



KEY ROUTE NETWORK Levelling Up

Full Business Case

June 2022

LCR CA



**LIVERPOOL
CITY REGION**
COMBINED AUTHORITY

METROMAYOR
LIVERPOOL CITY REGION

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Introduction

This document presents the Business Case for the Key Route Network programme. The ask for this project forms part of City Region Sustainable Transport Settlements (CRSTS) programme for the Liverpool City Region (LCR). This business case has been prepared as per the CRSTS criteria and in accordance with the LCR CA Assurance Framework. The Assurance Framework requires transport business cases to be developed in line with the Department for Transport's (DfT) 5-case model, with the economic appraisal section following a proportionate approach DfT's web-based Transport Appraisal Guidance (WebTAG).

1. Strategic Case

1.1 Build Back Better: Our vision for transport

In recent years the Liverpool City Region (LCR) has undergone a significant period of transformational growth and regeneration, with £1 billion added to the economy in the last decade alone. Now standing at a value of £32 billion, the LCR is the most productive city region in the north of England on a Gross Value Added (GVA) per hour worked basis¹.

The LCR offers a unique proposition that builds on its strong heritage in trade and industry, blending this seamlessly with innovation in clean energy and glass manufacturing, global enhancements in the prevention of infectious diseases, world-leading high performance computing capability and a visitor and cultural offer that is perhaps unrivalled outside of London and other European capital cities.

The low carbon sector in the LCR is valued at £2 billion and employs 27,000 people, which demonstrates the ongoing work in adapting and investing in new technologies and growth sectors that help address some of the most pressing issues facing society. HyNet North West, which is a hydrogen energy and carbon capture, usage and storage (CCUS) project being developed by Cadent and Progressive Energy, has recently committed to investing £72 million in transforming the north west into one of the world's first low carbon industrial clusters, where a new pipeline network will transport hydrogen to power industry, fuel trains and buses and heat homes². It is anticipated that by 2030, HyNet North West will reduce regional carbon dioxide emissions by up to 10 million tonnes every year, the equivalent of taking four million cars off the road. By then, HyNet North West alone will be delivering 80% of the Government's new UK-wide target of 5GW of low carbon hydrogen for power, transport, industry and homes³.

However, this success and growth seen at the city region and north west level has not filtered down to all societal groups, and deeply entrenched pockets of income, health and wider social deprivation remain. At the national level, the UK is by some measures the most geographically unequal developed country in the world, showing how critical it is to reduce inequalities.⁴ The LCR shows how these inequalities play out at the local level, where almost a third of Lower Super Output Areas (LSOAs) are

¹ Liverpool City Region Draft Industrial Strategy (LCRCA, March 2020)

² https://www.insidermedia.com/news/north-west/hynet-north-west-commits-72m-in-low-carbon-initiative?utm_source=northwest_newsletter&utm_campaign=northwest_news_tracker&utm_medium=business_article (accessed 17/03/2021)

³ <https://hynet.co.uk/app/uploads/2021/03/032021-HyNet-IDC-award-press-release.pdf> (accessed 19/03/2021)

⁴ <https://www.centreforcities.org/levelling-up/> (accessed 10/03/2021)

in the UK's most deprived decile, and where three LCR local authority areas (Liverpool, Knowsley and St Helens) have now been identified by Government as priority one areas for investment through the Levelling Up fund⁵.

The COVID-19 global pandemic, which continues to have a significant impact on the economy and social interaction, has only served to widen these inequalities, both at the city region level and at the national level. Whilst the LCR is in a strong position to recover, a shift in thinking is required to ensure that we not only return to a position of innovation, transformation and growth, but that we build back better and greener than before, with that investment benefitting those most in need and serving to reduce the current inequalities in economic, social and environmental performance across different geographies and societal groups.

Our ability to build back better will not only be measured on the benefits to today's society, and the way in which those benefits are distributed, but also the impacts on future society and the long-term legacy of decisions made today. In May 2019 the LCRCA declared a Climate Emergency in recognition of the urgent need to act to reduce the impact of our activities on the environment. The LCR was the first area in the country to adopt a net zero carbon target of 2040 (ten years earlier than the national target) and significant progress has been made in researching and trialling green renewable fuels and alternative technologies. However, there is still much work to be done, particularly in the transport sector where emissions remain stubbornly high compared to other sectors.

Our Vision

Our vision is for a fairer, cleaner, stronger City Region where no-one is left behind, as set out in our forthcoming Corporate Plan. Our commitment to build back better focuses on six key principles as outlined in the LCR Recovery Plan⁶:

- 1 A truly inclusive creative economy;
- 2 Social value;
- 3 Environmental sustainability;
- 4 Health, wellbeing and equality;
- 5 Meaningful engagement with our communities; and
- 6 A city region that can project itself internationally through its cultural, natural and sporting assets.

The recovery plan fully aligns with the two key government objectives of levelling up and achieving carbon net zero.

The intrinsic relationship between economic growth and good transport provision and accessibility is now well recognised at all policy levels and is explicit in the LCR's statutory Local Transport Plan⁷ and the more recent non-statutory Combined Authority Transport Plan⁸. The most successful city regions are served by high-quality, reliable infrastructure that enables people, goods and services to move quickly and efficiently for both intra-city region and inter-city region movements. The LCR's future prosperity depends largely on our ability to improve connectivity through the continued development of a fully integrated, modern and inclusive transport network.

⁵ <https://www.gov.uk/government/publications/levelling-up-fund-prospectus> (accessed 15/03/2021)

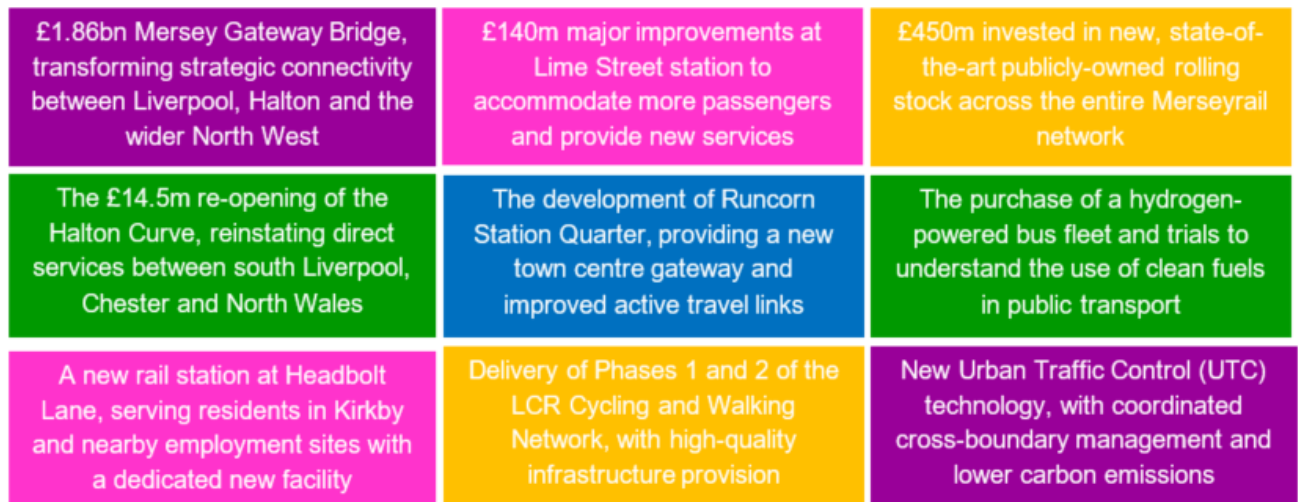
⁶ Building Back Better: Our Economic Recovery Plan (LCRCA, 2020)

⁷ Merseyside Third Local Transport Plan (Merseytravel, 2011)

⁸ Liverpool City Region Combined Authority Transport Plan (LCRCA, June 2019)

Over the last five years, the Combined Authority has made a series of targeted strategic investments in transport infrastructure (Figure 1.1), which are delivering transformative change in the city region, demonstrating the benefit of maximising the impact of devolved public funds allocated through local decision making. Much of the recent investment has been made through the LCR’s £172.5 million Transforming Cities Fund (TCF) allocation, aimed at boosting levels of walking and cycling and facilitating a greater number of trips to be made by public transport.

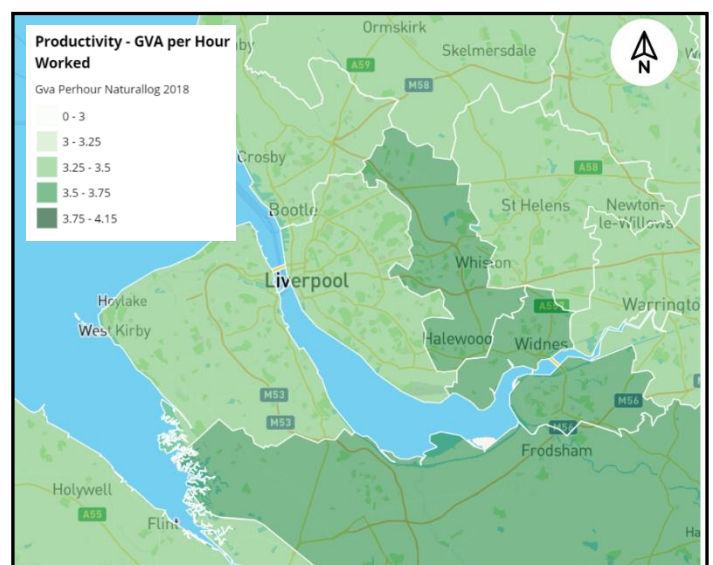
Figure 1.1 – Transformative LCRCA Strategic Transport Investment



Together, these schemes and a wider programme of targeted investment aim to revolutionise connectivity and journey quality across the city region.

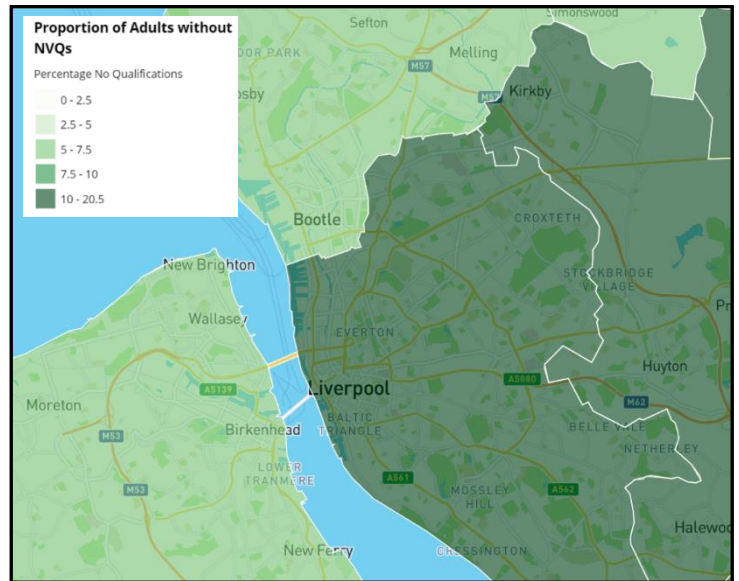
1.2 Challenges

The LCR faces a set of unique and persistent challenges in achieving its vision, many of which have been brought into sharper focus as a result of the climate change emergency and the impacts of the global COVID-19 pandemic. In economic terms, the LCR has historically lagged behind the UK average, and the evidence presented in the LCR Draft Industrial Strategy⁹ reflects this. In 2017, real Gross Value Added (GVA) per hour was £31 in the LCR, 90% of the UK average. GVA per head is only 74% of the UK level and economic inactivity stands at 26%, the third highest in all Local Enterprise Partnership (LEP) areas. These productivity metrics are indicative of a region in need of investment.

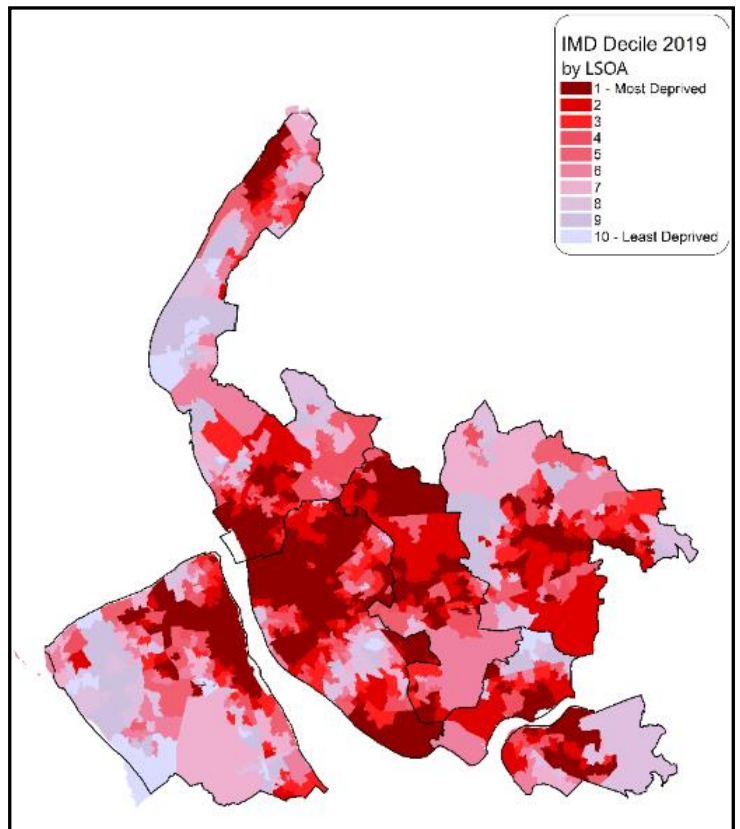


⁹ <https://www.liverpoolcityregion-ca.gov.uk/growing-our-economy/lis/>

The skills gap is a key contributor to this, where 10-20% of all adults in Liverpool have no NVQs. In order to match the national average for NVQ4+ qualifications, the LCR would need a further 59,000 residents qualified to that level. It is anticipated that local long-term unemployment will grow as a result, alongside other factors such as increasing automation and the number of people in sectors (such as hospitality and tourism) facing the worst disruption, as well as a fall in the overall number of job vacancies. Furthermore, more than 60% of graduates do not stay in the LCR after completing their studies, further compounding the skills gap and reducing the skilled labour pool available to serve potential business investors.



It is recognised that economic and health inequalities are intrinsically linked, where poor economic outcomes cause poor health outcomes and vice versa. This vicious cycle has only intensified during the pandemic and, as would be expected, is most acute in areas of high deprivation. The inherent inequalities in health and economic outcomes are clear, where life expectancy varies by 25 years depending on where a person is born within the LCR and with 70,000 people (out of a population of 1.5m) not seeking work prior to the pandemic due to physical and mental health problems. The health and economic impacts of COVID-19 risk widening inequalities and further entrenching deprivation in local communities. Research has shown that the traditionally ‘left-behind’ areas are not those most exposed to the short-term economic impact of the pandemic. This complicates the narrative as it introduces another dimension of geographic inequality. However, as a coastal community with a strong visitor economy, Liverpool is an important exception to this. In 2018 there were 67 million visitors to the LCR, who supported 55,000 jobs and contributed £5 billion to the economy. As a result of the pandemic, the visitor economy has suffered unprecedented loss and will continue to do so in the short term at least, and over the longer term without targeted investment and intervention. Liverpool’s key challenge is now two-fold; to reduce the immediate economic

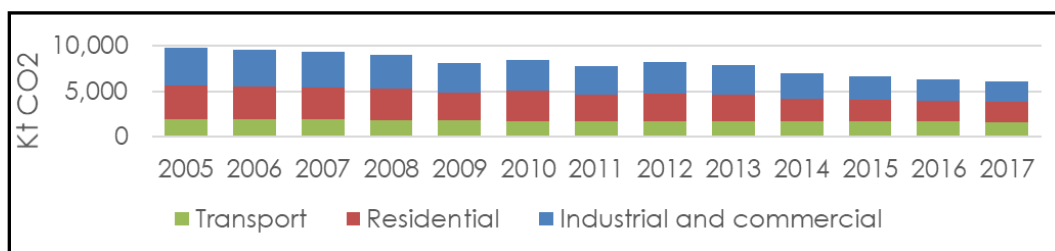


fallout from the pandemic and to reduce the extent to which it has historically been left behind the rest of the UK¹⁰.

Long-term ill health is in turn linked to place-based challenges, in particular the quality of the environment. This is evident not only in the poor-quality housing stock that exists in pockets across the city region, but also in poor quality transport links, severance and severe air quality issues. Poor air quality contributes to 800 deaths in the city region each year, and research by the Centre for Cities¹¹ shows that initial improvements in air quality seen in UK cities during the first lockdown in 2020 were soon reversed, with air pollution returning to its pre-pandemic levels in 39 of 49 cities and large towns studied (including Liverpool), despite the fact that none had returned to previous levels of economic activity.

Research by the British Lung Foundation shows that up to 1,040 deaths a year can be linked to exposure to PM2.5 and NO2 in the LCR, with air pollution costing the LCR economy an average of £480 million each year. An eight-year-old living in the City Region today could still have their life cut short by up to five months, even if pollution decreases in line with projected future improvements. Furthermore, deprived communities within the LCR are likely to reap the most health benefit by tackling toxic air and could be less impacted by policies which charge private car use. As shown in Figure 4.6, emissions from the transport section have remained stubbornly high since 2005, with a corresponding fall in the residential and industrial and commercial sectors.

Urgent action is needed now to reduce pollution, improve health and wellbeing outcomes and enable more people to take up education and employment opportunities.



