ARUP

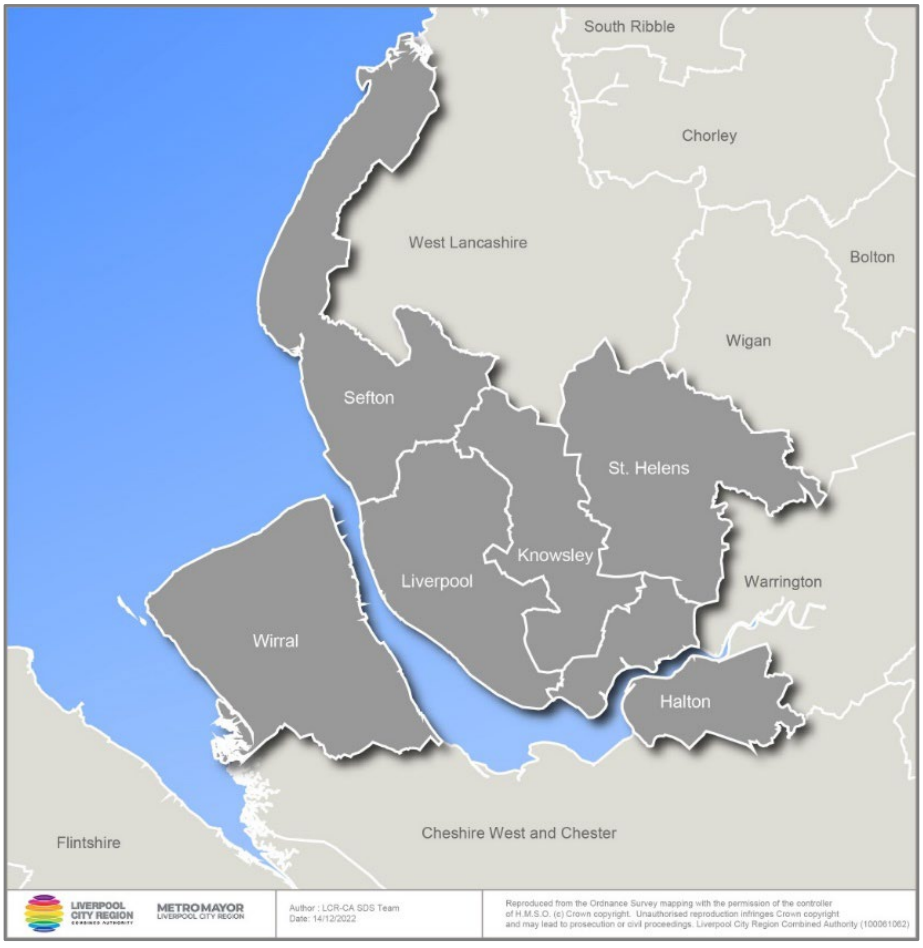
Liverpool City Region Combined Authority

Liverpool City Region Spatial Development Strategy

Strategic Infrastructure Plan

Initial Engagement Draft

26th October 2023



Job number 282736-00

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1. Introduction

This Strategic Infrastructure Plan ("SIP") has been produced by Ove Arup & Partners ("Arup") on behalf of Liverpool City Region Combined Authority ("LCRCA").

The purpose of the SIP is to support the LCRCA's Spatial Development Strategy ("SDS") as part of its evidence base and identify existing, funded, planned and aspirational strategic infrastructure that will be required to support the growth aspirations of the Liverpool City Region ("LCR") till 2045.

The SIP should be read in conjunction with the wider SDS evidence base and the SDS itself.

1.1 Overview of the LCR SDS

As part of its 2015 Devolution Deal[1], LCRCA is currently creating a single statutory city region framework in the form of an SDS. The SDS will be prepared in accordance with the relevant legislation and SDS regulations[2].

The SDS will be the first of its kind for the LCR and will set out the LCRCA's strategy for spatial development on a city region wide scale through a range of planning policies concerning development and land use.

When published, the SDS will form part of the Development Plan for the City Region's authorities meaning it will be a material consideration in the determination of planning applications. Local Plans subsequently prepared by the constituent local authorities must be in general conformity with the SDS.

The SDS will also have regard to other LCRCA policies or proposals that have spatial development aspects; for example, those relating to housing, transport, skills and employment, economic development, energy, and the environment. It will reflect LCRCA priorities with key influence being drawn from the LCR Plan for Prosperity.

The SDS will explain how land across LCR can be used, which will help to shape where residents live, work and play. It will contain high level policies for housing, transport, employment, health, and the environment, ultimately allowing a strategic framework to be set for the development and use of land.

[1] Available to view here on GOV.UK website.

[2] The Combined Authorities (Spatial Development Strategy) Regulations 2018 (as amended).

It is anticipated that the SDS will set the spatial pattern for future development across LCR including the identification of strategic development sites and/or broad locations for growth and new infrastructure as well as policies addressing health inequalities and climate change.

1.2 Overview of LCRCA

In 2015, the LCRCA Devolution Agreement set out terms of a proposed agreement between the government and leaders of the LCR to devolve a range of powers and responsibilities to the CA and a new directly elected mayor.

In October 2019, a LCR Spatial Planning Statement of Common Ground was agreed by the LCR authorities plus West Lancashire[3]. It was prepared jointly in response to the National Planning Policy Framework ("NPPF") requirement for strategic policy-making authorities to document agreement and cooperation on cross boundary strategic planning matters. Further details on national policy context are provided in Section 3.1.

The six local authorities which comprise the LCR, and therefore the geographical scope of the SDS and this SIP are set out in Figure 1.1. Further details on the local policy context are provided in Section 3.4.

[3] https://www.liverpoolcityregion-ca.gov.uk/wp-content/uploads/Liverpool-City-Region-SoCG.pdf

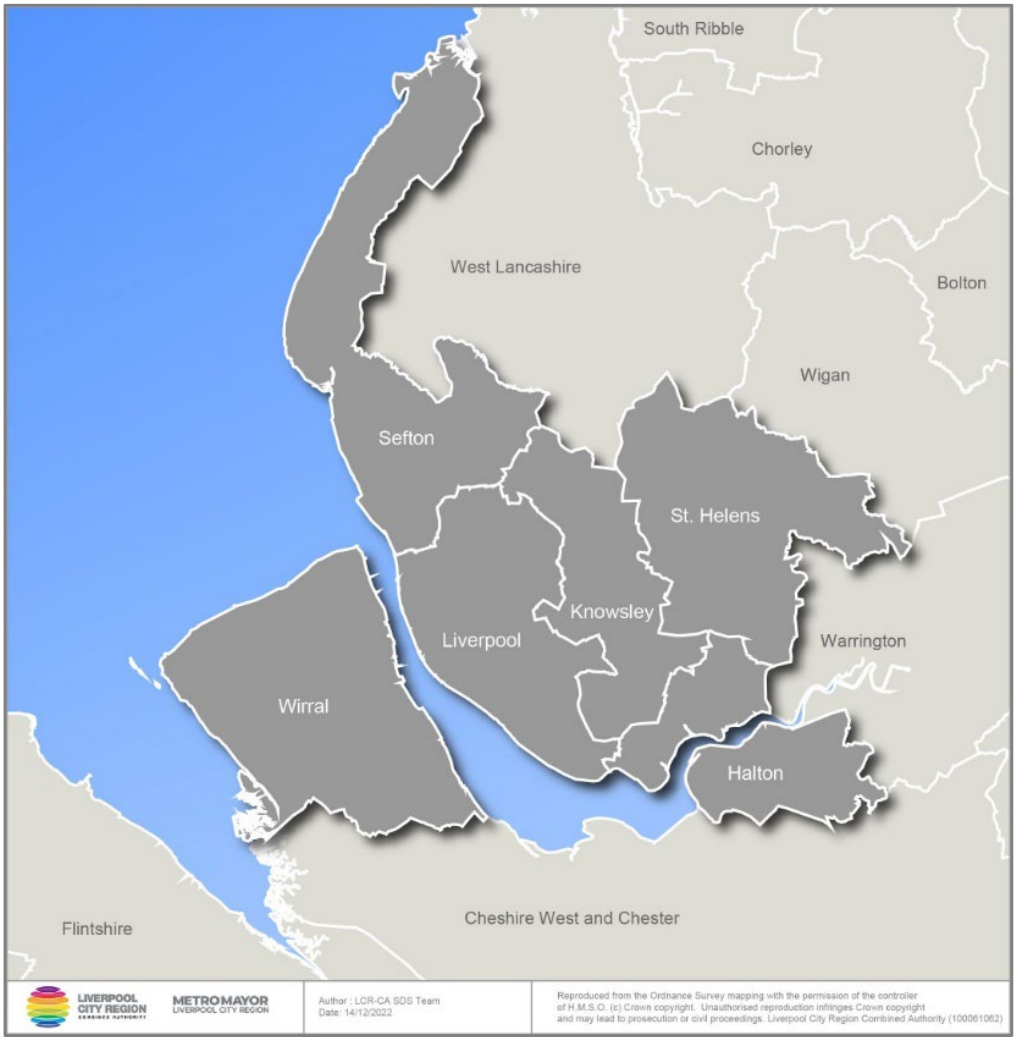

Figure 1.1: Map of the Liverpool City Region constituent local authorities[4]

1.3 Strategic objectives of the SDS

The scope of policies to be contained in the SDS will evolve through the engagement process. However, as a statutory requirement, in preparing the SDS the LCRCA has had regard to:

- the National Planning Policy Framework; and
- the effect that it would have on:
    - the health and well-being of persons in the LCR;

[4] LCR SDS (Working draft June 2023)

- health inequalities between persons living in the LCR;
- the achievement of sustainable development in the UK;
- climate change and the consequences of climate change; and,
- the need to ensure that the strategy is consistent with national policies.

Through this alignment, the LCR has identified five strategic objectives for the SDS, as set out in Figure 1.2 below.

Objective 1: Tackling climate change and creating a cleaner, greener city region.

Objective 2: Reducing health inequalities and creating a healthier city region.

Objective 3: Increasing the city region's economic prosperity in ways that widen opportunities for all.

Objective 4: The creation of sustainable places and communities with the homes the city region needs.

Objective 5: Maximising social value from development.

Figure 1.2: SDS Strategic Objectives

1.4 Purpose of the SIP

To successfully deliver the SDS and the policies within it, the LCRCA has produced this SIP in order to establish what additional strategic infrastructure is required to support the level of development proposed in the SDS. The SIP provides a robust and technically sound evidence base concerning strategic infrastructure requirements arising from growth requirements identified in the SDS and existing Local Plans of the six constituent local authorities that form the LCRCA.

The purpose of the SIP is therefore to explore the extent which strategic infrastructure is existing or planned to meet development proposed within the SDS, and to ensure proposed strategic infrastructure helps to deliver the SDS strategic objectives. The SIP is not seeking to demonstrate all infrastructure and services that may be required for proposed development, which is provided for or planned, as that is for each authority's Infrastructure Delivery Plan (IDP) to consider.

Non-strategic infrastructure will be / has been addressed through relevant Local Plan documents of the constituent local authorities, particularly their individual IDP which form part of the evidence base for the local authorities' Local Plan. It is therefore not the purpose of this SIP to consider localised infrastructure that is set out in each IDP.

Crucially, the SIP is concerned with strategic infrastructure, meaning infrastructure that will impact or support/deliver the strategic objectives of the SDS and is relevant for two or more of the LCR local authorities. However, the infrastructure itself does not have to physically cross borough boundaries (see section 1.5). The SIP will therefore highlight infrastructure that delivers the LCRCA's priorities and growth aspirations.

As the SIP supports the SDS, it is important that it sets out how strategic infrastructure will help support the delivery of the five strategic objectives. Each infrastructure set out within the SIP therefore explores how each relates with these and where relevant, provides opportunities to enhance the delivery of these.

1.5 Definition of Strategic Infrastructure

Importantly, the SIP must only deal with matters which are of strategic importance to LCR. There is no definition for the term 'strategic infrastructure' in the SDS Regulations. However, as agreed with the LCRCA at the inception of this workstream, for the purposes of the SIP, strategic infrastructure means:

"infrastructure that will impact, or support / deliver the strategic objectives of the SDS, in two or more local authorities within the LCRCA".

The infrastructure itself does not have to physically cross borough boundaries, it is the extent of the area served and the influence on the delivery of the LCR SDS policies.

Strategic infrastructure should include existing, funded, and planned infrastructure. Plus, infrastructure that is required to support the growth aspirations of the LCRCA.

Section 2 sets out what specific infrastructure has been considered 'strategic' in more detail and therefore what has been assessed through this SIP.

1.6 Delivery timescales for the SDS

The SIP has been produced as part of the evidence base underpinning the emerging SDS. The production of the SIP will be an iterative process and this current version of the SIP (LCR SDS SIP Engagement Draft 2023) has been drafted for the LCRCA's non-regulatory engagement of the SDS.

Following this engagement, comments from the general public and stakeholders will be considered where relevant and the SIP will be updated taking account of these.

Following this, changes to the proposed SDS policy approach in light of the comments would be considered, and additional elements of evidence that may be needed to support the proposed approach would be developed (including any updates to the SIP).

Following any refinement of the proposed policy approach, another round of consultation is required before the Combined Authority can submit the SDS to the Secretary of State for examination by the Planning Inspectorate.

1.7 Report structure

The SIP has been structured as follows:

- **Chapter 2** sets out the methodology for undertaking and collating the SIP;
- **Chapter 3** reviews the policy context for a SIP using relevant policy and guidance;

- **Chapters 4 through 13** consider each infrastructure theme in turn, reviewing the current provision within the City Region followed by a review of any planned schemes and analysis of the implications of planned growth, including recommended next steps; and,
- **Chapter 14** presents the overall summary and draws conclusions from the SIP for further consideration within the formation of the SDS.

For the infrastructure analysis in Chapters 4 through 13, each chapter is structured as follows:

- Introduction;
- Evidence base review;
- Stakeholder engagement;
- Baseline review of current infrastructure;
- Planned strategic infrastructure in LCR;
- Recommendations to align with SDS growth and identification of potential infrastructure gaps;
- Review and alignment of infrastructure against SDS strategic objectives; and,
- Summary and recommended next steps.

2. Methodology

The following section establishes the methodology for undertaking the SIP and collating relevant information.

2.1 Approach

The SIP focusses on understanding the current strategic infrastructure provision across LCR, whether it is adequate to meet the needs of the current population, and whether there are any implications for the distribution of growth across the LCRCA. It also identifies any planned improvements in strategic infrastructure provision.

Each infrastructure chapter considers the strategic infrastructure required to deliver growth proposed through the emerging SDS, in order to identify any gaps in provision to meet strategic growth through 2045.

Where available, costs and funding are also considered for planned infrastructure. Due to the strategic nature of this work, the costs that have been identified are high level at this stage and these should be explored further with key stakeholders when further details become available.

A combination of quantitative and qualitative sources has been utilised as part of a review of secondary data sources. This analysis has been supplemented by discussions with relevant stakeholders and service providers (see Section 2.3 for further details on stakeholder engagement).

2.2 Strategic infrastructure types

Given the strategic nature of the SIP, it is not appropriate to consider every type and scale of infrastructure. It has therefore been necessary to define strategic infrastructure in the context of the SIP using the definition defined by the LCRCA.

Table 2.1 sets out the types of infrastructure that have been established through best practice and agreed with the LCRCA. For clarity, Table 2.1 also lists types of infrastructure which are excluded from the strategic infrastructure definition for the purpose of this SIP. It is most likely that these will or have been assessed already at a local level by each local authority within the LCR through their IDPs.

Table 2.1: Infrastructure types within the SIP

Chapter	Infrastructure type	Specific strategic infrastructure included within the SIP	Excluded from the strategic infrastructure definition
4	Blue and green infrastructure	Open space designation and provision Corridor / network enhancements and developments Strategic enhancement programmes	Local open space provision or upgrades Local green space designations Management and maintenance strategies
5	Energy	Natural Gas / hydrogen generation Electricity and heat generation Strategic level reinforcements or network upgrades that increase capacity, enable improved efficiency, balancing or decarbonisation of the strategic energy system.	District Heating Networks Energy provision associated to one or more developments within a local authority Asset replacements which do not increase capacity Local level reinforcements Site connections
6	Surface water management and flood risk	Surface water management Strategic level reinforcements or network upgrades Flood protection Major Sustainable Drainage Schemes (SuDS)	Local level reinforcements Site level SuDS requirements Site connections
7	Foul water drainage	Wastewater Strategic level reinforcements or network upgrades	Asset replacements which do not increase capacity Local level reinforcements Site connections

			Changes to wastewater permits
8	Water supply	Potable water Strategic level reinforcements or network upgrades	Asset replacements which do not increase capacity Local level reinforcements Water environmental improvements Site connections
9	Digital and telecommunications	Broadband Strategic level reinforcements or network upgrades	Asset replacements which do not increase capacity
10	Transport	Highways (SRN, MRN and KRN) Rail: Merseyrail, other national rail, and freight. New or enhanced stations that are of strategic significance (e.g., Liverpool Central) have been included Buses which form the core and 'Green' networks and those which serve strategically important locations have been considered Liverpool John Lennon Airport The Port of Liverpool and associated infrastructure (access roads, freight terminals) The cruise terminal for passenger services Services that cross the River Mersey (e.g., Merseyferries) Active travel schemes which form part of the strategic walking and	Local roads which do not fall within the defined SRN, MRN or KRN which cross boundaries New station or enhancements to stations where the demand served is confided to one district Buses which serve local communities that happen to cross a boundary Smaller airfields for leisure and private Pleasure craft and tourist boats which the Mersey Coach services operate to national locations from Liverpool but do not, predominantly service journeys within the region Localised or small-scale walking and cycling

		cycling network as defined by LCR's LCWIP (note, smaller schemes which form part of the wider network have been included, where they are essential to creating a strategic route)	improvements that do not form part of the strategic network
11	Education	Universities	Early years and childcare Adult education Skills and training SEND Temporary bulge classes Primary education Secondary education Further education
12	Emergency services and health	Hospitals and NHS Trusts Clinical Commissioning Groups LCR-wide police LCR-wide fire & rescue LCR-wide ambulance	Other forms of primary healthcare Community nursing Independent living and extra care facilities Local or minor upgrades Mental health services and specialist secondary care services GPs and healthcare hubs Large nursing and residential homes
13	Waste management	LCR-wide waste and recycling facilities	Local level reinforcements Changes to waste permits

		Strategic level reinforcements or network upgrades	Asset replacements which do not increase capacity

Further information on the strategic infrastructure types is provided within each of the topic chapters (Chapters 4-13).

2.3 Stakeholder engagement

The starting point for the gathering of evidence and establishing a baseline position to inform the SIP has been a comprehensive review of secondary evidence documents. This information has been supplemented with understanding gained from conducting interviews with key strategic infrastructure stakeholders and providers.

The project team has also undertaken engagement with each of the six LCR authorities to confirm the status of their local plans and to gather information on any other strategic projects within each LPA, beyond the ones which were considered within the growth projections (further details on the growth scenarios can be found in Section 2.4).

A list of the stakeholders contacted for each strategic infrastructure theme is set out within the relevant chapters where relevant. Initial stakeholder engagement took place in 2022 and this was followed with an updated engagement in May 2023 prior to the non-regulatory engagement stage.

During engagement with stakeholders in 2022, the following questions were asked, and responses have been considered in the topic chapters.

- What is the state and capacity of the current strategic infrastructure in the LCR?
- Are there any known strategic level issues?
- Do you foresee any issues in strategic infrastructure should the projects shared with you be delivered by 2045 along with the growth projections?
- Are there any proposed strategic level projects which you are aware of that differ from those already shared through the growth projections?
- Based on the above, are there any gaps in strategic infrastructure to meet SDS growth to 2045?

In May 2023, stakeholders were then asked to provide any updates on their projects since the initial engagement exercise in 2022.

As set out in Section 1.6, there will be further opportunities for stakeholders (and the general public) to comment on the SIP through non-regulatory and regulatory engagement stages.

2.4 Proposed policy growth approaches

The SIP provides a robust evidence base about the future strategic infrastructure requirements arising from the projected growth requirements for Liverpool City Region. Proposed policy growth approaches have been produced as part of the SDS development, as follows:

- Engagement Draft SDS Policy LCR SP1 Strategic Housing Need and Distribution states a minimum of 83,600 net additional dwellings should be delivered in the Liverpool City Region over the period of 2021 through 2040. This equates to an annual average of approximately 4,400 net dwellings.
- Engagement Draft SDS Policy LCR SP2 Strategic Employment Land Need and Distribution states the following amount of employment land should be provided for over the period of 2021-2040 within Liverpool City Region.
    - General industrial (B2 uses) – a minimum of 521ha.
    - Office and research and development (use class E (g) (iii)) – a minimum of 281,600 sq. m.
    - Strategic B8 storage and distribution uses – 293-343ha.

3. Policy Context

It is important for the SIP to be robust and therefore meet the requirements of national planning policy and guidance. The following section outlines the national and local planning policy context for strategic infrastructure planning in the Liverpool City Region.

3.1 National context

3.1.1 National Planning Policy Framework

The NPPF (2021) sets out government's planning policies for England and how these are expected to be applied in the plan and decision-making process. It requires planning authorities to positively plan for development and infrastructure required in the area to meet the needs associated with growth. Local planning authorities must progress a proportionate evidence base for infrastructure which assesses the quality and capacity of various forms of infrastructure.

IDPs are therefore an important part of the evidence base for local development plans. Their purpose is to demonstrate that the infrastructure requirements necessary to support the level of housing and employment growth proposed can be delivered.

Although the SIP is not considered an IDP as it is not supporting an individual Local Plan, NPPF policy and planning practice guidance set out in this section have been considered to inform good practice in our approach and should be considered relevant to this strategic report.

Paragraph 16 of the NPPF states that plans should "be prepared positively, in a way that is aspirational but deliverable" (part b), while being prepared with "the objective of contributing to the achievement of sustainable development" (part a). Specifically, the NPPF states that both strategic (paragraph 20) and non-strategic (paragraph 28) policies should set out the overall strategy for the pattern, scale and design quality of places, and make sufficient provision for infrastructure, including transport and community facilities (such as health and education).

Paragraph 22 states that strategic policy should "look ahead over a minimum 15-year period from adoption, to anticipate and respond to long-term requirements and opportunities, such as those arising from major improvements in infrastructure. Where larger scale developments such as new settlements or significant extensions to existing villages and towns form part of the strategy for the area, policies

should be set within a vision that looks further ahead (at least 30 years), to take into account the likely timescale for delivery."

3.1.2 Planning Practice Guidance

Planning Practice Guidance (PPG) on 'plan-making' sets out guidance for the delivery of strategic matters, including for the provision of infrastructure.

Paragraph 059 (Reference ID: 61-059-20190315) states that a plan should identify "*what infrastructure is required and how it can be funded and brought forward*." It also states that early in the plan-making process, "*strategic policy-making authorities will need to work alongside infrastructure providers, [and] service delivery organisations …*" in order to take a collaborative approach to identifying infrastructure deficits and requirements as well as opportunities for addressing them. Through this process, they will need to:

- *"assess the quality and capacity of infrastructure, and its ability to meet forecast demands. Where deficiencies are identified, policies should set out how those deficiencies will be addressed; and*
- *take account of the need for strategic infrastructure, including nationally significant infrastructure, within their areas."*

3.1.3 The Planning Act 2008

The Planning Act 2008 sets out a development consent scheme for major infrastructure projects concerning energy, transport, water, wastewater, and waste. It sets out thresholds above which certain types of infrastructure development are nationally significant and require development consent.

The Act also set out a new body, the Infrastructure Planning Commission, to make decisions based on national policy statements. Therefore, major infrastructure decisions would be subject to this Act.

3.2 Planning obligations

Planning obligations assist in mitigating the impact of unacceptable development to make it acceptable in planning terms.

Paragraph 34 of the NPPF states that plans "should set out the contributions expected from development. This should include setting out the levels and types of affordable housing provision

required, along with other infrastructure (such as that needed for education, health, transport, flood and water management, green and digital infrastructure). Such policies should not undermine the deliverability of the plan."

Planning obligations may only constitute a reason for granting planning permission if they meet all the tests set out in Paragraph 57 of the NPPF:

a) *"necessary to make the development acceptable in planning terms;*

b) *directly related to the development; and*

c) *fairly and reasonably related in scale and kind to the development."*

The PPG on 'viability' states that plan makers should ensure that the combined total impact of such requests, and policies more generally, does not threaten the deliverability of the plan (Paragraph: 002, Reference: 10-002-20190509).

Developers may be asked to provide contributions for infrastructure in several ways. This may be by way of Community Infrastructure Levy (CIL) charged, or through Section 106 Agreements (S106) of the Town and Country Planning Act 1990 and Section 278 Agreements (S278) relating to highways works.

To date, no local authorities within the LCRCA have a local CIL Charging Schedule in place. The six LCR local authorities therefore utilise S106/278 mechanisms as required for developer contributions and their IDPs provide further information on potential funding and delivery mechanisms (where possible).

3.3 Collaboration and delivery

The Government has placed greater emphasis on the requirement for strategic partners and local planning authorities to cooperate on planning issues that cross administrative boundaries, particularly those which relate to the strategic priorities. This is in recognition that successful delivery needs to be underpinned by a comprehensive package of infrastructure, phased and delivered in a timely way, ahead of, or in tandem with the development it serves. This necessitates a coordinated approach across local authority boundaries and the involvement of a range of partners, including the infrastructure providers, the councils and the Combined Authorities, amongst others.

Paragraph 27 of the NPPF sets out the statutory requirement for strategic policy-making authorities to "prepare and maintain one or more statements of common ground, documenting the cross-boundary matters being addressed and progress in cooperating to address these."

PPG guidance on 'plan-making' (Paragraph: 011, Reference ID: 61-011-20190315) states that a statement of common ground should contain:

- The key strategic matters being addressed;
- The plan-making authorities responsible for joint working detailed in the statement;
- Governance arrangements responsible for the cooperation process; and,
- A record of where agreements have (or have not) been reached on key strategic matters

As mentioned, LCR agreed a LCR Spatial Planning Statement of Common Ground[5] in October 2019 with the following principal signatories (council areas depicted in the below image):

- Halton Council;
- Knowsley Council;
- Liverpool City Council;
- Liverpool City Region Combined Authority;
- Sefton Council;
- St. Helens Council;
- West Lancashire Borough Council (not covered within the SIP as does not fall within the LCR); and,
- Wirral Council.

[5] https://www.liverpoolcityregion-ca.gov.uk/wp-content/uploads/Liverpool-City-Region-SoCG.pdf

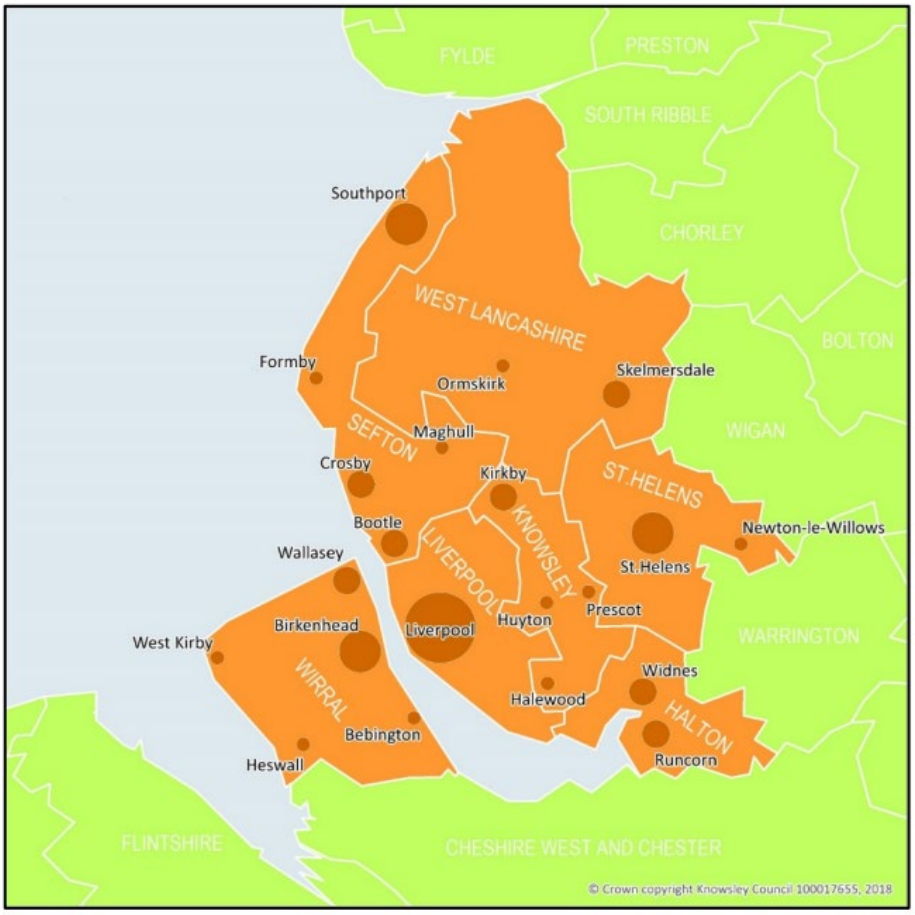

Figure 3.1: Area covered by LCR Statement of Common Ground

The Statement of Common Ground has informed policy matters to be covered by the LCR SDS and states that the LCR authorities agree to work collaboratively on SDS policy preparation.

3.4 Local context

This section sets out the local context for the six authorities within LCR. Although the SIP is concerned with strategic rather than local infrastructure, it is important to consider local growth areas, as these can highlight areas of importance which may need to be supported by strategic infrastructure. Additionally, local policy on infrastructure demonstrates how each LPA delivers infrastructure within their boundary, setting the context for how strategic infrastructure could be approached by the LCR authorities.

3.4.1 Local plan growth

The individual authorities which make up LCR are already planning for a significant level of growth through their individual Local Plans, which are all at different stages of the plan-making process. Table 3.1 sets out key indicative planned growth locations across the City Region.

Table 3.1: Indicative key planned growth areas across the study area

Local Authority	Latest Local Plan document	Adoption date	Key growth locations
Halton	Halton Delivery and Allocations Local Plan (Adopted)	2022	Halebank and Ditton Corridor, Widnes South Widnes West Runcorn East Runcorn North Widnes
Knowsley	Knowsley Local Plan: Core Strategy (Adopted)	2016	North Huyton and Stockbridge Village Kirkby Town Centre Tower Hill, Kirkby Knowsley Industrial and Business Parks Prescot Town Centre South Prescot
Liverpool	Liverpool Local Plan 2013-2033 (Adopted)	2022	North Liverpool City Centre Stonebridge/Gillmoss/Aintree Central Liverpool South Liverpool
Sefton	A Local Plan for Sefton 2015 - 2030 (Adopted)	2017	Bootle and Netherton

			Southport Sefton East Parishes
St. Helens	St. Helens Borough Local Plan up to 2037 (Adopted)	2022	St. Helens Core Area Blackbrook and Haydock Newton-le-Willows and Earlestown Rainford Billinge Garswood Rainhill
Wirral	Wirral Local Plan 2021-2037 Submission Draft (Regulation 19)	Estimated 2023	Wallasey Birkenhead Bebington, Bromborough and Eastham Leasowe, Moreton, Upton, Greasby and Woodchurch Hoylake and West Kirby Irby, Thingwall, Pensby, Hesway and Gayton

Much of the infrastructure identified within this SIP has been proposed to support the delivery of these key growth locations, as well as wider growth across the City Region.

3.4.2 Local Plan policy

Halton

Within the adopted Halton Local Plan, Policy CS(R)7: Infrastructure Provision states that development should be located to maximise the benefit of existing infrastructure while also minimising the need for new provision. Part 2 of this policy states the following:

"On larger developments that will be completed in phases or over a number of years, an agreed delivery schedule of infrastructure works may be appropriate. Where infrastructure provision is not

made directly by the developer, contributions may be secured by an agreement under Section 106 of the [Town and Country Planning] Act including where appropriate via a phased payment schedule."

Knowsley

Within the adopted Knowsley Local Plan, Policy CS27: Planning and Paying for New Infrastructure covers infrastructure provision principles, developer contributions, and economic viability. Part 1 of the policy states that, *"New development will be required to support, as appropriate:*

a) Safeguarding of existing infrastructure;

b) Maintenance and improvement of existing infrastructure;

c) Replacement of inadequate infrastructure; and,

d) Provision of new infrastructure."

Furthermore, part 4c of the policy states that new development will be expected to:

"Provide financial contributions towards the provision of strategic infrastructure to support local communities together with borough-wide and other strategic development requirements. Such contributions may be secured through set charges or infrastructure tariffs to be introduced by the Council in other Local Plan documents and/or a Community Infrastructure Levy Charging Schedule, as appropriate."

Liverpool

Part 2 of Policy STP4 – Infrastructure Provision within the Liverpool Local Plan states:

"Where new development is likely to create an identified shortfall in infrastructure capacity or exacerbate existing deficiencies, developers will be required to adequately mitigate or compensate for those deficiencies, in line with Policy STP5 – Developer Contributions, either through:

a. Providing new on or off-site infrastructure provision; and/or,

b. Making payments through a Community Infrastructure Levy or other developer contribution procedure."

Sefton

Policy IN1: Infrastructure and Developer Contributions within the Sefton Local Plan states:

"2. Social, community, environmental and physical infrastructure will be protected, enhanced and provided where there is an identified need to support sustainable communities.

3. Where appropriate, contributions will be sought to enhance and provide infrastructure to support new development. This may be secured as a planning obligation through a legal agreement, through the Community Infrastructure Levy or through other agreements. …"

St. Helens

Policy LPA07: Infrastructure Delivery and Funding of the St. Helens Local Plan is the key policy which establishes infrastructure requirements for the borough. Specifically, it states that the *"Council will seek to ensure satisfactory provision of all forms of infrastructure that are required to serve the needs of the local community by:*

a) Protecting existing infrastructure from being lost where there is an identified need for it;

b) Supporting the improvement of existing infrastructure where there is an identified need for such improvement;

c) Safeguarding land for planned new or improved infrastructure where there is an identified need for it; …".

It also sets out in broad terms how the Council will seek and secure contributions for various infrastructure provisions within the Borough.

Wirral

Within the Submission Draft of the Wirral Local Plan, Policy WS 10.1: Provision of Infrastructure sets out the Council's approach to infrastructure as follows:

"A. Proposals for development should, where appropriate, have regard to the Infrastructure Delivery Plan, which sets out the infrastructure required for the implementation of the Local Plan.

B. Proposals must demonstrate that there is sufficient appropriate infrastructure capacity to support the development or that such capacity will be delivered by the proposed development.

C. Developers will be expected to provide on-site provision where essential to the acceptable delivery of the development, or where appropriate a financial contribution towards either off-site provision or the enhancement of existing off-site facilities to mitigate the impact of development. This will be determined on a site- by- site basis. …"

Appendix 10: Developer Contributions sets out how the Council will seek and secure contributions for and protect infrastructure on Wirral.

4. Blue and Green Infrastructure

4.1 Introduction

This chapter assesses the existing strategic green and blue infrastructure provision in the LCRCA, details aspirational and planned interventions to be delivered within the timescales of the SIP and determines the extent to which these interventions support the SDS objectives and are suitable to meet the growing needs of the LCR as set out in the relevant growth scenario.

The NPPF recognises the essential contribution and services that our natural environment can provide in moving towards a sustainable and resilient future, as well as creating healthier, greener cities for the people who live, visit, and work there. The 2021 Environment Act priorities, Biodiversity Net Gain (BNG) requirements associated with new development and the emerging Local Nature Recovery Strategies place blue and green infrastructure at the top of the policy agenda and support the opportunity to deliver meaningful change at the regional scale.

Natural England's Green Infrastructure Guidance (2011) describes green infrastructure as:

*"a **strategically** planned and delivered network comprising the broadest range of high quality green spaces and other environmental features. It should be designed and managed as a multifunctional resource capable of delivering those ecological services and quality of life benefits required by the communities it serves and needed to underpin sustainability… Green Infrastructure includes established green spaces and new sites and should thread through and surround the built environment and connect the urban area to its wider rural hinterland. Consequently, it needs to be delivered at all spatial scales".* (Natural England 2011)

Strategically planned green and blue infrastructure that functions at multiple scales has a vital role in addressing the growing challenges of the 21st Century. It plays an important social, economic, and environmental function and, if delivered appropriately, it can help facilitate active travel, improve air quality, increase biodiversity and meet health and wellbeing objectives.

Natural capital identifies and places a value upon landscape assets within an ecosystem, such as forests, soil and living things. These elements provide people with free goods and services, known as ecosystem services. Using a natural capital / ecosystem services approach to frame discussions around blue and green infrastructure helps to assign clear value and inform policy responses.

Population and employment growth, along with its associated 'hard' infrastructure, will place additional pressure on green and blue infrastructure networks across the LCR. This, particularly in the context of climate change, means that it is now more important than ever to maximise the quality and multifunctionality of ecosystem services, improve biodiversity and ensure that mechanisms are in place to preserve and enhance these networks at the strategic scale. Beyond climate change mitigation and improvements to the natural environment, there is significant opportunity for enhanced green infrastructure networks to address the full range of SDS objectives, maximising benefits to communities and people who live and work across the LCR. For example, in relation to health and wellbeing, a comprehensive evidence base exists within the LCR and Warrington Green Infrastructure Framework (refer to Section 4.4.1) that identifies inequalities and correlation between health and wellbeing and access to natural green open space.

Figure 4.1 highlights several key principles for the delivery of successful green infrastructure, as outlined in Natural England's emerging Green Infrastructure Framework.

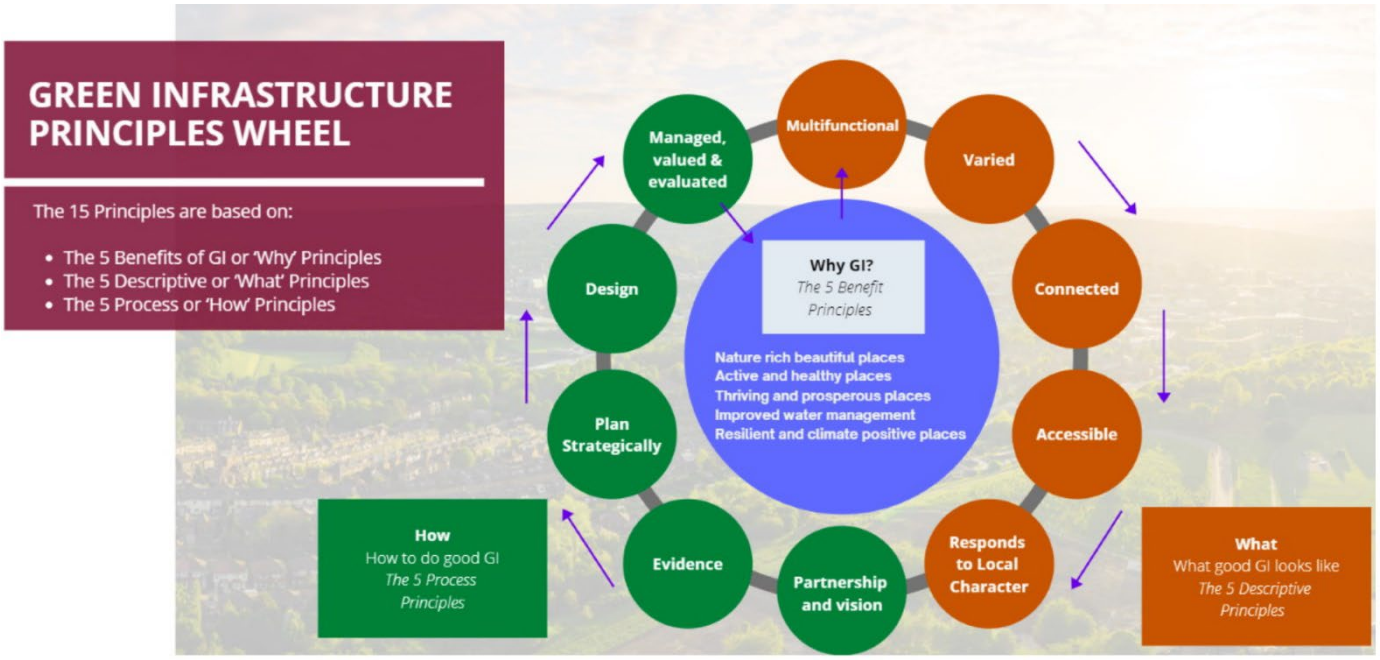

Figure 4.1: Green Infrastructure Principles (Natural England 2021)

4.2 Evidence base review

The initial evidence base review covers the following types of strategic green and blue infrastructure, crossing administrative boundaries directly or having a catchment / sphere of influence that extends beyond individual local authority boundaries:

- New strategic open space designation and provision;
- Green and blue infrastructure corridor/network enhancements and developments; and
- Strategic enhancement programmes.

The Baseline Study does not include:

- Local open space provision or upgrades;
- Local green space designations; and,
- Management and maintenance programmes.

A number of documents have been reviewed to gain an understanding of the current green and blue infrastructure in the LCR and to identify any planned schemes at the strategic scale. These are listed below:

- LCR and Warrington Green Infrastructure Framework (2013);
- Baseline natural capital assessment for the Liverpool City Region (2020);
- LCR Ecological Network (2015);
- Local Authority IDPs;
- LCRCA Local Cycling and Walking Infrastructure Plan;
- Liverpool City Council Strategic Green and Open Spaces Review Board (2016);
- Adapting the Landscape from Liverpool to Manchester (2009);
- Bold Forest Park – Area Action Plan (2014); and
- Liverpool Green Infrastructure Strategy (2010).

4.3 Stakeholder engagement

A key component of the project baseline has been to engage with relevant stakeholders to discuss recent and emerging strategies, existing strategic infrastructure provision and requirements. The aim of these conversations has been to establish whether the existing and planned strategic infrastructure

aligns with the growth projections of the LCRCA and the strategic objectives of the SDS. Representatives from the following stakeholder groups have been engaged:

- Mersey Forest;
- Environment Agency;
- Natural England;
- Liverpool John Moores University;
- Peel Group;
- LCRCA Transport Team; and,
- Merseyside Environmental Advisory Service (MEAS).

Stakeholders were invited to share their views on any issues they were aware of regarding the current and proposed strategic infrastructure, as well as the gaps identified to meet SDS growth to 2045. Information shared during these conversations has helped inform the production of this chapter.

4.4 Baseline review of current infrastructure

The following section sets out a strategic context of the current green and blue infrastructure using findings from baseline studies and then highlighting the existing assets the LCR has in relation to this infrastructure.

4.4.1 Strategic context

The LCR sits within a wide network of strategic green and blue infrastructure that includes the following typologies:

- Open space corridors;
- Green infrastructure along linear assets;
- Major parks and open spaces;
- Woodland;
- Rural land;
- Ecological network;

- Canals and waterways; and,
- The Mersey coast.

The landscapes across the region support several different sectors directly and indirectly, such as agriculture, forestry and tourism. Whilst its quality attracts employers, residents and visitors. They also provide vital ecosystem services such as flood management, water supply, carbon sequestration, air quality, soil and climate regulation.

To deliver successful green infrastructure, it needs to function at all spatial scales and across administrative boundaries. The LCR is already recognised as a leader in green infrastructure planning and delivery. A significant amount of work has been developed at the sub-regional scale to provide a comprehensive evidence base for green and blue infrastructure, ecological network and natural capital to underpin the identification of opportunity sites and appropriate interventions. This has been summarised below.

LCR and Warrington Green infrastructure Framework

An LCR and Warrington Green Infrastructure Framework[6] was produced by Mersey Forest in 2013 to provide an evidence base of the LCR's green infrastructure, advocate for green infrastructure as critical infrastructure, identify actions that meet key priorities, and form the basis for a programme of investment (Liverpool City Region and Warrington Green Infrastructure Framework 2013). Within this publication, green infrastructure is defined as 'the 'green' between the 'grey'; the farmland, open spaces, parks, trees, woodlands, coast, river and canals found right across our city region and that provide a natural environment in which to live, work and play'. At this time, green infrastructure accounted for around 80% of the total land area of, 8,000 jobs and £350million GVA across the City Region and Warrington (this is a larger geography than the SIP covers). The Framework identifies 6 key priorities, aimed at improving the multifunctionality of green infrastructure across the LCR:

- Growth and investment;
- Health and wellbeing;
- Recreation, leisure and tourism;

[6] Liverpool City Region Green Infrastructure Framework | Our work | The Mersey Forest

- Rural economy;
- Ecological framework; and,
- Climate change.

The study, through overlaying location and function of green infrastructure with the requirements of the LCR, identified a series of 'pinch points' as settings for investment where deficits are present, needs are not being met, and where actions should be targeted. It also provides a guide intended to highlight how specific Green Infrastructure interventions can help to address each 'pinch' category.

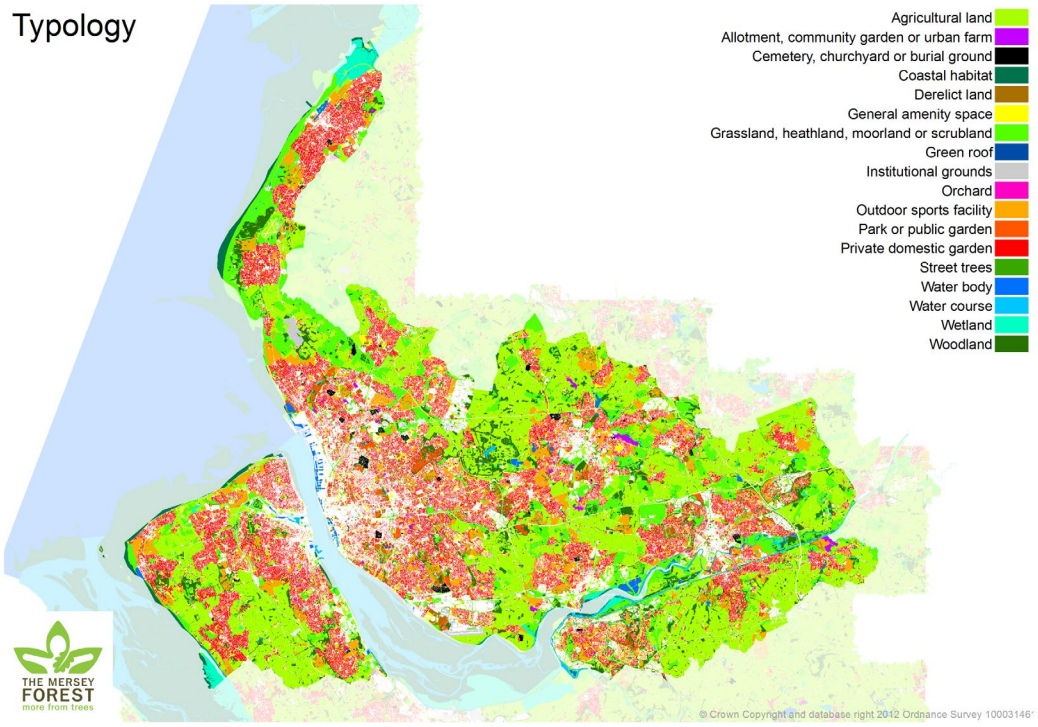

Figure 4.2: Green infrastructure typologies plan, as presented in the Liverpool City Region and Warrington Green Infrastructure Framework

Liverpool City Region Ecological Network (2015)

Ecological functionality is at the forefront of the policy agenda, with BNG requirements, emerging Local Nature Recovery strategies and the potential for private investment in nature as fundamental enablers of new proposed development. This provides significant opportunity to deliver on the recommendations and spatial strategies as set out in LCR's Ecological Network Report[7]. The LCR

[7] Interactive Map (lcreconet.uk)

includes a range of existing designated sites, as shown in Figure 4.9, and the report sets out clear objectives and spatial opportunities to deliver a bigger, better and more connected ecological network.

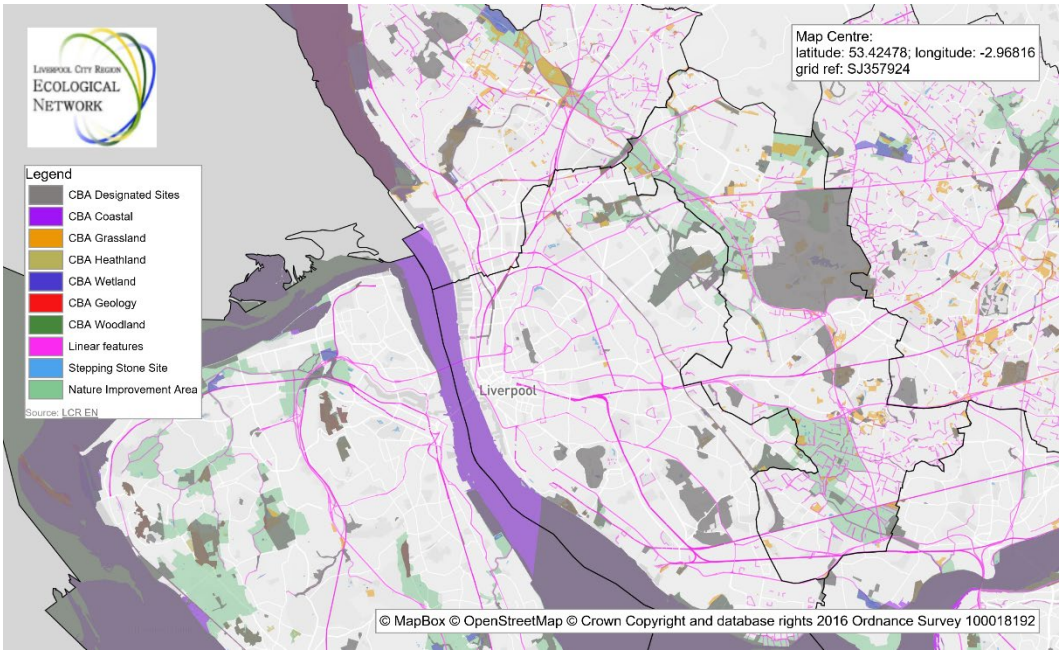

Figure 4.3: Extract from Ecological Network interactive map, indicating opportunity sites, linear features and Nature Improvement Areas

Liverpool City Region Natural Capital Assessment (2021)

Building on the delivery of the LCR Green Infrastructure Framework and the LCR Ecological Network, a LCR Natural Capital Working Group was established with the aim of embedding natural capital within decision making and policy. Working closely with the LCRCA, a natural capital baseline assessment for the LCR was delivered in 2021[8]. This aimed to provide an asset register and valuation of benefits through an ecosystem services lens, to align with the Natural Capital Approach as set out in DEFRA's 25-year Environment Plan and revised planning guidance. Following the detailed mapping of natural capital assets, a series of overlays were generated to establish:

a) Ecosystem capacity across a range of services (existing condition)

b) Demand (combining socio-economic data with base mapping to identify areas of deficiency)

[8] https://www.liverpoolcityregion-ca.gov.uk/wp-content/uploads/LCR-Natural-Capital-Baseline-Report.pdf

This evidence base can be applied to specific sites and projects to establish environmental net gain. The approach has been piloted for a scheme to transform Lunt Meadows as part of Mersey Forest's Trees for Climate vision, as well as the Urban GreenUP project. Benefits across a range of ecosystem services (e.g. air purification, carbon storage, noise regulation, access to nature etc.) can be determined at a range of scales – from site to local authority. Opportunity mapping is aimed at identifying areas of highest demand or lowest capacity. This includes the application of a mask for constraints; for example, avoiding heritage sites, priority habitats, hard infrastructure etc. A multiple benefits map can also be generated to identify hotspot areas that help project prioritisation where a range of ecosystem services can be delivered.

The baseline report describes a spatial mismatch between supply and demand across the LCR, with ecosystem services provision higher outside of urban centres. Air pollution, local climate and noise regulation, as well as accessible nature, are highlighted as key areas of focus. The provision of carbon storage is low and dependent on trees and woodland habitat in the LCR, the majority of which occurs outside of urban centres. Using a natural capital approach allows an understanding of the Liverpool City Region's natural assets and the social and economic benefits that are derived from them.

Following from the natural capital baseline report, an emerging Opportunity Mapping report aims to use the asset map and service capacity and demand outputs to identify opportunity areas, aimed at enhancing the ecological network, delivering ecosystem services and prioritising sites.

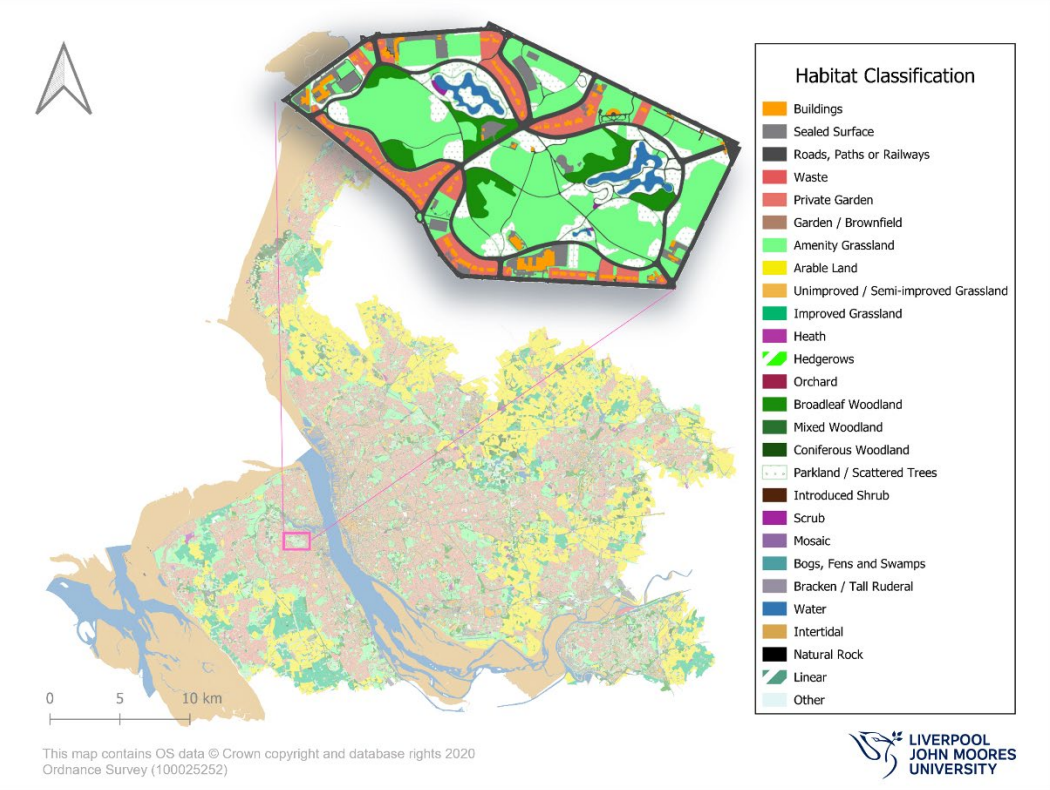

Figure 4.4: LCR basemap which provides the basis for opportunity mapping

Summary of strategic context

While this work provides a comprehensive, high quality evidence base, further actions are required to establish a project pipeline and deliver on the opportunities at the LCR scale. The emerging State of Nature report (2022) will support in contributing to the evidence base and providing a strategic context for existing initiatives across the LCRCA.

Recommendations and next steps include the following:

- Determining how to use the evidence base and opportunity mapping to establish a pipeline of projects;
- Consolidating and enhancing evidence base to map habitat functionality and performance;
- Engage with key stakeholders and delivery agents;
- Link to national policy and potential funding sources;
- Develop capacity in government, business, NGOs and other relevant stakeholder groups; and,

- Develop user friendly approaches.

The following section provides an outline of existing green and blue infrastructure provision at the strategic scale.

4.4.2 Existing green and blue infrastructure provision

The local authorities across the LCR vary from urban and rural contexts, each with distinct landscape and green / blue infrastructure characteristics. 6 National Character Areas (NCAs) fall within the region, reflecting a relatively complex landscape context and a variety in characteristics, value and function of the natural environment (see Figure 4.5). The key characteristics of each are outlined below:

Lancashire and Amounderness Plain The low-lying plain to the north of Liverpool is predominantly rural in character and dominated by productive arable farmland with extensive drainage systems. The area offers opportunity for recreation, with the Ribble Link and Leeds and Liverpool Canal crossing the NCA. Marshy sites provide valuable bird habitats.

Lancashire Coal Measures The Lancashire Coal Measures NCA surrounds the town of St. Helens, extending towards the Mersey Valley to the south. The area has an industrial heritage, which has contributed to a complex mosaic of landscapes that include farmland, scattered urban centres and industrial sites. Woodland cover is limited, though areas of community woodland have been introduced over recent years. Several county parks and nature reserves provide opportunity for people to enjoy the natural environment. Future challenges include pressure to accommodate housing and industry, though this provides opportunity to incorporate high quality public open spaces and improved habitat connectivity.

Sefton Coast The Sefton Coast extends from the mouth of the Ribble Estuary in the north to Crosby in the south. It is characterised by coastal habitats, including sand and mud flats, dunes, dune heathland and conifer plantations, framed to the east by agricultural land. Expansive areas of the coastline are internationally designated for conservation, and there is a challenge in sensitively integrating these with pressures of recreation and tourism. Coastal erosion and water quality pose additional challenges, and there is a need to ensure a sustainable approach to coastline management.

Mersey Conurbation The Mersey Conurbation is predominantly an urban and suburban landscape based around Liverpool city and a number of neighbouring settlements. These sit on a low-lying,

rolling landscape that is framed to the south by the Mersey Estuary. The extensive mud and sand flats of the estuary are internationally important bird feeding and roosting sites, with large areas designated as Ramsar Sites and Special Protection Areas. A high quality green infrastructure network permeates into the urban fabric, providing valuable open spaces and contributing to sense of place. Opportunities include enhancing green infrastructure, managing flood risk, promoting recreation, and ensuring pressure from development can be balanced with the need to conserve and promote a resilient natural landscape.

Wirral The Wirral is located on a peninsula framed by the Mersey and Dee estuaries. It is characterised by formal landscapes of historic country estates, rural land, coastal landscapes and wooded sandstone ridges. This rich pastoral landscape is interspersed with settlements. The coastal and estuarine landscapes are popular visitor destination and provide opportunity for ecotourism based on large extents of protected habitats and diverse wildlife. Challenges include improving water quality and enabling recreational access while maintaining and managing the area's important habitats and species.

Mersey Valley The Mersey Valley consists of a wide, low-lying river valley that incorporates the River Mersey, its estuary, associated tributaries and waterways. It is a varied landscape that includes salt marshes, the intertidal flats of the estuary itself, and a complex mosaic of high-quality farmland, extensive industrial development and urban communities. The habitats that frame the river provide natural flood defences, and appropriate management of the areas organic soils and wetlands can provide significant carbon sequestration benefits. Challenges include integrating development pressures with the protection and enhancement of the landscape and its internationally significant habitats. Additionally, there is opportunity for providing recreational green space through green infrastructure strategies in urban areas.

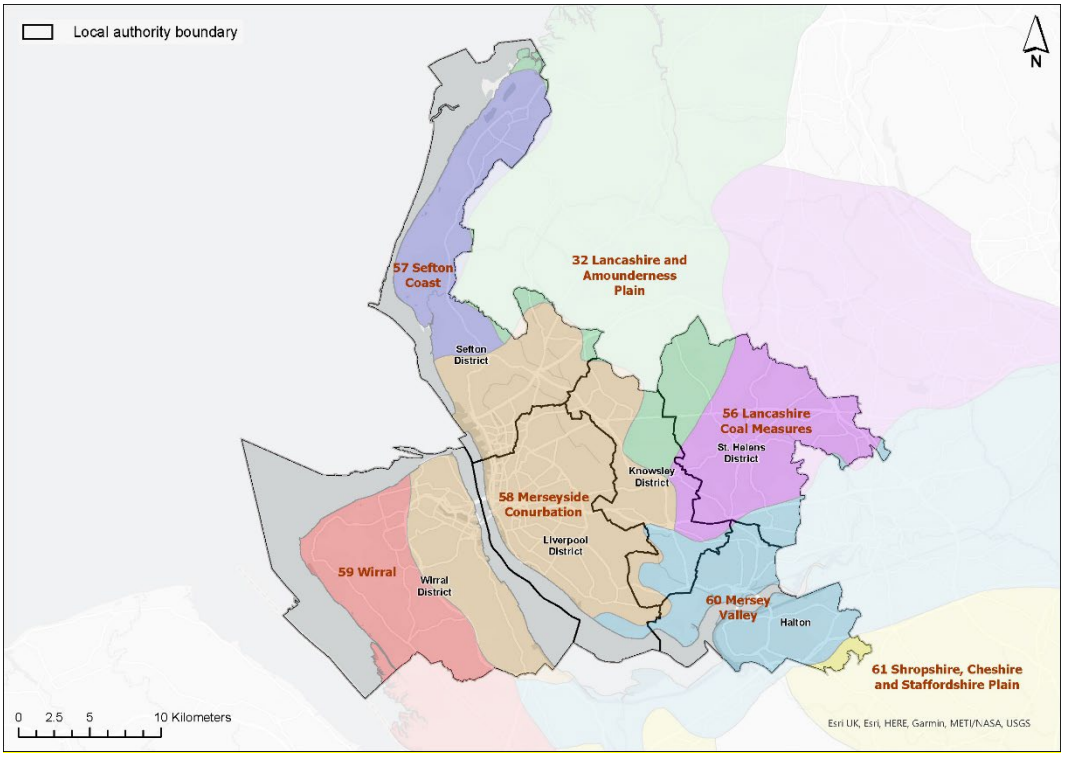

Figure 4.5: National Character Areas (NCAs)[9] across LCR

Across these distinct character areas, an extensive strategic green and blue infrastructure network includes an interconnected network of open space corridors, transport and energy infrastructure corridors, major public open spaces, woodland, agricultural land, ecologically designated sites and active travel routes, canals, waterways, and coastline. This diversity of landscapes provides a range of ecosystem services. They are summarised below and stratified by typology of strategic green and blue infrastructure to structure the assessment.

Open space corridors

Several strategic, cross-boundary green infrastructure corridors permeate into urban centres and provide important links across the rural-urban fringe. These predominantly follow river courses and include the following:

- Rimrose Valley in Sefton, following the Leeds-Liverpool canal;
- Lower Mersey Valley Corridor;

[9] http://www.naturalengland.org.uk/publications/nca/northwest.aspx

- Sankey Valley Corridor, connecting Warrington with St. Helens;
- River Alt Corridor;
- Whiston-Cronton Corridor; and,
- Stanley Bank, Carr Mill Dam and Billinge Hill Corridor.

These are depicted below in Figure 4.6. Cutting through the region and draining into the River Mersey, these open space and river valleys provide valuable habitat amenity as well as accommodate linear development corridors and transport infrastructure.

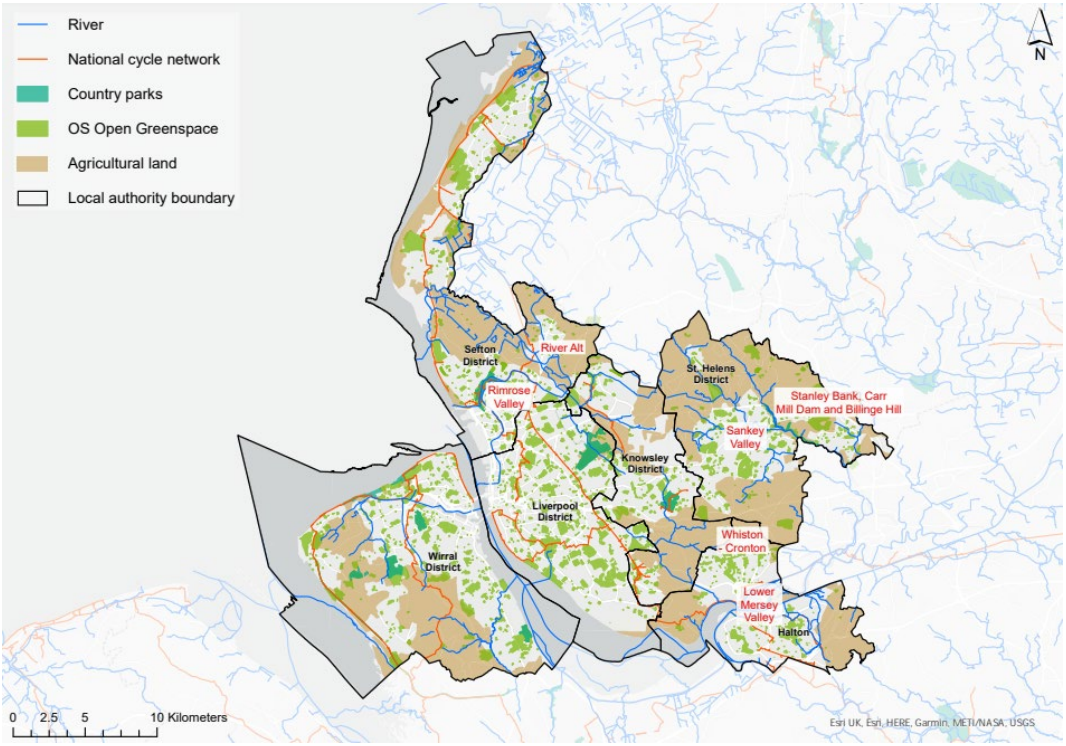

Figure 4.6 Open space corridors across LCR

Green infrastructure along linear assets

An extensive network of major road, rail and energy infrastructure extends across the region. Examples include Merseyrail and the major roads network (see Chapter 10 for further details regarding strategic Transport infrastructure).

Whilst these can create severance that impacts on the potential for high quality, regional-scale, connected ecological networks, they also provide opportunity to introduce green infrastructure along

linear assets. This can be achieved through retrofitting existing corridors or aligning with future schemes.

Incorporating well designed and managed green infrastructure into strategic linear infrastructure can contribute to enhanced asset resilience, efficiency and deliver an improved return on investment. Appropriate integration yields a range of environmental, social and economic benefits:

- Enhanced character, user experience and recreational opportunities;
- Revenue generating opportunities. For example, verge harvesting for biomass;
- A range of environmental benefits including improved air quality, flood risk management and carbon sequestration; and,
- Improved biodiversity.

Major parks and open spaces

A strategic approach to the delivery of public open spaces across the region can support in providing universal access and promoting health and wellbeing for residents and visitors. Several open spaces and parks for recreational use within the LCR have a regional sphere of influence. An example of this is the emerging Bold Forest Park, as one of the most advanced of five aspirational Forest Parks within the Mersey Forest. It is situated in the south of St. Helens, abutting Halton and Warrington borough and has significant potential as a regional attractor, with cross-boundary collaboration providing the opportunity to maximise access and open space provision to a wider catchment.

Using Natural England's Access to Natural Green Open Space Standards (ANGSt), the following sites have been identified as examples of natural space that meet the District and Sub-regional Standard thresholds (natural green spaces of 100ha within 5km and 500ha within 10km respectively) and have the potential to provide regional-scale attraction and value for the LCR and its communities. These are depicted on Figure 4.7 below.

- Bold Forest Park;
- Knowsley Park;
- Sefton Coast / Formby Point;
- Rimrose Valley Country Park;

- Croxteth Country Park;
- Sefton Park;
- North Wirral Coastal Park;
- Eastham Country Park;
- Royden Park / Thursaston Common; and,
- Wirral Country Park.

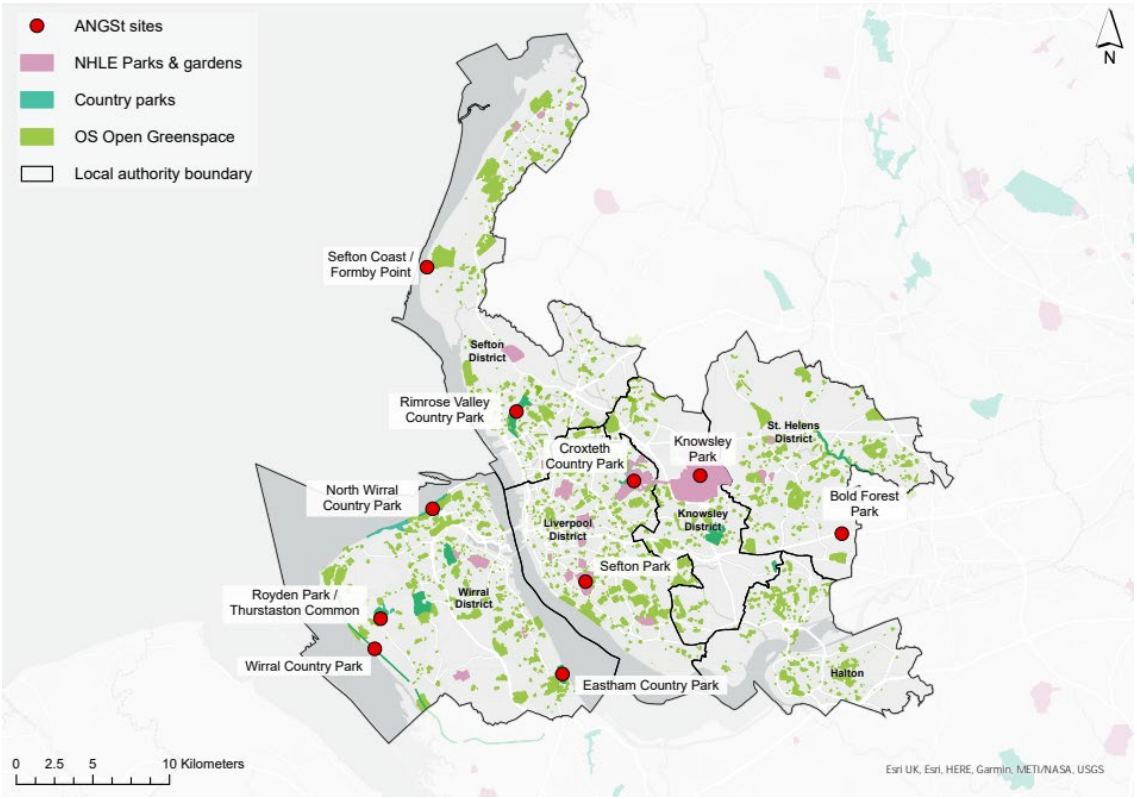

Figure 4.7 ANGSt sites which have been identified to meet the district and sub-regional threshold

Natural England's ANGSt model provides a useful tool for analysing access to open space (see Figure 4.8). Using this model, the LCR Green Infrastructure Framework identified a number of areas that do not meet this standard of provision. Whilst smaller, everyday spaces can be considered at the local scale through the delivery of local GI networks, a more strategic approach is perhaps useful when analysing larger open space and nature reserve provision which have the potential to serve a wider

population beyond administrative boundaries. It should be noted that the ANGSt standard has recently been updated, making a strong case for more access following the Covid pandemic.

Predicated around the ANGSt standards, DEFRA and Natural England have developed a Beta version (V1.1) of an England-wide GI mapping database[10], bringing together data from over 40 individual environmental and socio-economic datasets. The tool aims to support local authorities and other stakeholders in assessing green infrastructure provision against the emerging GI Standards. In future, it will integrate additional components and analytical features. For example, considering quality of open space and mapping green infrastructure functions (air quality, pollution, carbon storage etc). This tool is a useful resource to understand existing infrastructure provision and identify areas where requirements are not being met.

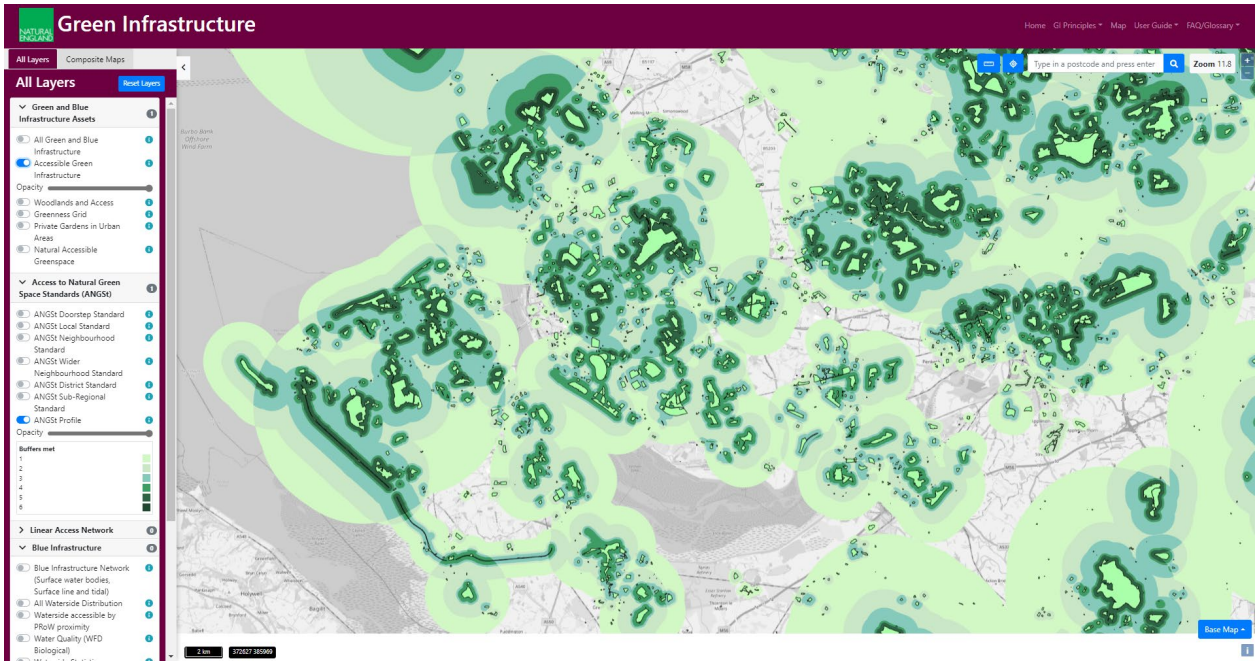

Figure 4.8 Natural England's GI mapping database, showing the ANGSt profile of Liverpool City Region. This indicates a number of areas where several, and in some cases all, the AGNSt standards are not being met.

[10] https://designatedsites.naturalengland.org.uk/GreenInfrastructure/Home.aspx

ANGSt

ANGSt recommends that everyone, wherever they live, should have an accessible natural greenspace:

- of at least 2 hectares in size, no more than 300 metres (5 minutes walk) from home;
- at least one accessible 20 hectare site within two kilometres of home;
- one accessible 100 hectare site within five kilometres of home; and
- one accessible 500 hectare site within ten kilometres of home; plus
- a minimum of one hectare of statutory Local Nature Reserves per thousand population.

Figure 4.9: Natural England's ANGSt standards

Mersey Coast

The Mersey Coast is a key tourism destination with potential for increased visitors. The Wirral and Sefton coastlines are of international importance for nature conservation, with a number of Ramsar Sites, SPAs and SACs forming part of a wider network of Natura 2000 sites (see Figure 4.10). These sites provide opportunity for recreational and tourism strategies if managed sustainably and sensitively, balanced with requirements for safeguarding the natural environment.

A Shoreline Management Plan SMP22 Great Ormes Head to Scotland has been prepared to set out requirements and strategies for coastal defences along the Mersey coastline, considering the future impact of climate change. There is a key need for careful balancing of ecological protection and accessible natural green space under pressure from new development.

In response to this challenge, an emerging Recreational Mitigation strategy for the LCR will outline requirements for safeguarding landscapes and the provision of additional green space associated with planned developments. Education will form a key component of this strategy, to ensure that visitors to sensitive sites use them in the right way. Potential Suitable Alternative Natural Greenspaces (SANGs) identified as mitigation measures for recreational pressure on the coast (as part of forthcoming LCR Recreation Mitigation Strategy and LCR & West Lancs Recreation Mitigation on the Coast SPD).

Canals and waterways

An extensive network of canals and waterways form part of the regional catchments of the LCR. The city region is dominated by the Mersey and its Estuary, as part of a wider catchment that includes the Alt and Crossens rivers, the Dee Estuary and the Birket and Dibbinsdale Brook. These are valuable assets which contribute to the character of the area and provide a range of opportunities for blue and

green infrastructure initiatives. A restoration project along the River Alt corridor in recent years has helped deliver new, transformative blue and green infrastructure with the aim of improving water quality, mitigating flood risk, creating new habitat and providing valuable, accessible natural green space.

The Manchester Ship Canal provides flood mitigation and drainage, as well as a recreational amenity and active travel corridor. The Leeds-Liverpool Canal, with the opening of the Ribble Link in 2002, connects the two cities with 127 miles of navigable waterway. The Bridgewater Canal, often described as England's first canal, is a 39-mile canal stretching from Runcorn to Leigh.

The Environment Agency has prepared a series of Catchment Flood and Basin Management Plans to set out policies for the management of flood risks.

Beyond improvements to the blue corridors themselves, green infrastructure initiatives in wider catchments can play an important role in helping to improve water quality. Opportunities include the creation of riparian buffers, SUDs, and re-naturalisation of culverted watercourses.

Woodland

Woodland is a dominant feature across many parts of the landscape, with many sites designated for their biodiversity (see Figure 4.10). The LCR natural capital assessment determined that the extent of woodland across the region sequesters 32,560 tonnes of carbon every year. The Mersey Forest, established in 1991, covers an area of 1370km2 and has planted over 9 million trees across the region since its inception. This is 3 times the England average. As well as providing new amenity space and important carbon sequestration and biodiversity functions, bringing woodlands back into sustainable active management and, where appropriate, introducing coppicing and pollarding regimes would help to improve their biodiversity interest and recreational value while also generating products such as commercial timber and biomass.

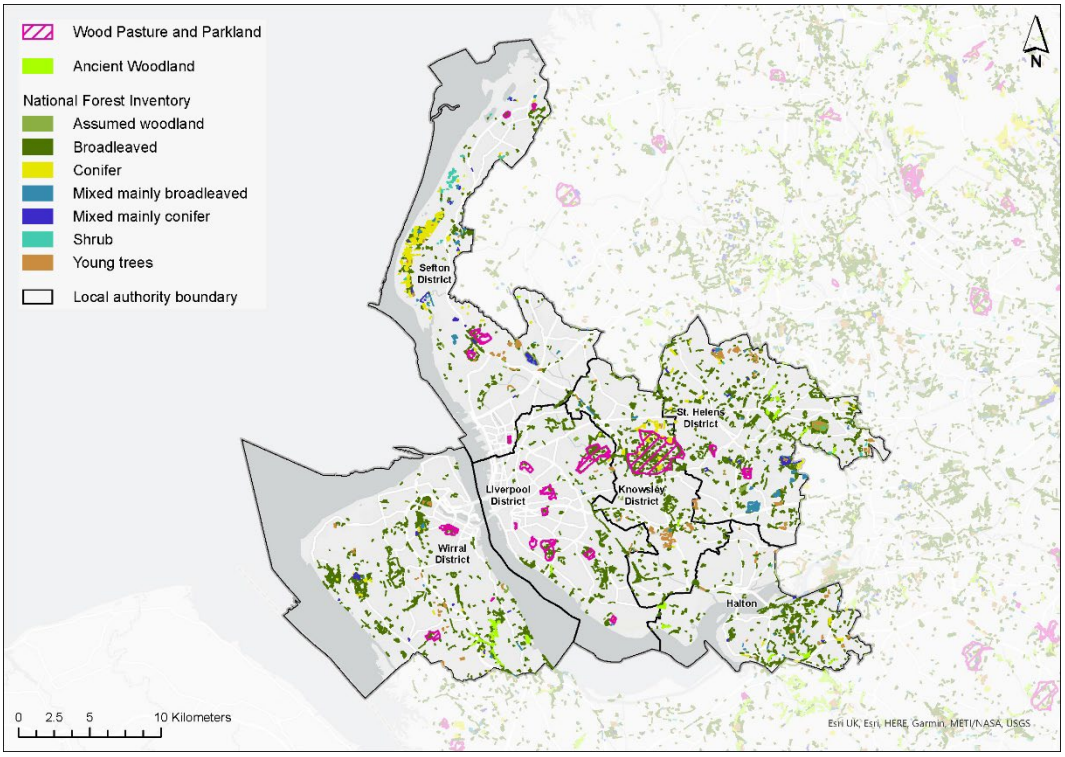

Figure 4.10: Existing woodland across LCR

Rural land

A 2009 publication, Green Zone: An economic strategy for Rural Merseyside, carried out an analysis of the rural economy and provides a useful baseline for agricultural land uses that account for 58% of the total land area. Predominantly located within the Northwest Green Belt, rural extents are an important component of strategic green infrastructure.

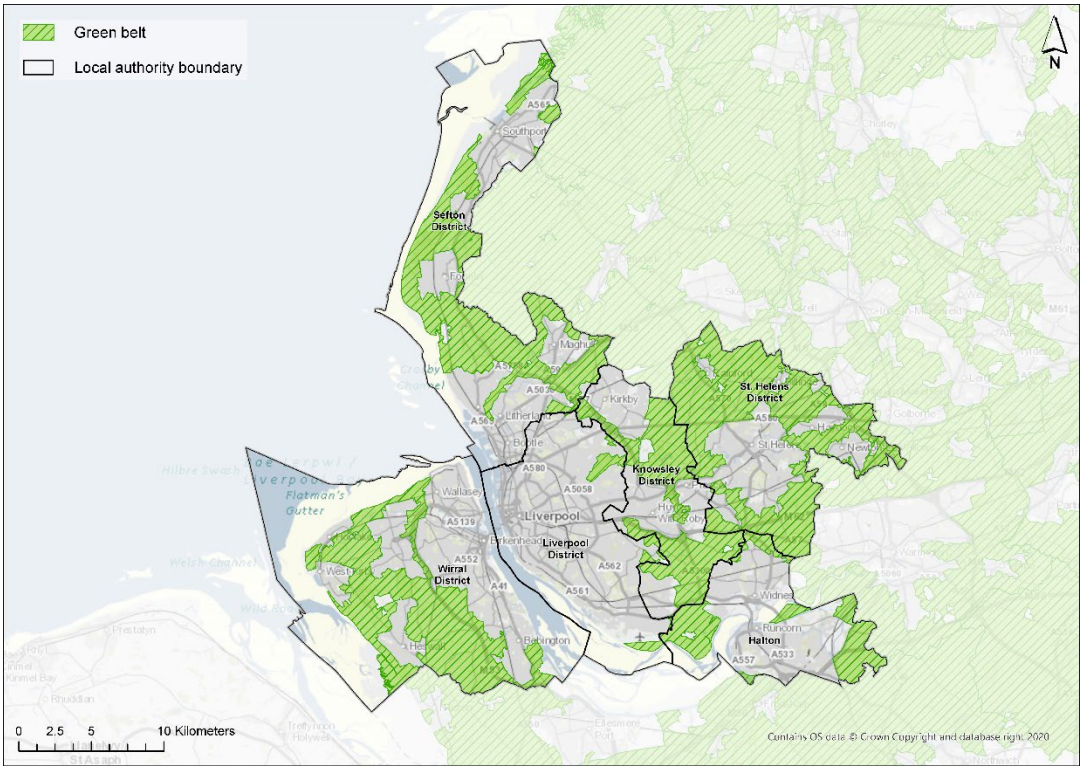

Figure 4.11: Green Belt designation across LCR

Ecological network

The value and quality of the county's landscapes and its substantial biodiversity interests are represented by internationally and nationally designated sites, alongside numerous local sites and other non-designated semi-natural habitats. An extensive ecological network is outlined in Liverpool City Region's Ecological Network (2015). This includes a range of designated sites, as shown in Figure 4.12, and identifies a number of elements to establish a spatial framework for improvement. (Core Biodiversity Areas, Search Areas for Potential Habitat Expansion, Connectivity Zone and Linear Features). The region falls into two Biodiversity Action Plan (BAP) areas, aimed at helping local people become more aware of the area's natural environment and the issues facing it. These include the North Merseyside and Cheshire BAPs, which set out targets for biodiversity improvements.

An emerging Functionally Linked Land Strategy will determine opportunities for nature-based solutions, including, for example, opportunities for wet grassland and salt marsh creation, and identify linkage between.

As noted in section 4.1.1, the LCR Ecological Network provides a useful framework for spatial mapping of opportunity and stepping-stone sites. The emerging Local Nature Recovery Strategies,

focusing on biodiversity and natural capital, will build on this work to establish what and where green infrastructure should be delivered across the region.

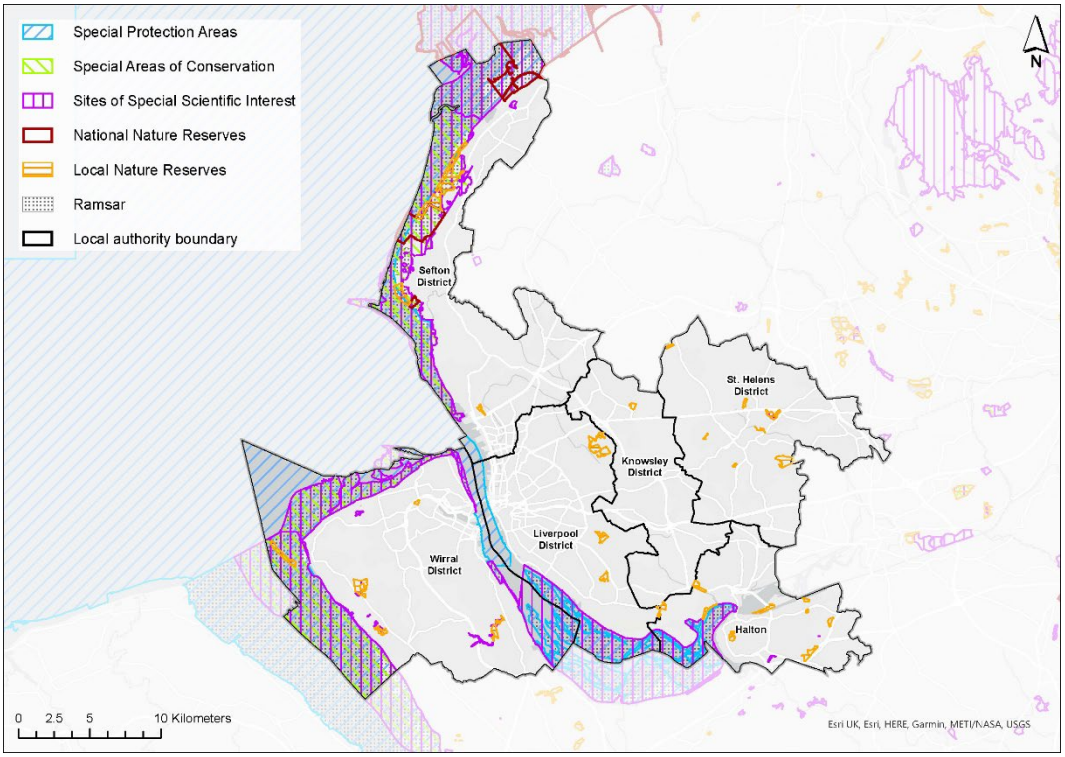

Figure 4.12: Environmental designations across the LCR

Active travel network

A number of strategic cycling and walking routes function at the regional scale to form an active travel network across the LCR (see Figure 4.13). These include the following connections:

- The Trans-Pennine Trail (Route 62 of the National Cycling Network), an exciting route for walkers, cyclists and horse riders. This begins in Southport and extends southwards through Liverpool, Knowsley, Halton, Warrington before continuing east towards Hornsea and the East Riding of Yorkshire
- Route 82 of the National Cycling Network, connecting Liverpool and Sefton

Opportunities should be explored to extend this cycle network at the strategic scale and encourage modal shift towards more active travel at the regional scale.

Active travel provision is also discussed within Chapter 10: Transport.

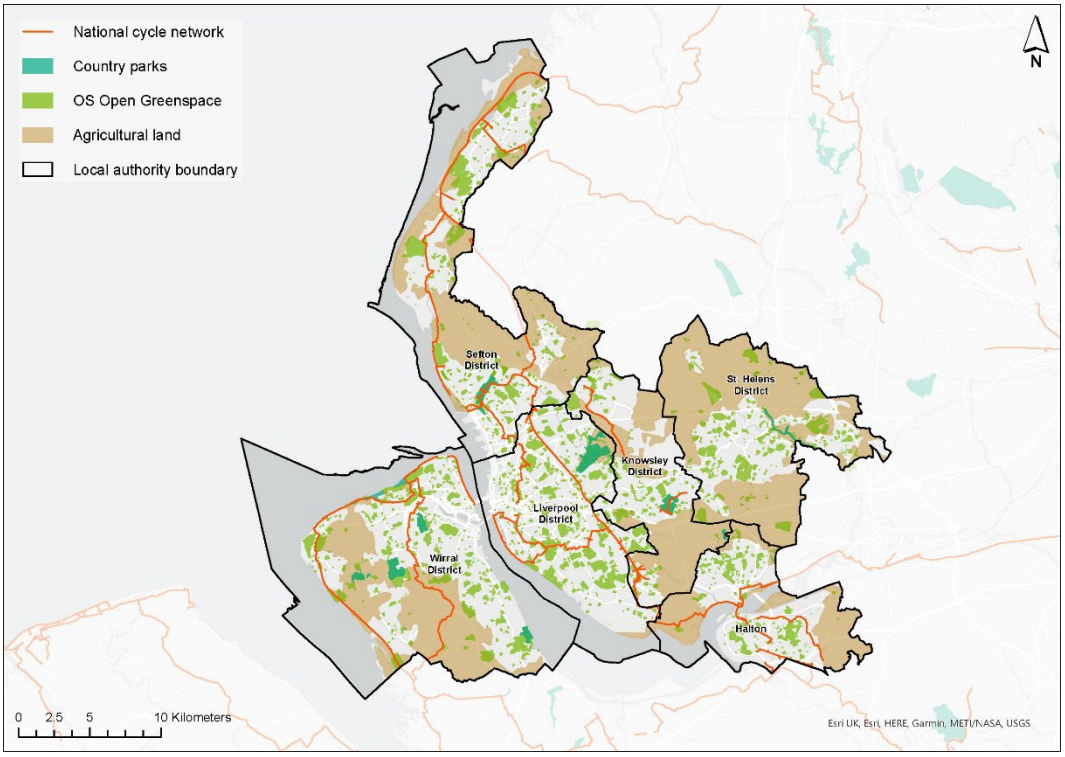

Figure 4.13: Access and recreation across the LCR

4.5 Planned strategic infrastructure in the LCR

Many local authorities across the study area are actively promoting the development of green and blue infrastructure networks at the local scale, and there are some positive examples of cross boundary collaboration and strategically planned infrastructure.

The following projects and programmes have been identified to support the delivery of strategic green infrastructure across the LCR.

Open space corridors

- **URBAN GreenUP** project aims at creating new green corridors across Liverpool to help tackle environmental issues and promote health and wellbeing.

Green infrastructure along linear assets

The below projects have been identified as linear assets or linkages which have the potential to incorporate green infrastructure initiatives at the strategic scale:

- **Maritime Corridor** The Maritime Corridor (A5036, A59 and connections) provides a major route for freight, commuter and local traffic, connecting the Port of Liverpool and other major

employment and retail sites with the wider motorway network at Switch Island. The 'A5036 Port of Liverpool access' scheme, led by National Highways proposes a bypass will take traffic away from communities by Church Road and Dunnings Bridge Road, reducing congestion at junctions and along local roads. The National Highways scheme is subject to DCO application.

Major parks and open spaces

- The Atlantic Gateway 'Adapting the Landscape' publication identified the **Merseyside Waterfront** as a potential regional park. This concept, whilst not developed, has the aim of creating a coherent and strategic waterfront that positively integrates new developments whilst promoting biodiversity and waterfront spaces for recreation, tourism and active travel.

Canals and waterways

- **Sankey Canal** The Sankey Catchment Partnership involves a number of local authorities, with the aim of reducing flooding, improving water quality and habitat provision / enhancement. (Sankey Catchment Partnership 2018). This underpins a broader strategic project to develop a cultural corridor along the Sankey Canal that highlights the heritage of the industrial landscape. The long-term aspiration of the Partnership is for full restoration of the route as a recreational amenity and biodiversity corridor, driving economic prosperity and the health and wellbeing of its users. The Partnership's aims, objectives and approach to implementation are set out in the Sankey Catchment Action Plan (2018).