Between 2005 and 2017, the transport sector's contribution to carbon dioxide emissions was largely unchanged

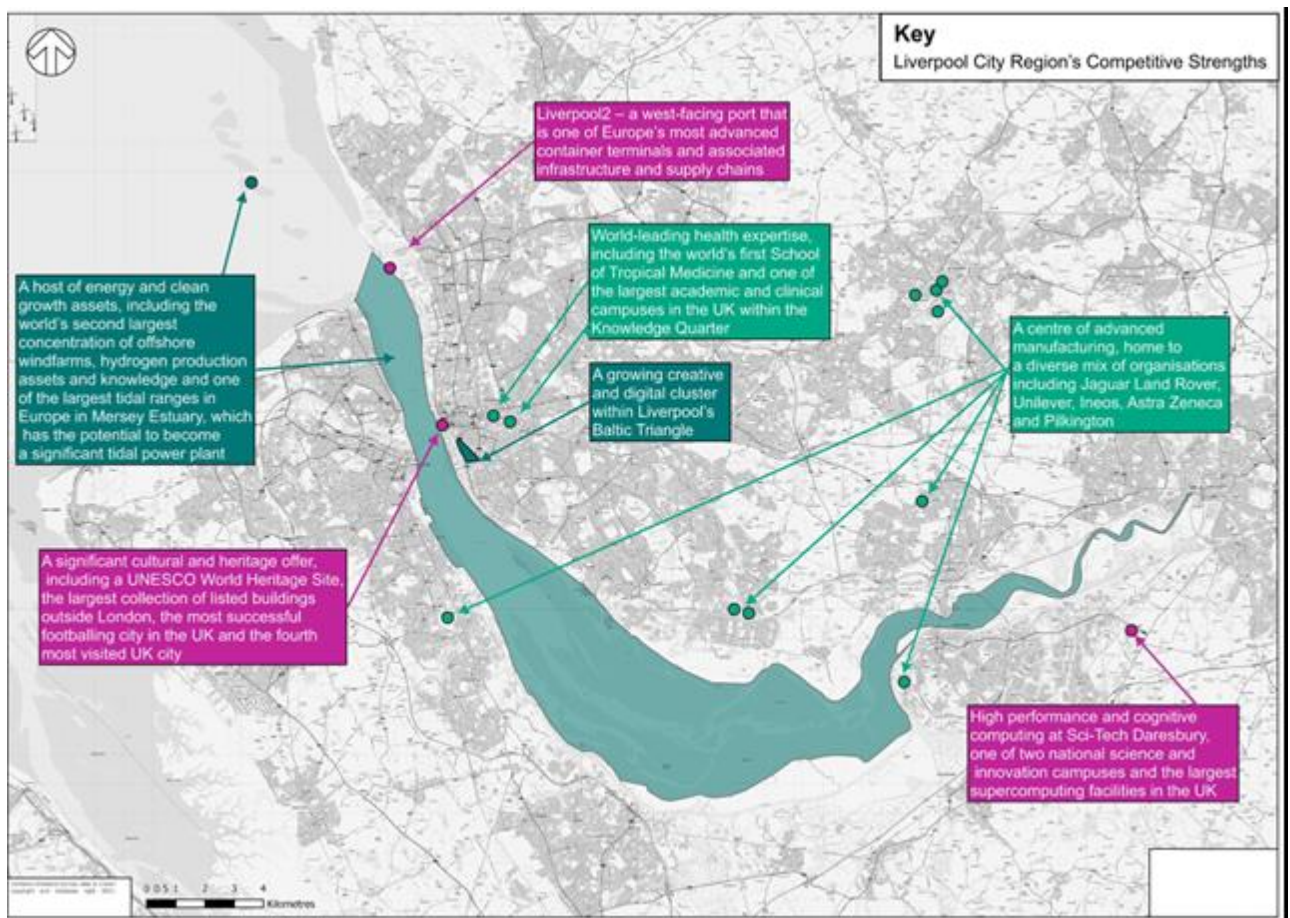
These economic challenges are, to an extent, counterbalanced by significant competitive strengths in a number of industries and the existence of key assets which will enable the LCR to build back better (see

Figure 1.2). The LCR is home to 52,000 businesses, including global organisations such as Jaguar Land Rover, Ineos, Very, Unilever and IBM, and Research and Development investment in the LCR is 2% of Gross Domestic Product (GDP), higher than the national average. Inherent in its success is its ability to adapt, innovate and evolve to achieve green industrial transformation.

¹⁰ <https://www.ifs.org.uk/publications/15055> (accessed 15/03/2021)

¹¹ <https://www.centreforcities.org/wp-content/uploads/2020/12/How-have-the-Covid-pandemic-and-lockdown-affected-air-quality-in-cities.pdf> (accessed 15/03/2021)

Figure 1.2 - Key Assets and Competitive Strengths in the LCR



Key to maximising the LCR's economic potential is the ability to capitalise on its competitive strengths, address its core challenges and embrace the prevailing opportunities, retaining the benefits over the long term and ensuring that these benefits filter down to all groups.

1.3 Key Opportunities

Despite the challenges faced and the inherent uncertainties associated with economic recovery, there is a wealth of opportunity that the LCR can grasp to level up in terms of the economic, social and environmental outcomes it delivers, and the ways in which those outcomes are distributed. The LCR's 'Building Back Better' economic recovery plan demonstrates how £1.4 billion in investment can unlock £8.8 billion of projects, which would create 94,000 permanent jobs and a further 28,000 jobs in construction which would become available in the short term.

This investment is grouped around four key themes:

- Business Ecosystem** – creating the optimum conditions for businesses to invest, thrive and drive an upturn in the LCR's economic performance, with a focus on growth industries and sectors where the LCR has a competitive advantage;

- 8 **People Focused Recovery** – enhancing quality of life for everyone who lives and works in the LCR and those who visit and stamping out entrenched deprivation and inequalities, enabling people to reach their full potential;
- 9 **Place** – enhancing and deriving maximum benefit from the LCR’s significant physical and natural assets, with effective connectivity, high-quality housing and a high-quality environment for residents and visitors; and
- 10 **A Green Recovery** – commitment to achieving net zero carbon by 2040, by investing in research and new technologies and fuels to reduce emissions and drive changes in behaviour that minimise our environmental impact.

The most successful city regions have the infrastructure in place to move goods, services and people quickly and efficiently. Our future prosperity depends on our ability to improve our connectivity through a fully integrated, modern and inclusive transport network. Transport is fundamental to each of the four themes identified in ‘Building Back Better’, as shown in Table 1.1.

Table 1.1 – The Role of Transport in Building Back Better

Business Ecosystem	A well-functioning, reliable transport network is fundamental to retaining global organisations such as Jaguar Land Rover, Unilever and Very in the LCR, and in attracting new investors. Businesses will only choose to invest where there is a pool of readily accessible skilled labour and the ability to move goods and materials quickly and efficiently and transport investment is often the key to unlocking sites for (re)development.
People Focused Recovery	The ability to access education, employment and training opportunities is fundamental in enabling local residents to achieve their potential and drive economic recovery, serving those businesses that choose to locate in the LCR. Severance, affordability and connectivity issues present real barriers to large groups of society in finding work and thus contribute directly to productivity issues.
Place	High-quality places are served by high-quality multimodal transport networks that enable people and goods to move quickly and efficiently. The LCR is well served by radial public transport routes into Liverpool city centre; however, north/south connectivity remains a challenge. A large part of the LCR’s offer is its transport network – Liverpool was the pioneer in introducing railways, transatlantic steamships and other forms of mass transit and Wapping Tunnel was the first railway tunnel in the world. Today, Liverpool’s iconic Mersey Ferry, international airport, 120 kilometre Merseyrail network and the UK’s busiest Atlantic-facing port are some of its biggest assets to its residents and visitors alike.
A Green Recovery	Whilst significant progress has been made in reducing carbon emissions from industry and the residential and commercial sectors, emissions from the transport sector have remained consistent for many years. The LCR is now investing in alternative ‘clean’ fuels such as hydrogen and in enabling much greater uptake of walking and cycling; however, there is much more to be done to improve air quality and reduce carbon emissions.

In its Combined Authority Transport Plan¹², the LCRCA articulates how transport supports the city region’s growth priorities, in terms of supporting access to key growth sites, ensuring that

¹² Liverpool City Region Combined Authority Transport Plan (LCRCA, June 2019)

transformational economic growth opportunities and priorities (including the ports, Liverpool John Lennon Airport and Northern Powerhouse Rail) are evidenced and exploited ensuring that transport and growth interventions support the inclusive economy agenda, including improved connectivity to job opportunities.

The CATP acknowledges the main challenges faced in this, and the key opportunity areas for investment, including:

- **Rail** – significant parts of the LCR are poorly served by rail, including Daresbury Enterprise Zone in Halton and advanced manufacturing and health and life science assets in Liverpool’s Knowledge Quarter, South Liverpool and Wirral. National rail connectivity is poor for a city region of the LCR’s scale and population and key stations, in particular Liverpool Central and Lime Street, are operating at capacity. There are huge opportunities associated with HS2 and NPR and a Station Commission has been set up to lead proposals for a new high speed station in Liverpool city centre that will transform connectivity and create a world class gateway to the city region.
- **Bus** – in contrast to the vast majority of other areas in the UK, the LCR had successfully reversed the decline in bus patronage prior to the COVID-19 global pandemic, with 16% growth in passenger journeys between 2013/14 to 2019. Since the pandemic began, there has been a sharp decline in bus patronage as a result of Government regulations and guidance regarding the use of public transport and it is currently uncertain when or even if patronage will return to its previous level. Despite this, the bus will remain a fundamental means of travel for longer trips, particularly for those on lower incomes and/or without access to a car, and offers a faster, cheaper means of investing in the public transport network compared to rail. A key priority for the city region is bus reform in the context of the recently published National Bus Strategy¹³, to determine the most effective delivery model going forward that can boost patronage, improve passenger journey quality and reduce carbon.
- **Active Modes** – walking and cycling make a low contribution to all trips, at 4.5% and 1.5% respectively, despite there being many shorter journeys that could, in theory, be made by these modes. Significant investment continues to be made in the infrastructure needed for people to feel safe and secure when walking and cycling as a result of the Local Walking and Cycling Infrastructure Plan (LCWIP); and ongoing work is helping to better understand and break down the barriers involved. Since the start of the pandemic many more people have spent much more time within their local communities, and local connectivity is more important than ever.
- **Key Route Network** – the KRN is essential for longer distance bus trips and private vehicle journeys that cannot be made by public transport, as well as for freight movement. However, there are clear links between major arterial roads, Air Quality Management Areas (AQMAs) and areas of significant deprivation. Before the pandemic, full-time home working was relatively uncommon and 68% of all journeys to work in the LCR were made by car. There is now a real opportunity to capitalise on the fact that much larger numbers of people are able to work from home and are supported by their employers in doing this beyond the end of the pandemic. Now is the time to break the cycle of high levels of car use, high numbers of commuter trips, poor air quality and areas of deprivation. The KRN also has an important role to play in supporting future bus corridors and in introducing high-quality active modes infrastructure that connects residential areas with employment areas.

1.4 Transport Pipeline

The LCR’s Draft Industrial Strategy, Recovery Plan and Transport Plan all set out a common vision for a competitive, clean and inclusive economy. The continued development of a reliable, accessible, high-

¹³ Bus Back Better: National Bus Strategy for England (DfT, March 2021)

quality transport network is fundamental to this in terms of connecting people to opportunity and giving businesses the confidence to invest in the area, and the decisions made regarding investment in transport proposals are therefore critical.

The 2020 Budget set out Government’s commitment to investing £4.2 billion in intra-city transport settlements from 2022/23, to be provided through five-year consolidated funding settlements for eight city regions, including the LCR. This fund later became known as City Region Sustainable Transport Settlements (CRSTS).

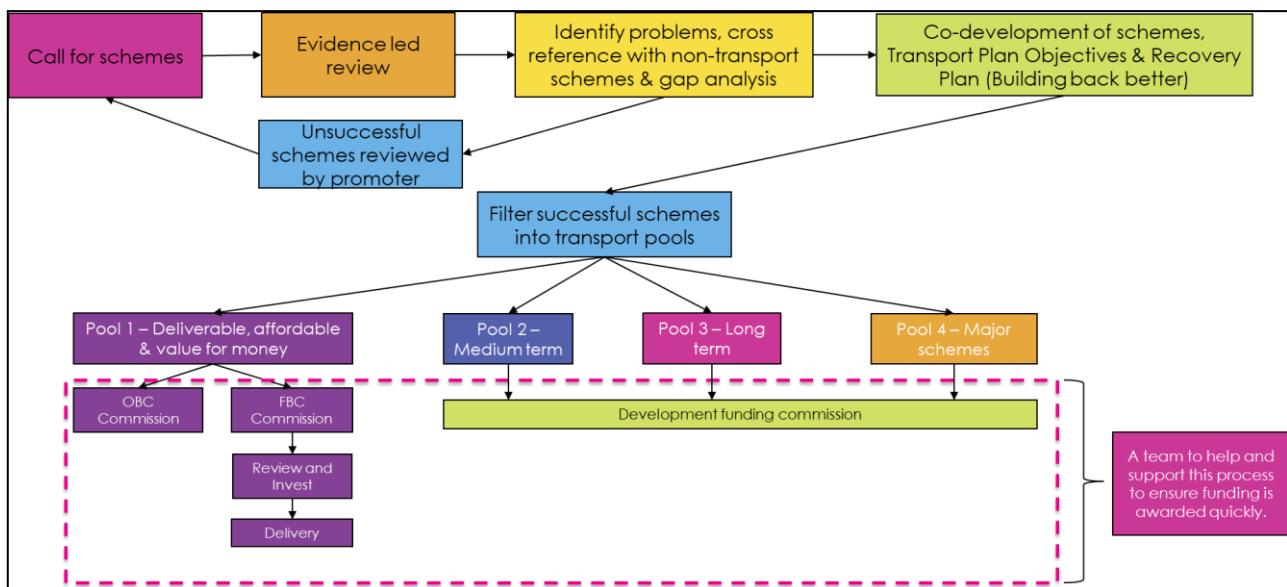
In response, LCRCA has carried out a review and refresh of the City Region Transport Pipeline for the period 2020-2027, which builds on the transformative change being delivered through the Transforming Cities Fund.

A robust, data-led approach was taken to the development of the pipeline. An LCR Forward Planning Dataset was created to help identify the strategic investment priorities, which reviewed:

- The changing context of the LCR;
- The strategic priorities for the LCR;
- The strategic vision for transport (focusing on the Economic Recovery Plan);
- Socio-economic outlook;
- Transport trends; and
- Key Investment sites, including major housing and employment sites and Local Plan allocations.

Figure 1.3 illustrates the transport pipeline development process.

Figure 1.3 – Transport Pipeline Development Process



Pool One schemes are considered to be affordable; readily deliverable over the period 2022-2027; offer value for money; and have therefore been prioritised for Outline Business Case or Full Business Case development, depending on their current stage. Pools Two and Three schemes are medium to longer term schemes that require development funding to bring them to a consistent stage of

development that enables a sound business case to be made. Pool Four schemes, which include major schemes such as Liverpool Central station, will also go through the same development process.

The KRN Levelling Up project was commissioned by the CA in March 2021 within the Pool 1 list of short-term priorities, to develop the project as per the LCR CA Assurance Framework. Through this process, the project could then be eligible for capital funding through CRSTS. Further details on the Programme wide Options Assessment can be found in Appendix A.

1.5 Case for Intervention

A resilient and effective key route network is critical to the delivery of bus priority measures and high quality walking and cycling routes across the LCR. The KRN links geographically to our wider CRSTS investments and supports our ambitions for investment in four key areas:

- The continued delivery of our 600km high-quality active travel network, linking residential communities to employment opportunities and connecting to the public transport network for longer journeys – with **LTN 1/20 compliant segregated routes** ensuring that people have confidence in their ability to cycle safely;
- The delivery of bus reform and the continued introduction of **Green Bus Corridors** and wider bus priority and infrastructure measures on key corridors that link local centres to Liverpool city centre, enhanced through the use of new fleets using hydrogen and other low carbon fuels;
- The delivery of a **new rail station** in Liverpool City Centre at the heart of the creative and digital cluster that adds **significant transport capacity** into the network, a remodelled rail station in Runcorn that better links it to the town centre via walking and cycling and further investment in **new battery technologies** that can in future expand the Merseyrail network to Widnes and Borderlands; and
- Investment into critical **Key Route Network upgrades** and local road maintenance aligned geographically to our investment in bus and active travel, that will deliver safety, reliability and journey quality improvements for all road users, reduce the negative impact of road traffic on local communities and support the resilience of the KRN to climate change, in the context of potential new powers to accelerate and deliver our priorities for modal shift and travel by bus and bike.

1.6 CRSTS Programme Objectives

We have developed three main objectives for the CRSTS programme, of which the KRN Programme is an integral part. All transport investment proposals must meet these objectives for us to delivery on our ambitions for the LCR. These objectives and sub-objective are set out in the table below.

Table 1.2 – CRSTS Programme Objectives

Objective	Sub-Objectives	Policy Fit
Growth and Productivity	<ul style="list-style-type: none"> • Boost local connectivity by building on delivery of new active 	National:

	<p>travel routes, linking communities to education, employment and training opportunities; and supporting wider regeneration/housing targets.</p> <ul style="list-style-type: none"> • Enhance rail connectivity through new/rebuilt stations and the roll out of battery technology providing access to new and existing labour catchments across the city region. • Advance critical KRN and local road maintenance to improve the resilience and reliability of services for public transport and active travel users, reduce journey times and congestion for all road users to enable quicker movement of people and goods. • Provision of high-quality bus priority routes that offer passengers a fast, reliable and clean link to growth areas, supporting greater access to employment 	<ul style="list-style-type: none"> • Gear Change – a vision for active travel (2020) • Bus Back Better – the national bus strategy (2021) • DfT Decarbonisation Plan (2021) • Williams-Shapps Rail White Paper (2021) • DfT Integrated Rail Plan (2021) <p>Sub-National:</p> <ul style="list-style-type: none"> • Transport for the North’s Strategic Transport Plan outlining how strategic investment in transport could support up to £100 billion growth in GVA and create an additional 850,000 jobs by 2050. <p>Local:</p> <ul style="list-style-type: none"> • LCRCA Transport Plan (2019) - Priority Action 1.1 supports social and economic growth in a way that improves accessibility and affordability and reduces reliance on personal car usage whilst improving the health and wellbeing of the city region’s residents, workforce and visitors. • LCRCA Plan for Prosperity (2022) advocates a shift towards integrated, clean infrastructure as an economic enabler, connects people to employment, services, and amenities. It seeks to create resilient, healthy, active communities, addressing social inclusion through access to transport and digital services and one that supports the shift to a low carbon economy.
<p>Levelling Up</p>	<ul style="list-style-type: none"> • To implement LTN 1/20 compliant active travel routes, providing safe, high quality experience for users. • Provide high-quality rail and bus links in areas of deprivation, supporting access to opportunity • A resilient KRN and highways network critical to the delivery of bus priority measures and high-quality walking and cycling routes, as well as reducing noise and air quality issues • A resilient public transport network serving all areas for the city region, improving 	<p>National:</p> <ul style="list-style-type: none"> • Gear Change – a vision for active travel (2020) • Bus Back Better – the national bus strategy (2021) • DfT Decarbonisation Plan (2021) <p>Sub-National:</p> <ul style="list-style-type: none"> • Transport for the North’s Strategic Transport Plan outlining how strategic investment in transport could support up to £100 billion growth in GVA and create an additional 850,000 jobs by 2050.