Woodland

- **Mersey Forest** was established in 1991 with a vision to 'get more trees' to help make Merseyside and North Cheshire one of the best places to live. Since then, woodland cover has doubled from 4% to 8% - a rate of three times the national average (St Helens Borough Local Plan 2020-2035). A number of ongoing schemes are listed below:

- **The Mersey Forest Plan** is the long-term, strategic guide to the work of the Mersey Forest team and its partners. Centred around an approach to working in partnership with local authorities, Natural England, the Forestry Commission and the Environment Agency, the aim of the Plan is to plant trees and woodland, improve their management and complement other habitats.

- The Mersey Forest forms part of a wider aspiration by the Woodland Trust to deliver the **Northern Forest**, encompassing 5 community forests from Merseyside to Yorkshire. The aim is to plant 50million trees in 25 years from 2017 – 2042.
- **Trees for Climate** is a major 5-year programme, funded through the Government's Nature for Climate Fund. Launched in November 2020, it aims to play a significant part in addressing climate change and carbon mitigation through tree planting.
- **Bold Forest Action Plan** Following 20 years of restoration of former mining sites, an Area Action Plan (2017) provides a framework for the development of the park as a regional attractor and economic / recreational asset. As well as improvements to the Park itself, stitching into its wider context through the implementation of wider open spaces, routes and sustainable transport corridors is a key driver.

Mersey Coast

- **Mersey Tidal Range,** though the approach has yet to be determined, presents multiple opportunities for habitat creation and salt marsh restoration.

Rural land

No planned strategic green / blue infrastructure projects have been identified that relate to rural economy.

Ecological network

- **LCR Nature Improvement Areas (NIAs)** were set out in the City Regional Ecological Network (2015), with the aim of establishing the strategic ambitions of protecting, connecting and enhancing sites of ecological importance and potential across the city region. Along with Core Biodiversity Areas, Stepping Stone Sites and Linear Features, these areas form the ecological network incorporating a number of strategic opportunity sites.

Active travel network

- **LCWIP:** 52.8km of new and upgraded local cycling and walking routes are proposed as set out in the local cycling and walking plan ("LCWIP"); to include 49 hectares of upgraded natural habitat. A new LTN 1/20 compliant active travel route between Runcorn and Daresbury. Figure 4.14 below demonstrates the proposed LCWIP routes. Phase 1, as indicated in yellow in

the plan below, is due to be completed in June 2024 as part of the ERDF Sustainable Urban Development (SUD) Green Sustainable Corridors Programme. This includes cycle link enhancements to priority corridors in several locations along with biodiversity improvements. Phases 2 (New Brighton – Birkenhead / Runcorn – Daresbury), 2a (East Lancashire Road) and 3 (development of 6 additional routes) are currently at outline design stage, with the aim of improving, expanding and connecting the wider network by 2029.

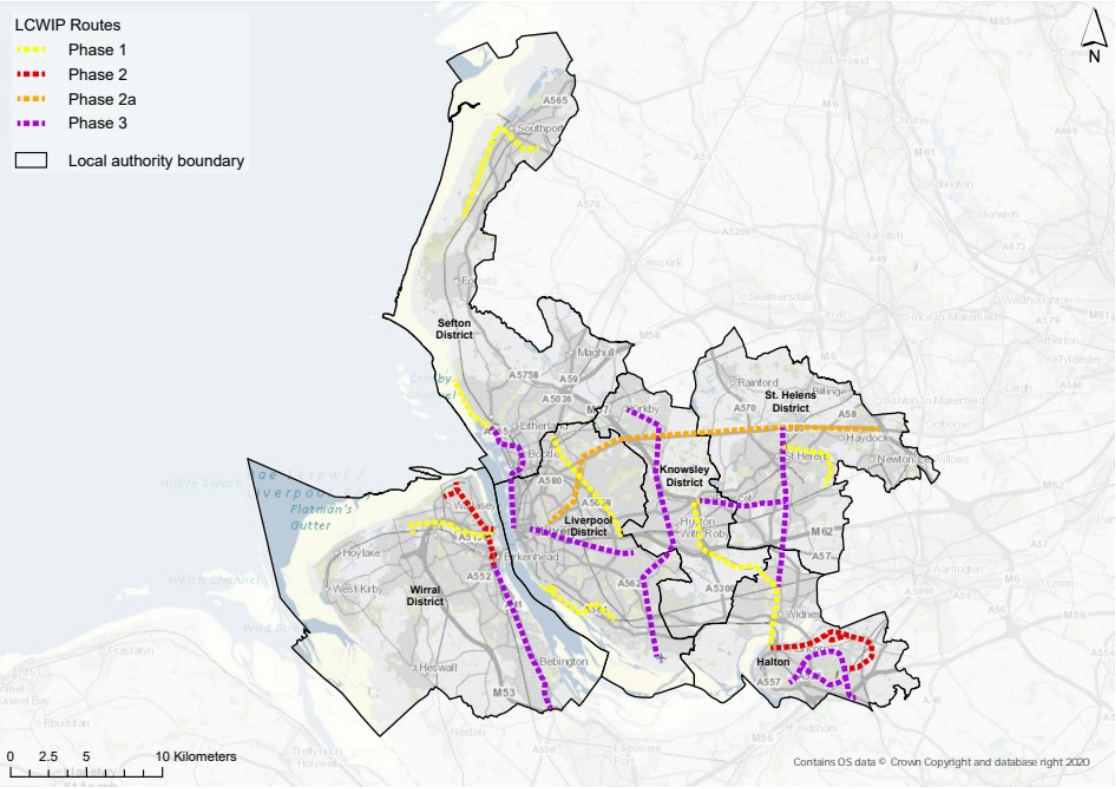

Figure 4.14: Proposed LCWIP routes across the LCR

4.6 Recommendations to align with SDS growth and identification of potential infrastructure gaps

The following section takes into account the analysis from the above sections in addition to stakeholder engagement and the growth scenarios set out in section 2.4.

It is recommended to include a strategic infrastructure policy within the SDS to ensure provision of key strategic infrastructure necessary to meet needs identified within the SIP. Additionally, it is recommended to include an infrastructure provision policy within the SDS to ensure development and proposals coming forward support and positively contribute to the SDS objectives by ensuring places are sustainable and served by appropriate levels of infrastructure.

Through the existing and proposed projects, schemes and existing assets the LCR has, there are no gaps identified in the delivery of green and blue infrastructure across the LCR to help align with the growth projects up to 2045. However, several strategic recommendations have been identified that would help align with the SDS as population and employment grows and green and blue strategic infrastructure becomes increasingly important to the LCR.

- Development of an integrated blue-green infrastructure spatial framework that responds directly to capacity and demand ecosystem service maps and associated opportunity mapping delivered by the natural capital working group.
- Up to date habitat evidence for interventions and Biodiversity Net Gain (BNG) opportunities, focusing on existing quality and functionality of specific sites, using DEFRA metric 3.0.
- Tying together the future energy aspirations of the LCR with green and blue infrastructure opportunities.
- Improving visibility of existing partnerships and strategic proposals. For example, river basin and catchment management plans.
- Consider interface between asset types. For example, a city-region wide coast strategy that ties in Sefton Coast management plan, shoreline management plan (which provides a good evidence base for climate resilience) and emerging plan on Dee Estuary and potentially Mersey Waterfront Regional Park.
- Appraisal of existing land holdings and the performance of specific sites in relation to ecosystem services, combined with the application of environmental net gain analysis, to support determination of appropriate interventions at the strategic scale that can provide multiple benefits.
- Alignment of green infrastructure strategies with planned linear ‘grey’ infrastructure networks (e.g., energy and transport schemes).
- Consolidated approach to improvements to the blue infrastructure network, identifying opportunities to enhance green and blue corridors that permeate into urban areas and ‘re-connect’ ecological sites and communities, through de-culverting, re-wilding and creating places for people.

- Considering active travel, blue and green infrastructure networks as an integrated system, maximising benefits from individual funding streams.
- Evolving the Merseyside Waterfront regional park concept with a clear vision that aligns with the objectives of the SDS.
- Evolving the Mersey Tidal Range project to consider ecological enhancement interventions.
- Rural stewardship schemes to maximise the multifunctionality of rural areas.
- Expand the active travel network at the strategic scale, considering modal interchange to ensure sustainable journeys and dovetailing with cycle and pedestrian routes at the local scale.
- Establish clear targets for natural capital.

4.7 Review and alignment of infrastructure against SDS Strategic Objectives

Table 4.1 below demonstrates the alignment between the planned strategic infrastructure and the goals of LCR's Spatial Development Strategy. There are no weak alignments identified. Figure 4.15 below depicts the planned strategic infrastructure projects which, at this stage, have a proposed location.

The key for this assessment is depicted in Table 4.2.

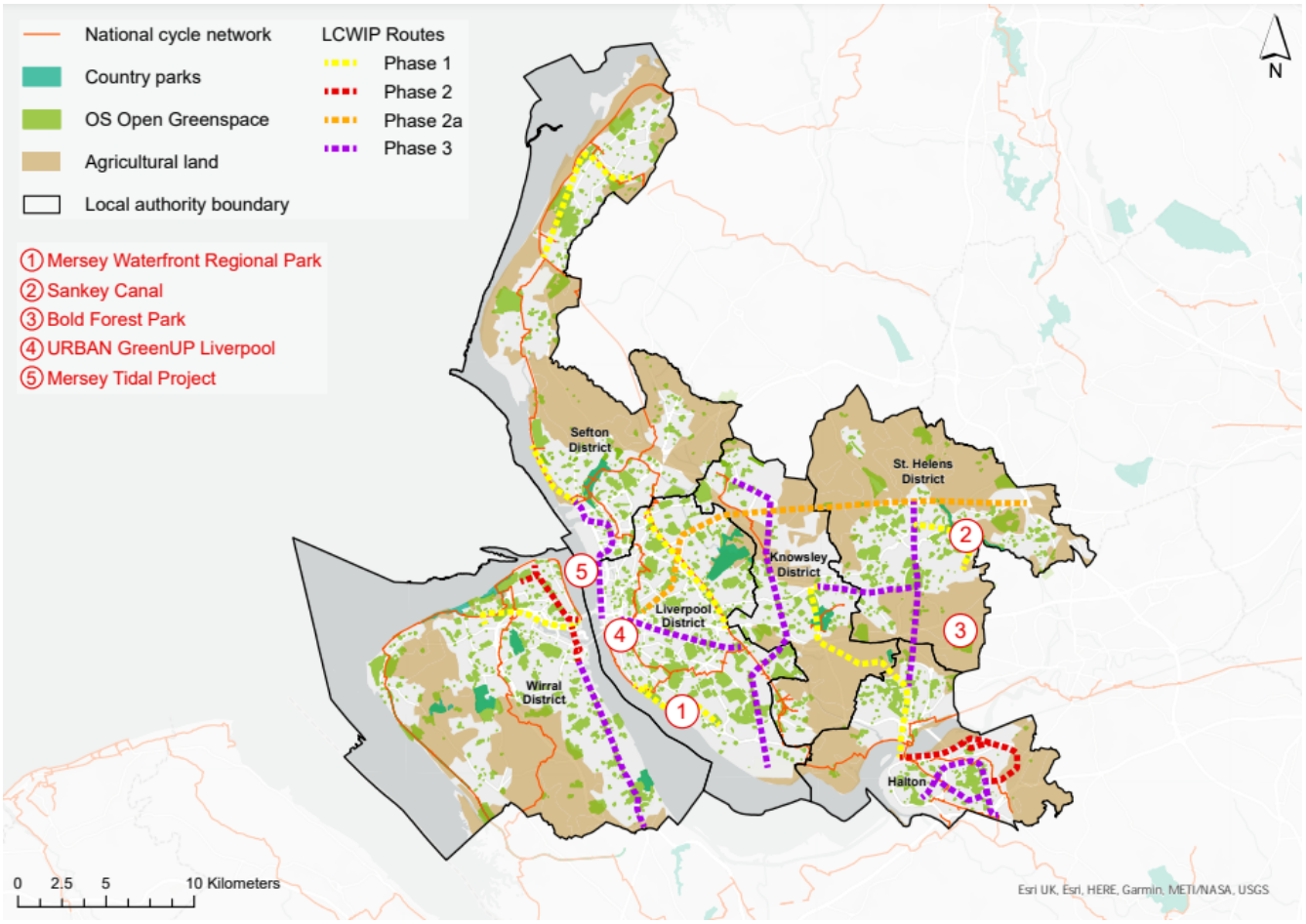

Figure 4.15: Planned blue-green strategic infrastructure across the LCR

Table 4.1: Assessment table

Scheme	SDS objective 1: Climate Change and Environment	SDS objective 2: Health and Wellbeing	SDS objective 3: Prosperous and Inclusive Economy	SDS objective 4: Placemaking, Communities and Housing	SDS objective 5: Social Value	Commentary (incl. suggested enhancement to meet objective(s))
URBAN GreenUP	+	++	o	++	o	Urban GreenUP will be an important contributor to bringing nature into Liverpool City, contributing to sense of place and providing a range of health and wellbeing benefits.
Green infrastructure along linear assets (e.g., Maritime Corridor)	+	+	o	+	o	Policy should be developed to support the integration of green infrastructure along traditionally 'grey' linear assets which, if delivered and managed successfully, can yield a range of environmental benefits.
Mersey Waterfront Regional Park	++	++	++	++	++	The Mersey Waterfront Park has the potential to positively integrate new development with biodiversity enhancement, safeguarding of natural capital and the provision of places for people.

The Mersey Forest Plan 2025	++	++	++	++	++	The Mersey Forest Plan aims to increase woodland cover across the LCR to 20% of its area, delivering multiple social, economic and environmental benefits through transformation of the natural environment and revitalisation of a woodland culture.
Trees for Climate	++	++	+	++	+	Trees for climate is a major planting scheme that can provide significant climate change mitigation, alongside a range of social benefits and economic opportunities.
Bold Forest	++	++	+	++	+	The Bold Forest will be an economic and recreational open space asset of regional influence, setting a benchmark for transformative landscape schemes by focusing on multifunctionality of natural capital.
Nature Improvement Areas	++	++	+	+	+	Nature Improvement Areas will establish a spatial framework for promoting nature and biodiversity. Emerging natural capital evidence base should be used to support the development of the Nature Improvement Area strategy and inform place-specific spatial planning.

LCWIP Phases 1,2 and 3	++	++	+	+	+	High quality cycling routes are proposed to connect between employment and housing site, opening up new opportunities. Also, the scheme supports modal shift towards cycling, helping to reduce the region's carbon emissions and bring about health benefits.
Sankey Canal	++	++	o	++	+	The Sankey Canal Partnership provides opportunity to take a strategic view of the blue infrastructure corridor as a multifunctional space for nature and people. This should be coordinated with adjacent schemes or partnerships that relate to the wider catchment.

Table 4.2: Assessment key

++	Scheme has strong alignment with SDS objective
+	Scheme has moderate alignment with SDS objective
o	Neutral; not applicable
-	Scheme has weak alignment with SDS objective
--	Scheme has very weak alignment with SDS objective

4.8 Summary and recommended next steps

The LCR has the opportunity to build upon a diverse landscape context and a world leading evidence base to deliver enhanced ecosystem services through strategically planned green and blue infrastructure. While several schemes have been identified to help meet this goal there are a number of recommendations set out as outlined in section 4.6.

The Liverpool City Region and Warrington Green Infrastructure Framework, Natural Capital Assessment and Ecological Network provide a valuable evidence base for existing green infrastructure assets, pinch points and opportunity sites across the LCR. Natural capital capacity and demand maps have been used to inform opportunity mapping to highlight spatial requirements for new and improved green and blue infrastructure. This evidence base should be used to frame discussions around strategic green infrastructure provision and underpin spatial strategies which, combined with the identification of funding sources and an appraisal of existing land holdings, can support scheme definition and a much-needed pipeline of projects that can support objectives and meet SDS growth to 2045. A key component of this will be to adopt clear targets for natural green space provision and ecosystem services.

Critically, a pipeline of green and blue infrastructure projects needs to be established, with clearly defined roles associated with ownership, delivery and management. An appraisal of existing local authority land holdings should be undertaken in the short term to identify sites which limit development (for example, due to policy restrictions or contaminated brownfield land) and present opportunity for the implementation of green and blue infrastructure.

At this stage and due to the strategic nature of the schemes and projects it is difficult to calculate a cost to assign to each project. Further consideration to cost and funding will need to be provided when further details and plans are associated to the scheme in the future.

Table 4.3: Summary of infrastructure

Scheme	Location	Potential lead delivery agency	Potential delivery mechanism	Cost	Delivery phasing	Gaps in funding
URBAN GreenUP	Liverpool	Liverpool City Council	To be established	To be established	To be established	To be established
Green infrastructure along linear assets (e.g., Maritime Corridor)	Regional	Liverpool City Council, Sefton Council, Wirral Council, Knowsley Council, St. Helens Council, Halton Council	To be established	To be established	To be established	To be established
Mersey Waterfront Regional Park	Mersey Estuary	Liverpool City Council, Sefton Council, Wirral Council	To be established	To be established	To be established	To be established
The Mersey Forest Plan 2025	Regional	Mersey Forest	To be established	To be established	To be established	To be established
Trees for Climate	Regional	Mersey Forest	To be established	To be established	To be established	To be established
Bold Forest	St. Helens	Mersey Forest, St Helens Council	Planning Obligations / Developer Contributions	To be established	To be established	To be established

Nature Improvement Areas	Regional	Liverpool City Council, Sefton Council, Wirral Council, Knowsley Council, St. Helens Council, Halton Council	To be established	To be established	To be established	To be established
Local Cycling and Walking Infrastructure Plan (LCWIP)	Regional	Merseytravel	Active Travel Fund Tranche 3 and 4 And CRSTS Intervention	£16m for Phase 1 £38m for Phases 2&3	2024 (Phase 1)	To be established
Sankey Canal	St. Helens	Canal and River Trust	To be established	To be established	To be established	To be established

5. Energy

5.1 Introduction

This chapter provides an overview of strategic energy infrastructure across the LCR, providing insights into the historic, present and future of energy consumption and demand, infrastructure provision and dependencies.

Strategic energy infrastructure includes transmission and distribution assets, and transfer processes. The physical assets associated with energy infrastructure include generating plant and ancillary systems.

Strategic electrical infrastructure refers to the transmission and associated assets at voltage levels of 33kV (Kilovolts) and above. It includes primary substations, which are needed to step down from transmission voltages to the local 11kV distribution voltage. The distribution network at 11kV and below is generally not considered to be strategic infrastructure.

Strategic gas infrastructure refers to network capacity and associated assets used for primary transmission and main distribution. At a strategic level, gas is typically transmitted at higher pressures and/or larger pipe sizes, with localised pressure levels and pipework size reduction to suit final connection to consumers.

As with other infrastructures the drivers are varied with the economy, population and demography, climate and environment, and technology combining to create a level of complexity not previously experienced. This is triggering the need for the most significant energy transition since the Industrial Revolution with the decarbonisation of heat and transport contributing to unprecedented demand for electricity.

The convergence of energy and digital technologies is creating a new generation of smart and virtual infrastructures and systems, with a shift from centralised to distributed-scale energy generation creating greater autonomy in generation, supply and consumption.

A key feature of this chapter is the need to recognise that new technologies will likely change the definition of strategic energy infrastructure over time and that the planning of that infrastructure will need to find ways to accommodate changing Technology Readiness Levels (TRLs). The technology is diverse; ranging from the deployment of distributed smart energy systems at scale, long-term / seasonal energy storage, hydrogen production, potential for Small Modular Reactor (SMT) and tidal.

Each technology is at varying levels of readiness; some such as smart grids are in the market and deployable whilst large scale hydrogen production is feasible and entering the planning stages and tidal is further behind and requiring significant investment to get to detailed design and planning. All relevant technologies are referenced where appropriate but given different weighting of consideration based on the stage, they are at in terms of delivery at the time of writing the SIP and the likelihood of them being developed further.

5.2 Evidence base review

A range of data and information sources have been reviewed to establish LCR's current and future energy infrastructure. The documents that have been reviewed are listed below:

- Mersey Tidal Power – Pathway to Net Zero;
- Renewable Energy Planning Database;
- SPEN RIIO Business Plan;
- SPEN Distribution Business Plan;
- SPEN Long Term Development Statement;
- SPEN Man Web Long Term Development Statement;
- SPEN Distribution Annual Performance Report;
- SPEN Network Innovation Allowance Report;
- SPEN Distribution Future Energy Scenarios Report, Data and Maps;
- SPEN Heat Maps;
- PS Manweb Network Capacity Headroom Report;
- Cadent Long Term Development Strategy; and,
- HyNet Vision Report.

5.3 Stakeholder engagement

The key stakeholders engaged as part of the development of this chapter include:

- Scottish Power Energy Networks (SPEN) the Distribution Network Operators (DNO) for the city region's electrical system;

- Cadent, the city region's main gas distribution operator;
- LCRCA Energy Lead; and
- Peel Group, a key facilitator of development and infrastructure provision in the city region.

In all cases information captured has been integrated into the main body of this chapter with appropriate references made.

5.4 Baseline review of current infrastructure

The review includes an assessment of the current electricity, gas and hydrogen demand, as well as the supply and distribution infrastructure for these resources. Also explored is the current infrastructure's suitability to meet LCR energy requirements with the findings documented in the following sections.

5.4.1 Electricity baseline

Electricity consumption

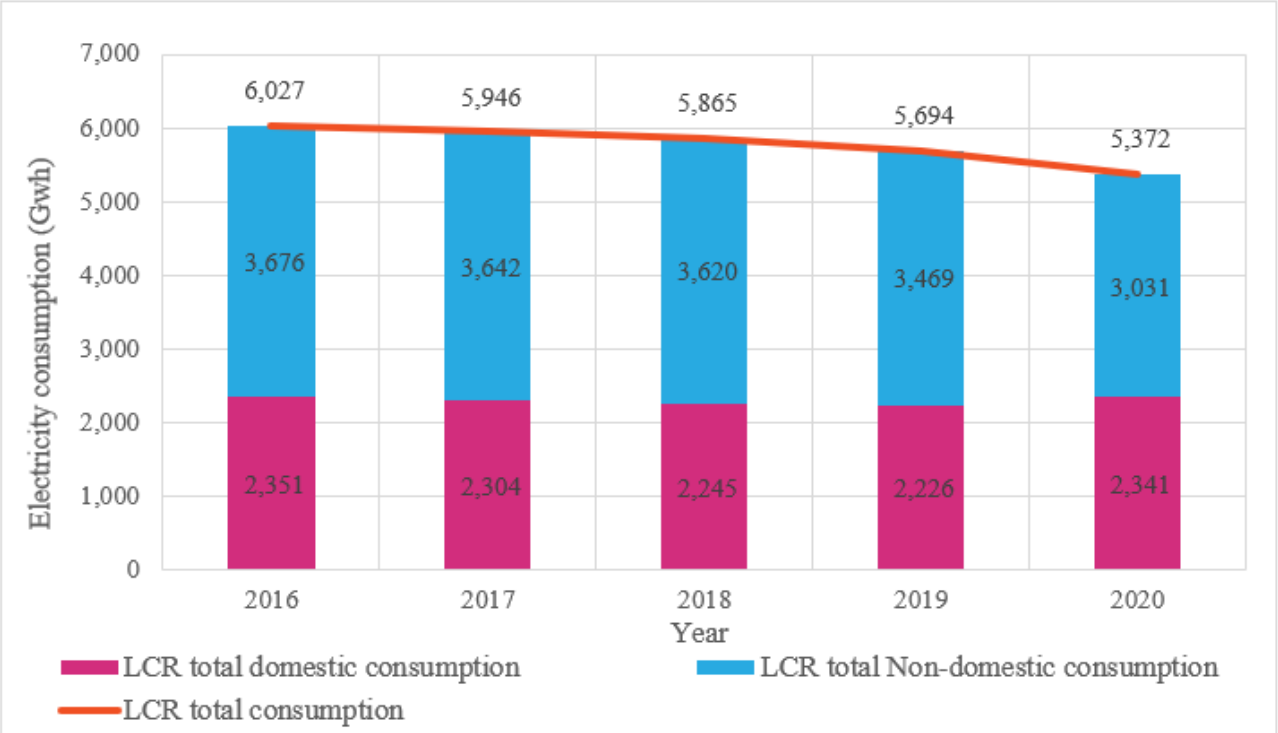

Figure 5.1: Total electricity consumption across Liverpool City Region.

The annual electricity consumption in LCR, in 2020, was 5,372 GWh (Gigawatt Hours), with the majority of electricity being consumed by non-domestic customers. Analysis of subnational energy consumption data indicates a year-on-year reduction in electricity consumption between 2016-2020, with the greatest decrease, of 6%, between 2019 and 2020. The greater decrease in electricity consumption in 2020 could partly be due to the Coronavirus pandemic, which sent the UK into lockdown in March 2020. Figure 5.1 illustrates LCR's electricity demand between 2016 and 2020.

The decrease in electricity consumption broadly collates with an overall reduction in peak demand over a 5-year period, starting in 2016. Table 5.1 documents the peak electricity demand over the 5 year period, for SP Manweb (the distribution network that serves LCR).

Table 5.1: Total electricity consumption across Liverpool City Region.

	Year				
	2016	**2017**	**2018**	**2019**	**2020**
Peak electricity demand (MW)	3,014	3,022	3,039	2,967	2,929

For the purpose of this review, the 2020 electricity consumption of 5,372 GWh, will be used as the baseline electricity consumption for LCR.

The electricity consumption data is based on electric meter readings and does not include electricity losses.

Electricity supply

The LCR's electricity is supplied by the national grid from a range of sources. Although, LCR contains 80 MWe of installed capacity from a range of generation and storage technologies. Analysis undertaken shows that all installed capacity is under the previous development order consent regime of 50 MWe which, set the proxy for what is considered strategic infrastructure. Operational infrastructure of note includes Widnes 3 MG Biomass/Mersey Bioenergy (CHP) Plant with 20 MWe and Carnegie Road Battery Storage project also 20 MW with the 28 MWe Hooton Bio Power facility and 49.9 MWe Battery Storage facility. Significant generation capacity exists on the fringes of the city region. This includes 50 MW of onshore wind generation on Frodsham in Cheshire West and Chester and 334 MW of offshore wind generation installed across Burbo Bank and Burbo Bank Extension, in Liverpool Bay.

Electricity distribution

SP Manweb PLC (SPM) is the Distribution Network Operator for LCR, serving Merseyside, Cheshire, North Shropshire and North Wales. SP Energy Networks owns SPM alongside SP Distribution and SP Transmission, which are both based in Scotland.

SPM distributes over 17,000 GWh of electricity to 1.55 million customers annually. In 2020-2021, SPM provided customers with electricity 99.99% of the time, with 30.5 customers out of 100 customers recording interruptions throughout the year. This is 11.4% lower than the regulatory target. During these interruptions, SPM customers only lost an average of 28.8 minutes of electricity, this is 5.2% lower than regulatory targets. In a customer satisfaction survey, SPM scored 9.24 out of 10, 13% higher than the regulatory target. Overall, SPEN were ranked as the 2nd overall DNO.

The SPM network consists of over 48,000 km of cables and overhead lines distributing electricity at 132 kV, 33 kV, 6.6 kV, 6.3 kV and 400/230 V. SPM operates over 250 primary substations within the city region. SPM's maximum network demand is 2.67 GW with 2.49 GW of connected generation (where generation is greater than 1 MW).

Most of the SPM network was built between 1950-70's in a unique interconnected configuration, as appose to a typical radial distribution. Approximately, 80% of the SPM network is designed and operated in this interconnected configuration, with connections to the meshed design at every voltage level. This provides a higher performance network configuration allowing increased flexibility to supply power, easier connection of new load or generation, greater future proofing and generally cheaper network connections (where there is spare capacity in the interconnected network). However, the interconnected design is more expensive to maintain and operate, due to network complexity and equipment required, compared to other distribution networks.

Figure 5.2 provides an overview of the HV distribution network capacity to connect distributed energy resource, from May 2020 and indicates that most grid substations and the 132 kV network is approaching capacity (indicated by red or amber colouring). However, there are four supergrid substations, shown in green, which could support the connection of distributed energy resources.

Figure 5.2: SPM's HV distribution network capacity for connecting generation (source: SPEN's heat map).

Figure 5.3 shows the primary substations and 33 kV network, in LCR, as of May 2020. Across LCR, the majority of the 33 kV network and primary substations are close to operational limits (shown in red). Thus, the potential connection of distributed energy resource to the 33 kV network and primary substations is highly unlikely and may require extensive reinforcement works in parts of the network shown in red. However, areas highlighted amber, despite approaching the operational limit, may be able to support the connection of distributed energy resource. A detailed network analysis would have to be completed to confirm this.

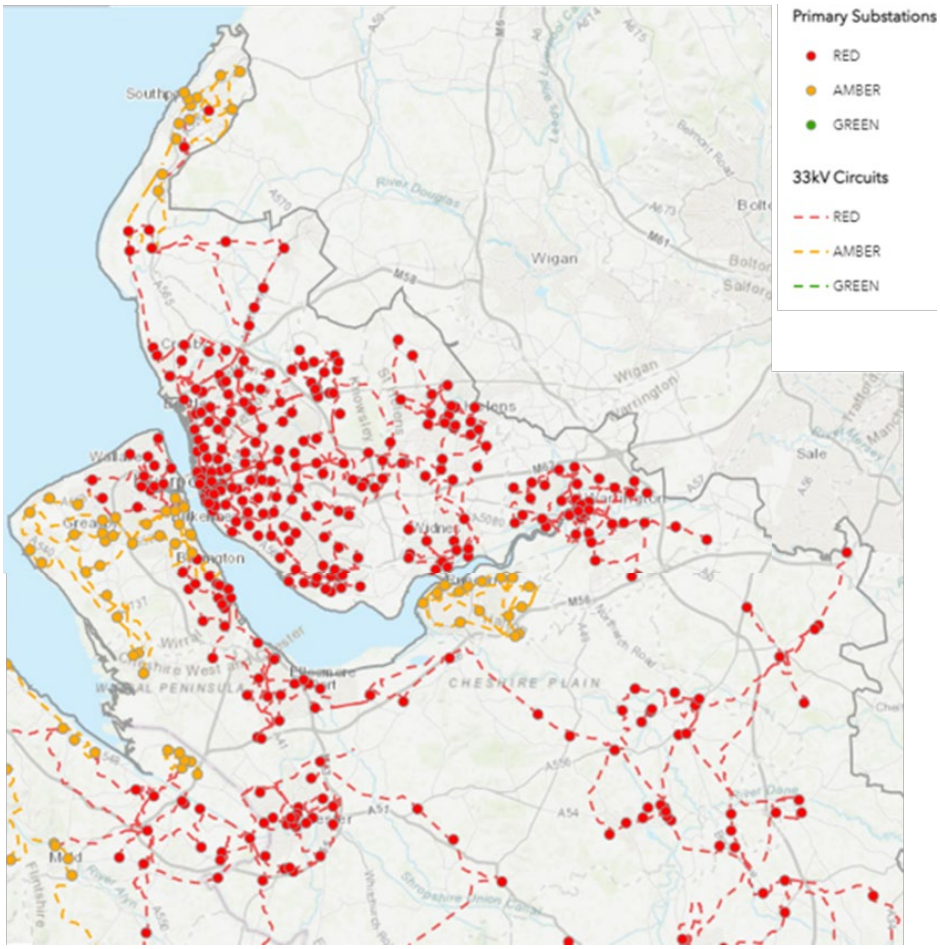

Figure 5.3: SPM's primary substation and 33 kV distribution network capacity for connecting generation (source: SPEN's heat map).

Baseline electricity infrastructure summary

The current distribution network is functional, delivering 5,372 GWh of electricity in 2020 to meet LCR's demand. SPM supplied electricity 99.99% of the time with the number and duration of costumer interruptions lower than regulatory targets. The distribution network also supports 70.3 MW of installed distributed energy resource capacity.

However, a significant proportion of the SPM distribution network is approaching the end of its life and is approaching full capacity.

5.4.2 Gas baseline

Gas consumption

Similarly, to most of the UK, the city region has a hydrocarbon natural gas infrastructure that provides the city region with the majority of its fuel for space heating and cooking. The city region has a total of 621,702 gas customers, 607,481 (97.7%) of these are domestic customers, 12,667 (2%) are commercial and 1,554 (<1%) are industrial. The total gas consumption across all

customers within the city region was 15,656 GWh's in 2020 - 2021, with a peak demand of 8.35 GW. A breakdown of the gas consumption is documented in Table 5.2 and also includes gas consumption from Independent Gas Transporters (IGT).

Table 5.2: Gas consumption and peak demand data for 2020-2021.

	Gas consumption		Peak gas demand	
	Annual gas consumption (GWh)	**Percentage of total annual gas consumption (%)**	**Annual peak demand (GW)**	**Percentage of total peak demand (%)**
Total	15,656	-	8.35	-
Domestic	8,834	56%	4.85	58%
Commercial	3,426	22%	2.27	27%
Industrial	3,396	22%	1.24	15%

The largest gas consumer group in the city region is the domestic sector, accounting for 56% of the total gas consumption and the largest peak demand of 4.85 GW.

In 2020-2021, there was a mild winter but, depending on the temperature throughout winter, the gas consumption can swing by 20%.

Gas supply and distribution

Cadent facilitated 15,300 new connections to the gas network in 2020-2021, with the annual number of new connections set to rise until at least 2025.

Cadent are continually renewing the gas distribution network in the city region as part of the 30/30 replacement programme. This programme aims to replace iron metal mains with plastic distribution pipes. A key feature of this upgrade is that the new pipe will be suitable to distribute hydrogen, with a network that has a minimum lifetime of 50 years.

Hydrogen

There are currently no operational hydrogen refuelling stations in LCR; however, there is a Hydrogen Bus Refuelling Station planned in St Helens. This station will be located near BOC Gas and Gear's site, in St Helens. LCR has ordered 20 hydrogen buses from Alexander Dennis Ltd using the Transforming Cities Fund. Hydrogen buses are planned to be delivered in 2022.

5.5 Future energy demand

5.5.1 Electricity demand

This review has been unable to find data establishing LCR's future electricity demand. However, SPEN developed a future energy forecasting tool, based on the National Grid's scenarios that predict the future electricity peak demand and uptake of low carbon technologies. The predictions are based on four scenarios outlined below:

- **Steady progression:** Steps are being taken to decarbonise but, progress is slower than other scenarios and will not achieve net zero by 2050.
- **Consumer transformation:** The UK will achieve net zero by 2050 but this transition to net zero is consumer led.
- **System transformation:** The UK will achieve net zero by 2050 with the least impact on consumers (includes a high use of hydrogen).
- **Leading the way:** The UK will achieve net zero by 2050 through rapid decarbonisation, high levels of investment in decarbonisation technologies and engaged consumers reducing and managing their own energy consumption.

In each scenario population growth is consistent across all demand scenarios.

The future energy demand is expected to rise significantly driven by the need to further decarbonise the energy system. By 2030, the number of electric vehicles (EV) and heat pumps (HP) are expected to increase significantly with a full transition expected by 2040. SPEN have estimated an additional 700,000 EVs and 200,000 HPs could be connected to the network with the city region by 2037. This will require significant upgrading of the network. The predicted uptake in EVs and HPs in LCR across the 4 scenarios, between 2020 and 2037 are illustrated in figures 5.4 and 5.5, respectively.

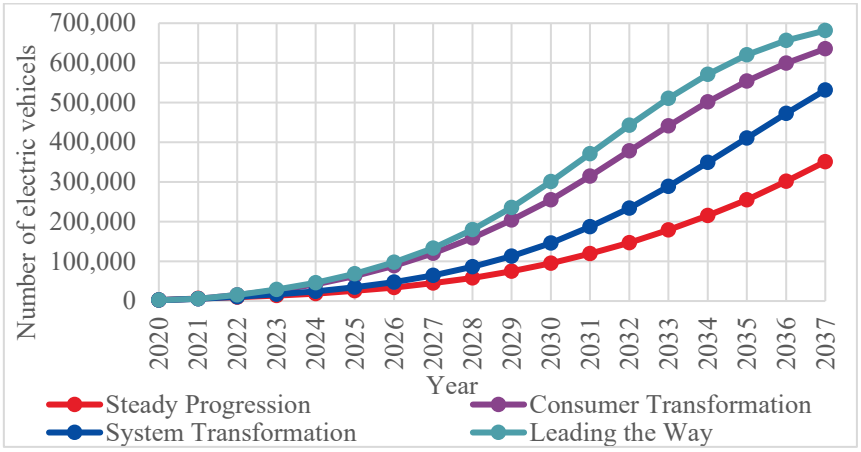

Figure 5.4 Predicted uptake of EVs in LCR, across National Grid's four future scenarios.

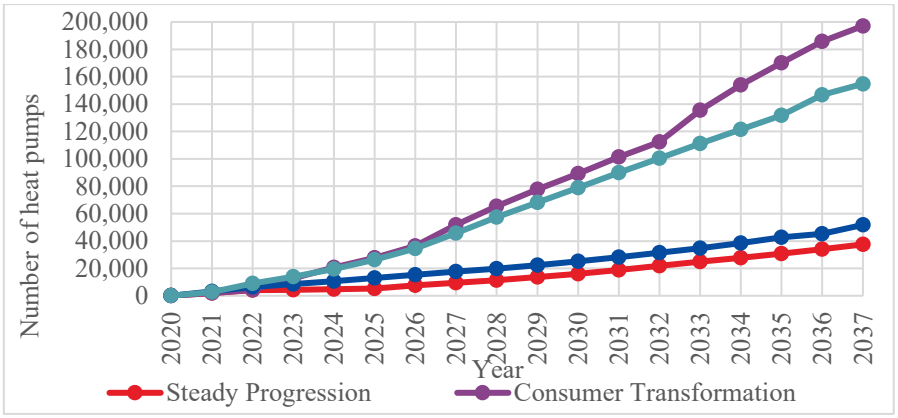

Figure 5.5: Predicted uptake of HPs in LCR, across National Grid's four future scenarios.

SPEN's predicted peak electricity demand is documented in table 5.3.

Table 5.3: Predicted electricity peak demand for SPM.

	Year				
	2021/22	**2022/23**	**2023/24**	**2024/25**	**2025/26**
Peak electricity demand (MW)	2,839	2,883	2,914	2,960	3,006

5.5.2 Gas demand

The number of new connections to the gas network is predicted to rise until 2025. Cadent have recognised that it is difficult to forecast beyond 2025, as there is still uncertainty around the use of

natural gas boilers in new dwellings past 2025. Subsequently, making future gas demand predictions uncertain.

5.6 Planned strategic infrastructure in the LCR

5.6.1 Planned Strategic Electricity Infrastructure

In order for the LCR to transition to a net zero future by 2040, the sub-region's electricity supply must decarbonise. The decarbonisation of LCR electricity supply is dependent on the decarbonisation of the national grid. However, there are plans to introduce low carbon distributed energy resources into LCR, including 7 schemes amounting to 237 MWe of consented battery storage schemes. Once constructed, the battery storage will support electricity supply and network balancing, thus, reducing strain on the distribution network and increasing the networks flexibility.

A summary of the pipeline schemes, awaiting construction in LCR, from the renewable energy planning database are documented in table 5.4.

Table 5.4: Pipeline schemes in LCR from the renewable energy planning database.

Scheme Name	Location	Technology Type	Delivered Lead	Installed Capacity (MWelec)	Development Status	Cost / funding gap
Knowsley ERF	Knowsley	Advanced Conversion Technologies	Private	8	Awaiting Construction	Unknown
Sutton Heath Road	St Helens	EfW Incineration	Private	15	Awaiting Construction	Unknown
Charleywood Road, Knowsley Industrial Park	Knowsley	Battery	Private	49.9	Awaiting Construction	Unknown
Beaufort Road	Wirral	Battery	Private	20	Awaiting Construction	Unknown

Scheme Name	Location	Technology Type	Delivered Lead	Installed Capacity (MWelec)	Development Status	Cost / funding gap
Carnegie Road (Phase 2)	Liverpool	Battery	Private	40	Awaiting Construction	Unknown
Liverpool Energy Management Facility	Liverpool	Battery	Private	49.9	Awaiting Construction	Unknown
Hawthorne Road	Sefton	Battery	Private	40	Awaiting Construction	Unknown
Britannia House	Wirral	Battery	Private	10	Awaiting Construction	Unknown
National Grids Rainhill Substation Battery storage facility	St Helens	Battery	National Grid	57	Revised	Unknown
Crowland Street - Energy Recovery Park	Sefton	Anaerobic Digestion	Private	-	Application Submitted	Unknown
Lock Street Energy from Waste Plant	St Helens	EfW Incineration	Private	10.6	Revised	Unknown
Lister Drive	Liverpool	Battery	Private	49.9	Under Construction	Unknown

Other potential renewable developments include the Mersey Tidal Power project. This project has a number of options to generate electricity at an internationally significant scale. The project has been subject to feasibility and economic appraisal, with a strong strategic case. However, this remains at the pre-application stage; therefore, it hasn't been considered further within this current version of the SIP.

Electricity distribution

The planned future strategic electricity distribution infrastructure projects are summarised in table 5.5.

Table 5.5: Planned strategic electricity distribution infrastructure.

Scheme Name	Location	Technology Type	Delivered Lead	Development Status	Cost/funding gap
RIIO – ED2	City Region	System upgrades and Smart Grid	SPEN	Submitted to Ofgem	£3.6bn

The core of planned schemes is set out in SPEN's Long Term Development Statement; aimed at transitioning the network where it benefits customers; providing network extensions at industry average cost and enhance benefits of interconnection.

SPEN has identified flexibility and smart solutions as key enablers to reducing the impact of the predicted increasing system peak demand. As discussed, there is a significant number of consented large-scale battery storage schemes that will (if constructed) contribute to this aim, providing storage and supply network balancing. SPEN have asked Ofgem for £3.6bn (part of RIIO - ED2) to upgrade infrastructure. This funding will cover business as usual reinforcements, and upgrades for anticipated increases in heat pumps and electric vehicles (EV). If less than the £3.6bn investment is received, there will be a need for other sources of funding and finance.

SPEN's preferred methodology to upgrade and decarbonise the electricity system is to develop a coordinated, planned programmer of street and neighbourhood upgrades. This will help avoid a reactive and likely fragmented approach and create efficiencies and cost reductions.

SPM will publish a Network Development Plan (NDP) every two years, starting in 2022, highlighting network constraints and flexibility requirements.

5.6.2 Planned Strategic Gas Infrastructure

The planned future strategic gas infrastructure projects are summarised in table 5.6.

Table 5.6: Planned strategic gas infrastructure.

Scheme Name	Location	Technology Type	Delivered Lead	Installed Capacity	Development Status	Cost/funding gap
30:30 Programme	Across city region	N/A	Cadent	N/A	Implementation	Unknown
Hynet	Parts of LCR and Cheshire West	Steam Methane Reformation and CCS	Private	3 TWh of hydrogen	Pre - application	£900m[11]

Natural gas

The natural gas infrastructure is going through a significant infrastructure transition. This is in response to the need to replace aging infrastructure, but also to future proof the network in readiness for a switch to hydrogen. Cadent's distribution network is transforming via the 30:30 replacement programme. By 2032 the programme will see 92% of its l tier 1 iron pipes (within 30m of a property) replaced with plastic, hydrogen ready pipes with a minimum lifetime of 50 years.

Cadent are also increasing their mains replacement by insertion, whereby they manage operating pressures and in doing so, identify where reinforcements are needed to improve network capacity and minimize disruptive works that impact on footpaths and roads. Cadent are also aiming to decrease leakages by prioritizing high leakage areas for replacement.

Hydrogen

Nationally, there are significant programmes in place to progress to a hydrogen gas system and the city region is well placed to make it given its proximity to planned hydrogen generation and storage. Whilst this is clearly positive, it is premature at this stage for the LCR to commit to a hydrogen transition with electrification a key consideration. Cadent have expressed ambitions to support LCR transition to hydrogen and have established multiple projects to support the transition, including HyNet.

[11] 14490_CADENT_A5_LEAFLET_TIMELINE_DOWNLOAD.pdf (hynet.co.uk)

HyNet

HyNet Northwest, based on the edge of LCR, is a project that aims to accelerate the UK's transition to net zero, through the production, storage and distribution of hydrogen, paired with Carbon Capture, Utilization and Storage (CCUS). The Combined Authority has identified HyNet Northwest, as a key facilitator in enabling the region to replace all methane with hydrogen in the city's gas network, by 2035. HyNet is also planned to support the expansion of the region's hydrogen bus scheme by supplying low carbon hydrogen. However, despite its high profile and receipt of government funding to progress feasibility, this scheme is at a very early, pre-application stage. Consequently, there is limited certainty at this stage of the role it could play in meeting the city region's energy needs.

It is expected that in 2025, the first phase of the HyNet project will begin with the construction of a low carbon hydrogen plant at Stanlow Refinery, producing 3 TWh of hydrogen, annually. Whilst the plant will be outside LCR, the hydrogen produced will be used in the city region. HyNet will also repurpose existing natural gas pipelines to transport over 1 million tonnes of $C0_2$ for storage under the seabed in Liverpool Bay. A hydrogen pipeline network will be constructed as part of HyNet's first phase. The pipeline will supply hydrogen to industry and blended hydrogen into the natural gas network, within LCR. HyNet have estimated the first phase of the project will reduce carbon emissions by at least 1 Mtpa.

The second phase of HyNet (2027-2028) will see a further 3-4 Mtpa reduction in carbon emissions from increasing hydrogen production capacity. The additional hydrogen generated will allow HyNet to serve a greater number of industrial sites and expand hydrogen blending in the gas network.

By 2030, the third stage of HyNet aims to generate over 30 TWh of hydrogen annually and capture 1 million tonnes of $C0_2$ from industry. In the third stage, HyNet also aims to be developing underground hydrogen storage and build 350 km of new pipeline to create a hydrogen network.

HyNet and LCR's transition to hydrogen

Cadent believe that LCR could transition to using hydrogen before 2038, providing funding is available and used at the appropriate time. This assumes that HyNet would be able to ramp up hydrogen production and meet hydrogen energy demands of the local area by 2050.

As part of the hydrogen transition, the majority of Cadent's low and medium pressure pipes could be repurposed for transporting hydrogen. This could include up to 126,100 km (94%) of Cadent's pipes. Cadent are aiming to lay new pipes to supply hydrogen to customers in a process that would result in customers only being without power for 1 day.