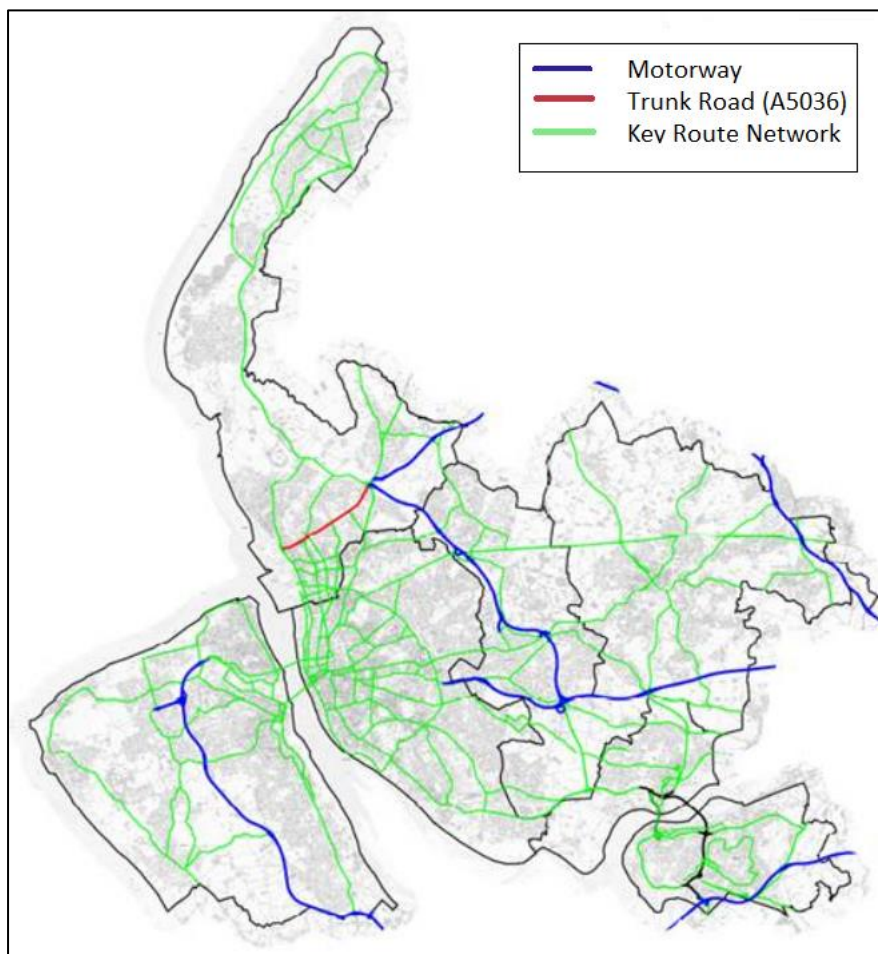
	<p>accessibility to employment, education and health services</p>	<p>Local:</p> <ul style="list-style-type: none"> • LCRCA Transport Plan (2019) - Priority Action 1.1 supports social and economic growth in a way that improves accessibility and affordability and reduces reliance on personal car usage whilst improving the health and wellbeing of the city region’s residents, workforce and visitors. • LCRCA Plan for Prosperity (2022) advocates a shift towards integrated, clean infrastructure as an economic enabler, connects people to employment, services, and amenities. It seeks to create resilient, healthy, active communities, addressing social inclusion through access to transport and digital services and one that supports the shift to a low carbon economy • LCRCA Bus Services Improvement Plan (2021) • LCRCA Local Journeys Strategy (2018) and its focus on designing-in sustainable transport options and placemaking • LCR Local Cycling and Walking Strategy (2019) aimed at improving the quality, reach, safety and use of active modes of travel • LCRCA Long Term Rail Strategy (2018) and its plans to improve the quality, capacity and reach of the rail network
<p>Decarbonisation</p>	<ul style="list-style-type: none"> • Promote an uplift in the use of active travel modes by providing safe, high quality infrastructure aligned to key origins and destinations • Enhance the attractiveness of bus through reliable bus links to encourage mode shift from private car, • Provide a genuine alternative to the car for longer journeys through new/upgraded rail stations and the rollout of battery technology on the Merseyrail network. • Promote a shift to cleaner fuel fleets to reduce carbon emissions 	<p>National:</p> <ul style="list-style-type: none"> • DfT Decarbonisation Plan (2021) <p>Sub-National:</p> <ul style="list-style-type: none"> • Transport for the North Decarbonisation Strategy (2021) - outlining the ambitious target of near-zero carbon emissions from surface transport by 2045 <p>Local</p> <ul style="list-style-type: none"> • LCRCA Air Quality Action Plan (2020) to tackle poor air quality problems across the city region, the majority of which are transport-related • LCRCA Pathway to Net Zero (2022) to set out the pathway and actions to achieving net zero carbon emissions by 2040 • Supported by transport strategies referenced under “Levelling Up”

1.7 The Key Route Network

Our ambition is to support our economy to Build Back Better by enhancing our competitive strengths, whilst at the same time improving tackling congestion, improving accessibility and improving road safety/maintenance. A high-quality KRN is a vital component in achieving this ambition.

The LCRCAs Key Route Network comprises of 801.295 km of adopted roads, 2km of Motorway, 669.244 km of Principal A Roads, 61.536km of Classified B Roads, 12.383km of Classified C Roads and 56.119km of Unclassified Roads.

Figure 1.4 – Liverpool City Region Key Route Network Map



The Key Route Network is defined as:-

1. Roads that form part of the Primary Route Network (PRN)

The KRN includes all roads within the Primary Route Network (PRN), which form a continuous network between 'primary destinations'. These are the most important local roads identified by their green-backed road signs.

The KRN also includes two Mersey Tunnels, the Silver Jubilee Bridge and those roads that serve primary destinations immediately outside the boundaries of the LCR.

2. Strategic links to development sites

In addition, the KRN includes roads that link significant new or proposed housing and employment areas that are not already part of the PRN.

3. Links to the trunk road network

The KRN also includes roads that aren't part of the Primary Route Network but provide links to the Strategic Road Network (SRN) which includes trunk roads and motorways. The LCR's trunk road network comprises parts of the M53, M56, M57, M58, M6, and M62 to the east of junction 6 and the A5036 from the Port of Liverpool to Switch Island. These roads remain managed by Highways England.

4. Traffic volumes

The Key Route Network also includes roads carrying the most significant volumes of traffic (defined as more than 10,000 vehicles per day), and which are not already part of the PRN.

5. Functional importance

Finally the KRN includes roads that are important in functional terms having regard to:-

- Car traffic;
- Light Goods Vehicles;
- Other Goods Vehicles; and
- Bus traffic

Almost every resident, worker and visitor within the Liverpool Combined Authorities uses the highway network in some way on a daily basis, whether as a pedestrian; as a cyclist or motorcyclist, as a car, bus or commercial vehicle driver or passenger, or in other diverse ways such as a mobility scooter user, etc.

The network is used by a diverse range of society, young and old, able-bodied, disabled persons, e.g. partially sighted/blind, etc, and by other minority groups such as equestrian users. The highway network therefore needs to perform in different ways for different user and social groups each with their own needs and priorities.

Highways data

A Highways Infrastructure Asset Management Plan (HIAMP) is part of a suite of management tools that are recognised as being best practice for the management of roads and road networks, especially those whose overall condition varies due to different maintenance regimes and techniques being applied, as is the case with the LCR KRN.

By having a HIAMP, the LCRA has an understanding and detailed knowledge as to the overall condition of the highway asset on a consistent basis. This enables each section of the asset to be categorised by its overall condition and performance. This information is necessary in order to develop short, medium and long-term maintenance programmes based upon known carriageway condition and the resources needed to bring it up to an acceptable standard.

Effectively, the three main categories that require highways major maintenance are: those requiring preventative maintenance (to prevent or minimise the potential/ or the formation of potholes); those

where structural maintenance is required (where potholes have already formed); and those lengths whose design life expectancy is reaching or has exceeded (where roads are beginning to break up) its limit.

In summary, the benefits to be obtained by this approach are: -

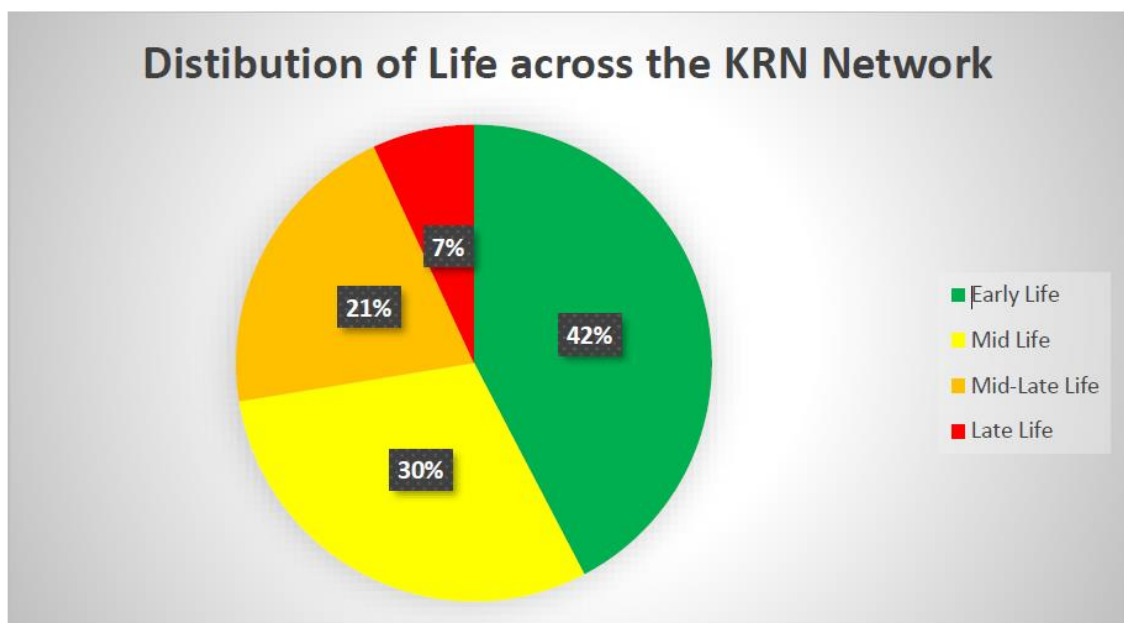
- A systematic approach that takes in short, medium and longer term requirements;
- Whole life cycle planning to reflect the use, condition and importance of the asset;
- Maximising benefits through an informed, balanced approach in assessing competing demands across the LCR;
- Allocation and assessment of the resources required based on need;
- It enables a prioritised programme of investment, based on identifying need, to be drawn up;
- Match third party and other stakeholders' aspirations; and
- Part of a suite of recognised UK best practice reflecting a "Well Managed Highway" approach.

The outputs from the HIAMP can further determine the condition of the carriageway as follows:

- Late Life – carriageway in urgent need of repair or replacement, typically over 15 years old (condition dependant on whether a surface treatment has been applied at mid-life)
- Mid Life – carriageway average age 8-15 years old that would benefit from some surface treatment to prolong life by up to a further 3 – 5 years
- Early Life – carriageway that is in good condition being under 8 years in life
- New – carriageway treated in the past 1-3 years

From the surveys undertaken on the KRN and shown in figure 1.5 below, 28% is in the "Late Life or Mid-Late Life" stage (requiring major treatment and preventative maintenance).

Figure 1.5 – KRN life status of the Key Route Network



Additionally, there is a significant backlog of maintenance requirements on the LCR road network, specifically on the KRN. To maintain current levels of service on the KRN, approximately £12m is required per annum for structural maintenance, £2.5m is required for preventative maintenance, and the current maintenance backlog is £56.8m.

A KRN that is in poor condition poses potential physical risks to active travel users especially, and to users who may have physical or sensory disabilities. It is not conducive to making bus and greater use of bus more attractive/popular and may serve as a disincentive in investment in new bus fleets on specific corridors with known maintenance problems of rough rides. Additional problems include the following:

- Resilience for the movement of goods and people is diminished, threatened or compromised with potential impacts on the LCR's economy;
- Damage can occur to bus fleets, private and business vehicles often resulting in claims (or damage and injuries and hence justification costs for the highways authorities and economy, health costs, time off work etc.);
- Quality and ride of comfort of bus journeys are adversely affected;
- Reactive and emergency maintenance needs to take place incurring additional costs and disruption;
- Reduced reliability of journey times, increased delays and driver frustration;
- Need for weight restrictions;
- Poor quality infrastructure for cyclists and pedestrians making it difficult to encourage sustainable travel and thus improve air quality;
- Rat-running along inappropriate streets with resultant impacts on communities quality of life and safety;
- Delays for freight and logistics operators and other businesses that incur additional time and costs; and
- Reputational damage to the LCR and attractiveness to investors.

Highways Maintenance, the KRN and CRSTS

As part of the Comprehensive Spending Review in October 2021, the LCRCA was indicatively awarded £710million in capital grant to cover local transport investment over a 5-year period between 2022/23 and 2026/27, to be known as the City Region Sustainable Transport Settlements (CRSTS).

The aim of the fund is to support programmes of interventions which will enhance sustainable transport connectivity in major city regions, supporting the decarbonisation of transport in line with local and national commitments. The transport pipeline will form the basis of this funding, as set out in Section 1.1 and the OAR.

As part of the guidance, it was stated that Highways Maintenance and Non-Highways Maintenance (previously Integrated Transport Block) funding would no longer exist as specific budget lines, and instead, be included in the wider un-ringfenced CRSTS allocations. The purpose of this is to simplify the funding landscape, move towards greater consolidation of funding streams and allow city regions much more flexibility to decide and develop long-term strategies that integrate all their local transport priorities.

Investing in highways infrastructure supports improved reliability for public transport, as well as improving the quality of the active travel offer. It also better ensures that the transport network is resilient in response to the significant risks of climate change (e.g. more extreme weather patterns such as heavy rain and flooding, strong winds and storms and hotter summers).

Historically, Highways Maintenance and Non-Highways Maintenance funding has been allocated by population per head for each of the Local Authorities. However, the Department for Transport guidance on the CRSTS bid noted that this funding must be awarded in line with the approved assurance framework for Combined Authorities and form part of the same monitoring and evaluation reporting process as other devolved funding awards. This means that there is much greater scrutiny on these works, with a need to ensure that works being planned comply with the strategic aims of the CRSTS fund.

Investments in the KRN very much need to align with the Highways Maintenance and Non-Highways Maintenance, further details of how this was achieved are presented in Appendix A.

Within the KRN programme, schemes will enhance and compliment Highways and Non-Highways investment in the CRSTS programme and wider investments in the LCR across key corridors.

Investment in the KRN

To fulfil our ambitions around modal shift, we must invest in the KRN with enhanced measures for bus users and active travel. Prioritising these modes allows for decarbonisation, better air quality, safety and quality of life including health benefits.

The proposal for Key Route Network, Levelling Up has been developed to align with the objectives of the LCRCA Transport Plan (2019), the LCRCA recovery plan and the City Region Sustainable Transport Settlement as identified earlier in this document.

The Objectives of the KRN Programme align with the three programme objectives of CRSTS:

- Growth and Productivity
- Levelling Up
- Decarbonisation

For the KRN Programme four priority objectives can be identified within the CRSTS objectives:

The primary objectives are to tackle the KRN Maintenance backlog whilst also improving active travel and public transport interventions along the KRN. Four priority objectives are identified:

1. Improve the reliability and resilience of the Key Route Network for delivery of bus priority measures and high-quality active travel interventions. Maintaining structures, resurfacing and flood prevention are key to ensuring resilience of the network.
2. Improve accessibility of the Key Route Network to ensure continued habitation and future regeneration of an area. For example, improved street lighting and enhancing conditions of the footways. This will improve the public's accessibility confidence in walking and cycling as viable alternatives to motorised vehicular transport for shorter trips.

3. Reduce journey times and congestion for all users of the Key Route Network to enable quicker movement of goods and people
4. Decarbonisation through promoting sustainable modes, embracing alternative fuels and new technology for infrastructure investment on the Key Route Network

The aim is to provide a **fit for purpose, resilient, high quality highway network for travel by bus, walk and cycle and to improve air quality for local communities**. A logic map for the KRN programme can be found in Appendix J.

Resurfacing

There are several resurfacing schemes within our KRN programme. Investing in resurfacing key corridors on our KRN, will improve journey times through smoother rides and reliability. Well maintained highways are safer for all users, providing better stopping distances which is imperative in accident prevention.

As highways deteriorate, there is a greater impact on the surrounding environment as travel times reduce and cars produce greater emissions due to increased fuel consumption.

Consideration for active travel and bus priority will be made in parallel with resurfacing schemes. For example, bus priority measures will be incorporated in to the Speke Hall Road resurfacing scheme. This will seek to address the overreliance on car for short journeys across the LCR as public transport becomes more reliable.

Flood Prevention

Flood prevention measures are included within the KRN programme. Managing surface water and run off effectively ensures that flooding impacts are reduced, and roads are safe for all users and surrounding communities.

Structures

We will invest in several structures across the LCR through a package of maintenance works on key bridges for example, on the A562 and M62. Repairing the concrete and steelwork, maintaining the structures will enhance its durability and resilience. This will ensure our road network is reliable for all users.

1.8 Scheme Descriptions

Table 1.3 shows the schemes within the KRN Programme, which have been selected based on their fit with LCR and CRSTS objectives together with our key investment corridors. It presents the projected outputs and indicative outcomes expected, although it should be noted that there are a number of more qualitative and wider outcomes that will be applicable to all schemes that have not been included in the description for each project. For example, regeneration impacts have not been quantified but a well-maintained highway network and improved conditions for all road users will improve access to employment and leisure opportunities and contribute to the efficient movement of goods to facilitate trade – which will be particularly important in realising the benefits from the Freeport. Furthermore, all road users will benefit from improvements to journey quality as a result of the investment and journey reliability will be improved as a result of the reduced demand for reactive maintenance.

Table 1.3 – Schemes in the KRN programme by investment corridor

Reference	Scheme Name	Scheme Description	KRN Outputs	KRN Outcomes	£m	Timescale
Investment Corridor: Cross River Corridor						
LIV011	Lime Street Multimodal Interchange <i>(Lime Street)</i>	Multimodal scheme including enhancements to active travel, public transport and the road network. It includes improvements to cycle facilities and the implementation of more direct routes for cyclists, secure cycle parking and pedestrian crossing widening to upgrade capacity. Also included is a dedicated bus link to accommodate a potential future bus shuttle facility to Lime Street Station; furthermore, the proposed plans will provide a one lane link with bus passing-by facilities and bus stops at each end - this, in combination with cycling infrastructure and proximity to the train station will create an intermodal hub. Finally, the scheme involves road network enhancements - this includes limiting traffic to buses, taxis and access only between the Lime Street/London Road junction and St Georges Place/ Hood Street junction.	120m of diverted cycle path 60m of widened pedestrian crossings New cycling storage facilities Dedicated bus link between Elliot Street and St Georges Place	<ul style="list-style-type: none"> Increased cyclists Demand for the bus link – increased passenger numbers 	1.580	2022/23
TUN001	Queensway Tunnel Decarbonisation <i>(Queensway Relighting)</i>	A carbon reduction scheme which involves the installation of new LED in the centre mounted location in the Queensway Tunnel similar to the Kingsway Relighting scheme.	50km of existing cable removed 100km of cable installed 1,056 luminaires installed	<ul style="list-style-type: none"> Reduced energy consumption Improved journey reliability 	9.99	24/25
TUN003	Kingsway Tunnel Safety (VRS) <i>(Kingsway Vehicle Restraints System)</i>	Various works to bring the VRS provision up to current standards.	x Safety barriers Wire rope safety fence repairs 5.36m steel crash cushion	<ul style="list-style-type: none"> Reduction in accidents and fatalities Improved journey reliability 	0.45	22/23
WIR001	Wirral Resurfacing <i>(KRN Plane and Inlay (KRN))</i>	Plane and Inlay works at various locations across Wirral including Hoylake Road, Arrowe Park Road, Leasowe Road, Stadium Road, Upton Road and Woodchurch Road.	Inlay works on the following roads: Arrow Park Road Urban Single (170m) Hoylake Road Urban Single (480m)	<ul style="list-style-type: none"> Reduced congestion Improved journey times 	1.400	22/23

			<p>Leasowe Road Urban Dual (470m)</p> <p>Stadium Road Urban (210m)</p> <p>Upton Road Urban Single (Tollemache Road Junction) (210m)</p> <p>Woodchurch Road Urban Dual (Arrow Park Road to M53) (570m)</p> <p>Woodchurch Road Urban Dual (230m)</p>			
WIR002	<p>Low Carbon Birkenhead</p> <p><i>(KRN Surface Treatments - Year 1)</i></p>	Surface treatment works at various locations across Wirral including Arrowe Park Road, Birkenhead Road, Docks Link, Kings Parade and Upton Road	<p>Inlay works Urban Dual: Docks Link (1.5km)</p> <p>Inlay works urban single: Arrow Park Road (1.05km)</p> <p>Birkenhead Road (1.12km)</p> <p>Kings Parade (0.45km)</p> <p>Upton Road (0.66km)</p>	* Safer transport network – less accidents and fatalities	0.500	22/23
Investment Corridor: Mersey Gateway						
LIV015	<p>Speke Hall Bus Priority</p> <p><i>(Speke Hall Road)</i></p>	Carriageway resurfacing, traffic signal upgrades, replacement of kerbs and upgrade of footway and highway drainage.	<p>Urban Road Single Re-Surfacing: Speke Hall Road (1km)</p> <p>Pedestrian Guardrail (180m)</p> <p>Full pavement reconstruction (340m²)</p> <p>New kerbs (1525m)</p> <p>New traffic signals (£420k)</p>	<ul style="list-style-type: none"> • Improved journey times and reduced congestion • Improved journey reliability • Safer transport network – less 	2.000	22/23

				<ul style="list-style-type: none"> accidents and fatalities • Access to employment, housing, services 		
LIV019	<p>Wavertree High Street Resurfacing</p> <p><i>(B5178 Picton Road/Wavertree High Street to B5178 Wavertree Road)</i></p>	Resurfacing along B5178 Picton Road/Wavertree High Street to B5178 Wavertree Road, the extents covering between Picton Clock Tower and Overton Street.	Re-surfacing of Picton Clock Tower Road to Overton Roundabout	<ul style="list-style-type: none"> • Improved journey times and reduced congestion 	4.000	23/24
HAL033	<p>Delph Lane Housing Gateway</p> <p><i>(A56 Reconstruction)</i></p>	<p>Junction improvement on the key A56 corridor serving Daresbury Sci Tech and the housing development in the East of Runcorn.</p> <p>The Junction and Delph lane require renewal due to the degradation of the foundations of the A56. The materials in the ground are based on waste materials which causes undulations over time due to swelling and shrinking caused by the weather.</p>	<p>HB2 Kerbs (188m)</p> <p>Re-surfacing of carriageway (6183m²)</p>	<ul style="list-style-type: none"> • Improved journey times and reduced congestion • Improved journey reliability • Access to employment and housing, services 	0.950	22/23
HAL034	<p>Dukesfield Active Travel Connectivity</p> <p><i>(Dukesfield ATL)</i></p>	Walking and cycling link from Runcorn Station to West Runcorn.	<p>Off-road segregated cycle path (180m)</p> <p>1 footbridge demolished</p> <p>Footways and Paving (1,265m²)</p>	<ul style="list-style-type: none"> • Increased pedestrians and cyclists 	1.800	22/23
Investment Corridor: Eastern Gateway						

LIV013	Queens Drive Bus Priority <i>(Queens Drive (KRN submission))</i>	Carriageway resurfacing, traffic signal upgrades, replacement of kerbs and upgrade of footway and highway drainage.	Resurfacing of Queens Drive, urban road single (950m) Upgrade of associated kerbs and footways	<ul style="list-style-type: none"> • Improved journey times and reduced congestion • Improved journey reliability • Safer transport network – less accidents and fatalities • Access to services 	2.000	22/24
LIV017	Active Travel Signals Upgrade <i>(Liverpool Non-Highway Maintenance Traffic Signals)</i>	Upgraded junction of Lowerhouse Lane/Storrington Ave	Junction upgrades on Lowerhouse Lane and Storrington Avenue	<ul style="list-style-type: none"> • Improved journey times and reduced congestion • Improved journey reliability • Access to services 	1.050	22/23
LIV018	West Derby Road Active Travel <i>(West Derby Road KRN)</i>	Carriageway resurfacing, traffic signal upgrades, replacement of kerbs and upgrade of footway and highway drainage on West Derby Road.	Resurfacing of A5049 West Derby Road (urban dual) (1.2km) Footway and kerb upgrades (1.2km) Signals upgrades on the extent of the section (1.2km)	<ul style="list-style-type: none"> • Improved journey times and reduced congestion • Improved journey reliability • Safer transport network – less accidents and fatalities 	3.000	22/24

				<ul style="list-style-type: none"> • Access to services 		
KNO020	Higher Road Active Travel Route Phase 1 <i>(Higher Road - Phase 1)</i>	Resurfacing of Higher Road from the junction with Speke Boulevard to the junction with Bailey's Lane.	Resurfacing of urban road single on Higher Road (1.3km)	<ul style="list-style-type: none"> • Improved journey times and reduced congestion 	0.425	24/25
KNO021	Higher Road Active Travel Route Phase 2 <i>(Higher Road - Phase 2)</i>	Surface dressing along Higher Road from the junction with Bailey's Lane to the junction of Macket's Lane. In addition, a new on road cycleway is to be constructed along Higher Road from the junction with Bailey's Lane to the junction with Blackburne Drive and the Trans Pennine Trail.	Surface Dressing of urban road single (2.1km) Cycle Lane on highway (1.73km)	<ul style="list-style-type: none"> • Safer transport network – less accidents and fatalities • Increase in the number of cyclists 	2	24/25
KNO022	Roby Road Pedestrian Improvements <i>(Roby Road)</i>	Resurfacing of Roby Road from the roundabout junction with Archway Road to the junction with Bridge Road. In addition, minor footway improvements will be made to improve crossing facilities on the side roads.	Resurfacing of Roby Road A5080, urban single (610m) Associated footway improvements	<ul style="list-style-type: none"> • Increase in number of pedestrians • Reduced severance 	0.225	23/24
KNO023	M62 Flood Prevention <i>(M62 Drainage)</i>	Replacement of the kerb drainage system on the M62 eastbound carriageway adjacent to junction 5 to increase capacity.	Replaced kerb drainage system on M62 eastbound carriageway adjacent to junction 5.	<ul style="list-style-type: none"> • Improved journey reliability • Safer transport network – less accidents and fatalities 	0.15	23/24

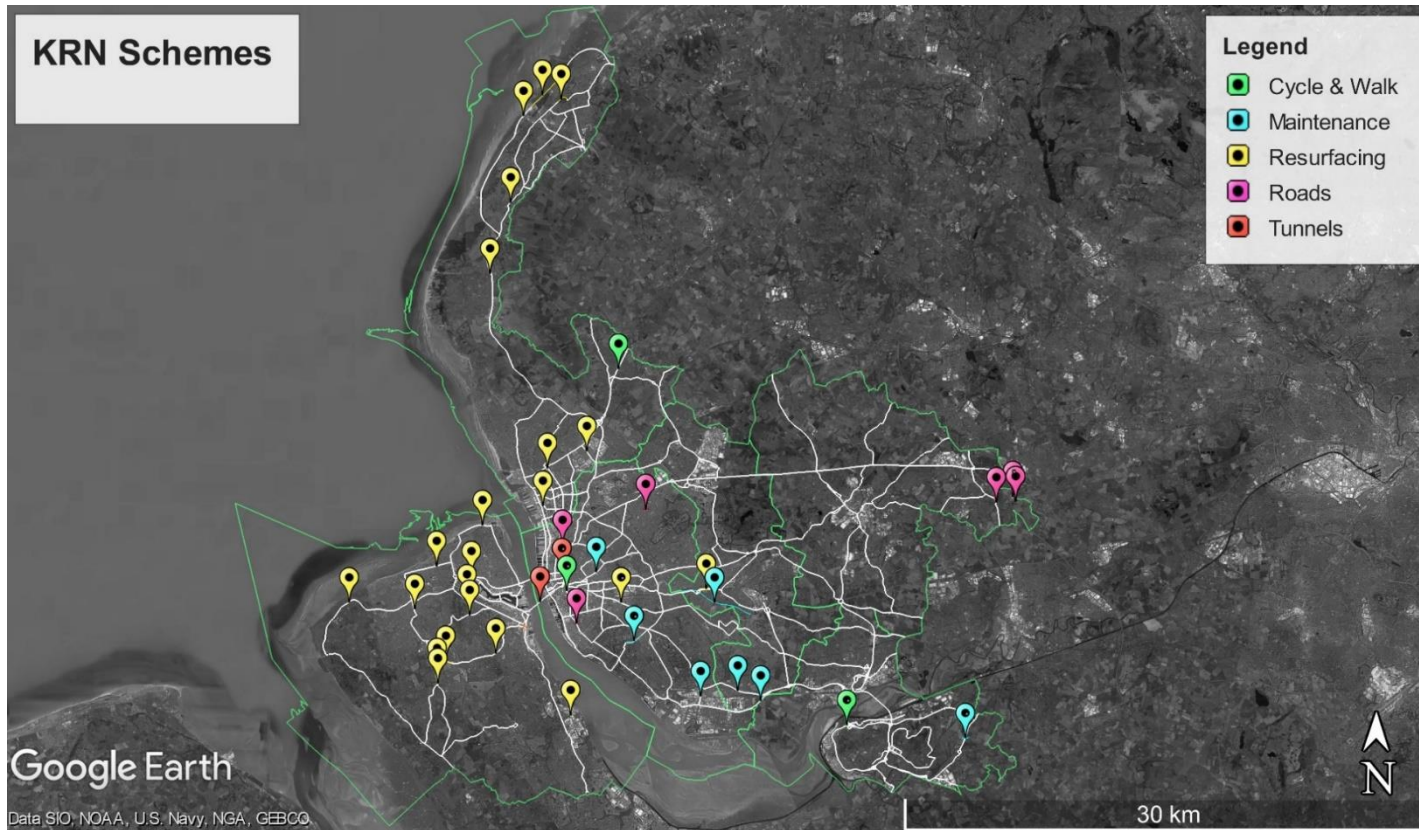
KNO024	M62 Structures Resilience <i>(M62 Structures)</i>	A package of maintenance works on several structures and footbridges over or adjacent to the M62.	<p>Yew Tree Footbridge; graffiti removal; a surfacing and waterproofing layer; concrete repair work; replaced gated gullies at bridge end; vegetation removal.</p> <p>Roby Road Retaining Wall; crack and spalling repairs throughout retaining wall.</p> <p>Bowring Circle East and West Bridges; crack and spalling repairs; renewal of polysulphide sealant.</p> <p>Coney Green Bridge; graffiti removal; concrete repairs; sealant replacement.</p> <p>Whitefield Lane Bridge; graffiti removal; concrete repairs; patch repairs.</p> <p>Carr Lane Footbridge; reinstate or replace polysulphide sealant; concrete repairs; graffiti and vegetation removal; exposed reinforcements repaired.</p> <p>Golf Course Bridge; Graffiti removal;</p>	<ul style="list-style-type: none"> • Improved journey reliability • Safer transport network – less accidents and fatalities • Increase in number of pedestrians 	1.5	24/25
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			concrete repairs; sealant replacement.			
KNO025	A562 Structures Resilience <i>(A562 Structures)</i>	A package of maintenance works to improve the condition of the A561 bridge over the A562 and the railway.	Asbestos investigations and removals; concrete spalls and cracks repairs; treat corrosion to steelwork, and bearings and bolts.	<ul style="list-style-type: none"> • More resilient infrastructure • Improved journey reliability • Safer transport network – less accidents and fatalities 	2	24/25
STH001	Parkside Access Improvements <i>(Parkside Additional KRN Mitigation)</i>	Highways enhancements to facilitate access to the Parkside Regeneration project. The scheme consists of full signalisation of the A572/A572/A573/A573 Southworth Road/Parkside Road junction, extended approach and queuing lanes at A49/A572 Church Road/Mill Lane/Southworth Road junction, and strengthening of A573 Parkside Road Bridge to accommodate 44 tonne vehicles.	Off-road segregated cycle track (630m) Inlay/Overlay of Urban Road Single: A572/A573 (300m) A49 (120m) Full signalisation of A572/A573 Southworth Road/Parkside junction Extended approach and queuing lanes at A49/A572 Church Road/Mill Lane/Southworth Road junction Strengthening of A573 Parkside Road Bridge (to	<ul style="list-style-type: none"> • Improved access to employment, housing, services • Improved journey reliability • Increased pedestrians and cyclists • Reduced severance 	6.000	23/24

			accommodate 44 tonnes)			
Investment Corridor: Coastal Corridor						
SEF002	A59 Cycling Connectivity <i>(A59, junction improvements at Kenyon's Lane and Hall Lane)</i>	<p>Combined scheme delivered over 3 years which aims to deliver a new segregated LTN 1/20 compliant cycle track on both sides of the carriageway between the town centre at Eastway/Westway junction and Robbins Island on the borough boundary.</p> <p>This will include measures to improve pedestrian facilities and cycle crossing links at the junction with; Robbins Island, Kenyon's Lane and Dodds Lane. The scheme will also include improvements including links to a wider E_W cycle route at Hall Lane.</p>	<p>Resurfacing of the following urban dual roads: A59-Kenyons Lane (300m) A59-Robbins Lane (300m) A59-Hall Lane (330m) A59-Dodds Lane (370m) Segregated cycle track on both sides of the carriageway (1.31km)</p>	<ul style="list-style-type: none"> • Increased pedestrians and cyclists • Safer transport network – less accidents and fatalities 	3.009	25/26
SEF032	Connecting Sefton <i>(Highway Maintenance Carriageway Resurfacing (KRN))</i>	<p>Highway Maintenance or Carriageway Resurfacing in various locations across the KRN in Sefton including Marine Drive, Albert Road, Liverpool Road, Strand Road, Hawthorne Road, Southport Road and Park Lane.</p>	<p>Resurfacing of the following roads: Urban Marine Drive 870m Southport Road (30m) Park Lane (210m) Urban road single: Albert Rd/Park Crescent (690m) Liverpool Road (190m) Strand Road (170m) Urban dual Hawthorne Road (100m)</p>	<ul style="list-style-type: none"> • Improved journey times and reduced congestion • Safer transport network – less accidents and fatalities 	0.941	22/23 and 23/24

Total					44.97 0	
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Figure 1.6 – Map of Key Route Network Schemes



Maps of schemes by Investment Corridors is provided in Appendix B. Additional scheme level maps and drawings are presented in Appendix C.