Figure 5.6 shows Cadent's current hydrogen network proposals for the City Region. This includes broad route corridors for underground hydrogen pipelines, reaching St. Helens.

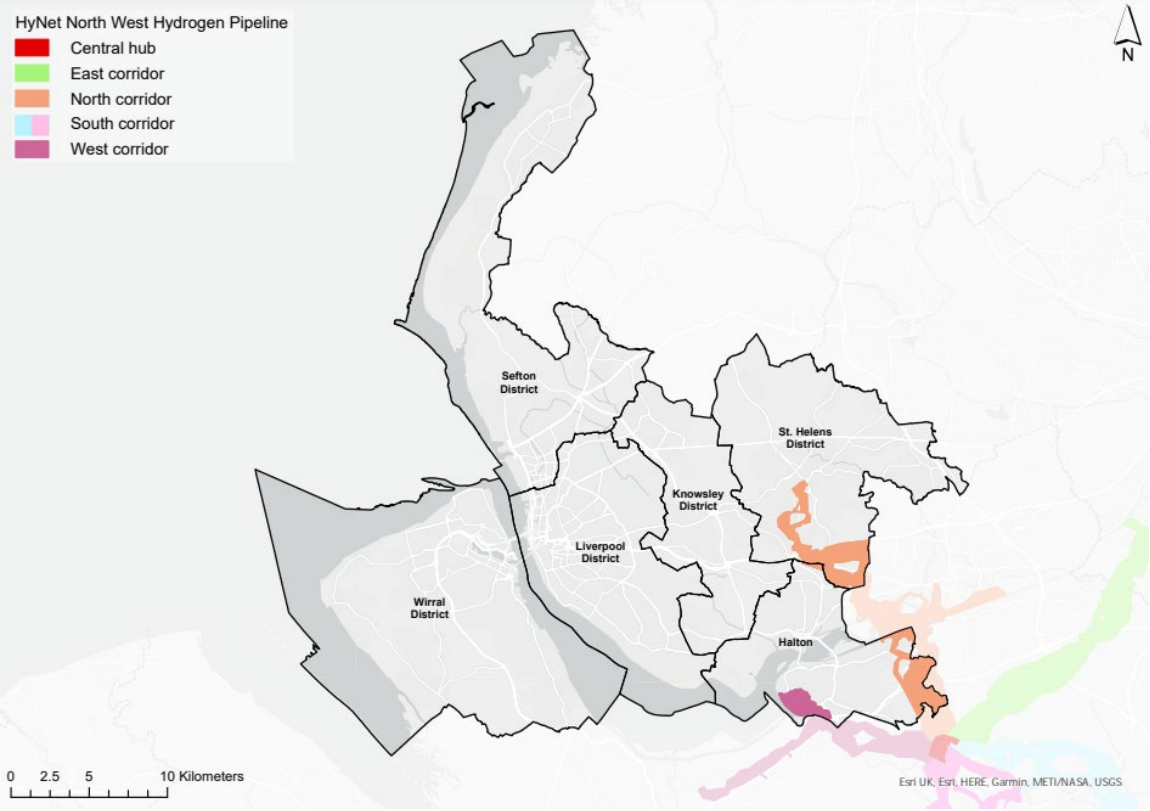

Figure 5.6: Map of HyNet North West Pipeline within LCR

Cadent do not foresee the transport sector's transition to hydrogen impacting the network size if the transport sector's hydrogen demand is not over peak times. For example, hydrogen vehicles could be charged over lunch or through the night to not increase the peak hydrogen demand.

Through improved energy efficiency measures, such as improved insulation, and the uptake of heat pumps, the demand for hydrogen could be decreased. These measures have the potential to ease LCR's transition to hydrogen.

To support LCR's transition to hydrogen, Cadent would require data regarding how hydrogen ready each property or street is. For example, if dwellings have hydrogen ready appliances.

Heat Networks

Liverpool was selected as part of the Heat Network Zoning Pilot Project, which uses Liverpool as a case study to understand the challenges and identify potential solutions, associated with developing heat networks. Concurrently, Mersey Heat District Heat Network is being developed. Mersey Heat would be a significant heat networks that aims to provide zero carbon heat to new development, Liverpool Waters, primarily from Water Source Heat Pumps. The scheme was granted planning

permission in 2021 and plans to serve residential properties, as well as new and retrofitted commercial properties.

5.7 Recommendations to align with SDS growth and identification of potential infrastructure gaps

The following section takes into account the analysis from the above sections in addition to stakeholder engagement and the growth scenarios set out in section 2.4.

It is recommended to include a strategic infrastructure policy within the SDS to ensure provision of key strategic infrastructure necessary to meet needs identified within the SIP. Additionally, it is recommended to include an infrastructure provision policy within the SDS to ensure development and proposals coming forward support and positively contribute to the SDS objectives by ensuring places are sustainable and served by appropriate levels of infrastructure.

Electricity infrastructure

SPM are planning to upgrade the electricity distribution network to facilitate the uptake of electric vehicles and heat pumps, as heat and transport decarbonises. This is supporting the SDS Climate Change and Environment objective which includes achieving net zero by 2040.

Supporting the uptake of electric vehicles has the potential to improve air quality thus, supporting the Health and Wellbeing Objective.

Additional battery storage and energy generation will also help provide low carbon power to LCR, supporting the Climate Change and Environment objective.

SPM's electrical upgrades will support the Placemaking and Communities and Social Value objective by providing reliable and flexible power to the city region.

To assess the suitability of the future infrastructure to meet SDS objectives, further data regarding the city region's energy demand would be required.

The most significant gap of provision is dependent on the outcomes of SPEN's £3.6bn RIIO-ED2 funding submission to Ofgem. If Ofgem were to allocate less than this amount, SPEN believe the LCR is at risk of being unable to meet projected electricity demand increase. Analysis has identified a significant amount of consented electricity schemes; and this could be an indication that the market sees the city region as an area where privately funded schemes will be essential with or without the planned programme of improvements planned by SPEN through ED2 funding.

Gas infrastructure

Cadent's upgrade of the gas network will include the installation of hydrogen ready pipes across the majority of the network. This would begin to facilitate the city region's potential to transition to hydrogen, future proofing the gas network and supporting the Climate Change and Environment objective by providing a low carbon energy source.

To assess the suitability of the future infrastructure to meet SDS objectives, further data regarding the city region's gas demand would be required.

5.8 Review and alignment of infrastructure against SDS Strategic Objectives

A summary of electrical and gas strategic infrastructure schemes, compared to the SDS objectives is documented in table 5.7. The key for this assessment is outlined in table 5.8.

Table 5.7: SDS objectives alignment

Scheme	SDS objective 1: Climate Change and Environment	SDS objective 2: Health and Wellbeing	SDS objective 3: Prosperous and Inclusive Economy	SDS objective 4: Placemaking, Communities and Housing	SDS objective 5: Social Value	Commentary (incl. suggested enhancement to meet objective(s)
Distributed energy network upgrade	++	-	-	-	-	Works are required to keep the electricity network functional and to be able to support the uptake of low carbon technologies.
320 MWe of Utility Scale Battery Schemes	++	-	-	-	-	Alignment of battery schemes to store and provide power to local end users and aligned with demand reduction and energy efficiency interventions could increase social value (i.e., more affordable energy prices).
Energy Generation (circa 30 MWe)	++	-	-	-	-	Alignment of energy generation schemes to provide power to local end users aligned with demand reduction and energy efficiency interventions would increase social value (i.e., more affordable energy prices).

Scheme	SDS objective 1: Climate Change and Environment	SDS objective 2: Health and Wellbeing	SDS objective 3: Prosperous and Inclusive Economy	SDS objective 4: Placemaking, Communities and Housing	SDS objective 5: Social Value	Commentary (incl. suggested enhancement to meet objective(s)
Cadent Gas Network Renewal	++	-	-	-	-	Alignment of gas network renewal and electricity network upgrades with domestic retrofit and boiler replacement programmers.
HyNet	++	-	-	-	-	Further exploration of the potential for hydrogen to be supplied for heating and transport.

Table 5.8: Assessment key

++	Scheme has strong alignment with SDS objective
+	Scheme has moderate alignment with SDS objective
o	Neutral; not applicable
-	Scheme has weak alignment with SDS objective
--	Scheme has very weak alignment with SDS objective

5.9 Summary and recommended next steps

The UK and internationally there is an energy crisis. This is driven by the need to modernise and expand energy systems to ensure decarbonisation and resilience. Costs to consumers is also increasing due to volatility in the energy market due to increases in wholesale prices also driven by decarbonisation and geopolitical issues.

The main drivers for change are health & safety, growth, decarbonisation, resilience and fuel poverty that combine to result in significant need to modernise infrastructure.

The current electricity and gas networks are adequately supplying power to the LCR. However, they are ageing, and in the case of the electricity network it is also reaching full capacity despite falls in overall energy consumption and peak loads the emergence of EV charging, new generation and storage upgrades are needed to cope with higher local peak loads and bidirectional energy flows. In order to maintain safe, clean and reliable energy supplies to meet changing needs across the city region, in ways that achieve net zero by 2040, significant infrastructure modernisation will be required.

The ability of the city region's strategic electric and gas infrastructures to accommodate different rates, densities and locations of connections over time is a common theme for the city region. This involves new connections to the:

- Electricity network in the form of EV charging, battery storage and renewable energy technologies as part of new development and/ or integration with existing built environment.
- Gas network through new development and/ or the transition of existing gas customers to hydrogen ready boilers to enable a natural gas to hydrogen transition to be realized.

It is difficult to predict the balance of strategic electricity and gas infrastructure requirements. At its most extreme, electrification of heat could replace gas infrastructure. Engagement with SPEN and Cadent indicates that a balance is essential; with SPEN recognising that the 'hydrofication' of the gas network will be important to it continuing to provide reliable energy supplies to customers in the face of significant change.

Engagement with stakeholders has identified:

- A recognition that integrated, planned programmes of activity are required.
- That despite evidence of some collaboration between SPEN and Cadent there was limited evidence of consistent and impactful engagement across the value chain.
- The need for ambition, to ‘plan for the peak’ and provide certainty of where different type and scales of energy infrastructure could be located to enable the decoupling of growth and carbon emissions.
- Closer engagement with consumers is key to planning and deploying strategic infrastructure transitions with other policy areas, namely energy efficiency, EV charging, use of heat pumps and gas boiler replacement.
- Affordability is at the heart of the zero emission transition of strategic infrastructure. There is a vital need to revert back to the energy hierarchy with a focus on continuing to reduce demand and increase energy efficiency of the built environment to help limit the need for costly upgrades.
- An opportunity to engage with private sector for further understanding of costs associated with consented energy schemes.

Table 5.9: Summary of infrastructure

Scheme	Location	Potential lead delivery agency	Potential delivery mechanism	Cost	Delivery phasing	Gaps in funding
Knowsley ERF	Knowsley	Private	Developer Direct Investment	To be established	To be established	To be established
Sutton Heath Road	St Helens	Private	Developer Direct Investment	To be established	To be established	To be established
Charleywood Road, Knowsley Industrial Park	Knowsley	Private	Developer Direct Investment	To be established	To be established	To be established
Beaufort Road	Wirral	Private	Developer Direct Investment	To be established	To be established	To be established
Carnegie Road (Phase 2)	Liverpool	Private	Developer Direct Investment	To be established	To be established	To be established
Liverpool Energy Management Facility	Liverpool	Private	Developer Direct Investment	To be established	To be established	To be established
Hawthorne Road	Sefton	Private	Developer Direct Investment	To be established	To be established	To be established

Britannia House	Wirral	Private	Developer Direct Investment	To be established	To be established	To be established
National Grids Rainhill Substation Battery storage facility	St Helens	National Grid	National Grid Direct investment	To be established	To be established	To be established
Crowland Street - Energy Recovery Park	Sefton	Private	Developer Direct Investment	To be established	To be established	To be established
RIIO – ED2	City Region	SPEN	SPEN Direct Investment	£3.6bn	To be established	£3.6bn
30:30 Programme	Across city region	Cadent	Cadent Direct Investment	To be established	To be established	To be established
Hynet	Parts of LCR and Cheshire West	Private	Developer	£900m	To be established	To be established
Mersey Tidal Range	Mersey Estuary	Private	To be established	To be established	To be established	To be established
Lock Street Energy from Waste Plant	St Helens	Private	Developer Direct Investment	To be established	To be established	To be established

Lister Drive	Liverpool	Private	Developer Direct Investment	To be established	To be established	To be established

6. Surface Water Management and Flood Risk

6.1 Introduction

This chapter covers the strategic surface water management and flood risk infrastructure in the LCR. A baseline review of current strategic level surface water management and flood risk infrastructure has been conducted to gain an understanding on how the existing infrastructure can cope with current and future demand, including climate change.

Strategic level flood defences are maintained by the relevant Local Authorities and the Environment Agency ("EA"). Strategic surface water drainage is maintained and managed by riparian owners, Local Authorities and United Utilities ("UU") (the statutory drainage undertaker covering all of LCR).

6.2 Evidence base review

A number of documents were reviewed to gain an understanding on the current flooding issues and infrastructure in the LCR as well as any planned infrastructure. Documents and maps have been reviewed and are listed below:

- Local Authority IDPs;
- LCR Vision, Objectives and Suggested Policy Approaches;
- The Flood Hub;
- The EA:
    - National Flood and Coastal Erosion Risk Management Strategy for England
    - Review of policy for development in areas at flood risk
    - Mersey Estuary Catchment Flood Management Plan
    - Alt Crossens Catchment Flood Management Plan
- UU:
    - Drainage and Wastewater Management Plan Strategic Context

- Various:
    - North West England and North Wales Shoreline Management Plan SMP2
    - Sankey Catchment Action Plan

6.3 Stakeholder engagement

Arup has liaised with the following stakeholders:

- Peel Group
- The EA:
    - Discussed the potential fluvial flood risks that could impact the LCR;
    - Discussed current strategic flood defences in the LCR; and
    - Discussed strategic flood defences proposals and overarching approach in the LCR.
- UU:
    - Discussed current strategic surface water management in LCR; and,
    - Discussed how new developments must adhere to the drainage hierarchy.

6.4 Baseline review of current infrastructure

6.4.1 Surface Water Management

UU are responsible for the sewage network in the LCR. The majority of their network is made up of combined sewers, therefore they accept both foul sewage and surface water run-off. Currently up to 90% of flow in the network is made up of surface water. Having a high volume of surface water in the system will increase the risk of the sewers flooding, combined sewer overflow events to watercourses and place greater demand on wastewater treatment works.

At a strategic level, UU's current surface water management infrastructure can cope with existing demand noting that there may be localised capacity issues.

Where surface water does not discharge to the UU sewage network it will ultimately discharge to watercourse or coastal outfall (or in local cases, infiltrated at source). Discharge of surface water to

watercourse on a catchment-wide scale is the predominant driver for fluvial (river) flooding, covered within the flood risk section below.

A number of the LCR Local Authority IDPs note concern surrounding new developments and the increase in surface water run off they would bring. United Utilities have already made recommendations such as preventing run-off rates from exceeding the pre-existing greenfield rates.

6.4.2 Flood Risk

The Local Authorities within the LCR mainly fall within the River Mersey and Alt-Crossens Catchments. All of the LCR falls in the Lower Mersey Catchment. There are defences along the Mersey Estuary from Liverpool to Warrington. These defences go through Liverpool, Halton and St Helens and are mainly natural high ground with a few walls and embankments. River flooding in this catchment is mainly located on the Mersey's tributaries. The Alt-Crossens catchment covers most of Sefton and parts of Liverpool and Knowsley.

The Merseyside Flood & Coastal Erosion Risk Management (FCERM) Partnership is a group of authorities who manage flood risk and coastal erosion in the LCR. This includes the local authorities that make up the LCR as well as the EA, UU and Dŵr Cymru/Welsh Water for a small section of Wirral. The Merseyside FCERM have devised a map that illustrates where there is current flood infrastructure, case studies, community groups and coastal monitoring. These schemes are localised to the area and are not classed as strategic in the context of this SIP.

Rivers that run through Sefton are discharged to the sea via the Altmouth and Crossens pumping stations. These pumping stations, along with 14 satellite pumping stations and linked watercourses, drain the Alt-Crossens catchment that covers most of Sefton as well as parts of Liverpool and Knowsley.

There is an existing Action Plan[12] in place for the Sankey Catchment Area that covers most of St Helens as well as areas of Halton.

According to the EA, in 2019 to 2020, 95.4% of planning decisions were made in line with the EA advice.

The EA confirmed that the biggest flood risks to the LCR were tidal flooding and sea level rise. There are not currently many formal flood defence schemes in place in the LCR. Figure 6.1

[12] https://www.sthelens.gov.uk/media/1999/FLO002-Sankey-Catchment-Action-Plan-2018/pdf/FLO002_Sankey_Catchment_Action_Plan_2018.pdf?m=637793965913030000#:~:text=The%20aim%20of%20the%20Catchment,maximises%20water%20for%20biodiversity%20needs.

illustrates where the LCR is most at risk from flooding. Flood Zone 3 mainly covers coastal areas and areas near to the River Mersey. A number of proposed developments are close to areas that are at a high risk of flooding.

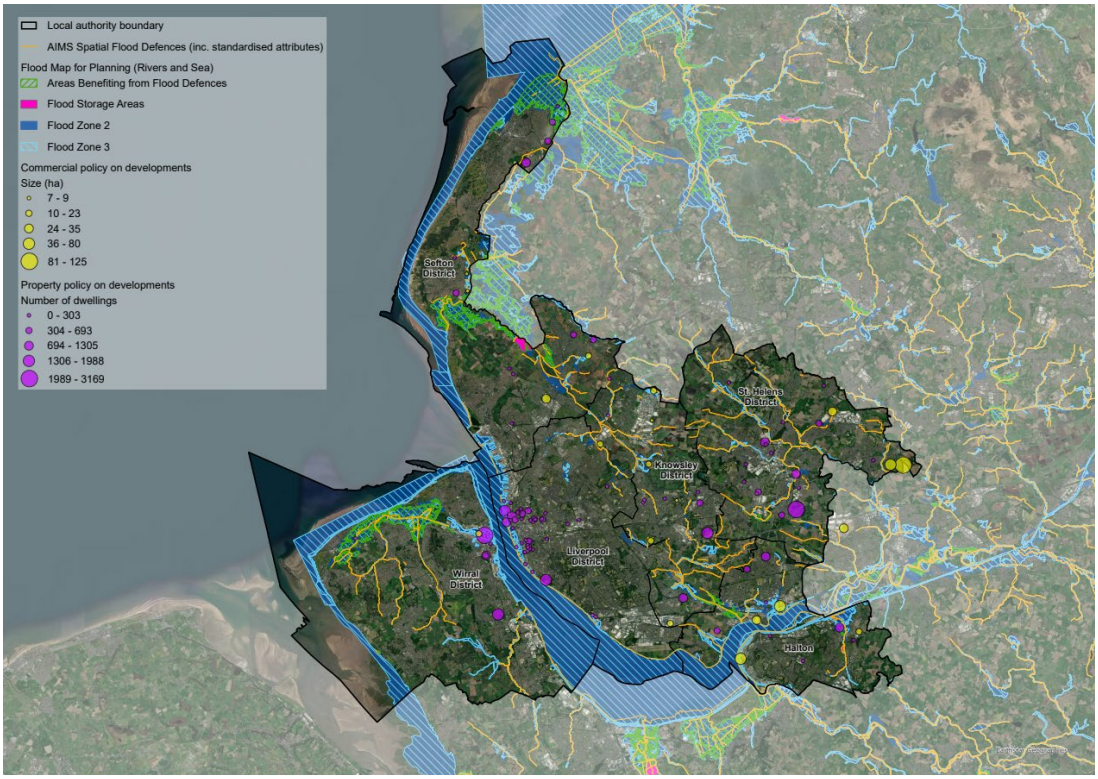

Figure 6.1: Flood Map of LCR including proposed developments

6.5 Planned strategic Infrastructure in the LCR

6.5.1 Surface Water Management

After engaging with stakeholders, it was confirmed that there are no planned upgrades nor installation of new strategic level surface water management infrastructure in the LCR.

However, the Planning Policies and approach of UU will look to reduce the peak flows draining to the surface water infrastructure; thereby reducing overall demand. This is being driven through pushing new developments to seek infiltration and sustainable drainage solutions (SuDS) through more stringent adherence to the drainage hierarchy and planning policy. UU are actively engaging with the LCR to drive this forward.

UU are not legally obliged to accept surface water from new developments into their network. Therefore, this provides one of the levers to drive new developments to manage surface water in a more sustainable manner.

Surface water should be dealt with as close to the source as possible. New developments have the opportunity to protect and enhance the region's environment by establishing a holistic approach resulting in a new green urban environment (potentially through the use of SuDS) and a reduction in flood risk. Reducing the volume of surface water entering the public sewer network and/or watercourses will reduce the risk of flooding and reduce the pressure on the networks.

6.5.2 Flood Risk

The Mersey Estuary and Alt Crossens Catchment Management Plans explore the present and future risk and identify policies for the individual sub-catchments along with key messages and actions. Climate change and sea level rise will impact directly on flood risk in the LCR. The plans note that climate change has a significant impact on flood risk; causing more frequent and intense storms, wetter winters and sea level rise.

While many of the key messages and actions are local in the context of this SIP there are a number of aspects which would be considered strategic; as follows:

- Investigate how environmental sites could withstand increased flooding to enhance or create further wetland habitat. There are opportunities for habitat enhancement through 'wetting up' of land and promotion of ecological networks.
- SUDS should be encouraged as a means of reducing overall flood risk and controlling pollution from urban runoff.
- Develop a Surface Water Management Plan in conjunction with United Utilities and local authorities – this is due to be published in summer 2022.

The North West England and North Wales Shoreline Management Plan defines four policy approaches:

- Hold the line;
- Advance the line;
- Managed realignment; and,
- No active intervention.

Figure 6.2 below shows a map that indicates where the different policy approaches have been applied at the coast.

Figure 6.2: Shoreline Management Policy approaches around the LCR

6.6 Recommendations to align with SDS growth and identification of potential infrastructure gaps

The following section takes into account the analysis from the above sections in addition to stakeholder engagement and the growth scenarios set out in section 2.4.

It is recommended to include a strategic infrastructure policy within the SDS to ensure provision of key strategic infrastructure necessary to meet needs identified within the SIP. Additionally, it is recommended to include an infrastructure provision policy within the SDS to ensure development and proposals coming forward support and positively contribute to the SDS objectives by ensuring places are sustainable and served by appropriate levels of infrastructure.

6.6.1 Surface water management and SuDS

Planning policy already exists to support the consideration and implementation of sustainable approaches to surface water management for new developments. However, it is noted from stakeholder liaison that lack of consideration of sustainable drainage and their multi-functional opportunities at the early stages of project creation means that a significant degree of opportunities are lost and more traditional ‘grey’ infrastructure is the result.

This can be mitigated by placing SuDS on the agenda in very early stage land development discussions and through strengthening planning policies both at a strategic and local level.

This may necessitate learning and development within the LCR and the individual local authorities across those parts of the organisations who may not traditionally deal with SuDS considerations in order to bring the topic and benefits into land purchasing and very early exploratory discussions on land development. UU are extremely supportive of this approach.

6.6.2 Flood Risk

It should be noted that the Catchment and Shoreline Management Plans are still current; however, they are from 2009 and 2011, respectively. These remain the documents providing the framework for action across the LCR; however, from discussion with the EA as part of the development of this SIP it should be noted that there may be opportunity for an LCR-led active role in driving forward and delivering the actions noted to provide strategic-scale benefits for the city region.

6.7 Review and alignment of infrastructure against SDS Strategic Objectives

The table below demonstrates the alignment between the planned strategic infrastructure and the strategic objectives of the SDS. There are no weak alignments identified.

Table 6.2 contains the key for this assessment.

Table 6.1: SDS objectives alignment

Scheme	SDS Objective 1: Climate Change and Environment	SDS Objective 2: Health and Wellbeing	SDS Objective 3: Prosperous and Inclusive Economy	SDS Objective 4: Placemaking, Communities and Housing	SDS Objective 5: Social Value	Commentary (incl. suggested enhancement to meet objective(s))
Greater prevalence of SuDS	++	+	+	+	o	There is a need for a wider use of SuDS across the LCR. Incorporating SuDS into designs will reduce the strain surface water runoff has on the sewage system.
Catchment Management Plans and Shoreline Management Plan	++	+	o	+	o	LCR to take strategic lead and consider each of the SDS objectives across any proposal.

Table 6.2: Assessment key

++	Scheme has strong alignment with SDS objective
+	Scheme has moderate alignment with SDS objective
o	Neutral; not applicable
-	Scheme has weak alignment with SDS objective

--	Scheme has very weak alignment with SDS objective

6.8 Summary and recommended next steps

The existing and proposed surface water management and flood risk infrastructure has been reviewed and a summary has been written below:

SuDS are to be considered early on in the design process for new developments to avoid surface water from entering the existing combined sewer network in order to reduce the risk of sewer flooding.

It appears that there is an opportunity for the LCR to take an active role in driving forward the key messages, actions and proposed strategic approach noted across the Mersey Estuary and Alt Crossens Catchment Flood Management Plans and the Shoreline Management Plan within the LCR boundary.

In doing so, embedding the SDS Objectives within the actions and decisions should support the wider beneficial outcomes for the LCR.

Table 6.3: Summary of infrastructure

Scheme	Location	Potential lead delivery agency	Potential delivery mechanism	Cost	Delivery phasing	Gaps in funding
Greater prevalence of SuDS	Across LCR	LCR/ Developers	Planning Policy/ Developer Contribution/ S106/LLFAs	To be established	To be established	To be established
Catchment Management Plans and Shoreline Management Plan	Across LCR	Environment Agency/ LCR	Planning Policy/Catchment Partnership/LLFAs	To be established	To be established	To be established

7. Foul Water Drainage

7.1 Introduction

This chapter covers the strategic foul water drainage infrastructure in the LCR. A baseline review of current wastewater infrastructure has been carried out to gain an understanding on how the existing infrastructure copes with current demand and if there are any potential constraints to proposed developments. All of the foul water drainage strategic infrastructure in the LCR is operated and maintained by United Utilities.

7.2 Evidence base review

A number of documents were reviewed to gain an understanding on the current wastewater and flooding infrastructure in the LCR as well as any planned infrastructure. Documents and maps have been reviewed and are listed below:

- Local Authority IDPs;
- LCR Vision, Objectives and Suggested Policy Approaches;
- United Utilities Final Water Resources Management Plan 2019[13]; and,
- United Utilities Drainage and Wastewater Management Plan Strategic Context[14].

7.3 Stakeholder engagement

Arup engaged with UU in regard to foul water drainage strategic infrastructure in the LCR. UU confirmed that foul water drainage infrastructure is successfully fulfilling the needs of the LCR.

UU have a legal obligation to convey and treat domestic (i.e., non-process) foul water and will respond to growth and accommodate additional growth and developments. UU uses proposed future developments to inform their decision making on any potential future upgrades as part of their five-year investment planning cycle.

[13] https://www.unitedutilities.com/globalassets/z_corporate-site/about-us-pdfs/wrmp-2019---2045/final-water-resources-management-plan-2019.pdf

[14] https://www.unitedutilities.com/globalassets/documents/pdf/dwmp-strategic-context-final-document.pdf

7.4 Baseline review of current infrastructure

UU is responsible for the management and maintenance of the foul water drainage network in LCR. They are also responsible for the management and maintenance of wastewater treatment in the LCR. There are various wastewater treatment works throughout the LCR, the drainage catchments for these cross local authority boundaries. Figure 7.1 illustrates the wastewater treatment work locations within the LCR.

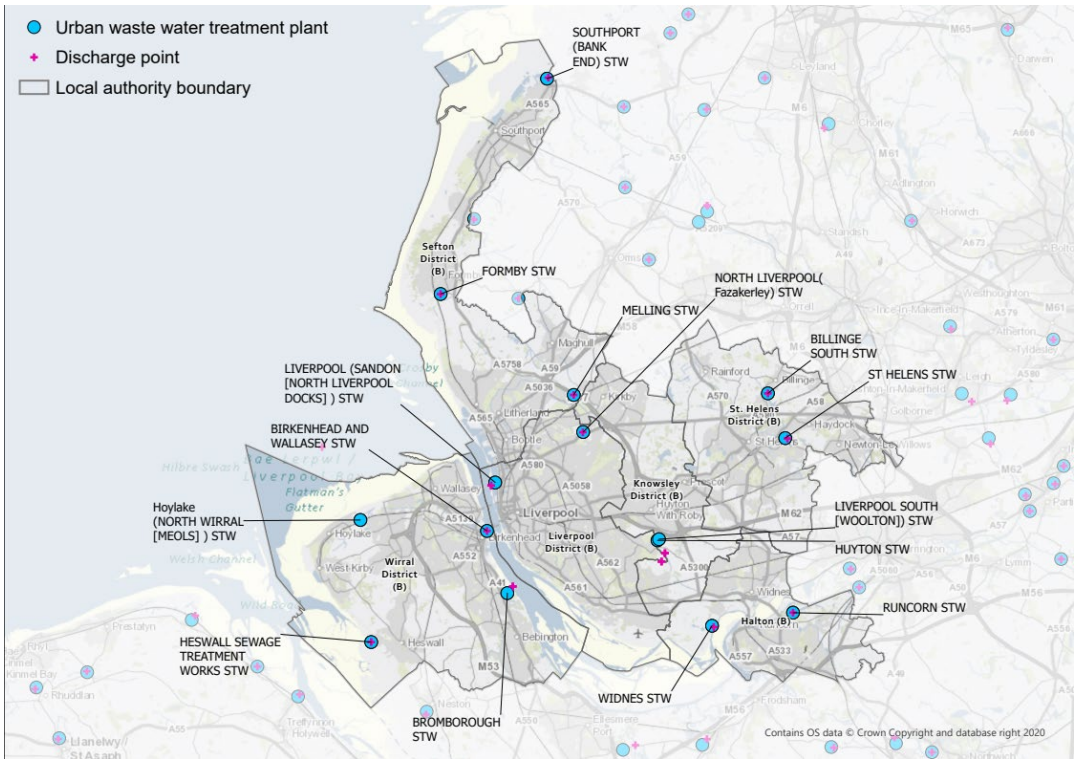

Figure 7.1: Map of LCR with Wastewater Treatment Plants identified

The Knowsley IDP notes that there is currently limited capacity at Sandon Dock Wastewater Treat Works in Liverpool which receives foul water from adjacent local authorities. Additionally, the IDP notes that there are concerns around developments that would rely on the Widnes Wastewater Treatment Works, located in Halton, as there are doubts as to whether the EA would consent to further discharge into the River Mersey. Widnes Wastewater Treatment works receives waste from Halton, Knowsley and St Helens.

UU state in their Drainage and Wastewater Management Plan that the majority of sewers in their network are combined. With the core of the sewerage system within most towns and cities being combined, there is concern around the capacity for sewage as combined sewers also transport rainwater.

7.5 Planned strategic infrastructure in the LCR

UU recently published their Drainage and Wastewater Management Plan in May 2023. UU have developed three themes alongside their stakeholders to align their planning objectives to. The themes are as follows:

- UU will collect, treat and recycle foul water in compliance with their permits, now and in the future, to protect the natural environment.
- UU will protect, restore and improve the natural environment of the North West through their actions
- UU will sustainably reduce the risk of sewer flooding in the North West.

UU stress the importance of adhering to the Drainage Hierarchy to reduce the volume of water in the sewage system to prevent sewer flooding.

7.6 Recommendations to align with SDS growth and identification of potential infrastructure gaps

The following section takes into account the analysis from the above sections in addition to stakeholder engagement and the growth scenarios set out in section 2.4.

Through this review, no gaps have currently been identified in the foul water drainage infrastructure in the LCR. UU will ensure that new developments are connected to the network as is their legal obligation and that the network is suitably upgraded.

It is recommended to include a strategic infrastructure policy within the SDS to ensure provision of key strategic infrastructure necessary to meet needs identified within the SIP. Additionally, it is recommended to include an infrastructure provision policy within the SDS to ensure development and proposals coming forward support and positively contribute to the SDS objectives by ensuring places are sustainable and served by appropriate levels of infrastructure.

7.7 Review and alignment of infrastructure against SDS Strategic Objectives

United Utilities have not stated that they intend to upgrade the existing foul water drainage infrastructure in the LCR. Should works be proposed, these should be explored for wider benefit opportunities against the SDS objectives. There are no weak alignments identified.

Table 7.2 contains the key for this assessment.

Table 7.1: SDS objectives alignment

Scheme	SDS Objective 1: Climate Change and Environment	SDS Objective 2: Health and Wellbeing	SDS Objective 3: Prosperous and Inclusive Economy	SDS Objective 4: Placemaking, Communities and Housing	SDS Objective 5: Social Value	Commentary (incl. suggested enhancement to meet objective(s))
Treatment and recycling of foul water to protect the natural environment	++	+	o	o	o	There is a need to ensure that the treatment and recycling is done appropriately to avoid damage to the natural environment and being in breach of permits.
Restore and improve the natural environment	++	+	o	+	+	UU will restore and improve the environment in the LCR where their infrastructure may have damaged it in the past. In the future, UU should consider the environment before undertaking new development.
Reduced risk of sewer flooding	++	++	+	o	o	Water entering the sewage system should be reduced where possible. This could potentially be done through SuDS.

Table 7.2: Assessment key

++	Scheme has strong alignment with SDS objective
+	Scheme has moderate alignment with SDS objective
o	Neutral; not applicable
-	Scheme has weak alignment with SDS objective
--	Scheme has very weak alignment with SDS objective

7.8 Summary and recommended next steps

The current foul water drainage infrastructure has been reviewed and a summary has been written below:

- UU provide and maintain the foul water drainage infrastructure to the LCR and the existing infrastructure is good and meets demand.
- New developments have a right to connect their foul water drainage to United Utilities network. They will upgrade their network when required to meet demand.

Table 7.3: Summary of infrastructure

Scheme	Location	Potential lead delivery agency	Potential delivery mechanism	Cost	Delivery phasing	Gaps in funding
Treatment and recycling of foul water to protect the natural environment	LCR	United Utilities	UU direct investment	To be established	To be established	To be established
Restore and improve the natural environment	LCR	United Utilities	UU direct investment	To be established	To be established	To be established
Reduced risk of sewer flooding	LCR	United Utilities	UU direct investment	To be established	To be established	To be established

8. Water Supply

8.1 Introduction

This chapter covers the strategic water supply infrastructure in the LCR. A baseline review of current water supply infrastructure has been carried out to gain an understanding on how the existing infrastructure copes with current demand and if there are any potential constraints to proposed developments. All the strategic water supply infrastructure in the LCR is operated and maintained by UU.

8.2 Evidence base review

A number of documents were reviewed to gain an understanding of the current water supply infrastructure in the LCR as well as any planned infrastructure. The documents reviewed are below:

- Local Authority IDPs;
- LCR Vision, Objectives and Suggested Policy Approaches; and,
- United Utilities Final Water Resources Management Plan 2019[15].

8.3 Stakeholder engagement

Arup met with UU in regard to water supply infrastructure in the LCR. UU confirmed that water supply infrastructure is successfully fulfilling the needs of the LCR. UU supply water across the whole of the North West.

UU have an obligation to provide developments with water, therefore they will respond to growth where and when it is required. They noted that there are no strategic issues with infrastructure that the projected growth within LCR would cause.

The North West relies on rain for a large proportion of their water supply. UU stated that their projects will change over time in order to accommodate the effects of climate change. Climate change will see longer dry periods but also shorter, more extreme periods of weather. To mitigate the potential effects of climate change, UU require support to increase the drive for water efficiency

[15] https://www.unitedutilities.com/globalassets/z_corporate-site/about-us-pdfs/wrmp-2019---2045/final-water-resources-management-plan-2019.pdf

in new homes to keep water supply volumes down. Additionally, due to work being carried out on their existing network to reduce leakage, there will be a reduction in water demand.

8.4 Baseline review of current infrastructure

UU is responsible for the supply of potable water across the LCR. The LCR falls within UU's "Strategic Resource Zone" which has an overall population of just over 7 million.

The source of the LCR's water is nearby in Prescot, Knowsley and Wales. However, UU manage water supply across the area collectively and transfer water flexibly across their Strategic Resource Zone.

Consultation with UU as part of the development of this SIP and the existing Local Authority IDPs, indicates that water supply to the LCR is good and requirements are currently being met. There are some development constraints where water supply is dependent on aqueducts, but this is a local issue. Additionally, there are existing concerns around pressure issues in Kirkby, Southport, Litherland and Maghull identified by Knowsley and Sefton Councils. It has been advised that any new developments take place near existing water supply where infrastructure has existing capacity.

8.5 Planned strategic infrastructure in the LCR

UU develop 5 yearly investment periods. They are currently in the period 2020-2025. However, due to the short timescales of the investment plans, the document of relevance for this SIP is the UU's Final Water Resources Management Plan for the period from 2020 to 2045 which includes forecasts water demand up to 2045. The key headlines from the Plan for the northwest are as follows:

- Over the planning horizon, availability of base water supply is forecast to decrease by approximately 1.7% due to the impacts of climate change.
- Continuing demand side reduction programme, including continuing to increase household meter penetration to 75%, resulting in a reduction in household consumption of 100 Ml/d. (current approximately 42% and forecast 75% penetration in 2045).
- The demand forecast shows reductions in demand over time even with future economic and population growth due to increasing water efficiency and metering.
- Currently, UU are predicting that there will be a surplus of potable water in the Strategic Resource Zone from 2020 to 2040 with a small deficit occurring in from 2041 to 2045.

- However, UU are implementing a programme of leakage reduction of 20% by 2025, and just over 40% by 2045.
- Therefore, the overall conclusion is that forecast water demand across the Strategic Resource Zone (which includes the LCR) will not exceed forecast supply.

There are no significant strategic infrastructure installations planned at this time. As noted in the Final Water Resources Management Plan (2019), UU will be undertaking a programme of leakage reduction and demand side management to manage the supply / demand. Their leakage reduction programme is to cover their entire network, extending beyond the LCR. Completing this leakage reduction programme will prevent a deficit occurring after 2041. The LCR should actively work with UU to facilitate this programme of demand side management and leakage reduction works.

UU respond to growth in alignment with any new developments that are taking place. They are flexible and responsive in their approach to providing water to new developments. United Utilities cannot conclude the extents of their provision up to 2045 as they have a 5-year investment periods.

8.6 Recommendations to align with SDS growth and identification of potential infrastructure gaps

The following section takes into account the analysis from the above sections in addition to stakeholder engagement and the growth scenarios set out in section 2.4.

Through this review, no gaps have currently been identified in the water supply infrastructure in the LCR across the plan period subject to successful implementation of the demand side management and leakage reduction. The steps that are already planned by UU and the adaptation of the network will support the proposed growth.

It is recommended to include a strategic infrastructure policy within the SDS to ensure provision of key strategic infrastructure necessary to meet needs identified within the SIP. Additionally, it is recommended to include an infrastructure provision policy within the SDS to ensure development and proposals coming forward support and positively contribute to the SDS objectives by ensuring places are sustainable and served by appropriate levels of infrastructure.

8.7 Review and alignment of infrastructure against SDS Strategic Objectives

UU's proposed leakage reduction and demand site management is directly supportive of the Climate Change and Environment and Inclusive Economy SDS Objectives. Reducing the number of leaks in the network will ensure that resources are being used in a sustainable and responsible way.

Additionally, improving water efficiency and reducing the amount of water escaping the network will ensure there is a surplus. This will reduce the likelihood of water prices rising.

UU do not have strategic water supply infrastructure proposed for the LCR. However, they are carrying out a leakage reduction programme and demand site reduction across their network that will benefit the LCR. In Table 8.1 below, leakage reduction and demand site reduction have been considered against the SDS Strategic Objectives. Table 8.2 contains the key for this assessment.

Table 8.1: SDS objectives alignment

Scheme	SDS Objective 1: Climate Change and Environment	SDS Objective 2: Health and Wellbeing	SDS Objective 3: Prosperous and Inclusive Economy	SDS Objective 4: Placemaking, Communities and Housing	SDS Objective 5: Social Value	Commentary (incl. suggested enhancement to meet objective(s))
Leakage Reduction	o	o	o	+	o	There is a need for leakage reduction across the region to ensure there is not a water deficit.
Demand Site Reduction	+	o	o	o	o	There is a need to reduce the volume of water that properties need to avoid a water deficit.

Table 8.2: Assessment key

++	Scheme has strong alignment with SDS objective
+	Scheme has moderate alignment with SDS objective
o	Neutral; not applicable
-	Scheme has weak alignment with SDS objective
--	Scheme has very weak alignment with SDS objective

8.8 Summary and recommended next steps

There are no proposed water supply infrastructure developments taking place that are specific to the LCR. However, the LCR will benefit from UU's Leakage Reduction programme as this will ensure there is a surplus within the network. Table 8.3 provides a summary of this programme. Not all the information is yet known about the programme as it is ongoing and covers United Utilities entire network.

The current water supply infrastructure has been reviewed and a summary has been written below:

- UU provides water to the LCR. The provision is good and current needs are being met.
- UU will respond accordingly to new proposals to ensure they have an adequate water supply. They are able to transport water where the demand is.
- Future water supply is noted to be sufficient subject to implementation of a programme of demand side management and leakage reduction. The LCR should actively support UU in delivering this programme.

Table 8.3: Summary of infrastructure

Scheme	Location	Potential lead delivery agency	Potential delivery mechanism	Cost	Delivery phasing	Gaps in funding
Leakage Reduction	United Utilities network/LCR	United Utilities	UU direct investment	To be established	To be established	To be established

9. Digital and Telecommunications

9.1 Introduction

This chapter covers the strategic Digital and Telecommunications infrastructure in the LCR. A baseline review of current infrastructure has been conducted to gain an understanding on how the existing infrastructure can cope with current demand. Constraints to potential developments have also been identified.

The telecoms and digital infrastructure is on a supply and demand basis i.e. if there is a demand for the service the infrastructure will be built to service that demand.

9.2 Evidence base review

A number of sources have been reviewed to gain an understanding of the current Digital coverage of the LCR:

- LCR Digital Strategy 2021 – 2023;
- Think Broadband website;
- Vodafone coverage website;
- EE coverage website;
- O2 coverage website; and,
- 3 coverage website.

9.3 Stakeholder engagement

A key component of the project baseline has been to engage with relevant stakeholders and discuss future infrastructure requirements. The aim of these conversations was to establish whether the existing and planning strategic infrastructure aligns with the growth projections of the LCR and the planned strategic projects. Representatives from the following stakeholder groups have been interviewed:

- City Fibre;
- LCR's Digital Team;
- Virgin Media;

- BT Open reach;
- Vodafone;
- EE; and,
- 3.

9.4 Baseline review of current infrastructure

The current joint venture investment in the 212km High Speed full fibre network which links all six local authority areas provides the LCR with a commercial high speed back haul connected to the transatlantic cables.

The CA policy of “dig once" and applied wayleaves also provides new developments with the necessary infrastructure for suppliers to connect easily.

At present there are still postcode areas within the LCR with low broadband speeds. This is due to low take up and in the more rural areas the infrastructure provision.

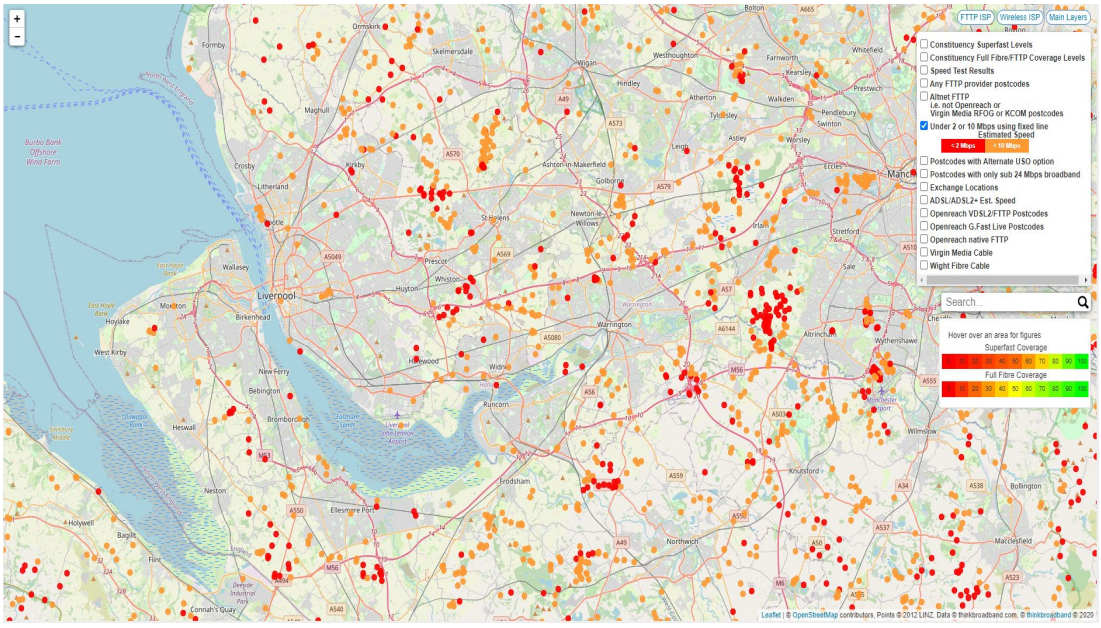

Figure 9.1: Map of postcodes with less than 10mbps broadband speeds

Figure 9.2: Map of postcodes with less than 24Mbps broadband speeds

There is good coverage of fibre in the Liverpool City Region as shown by the coverage set out in Figure 9.3 below. Though some areas do not have full fibre, they do have high availability of Superfast broadband.