1.9 Options Appraisal

A full options appraisal was undertaken and is provided in Appendix A. This details how the KRN programme was built, including multiple rounds of shortlisting based on compatibility, funding, the KRN and CRSTS objectives, and deliverability and affordability. An initial longlist of 187 schemes worth a total of £328.538m was refined to the final shortlist of 21 schemes totalling £44.970m. A RAG rating system was used to eliminate schemes during each sift.

1.10 Impact of not securing public funding

If public sector funding is not secured to deliver the full programme of KRN investments, our ability to bring about our ambitions for the City Region as set out in the LCRC recovery plan and the City Region Sustainable Transport Settlement programme would be placed in jeopardy. Without sufficient investment to maintain and improve our strategic Key Route Network, which supports the efficient movement of goods and people to and from the region's key employment and housing sites, we would fail to make the step change in business growth and inward investment that we seek.

The poor quality of many of the region's highways detracts from the resilience, efficiency and competitiveness of the LCR. There remains a significant highway capital maintenance backlog and legacy of degraded highways and footways. This impedes the safe and efficient movement of traffic and discourages walking and cycling in the region.

Furthermore, the highway capacity restrictions at key LCR locations act as a barrier to economic growth for the Region, discouraging businesses to base and invest in the LCR as there would be limited growth potential at these sites and no improvement to the existing accessibility. This would limit options for sustainable growth and social and environmental benefits of improvements to the existing highways assets.

Investment and improvement in existing highway infrastructure on the KRN is invariably led by the public sector and there is also then an increased pressure on reactive revenue-based maintenance interventions of the region's highways authorities.

Sometimes KRN improvements can be part funded with contributions from developers where the works are required as a consequence of specific developments, although they are rarely sufficient to fund the total cost of the improvements required which is where public funding is required to make up the shortfall.

In recognition of the significant maintenance backlog that exists on the city region's roads, the KRN programme will work to improve the quality and resilience of the city region's highway assets. This will be focused on routes that link, open up, or enhance the city region's main economic growth zones, housing sites and urban centres.

1.11 Constraints and Dependencies

The delivery of the schemes that make up the programme between 2022-27 will require several scheme tasks to take place for them to be delivered successfully. These include Traffic Regulation Orders, traffic management plans and planning approvals. All LCR partners have established procedures in place to deal with these delivery constraints and dependencies.

In addition, the KRN programme of schemes aligns closely with local and national strategies including the LCR Growth Strategy through contributing to developing a London Style Transport System for the City Region. Further to this, the KRN programme of schemes will also align closely with the City Region Spatial Development Strategy such as developing strategic transport links to new employment and housing developments which will facilitate the easy movement of goods and people.

A key constraint is likely to be contractor resources and existing contract value exceedance.

A detailed programme risk register has been produced and are provided in Appendix D; this identifies potential risks in delivering the programme, the consequences and probability.

Many of the KRN schemes show a high level of synergy with other ongoing or planned investments. For example, many schemes link to the remaining TCF projects in delivery, CRSTS proposals and Highways Maintenance programmes for each of the Local Authorities.

In order to measure whether the scheme objectives have been met, a series of specific; measurable; achievable; realistic and time-bound targets have been derived. The key success factors for the KRN programme will be:

- On time and to budget delivery of the scheme
- Improved journey times and reliability through improved UTC at signals
- Introduction of bus priority measures at key junctions
- Improved pedestrian and cyclist crossing facilities at key junctions
- Reconstruction and resurfacing of carriageways on key strategic routes in the City Region

Tables 1.4 sets set out the headline types of constraints, dependencies and interfaces for the programme, broken down by scheme type.

Table 1.4: Constraints, Dependencies and Interfaces by scheme type

SCHEME TYPE	CONSTRAINTS	DEPENDENCIES	INTERFACES
Junction Improvements	<p>Orders (TROs) to be produced, statutory advertisement period and political sign off.</p> <p>Out of hours working or restrictions on working will be required to minimise journey time disruption.</p>	<p>Planning approvals for the proposed work will be required.</p> <p>Number of contractors.</p> <p>Delivery of TCF projects like UTC traffic signal upgrade and respective local authority highways maintenance programmes</p>	<p>LCR Spatial Plan</p> <p>Local Transport Plan 4, Spatial Development Strategy, CRSTS priority schemes and respective LA highways maintenance programmes</p>
Walking	<p>Development of pedestrian management plans to ensure safe movement of people during the construction period.</p> <p>Traffic Regulation Orders (TROs) to be produced, statutory advertisement period and political sign off.</p> <p>Designing within the public realm requirements to complement the existing network in Liverpool City.</p>	<p>Delivery of Highways Maintenance programmes for each local authority, TCF schemes such as LCWIP phase 1 and 2, plus CRSTS pool 1 projects</p>	<p>The development of the Ropewalks area around Duke Street enhances the leisure offer and encourages more visitors to this area of the city.</p>
Cycling	<p>Traffic Regulation Orders (TROs) to be produced, statutory advertisement period and political sign off.</p> <p>Complete legal process to provide a notice of intention for the change of use from footways to shared surfaces for multi-use.</p>	<p>Successful delivery of LCWIP Phase 1 and 2, Runcorn Station Quarter, respective Highways Maintenance programmes for each LA plus CRSTS pool 1 projects</p>	<p>The development of the Ropewalks area around Duke Street enhances the leisure offer and encourages more visitors to this area of the city.</p> <p>Undertake regular cycle forum consultations to ensure effective scheme delivery.</p> <p>Develop a way finding proposal to ensure effective movement of cyclists that is consistent with the LCR Strategic Network.</p>
Bus	<p>Orders (TROs) to be produced, statutory advertisement period and political sign off.</p> <p>Out of hours working will be required to minimise journey time disruption.</p>	<p>Successful delivery of Green Bus Route interventions as part of CRSTS</p> <p>Planning approvals for the proposed work will be required.</p>	<p>LCR Bus Strategy, Local Transport Plan 4</p>
Rail	N/A	N/A	N/A

2. Economic Case

2.1 Introduction

The Economic Case is the essential core of the business case and has been prepared according to Treasury's Green Book guidance. This section of the business case assesses the economic costs and benefits of the proposal to society, and spans the entire period covered by the proposal.

The methodology for appraisal of the scheme is set out in the sections below, including appraisal tools and data used, assumptions and a narrative of the qualitative and quantitative benefits of the scheme in terms of the economy, environment and society in accordance with TAG.

2.2 Options Appraised

As outlined in the Strategic Case, the KRN programme includes a number of highways maintenance schemes across the City Region. These include schemes that will enhance conditions for public transport and active modes as well as for highway trips. The schemes are set out in the appraisal methodology selection below.

2.3 Appraisal Methodology

2.3.1 Overview and scope

The economic appraisal of the proposed schemes have been based on quantitative and qualitative assessments as per TAG units A1, A2, A3 and A5. In line with Transport Analysis Guidance (TAG) advice contained within the 'Guidance for the Technical Project Manager', a proportionate approach has been adopted to assessing the schemes. The primary appraisal method for each scheme is dependent on the type of scheme, the expected benefits, and whether these can be appraised qualitatively or quantitatively. Table 2.1 provides a summary of the proposed approaches to appraisal.

Table 2.1: Appraisal methodology summary

Scheme reference	Scheme name	Scheme promoter	Primary appraisal methodology
HAL033	A56 Reconstruction	Halton	Quantitative and qualitative. HMAT appraisal plus non-monetised benefits.
HAL034	Dukesfield ATL	Halton	AMAT appraisal.
KNO020	Higher Road - Phase 1	Knowsley	HMAT appraisal
KNO021	Higher Road - Phase 2	Knowsley	HMAT + AMAT appraisal
KNO022	Roby Road	Knowsley	Quantitative and qualitative. HMAT appraisal plus non-monetised benefits.
KNO023	M62 Drainage	Knowsley	Qualitative appraisal
KNO024	M62 Structures	Knowsley	Qualitative appraisal
KNO025	A562 Structures	Knowsley	Qualitative appraisal
LIV013	Queens Drive (KRN submission)	Liverpool	Quantitative and qualitative. HMAT appraisal plus non-monetised benefits.

LIV015	Speke Hall Road	Liverpool	Quantitative and qualitative. HMAT appraisal plus non-monetised benefits.
LIV017	Liverpool Non-Highway Maintenance Traffic Signals	Liverpool	Qualitative appraisal
LIV018	West Derby Road KRN	Liverpool	Quantitative and qualitative. HMAT appraisal plus non-monetised benefits.
LIV011	Lime Street	Liverpool	AMAT appraisal.
LIV019	B5178 Picton Road/Wavertree High Street to B5178 Wavertree Road	Liverpool	Quantitative and qualitative. HMAT appraisal plus non-monetised benefits.
SEF002	A59, junction improvements at Kenyon's Lane and Hall Lane	Sefton	HMAT + AMAT appraisal
SEF032	Highway Maintenance Carriageway Resurfacing (KRN)	Sefton	HMAT appraisal
STH001	Parkside Additional KRN Mitigation	St Helens	Quantitative and qualitative. HMAT appraisal plus non-monetised benefits.
TUN001	Queensway Relighting	Merseytravel	Quantitative and qualitative. Bespoke appraisal using TAG Unit A3 plus non-monetised benefits.
TUN003	Kingsway Vehicle Restraints System	Merseytravel	Quantitative and qualitative. HMAT appraisal plus non-monetised benefits.
WIRO01	KRN Plane and Inlay (KRN)	Wirral	HMAT appraisal
WIRO02	KRN Surface Treatments - Year 1	Wirral	HMAT appraisal

2.3.2 Highways Maintenance Appraisal Tool

The majority of the appraisal work undertaken in this Economic Case has been undertaken using the Highways Maintenance Appraisal Tool (HMAT) developed by TRL on behalf of the Department for Transport. The model assesses a range of inputs relating to maintenance spend and project outcomes measured both in terms of the impact on the quality of the road network, but also the economic benefits arising from this.

The main inputs to the model are as follows:

- Do minimum and do something spend profiles;
- Condition of the existing network;
- Treatment strategies to be applied and allocation of treatment strategies to condition of the existing network;
- Average scheme length;
- Estimated traffic flows and future growth in vehicle kilometres; and
- Cost of treatments.

The assumptions made in the model are set out below.

Across all schemes:

- Same treatment types and condition bands for all schemes.
- Construction costs for each treatment type based on previous HMAT appraisals, costs inflated to 2022 prices using GDP deflator.
- Budget drivers based on previous HMAT appraisals.
- Treatment effects constant across all schemes (e.g. surface dressing turns fair condition to good, etc.).

- All condition bands treated by a given scheme in the scheme area.
- Assumed maintenance period is 80% off-peak closures, 20% night closures.
- Maintenance output per sqm constant across all schemes, based on previous HMAT appraisals.
- Job impact uses default national average.

Scheme specific:

- Scheme extent information, e.g distance, traffic, road type, etc.
- Budgets based on cost information provided by LCR and districts.
- Specific treatment using given budget occurs in certain years according to information given by LCR – all other years have a budget of £1k and surface dressing treatment only.
- GAIST condition data used where available, Liverpool schemes assume % split across condition bands based on overall GAIST score, Sefton schemes assume road condition as no information provided in this regard.
- Treatment type for each scheme based on info given by LCR/districts, scheme drawings, etc.

The model produces a range of outputs. These can broadly be split into engineering-related outputs (examining the condition of the network after the projected spend) and economic outputs (looking at the broader benefits of the investment) such as the value of time savings or changes to vehicle operating costs. The key outputs of the model are:

- Change in road condition over the specified period;
- Impact of the work being carried out on journey time, accidents, vehicle operating costs and carbon;
- Carbon impact of the work carried out, including both emissions from vehicles involved in the process as well as the embedded carbon impact of the materials;
- Long term changes in vehicle operating costs, value of time, carbon and accidents of the improved quality of the road surface; and
- Additional jobs created and associated gross value added (GVA) uplift from the work carried out (not included in the unadjusted benefit cost ratio (BCR) within this business case).

Whilst the inputs to the process are based around the overall investment requirements, the modelling process is indifferent to the locations of individual schemes, being only concerned with the overall length of the road network that is upgraded, the average length of schemes and the cost of the treatments.

2.3.3 Active Mode Appraisal Toolkit

The Active Mode Appraisal Toolkit (AMAT) has also been utilised in this Economic Case. The latest version was updated in May 2022. AMAT quantifies a wide range of potential benefits of cycling and walking interventions including:

- health improvements from increased levels of physical activity in terms of reduced mortality risk and lower work absenteeism;
- improvements to journey quality as a result of providing the perception of a safer or pleasant journey whilst using walking and cycling infrastructure; and
- impacts associated with modal shift away from cars and taxis including improvements in traffic congestion, greenhouse gas emissions, air quality, noise, accidents, infrastructure maintenance, and changes to indirect tax revenues as a result of a reduction in distance travelled by these modes.

Inputs into the AMATs required for the appraisals are:

- Cycle and pedestrian demand before the scheme. This has been taken from count data (if available) and 2011 Census data using the Propensity to Cycle Tool for cycle trips and the DataShine Commute Tool for walking trips.
- Cycle and pedestrian demand after the scheme. Cycle demand growth has been calculated using a disaggregate mode choice model, which calculates a growth factor based on the type and length of new infrastructure and the potential for cycle growth in the local area, developed using guidance and values in TAG A5.1. Pedestrian demand growth has been estimated using evidence from comparable schemes and studies.
- Length and type of infrastructure and scheme costs, taken from drawings and scheme information provided by scheme promoters.
- For all other parameters in AMAT, the defaults in the AMAT template have been retained.

The discounting worksheet within the AMAT template has been modified to produce results in a 2022 base year, as opposed to the standard 2010. This is to match the outputs produced by the HMAT template, which are also produced using a 2022 base year. The discounting values in the AMAT template have been modified using values in the TAG Databook.

Specific details regarding the AMAT methodology for each active mode scheme is provided below.

Dukesfield ATL

The proposed scheme will implement a new segregate cycleway and footway between Percival Lane and Station Road/Waterloo Bridge. The following has been assumed in the AMAT appraisal:

- The Propensity to Cycle Tool has been used to derive the existing cycle demand, with 42 commute cyclists predicted to use Station Road. In accordance with Active Travel Fund guidance, this has been factored by 6 to account for all day trips and return trips.
- A disaggregate mode choice model has been used to derive the uplift in demand with the scheme. This model has been developed using guidance and values in TAG A5.1. The calculated uplift factor is 5.7%.
- An off-road segregated cycle track has been assumed.
- Pedestrian improvements are assumed to include lighting, kerb levels, widening, pavement evenness and directional signage.
- The DataShine Commute Tool has been used to derive existing pedestrian demand. A judgement has been made regarding the commute walking trips between MSOAs in the area that would potentially use the new route. Of these total trips between MSOAs in the area, a conservative estimate of 20% has been applied to estimate trips that would divert to the new route. In accordance with Active Travel Fund guidance, the commute trips have been factored by 32 to account for all day trips and return trips.
- To derive pedestrian trips with the scheme, an estimate has been made based on research by Whitehead et al (2006) and the impact of similar studies, which indicate an increase in footfall of 20-30%. An estimated uplift of 30% has been applied. Given that the scheme is introducing a wholly new link, as opposed to an improvement of an existing link, it is possible the uplift in trips will be significantly more than in the studies referenced here.
- The appraisal period has been set at 30 years. TAG Unit A1.1 states that the appraisal period for footways and cycleways is between 20 and 40 years, depending on whether the scheme involves surfacing or foundation works. Given that the Dukesfield ATL scheme makes use of existing highway and also features a new link and is expected to include both resurfacing and foundation works, an appraisal period within this range has been assumed.

Lime Street

The proposed scheme is an amendment to a previously developed scheme, with a diverted cycle track, widened pedestrian crossing and removal of a proposed mirror pool. The following has been assumed in the AMAT appraisal:

- A Tracsis cycle count from March 2016 at the St George's Place/Lime Street junction has been used. Given the proposed cycle track is only being diverted, no demand growth has been assumed. The benefits for cycle trips are derived from new storage facilities.
- A Tracsis pedestrian count from March 2016 at the St George's Place/Lime Street junction has been used. Given the proposed changes, 60 metres of widened pedestrian crossing and increased public space has been assumed.
- No change in cycle infrastructure has been assumed.
- Pedestrian improvements are assumed to include widening, pavement evenness and directional signage.
- The appraisal period has been set at 60 years. This scheme is an amendment to a wider and more comprehensive multi-modal transport scheme and therefore its costs and benefits are expected to occur over an extended period. For many elements of the wider scheme, the design life will exceed the standard 60 years and could be as long as 100 years, as noted by the guidance in TAG Unit A1.1. Therefore, in accordance with the guidance for a core appraisal period, 60 years has been assumed.

Higher Road Phase 2

The proposed scheme is for an on-road cycle lane on Higher Road between Bailey's Lane and Blackburne Drive. The following has been assumed in the AMAT appraisal:

- DfT traffic counter 27336 on Higher Road has been used to derive the existing demand.
- A disaggregate mode choice model has been used to derive the uplift in demand with the scheme. This model has been developed using guidance and values in TAG A5.1. The calculated uplift factor is 68%.
- An on-road segregated cycle lane has been assumed.
- The scheme is 1.73km in length.
- The appraisal period has been set at 20 years. This scheme is likely to primarily involve surfacing works, with only limited foundation works. Therefore, in accordance with the guidance noted above for the Dukesfield ATL scheme, a 20 year appraisal period has been assumed.