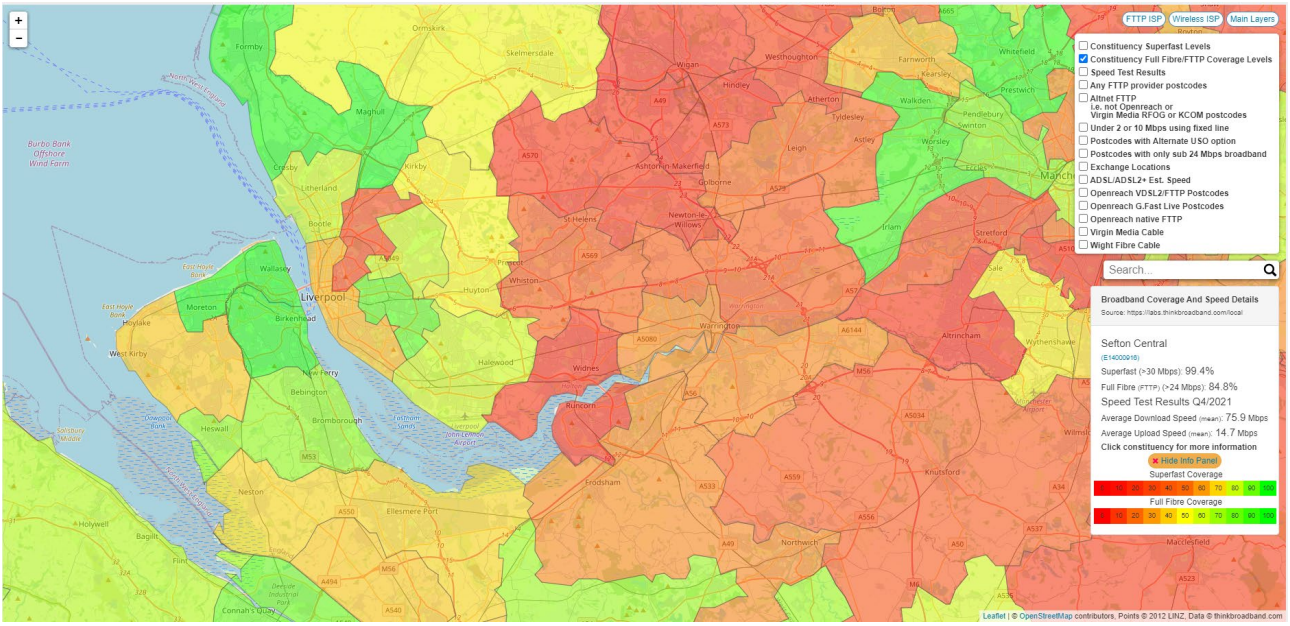

Figure 9.3: LCR Fibre Broadband coverage

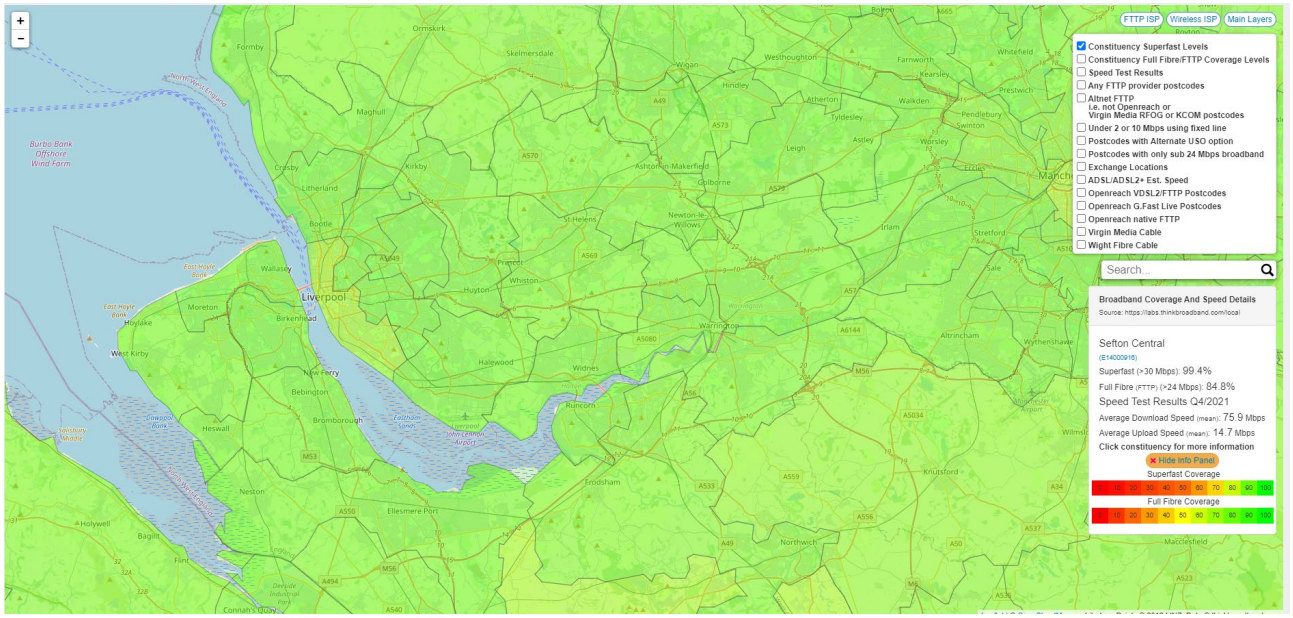

Figure 9.4: LCR 5G Coverage

This coverage is supplemented with the Mobile Network Operators (MNO) rolling out 5G across the region. The 5G coverage can be checked on each of the main operator's websites but is mainly at this time in the main populated areas.

9.5 Planned strategic infrastructure in the LCR

All key stakeholders are continually rolling out infrastructure to meet the increasing demand for services. LCR Connect, the new 212km full-fibre, ultrafast, gigabit-capable network infrastructure recently rolled out across the region will act as a conduit for existing service providers to reach additional areas in the region i.e., those not having full fibre connections. Openreach and Virgin are also rolling out Fibre to the home and upgrading their networks across the region.

In addition, Merseyrail are installing a 432-fibre optic cable across the 160km of their network which will provide full fibre connectivity to station and trackside locations. This will provide additional fibre network capacity with potential for fixed and wireless connectivity.

9.6 Recommendations to align with SDS growth and identification of potential infrastructure gaps

The following section takes into account the analysis from the above sections in addition to stakeholder engagement and the growth scenarios set out in section 2.4.

Upon review there are currently no gaps identified in the infrastructure to meet SDS growth.

It is recommended to include a strategic infrastructure policy within the SDS to ensure provision of key strategic infrastructure necessary to meet needs identified within the SIP. Additionally, it is recommended to include an infrastructure provision policy within the SDS to ensure development and proposals coming forward support and positively contribute to the SDS objectives by ensuring places are sustainable and served by appropriate levels of infrastructure.

9.7 Review and alignment of infrastructure against SDS Strategic Objectives

Once the 212Km gigabit backhaul is up and running and providing that connectivity to the transatlantic fibre, the regions infrastructure will be in a positive state to aid the SDS strategy. With fibre to the home being rolled out by the major players in the broadband sector and 5G rollout from the MNO's will also help the LCR meet its SDS. There is no weak alignment identified.

Table 9.2 contains the key for this assessment.

Table 9.1: SDS objectives alignment

Scheme	SDS Objective 1: Climate Change and Environment	SDS Objective 2: Health and Wellbeing	SDS Objective 3: Prosperous and Inclusive Economy	SDS Objective 4: Placemaking, Communities and Housing	SDS Objective 5: Social Value	Commentary (incl. suggested enhancement to meet objective(s))
Roll out of high speed internet	o	+	++	+	++	The provision of a high speed backhaul will make the LCR attractive to high tech industries.
5G Roll out	+	+	+	+	+	The great use of wireless 5G/Internet will reduce the reliance on copper cabling

Table 9.2: Assessment key

++	Scheme has strong alignment with SDS objective
+	Scheme has moderate alignment with SDS objective
o	Neutral; not applicable
-	Scheme has weak alignment with SDS objective
--	Scheme has very weak alignment with SDS objective

9.8 Summary and recommended next steps

It would be beneficial for the LCR to support the use of 5/6G wireless network with fibre to the node on the gigabyte backhaul system and the spare fibres on the Merseyrail network to reach rural areas.

Table 9.3: Summary of infrastructure

Scheme	Location	Potential lead delivery agency	Potential delivery mechanism	Cost	Delivery phasing	Gaps in funding
Roll out of high speed internet	LCR	Fibre Companies	On demand	To be established	To be established	To be established
5G Roll out	LCR	MNO's	On demand	To be established	To be established	To be established

10. Transport

10.1 Introduction

This chapter assesses the existing strategic transport network in the LCR; details the planned interventions to be delivered within the timescales of this SIP; and assesses whether planned interventions support the SDS growth objectives and are suitable to meet the growing needs of the LCR.

LCR SIP Transport

'Strategic transport' has been defined as routes or services that cross one or more district boundary as well as strategically important stations and ports such as Liverpool Lime Street, Liverpool Central, the Port of Liverpool and Liverpool John Lennon Airport.

As well as assessing the fit for purpose of transport infrastructure, this SIP considers the wider challenges that face the city region's transport networks, which are set out in draft form in the Liverpool City Region Combined Authority 4th Local Transport Plan (LTP4) Vision and Goals document published in 2022. The LTP4 is expected to be published in 2024, once Government guidance has been published.

It is important to note that the LTP4 is not being developed on the basis of 'predict and provide', as many transport plans used to be rather LTP4 is designed to deliver a rapid and urgent need to instigate modal shift away from private vehicles to active and public modes delivered through a combination of demand management, behavioural change and delivery of high-quality active travel and public transport priority infrastructure.

The draft vision and goals of the LCRCA Local Transport Plan 4, as set out in the Vision and Goals document, are as follows:

DRAFT VISION	
"To plan for, and deliver a clean, safe, resilient, accessible and inclusive London-standard transport system for the movement of people, goods and freight in a way that delivers our economic, social and environmental ambitions, and in particular, a net zero carbon emitting city region by 2040 or sooner"	
DRAFT GOALS	
GOAL 1	Ensure that transport supports recovery, sustainable growth and development, and that our transport plan, Plan for Prosperity, Climate Action Plan and Spatial Development Strategy are fully aligned
GOAL 2	Achieve net-zero carbon emissions by 2040 or sooner whilst safeguarding and enhancing our environment
GOAL 3	Improving the health and quality of life of our people and communities through the right transport solutions, including safer, more attractive streets and places used by zero emission passenger and freight transport
GOAL 4	Ensuring that our transport network and assets are resilient, responsive to the effects of climate change, and are well maintained
GOAL 5	Ensuring that we respond to uncertainty and change but also innovation and new technologies in the movement of people and goods

10.2 Evidence base review

The following documents were reviewed to gain an understanding on the current transport networks in the LCR and planned infrastructure:

- Combined Authority 4th Local Transport Plan Vision and Goals document (2022);
- Combined Authority City Region Sustainable Transport Settlement Prospectus 2022/2023 – 2026/2027 and confirmed outcome (2022);
- Combined Authority Transport Plan (Version 14), Liverpool City Region (2019)[16];
- Bus Service Improvement Plan. Liverpool City Region (2019);
- Long Term Rail Strategy. Liverpool City Region (2018);
- Liverpool City Region Sustainable Transport Settlement. Liverpool City Region Combined Authority;
- 2021/22 Transport Settlement & Transport Pipeline. Liverpool City Region Combined Authority (2021);

[16] Please note, the 2019 Local Transport Plan does not in itself replace the statutory Merseyside Local Transport Plan and Halton Local Transport Plan from 2011. Instead, it provides a non-statutory, updated statement of current priorities and provides a bridge between the 2011 statutory plans and the development of a new LTP 4 statutory Transport Plan, produced in draft form in 2022 and scheduled for publication in 2024.

- Local Cycling and Walking Infrastructure Plans. Department for Transport (2017);
- Local Cycling and Walking Infrastructure Plan. Liverpool City Region Combined Authority (2019);
- Bus Service Improvement Plan. Liverpool City Region Combined Authority (2021);
- LCR Freight and Logistics Strategy – Strategy Report. Merseytravel (2017);
- Delivery Plan 2020-2025. National Highways (2020); and,
- North West and Central Strategic Plan. Network Rail (2021).

10.3 Stakeholder engagement

A key component of developing this SIP has been to engage with relevant stakeholders and discuss future infrastructure requirements. The aim of these conversations was to establish whether the existing and planned strategic infrastructure aligns with the growth projections of the LCR and the highlight the planned strategic projects. Representatives from the following stakeholder groups have been interviewed:

- Liverpool City Region Combined Authority transport team, covering all modes of transport in the city region;
- National Highways;
- Liverpool City Region Freeport;
- Peel Group; and,
- Liverpool John Lennon Airport.

Stakeholders were invited to share their views on any issues they are aware of regarding the current and proposed strategic infrastructure, as well as the gaps identified to meet SDS growth to 2045.

LCRCA

The combined authority has provided an overview of the key strategic challenges facing the transport network and identified the transport infrastructure that is near capacity alongside the gaps in strategic provision. The combined authority also detailed the strategic objectives of

the region with regards to transport, which include supporting better first and last mile connectivity and encouraging a shift towards more active and sustainable modes.

National Highways (NH)

NH have identified roads that are currently struggling with capacity and air quality issues, as well as roads that will likely be impacted by future developments. In addition to the enhancements and renewals work already being undertaken by NH, a number of studies will be undertaken within the lifetime of this SIP to develop interventions for congestion and capacity hot spots on the network.

LCR Freeport – City Region wide Freeport Sites

The LCRCA Freeport Team is aware of the growing demand for export and import businesses which is driving freight demand in the LCR across road and rail. As the Freeport development planning grows, there will be an increasing need for businesses to operate more efficiently across the Freeport sites dotted across the City Region, and the Freeport Team is committed to ensuring that growth at the port does not come at the cost of increased carbon emissions. As the Freeport and associated sites is still at its early stages of development, there is a clear need to improve understanding of the freight market in the LCR in order to develop a strategy for decarbonisation.

Peel Ports

Peel Ports are aware of the future expansion of port capacity and the potential traffic congestion on the nearby network. The improvement of port facilities, adequate provision of facilities for HGVs such as fuelling stations and improved connection between the port and the road network could help the region cope with growing freight demand.

Liverpool John Lennon Airport

Liverpool John Lennon Airport has planned expansion which will lead to increased demand, both from those using the airport and those employed at the site. If measures are not taken to improve sustainable access to the airport, this may result in an increase of road traffic.

10.4 Baseline review of current infrastructure

The current strategic transport network in the LCR is made up of a network of strategic and major roads; a bus network; the Merseyrail network; other passenger and freight rail services;

a walking and cycling network; maritime services including cross-Mersey ferries and ports, international cruise terminals and an international freight terminal; and an international airport.

The following section outlines each of these component parts of the strategic transport network as assesses its fit for purpose.

10.4.1 Roads

The strategic roads network in the LCR is defined as the major routes through the city region which are the busiest and most economically important. Local roads which may cross a district boundary have not been included within the network. The network is made up of:

- **The Strategic Road Network (SRN), managed by National Highways.** These are the motorways and 'A' roads which support national journeys as well as those within the LCR. This includes the M62 which provides the main east-west connections across the north of England and connections to the M6 for north-south journeys; the M53 which connects the Wirral peninsula to the M56 for connections to north Wales and Cheshire; the M58/A5036 which connects the Port of Liverpool with the M6; the M6 itself which passes through the region for a short distance; and finally, the M57 Liverpool's Outer Ring Road, connecting the M62 and M58.
- **The Major Roads Network (MRN), managed by local highways authorities.** These roads form the second tier of highways in the UK and are those which carry significant amounts of regional traffic. This includes the main roads connecting Liverpool City Centre to the surrounding district centres; all of the road river crossings; and the main highways connection to Liverpool John Lennon Airport.
- **The Key Route Network (KRN), managed by local highways authorities.** These roads from the third tier of highways in the city region and include those roads that form part of the MRN, strategic links to development sites and links to the SRN. The KRN is reviewed annually, and roads are included based on their traffic volumes and functional importance.

Figure 10.2 below shows the strategic road network in the LCR (KRN not included).

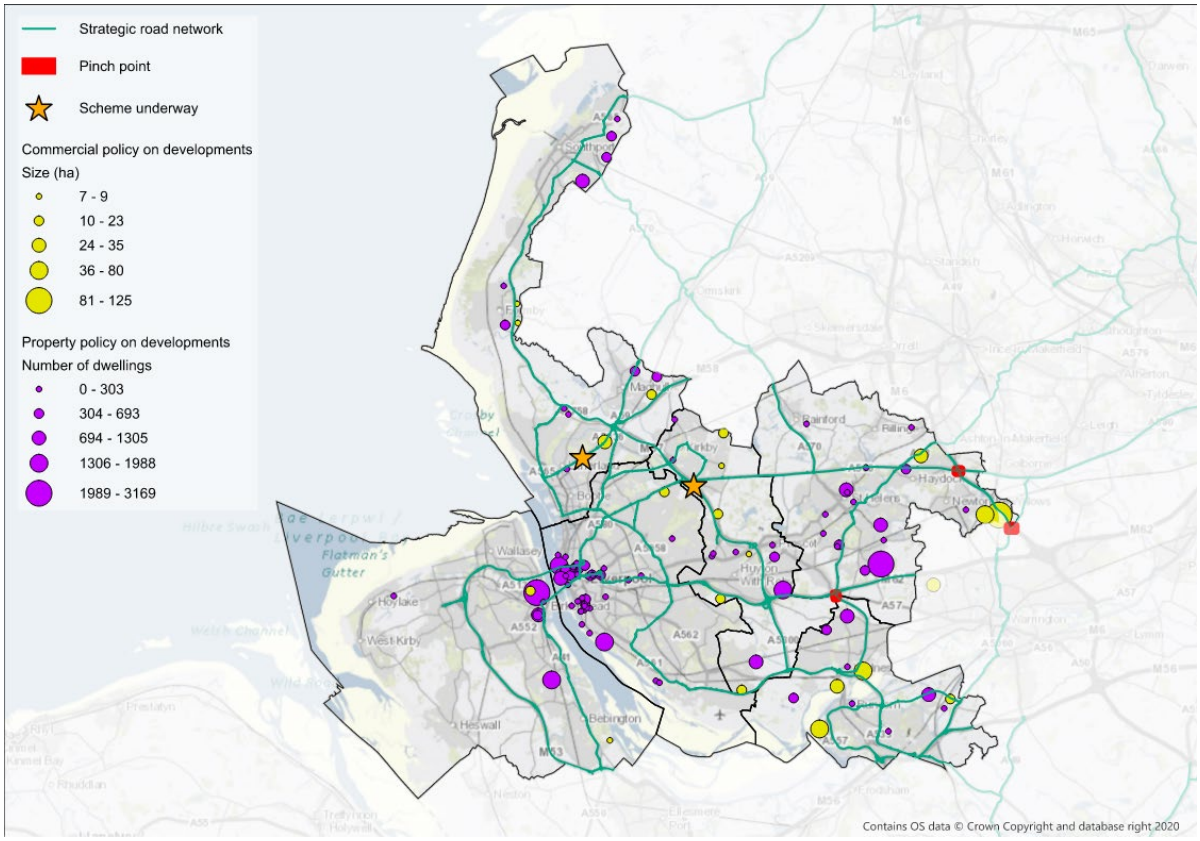

Figure 10.1: LCR's current strategic roads network

Following consultation with stakeholders, a number of short- and longer-term issues have been highlighted on the strategic roads network (SRN).

In the short term, a key issue on the SRN is congestion and capacity constraints on the A5036, the Port of Liverpool access road. These known issues are being addressed by the A5036 National Highways scheme discussed in section 10.5.

Other key pinch points are highlighted on the map above and occur largely where development sites nearby are expected to place new pressure on the network. These include Junctions 23 (Haydock Island) and 22 on the M6 and Junction 7 of the M62.

Furthermore, in order to support the policy aspiration of the LCR to encourage sustainable forms of transport, the highways network may be required to adapt in the future to enable greater use of public and active travel. For example, new bus infrastructure may be required to make public transport more competitive versus the private car. This will have an impact on the highways network.

10.4.2 Zero-emission vehicle infrastructure

As part of the LCR's response to the climate emergency, the region is aiming to achieve zero carbon mobility with an emphasis on active travel and zero-emission modes. Electric Vehicles (EVs) and alternative fuelled buses and HGVs, particularly those Hydrogen powered, will play a key in supporting decarbonising road based transport, alongside LCRCA stated strategy of supporting the mass modal shift to active and public transport modes.

Critical to achieving this shift away from carbon intensive fuels is providing a refuelling and recharging network that can support the demands of moving goods and people both regionally and nationally.

There is currently a network of electric vehicle charging points and compressed natural gas and other alternative fuel source refuelling stations in the region. Figure 10.3 below shows the public electric vehicle charge points in LCR. LCR are also growing a fleet of hydrogen buses and associated infrastructure which will enable these journeys to be decarbonised.

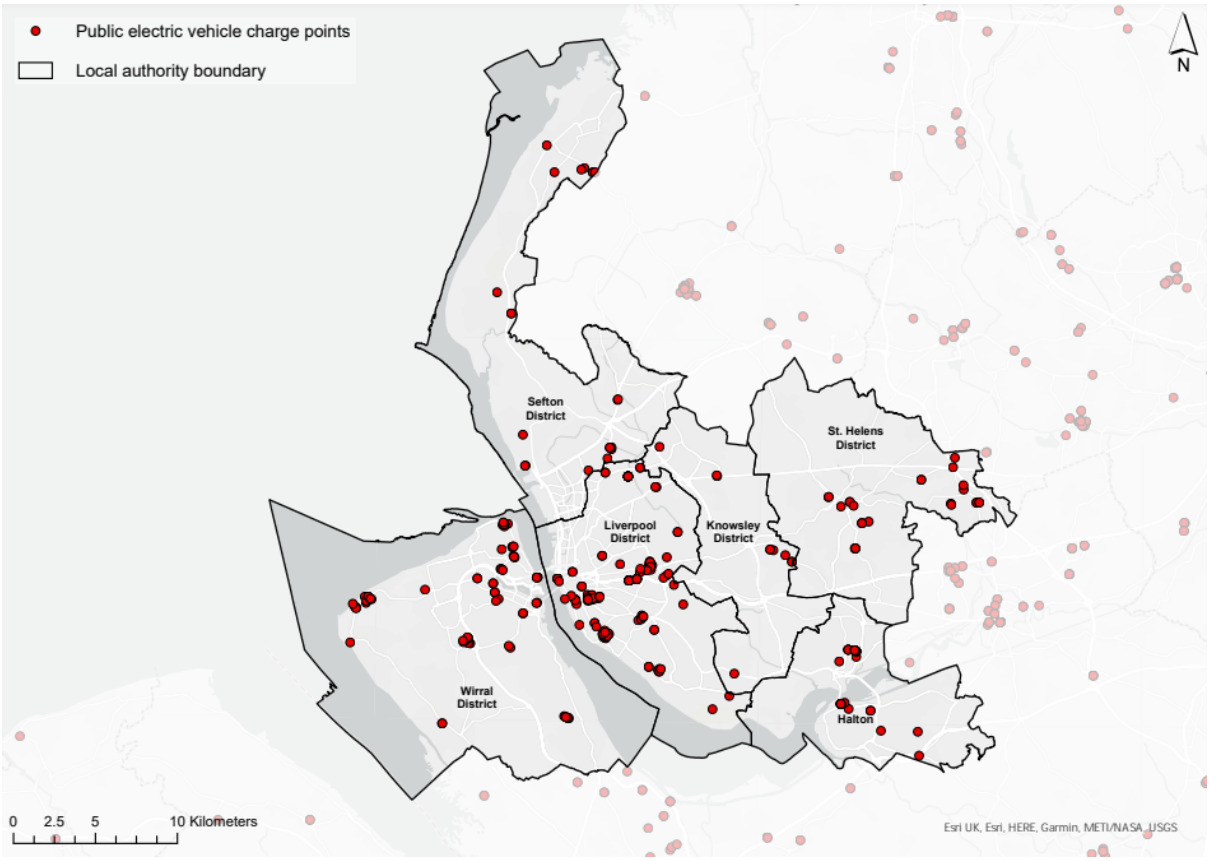

Figure 10.3 Public electric vehicle charge points

The electric vehicle charging network catering for private cars and light vehicles is growing, with LCRCA having received Local Electric Vehicle Infrastructure (LEVI) Tranche 1 Funding[17] to deliver ChargePoint infrastructure for residents without off-street parking.

Further investment in both electric charging and hydrogen fuelling infrastructure will be needed in order to fully meet the needs of both private and commercial car / van users, as well as enabling heavy duty freight to decarbonise

10.4.3 Buses

The LCR has a network of around 400 services provided by 17 operators. The majority of the services are run by Stagecoach and Arriva. Approximately 10% of bus services are contracted or financially supported by local authorities.

There is a core network of 19 routes which see over 5 services operate per hour, alongside 21 'Green' bus routes along quality bus corridors.[18] These services operate mostly on routes into Liverpool City Centre. In addition to this core network, over 200 services operate across the LCR, serving local communities as well as strategically important destinations such as hospitals, airports, and universities. The scale of the network is shown in Figure 10.4.

For the purposes of this SIP, only those buses which form the core and 'Green' networks and those which serve strategically important locations have been considered. Buses which serve local communities that happen to cross a boundary will not be considered.

[17] Local Electric Vehicle Infrastructure (LEVI) funding amounts and tranche allocations: capital - GOV.UK (www.gov.uk)

[18] *Bus Service Improvement Plan*. Liverpool City Region Combined Authority. 2019

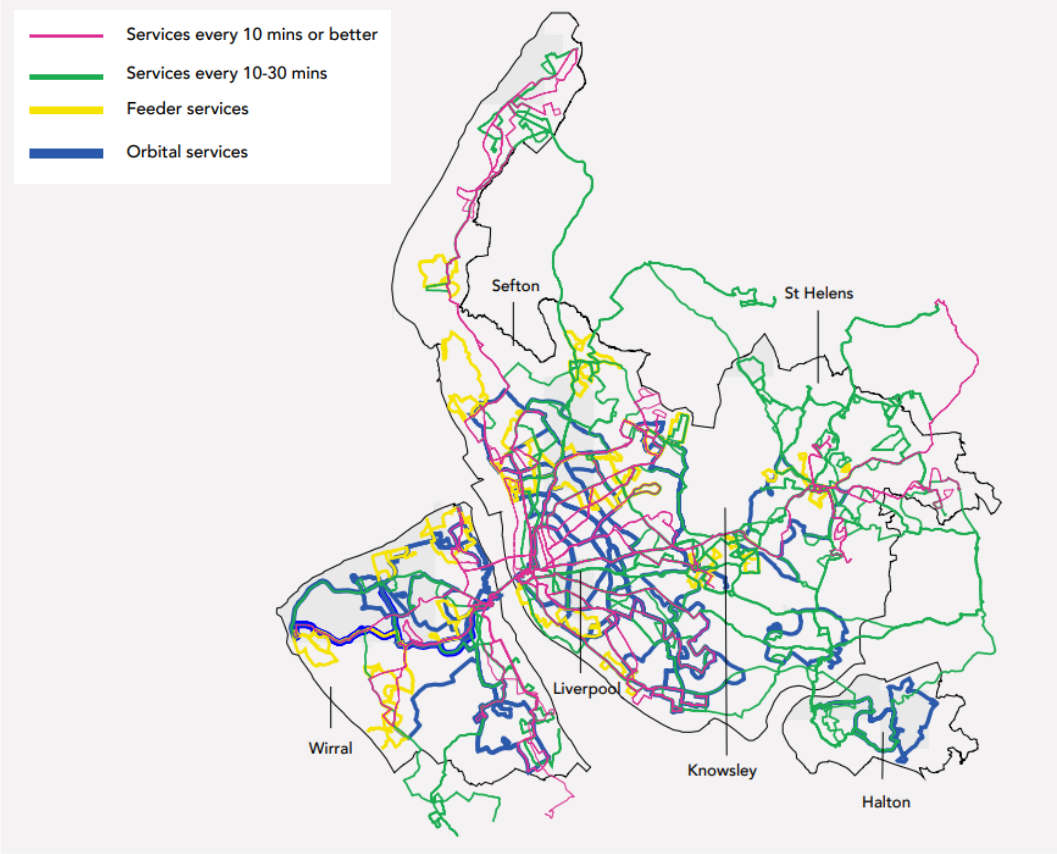

Figure 10.4: Bus services in Liverpool City Region

The LCR is generally well served by buses: 99% of communities are within 400m of a bus route and the combined authority reports positive customer satisfaction scores across a range of service aspects.[19] The bus network accounts for 80% of all public transport journeys in the region, and prior to the pandemic, patronage was beginning to increase after historic declines.[20]

However, reliability of services remains an issue: less than 84% of services meet on-time performance standards in 2019/20, compared to 97% of rail services.[21] This is largely due to buses sharing space with general traffic, leaving them vulnerable to delays.

Strengthening the role of bus is a priority for the city region. Buses are the most flexible, adaptable and quickest to deliver form of public transport relative to catering for the needs of

[19] *Bus Service Improvement Plan*. Liverpool City Region Combined Authority. 2019.

[20] *Combined Authority Transport Plan*. Liverpool City Region Combined Authority. 2019

[21] *Bus Service Improvement Plan*. Liverpool City Region Combined Authority. 2019.

new development and new travel demands. While the current scope of the network reaches many of the development corridors and areas of growth, interventions are needed to ensure that buses are a convenient, reliable, and attractive option. In addition to the Green Routes currently in development, the combined authority is also looking to deliver additional priority bus corridors. Intentions such as Bus Rapid Transit (BRT) in appropriate locations, such as Liverpool John Lennon Airport, will also be key parts of the solution to transport decarbonisation. These proposals, underpinned by significant bus priority infrastructure to make bus travel more attractive through greater reliability and quicker journey times are set out in LCRCA Bus Service Improvement Plan[22].

As part of the LCR's 2015 Devolution Agreement, the region also has the ability to seek franchising of bus services that operate within the region. The Transport Act (2000), as amended by the Bus Services Act, has given the Combined Authority powers to improve bus services. The options available include Franchising – the system used in London and other cities globally – or an Enhanced Partnership with existing operators. After assessing both options available to LCRCA as part of the Combined Authority Bus Franchising Assessment, LCRCA believe that, subject to the results of a public Consultation being run during Summer 2023[23], Franchising would be the best option to improve our bus services.

Bus Franchising is where a transport authority specifies what bus services are provided, determining the routes, timetables and fares. Bus services are then operated under contract by private companies that bid to run the services through a competitive tendering process. This is the model currently in operation in London, and set to be introduced in Greater Manchester from September 2023.

From the passenger perspective, franchising enables:

- Simple, unified and integrated ticketing and product set under one brand (which competition law prevents in a deregulated environment)
- Single identity for bus services and potentially other public transport modes, which is easy to understand for new users

[22] Bus Service Improvement Plan Updated November 2022, Liverpool City Region Combined Authority. 2022.

[23] LCR Bus Franchising documents | Liverpool City Region Combined Authority. 2023.

- Unified, easy to use network of integrated public transport services
- Consistent standards of service, including vehicle, driver and customer care standards
- One accountable body, integrated real time information and a single point of contact for customers.

From a transport authority perspective, franchising provides for:

- Greater levels of connectivity, where more effective cross-subsidy allows the development of a comprehensive network, and allows closer integration with other modes such as trams and heavy rail, enabling more people to better access employment, education, training, retail, leisure and other opportunities.
- A more attractive network is easier to use and to market to new customers and visitors, encouraging patronage growth which in turn can help drive healthy revenues.
- And in turn help reduce car dependency, emissions and highway congestion as more people make use of an integrated public transport network and active travel modes (cycling and walking)
- Enables existing resources and subsidies to be pooled efficiently, driving better value from the high levels of public support and reducing leakage into excess operator profits.

If the LCRA decided to pursue a franchising model post consultation, which ended in August 2023, there would be significant scope for the fares, routes, and services in the region to be changed to support patronage growth.

10.4.4 Coaches

Coach services operate from Liverpool One Bus Station to a range of national destinations. Some services also stop at destinations across the city region including Conway Park Bus Station and Aintree. Services are operated by National Express and Megabus. While important for national connectivity, coaches are not key to the LCR's strategic transport network and will not be considered further within this SIP.

10.4.5 Merseyrail

Merseyrail is the LCR's urban rail network, formed of both electrified services on a dedicated 'third rail' network and local services operated on track shared with other national rail services. The entire rail network in the LCR is considered to be strategic. This network is shown in Figure 10.5.

The dedicated 'third rail' section of the network stretches for 75 miles and covers 68 stations across two lines. The Wirral Line connects the central Liverpool stations of Lime Street (low-level), Moorfields, James Street and Central with destinations in the Wirral as well as Chester and Ellesmere Port. The Northern Line connects Moorfields and Central with Southport, Ormskirk, Kirkby and Hunts Cross.

The City Line services run out of Lime Street (high-level) and serve destinations within the city region including St Helens Junction and Runcorn. Many City Line services continue outside the city region providing connectivity to Chester, Wigan, Preston, Crewe, Blackpool North, and Warrington.

Across the Wirral and Northern Lines, a four train per hour service runs to each destination apart from Ellesmere Port. City Line services run less frequently, with between one and two trains per hour.

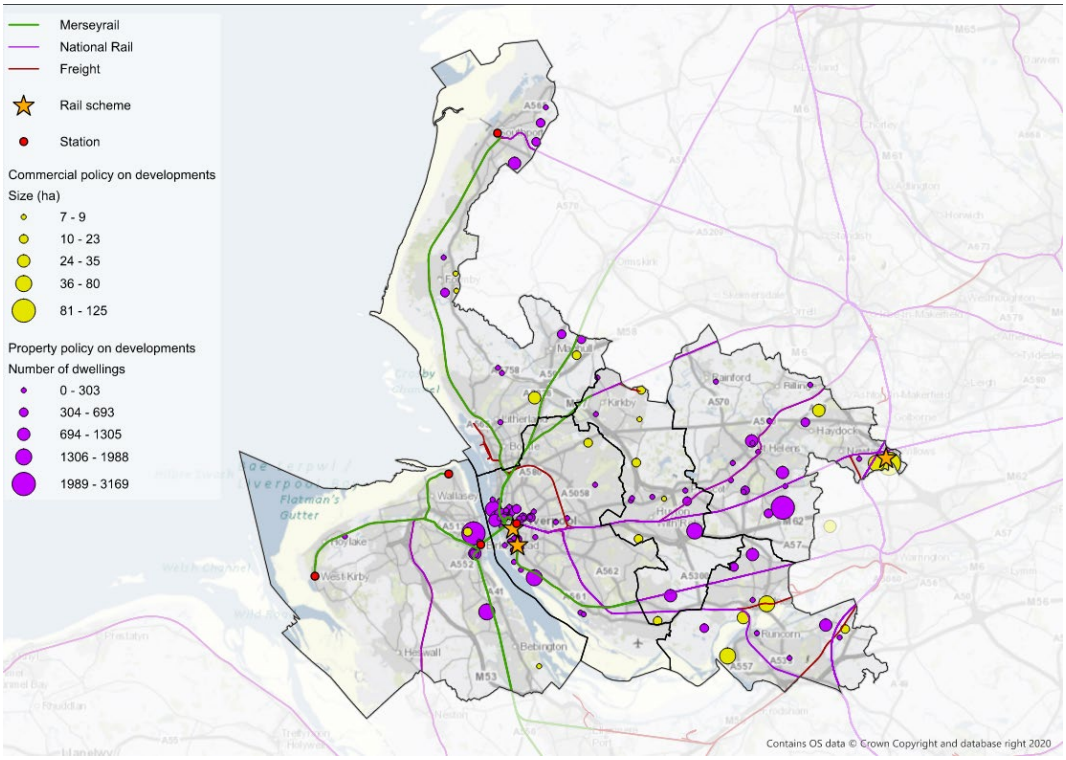

Figure 10.5: Rail network in Liverpool City Region

The Merseyrail network is a significant asset to the city region and plays an important role in enabling sustainable, low-emission journeys. While there are some capacity constraints on the network, the goal of the city region is still to encourage greater use of the network.

A key part of this is enabling good 'first and last mile' connectivity between Merseyrail stations and homes, shops, and businesses. While this is not covered within the SIP, it should be noted that good walking and cycling routes to Merseyrail stations is essential to enabling longer, sustainable journeys.

As demonstrated by Figure 10.5, many of the housing and employment growth sites are located in close proximity to the existing rail network. This means there is potential for some of the travel demand generated by these developments to be accommodated on the Merseyrail network.

The LCR's Long Term Rail Strategy (2018) forecast significant patronage growth on the Merseyrail network, with many lines exceeding seated capacity in the peak hours within 30 years. The impact of COVID-19 on these forecasts remains uncertain, however latest data from Merseytravel shows that patronage on the network in April 2022 was 90% of pre-

pandemic levels.[24] Given this level of recovery, it is likely that the capacity constraints identified by the Long-Term Rail Strategy will still be relevant.

The most significant constraints on the Merseyrail network are the capacity of trains and the pedestrian capacity at Liverpool Central. Train capacity is expected to be significantly increased by the ongoing roll out of new vehicles, while a scheme to resolve congestion at Liverpool Central is currently in development. Together, these two schemes should provide sufficient capacity on the network to meet the needs of the city region.

It should also be noted that there remain some minor capacity constraints on the network: the central section of the Northern Line between Sandhills and Central is constrained to 18-20 trains per hour and additional cross-river services on the Wirral Line cannot currently be accommodated.[25] Improvements in terminal capacity at the ends of each line may also be required to facilitate more services.

In 2016, Merseyrail ordered 53 new Class 777 trains from rolling stock manufacturer Stadler Rail, seven of which have been configured as battery electric multiple units (BEMUs) which allows for services to run on non-electrified lines, therefore expanding the future potential of the Merseyrail network. The planned route extension of the Northern Line through the unelectrified sections of the Kirkby - Wigan line to Headbolt Lane Station (set to open in 2023) is an example of the future flexibility in service the new BEMU trains offer.

The new trains will therefore not only increase both on board passenger capacity and user experience, but open new opportunities to increase connectivity across the city region and beyond and support patronage growth. The new trains started operations on select line during 2023.

10.4.6 Other passenger heavy rail services

In addition to those services branded as City Line services on entry to the LCR, there are several inter-urban services which operate from Liverpool Lime Street Station (high-level) to destinations such as Manchester, London and Scotland. Lime Street is therefore of strategic importance to the LCR as it is the main point of connection to the UK's wider rail network.

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[24] https://www.merseytravel.gov.uk/news/passengers-thanked-as-liverpool-city-region-public-transport-network-boasts-very-strong-recovery/

[25] *Long Term Rail Strategy*. Liverpool City Region Combined Authority. 2018.

However, these services themselves do not form part of the strategic transport network in the LCR.

10.4.7 Freight services

There are currently numerous freight services operating across the LCR's rail network. Demand for these services is generated predominantly by freight terminals at the Port of Liverpool, Garston, Ditton and Wavertree with services running along the Chat Moss Line to the West Coast Main Line and across the Pennines.

While almost all of the freight services on the LCR's rail network serve ultimate origins or destinations outside of the region, given the importance of freight to the region's economy, they have been considered within the strategic transport network.

Given the policy objectives of enabling mode shift for freight from road to rail, the expansion of activity at the Port of Liverpool and new activities associated with the Freeport sites across the region, there is likely to be demand for additional freight services on the LCR's rail network. This demand however maybe constrained due to network pinch points elsewhere on the national rail network at locations such as the Castlefield Corridor in Manchester or on critical sections of the West Coast and TransPennine routes where passenger and freight demands for track capacity clash.

Within the city region, a specific constraint on rail freight is the Bootle Branch line which is not electrified and faces speed challenges, though infrastructure works in the vicinity of the port have increased pathing capacity. If this is left unaddressed, the growth of freight activity in the city region may lead to additional journey by HGVs.

However, the characteristics of this freight — volumes, destinations and type of goods being transport — remain largely unknown.

10.4.8 Active travel

There is currently only a limited number of strategic cycling routes (those which cross more than one local authority boundary) in the LCR. Route 62 of the National Cycling Network connects the boroughs of Halton, Liverpool, and Sefton, while route 82 connects Liverpool and Sefton. Both of these routes are managed and maintained by Sustrans.

There is currently a significant lack of strategic cycling routes in the LCR. There are limited routes between St Helens and Liverpool, and no cross-river cycling routes to / from the Wirral and apart from journeys involving interchange via ferry, bus and Merseyrail. The lack of strategic cycling network, if left unaddressed, could limit the ability of the LCR to encourage modal shift to active modes.

Please note, through the LCRCA Liverpool City Local Cycling and Walking Infrastructure Plan (LCWIP), supported by both Active Travel England and central government City Region Sustainable Transport Settlement funding, plans are in place short term to address a number of the strategic active travel network gaps identified. Please see section 10.5 Planned strategic infrastructure in the LCR below for more information.

A pilot hire scheme of e-scooters is currently taking place in Liverpool. The trial scheme is delivered in partnership between LCRCA and Liverpool City Council, providing a fleet of carbon-neutral vehicles which available for public hire at key sites around Liverpool city centre. Subject to success of the trial and continued local support, alongside changes to national legislation, hired e-scooters have the potential to spread city region wide over the life of the SIP.

10.4.9 Cross-Mersey ferries

The Mersey Ferry, operated and owned by Merseytravel, provide a commuter service to Liverpool in addition to a range of pleasure and tourist trips. For the purpose of this SIP, only those commuter services have been considered to form part of the strategic transport network.

There are currently seven ferries a day from Woodside Pier in Birkenhead to Pier Head in Liverpool. Seacombe Ferry Terminal in Wirral is currently closed for major refurbishment to enable it to operate for another 25 years without major interventions, and as a result all services are using the Woodside Pier. The first service arrives in Liverpool at 07:30 and the last service arrives at 09:30. In the evening peak, the first service leaves Liverpool at 17:00 and the last service at 18:40. The journey takes approximately 10 minutes.

The Mersey Ferry is not considered to be a critical part of the strategic transport network. There may be scope to grow the commuter offering of the ferry, however this is not a priority for the SDS.

10.4.10 International ports

The Port of Liverpool is one of Britain's largest ports, providing passenger ferry services as well as container terminals with transatlantic services.

At the Port of Liverpool, passenger ferry services across the Irish Sea to Belfast, Dublin and the Isle of Man are provided by several companies, including the Isle of Man Steam Packet Company, P&O Ferries and Stena Line.

The Liverpool Cruise Terminal, opened in 2007, provides long-distance passenger cruises to Iceland, France, Spain and Norway.

For freight services, Port of Liverpool operates two container terminals, the Royal Seaforth Container Terminal (RSCT) and Liverpool2. The two main terminals are complemented by facilities at Greenock in Scotland, Dublin in Ireland and at inland ports along the Manchester Ship Canal.

The vast majority of goods are distributed by road upon arrival at the Port. With increasing economic activity, the limited road capacity and pressing concerns over air quality and carbon emissions mean that there is a clear need to secure modal shift from road distribution to rail and waterways.

10.4.11 Airports

Liverpool John Lennon Airport, which is located within the City of Liverpool, provides direct air connections across the United Kingdom and Europe. The airport handles over 5 million passengers annually and today offers services to over 70 destinations, including Berlin, Rome, Milan, Paris, Barcelona, and Zürich. While connectivity to the airport is important strategically, the airport’s services themselves are not considered as part of this SIP.

10.5 Planned strategic infrastructure in the LCR

The following section details the planned strategic infrastructure being delivered in the LCR within the SDS period.

- **LCRCA City Region Sustainable Transport Settlement (CRSTS) programme, 2022 – 2027**

In April 2022, LCRCA where successful in unlocking transformational funding for the delivery of sustainable transport infrastructure from the Department for Transport. General objectives of the CRSTS funding dictate schemes must drive growth through infrastructure investment, level up services towards the standards of the best, and promote modal shift from cars to public transport, walking and cycling. They must reduce carbon and particulate emissions from transport, aligned with the UK's legal commitments. They must further the objectives of the national bus and cycling strategies, including ambitious bus and cycling priority measures, with decisions on Key Route Networks led by MCAs and mayors. Schemes should promote the use of active travel and public transport; not lead to overall increases in car use or car modal share; tackle traffic congestion; and improve air quality.

In total, £710m (not including LCRCA local contributions) was unlocked following delivery of a prospectus26 to Government outlining LCRCAs aspiration for investment over the 5-year period covering 2022 – 2027. The CRSTS grant consolidates funding from previous allocations of the Highways Maintenance Block, Potholes Fund and Integrated Transport Block (including Transforming Cities funding).

The schemes which gained funding, as per the April 2022 DfT published delivery plans[27] include:

Name of Scheme	Description
Local Cycling and Walking Infrastructure Plan (LCWIP) Phase 3	Delivery of the third phase of high-quality walking and cycling network in line with the LCWIP, LTN 1/20 compliant active travel connectivity, Access for All and Green Bus Routes across the City Region.
Independently Powered Electric Multiple - Unit (IPEMU) – Network Expansion*	Expansion of the IPEMU project to fit Merseyrail trains with battery technology to enable services to run beyond the end of the existing network, enabling the new 777 Class Rolling stock to be deployed on a range of routes. *Scheme retained by DfT and subject to business case approval by HMG

[26] https://liverpoolcityregion-ca.gov.uk/wp-content/uploads/LCR%20Sustainable%20Transport%20Settlement%20Prospectus.pdf

[27] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1097607/CRSTS_Delivery_Plans_for_City_Regions_-_with_retained_schemes_description_additions.ods

Key Route Network (KRN) Levelling Up	Delivery of a programme of KRN upgrades to provide a high-quality highway network for travel by bus, walk and cycle and reduce negative noise and air quality issues for local communities.
Highways Maintenance	A series of maintenance packages will deliver key improvements to the city region's highway network and transport systems.
Non-Highways Maintenance	This is a supporting maintenance programme that will improve the MCAs ferry, bus and rail assets.
Transforming Cities Fund - Headbolt Lane Station	A new rail station providing an alternative to the car for people making longer journeys to and from Kirkby local centre, with supporting active travel links to and from the station.
Transforming Cities Fund – Active Travel	Delivery of high-quality walking and cycling network in line with our LCWIP, LTN 1/20 compliant active travel connectivity across the City Region.
Transforming Cities Fund – Hydrogen Buses	Provision of 20 hydrogen buses on the Liverpool – St Helens 10A corridor, which will provide a high-quality passenger journey with significantly reduced carbon emissions.
Liverpool Baltic Rail Station	Delivery of a new rail station in the Baltic Triangle area of Liverpool with a 15-minute peak time frequency which provides direct rail access to the city centre's growing creative and digital cluster. *Scheme retained by DfT and subject to business case approval by HMG
Birkenhead Central Gateway	LTN 1/20 compliant new and upgraded walking and cycling links. Supports sustainable access to key regeneration sites in central Birkenhead.
St George's Gateway	LTN 1/20 compliant new and upgraded walking and cycling links which will link the city centre, Lime Street station, Liverpool John Moores University and the Knowledge Quarter.
Cross River Connectivity	Reconfiguration of the toll plazas at the Kingsway and Queensway Tunnels and the re-routing of strategic traffic to the Kingsway Tunnel, improving bus journey time and reliability via the Queensway tunnel. This will improve cross-river bus journey times.
Green Bus Routes (79)	Delivery of a new Green Bus Corridor between Liverpool and Knowsley offering faster and more reliable journey times, enhanced journey quality and ticketing.
Green Bus Routes (20/21)	Delivery of a new Green Bus Corridor in Liverpool and Knowsley offering faster and more reliable journey times, enhanced journey quality and ticketing.