A59 Hall Lane

The proposed scheme is for an off-road segregated cycleway between the A59 Northway/Hall Lane junction and the bridge over the Sefton Canal. The following has been assumed in the AMAT appraisal:

- An Intelligent Data pedestrian and cycle count undertaken on 14th October 2021 has been used to derive the existing demand.
- A disaggregate mode choice model has been used to derive the uplift in demand with the scheme. This model has been developed using guidance and values in TAG A5.1. The calculated uplift factor is 4%.
- An off-road segregated cycle track has been assumed.

- Pedestrian improvements are assumed to include kerb levels, widening, pavement evenness and directional signage.
- The scheme is 0.36km in length.
- The appraisal period has been set at 20 years. This scheme is likely to primarily involve surfacing works, with only limited foundation works. Therefore, in accordance with the guidance noted above for the Dukesfield ATL scheme, a 20 year appraisal period has been assumed.
- Pedestrian trips with the scheme have been derived using research by Whitehead et al (2006) and the impact of similar studies, which indicate an increase in footfall of 20-30%. An estimated uplift of 30% has been applied.

A59 Liverpool Road to Kenyons Lane

The proposed scheme is for an off-road segregated cycleway between the A59 Northway/B5407 Liverpool Road/Old Lane junction and the A59 Northway/Dodds Lane junction. The following has been assumed in the AMAT appraisal:

- An Intelligent Data pedestrian and cycle count undertaken on 21st September 2021 has been used to derive the existing demand.
- A disaggregate mode choice model has been used to derive the uplift in demand with the scheme. This model has been developed using guidance and values in TAG A5.1. The calculated uplift factor is 51%.
- An off-road segregated cycle track has been assumed.
- Pedestrian improvements are assumed to include kerb levels, widening, pavement evenness and directional signage.
- The scheme is 1.31km in length.
- The appraisal period has been set at 20 years. This scheme is likely to primarily involve surfacing works, with only limited foundation works. Therefore, in accordance with the guidance noted above for the Dukesfield ATL scheme, a 20 year appraisal period has been assumed.
- Pedestrian trips with the scheme have been derived using research by Whitehead et al (2006) and the impact of similar studies, which indicate an increase in footfall of 20-30%. An estimated uplift of 30% has been applied.

Parkside Road Bridge

The proposed scheme is for an off-road segregated track on the Parkside Road bridge over the M6. The following has been assumed in the AMAT appraisal:

- An DfT traffic counter on Parkside Road has been used to derive the existing cycle demand.
- A disaggregate mode choice model has been used to derive the uplift in demand with the scheme. This model has been developed using guidance and values in TAG A5.1. The calculated uplift factor is 23%.
- An off-road segregated cycle track has been assumed.
- The scheme is 0.63km in length.
- The appraisal period has been set at 20 years. This scheme is likely to primarily involve surfacing works, with only limited foundation works. Therefore, in accordance with the guidance noted above for the Dukesfield ATL scheme, a 20 year appraisal period has been assumed.
- No pedestrian benefits have been assumed.

2.3.4 Bespoke appraisal – TUN001 Queensway Relighting

For scheme TUN001 Queensway Relighting, there are elements that are not possible to appraise using standard TAG tools and a bespoke approach using TAG guidance has been adapted.

Given that this scheme has benefits in terms of reduced operating costs and carbon emissions due to reduced energy consumption, a bespoke spreadsheet-based appraisal was undertaken using guidance in TAG Unit A3 Environmental Impact Appraisal. In terms of the appraisal of greenhouse gas benefits, the guidance states the following regarding carbon dioxide emissions:

“Although carbon dioxide has a relatively low global warming potential compared to other greenhouse gases, it is by far the most abundant. Therefore, for convenience, the global warming potential of greenhouse gas emissions is measured in terms of the equivalent amount of CO₂ that would give this warming. The standard unit of account is tonnes of carbon dioxide equivalent (tCO₂e), and this is how estimates of greenhouse gas emissions should be presented.

TAG Table A3.4 details carbon values in £ per tonne of CO₂e in 2010 prices, with low, central and high estimates for all years of the appraisal period. These central values have been used in the core appraisal alongside the reduction in energy consumption as a result of the improvement to quantify the carbon emission benefit of the scheme over the lifespan of the new equipment.

The amount of CO₂e per kWh assumed in the calculation is the 2021 electricity conversion factor, published in June 2021, in the UK Government Greenhouse Gases Conversion Factor for Company Reporting by the Department for Business, Energy & Industrial Strategy and the Department for Environment, Food & Rural Affairs.

The lifespan of the new lighting equipment is expected to be significant, with regular scheduled maintenance and renewal costs factored into the overall scheme costs. In accordance with the guidance on appraisal periods for core appraisals in TAG Unit A1.1, the appraisal period has been set at 60 years.

The new equipment is also anticipated to have operating cost benefits due to reduced energy consumption. This has been calculated using the electricity cost per kWh values in TAG Table A1.3.7 and the kWh and maintenance cost estimates provided by Merseytravel. VAT has not been added to the energy costs and indirect tax revenues have not been calculated because it is assumed that Merseytravel are able to claim the cost of VAT on energy from HM Treasury.

Given that the operating cost benefits accrue to the Broad Transport Budget and form part of the Present Value of Costs calculation, this results in a negative cost estimate and therefore a negative BCR as the reduced operating costs offset the investment costs. Therefore, for this particular scheme appraisal, the Net Present Value is a more useful metric when considering this scheme in isolation and the BCR has not been presented.

As for the AMAT appraisals, results for the Queensway appraisal have been produced using a 2022 base year to match the results produced by HMAT.

2.3.5 Risk and optimism bias

In accordance with TAG guidance for highway schemes at FBC, optimism bias of 20% has been applied to the overall programme costs and is included in the overall programme results. The allowance for risk is discussed in the Financial Case.

2.4 Scheme Costs

The costs of the programme are discussed in greater detail in the Financial Case. The conversion of scheme costs into the Present Value of Costs is presented below. Due to the way benefits and costs are presented in HMAT, as discussed below, the Present Value of Costs are presented in 2022 prices and values.

Table 2.2: Scheme costs

Cost type	Values
Base costs (2022 prices)	£42.920m
→ including inflation	£45.380m
→ including optimism bias	£54.456m
→ rebased to 2022 prices	£52.029m
→ discounted to 2022 values	£50.653m

2.5 Appraisal Results

The results of the scheme appraisals are presented in the following table, including an appraisal result for the overall programme. For those schemes appraised in HMAT, the PVB and PVC outputs from the model have been used. The scheme costs and benefits have been discounted using 2022 as a base year. Whilst the standard TAG base year is 2010, the HMAT modelling tool and associated Aggregated Outputs Model discounts results to the first year of the analysis conducted, in this case 2022. In the case of the appraisals not undertaken in HMAT, these have also been presented using 2022 as a base year.

As noted in section **Error! Reference source not found.**, the operating cost benefits for the Queensway Tunnel form part of the overall Present Value of Costs calculation. Therefore, the Present Value of Costs is lower than presented in section **Error! Reference source not found.**

It should also be noted that in accordance with TAG guidance, the benefits results exclude variations relating to the GVA uplift from jobs and embedded carbon calculated by the HMAT tool. The impacts of these are presented as a sensitivity test.

Table 2.3: Appraisal results of KRN schemes

Scheme reference	Scheme name	Present Value of Benefits	Present Value of Costs	Net Present Value	Benefit to Cost Ratio
HAL033	A56 Reconstruction	N/A	£1.001m	N/A	N/A
HAL034	Dukesfield ATL	£4.844m	£1.908m	£2.936m	2.54

KNO020	Higher Road - Phase 1	£1.195m	£0.408m	£0.787m	2.93
KNO021	Higher Road - Phase 2	£1.893m	£1.905m	-£0.012m	0.99
KNO022	Roby Road	£1.015m	£0.221m	£0.794m	4.60
KNO023	M62 Drainage	N/A	£0.155m	N/A	N/A
KNO024	M62 Structures	N/A	£1.423m	N/A	N/A
KNO025	A562 Structures	N/A	£1.905m	N/A	N/A
LIV013	Queens Drive (KRN submission)	£1.971m	£2.064m	-£0.093m	0.95
LIV015	Speke Hall Road	£2.353m	£2.118m	£0.235m	1.11
LIV017	Liverpool Non-Highway Maintenance Traffic Signals	N/A	£1.105m	N/A	N/A
LIV018	West Derby Road KRN	£6.309m	£3.096m	£3.213m	2.04
LIV011	Lime Street	£3.533m	£1.675m	£1.858m	2.11
LIV019	B5178 Picton Road/Wavertree High Street to B5178 Wavertree Road	£11.49m	£4.006m	£7.484m	2.87
SEF002	A59, junction improvements at Kenyon's Lane and Hall Lane	£4.964m	£2.913m	£2.051m	1.70
SEF032	Highway Maintenance Carriageway Resurfacing (KRN)	£2.646m	£0.975m	£1.671m	2.71
STH001	Parkside Additional KRN Mitigation	£0.686m	£6.015m	-£5.329m	0.11
TUN001	Queensway Relighting	£1.995m	-£2.455m	£4.450m	N/A
TUN003	Kingsway Vehicle Restraints System	N/A	£0.477m	N/A	N/A
WIR001	KRN Plane and Inlay (KRN)	£6.337m	£1.478m	£4.859m	4.29
WIR002	KRN Surface Treatments - Year 1	£2.827m	£0.535m	£2.292m	5.28
TOTAL		£54.066m	£37.111m	£16.955m	1.46

The economic appraisal of the overall programme produces a Present Value of Benefits of £54.066m and a Net Present Value of £16.955m. The BCR for the overall programme is 1.46, which represents low value for money.

However, it should be noted that, although the costs of all the schemes have been included in the Present Value of Costs, the benefits for a number of the schemes in the programme have not been monetised. Therefore, it is considered that the Present Value of Benefits and BCR presented above may significantly underestimate the overall value for money of the scheme. There are a range of non-monetised benefits expected to be generated by the programme, which are outlined below in section 0.

If only the costs of the monetised schemes are taken into account, the monetised programme achieves a Net Present Value of £23.012m and a BCR of 1.74.

2.6 Sensitivity tests

Each sensitivity test has been undertaken independently, and therefore the impact of each test on the overall programme assumes no other sensitivity tests have been undertaken.

- Assumption of 10% optimism bias
- Variation in carbon benefits of Queensway Relighting scheme
- Inclusion of GVA and embedded carbon benefits

2.6.1 Assumption of 10% optimism bias

As noted above, in the core appraisal optimism bias of 20% has been applied in line with TAG guidance for highway schemes at FBC. However, given that the majority of these are maintenance schemes that employ measures that are well understood and well-practised by local authorities and their contractors as part of their usual maintenance programmes, it is considered that 20% optimism bias may result in an overestimate of the costs and therefore an underestimate of the benefits. Therefore, a sensitivity test with optimism bias at 10% has been undertaken.

Table 2-1 Optimism bias sensitivity test

	20% OB	10% OB
Present Value of Benefits	£54.066m	£54.066m
Present Value of Costs	£37.111m	£33.521m
Net Present Value	£16.955m	£20.537m
Benefit to Cost Ratio	1.46	1.61

The result of the sensitivity test results in the Net Present Value increasing to £20.537m and the BCR increasing to 1.61, representing medium value for money.

2.6.2 Variation in carbon benefits of Queensway Relighting

As noted previously, the carbon benefits of this scheme have been calculated using values in TAG Table A3.4, which details carbon values in £ per tonne of CO₂e in 2010 prices, with low, central and high estimates for all years of the appraisal period. The central values have been used in the core appraisal. The table below presents the results using the low and high values for carbon.

Table 2-2 Queensway Relighting carbon sensitivity tests

	Queensway Relighting		KRN Programme	
	Low	High	Low	High
Present Value of Benefits	£0.998m	£2.993m	£53.068m	£55.064m
Present Value of Costs	-£2.455m	-£2.455m	£37.111m	£37.111m
Net Present Value	£3.452m	£5.447m	£15.958m	£17.953m
Benefit to Cost Ratio	N/A	N/A	1.43	1.48

The low and high TAG values provide a PVB range for the Queensway Relighting scheme of £1.0m-£3.0m and a NPV range of £3.5m-£5.5m.

In terms of the impact on the overall programme, the test produces a PVB range of £53.1m-£55.1m and a BCR range of 1.43-1.48.

2.6.3 Inclusion of GVA and embedded carbon benefits

HMAT calculates the impact of the road works associated with the improvements on fuel used in the maintenance process and the embedded carbon within the materials used. TAG guidance in Unit A3 states that embedded carbon is likely to be covered by the EU Emissions Trading System and will be internalised within the cost of the materials. Upon the departure of the UK from the EU on 1st January 2021, a UK Emissions Trading Scheme replaced the UK's participation in the EU ETS. Therefore, it is considered that the embedded carbon costs of materials remain internalised.

Furthermore, HMAT also quantifies the GVA benefit of an increase in jobs as a result of the schemes. The results including the GVA and embedded carbon benefits are presented below.

Table 2-3 GVA and embedded carbon sensitivity test

	Core	Including GVA and embedded carbon
Present Value of Benefits	£54.066m	£56.751m
Present Value of Costs	£37.111m	£37.111m
Net Present Value	£16.955m	£19.640m
Benefit to Cost Ratio	1.46	1.53

The result of the sensitivity test increases the Net Present Value to £19.640m and the BCR to 1.53.

2.7 Appraisal Summary

The BCR for the KRN programme has been produced following TAG guidance and monetised appraisals in AMAT, HMAT and using TAG values. The core appraisal for the programme produces a BCR of 1.45. Excluding the costs of the non-monetised schemes increases the BCR to 1.74. As presented above, a range of sensitivity tests have been conducted which provide a range of BCRs from 1.43 to 1.61.

The value for money assessment presented here provides greater detail on the range of non-monetised qualitative benefits which should be taken into account in assessing the overall value for money of the programme.

2.7.1 Business users and transport providers

Business users and transport providers will benefit from improved journey times and reduced operating costs as a result of the maintenance investments. This is due to improved junction operation and reduced risk of unplanned maintenance enhancing journey times, and the improved road surfaces and conditions reducing the wear and tear on vehicles.

In AMAT, user benefits have been quantified as a result of decongestion generated by modal shift to active modes.

Due to the nature of the HMAT and AMAT models not providing disaggregation by journey purpose or journey time group, the quantification of benefits for business users has been undertaken using 2020 Road Traffic Estimates and journey purpose distributions from TAG Table A1.3.4.

The benefits have been quantified in HMAT and AMAT as £11.146m.

2.7.2 Reliability

The impact of the programme on journey reliability for all road users has not been quantified. However, it is anticipated that journey reliability will be improved due to a lesser need for unplanned reactive maintenance works in the future. The works would also reduce the potential need for sections of highway to close in the future due to deterioration and a lack of maintenance, which would generate significant disruption and associated disbenefits. This is of particular relevance to the schemes that involve drainage and structural works.

Furthermore, there are a number of junction improvement measures proposed in the programme that will improve the efficiency of junction operation, enhancing journey time reliability for all users. A number of the maintenance schemes also include measures that have not been monetised, but would generate reliability improvements through improvements to drainage, structures and safety measures that will reduce the need for future closures and disruptions. These schemes include:

- A56 Reconstruction
- M62 Drainage
- M62 Structures
- A562 Structures
- Queens Drive
- Speke Hall Road
- Liverpool Non-Highway Maintenance Traffic Signals
- West Derby Road KRN
- Parkside Additional KRN Mitigation
- Queensway Relighting
- Kingsway Vehicle Restraints System

2.7.3 Regeneration

It was not considered to be proportionate to quantify the impacts of regeneration according to TAG. However, it would be expected that a well-maintained highway network and improved conditions for all road users will improve access to employment and leisure opportunities and contribute towards regeneration areas. Indeed, Liverpool City Region will be home to one of the new Freeports in England, which will be a key regeneration opportunity for the region and a hub of businesses and enterprises.

2.7.4 Wider impacts

The HMAT calculates GVA assessment relating to the wider impacts of the maintenance spend on the economy. This has not been included in the central case but, as noted in the sensitivity test, is valued as £3.77m over the appraisal period.

There are also likely to be further wider impacts that accrue as the result of the investment. A well-maintained road network that delivers reliable and efficient journeys for all modes will help to support the broader growth of the economy in Liverpool City Region by improving access to opportunities and equity between modes.

2.7.5 Noise

No quantification of the impact on noise of the maintenance schemes has been undertaken. It is likely that during the delivery of the investment there will be localised noise issues generated by the construction works. However, these issues would be comparable with the impacts expected as a result of routine maintenance schemes. Furthermore, it is anticipated that noise impacts would be minimised by limiting night-time working.

Additionally, for schemes that involve improved surfaces and junction operation efficiency, it is anticipated that the schemes once completed will marginally improve noise for communities in the vicinity by reducing congestion and road noise.

Noise benefits as a result of the active mode schemes have been quantified in AMAT as £2,091 over the appraisal period. This is as a result of modal shift to active modes.

2.7.6 Air quality

No quantification of the impact on air quality of the maintenance schemes has been undertaken. It is likely that during the delivery of the investment there will be localised air quality impacts caused by

construction vehicles and congestion caused by the roadworks. However, these issues would be comparable with the impacts expected as a result of routine maintenance schemes.

Additionally, for schemes that involve improved surfaces and junction operation efficiency, it is anticipated that the schemes once completed will marginally improve air quality for communities in the vicinity by reducing congestion and emissions caused by stationary traffic.

Air quality benefits as a result of the active mode schemes has been quantified in AMAT as £4,801 over the appraisal period. This is as a result of modal shift to active modes.

2.7.7 Greenhouse gases

The carbon impacts of the programme of maintenance schemes have been quantified in HMAT. The tool calculates impacts in terms of road condition and road works. The road condition element calculates an impact of the improved road surface on fuel consumption. The road works element calculates the impact of fuel used in the maintenance process and the embedded carbon within the materials used. This is quantified as £0.48m over the appraisal period. As noted above, the embedded carbon element was not included in the central appraisal in accordance with TAG guidance. If this is included, HMAT quantifies the total carbon benefit of the scheme as -£0.61m over the appraisal period.

Carbon benefits of the Queensway Relighting scheme has been quantified using values and guidance in TAG Unit A3 and energy costs per kWh in TAG A1.3.7 as £1.03m over the appraisal period using the central estimates of £ per tonne of CO₂e. This is as a result of the reduced energy consumption of the new LED installations.

The impact on greenhouse gases of the active mode schemes has been quantified in AMAT as £14,749 over the appraisal period. This is as a result of modal shift to active modes.

2.7.8 Commuting and other users

Like business users and transport providers, commuters and other users will benefit from improved journey times and reduced operating costs as a result of the maintenance investments. This is due to improved junction operation and reduced risk of unplanned maintenance enhancing journey times, and the improved road surfaces and conditions reducing the wear and tear on vehicles.

In AMAT, user benefits have been quantified as a result of decongestion generated by modal shift to active modes.

Due to the nature of the HMAT and AMAT models not providing disaggregation by journey purpose or journey time group, the quantification of benefits for commuters and other users has been undertaken using 2020 Road Traffic Estimates and journey purpose distributions from TAG Table A1.3.4.

The benefits have been quantified in HMAT and AMAT as £30.421m.

2.7.9 Physical activity

Benefits for physical activity have been quantified in AMAT. These are a result of the active mode schemes improving conditions and provision for pedestrians and cyclists, which generates increased active trips and increased physical activity, in turn generating benefits in terms of reduced risk of premature death and reduced absenteeism.

The benefits have been quantified in AMAT as £5.624m.

2.7.10 Journey quality

All road users will benefit from improvements to journey quality as a result of the investment. The additional investment in maintenance will deliver a road surface that is more comfortable for users. In addition, journey reliability will be improved due to less need for unplanned reactive maintenance in the future.

The improvement in journey quality for walking and cycling as a result of the active mode schemes has been quantified in AMAT as £4.408m over the appraisal period.

2.7.11 Accidents

It is anticipated that schemes that improve the quality of the road surface will have a positive impact on accidents. Furthermore, a number of the schemes include structural, drainage and safety measures that will improve the safety of road users. These include:

- M62 Drainage
- M62 Structures
- A562 Structures
- Queens Drive
- Speke Hall Road
- West Derby Road KRN
- Kingsway Vehicle Restraints System

The improvement in accidents as a result of the active mode schemes has been quantified in AMAT as £31,362 over the appraisal period. These benefits are a result of reduced vehicle kilometres due to modal shift. There are also unquantified accident benefits for pedestrians and cyclists as a result of improved infrastructure.

There are also accident disbenefits calculated by HMAT caused by the impact of road works during construction of the schemes, which generate temporary additional congestion and disruption. This has been quantified over the appraisal period as -£149,789. Combined with the AMAT result, this produces an overall disbenefit of -£118,427.

2.7.12 Access to services

Investment in road maintenance will assist in improving access to services for local residents and visitors across all modes. This will be achieved largely through improvements in journey quality, reliability and changes to travel time. A reduced need for routine or unplanned maintenance in the future will also enhance access to services through increased network resilience.

The focus on the Key Route Network for the maintenance programme aims to connect key employment and residential areas to services both now and in response to future demands from development aspirations in the region.

Furthermore, as noted previously, there are a number of junction improvement measures proposed in the programme that will improve the efficiency of junction operation, enhancing accessibility for all users. These include:

- A56 Reconstruction

- Parkside Additional KRN Mitigation
- Speke Hall Bus Priority
- Queens Drive
- Liverpool Non-Highway Maintenance Traffic Signals
- West Derby Road KRN

2.7.13 Severance

A number of the schemes in the programme include improvements to crossing facilities and junction operations, which will contribute towards reducing severance for vulnerable road users.

Furthermore, the active mode schemes will help to reduce severance between areas for walking and cycling by creating new links and routes on existing desire lines. The schemes that include these non-monetised measures that will address severance include:

- Roby Road
- Liverpool Non-Highway Maintenance Traffic Signals
- Parkside Additional KRN Mitigation

2.7.14 Indirect tax revenues

Indirect tax revenues are the impact of reduced tax revenues accruing to central government as a result of reduced fuel consumption and/or vehicle miles.

The impact on indirect tax revenues of the active mode schemes in the programme have been quantified in AMAT as -£16,850 over the appraisal period. This is as a result of modal shift to active modes.

It is also anticipated that there will be a minor unquantified reduction in tax revenues as a result of improved road surfaces and reduced congestion at junctions resulting in reduced fuel consumption.

2.7.15 Neutral impacts

The following impacts have been assessed as neutral within the appraisal of the programme:

- Landscape
- Townscape
- Historic environment
- Biodiversity
- Water environment
- Security
- Affordability
- Option and non-use values

2.8 TAG appraisal tables

The following TAG tables have been completed for the central case of the proposed programme:

- Appraisal Summary Table (Appendix N)
- Transport Economic Efficiency Table (Appendix O)
- Analysis of Monetised Costs and Benefits Table (Appendix P)

- Public Accounts Table (Appendix Q)

2.9 Distributional Impacts

In line with guidance in TAG Unit A4.2, a Distributional Impacts Screening Proforma has been completed. This is presented in Appendix K. The nature of the scheme with a large number of small schemes forming a programme covering a large area and the types of improvements proposed mean that the completion of a full Distributional Impact appraisal would be disproportionate.

2.10 Value for Money Statement

The Economic Case presents an appraisal of the economic benefits of the proposed Key Route Network maintenance programme in Liverpool City Region. The quantified benefits have been derived from the HMAT and AMAT tools, which calculate benefits of road maintenance and active mode schemes, and from a bespoke appraisal of a tunnel relighting scheme.

The core appraisal for the programme produces a BCR of 1.46, which represents low value for money. Excluding the costs of the non-monetised schemes increases the BCR to 1.74, pushing the monetised programme into the medium value for money category. A range of sensitivity tests have been conducted which provide a range of BCRs from 1.43 to 1.61. The most substantial source of benefits come from the impact on vehicle operating costs.

Overall, when the impact of the significant non-monetised benefits of the programme are taken into account, it is considered that the proposed programme of investment has the potential to represent high value for money.

3. Financial Case

3.1 Financial Case Overview

This Financial Case sets out the calculated cost of delivering the schemes included in the KRN programme, which forms part of the LCR CRSTS programme. The value of these projects is £44.97m. The case below details the level of inflation, risk and the sources of contribution that are provided for this programme. This section has been developed in line with TAG Unit A1.2 Scheme Costs.

3.2 Funding Requirement

In 2019 the UK Government announced that the eight eligible English city regions would receive additional funding of £4.2bn to invest in local transport networks. The City Region Sustainable Transport Settlement (CRSTS) is at the core of this fund which will enable city regions to deliver transformational change supporting the three key policy priorities of growth and productivity, levelling up and decarbonisation.

England's eight large metropolitan areas, including the LCR, are at the core of Government's ambition to level up. In comparison to London and their counterparts in Europe, it is recognised that one important weakness of many of these city regions is the quality of their local transport networks, which heavily impacts on their productivity.

The CRSTS consolidates several funding streams, including Integrated Transport Block (ITB) and Highways Maintenance funding, giving city regions the flexibility to identify and deliver long-term strategies based around a single transport pipeline. The initial 2022/23-2026/27 allocation could be the first in a series of five-year settlements as part of a consolidated and devolved model of transport funding that delivers significant improvements for users.

In April 2022, LCRCA was awarded £710m as part of CRSTS to spend on capital transport infrastructure projects between 2022/23 and 2026/27. The KRN Programme has been deemed eligible for this funding subject to submission of an independently appraised FBC, demonstrating that the programme is deliverable, affordable and value for money, as per the CA Assurance Framework.

3.2 Scheme Costs

The KRN programme was included in the CRSTS bid to Government at a cost of £50m spread over 3 years. This has now been developed and refined with the constituent Local Authorities, with reference to the priorities of the CRSTS programme, and to complement and enhance the schemes included in the Highways Maintenance and Non-Highways Maintenance programmes, to provide a cohesive and defined programme of interventions in the Liverpool City Region.

The LCRCA KRN has been developed to include schemes that meet both the CRSTS funding requirements and the needs of the LCRCA. Each scheme has been developed with the support of the Local Authorities, LCRCA Development Team and the LCRCA KRN Manager. LCRCA has provided

financial support to allow for these schemes to undergo a rigorous assessment. The **£44.97m** of capital funding required for the KRN programme will be funded from CRSTS. In addition to this, the CRSTS ask will be matched at a level of 10% (£4.5m) by local contribution, details of which are provided in section 3.3.

Table 3.1 - Summary of Costs for the KRN Programme

KRN Programme Summary	BASE Costs £m					Inflation Allowance	Risk Allowance	TOTAL CRSTS
	22/23	23/24	24/25	25/26	Total			
CROSS RIVER CORRIDOR	7.04	5.01	-	-	12.05	0.61	1.26	13.92
MERSEY GATEWAY CORRIDOR	4.17	3.39	-	-	7.56	0.39	0.80	8.75
EASTERN GATEWAY	3.12	7.54	4.85	-	15.51	1.17	1.67	18.35
COASTAL CORRIDOR	0.47	1.37	1.21	0.25	3.30	0.29	0.36	3.95
TOTAL CRSTS	14.80	17.31	6.06	0.25	38.42	2.46	4.09	44.97
LCRCA CONTRIBUTION	1.69	2.04	0.74	0.03	4.50			4.50
TOTAL KRN PROGRAMME	16.49	19.35	6.80	0.28	42.92	2.46	4.09	49.47

All costs are presented at 2022 Base Prices and are reflective of inflationary expectations. Inflation and Scheme Risk Allowance has been applied to each scheme. Whole Life Costs have not been included in the Business Case. The schemes included in the LCRCA KRN programme are specifically designed to reduce the ongoing maintenance requirements of the constituent Local Authorities. As such, any revenue or maintenance requirements generated by these schemes will be funded by the Local Authorities and funding will be contracted to them on this basis. LCRCA will not be seeking further revenue funding in relation to these schemes.

Table 3.2 CRSTS KRN Annual Funding Profile

KRN Programme	Capital Expenditure in £m				
	22/23	23/24	24/25	25/26	Total
CROSS RIVER CORRIDOR	8.01	5.91	-	-	13.92
MERSEY GATEWAY CORRIDOR	4.75	4.00	-	-	8.75
EASTERN GATEWAY	3.55	8.88	5.92	-	18.35
COASTAL CORRIDOR	0.54	1.61	1.48	0.32	3.95
TOTAL CRSTS	16.85	20.40	7.40	0.32	44.97
LCRCA CONTRIBUTION	1.69	2.04	0.74	0.03	4.50
TOTAL KRN PROGRAMME	18.54	22.43	8.14	0.35	49.47

Table 3.3 – KRN Programme Breakdown of Scheme Costs

KRN Programme	BASE COSTS £m					Inflation Allowance	Risk Allowance	Total CRSTS
	22/23	23/24	24/25	25/26	Total			
Lime Street Multimodal Interchange	1.39	-	-	-	1.39	0.05	0.14	1.58
Queensway Tunnel Decarbonisation	3.58	5.01	-	-	8.59	0.49	0.91	9.99
Kingsway Tunnel Safety (VRS)	0.40	-	-	-	0.40	0.01	0.04	0.45
Wirral Resurfacing	1.23	-	-	-	1.23	0.04	0.13	1.40
Low Carbon Birkenhead	0.44	-	-	-	0.44	0.02	0.04	0.50
CROSS RIVER CORRIDOR	7.04	5.01	-	-	12.05	0.61	1.26	13.92
Speke Hall Bus Priority	1.76	-	-	-	1.76	0.06	0.18	2.00
Wavertree High Street Resurfacing	-	3.39	-	-	3.39	0.24	0.37	4.00
Delph Lane Housing Gateway	0.83	-	-	-	0.83	0.03	0.09	0.95
Dukesfield Active Travel Connectivity	1.58	-	-	-	1.58	0.06	0.16	1.80
MERSEY GATEWAY CORRIDOR	4.17	3.39	-	-	7.56	0.39	0.80	8.75
Queens Drive Bus Priority	0.88	0.85	-	-	1.73	0.09	0.18	2.00
Active Travel Signals Upgrade	0.92	-	-	-	0.92	0.03	0.10	1.05
West Derby Road Active Travel	1.32	1.27	-	-	2.59	0.14	0.27	3.00
Higher Road Active Travel Route Phase 1	-	-	0.35	-	0.35	0.04	0.04	0.43
Higher Road Active Travel Route Phase 2	-	-	1.64	-	1.64	0.18	0.18	2.00
Roby Road Pedestrian Improvements	-	0.19	-	-	0.19	0.01	0.02	0.22
M62 Flood Prevention	-	0.13	-	-	0.13	0.01	0.01	0.15
M62 Structures Resilience	-	-	1.23	-	1.23	0.13	0.14	1.50
A562 Structures Resilience	-	-	1.64	-	1.64	0.18	0.18	2.00
Parkside Access Improvements	-	5.09	-	-	5.09	0.36	0.55	6.00
EASTERN GATEWAY CORRIDOR	3.12	7.53	4.86	-	15.51	1.17	1.67	18.35
A59 Cycling Connectivity	0.06	0.97	1.21	0.25	2.49	0.24	0.27	3.00
Connecting Sefton	0.41	0.40	-	-	0.81	0.05	0.09	0.95
COASTAL CORRIDOR	0.47	1.37	1.21	0.25	3.30	0.29	0.36	3.95
TOTAL CRSTS	14.80	17.30	6.07	0.25	38.42	2.46	4.09	44.97
LCRCA CONTRIBUTION	1.69	2.04	0.74	0.03	4.50	-	-	4.50
TOTAL KRN PROGRAMME	16.49	19.34	6.81	0.28	42.92	2.46	4.09	49.47

LCRCA is fully committed to each scheme within the above programme. As well as match funding the DfT contribution of £44.97m with additional funds of £4m.

Throughout the development of each scheme within this programme, LCRCA will continue to look to identify any additional match funding opportunities, and Partnership arrangements to further enhance the development of our transport network.

3.3 Local Contribution

In addition to the capital funding from CRSTS, the KRN programme is being matched by local contribution in the form of revenue funding. The CRSTS guidance published in July 2021 stated that Mayoral Combined Authorities would be expected to raise 15-20% local contributions for capital enhancements, fully additional to the money granted by Her Majesty's Government (in this case CRSTS). The guidance was explicit that this was expected to be programme wide across the CRSTS funding period (2022/23-2026/27) and the CA needed to demonstrate that the money was new and not an existing source.

Table 3.4 details the new sources of revenue funding in the CRSTS period that have been provided as match funding for the KRN programme. The partners are financially committed to these local contributions to the satisfaction of the Combined Authority's Treasurer, whose sign-off is included in Appendix E.

Table 3.4 LCRCA Local Funding Supporting KRN in the CRSTS Programme

KRN Programme	Expenditure in £m				
	22/23	23/24	24/25	25/26	Total
LCRCA CONTRIBUTION					
TUNNEL TOLLS	1.69	2.04	0.74	0.03	4.50
SEFTON COUNCIL S106					-
ST HELENS COUNCIL S106					-
ST HELENS COUNCIL S278					-
TOTAL LCRCA CONTRIBUTION	1.69	2.04	0.74	0.03	4.50

4. Commercial Case

The commercial case is concerned with issues of commercial feasibility and sets out to answer the question “can the proposed solution be effectively delivered through a workable commercial deal or deals?” The first question, therefore, is what procurement does the proposal require, is it crucial to delivery and what is the procurement strategy?

4.1 Procurement Strategy

The KRN presents a range of schemes across a large geographical area spanning multiple local authority boundaries. As a result, the procurement methodology for the KRN will be based on the pre-existing and well-established contractual arrangements in place for each of the LCR partners.

The partners across the LCR will lead in the delivery of the KRN programme via centralised management by the KRN Manager. LCR partners have existing well established and effective procurement procedures in place, linked to extensive supply chains. For the majority of schemes existing systems in place to deliver Highways Maintenance and Non-Highways Maintenance works will be used, and for some schemes bespoke procurement practices to deliver the schemes.

Table 4.1 - Procurement Method by scheme

Scheme Reference	Scheme Name	Procurement Method
LIV011	Lime Street Multimodal Interchange	All works will be procured via Highways Planned Framework or Highways Improvement Programme (HIP).
TUN001	Queensway Tunnel Decarbonisation	A Restricted Procurement Procedure in accordance with the Public Contracts Regulations 2015 was conducted. A Selection Questionnaire (SQ) was issued via the Authority's e-Tendering system, "The Chest". Four responses were submitted and evaluated. An invitation to tender was issued to the three bidders who passed the SQ with supplier (SPIE Ltd) issuing a response. The ITT was evaluated, with quality accounting for 70% and price accounting for 30%. SPIE Ltd scored 64.4% for quality and 30% for price. SPIE Ltd have also made a number of social value commitments such as 50% of site team will be local to the site and 40% of contract value will be spent within a 25-mile radius of site.
TUN003	Kingsway Tunnel Safety (VRS)	Scheme will be procured via a selected tender process; this process has been chosen to ensure only specialist companies that could adequately deliver the scheme tender. Tenders are to be returned by 07 July 2022 and will be scored 100% on price.
WIR001	Wirral Resurfacing	Scheme to be delivered via Term Service Contractor (Hansons Ltd)
WIR002	Low Carbon Birkenhead	Scheme to be delivered via Term Service Contractor (Hansons Ltd)
LIV015	Speke Hall Bus Priority	All works will be procured via Highways Planned Framework or Highways Improvement Programme (HIP).
LIV019	Wavertree High Street Resurfacing	All works will be procured via Highways Planned Framework or Highways Improvement Programme (HIP).
HAL033	Delph Lane Housing Gateway	The replacement of the defective sub base at A56 works are being carried out by Redrow's contractor McPhillips. These works are covered by a S278 agreement (Highways Act 1980) to enable Redrow and its contractor to act as the highway authority. The replacement of the sub base material is additional works to Redrow's scope and is being undertaken at Halton Council's request and cost, these works are written into the S278 agreement.
HAL034	Dukesfield Active Travel Connectivity	Scheme is being undertaken as a Deed of Variation to the existing Scape Runcorn Delinking contract between Halton Council and Balfour Beatty.
LIV013	Queens Drive Bus Priority	All works will be procured via Highways Planned Framework or Highways Improvement Programme (HIP).
LIV017	Active Travel Signals Upgrade	All works will be procured via Highways Planned Framework or Highways Improvement Programme (HIP).