Local Cycling and Walking Infrastructure Plan (LCWIP) Phase 2 (Runcorn - Daresbury)	LTN 1/20 compliant active travel route connecting Runcorn with Sci-Tech Daresbury.
Runcorn Station Quarter Phase 2	A rebuild of Runcorn Station building with enhanced active travel links connecting to Runcorn.
Runcorn Busway Active Travel Corridor	Repurposing a bus-only corridor to include active travel, linking Runcorn to major housing developments and employment zones.
East Runcorn Connectivity	An integrated cycle network of LTN 1/20 compliant routes connecting communities, businesses and major multimodal interchanges.
Green Bus Routes (86)	A Green Bus Corridor in Liverpool with faster and more reliable journey times, enhanced journey quality and ticketing.
St Helens Town Centre Multimodal Interchange	Multimodal intervention in St Helens town centre. Enhancements to the bus station area. Active travel infrastructure around the town.
Active Travel Improvements M57 J4	Delivery of high-quality walking and cycling network in line with our LCWIP, LTN 1/20 compliant. Connecting Knowsley and Liverpool across M57 J4.
St Helens North Housing Access	Improved LTN 1/20 compliant active travel connectivity between St Helens town centre and Cowley Hill development site.
Huyton Active Travel Corridor	Improved LTN 1/20 compliant active travel connectivity between Huyton and local employment sites.
Green Bus Routes (10a)	Delivery of a new Green Bus Corridor between Liverpool and St Helens offering faster and more reliable journey times, enhanced journey quality and ticketing.
Southport Eastern Access	Junction and roundabout improvements supporting active travel with segregated cycle facilities and additional crossings.
Stanley Dock Rail Access (Sandhills)	Expansion of station capacity at Sandhills to support the development of Liverpool Waters.
Maritime Corridor	Enhanced multimodal connectivity along the Maritime Corridor in Sefton.
Green Bus Routes (53)	Delivery of a new Green Bus Corridor between Liverpool and Sefton providing faster and more reliable journey times, enhanced journey quality and ticketing.

- **Local Cycling and Walking Infrastructure Plan (LCWIP) Merseytravel in partnership with LAs, delivery up to 2029**

The LCRCA Local Journeys Strategy[28] (2017) set out LCRCAs vision for a high-quality, City Region wide, cycling, walking and wheeling network, delivered through a programme of integrated and prioritised schemes which combined are essential to support modal shift towards more sustainable modes of transport, helping to reduce the region's carbon emissions and bring about health, nature and economic benefits.

The Local Cycling and Walking Infrastructure Plan (LCWIP)[29] is the strategic planning approach that underpins the development and delivering a cohesive network of active travel routes across the region. The LCWIP identifies 31 origin – destination links, from which the roads and routes for cycleways have been defined, with the eventual LCR LCWIP Network encompassing up to 600km of cycling and walking routes.

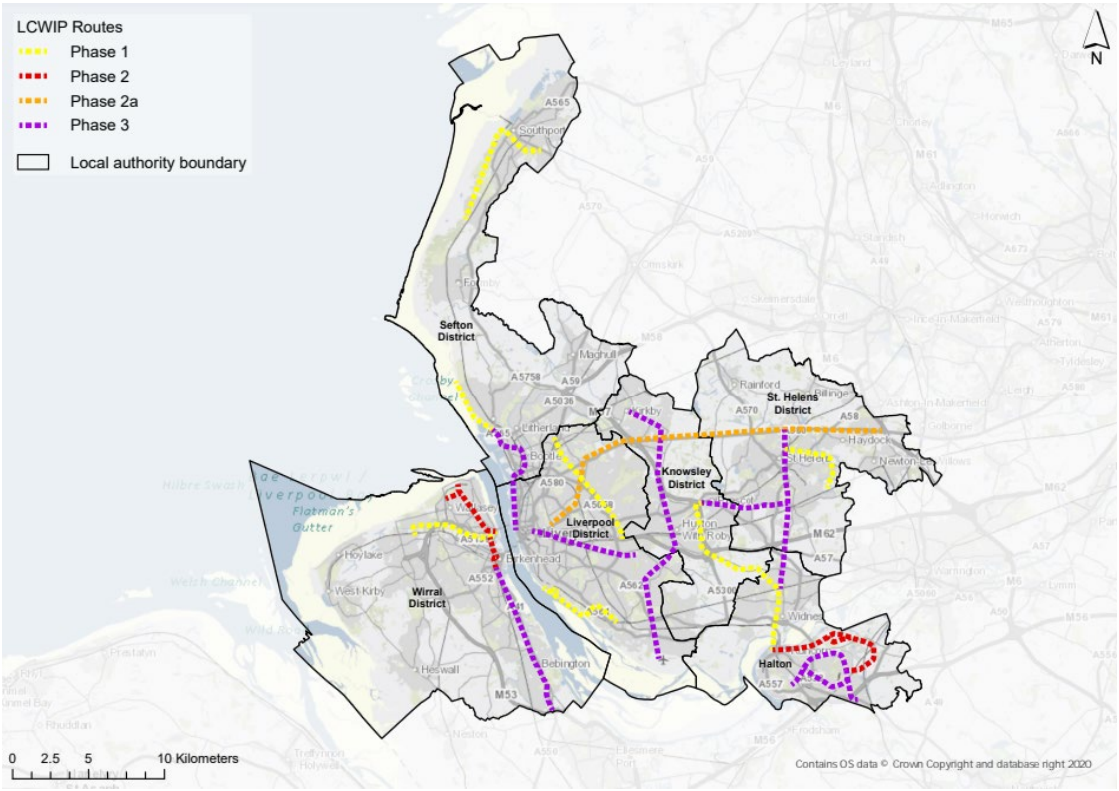

Figure 10.6: Proposed LCWIP routes across the LCR

Some of the roads identified as LCWIP links already have cycling and walking infrastructure that is fit for purpose, whilst others will have existing infrastructure in need of an upgrade. Other locations will require entirely new infrastructure for the route. With the inclusion of

[28] LCRCA_LCL_JRNYS_STRATEGY.pdf (liverpoolcityregion-ca.gov.uk)

[29] LCR-LCWIP-Final-1.pdf (liverpoolcityregion-ca.gov.uk)

additional links to nearby amenities including rail stations and ferry terminals, the eventual LCWIP Network is expected to encompass up to 600km of cycling and walking routes.

All new LCWIP routes will be compliant with the latest Government guidance (LTN 1/20) and new infrastructure will provide high-quality routes between employment and housing sites, opening up new opportunities.

Significant funding to support delivery of the LCR LCWIP network has been secured, including via the CRSTS schemes listed above, as well as through the Governments Active Travel Fund (Tranche 1,2 &3). However, further funding will be required to deliver the network in full.

- **Expansion of Liverpool Central Station, Merseytravel, 2030**

Liverpool Central Station is close to capacity on the Northern Line platform and concourse area. Expansion is proposed to accommodate more passengers and encourage mode shift from private cars to reduce emission. This project is currently in development and is progressing through Network Rail project cycles (GRIP4).

- **Northern Powerhouse Rail (NPR), National Government**

The Northern Powerhouse Rail (NPR) vision was established in 2015, to radically improve connectivity between the major cities of Liverpool, Manchester, Leeds, Sheffield, Hull and Newcastle, and with Manchester Airport. The core network of NPR will include a new high speed line between Liverpool and Warrington (Bank Quay). Significant upgrades (and, where appropriate, electrification) will also be included for existing railways to Sheffield, Newcastle and Hull.

- **A5036 Port of Liverpool Access, National Highways, by RIS3.**

The A5036 between the Switch Island Interchange and Princess Way is a key commuter route, as well as the main access connecting the Port of Liverpool with the motorway network. The road currently suffers from severe congestion. The Port of Liverpool is set to become even busier with the on-going development of Liverpool2, which will add to the pressure on the A5036. National Highways are proposing a bypass scheme which will take traffic away from communities by Church Road and Dunnings Bridge Road, reducing congestion at junctions and along local roads to alleviate air pollution.

- **Parkside Strategic Rail Freight Interchange, iSec (private developer), in progress.**

Following the Parkside Logistics Rail Freight Interchange Study (2016), sufficient demand was identified from the industry for a strategic rail freight interchange in the northwest of England. This proposal, which forms part of the St Helens Local Plan, would significantly increase the ability of businesses in the LCR to move goods by rail.

A Development Consent Order is planned for submission in 2024 to progress the scheme.

- **South Liverpool Global Gateway Eastern Access Corridor**

The Eastern Access Corridor (EAC) is a potential multi-modal transport route that would connect the wider south estuary area in the vicinity of Liverpool John Lennon Airport to the strategic highway, public transport, and sustainable transport networks. The proposed scheme can also relieve other key arterial routes such as A561 Speke Boulevard and improve journey time reliability, resilience, and air quality in the existing corridor. Whilst the scheme is referenced in the Halton and Liverpool City Council development plans, currently there is no status to the scheme in terms of development or delivery funding.

10.6 Recommendation to align with SDS growth and identification of potential infrastructure gaps

It is recommended to include a strategic infrastructure policy within the SDS to ensure provision of key strategic infrastructure necessary to meet needs identified within the SIP. Additionally, it is recommended to include an infrastructure provision policy within the SDS to ensure development and proposals coming forward support and positively contribute to the SDS objectives by ensuring places are sustainable and served by appropriate levels of infrastructure.

Following the review of the existing provision, proposed schemes, and engagement with stakeholders, gaps have been identified in transport infrastructure required to meet SDS growth and objectives.

These gaps identified have been grouped into policy gaps and programme gaps.

Programme gaps: these represent the known pinch-points, capacity constraints or connectivity gaps within the existing transport network that are likely to limit the ability of the region to meet SDS growth, and where an intervention does not currently exist.

Policy gaps: these represent the strategic level gaps where an intervention is required to respond to a specific theme, for example transport decarbonisation or freight growth. The geographic scope, mode and timescales of these interventions may be undefined.

10.6.1 Programme gaps

Highways capacity

A number of strategic highway pressure points have been identified as part of the SIP process following review of Local Plan IDPs. Given the development context, the following locations are expected to come under significant pressure and may require an intervention within the lifetime of the SIP. These are:

- Junction 23 of the M6 (with the East Lancashire Road A580).
- Junction 22 of the M6 (with the A572). This will be impacted by the Parkside Development and proposed development in nearby Wigan.
- Junction 7 of the M62 (with the A57, A557 and A570). This will be impacted by the Halsnead Garden Village proposals.

In addition, the M57 / Knowsley Expressway corridor is also likely to come under pressure from the significant housing and commercial development along this route. This includes residential developments in Halewood and Whiston, and commercial developments at 3MG in Widnes.

Currently there is no funding route or commitment to progress the above National Highways-led schemes, with LCR awaiting confirmation of the RIS3 programme by Central Government.

Recommendation: The LCRCA should look to support and work with National Highways to develop interventions that will reduce demand on the highway network in the above locations, particularly those that encourage transport by active and sustainable modes. Given the challenging funding and delivery landscape for National Highways schemes, it is

recommended that only essential highways schemes are pursued for development and that any scheme has a clear plan to deliver mode shift and transport decarbonisation.

Rail capacity

While the rail network within the LCR has been identified as largely fit for purpose, capacity issues at the Castlefield corridor in Greater Manchester and on the existing Transpennine route via Huddersfield have a significant impact on the rail network in the LCR.

These constraints limit the ability of both freight operators to run more services via rail from the Port of Liverpool to destinations in Yorkshire and the North East of England and limits the potential for additional passenger services into and out of the LCR. The capacity constraint also presents significant punctuality and reliability challenges, which limit passenger trust in utilising rail services.

If left unaddressed, this may result in additional road journeys and limit the sustainable economic development of the city region.

Recommendation: The LCRCA should seek to use its influence to ensure issues on the rail network outside of the city region are resolved sufficiently to enable greater use of rail for both freight and passenger services in the LCR.

Regarding intra-city region passenger rail trips however, there is significant scope to increase the modal share of rail. Resolving the capacity issues at Liverpool Central station and the arrival of new rolling stock will enable more people to travel by rail. However, to encourage people to use the network, access to stations via high-quality sustainable modes is essential.

Recommendation: The LCRCA should focus on first and last mile connectivity between Merseyrail stations and residential and employment centres. This will enable more people to travel via the strategic rail network.

Road haulage infrastructure

Provision of facilities to support the road haulage industry, such as driver accommodation and layover facilities as is currently provided at Switch Island, is severely lacking within the LCR. This can have a negative impact on those working in the haulage industry, particularly lorry drivers, as well as having a negative impact on local communities.

Recommendation: The LCRCA should work with providers to ensure that high-quality infrastructure is available to support the haulage industry.

10.6.2 Strategic gaps

Growth in freight associated with the Port and the Freeport

Currently, the quantum of additional freight journeys likely to be generated by the Freeport and the ultimate destination for that freight is largely unknown. Through the stakeholder engagement, strategic freight movements by road and rail between the port and intermediate locations within the city region have been identified, alongside onward flows outside of the region. This is depicted in Figure 10.6 below.

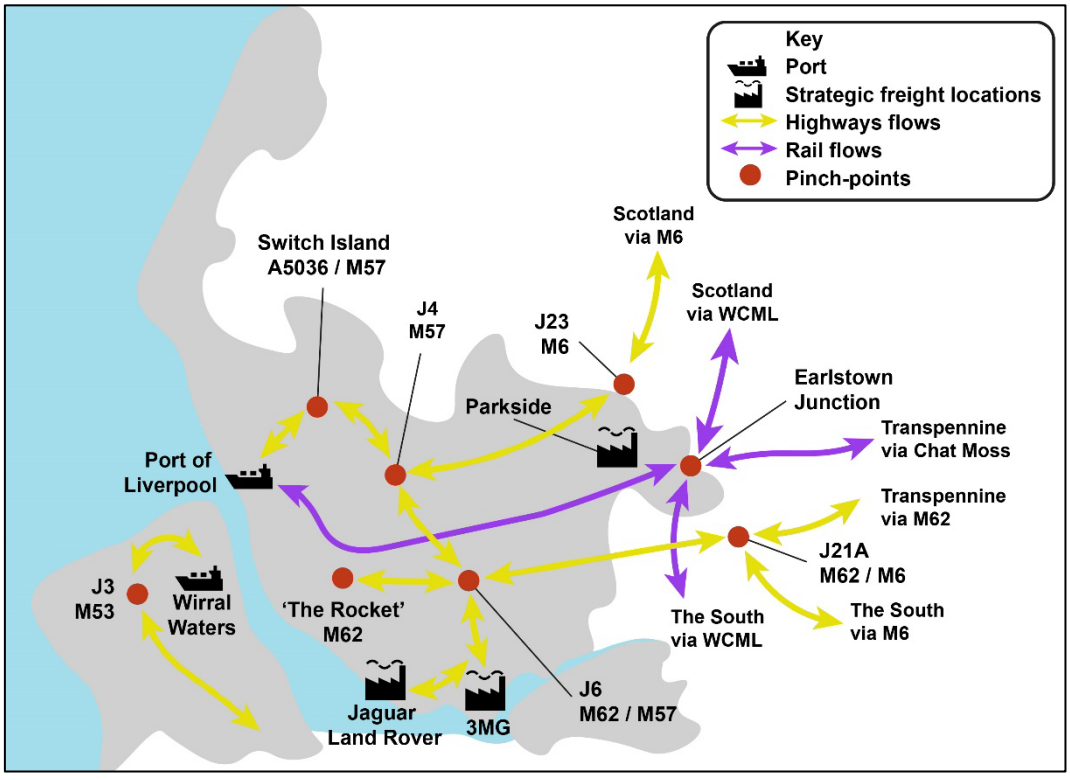

Figure 10.6 : Strategic freight flows in the LCR

Without interventions, additional demand for freight will be accommodated onto the existing road network. This will lead to worsening congestion and poor environmental outcomes. The figure above provides an indication of these key flows.

Recommendation: The LCRCA should commission a freight study to better understand the requirements of the sector in the region, with a focus on how growth can be accommodated without leading to negative social and environmental outcomes.

Enabling hydrogen transport

Hydrogen fuelled vehicles will be an important part of the future transport network in LCR, most notably for bus and HGVs. However, the current infrastructure for hydrogen vehicles is limited and a significant uplift in capacity is needed. This intervention is key to enable the complete decarbonisation of the LCR's transport network.

Recommendation: The LCRCA should work with partners to deliver a network of hydrogen refuelling stations that can be used by both bus operators and HGVs.

10.7 Review and alignment of infrastructure against SDS Strategic Objectives

This section assesses how each infrastructure schemes align with the SDS objectives. Table 10.1 shows the assessment table which demonstrates the alignment between the planned strategic infrastructure and the goals of LCR's Spatial Development Strategy. There is no weak alignment identified.

The following Table 10.2 contains the assessment key.

Table 10.1: SDS objectives alignment

Scheme	SDS objective 1: Climate Change and Environment	SDS objective 2: Health and Wellbeing	SDS objective 3: Prosperous and Inclusive Economy	SDS objective 4: Placemaking, Communities and Housing	SDS objective 5: Social Value	Commentary (incl. suggested enhancement to meet objective(s))
Northern Powerhouse Rail (NPR)	++	+	++	+	+	The Northern Powerhouse Rail (NPR) vision will improve connectivity between the major cities of Liverpool, Manchester, Leeds, Sheffield, Hull and Newcastle, and with Manchester Airport with new high-speed line, electrification, etc. It is essential that NPR acts as a catalyst to support the LCRCA economic development, with any new station or service patterns supporting local objectives for economic regeneration and transport modal shift / decarbonisation.
Liverpool Baltic Rail Station (CRSTS Scheme)	++	+	++	+	+	Delivery of a new rail station in the Baltic Triangle area of Liverpool with a 15-minute peak time frequency on the Northern Line which provides direct rail access to the city centre's growing creative and digital cluster.

Scheme	SDS objective 1: Climate Change and Environment	SDS objective 2: Health and Wellbeing	SDS objective 3: Prosperous and Inclusive Economy	SDS objective 4: Placemaking, Communities and Housing	SDS objective 5: Social Value	Commentary (incl. suggested enhancement to meet objective(s))
						Baltic station will support regeneration and economic growth in the regional core of the LCR and promotes mode shift to rail. Scheduled for delivery during 2027 using CRSTS funding.
Maritime Corridor, Merseytravel (CRSTS Scheme)	+	+	++	+	o	Enhanced multimodal connectivity along the Maritime Corridor in Sefton. The Maritime Corridor provides a major route connecting the Port of Liverpool and other major employment sites promoting economic growth and its active travel measures would also encourage modal shift. Scheduled for delivery during 2024 using the CRSTS funding.
New battery trains for Merseyrail	++	+	++	+	+	Expansion of the IPEMU project to fit Merseyrail trains with battery technology to enable services to run beyond the end of the existing network, enabling the new 777 Class Rolling stock to be deployed on a range of routes.

Scheme	SDS objective 1: Climate Change and Environment	SDS objective 2: Health and Wellbeing	SDS objective 3: Prosperous and Inclusive Economy	SDS objective 4: Placemaking, Communities and Housing	SDS objective 5: Social Value	Commentary (incl. suggested enhancement to meet objective(s))
(IPEMU Extension) **(CRSTS Scheme)**						Investment will enable the Merseyrail network to expand and accommodate more low carbon, sustainable journeys. Scheduled for delivery during 2024 to Headbolt Lane with further route options being investigated utilising CRSTS funding.
Improvements and Enhancements to the KRN and MRN **(CRSTS Scheme)**	o	O	+	+	o	Delivery of a programme of KRN upgrades to provide a high-quality highway network for travel by bus, walk and cycle and reduce negative noise and air quality issues for local communities. The proposed highway improvement schemes will improve journey times for all users, and may potentially encourage the usage of private vehicles if designs do not reallocate space to public transport and active modes. Supported by CRSTS funding through to 2026.

Scheme	SDS objective 1: Climate Change and Environment	SDS objective 2: Health and Wellbeing	SDS objective 3: Prosperous and Inclusive Economy	SDS objective 4: Placemaking, Communities and Housing	SDS objective 5: Social Value	Commentary (incl. suggested enhancement to meet objective(s))
Non-Highways Maintenance (bus, ferry, and rail assets) **(CRSTS Schemes)**	++	+	+	+	+	Supporting maintenance programme that will improve the MCAs ferry, bus and rail assets. Interventions to support bus, rail and ferry use will help to make more sustainable modes of transport more attractive and will improve access to important employment, education, and healthcare opportunities.
Cross River Connectivity, Merseytravel **(CRSTS Scheme)**	+	+	++	o	o	Re-configuration of the toll plazas at the Kingsway and Queensway Tunnels and the re-routing of strategic traffic to the Kingsway Tunnel, improving bus journey time and reliability via the Queensway tunnel. This will improve cross-river bus journey times. The proposed scheme enables better connections between economic and employment centres, including via public transport, and will improve air quality. However, the

Scheme	SDS objective 1: Climate Change and Environment	SDS objective 2: Health and Wellbeing	SDS objective 3: Prosperous and Inclusive Economy	SDS objective 4: Placemaking, Communities and Housing	SDS objective 5: Social Value	Commentary (incl. suggested enhancement to meet objective(s))
						improvement of journey times and reduced congestion may encourage greater use of private vehicles. Supported by CRSTS funding for delivery in 2025.
LCWIP Phases 1, 2 and 3 **(CRSTS and Active Travel Fund Schemes) Infrastructure**	++	++	+	+	+	Multiple schemes delivering high-quality walking and cycling network in line with the LCWIP, LTN 1/20 compliant active travel connectivity, Access for All and Green Bus Routes across the City Region. High quality cycling routes are proposed to connect between employment and housing site, opening up new opportunities. The schemes will support modal shift towards cycling, helping to reduce the region's carbon emissions and bring about health benefits.
Green Bus Corridors	++	+	++	o	+	The Green Bus Corridor schemes will significantly enhance the attractiveness of bus travel and encourage mode shifts from car, reducing emissions and improving air quality along routes that serve areas of high deprivation in Liverpool, Knowsley

Scheme	SDS objective 1: Climate Change and Environment	SDS objective 2: Health and Wellbeing	SDS objective 3: Prosperous and Inclusive Economy	SDS objective 4: Placemaking, Communities and Housing	SDS objective 5: Social Value	Commentary (incl. suggested enhancement to meet objective(s))
(CRSTS Schemes)						and St Helens, and the supporting greater access to employment. CRSTS funding acquired for delivery of schemes through to 2027, as follows: • 10a: 2025 • 79: 2027 • 20/21: 2027 • 86: 2026 • 53: 2026
M57 J4Active Travel Improvements	++	++	++	+	+	The improvements to highways and active travel provision will improve connectivity to major housing and employment sites and provide enhanced safety for those travelling by active modes.

Scheme	SDS objective 1: Climate Change and Environment	SDS objective 2: Health and Wellbeing	SDS objective 3: Prosperous and Inclusive Economy	SDS objective 4: Placemaking, Communities and Housing	SDS objective 5: Social Value	Commentary (incl. suggested enhancement to meet objective(s))
(CRSTS Scheme)						
Hydrogen Buses (CRSTS Schemes)	++	++	++	+	+	Please see links above to the Green Bus Route Improvements. Shifting fuel from diesel to hydrogen on these routes will significantly reduce carbon emissions and improve air quality. Investment in the new technology will also support economic growth through development of specialist skills and jobs.
Expansion of Liverpool Central Station	++	+	++	++	+	Expansion and upgrade is proposed to accommodate more passengers and increase the passenger experience in order to encourage mode shift from private cars to rail, reducing transport emission. There is no committed funding allocation for this project, which presents potential risk.

Scheme	SDS objective 1: Climate Change and Environment	SDS objective 2: Health and Wellbeing	SDS objective 3: Prosperous and Inclusive Economy	SDS objective 4: Placemaking, Communities and Housing	SDS objective 5: Social Value	Commentary (incl. suggested enhancement to meet objective(s))
Stanley Dock Rail Access (Expansion of Sandhills Station) **(CRSTS Scheme)**	++	+	++	++	+	Expansion of station capacity at Sandhills to support the development of Liverpool Waters and the new Everton FC stadium. The investment will support unlocking regeneration and sustainable journeys to the new development.
South Liverpool Global Gateway Eastern Access Corridor	o	+	++	o	o	The Eastern Access Corridor (EAC) is a new multi-modal transport route that will better connect the wider south estuary area in the vicinity of Liverpool John Lennon Airport (LJLA) to the strategic highway, public transport and sustainable transport networks. EAC will support the growth of the South Liverpool economy, including the delivery of the surrounding development opportunities. EAC will support economic growth in the region, however, it may result in greater use of private cars if

Scheme	SDS objective 1: Climate Change and Environment	SDS objective 2: Health and Wellbeing	SDS objective 3: Prosperous and Inclusive Economy	SDS objective 4: Placemaking, Communities and Housing	SDS objective 5: Social Value	Commentary (incl. suggested enhancement to meet objective(s))
						interventions are not delivered to support uptake and priority of sustainable modes.
A5036 Port of Liverpool Access (National Highways Scheme)	o	+	++	o	o	The National Highways proposed bypass scheme will take traffic away from communities by Church Road and Dunnings Bridge Road, reducing congestion at junctions and along local roads to alleviate air pollution. However, the route may result in greater use of private cars if interventions are not delivered to support sustainable modes. The scheme is subject to National Highways seeking DCO consenting.
Parkside Strategic Rail Freight Interchange	++	+	+	+	o	The strategic rail freight interchange, while still in development with no DCO planning application yet proposed, has the potential to enable mode shift of freight from road to rail, helping to mitigate the negative impacts on people, communities, and the environment of high volumes of HGVs on the region's roads.

Table 10.2: Assessment key

++	Scheme has strong alignment with SDS objective
+	Scheme has moderate alignment with SDS objective
o	Neutral; not applicable
-	Scheme has weak alignment with SDS objective
--	Scheme has very weak alignment with SDS objective

10.8 Summary and recommended next steps

This chapter has reviewed the existing transport provision in the Liverpool City Region, established its fit for purpose and detailed the interventions into the strategic transport network that will be delivered within the timeframes of this SIP.

This has led to a number of focused strategic gaps being identified where the levels of transport infrastructure proposed are not sufficient to meet the needs of the city region and to achieve the SDS's Strategic Objectives.

In response to these gaps, the following recommendations to the city region have been made:

- The LCR should look to support interventions that will reduce demand on the highway network in these locations, particularly those that encourage transport by active and sustainable modes. Given the challenging funding and delivery landscape for highways schemes, it is recommended that only essential highways schemes are pursued for development and that any scheme has a clear plan to deliver mode shift and transport decarbonisation.
- The LCR should seek to use its influence to ensure issues on the rail network outside of the city region are resolved sufficiently to enable greater use of rail for both freight and passenger services.
- The LCR should focus on first and last mile connectivity between Merseyrail stations and residential and employment centres. This will enable more people to travel via the strategic rail network.
- The LCR should work with providers to ensure that high-quality infrastructure is available to support the haulage industry.
- The LCR should work with partners to deliver a network of hydrogen refuelling station that can be used by both bus operators and HGVs.
- The LCR should commission a freight study to better understand the requirements of the sector in the region, with a focus on how growth can be accommodated without leading to negative social and environmental outcomes.

- The LCR should consider the key role of development plans and reviewing planning proposals in tackling some of the constraints identified above. This would ensure that new development sites are designed around the needs of sustainable travel, and that developer-led enhancements and contributions to bus and active travel connections in particular are prioritised and impacts mitigated.

Table 10.3: Summary of infrastructure

Scheme	Location	Potential lead delivery agency	Potential delivery mechanism	Total Cost	Delivery phasing	Gaps in funding
Northern Powerhouse Rail (NPR)	Regional	DfT / Great British Railways / HS2 Ltd	To integrate with HS2	£17.2b	2030s to 2040s	To be established
Liverpool Baltic Rail Station	Liverpool City Centre	Merseytravel	CRSTS Intervention	£66m	Construction scheduled from 2024 – delivery by 2027	To be established
Stanley Dock Rail Access (Expansion of Sandhills Station)	Liverpool City Centre	Merseytravel	CRSTS Intervention	£8m	2024	To be established
Maritime Corridor	Sefton and Liverpool	Merseytravel	CRSTS Intervention	£13m	2024	To be established
New batter trains for Merseyrail	Regional	Merseytravel	CRSTS Intervention	£101m	2025 - 2027	To be established

Improvements and enhancements to the KRN and MRN (including KRN Levelling Up through CRSTS)	Regional	Local Transport Authorities and Merseytravel	CRSTS and LTA led interventions	£271m (CRSTS only)	Ongoing up to 2027	To be established
Non-Highways Maintenance (ferry, bus and rail assets)	Regional	Local Transport Authorities and Merseytravel	CRSTS and other LTA led interventions	£11.3	2027	To be established
Cross River Connectivity	Wirral and Liverpool	Merseytravel	CRSTS Intervention	£22m	2024 - 2025	To be established
LCWIP Phases 1, 2 and 3 + wider CRSTS linked Active Travel Infrastructure	Regional	Merseytravel	Phased into three stages	£16m for Phase 1, £38m for LCWIP Phases 2 & 3	2024 (Phases 2 & 3) Wider CRSTS schemes through to 2027	To be established
Green Bus Corridors	Regional	Merseytravel	CRSTS Intervention: initially 3 routes with 7 more in development.	£64m	2025 - 2027	To be established

M57 J4 Improvements	Knowsley	Knowsley District Council	CRSTS Intervention	£10m	2024	To be established
Hydrogen Buses	Regional	Merseytravel	Part of Bus Reform workstream.	£12.5m	2023 - 2027	To be established
Expansion of Liverpool Central Station	Liverpool City Centre	Merseytravel	Currently at GRIP Stage 4	To be established	2030	To be established
South Liverpool Global Gateway Eastern Access Corridor	Liverpool	Merseytravel	Paused	To be established	2022	To be established
A5036 Port of Liverpool	Liverpool	National Highways	Nationally Significant Infrastructure Project	To be established	Within Road Investment Strategy period 3 (RIS3), 2025 - 2027	To be established
Parkside Strategic Rail Freight Interchange	St Helens	iSec (private developer)	A Development Consent Order is planned for submission in 2024.	To be established	To be established	To be established

11. Education

11.1 Introduction

This chapter covers strategic education in the LCR. A baseline review of education infrastructure has been carried out to determine current provision and identify opportunities for enhancement, aligned with the SDS' Strategic Objectives.

This SIP covers the following types of education provision:

- Higher Education

Higher education is maintained and delivered primarily through three universities within the LCR and one on the edge of the LCR.

The Strategic Infrastructure Plan does not include:

- Early years and childcare
- Primary Education
- Secondary Education
- Adult education
- Skills and training
- Special Educational Needs and Disability (SEND) education
- Temporary bulge class projects

Early years and childcare, primary and secondary education, adult education and SEND education have not been included in the SIP because the level of current capacity in these types of provision is unlikely to be a major determining factor in deciding where to locate strategic growth. However, it is important that new growth is served by these types of infrastructure, and so will be considered as part of each local authority's IDP.

In particular, as such provision is often included with mainstream forms of education, consideration will need to be given to the additional requirements (in terms of site size and costs) that including these with mainstream education facilities generates. This will also be considered in each IDP.

11.2 Evidence base review

The following evidence has been reviewed as part of this strategic infrastructure plan:

- Local Authorities' IDPs;
- Higher education institution's websites;
- University of Liverpool's Strategy;
- Liverpool John Moores University's Strategic Plan;
- Liverpool Hope University's Corporate Plan; and,
- Edge Hill University's Strategic Plan (outside the LCR)

11.3 Stakeholder engagement

A key component of the project baseline has been to engage with relevant stakeholders and discuss future infrastructure requirements. The aim of these conversations was to establish whether the existing and planning strategic infrastructure aligns with the growth projections of the LCR and the planned strategic projects. Representatives from the following stakeholder groups have been interviewed:

- University of Liverpool;
- Liverpool John Moores University;
- Liverpool Hope University; and,
- Edge Hill University.

11.4 Baseline review of current infrastructure

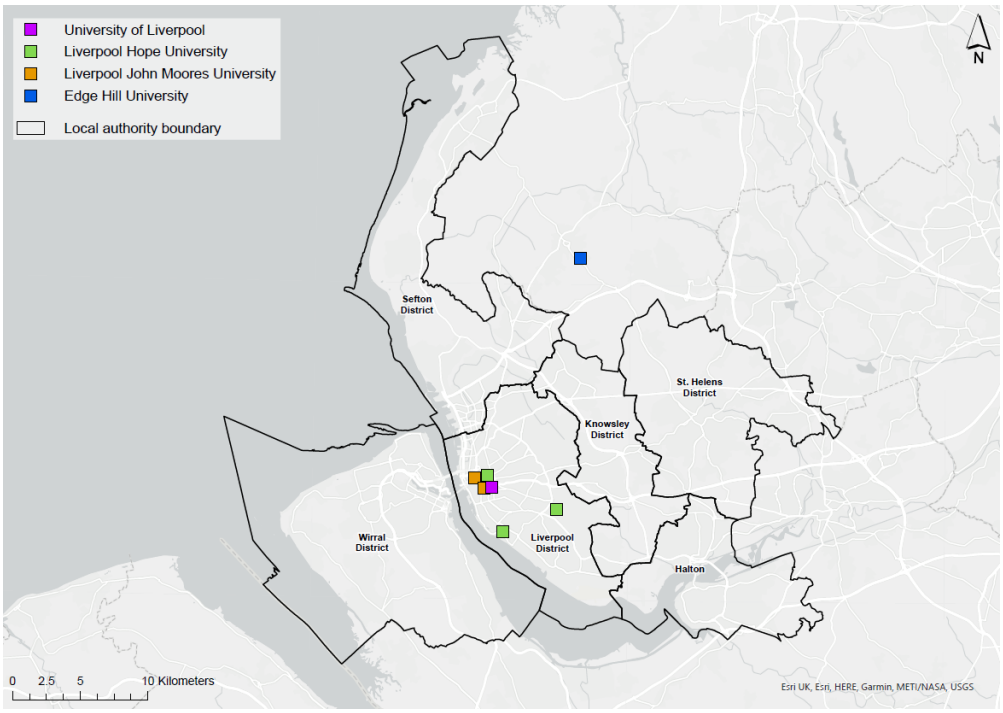

Figure 11.1 Plan of Universities

There are three higher education facilities within the LCR, located within Liverpool city centre and one on the edge of the LCR, Edge Hill located in Ormskirk. The planning and provision of education is the responsibility of the four universities. However, the universities' growth and future plans need to be considered at a strategic scale due to their role within the city region.

11.4.1 University of Liverpool

The University of Liverpool has over 16,400 undergraduate and over 1,500 postgraduate students with over 400 courses for both undergraduates and postgraduates. There are three facilities of study; health & life sciences, science & engineering and humanities & social science. The University has three campuses in Liverpool City Centre, Leahurst in the Wirral and Suzhou in China.

Key strategic issues for the university are the need for improved sustainable travel across the city and the city region, with specific mention given to pedestrian, cyclists and rail infrastructure, improving the city's air quality and reviewing the university's energy plans to move from gas to alternative energy sources. Key strategic priorities to support this are working with the LCR to enhance sustainable travel and energy opportunities while reviewing the current Masterplan for the university to address these issues on areas within their control.

Key shortfalls in provision have been identified on the Leahurst Campus in terms of a lack of sports and recreation facilities, increases in student numbers requiring larger and improved facilities and the need to address the historic piecemeal development across the campus. This is planned to be actioned by future development across the site including a new pathology building, new equine isolation unit and a student/staff hub. Additionally, new active travel routes and public transport connectivity is proposed to improve access to the campus for students, staff, visitors and the local community.

11.4.2 Liverpool John Moores University

Liverpool John Moores University has over 20,000 undergraduate and around 5,000 postgraduate students across five faculties. These are Business & Law, Arts Professional & Social Studies, Health, Science and Engineering & Technology. The university is split across two campuses, both based in Liverpool, the City Campus and the Mount Pleasant Campus.

Key strategic issues for the university are the need for improved sustainable travel across the city and the city region, with specific mention given to pedestrians, cycling and scooter users, and to introduce zero net carbon energy measures across both campuses. Key strategic priorities to support this are working with the LCR to enhance sustainable travel and energy opportunities while creating a new Masterplan for the university to address these issues on areas within their control.

Key shortfalls in provision for the university have been identified through the Estate's Masterplan to enhance the current estate and provide improved facilities for teaching and research. These developments are key for the university's future however do not classify as strategic in nature. A lack of space for delivering facilities has been identified as a shortfall for the university, however it is planned to review the current estate and reconfigure campuses to meet needs rather than purchasing more land within the LCR.

11.4.3 Liverpool Hope University

Liverpool Hope University has over 5,000 students across nine schools. These are the Business School, Creative & Performing Arts, Education, Geography & Environmental Science, Health & Sport Sciences, Humanities, Social Science, Psychology and Mathematics, Computer Science & Engineering. The university is split across three locations campuses, all in Liverpool: Hope Park (main teaching campus) in Childwall, L16; the Creative Campus in L6 (adjacent to the city centre); and Aigburth Park (residential-only campus) in Aigburth, L17.

Key strategic issues for the university are the need for improved sustainable travel across the city and the city region, with specific mention given to pedestrians, cycling and scooter users, and to introduce zero net carbon energy measures across all campuses, including EV infrastructure. Key strategic priorities to support this are working with the LCR to enhance sustainable travel and energy opportunities while utilising the university's carbon reduction plan to address these issues on areas within their control.

Key shortfalls in provision for the university are transportation to the university campuses, with a reliance on car due to lack of rail provision (at the main campus) and lack of bus connectivity between the three campuses. Due to the central location of their Creative Campus, parking is an issue; the university has previously attempted to purchase land adjacent to the Royal Hospital to provide more parking for students. As the Hope Park campus is suburban, and not located near any train stations, local residents can make complaints over parking. The university therefore would like to engage with any active travel plans for Liverpool, to ensure they can influence regarding walking, cycling and electric scooter provision.

As mentioned, Liverpool Hope is decarbonising under a carbon reduction plan and implementation plan, which is aligned with their estates strategy. However, they are currently at capacity with their electrical load so would need increased capacity in order to move forward with further decarbonisation measures. The university would also like to engage with any city or city region EV strategy to ensure they can align with wider strategies to achieve net zero.

11.4.4 Edge Hill University

Edge Hill University has over 13,000 students with over 10,000 being undergraduates and over 3,000 being postgraduates. There are three faculties being Arts &Sciences, Education and Health & Social Care. The university is based on the edge of the LCR, on one campus in Ormskirk, Lancashire.

Key strategic issues for the university are transportation, with the need to increase future car parking provision and a desire for improving road congestion from the M58 and improving rail and bus infrastructure due to current limited services from both the city region and across West Lancashire. The university are also reviewing their current campus and redeveloping existing facilities to support current and future student's needs. Key strategic priorities to support this are the opportunity to redevelop vacant land and underutilised buildings across the campus and look for opportunities to improve transportation to the site.

Key shortfalls in provision for the university are transportation to the university campus, with a heavy reliance on car due to limited bus and rail services and lack of active travel routes to the campus. Additionally, significant congestion is felt for road users when driving to campus from the M58. Due to the reliance on the car, the university have enough car parking spaces for students currently, however this will need to be reviewed in the future.

The university feel through a plan of redeveloping their existing campus and facilities there is scope of ensure sufficient facilities and resources for current and future students. However, there is potential for the university to expand into adjacent land in collaboration with West Lancashire District Council as part of their emerging Local Plan. This plan would create the additional resources, capacity and services identified as need for future students and researchers. However, this would likely not be pursued further until 2026/2027, though this is dependent on future student numbers.

11.5 Planned strategic infrastructure in the LCR

Liverpool City Council's IDP[30] outlines capacity for 50,000 students across the University of Liverpool, Liverpool John Moores University and Liverpool Hope University with the continued strategic approach for the city to develop the Knowledge Quarter as a focus for science, research and education.

11.5.1 University of Liverpool

The university's current strategy covering to 2026 outlines future plans[31] with a Masterplan Estate Strategy covering teaching, research and the estate across the three campuses[32.] The university has plans to continue investment in core areas including "research leadership, thematic research development, partnerships and IP exploitation"[33.] This will involve enhancing quality and providing further time for innovative research for both students and staff across the campuses. The university are currently preparing a new Masterplan to cover beyond 2026. The university also plan to invest in teaching resources and expand opportunities available to students by building the university's network. The university also continues to review and create a unique offer for students based on the

[30] Liverpool City Council IDP

[31] University of Liverpool Our Strategy

[32] University of Liverpool Masterplan Estate Strategy

[33] University of Liverpool Our Strategy

needs of employers, specifically in the LCR. Funding sources for future projects is currently unknown.

11.5.2 Liverpool John Moores University

The university is developing a masterplan for future estate development across both campuses[34] which is likely to be completed by the end of 2022. Future developments currently planned include the Student Life Building to enhance key student services, the University's sports centre creating international scale sports facilities, the Library Pavilion to provide further learning spaces for students and refurbishing a number of existing buildings to enhance teaching and research facilities. Funding sources for future projects is currently unknown.

11.5.3 Liverpool Hope University

The university has an enhancement strategy from 2015 which looks to enhance teaching at the university[35]. The strategy highlighted the need to major initiatives at university level and local activities which can enhance student experiences. The plan does not outline planned strategic infrastructure.

The university does not have ambitions to expand currently but are examining the quality of their offer, in line with their estates strategy, to determine what buildings may need to be refurbished or demolished if sites aren't needed. As mentioned previously, they also have a carbon reduction and implementation plan and have begun electrifying their heating. If any future projects are required, funding sources are currently unknown.

11.5.4 Edge Hill University

The university has undergone significant masterplanning in recent years, leading to it being named as the top campus in the Northwest and in the top 5 university campuses[36]. Key developments have been the Clinical Skills and Simulation Centre for health, social care and medicine teaching, the Catalyst building for student services, the EHU Police Training and Simulation Facility and state of the art teaching spaces[37]. The university is currently exploring the potential to expand the campus into the surrounding Green Belt as part of the West Lancashire Local Plan in addition to

[34] Liverpool John Moores University Estate Development

[35] Liverpool Hope University Enhancement Strategy

[36] Edge Hill University Campus and Facilities Webpage

[37] Edge Hill University Campus and Facilities Webpage

redeveloping existing spaces in the current campus to further enhance the campus in the next masterplan for the university[38]. Future planned developments for the university include a new Life Sciences building providing 3,200m^2 of floorspace, totalling £17.4 million, with plans to be completed in December 2023 in addition to planning permission being sought for a replacement Student Union building, providing 1,800m^2 floorspace, totalling £6.3 million and for additional student accommodation of ~250 student rooms totally £20.7 million, both to be completed in 2024. Funding sources for future projects would self-funded from the university's resources.

11.6 Recommendations to align with SDS growth and identification of potential infrastructure gaps

The following section takes into account the analysis from the above sections in addition to stakeholder engagement and the growth scenarios set out in section 2.4.

It is recommended to include a strategic infrastructure policy within the SDS to ensure provision of key strategic infrastructure necessary to meet needs identified within the SIP. Additionally, it is recommended to include an infrastructure provision policy within the SDS to ensure development and proposals coming forward support and positively contribute to the SDS objectives by ensuring places are sustainable and served by appropriate levels of infrastructure.

Following the review of the education baseline and proposed projects with engagement with stakeholders, no strategic gaps have been identified in education infrastructure required to meet SDS growth, other than future development already being explored by the universities.

Potential areas of collaboration with the LCR to further support SDS growth could be surrounding the creation of a strategic active travel network across the LCR, ensuring electrical grid capacity to support net zero carbon targets for the universities and the LCR and supporting the universities plans to reconfigure and redevelop their campuses and enhance facilities. Chapter 5 and Chapter 10 shows further detail.

11.7 Review and alignment of infrastructure against SDS Strategic Objectives

The table below demonstrates the alignment between the planned strategic infrastructure and the strategic objectives of the SDS. There are no weak alignments identified.

Table 11.2 contains the key for this assessment.

[38] Edge Hill University Campus Baseline Report

Table 11.1: SDS objectives alignment

	SDS Objective 1: Climate Change and Environment	SDS Objective 2: Health and Wellbeing	SDS Objective 3: Prosperous and Inclusive Economy	SDS Objective 4: Placemaking, Communities and Housing	SDS Objective 5: Social Value	Commentary (incl. suggested enhancement to meet objective(s))
University of Liverpool	o	o	+	+	+	There is a need for strategic planning across the City Region to support sustainable and active travel to campuses, enabling students and staff to better access universities and creating healthier communities.
Liverpool John Moores University	o	o	+	+	+	There is a need for strategic planning across the City Region to support sustainable and active travel to campuses, enabling students and staff to better access universities and creating healthier communities.
Liverpool Hope University	o	o	+	+	+	There is a need for strategic planning across the City Region to support sustainable and active travel to campuses, enabling students and staff to better access universities and creating healthier communities.

Edge Hill University	o	o	+	+	+	There is a need for strategic planning across the City Region to support sustainable and active travel to campuses, enabling students and staff to better access universities and creating healthier communities.

Table 11.2: Assessment key

++	Scheme has strong alignment with SDS objective
+	Scheme has moderate alignment with SDS objective
O	Neutral; not applicable
-	Scheme has weak alignment with SDS objective
--	Scheme has very weak alignment with SDS objective

There are currently no strategic plans across the LCR covering these four universities, with each university planning for their own current and future growth. Despite this, all future plans of the universities are supporting the SDS objectives 3-5 well, with aims to support the city region's economy by being able to produce graduates in key skills areas.

To further enhance supporting the SDS objectives, strategic working in partnership with the LCR could support the creation of more opportunities for decarbonisation and sustainable travel, supporting the creation and enhancement of healthier communities. For example, creating active travel routes across the city for students and residents to sustainably access facilities.

11.8 Summary and recommended next steps

The current and planned higher education infrastructure has been reviewed and a summary has been written below:

- It has been identified that there are no strategic gaps in higher education infrastructure required to meet SDS growth.
- Cross cutting strategic issues facing higher education institutions are the need to improve sustainable and integrated travel to campuses, and to increase opportunities and funding for decarbonisation (e.g., increasing capacity on the electrical grid to support decarbonising efforts).
- Key strategic shortfalls for higher education provision are the current public transportation and road network which limit the ability for students and staff to get to campuses, and the need for new or updated facilities to support current and future teaching and research.
- Key strategic priorities for the universities are to undertake masterplanning and estate reviews, with a focus being on redeveloping existing campuses to enhance facilities and look for opportunities to support becoming net zero where possible and improving sustainable transport links.
- The LCR should work with providers to ensure that high-quality, sustainable transport infrastructure is available to better integrate the campuses into the wider transport network, supporting health and wellbeing as well as place-making.
- The LCR should work with providers to ensure that high-quality, net zero carbon energy infrastructure is available to better integrate the campuses into the grid, supporting decarbonisation.

Table 11.3: Summary of infrastructure

Scheme	Location	Potential lead delivery agency	Potential delivery mechanism	Cost	Delivery phasing	Gaps in funding
LJMU – Student Life Building	Liverpool	LJMU	University capital plans	To be established	To be established	To be established
LJMU – Sports Centre	Liverpool	LJMU	University capital plans	To be established	To be established	To be established
LJMU – Library Pavilion	Liverpool	LJMU	University capital plans	To be established	To be established	To be established
Liverpool Hope – Refurbishing Hope Park Campus	Liverpool	Liverpool Hope University	University capital plans	~£8.5m	To be established	To be established
Liverpool Hope – Redeveloping 2 and 3 Linkton Square	Liverpool	Liverpool Hope University	University capital plans	To be established	To be established	To be established
Edge Hill – Life Sciences Building	Ormskirk	Edge Hill University	University capital plans	£17.4m	December 2023	To be established
Edge Hill – Replacement Student Union Building	Ormskirk	Edge Hill University	University capital plans	£6.3m	September 2024	To be established

Edge Hill – Student Accommodation	Ormskirk	Edge Hill University	University capital plans	£20.7m	2024	To be established

12. Emergency Services and Health

12.1 Introduction

This chapter covers strategic emergency services and healthcare in the LCR. A baseline review of infrastructure has been carried out to determine current provision and identify opportunities for enhancement, aligned with the SDS' Strategic Objectives.

This SIP covers the following types of emergency services and healthcare provision:

- Hospital Healthcare Infrastructure
- Fire Search and Rescue Infrastructure
- Police Infrastructure
- Ambulance Infrastructure

Healthcare is maintained and delivered primarily through NHS Trusts and Clinical Commissioning Groups (CCGs) as part of the Cheshire and Merseyside Integrated Care System (ICS) with each of the nine places forming an Integrated Local Partnership (ICP). Emergency services are maintained and delivered by the Merseyside Police and Merseyside Search and Rescue.

The Strategic Infrastructure Plan does not include:

- Other forms of Primary Healthcare
- Community Nursing
- Independent Living and Extra Care Facilities
- Local or Minor Upgrades to Services
- Mental Health Services
- Specialist Secondary Care Services
- GPs and Healthcare Hubs
- Large Nursing and Residential Homes

These forms of infrastructure have not been included in the SIP because the level of current capacity in these types of provision is unlikely to be a major determining factor in deciding where to locate strategic growth. However, it is important that new growth is served by these types of infrastructure, and so will be considered as part of each local planning authority's IDPs. In particular, as such provision is often included with mainstream forms of education, consideration will need to be given to the additional requirements (in terms of site size and costs) that including these with mainstream education facilities generates. This will also be considered in each local planning authorities' IDPs.

12.2 Evidence base review

12.2.1 Emergency services

The following evidence has been reviewed as part of this strategic infrastructure plan:

- Local Authorities' IDPs;
- Merseyside Fire Service Delivery Plan 2021 – 2022;
- Merseyside Fire Integrated Risk Management Plan 2021 – 2024;
- Merseyside Fire website;
- Merseyside Police Estate Strategy 2014;
- Merseyside Police Annual Report 2021 – 2022;
- Merseyside Police and Crime Plan 2021 – 2025;
- Merseyside Police website;
- Cheshire Constabulary Police and Crime Plan 2021 – 2024;
- Cheshire Constabulary Strategic Plan 2019 – 2020;
- Cheshire Constabulary Strategic Plan 2020 – 2021;
- Cheshire Constabulary Police website;
- Cheshire Fire Integrated Risk Management Plan 2020 – 2024;
- Cheshire Fire Authority Annual Report 2020 – 2021;

- Cheshire Fire and Rescue website;
- North West Ambulance Service NHS Trust Estates Strategy;
- North West Ambulance Service Integrated Business Plan 2019 – 2024;
- North West Ambulance Service Strategy 2019 – 2024; and,
- North West Ambulance Service website.

12.2.2 Health

The following evidence has been reviewed as part of this SIP:

- Local Authorities' IDPs;
- Aintree University Hospital NHS Foundation Annual Report 2020 – 2021;
- Cheshire and Wirral Partnership NHS Foundation Trust Annual Report 2019 – 2020;
- Royal Liverpool and Broadgreen University Hospitals NHS Trust Annual Report 2020 – 2021;
- Liverpool University Hospitals NHS Foundation Trust Annual Report 2019 – 2020;
- Liverpool Women's NHS Foundation Trust Annual Report 2019 – 2020;
- Southport and Ormskirk Hospital NHS Foundation Trust Annual Report 2018 – 2019;
- St Helens and Knowsley University Hospitals NHS Foundation Trust Annual Report 2018 – 2019;
- Warrington and Halton Teaching Hospitals NHS Foundation Trust Annual Report 2020 – 2021;
- Wirral University Teaching Hospital NHS Foundation Trust Annual Report 2019 – 2020;
- Improving Health and Wellbeing in Cheshire and Merseyside Strategy 2021 – 2025; and,
- NHS North West website.

12.3 Stakeholder engagement

12.3.1 Emergency services

A key component of the project baseline has been to engage with relevant stakeholders and discuss future infrastructure requirements. The aim of these conversations was to establish whether the existing and planned strategic infrastructure aligns with the growth projections of the LCR and the planned strategic projects. Representatives from the following stakeholder groups have been interviewed:

- North West Emergency Services;
- Merseyside Police;
- Merseyside Fire and Rescue.

12.3.2 Health

A key component of the project baseline has been to engage with relevant stakeholders and discuss future infrastructure requirements. The aim of these conversations was to establish whether the existing and planned strategic infrastructure aligns with the growth projections of the LCR and the planned strategic projects. Representatives from the following stakeholder groups have been interviewed:

- NHS Estates and Health & Care Partnership for Cheshire and Merseyside

12.4 Baseline review of current infrastructure

12.4.1 Emergency services

There are 43 police stations and 29 fire stations within the LCR and 40 ambulance facilities across the LCR and Cheshire. New models for the delivery for emergency services across the LCR have been developed, with the aim to both rationalise facilities and provide a more efficient service. Emergency services plan to make savings through increased joint working across authority boundaries and targeting resources to areas of acute need. Local need will be accommodated through community teams and representatives, offering a greater presence in community spaces. There will, however, be few new dedicated facilities.

Halton Council's police and fire and rescue sit outside of Merseyside Police and Merseyside Fire & Rescue, being within Cheshire's police and fire services. Cheshire's services are outside of the scope of this SIP. However, the future growth of the LCR will require and impact Cheshire's emergency services. Therefore, the SIP has considered both Merseyside's and Halton's emergency services within our baseline review of current infrastructure.

Ambulance Services

The North West service is divided into three operational groups; Greater Manchester, Cumbria and Lancashire, and Cheshire & Merseyside. The service has 130 sites with over 6,000 staff members across the North West.

Key strategic issues for the services to continue to improve all services and resources for patients, reduce emissions to be net zero by 2040 for emissions they control and by 2045 for emissions they can influence and to continue supporting staff[39]. Key strategic priorities are to continue to implement the NHS Long Term Plan of reducing carbon emissions[40], redesigning ambulance responses to align with the Ambulance Response model, continuing to reduce the number of Paramedic Emergency Service patients conveyed to A&E and improving the deployment of ambulance resources to patients at the time of dispatch through the Patient Centered Deployment concept[41].

The North West Ambulance Service has eight priorities to support them in delivering their services: urgent and emergency care, quality, digital, business and commercial development, workforce, stakeholder relationships, infrastructure and the environment[42]. The service has identified a number of priority projects including the electronic patient record and the unified communications programme as projects to support the delivery of emergency services provision. Current published work does not identify any strategic shortfalls for the service with the service being rated as 'good' following an inspection from the Care Quality Commission in 2020[43].

[39] NHS North West Ambulance Service Estate Strategy 2018 – 2023

[40] The NHS Long Term Plan states the NHS will improve the way they manage their estate and modernise and standardise the ambulance fleet to help reduce emissions. It is noted this could change the way infrastructure is delivered in the future.

[41] NHS North West Ambulance Service Estate Strategy 2018 - 2023

[42] NHS North West Ambulance Service Strategy 2019 – 2024

[43] CQC Ratings, North West Ambulance Service

Fire and Rescue

Merseyside

The Integrated Risk Management Plan (IRMP) outlines that there are 29 fire stations across the city region with varying levels of staff, with 13 being crewed 24 hours a day, 7 days a week[44]. The report continues to state that in addition, Merseyside Fire & Rescue also work with the National Resilience Fire Control team which provides specialist assistance and training across the country. Furthermore, the team carry out ~50,000 home fire safety checks and 10,000 'safe and well' visits. The team have improved their average response time from 6 minutes 7 seconds to 5 minutes 52 seconds from 2017 to 2021.

Key strategic issues for Fire & Rescue are the recent collation of stations reducing the number of sites across the city, the requirement for a new training and development centre and the need for their operation to be carbon net zero, in line with city targets. Key strategic priorities to support this are for the organisation to increase the number of fire engines from 29 to 31, introduce hybrid duty systems at multiple stations and build a Training and Development Academy to increase the capacity and resources to skill teams[45].

The Merseyside Fire & Rescue service have predicted that annual future operational demand on the service based on data from 2011/12 to 2020/21, will be at similar levels or decrease from current levels experienced, with the exception of Special Service calls[46]. Six high impact incident types were identified for the service to focus on; terrorist related incidents, marine incidences, wildfire, flooding, fires in large buildings and fires at recycling and waste processing plants due to the potential impact they could have on local communities[47]. Strategic delivery plans are in place to deliver an effective service over the next 5 years however it is noted of the reduction in government spending for local government functions (including fire and rescue authorities) which significantly impacted the service compared with other fire and rescue authorities due to the LCR's low council tax base[48].

[44] Integrated Risk Management Plan, Merseyside Fire & Rescue

[45] Integrated Risk Management Plan, Merseyside Fire & Rescue

[46] Integrated Risk Management Plan, Merseyside Fire & Rescue

[47] Integrated Risk Management Plan, Merseyside Fire & Rescue

[48] Integrated Risk Management Plan, Merseyside Fire & Rescue

Halton

The Integrated Risk Management Plan (IRMP) outlines there are 28 fire stations across Cheshire with varying levels of staff, with 8 being crewed 24 hours a day, 7 days a week in addition to the team carrying out 32,443 Safe and Well visits in 2019/2020[49].

Key strategic issues for Fire & Rescue are the longer response times above 15 minutes in rural areas of Cheshire and the impact of climate change contributing towards heatwaves and flooding. Key strategic priorities to support this are for the organisation to introduce a fleet of rapid response rescue units to support with road traffic collisions and other incidents where they can arrive quicker than fire engines, especially in rural areas of Cheshire and review the organisation's water strategy and provision of specialist equipment across the stations to improve services.

The Cheshire Fire Service have predicted the annual future operational demand on the service, based on data from incidents between 2016 to 2020, will increase or be at a similar level to current levels experienced. Strategic delivery plans are in place to deliver an effective service over the next 5 years[50]. It is noted that central funding has reduced however overall funding allowances has increased from 2017/18 to 2020/21 to £44.8 million. There is uncertainty for the outlook of future public spending as it is dependent on the external political environment however the service is in a position to review their finances next year to ensure it delivers its vital services[51].

Police

Merseyside

The Police and Crime Plan for 2021 to 2025 identifies three key pillars for providing an effective service for the Merseyside:

- Fighting crime, proactive policing;
- Supporting victims, safer communities; and

[49] Integrated Risk Management Plan, Cheshire Fire Authority

[50] Integrated Risk Management Plan, Cheshire Fire Authority

[51] Integrated Risk Management Plan, Cheshire Fire Authority

- Driving change, prevent offending[52].

The report continues to state that the Merseyside Police are one of the best performing metropolitan police across the UK, being graded as 'outstanding' when tackling serious and organised crime. In 2014, the Merseyside Police implemented an estate strategy to deliver a £130 million investment into the police station and facilities. This has proved to be effective and supported by local communities.

Key strategic issues for the Police are improving road safety, tackling serious and organised crime and preventing anti-social behaviour with visible and accessible police in local communities. Key strategic priorities to support this are to review the current estate strategy to ensure the teams have facilities and resources they need to serve Merseyside, continue to reduce the overall force's C02 emissions following the new hybrid technology frontline vehicles purchased this past year and deliver more training and campaigns to support staff and communities[53.]

There has been a 6% reduction in all crime with a 21% reduction in burglary, a 15% reduction in knife crime and a 32% reduction in vehicle crime (2019 compared to 2020)[54.] Strategic delivery plans are in place to deliver an effective service in the future. The Merseyside Police has consistently delivered a strong service across the LCR despite reductions in funding from central government reducing by 29.9% between 2010/11 and 2020/21 with the inability to raise the precept resulting in overall reduced funding for the service[55.] There is uncertainty for the outlook of future public spending as it is dependent on the external political environment.

Halton

[52] Police and Crime Plan, Merseyside Police & Crime Commissioner

[53] Police and Crime Plan, Merseyside Police & Crime Commissioner

[54] Annual Report 2020-21, Merseyside Police & Crime Commissioner

[55] Annual Financial Report 2020-21, Merseyside Police

The Police and Crime Plan for 2021 to 2024 identifies six key priorities for providing an effective service for Cheshire: preventing and tackling crime, making roads safer, delivering justice for victims of crime, protecting vulnerable people, improving confidence in the police and modernizing the police service[56.] The report continues to state that the Cheshire Constabulary are based across nine Local Policing Units, including Widnes and Runcorn within Halton.

Key strategic issues for the Police are becoming carbon neutral by 2040 improving road safety, tackling anti-social behaviour with visible and accessible police in urban and rural communities. Key strategic priorities to support this are to review the current estate to ensure the teams have facilities and resources they need, creating an environment plan to reduce emissions and deliver a range of campaigns to support staff and communities including speed awareness, anti-social behaviour, tackling hate crime and bullying [57.]

The Cheshire Constabulary outline increases in crimes relating to hate crimes, domestic violence, sexual offenses and those involving weapons in addition to missing persons cases and investigations involving digital media since 2016 during 2019-2020[58]. However, during 2020-2021, there was a decrease in the total number of crimes overall other than in domestic violence, which increased[59.] Strategic delivery plans are in place to deliver an effective service during this period[60]. Funding for the police has been impacted by national and international uncertainty and is done on a yearly basis which results in a shorter term capacity to plan projects[61]. Potential further exacerbating financial issues noted were the potential impacts of Brexit, if there were to be a change in government and any changes to the implementation of the Emergency Services Network[62].

[56] Police and Crime Plan, Cheshire Constabulary Police & Crime Commissioner

[57] Police and Crime Plan, Merseyside Police & Crime Commissioner

[58] Strategic Plan 2019 – 2020, Cheshire Constabulary

[59] Strategic Plan 2020 – 2021, Cheshire Constabulary

[60] Strategic Plan 2020 – 2021, Cheshire Constabulary

[61] Strategic Plan 2019 – 2020, Cheshire Constabulary

[62] Cheshire Constabulary Strategic Plan 2019 – 2020

12.4.2 Health

This area is covered by the Cheshire and Merseyside Integrated Care System (ICS), covering the city region and Cheshire, catering for 2.6 million people[63].

Figure 12.1: Integrated Care System for the LCR and Cheshire

Within the ICS, there are nine CCGs and nine NHS Trusts (excluding those who provide specialist services) who provide healthcare services across the city region. These organisations commission and deliver primary healthcare for communities across the city region.

Clinical Commissioning Groups

The nine CCGs, as follows, have formed a Joint Committee to work effectively together to support the delivery of care across all local communities within the LCR[64].

[63] Improving Health and Wellbeing in Cheshire and Merseyside Strategy 2021 – 2025

[64] Cheshire and Merseyside CCGs Joint Committee webpage

- Cheshire CCG
- Halton CCG
- Knowsley CCG
- Liverpool CCG
- St Helens CCG
- South Sefton CCG
- Southport and Formby CCG
- Warrington CCG
- Wirral CCG

NHS Trusts

The following NHS Trusts are relevant to the study area within the SIP:

- Cheshire and Wirral Partnership NHS Foundation Trust;
- Royal Liverpool and Broadgreen University Hospitals NHS Trust;
- Liverpool Heart and Chest NHS Foundation Trust;
- Liverpool University Hospitals NHS Foundation Trust;
- Liverpool Women's NHS Foundation Trust;
- Southport and Ormskirk Hospital NHS Foundation Trust;
- St Helens and Knowsley University Hospitals NHS Foundation Trust;
- Warrington and Halton Teaching Hospitals NHS Foundation Trust; and,
- Wirral University Teaching Hospital NHS Foundation Trust.

There are 9 strategic hospitals across and 2 on the edge of the LCR.

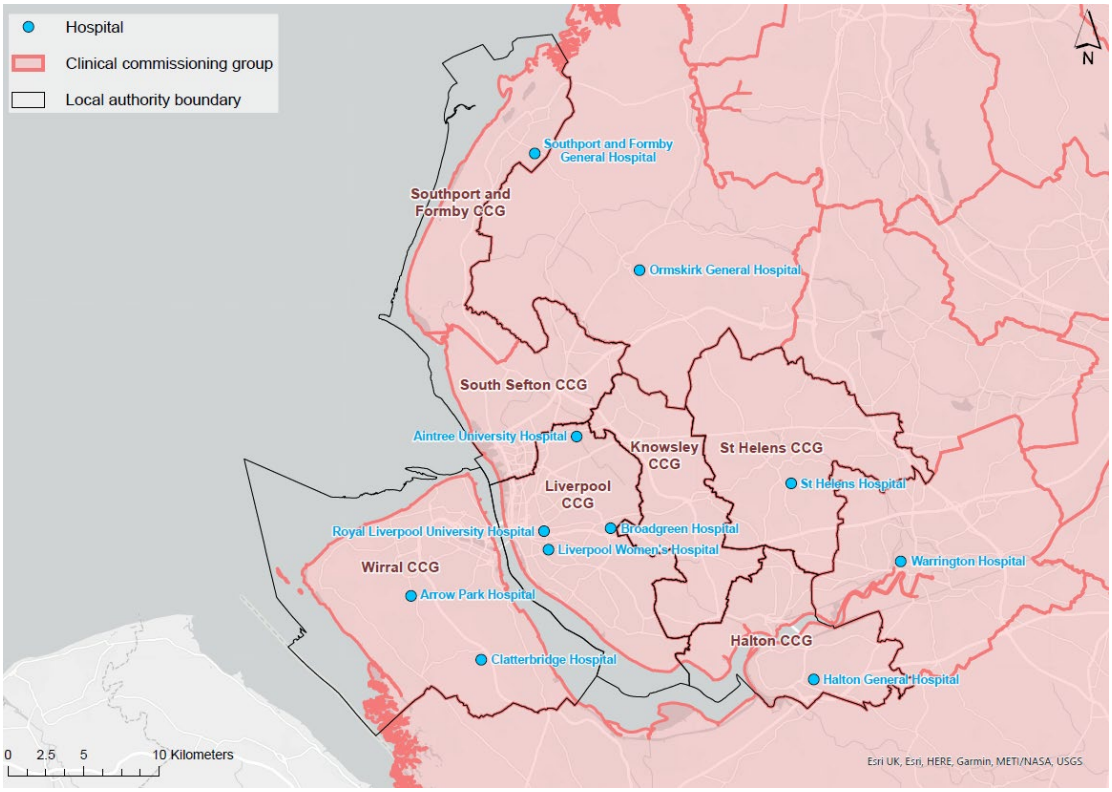

Figure 12.2 Plan of Strategic Hospitals

It is noted that the CCGs and the Trusts will become one partnership from summer 2022 with structural reforms.

The ICS has a strategy in place until 2025 with four strategic objectives for the LCR[65]:

- Improve population health and healthcare;
- Tackling health inequality, improving outcomes and access to services;
- Enhancing quality, productivity and value for money; and
- Helping the NHS support broader social and economic development.

Within the strategy, key enablers to support these objectives were raised, including digital transformation & utilising data analytics, research & innovation, communication & engagement and service design & transformation to support future needs on the LCR healthcare system.

[65] Improving Health and Wellbeing in Cheshire and Merseyside Strategy 2021 – 2025

Key Shortfalls in Provision

Strategic shortfalls in provision have been identified in four strategic sites in the LCR and one in Cheshire. This includes the consideration of the impact of the Covid-19 pandemic. Funding to address these strategic issues within these hospitals has been raised within the NHS. Trusts are waiting to hear if they will receive funding from the NHS Central Finance resources.

Liverpool Royal Hospital, Liverpool City

There is a need to redevelop the current estate to utilise space and resources more efficiently. £40 million has been requested in funding for Liverpool University Hospitals Foundation Trust to support primary care, pharmacy, renal dialysis, the women's unit and UTC which will form part of the reconfiguration of the Liverpool Royal Hospital and better utilisation of space, improving healthcare services.

Arrowe Park Hospital, Wirral

There is a need to redevelop the current estate to utilise space and resources more efficiently. £423 million in funding has been requested for the Wirral University Teaching Hospital Foundation Trust to support reprovision of elective care, adult and children hospice care, elderly care provision, CWP and funding for the reconfiguration of Arrow Park hospital and better utilisation of space, improving healthcare services.

Clatterbridge Hospital, Wirral

There is a need to redevelop the current estate to utilise space and resources more efficiently. A masterplan has been created outlining the proposed changes to the site. £423 million has been requested in funding for the Wirral University Teaching Hospital Foundation Trust to support reprovision of elective care, adult and children hospice care, elderly care provision, CWP and funding for the reconfiguration of Clatterbridge hospital and better utilisation of space, improving healthcare services.

Halton and Warrington Hospitals, Halton

There is a need to redevelop the Halton and Warrington Hospital sites to utilise space and resources more efficiently. £410 million has been requested in funding for the Warrington and Halton Teaching NHS Hospitals Foundation Trust to support the creation of two new hospital buildings, which will form part of the redevelopment of both Halton and Warrington hospitals with a better utilisation of space, improving healthcare services. It is noted that the Warrington hospital is on the edge of the LCR.

12.5 Planned strategic infrastructure

12.5.1 Emergency services

As noted earlier, Cheshire's services are outside of the scope of this Strategic Infrastructure Plan. However, the future growth of the LCR will require and impact Cheshire's emergency services. Therefore, we have considered both Merseyside's and Halton's emergency services within our review of planned strategic infrastructure.

Ambulance Services

The North West Ambulance Service Estate Plan and Strategy outlines the consistent survey and review of current estate infrastructure undertaken by the team. There are no published plans of planned strategic infrastructure delivery; however, the estate plan outlines the need for the service to develop modern bases (likely a hub and spoke model with fewer larger sites and standby points) with a full range of facilities across the North West, appropriate facilities for training and changes to the current infrastructure to reduce carbon emissions in line with the NHS Carbon Reduction Strategy for England[66]. Therefore, it is likely more infrastructure will be delivered during the plan period. Funding sources for future projects will be through the North West Ambulance Service capital budgets.

Fire and Rescue

Merseyside

There is a need for a new training centre to support the ongoing work of Merseyside Fire & Rescue. An application is currently submitted for the development of a new facility on Long Lane, Aintree. This facility would close Aintree and Croxteth Fire Stations, with the Training & Development Academy, to create a new multi pump super-station and state of the art training facility and National Resilience Centre of Excellence[67]. The site would be used to support the training of Merseyside Fire & Rescue officers but also teams across the country. This is currently awaiting planning approval. This will likely cost £25 million to develop[68].

[66] NHS North West Ambulance Service Estate Strategy 2018 – 2023

NHS North West Ambulance Service Strategy 2019 – 2024

[67] Station Merger Consultation: Aintree & Croxteth July 2021 - The Creation of a New Super-Station and Training Centre at Long Lane, Aintree, Merseyside Fire & Rescue

[68] Integrated Risk Management Plan, Merseyside Fire & Rescue

Further development required will be to introduce a hybrid duty system at Kirkdale fire station, combine the duty systems at Liverpool City and Kensington fire stations to create a Dual Station Hybrid and to introduce a Stinger/Scorpion fire engine at St Helens to replace the complementary crewed Combined Platform Ladder[69]. Specialist fire stations would also be created within Liverpool city, Wallasey, St Helens, Long Lane, Kirkdale, Belle Vale, Heswall and Formby to cover a range of specialist incidents including wildfire, water, terrorist response, hazmat and marine firefighting[70]. Additional strategic infrastructure provision will be needed to support the service becoming net zero, in line with LCR targets. Funding sources for future projects is currently unknown.

Halton

During 2021, a new carbon neutral fire station has been completed in Chester with new training facilities for staff, following four previous years of planning[71]. There are no further published plans of strategic infrastructure; however, the service is continuing its modernisation of its fire stations and housing stock (housing stock is provided for staff)[72]. Therefore, it is likely more infrastructure will be delivered during the plan period. Proposed plans include continuing the trail of a fire service drone and improving welfare facilities for staff[73]. Funding sources for future projects is currently unknown.

Police

Merseyside

The Police and Crime Plan 2021 – 2025 outlines their current police estate is being reviewed to ensure it is fit for purpose to address future crime across Merseyside[74]. This is in conjunction with the newly built Rose Hill police headquarters completed in 2021, the Edge Lane Patrol Hub in 2020 and the Operational Command Centre completed in 2018, resulting in over £100 million investment into strategic police infrastructure[75]. There are no further published plans of strategic infrastructure however in line with LCR aspirations, it is likely additional infrastructure provision will be

[69] Integrated Risk Management Plan, Merseyside Fire & Rescue

[70] Integrated Risk Management Plan, Merseyside Fire & Rescue

[71] Annual Report, Cheshire Fire Authority

[72] Integrated Risk Management Plan 2020 – 2024, Cheshire Fire Authority

[73] Integrated Risk Management Plan 2020 – 2024, Cheshire Fire Authority, link above

[74] Police and Crime Plan, Merseyside Police & Crime Commissioner

[75] Annual Report 2020-21, Merseyside Police & Crime Commissioner

implemented to support the reduction in the overall force's CO_2 emissions[76]. Funding sources for future projects is currently unknown.

Halton

The Police and Crime Plan 2021 – 2024 outlines their current police estate is being reviewed to ensure it is fit for purpose to address future crime across Cheshire[77]. There are no further published plans of planned strategic infrastructure for the Cheshire Constabulary. Funding sources for any potential future projects is currently unknown.

12.5.2 Health

As mentioned, four strategic hospital sites in the LCR are planned to be improved to support current and future healthcare services and provision. Those identified strategic shortfalls are within the Liverpool University Hospitals Foundation, Wirral University Teaching Hospital Foundation, and Warrington and Halton Teaching NHS Hospitals Foundation Trust will need to be delivered in the near future to support current and future healthcare services. However, their funding and delivery timetable has not yet been finalised.

12.6 Recommendations to align with SDS growth and identification of potential infrastructure gaps

The following section takes into account the analysis from the above sections in addition to stakeholder engagement and the growth scenarios set out in section 2.4.

It is recommended to include a strategic infrastructure policy within the SDS to ensure provision of key strategic infrastructure necessary to meet needs identified within the SIP. Additionally, it is recommended to include an infrastructure provision policy within the SDS to ensure development and proposals coming forward support and positively contribute to the SDS objectives by ensuring places are sustainable and served by appropriate levels of infrastructure.

Following the review of the health and emergency services baseline and proposed projects with engagement with stakeholders, no strategic gaps have been identified in health and emergency infrastructure required to meet SDS growth, other than future development already being explored by the providers.

[76] Police and Crime Plan, Merseyside Police & Crime Commissioner

[77] Police and Crime Plan, Cheshire Constabulary Police & Crime Commissioner

Potential areas of collaboration with the LCR to further support SDS growth could be supporting the identified hospital plans to reconfigure and redevelop their sites to enhance facilities, ensuring electrical grid capacity to support net zero carbon targets for the healthcare system and emergency service providers, and supporting future campaigns (for example, anti-social behaviour and road safety) proposed by the stakeholders to improve their coverage across the LCR. Chapter 5 shows further detail.

Additionally, the North West Ambulance Service has identified the need for future largescale housing proposals to include them as a stakeholder from project inception, in order to ensure smaller ambulance spokes – as part of their proposed hub and spoke model – are adequately dispersed throughout LCR to serve communities efficiently.

12.7 Review and alignment of infrastructure against SDS Strategic Objectives

The table below demonstrates the alignment between the bodies providing strategic infrastructure and the goals of LCR's Spatial Development Strategy. There are no identified weak alignments.

Table 12.2 contains the key for this assessment.

Table 12.1: SDS objectives alignment

	SDS Objective 1: Climate Change and Environment	SDS Objective 2: Health and Wellbeing	SDS Objective 3: Prosperous & Inclusive Economy	SDS Objective 4: Placemaking, Communities & Housing	SDS Objective 5: Social Value	Commentary (incl. suggested enhancement to meet objective(s))
Merseyside Fire & Rescue	o	++	+	O	++	There is a need for strategic planning across the City Region to support sustainable and active travel to emergency and healthcare services, enabling a strategic network better accessible to service providers and communities.
Merseyside Police	o	++	+	O	++	There is a need for strategic planning across the City Region to support sustainable and active travel to emergency and healthcare services, enabling a strategic network better accessible to service providers and communities.
North West Ambulance	o	++	+	O	++	There is a need for strategic planning across the City Region to support sustainable and active travel to emergency and healthcare services, enabling a strategic network better accessible to service providers and communities.

NHS Trusts and CCGs	o	++	+	o	++	There is a need for strategic planning across the City Region to support sustainable and active travel to emergency and healthcare services, enabling a strategic network better accessible to service providers and communities.
Halton Police	o	++	+	O	++	There is a need for strategic planning across the City Region to support sustainable and active travel to emergency and healthcare services, enabling a strategic network better accessible to service providers and communities.
Halton Fire & Rescue	o	++	+	O	++	There is a need for strategic planning across the City Region to support sustainable and active travel to emergency and healthcare services, enabling a strategic network better accessible to service providers and communities.

Table 12.2: Assessment key

++	Scheme has strong alignment with SDS objective
+	Scheme has moderate alignment with SDS objective
o	Neutral; not applicable

-	Scheme has weak alignment with SDS objective
--	Scheme has very weak alignment with SDS objective

12.8 Summary and recommended next steps

The current and planned health and emergency services infrastructure has been reviewed and a summary has been written below:

- It has been identified that there are strategic gaps in the healthcare infrastructure required to meet SDS growth. Emergency services have strategic plans in place to meet SDS growth.
- Cross cutting strategic issues facing healthcare and emergency services provision are the need to: improve capacity, improve response times to providing care, and increase opportunities for decarbonisation.
- Key strategic shortfalls in provision have been identified in four strategic healthcare sites in the LCR: the Liverpool Royal, Arrowe Park, Clatterbridge, and Halton hospitals.
- North West Ambulance Service in particular has identified the need for future largescale housing proposals to include them as a stakeholder from project inception, in order to ensure smaller ambulance spokes are adequately dispersed throughout LCR to serve communities efficiently.
- Key strategic priorities for healthcare and emergency services providers are to undertake masterplanning and estate reviews, with a focus being on redeveloping existing sites to enhance facilities and look for opportunities to support becoming net zero where possible and delivering key public facing city region focused campaigns.
- The LCR should work with providers to ensure that high-quality, sustainable transport infrastructure is available to better integrate emergency services and healthcare into the wider transport network, supporting health and wellbeing as well as place-making.
- The LCR should work with providers to ensure that high-quality, net zero carbon energy infrastructure is available to better integrate services into the grid, supporting decarbonisation.

Table 12.3: Summary of infrastructure

Scheme	Location	Potential lead delivery agency	Potential delivery mechanism	Cost	Delivery phasing	Gaps in funding
NW Ambulance Service – development of 'hub and spoke model'	LCR	NW Ambulance Service	Partly funded by planning obligations; remainder by North West Ambulance Services capital plans and budgets	To be established	Throughout SDS plan period	To be established
Merseyside Fire & Rescue – multi-pump super station & training centre	Aintree	Merseyside Fire & Rescue	Merseyside Fire & Rescue capital plans	£25m	Throughout SDS plan period	To be established
Merseyside Fire & Rescue Specialist Fire Stations	LCR	Merseyside Fire & Rescue	Merseyside Fire & Rescue capital plans	To be established	Throughout SDS plan period	To be established
Liverpool Royal Hospital	Liverpool	Liverpool University Hospital Foundation Trust	NHS investment plans	£40m	Throughout SDS plan period	To be established
Arrowe Park Hospital and Clatterbridge Hospital	Wirral	Wirral University Teaching Hospital Foundation Trust	NHS investment plans	£423m	Throughout SDS plan period	To be established

Halton and Warrington Hospitals	Halton and Warrington	Halton and Warrington NHS Hospitals Foundation Trust	NHS investment plans	£410m	Throughout SDS plan period	To be established

13. Waste Management

13.1 Introduction

This chapter covers strategic waste management in the LCR. A baseline review of wate infrastructure has been carried out to determine current provision and identify opportunities for enhancement, aligned with the SDS' Strategic Objectives.

This SIP covers the following types of waste provision:

- LCR Strategic Level Waste Reinforcements; and,
- LCR Network Upgrades.

Waste management and disposal is managed by the Merseyside Recycling and Waste Authority (MRWA) across the LCR, including Halton who have delegated authority to the MRWA. The authority works in partnership with Veolia who were awarded a 20-year Waste Management and Recycling contract in 2009. Furthermore, Merseyside Energy Recovery Limited was appointed in 2014 to divert household waste from landfill.

MEAS additionally offers LCR councils a core of specialist staff to advise across a range of environmental and planning issues, including waste planning. MEAS prepared the Merseyside and Halton Joint Waste Local Plan (WLP), adopted by the six councils in 2013. MEAS is responsible for monitoring and implementation of the WLP and preparing a monitoring report which feeds into the individual LPA annual monitoring reports.

The SIP does not include:

- Local Authority Level Waste Reinforcements;
- Changes to Wastewater Permits; and,
- Asset Replacements which do not Increase Capacity.

These forms of infrastructure have not been included in the strategic infrastructure plan because the level of current capacity in these types of provision is unlikely to be a major determining factor in deciding where to locate strategic growth. However, it is important that new growth is served by these types of infrastructure, and so will be considered as part of each local planning authority's IDP. In particular, as such provision is often included with mainstream forms of education, consideration will need to be given to the additional requirements (in terms of site size and costs)

that including these with mainstream education facilities generates. This will also be considered in each local planning authorities' IDPs.

13.2 Evidence base review

The following evidence has been reviewed as part of this strategic infrastructure plan:

- Local Authorities' IDPs;
- Merseyside and Halton Waste Local Plan;
- Merseyside and Halton Waste Local Plan Monitoring Report 2018-19;
- Merseyside Recycling & Waste Authority Annual Report 2021;
- Liverpool City Region Strategic Review of Waste Management 2016;
- Merseyside and Halton Waste Needs Assessment 2011;
- Resources Merseyside Strategy 2011 – 2041; and,
- National Waste Management Plan.

13.3 Stakeholder engagement

A key component of the project baseline has been to engage with relevant stakeholders and discuss future infrastructure requirements. The aim of these conversations was to establish whether the existing and planning strategic infrastructure aligns with the growth projections of the LCR and the planned strategic projects. A representative from the following stakeholder group have been interviewed:

- Merseyside Recycling and Waste Authority

13.4 Baseline review of current infrastructure

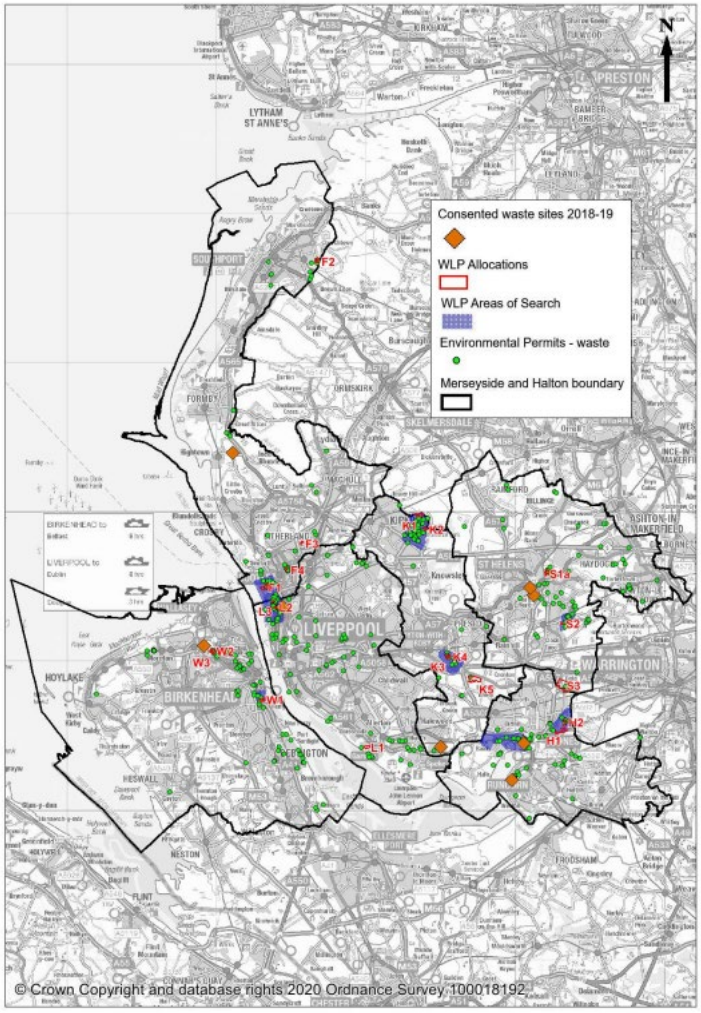

Figure 13.1: Existing, consented and allocated waste management sites in Merseyside and Halton (Joint Merseyside and Halton Waste Local Plan – Implementation and Monitoring Report 2018-19 (July 2020))

The MRWA currently collects and manages 650,000 tonnes per year across the city region. The majority of this waste is from commercial premises, construction and demolition with municipal waste forming a small proportion of what is managed.

Current facilities within the city region and Halton include 16 household waste centres, 4 road-based waste stations, 2 materials recovery facilities (MRFs) and 1 rail loading station. There is also a 50mg energy from waste plant, which is based in the North East but is owned by the MRWA, which caters for 450,000 tonnes per year and the authority also has a share of income from the energy generated. The MRWA also manage 5 closed landfill sites and look for opportunities for carbon sequestration and biodiversity enhancement, in addition for potential for solar energy production.

Key strategic issues are the need to increase waste capacity and infrastructure to ensure MRWA can meet future SDS growth and to increase opportunities for implementing the circular economy in the city region to help create a more sustainable management plan for waste and resources across the city region.

Key strategic priorities for the MRWA are to implement circular economy principles to support the more sustainable management of waste and resources being created and to improve recycling rates across the city region to support the future capacity of existing MRWA sites before looking to invest into the creation of a new waste management site.

Key shortfalls in provision have been identified in handling municipal waste, recycling and implementing the circular economy.

Recycling has decreased to 36% over the last 5 years across the city region, resulting in being in the lower quartile of the country for recycling rates. The MRWA's current facilities could have enough capacity to manage future waste across the city region if recycling rates increase across the city region. However, investment is required upstream in the waste management process by the six local authorities to encourage recycling and then divert it from non-recyclable waste; to ensure resources are reused and recycled outside of being sent to the MRWA's facilities for waste disposal.

Central government aims for authorities to recycle more materials, such as tetrapacks and containers. Therefore, the city region will require more MRF infrastructure. MRWA are looking for opportunities to create a reuse and logistics hub to cater for these additional materials collected from the city region.

13.5 Planned strategic infrastructure in the LCR

The MRWA need to find additional capacity and contingency to manage municipal waste. This will either require a newly constructed facility, within or outside the city region, or buying capacity as part of a merchant facility. However, an owned and managed building by MRWA is the preference due to having first call on managing waste over competing authorities or companies in a merchant facility. Although this infrastructure is 'planned', it is still in the concept stage.

In order to fund a potential new facility or additional capacity from a merchant facility, MRWA costs are levied back to the six local authorities in the LCR and typically paid through council tax.

13.6 Recommendations to align with SDS growth and identification of potential infrastructure gaps

The following section takes into account the analysis from the above sections in addition to stakeholder engagement and the growth scenarios set out in section 2.4.

It is recommended to include a strategic infrastructure policy within the SDS to ensure provision of key strategic infrastructure necessary to meet needs identified within the SIP. Additionally, it is recommended to include an infrastructure provision policy within the SDS to ensure development and proposals coming forward support and positively contribute to the SDS objectives by ensuring places are sustainable and served by appropriate levels of infrastructure.

Following the review of the waste management services baseline and proposed projects with engagement with MRWA, strategic gaps have been identified to manage future waste to meet SDS growth however future development plans already being explored by MRWA.

Potential areas of collaboration with the city region to further support SDS growth could be supporting the delivery of a circular economy and improving recycling rates across the LCR.

13.7 Review and alignment of infrastructure against SDS

The table below demonstrates the alignment between the planned strategic infrastructure and the strategic objectives of the SDS. There are no weak alignments identified.

Table 13.2 contains the key for this assessment.

Table 13.1: SDS objectives alignment

	SDS Objective 1: Climate Change and Environment	SDS Objective 2: Health and Wellbeing	SDS Objective 3: Prosperous & Inclusive Economy	SDS Objective 4: Placemaking, Communities & Housing	SDS Objective 5: Social Value	Commentary (incl. suggested enhancement to meet objective(s))
Merseyside Recycling & Waste Authority	+	o	o	o	o	There is a need for strategic planning across the City Region to better support implementation of circular economy and net zero carbon principles.

Table 13.2: Assessment key

++	Scheme has strong alignment with SDS objective
+	Scheme has moderate alignment with SDS objective
o	Neutral; not applicable
-	Scheme has weak alignment with SDS objective
--	Scheme has very weak alignment with SDS objective

13.8 Summary and recommended next steps

The current and planned health and emergency services infrastructure has been reviewed and a summary has been written below:

- It has been identified that there are strategic gaps in the waste infrastructure required to meet future SDS growth; however, MRWA has a strategic plan in place to meet initial SDS growth.
- Strategic issues facing waste management services provision is the need to increase waste capacity and infrastructure, and to increase opportunities for implementing the circular economy in the city region.
- Key strategic shortfalls in provision have been identified in managing future capacity and ensuring a contingency to manage future waste demands, the need to increase recycling to support ensuring the MWRA's waste contingency space, and the need to create a facility to support recycling more materials, in line with government aims.
- Key strategic priorities for MRWA are to implement circular economy initiatives and improve recycling rates across the city region, the latter of which would reduce overall waste.
- The LCR should work with MRWA and relevant stakeholders to ensure that high-quality, sustainable waste infrastructure is implemented to reduce waste and increase circularity within the City Region, supporting climate change and environment as well as health and wellbeing.
- The LCR should work with MRWA and relevant stakeholders to ensure that high-quality, net zero carbon energy infrastructure is available to better integrate waste-to-energy services into the grid, supporting decarbonisation.

Table 13.3: Summary of infrastructure

Scheme	Location	Potential lead delivery agency	Potential delivery mechanism	Cost	Delivery phasing	Gaps in funding
Potential new waste facility	LCR	MRWA	LCR funding via city region capital plans	To be established	Throughout SDS plan period	To be established
Potential to secure additional waste capacity from merchant facility	Unknown	MRWA	LCR funding via city region capital plans	To be established	Throughout SDS plan period	To be established

14. Overall Conclusions and Recommendations

14.1 Summary

The purpose of the SIP is to support the LCRCA's SDS as part of its evidence base. It's two main aims are to explore the extent which strategic infrastructure is existing or planned to meet development proposed within the SDS, and to ensure proposed strategic infrastructure helps to deliver the SDS strategic objectives. The SIP is not seeking to demonstrate all infrastructure which may be required for proposed development is provided for or planned, as that is for each authority's IDP to consider. It identifies existing, funded, planned and aspirational strategic infrastructure that will be required to support the growth aspirations of the LCR till 2045. The SIP should be read in conjunction with the wider SDS evidence base and the SDS itself.

The SIP provides a robust and technically sound evidence base concerning strategic infrastructure requirements arising from growth requirements identified in the SDS, Local Plans and other strategic documents of the six constituent local authorities that form the LCRCA.

The SIP examines the quality and capacity of the following types of strategic infrastructure:

- Blue and Green Infrastructure;
- Energy;
- Surface water management and flood risk;
- Foul water drainage;
- Water supply;
- Digital and telecommunications;
- Transport;
- Education;
- Emergency services and health; and,
- Waste management.

The report identifies the ability of each type of strategic infrastructure to support the delivery of housing and employment growth across the LCR based on the growth scenarios projected, which are to be confirmed with the CA as set out in Section 2.4 of the SIP. A baseline review and

stakeholder engagement have been used to help understand and identify future strategic infrastructure provision, any shortfalls to help meet future growth and to align with the SDS Strategic Objectives.

Appendix A sets out an overall summary of all future strategic infrastructure schemes and themes which have been identified within the SIP. These are identified for investment and delivery over the period of the SDS.

The implementation of this identified strategic infrastructure and key themes will help deliver the meet future growth and, where relevant, align with the SDS objectives.

Appendix B sets out an overall summary of how all future strategic infrastructure schemes and themes align with the strategic objectives of the SDS and where possible supports the delivery of them. An assessment against each objective has been undertaken and where an infrastructure does not align with the objectives, suggested mitigation has been added to enhance the relationship.

Based on analysis of current infrastructure and details of planned infrastructure set out within each chapter above and summarised Appendix A and B, the overall conclusion is that **there are no significant shortfalls in strategic infrastructure provision which will prevent delivery of the SDS growth proposals in the first 10 years of the plan.**

Only the strategic infrastructure topics **Energy, Transport and Waste Management** have identified gaps in achieving the growth objectives of the SDS across the plan period. However, through the implementation of the projects identified and the suggested mitigation provided in each of the chapters, alignment towards the SDS objectives to enable the delivery of the SDS can take place.

The next section sets out the key findings from each strategic infrastructure considered in the SIP in more detail. The section should be read in conjunction Appendix A and B.

14.2 Strategic Infrastructure Conclusions and Recommendations

14.2.1 Blue and Green Infrastructure

Alignment with SDS Growth Projections

The LCR is already recognised as a leader in green infrastructure planning and delivery. A significant amount of work has been developed at the regional scale to provide a comprehensive evidence base for green and blue infrastructure, ecological network and natural capital to underpin the identification of opportunity sites and appropriate interventions.

Through the existing assets, proposed projects and schemes identified in the SIP, it is considered that **there are no gaps identified** in the delivery of green and blue strategic infrastructure across the LCR to help align with the growth projections up to 2045.

Alignment with SDS Strategic Objectives

Future strategic infrastructure related to blue and green schemes **generally align well** with the five SDS objectives. Most schemes have strong to moderate alignment with the objectives and there is **no weak or very weak alignment**. There are some occasional neutral alignments, but it is considered that this is because the objectives are not applicable in these cases. Further enhancement can be achieved through bringing nature into Liverpool City, developing policy to integrate green infrastructure with grey linear assets, coordinating delivery with adjacent schemes or partnerships, and ensuring protective interventions maximise opportunities for biodiversity.

Suggested Next Steps

- The LCR has a real opportunity to build upon its diverse landscape context to deliver enhanced ecosystem services through strategically planned green and blue infrastructure.
- The evidence base identified in the SIP should be used to frame discussions around strategic green and blue infrastructure provision and to underpin spatial strategies, combined with the identification of funding sources.
- Up-to-date habitat evidence should be compiled for interventions and biodiversity net gain opportunities, focusing on existing quality and functionality of specific sites. This should utilise DEFRA metric 3.0 and should establish clear targets for natural capital.
- Consider interface between asset types. For example, a city-region wide coast strategy that ties in Sefton Coast management plan, shoreline management plan (which provides a good evidence base for climate resilience) and emerging plan on Dee Estuary and potentially Mersey Waterfront Regional Park.
- Critically, a pipeline of clearly defined green and blue projects needs to be established to enable investment. An appraisal of existing local authority land holdings should be undertaken in the short term to identify sites which limit development (for example, due to policy restrictions or contaminated brownfield land) and present opportunity for the implementation of green and blue infrastructure.

14.2.2 Energy

Alignment with SDS Growth Projections

Careful consideration of future energy provision is key to the future economic growth of the LCR under the SDS. Due to fluctuations in the economy, population and demography, climate, environment and technology, the most significant energy transition since the Industrial Revolution is currently taking place with the decarbonisation of heat and transport contribution to unprecedented demand for electricity.

The current electricity and gas networks are adequately supplying power to the LCR. However, they are ageing, and in the case of the electricity network it is also **reaching full capacity** despite falls in overall energy consumption.

Alignment with SDS Strategic Objectives

Future strategic infrastructure related to energy schemes **align well** with SDS objective 1 (Climate Change and Environment) but are **weakly aligned** with all other objectives. Therefore, a major issue identified in the high-level assessment is the weak alignment of strategic energy infrastructure across the majority of SDS objectives. This centres on the lack of integration and 'whole system' planning when maintaining and modernising the UK and city region's energy system. Further enhancement to meet objectives includes supporting uptake of low carbon technologies, enabling battery and energy generation schemes to store and provide power to local end users, utilising energy efficiency interventions to increase social value (i.e., more affordable energy prices), aligning gas network renewal and electricity network upgrades with domestic retrofit and boiler replacement programmes, and exploration of the potential for hydrogen to be supplied for heating and transport.

Suggested Next Steps

- New generation and storage upgrades are needed to cope with higher local peak loads and bidirectional energy flows and future growth within the LCR. In order to maintain safe, clean and reliable energy supplies to meet changing needs across the LCR, in ways that achieve net zero by 2040, significant infrastructure modernisation will be required.
- As engagement with SPEN highlighted, the 'hydrofication' of the gas network will be important to it continuing to provide reliable energy supplies to customers in the face of significant change.

- In order for the LCR to transition to a net zero future by 2040, the region's electricity supply must decarbonise. The decarbonisation of LCR electricity supply is dependent on the decarbonisation of the national grid. However, there are plans to introduce low carbon distributed energy resources into LCR, including seven schemes for consented battery storage. Once constructed, the battery storage will support electricity supply and network balancing, thus, reducing strain on the distribution network and increasing the network's flexibility.
- Other potential strategic renewable developments include the Mersey Tidal Power project and HyNet but the thinking around these projects in still in its infancy, and therefore cannot be relied upon just yet to assist with the growth projections as set out in the SDS.
- Engagement with all relevant stakeholders, including closer engagement with consumers, is required to plan for the integration of energy interventions e.g., energy efficiency measures, EV charging infrastructure, heat pumps, and gas boiler replacement. The main drivers for change are health & safety, growth, decarbonisation, resilience and fuel poverty that combine to result in significant need to modernise strategic infrastructure.

14.2.3 Surface Water Management and Flood Risk

Alignment with SDS Growth Projections

The existing and proposed surface water management and flood risk infrastructure has been reviewed, and if best practice is maintained and relevant policies and strategies prepared by the UU and the EA are aligned with then **there are no gaps identified** in this infrastructure or issues meeting the growth objectives of the SDS.

Alignment with SDS Strategic Objectives

Future strategic infrastructure related to surface water management and flood risk **generally align well** with the five SDS objectives. Both strategies (i.e., greater prevalence of SuDS and Catchment Management/Shoreline Management Plans) to manage surface water and flood risk have moderate to strong alignment with the objectives where relevant, with no objectives showing weak alignment to this strategic infrastructure. Further enhancement to meet objectives includes a wider use of SuDS across the City Region.

Suggested Next Steps

- SuDS should be considered early on in the design process for new developments to avoid surface water from entering the existing combined sewer network, in order to reduce the risk of sewer flooding.
- There is an opportunity for the LCRCA to take an active role in driving forward the key messages, actions and proposed strategic approach noted across the Mersey Estuary and Alt Crossens Catchment Flood Management Plans and the Shoreline Management Plan within the LCR boundary.

14.2.4 Foul Water Drainage

Alignment with SDS Growth Projections

No gaps have been identified in the foul water drainage infrastructure in the LCR. Through the development process, UU will ensure that new developments are connected to the network, as is their legal obligation, and that the network is suitably upgraded as appropriate.

Alignment with SDS Strategic Objectives

Foul water drainage **generally aligns well with the SDS Strategic Objectives** where applicable. To enhance the occasional neutral alignments, water entering the foul water system should be reduced where possible, and treatment and recycling should be done appropriately to avoid damage to the natural environment.

Suggested Next Steps

- UU have not stated that they intend to upgrade the existing foul water drainage infrastructure in the LCR during the SDS period as it is good and meets demand. Should works be proposed, these should be explored for wider benefit opportunities against the SDS objectives.

14.2.5 Water Supply

Alignment with SDS Growth Projections

All the strategic water supply infrastructure in the LCR is operated and maintained by UU. Through this review, **no gaps have currently been identified** in the water supply infrastructure in the LCR across the SDS plan period, subject to successful implementation of the demand side

management and leakage reduction. The steps that are already planned by UU and the adaptation of the network will support the proposed growth.

Alignment with SDS Strategic Objectives

The only applicable SDS objectives for water supply are Objective 1 (Climate Change and Environment) and Objective 4 (Placemaking, Communities & Housing) where there is a **moderate alignment**. This could be enhanced further through leakage reduction across the City Region, as well as reducing the volume of water that properties need in order to avoid a water deficit.

Suggested Next Steps

- There are no proposed water supply infrastructure developments taking place that are specific to the LCR. However, the LCR will benefit from UU's Leakage Reduction programme as this will ensure there is a surplus within the network.
- UU will respond accordingly to new proposals to ensure they have an adequate water supply; they are able to transport water in order to meet demand.
- Future water supply is noted to be sufficient, subject to implementation of a programme of demand side management and leakage reduction. The LCR should actively support UU in delivering this programme.
- Reducing the number of leaks in the network will ensure that resources are being used in a sustainable and responsible way. Additionally, improving water efficiency and reducing the amount of water escaping the network will ensure there is a surplus. This will reduce the likelihood of water prices rising.

14.2.6 Digital and Telecommunications

Alignment with SDS Growth Projections

The telecoms and digital infrastructure is on a supply and demand basis i.e., if there is a demand for the service, the strategic infrastructure will be built to service that demand. Upon review, there are currently **no gaps identified** in the strategic infrastructure to meet SDS growth. Once the 212Km gigabit backhaul is up and running and providing that connectivity to the transatlantic fibre, the region's infrastructure will be in a positive state to aid the SDS. With fibre to the home being rolled out by the major players in the broadband sector and 5G rollout from the MNOs, this will also help the LCR meet its SDS growth targets.

Alignment with SDS Strategic Objectives

The digital and telecommunications strategic infrastructure **generally aligns well** with the relevant SDS Objectives. Further enhancement to meet objectives includes provision of a high speed backhaul to make LCR attractive to tech industries, as well as greater use of wireless 5G/internet to reduce reliance on copper cabling.

Suggested Next Steps

- All relevant stakeholders and providers are continually rolling out infrastructure to meet the increasing demand for services. With the new 212km gigabyte backhaul due to be complete spring 2023, this will act as a conduit for existing service provides to reach additional areas in the region. Openreach and Virgin are also rolling out Fibre to the home and upgrading their networks across the region.
- Merseyrail's digitisation of the full 160km rail network will also provide additional fibre network capacity with potential for fixed and wireless connectivity.
- As the rollout of the 5G network increases, the demand of landlines for broadband will decrease, thus reducing the demand for copper and running cables in the ground.
- It would be beneficial for the LCR to support the use of 5/6G wireless network with fibre to the node on the gigabyte backhaul system and the spare fibres on the Merseyrail network to reach rural areas.

14.2.7 Transport

Alignment with SDS Growth Projections

Following the review of the existing provision, proposed schemes, and engagement with stakeholders**, gaps have been identified** in strategic transport infrastructure required to meet SDS growth.

The following highway locations are expected to come under significant pressure and may require an intervention within the lifetime of the SDS. These are:

- Junction 23 of the M6 (with the East Lancashire Road A580).
- Junction 22 of the M6 (with the A57, A557 and A570). This will be impacted by the Parkside Development.

- Junction 7 of the M62 (with the A572). This will be impacted by the Halsnead Garden Village proposals.

In addition, the M57 / Knowsley Expressway corridor is also likely to come under pressure from the significant housing and commercial development along this route. This includes residential developments in Halewood and Whiston, and commercial developments at 3MG in Widnes.

Regarding intra-city region passenger rail trips, there is significant scope to increase the modal share of rail. Resolving the capacity issues at Liverpool Central station and the arrival of new rolling stock will enable more people to travel by rail. However, to encourage people to use the network, access to stations via high-quality sustainable modes is essential.

Provision of facilities to support the road haulage industry, such as driver accommodation and layover facilities, is severely lacking within LCR. This can have a negative impact on those working in the haulage industry, particularly lorry drivers, as well as having a negative impact on local communities. Furthermore, without Freeport interventions, additional demand for freight will be accommodated onto the existing road network. This will lead to worsening congestion and poor environmental outcomes.

Additionally, the current infrastructure for hydrogen vehicles is limited and a significant uplift in capacity is needed. This intervention is key to enable the complete decarbonisation of the LCR's transport network.

Alignment with SDS Strategic Objectives

Future infrastructure projects relevant to strategic transport improvements **generally align well with the SDS objectives** as they seek to improve public transport infrastructure, promote active travel and support the economy through enhancing the attractiveness of connectivity within the LCR. However, without the implementation of the suggested enhancements made within the SIP and the strategic infrastructure identified, there is the potential for gaps to become apparent in meeting the objectives of the SDS.

Suggested Next Steps

- The LCR should look to prioritise interventions to ensure the City Region can secure the right investment in the context of the challenging funding and delivery landscape for highways schemes.
- The LCR should seek to use its influence to ensure issues on the rail network outside of the city region are resolved sufficiently to enable greater use of rail for both freight and

passenger services in the LCR. In terms of the City Region stations, LCRCA should focus on first and last mile connectivity between Merseyrail stations and residential and employment centres. This will enable more people to travel via the strategic rail network.

- The LCR should work with providers to ensure that high-quality infrastructure is available to support the haulage industry.
- The LCR should commission a freight study to better understand the requirements of the sector in the region, with a focus on how growth can be accommodated without leading to negative social and environmental outcomes.
- The LCR should work with partners to deliver a network of hydrogen refuelling station that can be used by both bus operators and HGVs.

14.2.8 Education

Alignment with SDS Growth Projections

Following the review of the education baseline and proposed projects with engagement with stakeholders, **no strategic gaps have been identified** in education infrastructure required to meet SDS growth, other than future development already being explored by the universities.

Alignment with SDS Strategic Objectives

All future plans of the universities **are generally aligning well with the SDS objectives 3-5** (Inclusive Economy, Placemaking & Communities, Social Value), with aims to support the city region's economy by being able to produce graduates in key skills areas. There is **no weak alignment** with the SDS objectives. Further enhancements to support the objectives include working in partnership with the LCR to identify and support the creation of integrated opportunities for decarbonisation and sustainable travel, which will ultimately support the creation and enhancement of healthier communities (for example, creating active travel routes across the city for students and residents to sustainably access facilities).

Suggested Next Steps

- The LCRCA should work with providers to ensure that high-quality, sustainable transport infrastructure is available to better integrate the campuses into the wider transport network, supporting health and wellbeing as well as place-making.

- The LCRCA should work with providers to ensure that high-quality, low carbon energy infrastructure is available to better integrate the campuses into the grid, supporting decarbonisation.

14.2.9 Emergency Services and Health

Alignment with SDS Growth Projections

Following the review of the health and emergency services baseline and proposed projects with engagement with stakeholders, **no strategic gaps have been identified** in health and emergency infrastructure required to meet SDS growth, other than future development already being explored by the providers.

Alignment with SDS Strategic Objectives

Future infrastructure projects relevant to strategic emergency services and health **generally align well with the relevant SDS objectives** as they seek to improve healthcare provision and promote greater response times to emergencies. Further enhancements to the objectives could be delivered through strategic planning across the City Region which supports sustainable and active travel to/for emergency and healthcare services, enabling a network better accessible to service providers and communities.

Suggested Next Steps

- LCRCA should engage with and support future behavioural campaigns (for example, anti-social behaviour and road safety) proposed by the stakeholders to improve their coverage across the LCR.
- LCRCA should seek to engage with and support the North West Ambulance Service, in order to ensure smaller ambulance 'spokes' – as part of their proposed hub and spoke model – are adequately dispersed throughout LCR to serve communities efficiently.
- LCRCA should work with providers to ensure that high-quality, sustainable transport infrastructure is available to better integrate emergency services and healthcare into the wider transport network, supporting health and wellbeing as well as place-making.
- LCRCA should work with providers to ensure that high-quality, net zero carbon energy infrastructure is available to better integrate services into the grid, supporting decarbonisation.

14.2.10 Waste Management

Alignment with SDS Growth Projections

Following the review of the waste management services baseline and proposed projects with engagement with MRWA, **strategic gaps have been identified** to manage future waste to meet SDS growth. However, future development plans already being explored by MRWA to meet potential capacity issues. As discussed, MRWA's current facilities could have enough capacity to manage future waste if recycling rates significantly increase and waste is reduced across LCR.

Alignment with SDS Strategic Objectives

Strategic waste and recycling infrastructure has **moderate alignment** with SDS objective 1 (Climate Change and Environment). Further enhancement to meet objectives includes integrated and strategic planning across the City Region to better support implementation of circular economy and net zero carbon principles.

Suggested Next Steps

- Areas of collaboration between MRWA, LCR and relevant stakeholders includes supporting the delivery of a City Region circular economy, and associated high-quality sustainable waste infrastructure, across the LCR. This will increase circularity and support climate change and environment as well as health and wellbeing objectives.
- Investment is required upstream in the waste management process by the six LCR authorities to encourage recycling (i.e., behaviour change) and divert materials from non-recyclable waste; this will ensure resources are reused and recycled rather than being primarily sent to MRWA's facilities for waste disposal. This aligns with the waste hierarchy which seeks to first prevent waste, and then reduce, reuse, recycle or recover (in that order) before disposing as a last resort.
- LCRCA should work with MRWA and relevant stakeholders to ensure that high-quality, net zero carbon energy infrastructure is available to better integrate waste-to-energy services into the grid, supporting decarbonisation. However, waste-to-energy should be considered a short-term solution in terms of waste due to environmental impacts.

14.3 Next steps for the SIP

As discussed in Section 1.6, the SIP has been produced as part of the evidence base underpinning the SDS; therefore, the production of the SIP will be an iterative process.

This current version of the SIP (Initial Engagement Draft) has been drafted for the LCRCA's non-regulatory engagement of the SDS. This non-regulatory engagement seeks comments on strategic spatial priorities, more detailed draft policy approaches and, where necessary, any reasonable alternatives to them to help shape the SDS.

It is recommended to include a strategic infrastructure policy within the SDS to ensure provision of key strategic infrastructure necessary to meet needs identified within the SIP. Additionally, it is recommended to include an infrastructure provision policy within the SDS to ensure development and proposals coming forward support and positively contribute to the SDS objectives by ensuring places are sustainable and served by appropriate levels of infrastructure.

Following this engagement, comments from the general public and stakeholders will be considered where relevant and the SIP will be updated taking account of these.

Appendix A - Overall summary of strategic infrastructure

Blue and Green Infrastructure

Scheme	Location	Potential lead delivery agency	Potential delivery mechanism	Cost	Delivery phasing	Gaps in funding
URBAN GreenUP	Liverpool	Liverpool City Council	To be established	To be established	To be established	To be established
Green infrastructure along linear assets (e.g., Maritime Corridor)	Regional	Liverpool City Council, Sefton Council, Wirral Council, Knowsley Council, St. Helens Council, Halton Council	To be established	To be established	To be established	To be established
Mersey Waterfront Regional Park	Mersey Estuary	Liverpool City Council, Sefton Council, Wirral Council	To be established	To be established	To be established	To be established
The Mersey Forest Plan 2025	Regional	Mersey Forest	To be established	To be established	To be established	To be established
Trees for Climate	Regional	Mersey Forest	To be established	To be established	To be established	To be established
Bold Forest	St. Helens	Mersey Forest	Planning Obligations / Developer Contributions	To be established	To be established	To be established

Nature Improvement Areas	Regional	Liverpool City Council, Sefton Council, Wirral Council, Knowsley Council, St Helens Council, Halton Council	To be established	To be established	To be established	To be established
Local Cycling and Walking Infrastructure Plan (LCWIP)	Regional	Merseytravel	Active Travel Fund Tranche 3 and 4 and CRSTS Intervention	£16m for Phase 1 £38m for Phases 2&3	2024 (Phase 1)	To be established
Sankey Canal	St. Helens	Canals and River Trust	To be established	To be established	To be established	To be established

Energy

Scheme	Location	Potential lead delivery agency	Potential delivery mechanism	Cost	Delivery phasing	Gaps in funding
Knowsley ERF	Knowsley	Private	Developer Direct Investment	To be established	To be established	To be established
Sutton Heath Road	St Helens	Private	Developer Direct Investment	To be established	To be established	To be established
Charleywood Road, Knowsley Industrial Park	Knowsley	Private	Developer Direct Investment	To be established	To be established	To be established
Beaufort Road	Wirral	Private	Developer Direct Investment	To be established	To be established	To be established
Carnegie Road (Phase 2)	Liverpool	Private	Developer Direct Investment	To be established	To be established	To be established
Liverpool Energy Management Facility	Liverpool	Private	Developer Direct Investment	To be established	To be established	To be established

Hawthorne Road	Sefton	Private	Developer Direct Investment	To be established	To be established	To be established
Britannia House	Wirral	Private	Developer Direct Investment	To be established	To be established	To be established
National Grids Rainhill Substation Battery storage facility	St Helens	National Grid	National Grid Direct investment	To be established	To be established	To be established
Crowland Street - Energy Recovery Park	Sefton	Private	Developer Direct investment	To be established	To be established	To be established
RIIO – ED2	City Region	SPEN	SPEN Direct Investment	£3.6bn	To be established	£3.6bn
30:30 Programme	Across city region	Cadent	Cadent Direct Investment	To be established	To be established	To be established
Hynet	Parts of LCR and Cheshire West	Private	Developer	£900m	To be established	To be established
Mersey Tidal Range	Mersey Estuary	Private	Unknown	To be established	To be established	To be established
Lock Street Energy from Waste Plant	St Helens	Private	Developer Direct Investment	To be established	To be established	To be established
Lister Drive	Liverpool	Private	Developer Direct Investment	To be established	To be established	To be established

Surface Water Management and Flood Risk

Scheme	Location	Potential lead delivery agency	Potential delivery mechanism	Cost	Delivery phasing	Gaps in funding
Greater prevalence of SuDS	Across LCR	LCR/ Developers	Planning Policy/ Developer Contribution/ S106	To be established	To be established	To be established
Catchment Management Plans and Shoreline Management Plan	Across LCR	Environment Agency/ LCR	Planning Policy	To be established	To be established	To be established

Foul Water Drainage

Scheme	Location	Potential lead delivery agency	Potential delivery mechanism	Cost	Delivery phasing	Gaps in funding
Treatment and recycling of foul water to protect the natural environment	LCR	United Utilities	UU direct investment	To be established	To be established	To be established
Restore and improve the natural environment	LCR	United Utilities	UU direct investment	To be established	To be established	To be established
Reduced risk of sewer flooding	LCR	United Utilities	UU direct investment	To be established	To be established	To be established

Water Supply

Scheme	Location	Potential lead delivery agency	Potential delivery mechanism	Cost	Delivery phasing	Gaps in funding
Leakage Reduction	United Utilities network/LCR	United Utilities	UU direct investment	To be established	To be established	To be established

Digital and Telecommunication

Scheme	Location	Potential lead delivery agency	Potential delivery mechanism	Cost	Delivery phasing	Gaps in funding
Roll out of high speed internet	LCR	Fibre Companies	On demand	To be established	To be established	To be established
5G Roll out	LCR	MNO's	On demand	To be established	To be established	To be established

Transport

Scheme	Location	Potential lead delivery agency	Potential delivery mechanism	Total Cost	Delivery phasing	Gaps in funding
Northern Powerhouse Rail (NPR)	Regional	DfT / Great British Railways / HS2 Ltd	To integrate with HS2	£17.2b	2030s to 2040s	To be established
Liverpool Baltic Rail Station	Liverpool City Centre	Merseytravel	CRSTS Intervention	£66m	Construction scheduled from 2024 – delivery by 2027	To be established
Stanley Dock Rail Access (Expansion of Sandhills Station)	Liverpool City Centre	Merseytravel	CRSTS Intervention	£8m	2024	To be established
New batter trains for Merseyrail	Regional	Merseytravel	CRSTS Intervention	£101m	2025 - 2027	To be established
Improvements and enhancements to the KRN and MRN (including KRN Levelling Up through CRSTS)	Regional	Local Transport Authorities and Merseytravel	CRSTS and LTA led interventions	£271m (CRSTS only)	Ongoing up to 2027	To be established
Non-Highways Maintenance (ferry, bus and rail assets)	Regional	Local Transport Authorities and Merseytravel	CRSTS and other LTA led interventions	£11.3	2027	To be established
Cross River Connectivity	Wirral and Liverpool	Merseytravel	CRSTS Intervention	£22m	2024 - 2025	To be established
LCWIP Phases 1, 2 and 3 + wider CRSTS linked Active	Regional	Merseytravel	Phased into three stages	£16m for Phase 1, £38m for LCWIP Phases 2 & 3	2024 (Phases 2 & 3)	To be established

Travel Infrastructure					Wider CRSTS schemes through to 2027	
Green Bus Corridors	Regional	Merseytravel	CRSTS Intervention: initially 3 routes with 7 more in development.	£64m	2025 - 2027	To be established
M57 J4 Improvements	Knowsley	Knowsley District Council	CRSTS Intervention	£10m	2024	To be established
Hydrogen Buses	Regional	Merseytravel	Part of Bus Reform workstream.	£12.5m	2023 - 2027	To be established
Expansion of Liverpool Central Station	Liverpool City Centre	Merseytravel	Currently at GRIP Stage 4	To be established	2030	To be established
South Liverpool Global Gateway Eastern Access Corridor	Liverpool	Merseytravel	Paused	To be established	2022	To be established
A5036 Port of Liverpool	Liverpool	National Highways	Nationally Significant Infrastructure Project	To be established	Within Road Investment Strategy period 3 (RIS3), 2025 - 2027	To be established
Parkside Strategic Rail Freight Interchange	St Helens	iSec (private developer)	A Development Consent Order is planned for submission in 2024.	To be established	To be established	To be established

Education

Scheme	Location	Potential lead delivery agency	Potential delivery mechanism	Cost	Delivery phasing	Gaps in funding
LJMU – Student Life Building	Liverpool	LJMU	University capital plans	To be established	To be established	To be established
LJMU – sports centre	Liverpool	LJMU	University capital plans	To be established	To be established	To be established
LJMU – Library Pavilion	Liverpool	LJMU	University capital plans	To be established	To be established	To be established
Liverpool Hope – Refurbishing Hope Park Campus	Liverpool	Liverpool Hope University	University capital plans	~£8.5m	To be established	To be established
Liverpool Hope – Redeveloping 2 and 3 Linkton Square	Liverpool	Liverpool Hope University	University capital plans	To be established	To be established	To be established
Edge Hill – Life Sciences Building	Ormskirk	Edge Hill University	University capital plans	£17.4m	December 2023	To be established
Edge Hill – Replacement Student Union Building	Ormskirk	Edge Hill University	University capital plans	£6.3m	September 2024	To be established
Edge Hill – Student Accommodation	Ormskirk	Edge Hill University	University capital plans	£20.7m	2024	To be established

Emergency Services and Health

Scheme	Location	Potential lead delivery agency	Potential delivery mechanism	Cost	Delivery phasing	Gaps in funding
NW Ambulance Service – development of 'hub and spoke model'	LCR	NW Ambulance Service	Partly funded by planning obligations; remainder by North West Ambulance Services capital plans and budgets	To be established	Throughout SDS plan period	To be established
Merseyside Fire & Rescue – multi-pump super station & training centre	Aintree	Merseyside Fire & Rescue	Merseyside Fire & Rescue capital plans	£25m	Throughout SDS plan period	To be established

Merseyside Fire & Rescue Specialist Fire Stations	LCR	Merseyside Fire & Rescue	Merseyside Fire & Rescue capital plans	To be established	Throughout SDS plan period	To be established
Liverpool Royal Hospital	Liverpool	Liverpool University Hospital Foundation Trust	NHS investment plans	£40m	Throughout SDS plan period	To be established
Arrowe Park Hospital and Clatterbridge Hospital	Wirral	Wirral University Teaching Hospital Foundation Trust	NHS investment plans	£423m	Throughout SDS plan period	To be established
Halton and Warrington Hospitals	Halton and Warrington	Halton and Warrington NHS Hospitals Foundation Trust	NHS investment plans	£410m	Throughout SDS plan period	To be established

Waste Management

Scheme	Location	Potential lead delivery agency	Potential delivery mechanism	Cost	Delivery phasing	Gaps in funding
Potential new waste facility	LCR	MRWA	LCR funding via city region capital plans	To be established	Throughout SDS plan period	To be established
Potential to secure additional waste capacity from merchant facility	Unknown	MRWA	LCR funding via city region capital plans	To be established	Throughout SDS plan period	To be established

Appendix B - Overall summary of SDS objectives alignment

Key

++	Scheme has strong alignment with SDS objective
+	Scheme has moderate alignment with SDS objective
o	Neutral; not applicable
-	Scheme has weak alignment with SDS objective
--	Scheme has very weak alignment with SDS objective

Blue and Green Infrastructure

Scheme	SDS objective 1: Climate Change and Environment	SDS objective 2: Health and Wellbeing	SDS objective 3: Prosperous and Inclusive Economy	SDS objective 4: Placemaking, Communities & Housing	SDS objective 5: Social Value	Commentary (incl. suggested enhancement to meet objective(s))
URBAN GreenUP	+	++	o	++	o	Urban GreenUP will be an important contributor to bringing nature into Liverpool City, contributing to sense of place and providing a range of health and wellbeing benefits.
Green infrastructure along linear assets (e.g., Maritime Corridor)	+	+	o	+	o	Policy should be developed to support the integration of green infrastructure along traditionally 'grey' linear assets which, if delivered and managed successfully, can yield a range of environmental benefits.

Mersey Waterfront Regional Park	++	++	++	++	++	The Mersey Waterfront Park has the potential to positively integrate new development with biodiversity enhancement, safeguarding of natural capital and the provision of places for people. The concept should be evolved and embedded in policy alongside principles that align directly with SDS objectives.
The Mersey Forest Plan 2025	++	++	++	++	++	The Mersey Forest Plan aims to increase woodland cover across the LCR to 20% of its area, delivering multiple social, economic and environmental benefits through transformation of the natural environment and revitalisation of a woodland culture.
Trees for Climate	++	++	+	++	+	Trees for climate is a major planting scheme that can provide significant climate change mitigation, alongside a range of social benefits and economic opportunities.
Bold Forest	++	++	+	++	+	The Bold Forest will be an economic and recreational open space asset of regional influence, setting a benchmark for transformative landscape schemes by focusing on multifunctionality of natural capital.
Nature Improvement Areas	++	++	+	+	+	Nature Improvement Areas will establish a spatial framework for promoting nature and biodiversity. Emerging natural capital evidence base should be used to support the development of the Nature Improvement Area strategy and inform place-specific spatial planning.
LCWIP Phases 1,2 and 3	++	++	+	+	+	High quality cycling routes are proposed to connect between employment and housing site, opening up new opportunities. Also, the scheme supports modal shift

						towards cycling, helping to reduce the region's carbon emissions and bring about health benefits.
Sankey Canal	++	++	o	++	+	The Sankey Canal Partnership provides opportunity to take a strategic view of the blue infrastructure corridor as a multifunctional space for nature and people. This should be coordinated with adjacent schemes or partnerships that relate to the wider catchment.

Energy

Scheme	SDS objective 1: Climate Change and Environment	SDS objective 2: Health and Wellbeing	SDS objective 3: Prosperous and Inclusive Economy	SDS objective 4: Placemaking, Communities and Housing	SDS objective 5: Social Value	Commentary (incl. suggested enhancement to meet objective(s)
Distributed energy network upgrade	++	-	-	-	-	Works are required to keep the electricity network functional and to be able to support the uptake of low carbon technologies.
320 MWe of Utility Scale Battery Schemes	++	-	-	-	-	Alignment of battery schemes to store and provide power to local end users and aligned with demand reduction and energy efficiency interventions could increase social value (i.e., more affordable energy prices).
Energy Generation (circa 30 MWe)	++	-	-	-	-	Alignment of energy generation schemes to provide power to local end users aligned with demand reduction and energy efficiency interventions would increase social value (i.e., more affordable energy prices).
Cadent Gas Network Renewal	++	-	-	-	-	Alignment of gas network renewal and electricity network upgrades with domestic retrofit and boiler replacement programmers.

Scheme	SDS objective 1: Climate Change and Environment	SDS objective 2: Health and Wellbeing	SDS objective 3: Prosperous and Inclusive Economy	SDS objective 4: Placemaking, Communities and Housing	SDS objective 5: Social Value	Commentary (incl. suggested enhancement to meet objective(s)
HyNet	++	-	-	-	-	Further exploration of the potential for hydrogen to be supplied for heating and transport.

Surface Water Management and Flood Risk

Scheme	SDS Objective 1: Climate Change and Environment	SDS Objective 2: Health and Wellbeing	SDS Objective 3: Prosperous & Inclusive Economy	SDS Objective 4: Placemaking, Communities & Housing	SDS Objective 5: Social Value	Commentary (incl. suggested enhancement to meet objective(s))
Greater prevalence of SuDS	++	+	+	+	o	There is a need for a wider use of SuDS across the LCR. Incorporating SuDS into designs will reduce the strain surface water runoff has on the sewage system.
Catchment Management Plans and Shoreline Management Plan	++	+	o	+	o	LCR to take strategic lead and consider each of the SDS objectives across any proposal.

Foul Water Drainage

Scheme	SDS Objective 1: Climate Change and Environment	SDS Objective 2: Health and Wellbeing	SDS Objective 3: Prosperous & Inclusive Economy	SDS Objective 4: Placemaking, Communities & Housing	SDS Objective 5: Social Value	Commentary (incl. suggested enhancement to meet objective(s))
Treatment and recycling of foul water to protect the natural environment	++	+	o	o	o	There is a need to ensure that the treatment and recycling is done appropriately to avoid damage to the natural environment and being in breach of permits.
Restore and improve the natural environment	++	+	o	+	+	UU will restore and improve the environment in the LCR where their infrastructure may have damaged it in the past. In the future, UU should consider the environment before undertaking new development.
Reduced risk of sewer flooding	++	++	+	o	o	Water entering the sewage system should be reduced where possible. This could potentially be done through SuDS.

Water Supply

Scheme	SDS Objective 1: Climate Change and Environment	SDS Objective 2: Health and Wellbeing	SDS Objective 3: Prosperous & Inclusive Economy	SDS Objective 4: Placemaking, Communities & Housing	SDS Objective 5: Social Value	Commentary (incl. suggested enhancement to meet objective(s))
Leakage Reduction	o	o	o	+	o	There is a need for leakage reduction across the region to ensure there is not a water deficit.
Demand Site Reduction	+	o	o	o	o	There is a need to reduce the volume of water that properties need to avoid a water deficit.

Digital and Telecommunications

Scheme	SDS Objective 1: Climate Change and Environment	SDS Objective 2: Health and Wellbeing	SDS Objective 3: Prosperous & Inclusive Economy	SDS Objective 4: Placemaking, Communities & Housing	SDS Objective 5: Social Value	Commentary (incl. suggested enhancement to meet objective(s))
Roll out of high speed internet	o	+	++	+	++	The provision of a high speed backhaul will make the LCR attractive to high tech industries.
5G Roll out	+	+	+	+	+	The great use of wireless 5G/Internet will reduce the reliance on copper cabling

Transport

Scheme	SDS objective 1: Climate Change and Environment	SDS objective 2: Health and Wellbeing	SDS objective 3: Prosperous & Inclusive Economy	SDS objective 4: Placemaking, Communities & Housing	SDS objective 5: Social Value	Commentary (incl. suggested enhancement to meet objective(s))
Northern Powerhouse Rail (NPR)	++	+	++	+	+	The Northern Powerhouse Rail (NPR) vision will improve connectivity between the major cities of Liverpool, Manchester, Leeds, Sheffield, Hull and Newcastle, and with Manchester Airport with new high-speed line, electrification, etc. It is essential that NPR acts as a catalyst to support the LCRCA economic development, with any new station or service patterns supporting local objectives for economic regeneration and transport modal shift / decarbonisation.
Liverpool Baltic Rail Station **(CRSTS Scheme)**	++	+	++	+	+	Delivery of a new rail station in the Baltic Triangle area of Liverpool with a 15-minute peak time frequency on the Northern Line which provides direct rail access to the city centre's growing creative and digital cluster. Baltic station will support regeneration and economic growth in the regional core of the LCR and promotes mode shift to rail. Scheduled for delivery during 2027 using CRSTS funding.

Scheme	SDS objective 1: Climate Change and Environment	SDS objective 2: Health and Wellbeing	SDS objective 3: Prosperous & Inclusive Economy	SDS objective 4: Placemaking, Communities & Housing	SDS objective 5: Social Value	Commentary (incl. suggested enhancement to meet objective(s))
Stanley Dock Rail Access (Expansion of Sandhills Station) **(CRSTS Scheme)**	++	+	++	++	+	Expansion of station capacity at Sandhills to support the development of Liverpool Waters and the new Everton FC stadium. The investment will support unlocking regeneration and sustainable journeys to the new development
New battery trains for Merseyrail (IPEMU Extension) **(CRSTS Scheme)**	++	+	++	+	+	Expansion of the IPEMU project to fit Merseyrail trains with battery technology to enable services to run beyond the end of the existing network, enabling the new 777 Class Rolling stock to be deployed on a range of routes. Investment will enable the Merseyrail network to expand and accommodate more low carbon, sustainable journeys. Scheduled for delivery during 2024 to Headbolt Lane with further route options being investigated utilising CRSTS funding.
Improvements and Enhancements to the KRN and MRN **(CRSTS Scheme)**	o	o	+	+	o	Delivery of a programme of KRN upgrades to provide a high-quality highway network for travel by bus, walk and cycle and reduce negative noise and air quality issues for local communities.

Scheme	SDS objective 1: Climate Change and Environment	SDS objective 2: Health and Wellbeing	SDS objective 3: Prosperous & Inclusive Economy	SDS objective 4: Placemaking, Communities & Housing	SDS objective 5: Social Value	Commentary (incl. suggested enhancement to meet objective(s))
						The proposed highway improvement schemes will improve journey times for all users, and may potentially encourage the usage of private vehicles if designs do not reallocate space to public transport and active modes. Supported by CRSTS funding through to 2026.
Non-Highways Maintenance (bus, ferry, and rail assets) **(CRSTS Schemes)**	++	+	+	+	+	Supporting maintenance programme that will improve the MCAs ferry, bus and rail assets. Interventions to support bus, rail and ferry use will help to make more sustainable modes of transport more attractive and will improve access to important employment, education, and healthcare opportunities.
Cross River Connectivity, Merseytravel **(CRSTS Scheme)**	+	+	++	o	o	Re-configuration of the toll plazas at the Kingsway and Queensway Tunnels and the re-routing of strategic traffic to the Kingsway Tunnel, improving bus journey time and reliability via the Queensway tunnel. This will improve cross-river bus journey times. The proposed scheme enables better connections between economic and employment centres, including via public transport, and will improve air quality. However, the improvement of journey times and

Scheme	SDS objective 1: Climate Change and Environment	SDS objective 2: Health and Wellbeing	SDS objective 3: Prosperous & Inclusive Economy	SDS objective 4: Placemaking, Communities & Housing	SDS objective 5: Social Value	Commentary (incl. suggested enhancement to meet objective(s))
						reduced congestion may encourage greater use of private vehicles. Supported by CRSTS funding for delivery in 2025.
LCWIP Phases 1, 2 and 3 + Active Travel Infrastructure **(CRSTS and Active Travel Fund Schemes)**	++	++	+	+	+	Multiple schemes delivering high-quality walking and cycling network in line with the LCWIP, LTN 1/20 compliant active travel connectivity, Access for All and Green Bus Routes across the City Region. High quality cycling routes are proposed to connect between employment and housing site, opening up new opportunities. The schemes will support modal shift towards cycling, helping to reduce the region's carbon emissions and bring about health benefits.
Green Bus Corridors **(CRSTS Schemes)**	++	+	++	o	+	The Green Bus Corridor schemes will significantly enhance the attractiveness of bus travel and encourage mode shifts from car, reducing emissions and improving air quality along routes that serve areas of high deprivation in Liverpool, Knowsley and St Helens, and the supporting greater access to employment. CRSTS funding acquired for delivery of schemes through to 2027, as follows:

Scheme	SDS objective 1: Climate Change and Environment	SDS objective 2: Health and Wellbeing	SDS objective 3: Prosperous & Inclusive Economy	SDS objective 4: Placemaking, Communities & Housing	SDS objective 5: Social Value	Commentary (incl. suggested enhancement to meet objective(s))
						• 10a: 2025 • 79: 2027 • 20/21: 2027 • 86: 2026 53: 2026
M57 J4 Active Travel Improvements (CRSTS Scheme)	++	++	++	+	+	The improvements to highways and active travel provision will improve connectivity to major housing and employment sites and provide enhanced safety for those travelling by active modes.
Hydrogen Buses (CRSTS Schemes)	++	++	++	+	+	Please see links above to the Green Bus Route Improvements. Shifting fuel from diesel to hydrogen on these routes will significantly reduce carbon emissions and improve air quality. Investment in the new technology will also support economic growth through development of specialist skills and jobs.
Expansion of Liverpool Central Station	++	+	++	++	+	Expansion and upgrade is proposed to accommodate more passengers and increase the passenger experience in order to encourage mode shift from private cars to rail, reducing transport emission.

Scheme	SDS objective 1: Climate Change and Environment	SDS objective 2: Health and Wellbeing	SDS objective 3: Prosperous & Inclusive Economy	SDS objective 4: Placemaking, Communities & Housing	SDS objective 5: Social Value	Commentary (incl. suggested enhancement to meet objective(s))
						There is no committed funding allocation for this project, which presents potential risk.
South Liverpool Global Gateway Eastern Access Corridor	o	+	++	o	o	The Eastern Access Corridor (EAC) is a new multi-modal transport route that will better connect the wider south estuary area in the vicinity of Liverpool John Lennon Airport (LJLA) to the strategic highway, public transport and sustainable transport networks. EAC will support the growth of the South Liverpool economy, including the delivery of the surrounding development opportunities. EAC will support economic growth in the region, however, it may result in greater use of private cars if interventions are not delivered to support uptake and priority of sustainable modes.
A5036 Port of Liverpool Access	o	+	++	o	o	The National Highways proposed bypass will take traffic away from communities by Church Road and Dunnings Bridge Road, reducing congestion at junctions and along local roads to alleviate air pollution. However, the route may result in greater use of private cars if interventions are not delivered to support sustainable modes.
Parkside Strategic Rail Freight Interchange	++	+	+	+	o	The strategic rail freight interchange, while still in development, has the potential to enable mode shift of freight from road to rail, helping to mitigate the negative

Scheme	SDS objective 1: Climate Change and Environment	SDS objective 2: Health and Wellbeing	SDS objective 3: Prosperous & Inclusive Economy	SDS objective 4: Placemaking, Communities & Housing	SDS objective 5: Social Value	Commentary (incl. suggested enhancement to meet objective(s))
						impacts on people, communities, and the environment of high volumes of HGVs on the region's roads.

Education

Scheme	SDS Objective 1: Climate Change and Environment	SDS Objective 2: Health and Wellbeing	SDS Objective 3: Prosperous & Inclusive Economy	SDS Objective 4: Placemaking, Communities & Housing	SDS Objective 5: Social Value	Commentary (incl. suggested enhancement to meet objective(s))
University of Liverpool	o	o	+	+	+	There is a need for strategic planning across the City Region to support sustainable and active travel to campuses, enabling students and staff to better access universities and creating healthier communities.
Liverpool John Moores University	o	o	+	+	+	There is a need for strategic planning across the City Region to support sustainable and active travel to campuses, enabling students and staff to better access universities and creating healthier communities.
Liverpool Hope University	o	o	+	+	+	There is a need for strategic planning across the City Region to support sustainable and active travel to campuses, enabling students and staff to better access universities and creating healthier communities.
Edge Hill University	o	o	+	+	+	There is a need for strategic planning across the City Region to support sustainable and active travel to campuses, enabling students and staff to

						better access universities and creating healthier communities.

Emergency Services and Health

Scheme	SDS Objective 1: Climate Change and Environment	SDS Objective 2: Health and Wellbeing	SDS Objective 3: Prosperous & Inclusive Economy	SDS Objective 4: Placemaking, Communities & Housing	SDS Objective 5: Social Value	Commentary (incl. suggested enhancement to meet objective(s))
Merseyside Fire & Rescue	o	++	+	O	++	There is a need for strategic planning across the City Region to support sustainable and active travel to emergency and healthcare services, enabling a strategic network better accessible to service providers and communities.
Merseyside Police	o	++	+	O	++	There is a need for strategic planning across the City Region to support sustainable and active travel to emergency and healthcare services, enabling a strategic network better accessible to service providers and communities.
North West Ambulance	o	++	+	O	++	There is a need for strategic planning across the City Region to support sustainable and active travel to emergency and healthcare services, enabling a strategic network better accessible to service providers and communities.
NHS Trusts and CCGs	o	++	+	o	++	There is a need for strategic planning across the City Region to support sustainable and active travel to emergency and healthcare services, enabling a strategic network better accessible to service providers and communities.
Halton Police	o	++	+	O	++	There is a need for strategic planning across the City Region to support sustainable and active travel to emergency and healthcare services, enabling a

						strategic network better accessible to service providers and communities.
Halton Fire & Rescue	o	++	+	O	++	There is a need for strategic planning across the City Region to support sustainable and active travel to emergency and healthcare services, enabling a strategic network better accessible to service providers and communities.

Waste Management

Scheme	SDS Objective 1: Climate Change and Environment	SDS Objective 2: Health and Wellbeing	SDS Objective 3: Prosperous & Inclusive Economy	SDS Objective 4: Placemaking, Communities and Housing	SDS Objective 5: Social Value	Commentary (incl. suggested enhancement to meet objective(s))
Merseyside Recycling & Waste Authority	+	o	o	o	o	There is a need for strategic planning across the City Region to better support implementation of circular economy and net zero carbon principles.