LIV018	West Derby Road Active Travel	All works will be procured via Highways Planned Framework or Highways Improvement Programme (HIP).
KNO020	Higher Road Active Travel Route Phase 1	<p>Scheme to be delivered via existing term contractors. Existing arrangements Knowsley Council have in place are:</p> <ul style="list-style-type: none"> • Maintenance works undertaken by Tarmac (contract expiry 31 Jan 2024) • Street cleansing/verge maintenance undertaken in house • Construction and engineering works undertaken by Tarmac (contract expiry 31 Jan 2024) • Technical and design work – competitive tender off existing framework • UTC works - managed service via Tarmac. All signals work is undertaken via Yunex • Street lighting – Enerveo – end date approx. 2032
KNO021	Higher Road Active Travel Route Phase 2	<p>Scheme to be delivered via existing term contractors. Existing arrangements Knowsley Council have in place are:</p> <ul style="list-style-type: none"> • Maintenance works undertaken by Tarmac (contract expiry 31 Jan 2024) • Street cleansing/verge maintenance undertaken in house • Construction and engineering works undertaken by Tarmac (contract expiry 31 Jan 2024) • Technical and design work – competitive tender off existing framework • UTC works - managed service via Tarmac. All signals work is undertaken via Yunex • Street lighting – Enerveo – end date approx. 2032
KNO022	Roby Road Pedestrian Improvements	<p>Scheme to be delivered via existing term contractors. Existing arrangements Knowsley Council have in place are:</p> <ul style="list-style-type: none"> • Maintenance works undertaken by Tarmac (contract expiry 31 Jan 2024) • Street cleansing/verge maintenance undertaken in house • Construction and engineering works undertaken by Tarmac (contract expiry 31 Jan 2024) • Technical and design work – competitive tender off existing framework • UTC works - managed service via Tarmac. All signals work is undertaken via Yunex • Street lighting – Enerveo – end date approx. 2032
KNO023	M62 Flood Prevention	<p>Scheme to be delivered via existing term contractors. Existing arrangements Knowsley Council have in place are:</p> <ul style="list-style-type: none"> • Maintenance works undertaken by Tarmac (contract expiry 31 Jan 2024) • Street cleansing/verge maintenance undertaken in house • Construction and engineering works undertaken by Tarmac (contract expiry 31 Jan 2024)

		<ul style="list-style-type: none"> • Technical and design work – competitive tender off existing framework • UTC works - managed service via Tarmac. All signals work is undertaken via Yunex • Street lighting – Enerveo – end date approx. 2032
KNO024	M62 Structures Resilience	<p>Scheme to be delivered via existing term contractors. Existing arrangements Knowsley Council have in place are:</p> <ul style="list-style-type: none"> • Maintenance works undertaken by Tarmac (contract expiry 31 Jan 2024) • Street cleansing/verge maintenance undertaken in house • Construction and engineering works undertaken by Tarmac (contract expiry 31 Jan 2024) • Technical and design work – competitive tender off existing framework • UTC works - managed service via Tarmac. All signals work is undertaken via Yunex • Street lighting – Enerveo – end date approx. 2032
KNO025	A562 Structures Resilience	<p>Scheme to be delivered via existing term contractors. Existing arrangements Knowsley Council have in place are:</p> <ul style="list-style-type: none"> • Maintenance works undertaken by Tarmac (contract expiry 31 Jan 2024) • Street cleansing/verge maintenance undertaken in house • Construction and engineering works undertaken by Tarmac (contract expiry 31 Jan 2024) • Technical and design work – competitive tender off existing framework • UTC works - managed service via Tarmac. All signals work is undertaken via Yunex • Street lighting – Enerveo – end date approx. 2032
STH001	Parkside Access Improvements	<p>The improvements will be delivered through the National Scape Civils and Infrastructure Framework. Scape is a public sector owned built environment specialist. It offers a suite of OJEU compliant frameworks and innovative design solutions that are available to public bodies in the United Kingdom and can support the entire lifecycle of a project. Scape actively audits each project and framework partner, ensuring value for money and an excellent level of service. It has an embedded social value process for each project, covering job creation, local labour spend and community engagement. It encourages collaborative working and early contractor involvement (ECI) so that project design and delivery can be influenced, progressing rapidly to the construction stage. This procurement route has been scrutinised by the Council's Procurement Team and approval was given by St Helens Council Cabinet for the project to be delivered in this way. The Framework consists of a sole provider in Balfour Beatty who has an excellent track record of delivery for the Authority and most recently delivered for St Helens, the A580 Windle Island</p>

		<p>Junction Improvements and A580/A58 Pewfall Junction Improvement Scheme within time and budgetary constraints. All works are openly tendered to an agreed sub-contractors list with fixed fee uplifts applied to those work packages.</p> <p>The Contractor will be appointed under a call off contract form from the Framework which is a New Engineering Contract 3 (NEC3) Engineering & Construction Contract Option C Target Cost. A target cost contract introduces a mechanism enabling the contractor to share in the benefits of cost savings, but also to bear some of the cost when there are cost overruns. This arrangement forces both parties to work more collaboratively as the financial success is shared by both client and contractor. Similarly, the financial failure of a project is shared. This collaborative working can reduce disputes and accelerate innovation.</p>
SEF002	A59 Cycling Connectivity	<p>Scheme will be delivered in two contracts:</p> <ul style="list-style-type: none"> • Robbins Island to Eastway/Westway and Kenyon’s Lane junction • Hall lane junction <p>Both contracts are currently proposed to be procured through separate closed tender exercises. However, it is possible the first contract will go out to open tender should market testing indicate that usual contractors are stretched.</p>
SEF032	Connecting Sefton	<p>Scheme will be delivered through Sefton Council’s annual maintenance contractor.</p>

4.4 Statutory and Other Consents

Business Case approval and Funding

As per the SIF Assurance Framework (Appendix F), business cases submitted to the CA for CRSTS funding (part of SIF) will need to be taken to Transport Delivery Board for scrutiny before being approved for CA funding.

Additionally, a Full Business Case (FBC) will need to be appraised externally by an appointed independent expert/consultant. The appraisal process will be consistent with HM Treasury’s Green Book and Business Case Appraisal Process including supplementary and departmental guidance, such as the DfT’s WebTAG appraisal guidance.

In addition, the CA’s Investment Strategy states that appraisers should ensure that business cases present:

- Strategic Fit;
- Clear case for Investment;
- Value for Money;
- Deliverability;
- Good Growth

The projects included in the CA's CRSTS programme were deemed to fit the above at Strategic Outline Case, leading to the projects being commissioned for development as part of the programme. However, it is the role of the appraiser to ensure that these projects still fit the above criteria.

After developing a Full Business Case for the KRN programme, it was taken to the Transport Delivery Board for approval on 16th June 2022. The Board recommended that the programme proceed for funding, with some recommendations subject to an external appraisal and consideration at the CA meeting on 22nd July 2022.

Funding Agreement

Each of Sponsors will be required to legally contract with the Combined Authority, to the terms and conditions of the Assurance Framework, and have provided evidence of match funding and the necessary consents, (planning, land ownership etc.) being in place.

On CA approval, a funding agreement between the CA (funder) and Sponsors (recipient) can be signed after a statutory cooling off period of five working days. A separate funding agreement will be produced for each Sponsor to deliver their elements of the project up to the value as indicated in the financial case.

Section 73 Sign-Off is required (Appendix E) consists of a letter from the Combined Authority's Treasurer confirming that:

- The cost estimates are accurate and represent the best estimates based on currently available information;
- The LCR Combined Authority has the means to accept liability for the schemes going ahead; and
- All partners are committed to the local contributions discussed above.

This Section 73 letter provided for this FBC acts as the Section 151 letter for the purposes of the Liverpool City Region Combined Authority.

The LCR Combined Authority has, in accordance with guidance issued by Government in December 2014, agreed an Assurance Framework with the LEP for the financial management of government funding. This SIF Assurance Framework will form the basis of financial management for the CRSTS programme, including this programme.

Building on local government financial systems, the CA will require quarterly grant claims, signed and authorised by each of the Partner's Chief Financial Officer and Head of Internal Audit, whilst reserving the right to randomly audit Partner expenditure.

5. Management Case

The management case is concerned with the deliverability of the proposal and is sometimes referred to as programme management or project management case. The management case must clearly set out management responsibilities, governance and reporting arrangements.

5.1 Management Arrangements

The Combined Authority has put in place a governance structure which is designed to oversee the delivery of the scheme. Within this governance structure the Executive Director for Place is the Senior Responsible Officer (SRO) for the scheme.

The Combined Authority will oversee the delivery of the KRN Programme across the LCR, via the Transport Delivery Board. The board will be supported by the Key Route Network Manager, CRSTS Programme Manager and the Programme Management Office (PMO). This is based on the Governance and SIF Assurance Framework approved by the CA.

5.2. Governance Arrangements

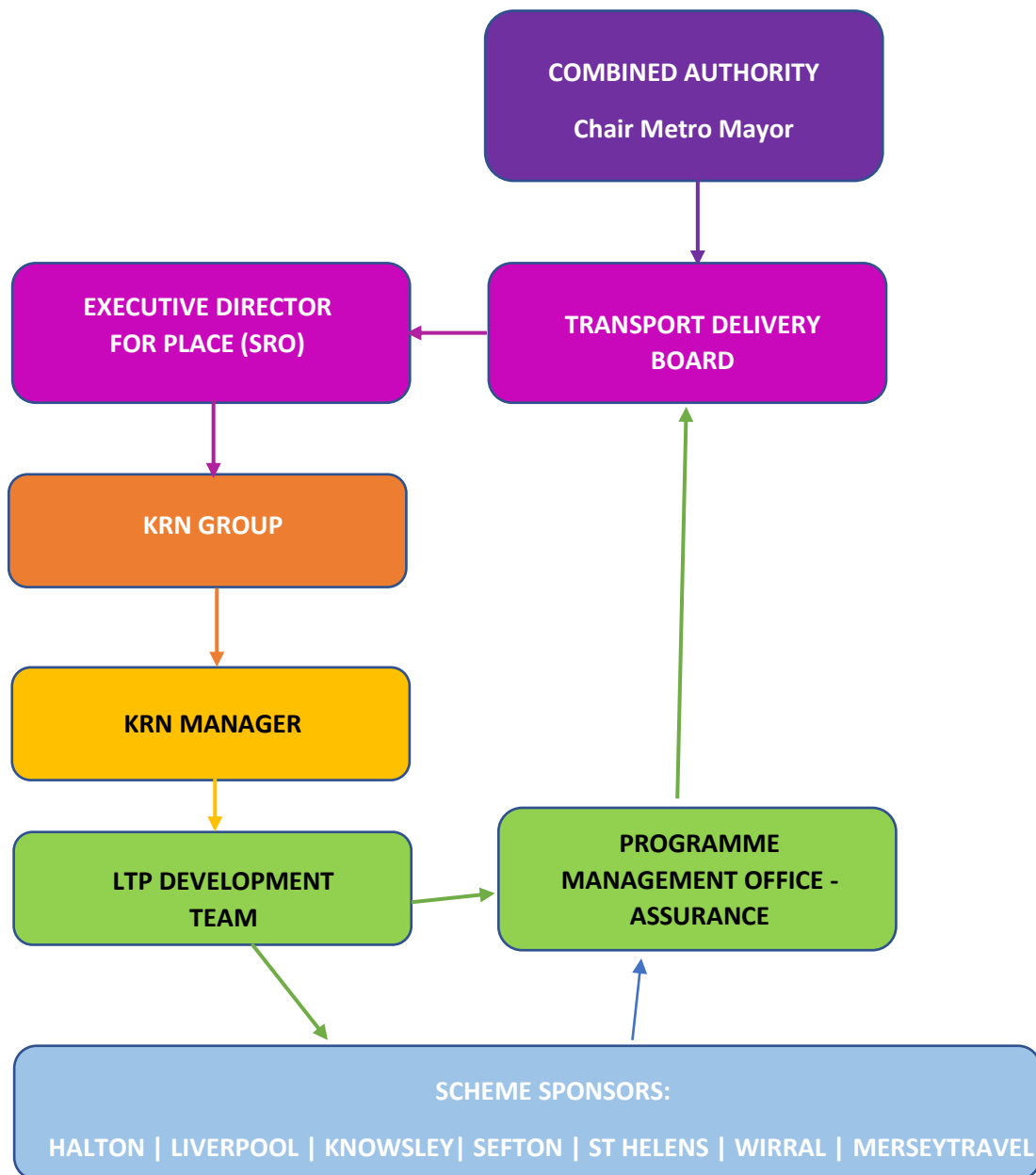
Key Route Network Group

The KRN Group will act as the steering group for this project, providing professional and technical advice on strategic transport issues that affect the Liverpool City Region (LCR) Key Route Network and managing the KRN Programme of works. The group meets once every six weeks.

The remit of the KRN Group comprises:-

- To develop and agree, on an ongoing basis, a strategic KRN for the LCR, taking into account the route network/cross boundary information supplied by each district partner and current and projected traffic flow data as provided by the CA (or it's consultants)
- To develop and agree the use of Highways Protocols - to agree the criteria for what should be included in the KRN
- To develop and recommend an operating model i.e. responsibility for delivery and proposed delivery arrangements at both a strategic and a local level, as well as identify potential efficiencies in joint working and cross boundary working opportunities
- To consider and develop governance arrangements within the LCR which meet the needs of the CA and its strategic partners and identify the necessary resources to coordinate the KRN
- To manage and act as a conduit between TAG and its sub-groups, setting and receiving work programmes and update reports, coordinating activities, actions and responses, as necessary.
- To report to TAG and make recommendations on the appropriate use of available funds to ensure efficient operation of the KRN
- Share knowledge and examples of good practice between LCR Highway Authorities

Figure 5.1 - Programme Management Governance for KRN Package



The KRN Group core membership comprises of the Chair (LCR Lead Officer for Transport); representatives from each LCR constituent local authority; CA officer for Transport Policy, and representatives from the transport executive’s delivery teams.

Core members are responsible for communicating KRN Group’s business to colleagues in their own organisation (including those involved with other LCR Combined Authority themes). They are also responsible for ensuring they liaise with their own relevant authority colleagues to ensure effective input into reports and any subsequent debates. Other key stakeholders will be invited to attend as appropriate.

Updates on the KRN Programme will be reported to Transport Delivery Board, where performance and delivery will be reported against objectives and the delivery programme.

Transport Delivery Board

The Combined Authority has established a Transport Delivery Board, which is responsible for the development and delivery of the CA-administered, externally funded transport programmes, of which the KRN Programme is an integral part. The Board is supported by the CRSTS Programme Manager and the Programme Management Office (PMO) and serviced by Democratic Services. This is based on the Governance and SIF Assurance Framework approved by the CA.

The Transport Delivery Board will comprise the following core representatives. Additional attendees may attend where necessary:

- Executive Director for Place, Senior Responsible Officer and Chair – Richard McGuckin
- Executive Director Investment and Delivery – Aileen Jones
- Project Director Rolling Stock – David Powell
- Assistant Director for Finance – Sarah Johnston
- Head of Programme Management and Corporate Performance – Dan McCafferty
- Project Sponsors – Various (when required)
- Lead Officer for Transport Development – Paul Buntin
- Lead Officer for Transport Policy – Huw Jenkins
- CRSTS Programme Manager – Adam Price
- CRSTS Programme Accountant – Tracy Gibson

Project Sponsors provide updates to the Transport Delivery Board, which will be held to account for performance and delivery in accordance with the project objectives and the delivery programme. The Board is a forum for the reporting of project data, including performance against milestones, risk exposure and financial profiles. Risk, issues and change controls that exceed the project tolerances will be escalated for resolution, whilst business cases and funding agreements for approval are reviewed and actioned. The Board meets monthly, with ad-hoc deep dives into specific projects and issues as required.

The Transport Delivery Board reports to the Combined Authority and LCRC Executive Leadership Team. It operates as the escalation point for all Projects and Programmes in delivery under the Transport Delivery Programme. Where decisions cannot be reached by the Transport Delivery Board or they exceed agreed tolerances provided by delegated authority to the Executive Lead, Board members or provided from the Combined Authority, these will need to be escalated to Executive Leadership Team and/or Combined Authority as defined in the Constitution.

5.2.2 Change Management

Each project within the CRSTS programme will have authority to manage change delegated to it up to certain thresholds in line with the Combined Authority Constitution. Change will be managed throughout the KRN programme via a formal change control process which defines what constitutes change, sets baselines and clearly delegates levels of authority. Thresholds and tolerances will be tailored to the project parameters, including the overall budget and risk profile and all early warnings, risks, issues and changes will be logged and reported to the CRSTS Programme Manager by the Key Route Network Manager.

5.2.3 SIF Assurance Framework

The SIF Assurance Framework developed for the CA, covers the expectations of Government in the following areas:

- Governance and decision making;
- Partnership working;
- Transparent decision making;
- Accountable decision making;
- Achieving Value for Money; and
- Independent Audit and Scrutiny

The CA agreed with Government that CRSTS funds would be governed as part of the SIF Assurance Framework. This was also the case with previously devolved funds, including the Transforming Cities Fund (TCF). The Strategic LCR Governance Structure can be found in the SIF Assurance Framework, Appendix F.

5.2.4 Programme Reporting

During the delivery phase of the KRN Programme, the PMO will provide assurance for the LCR CA. The PMO are required to provide independent assurance on projects funded by the CA as per the SIF Assurance Framework. This is done by highlighting and reporting on project progress (milestone tracking), financial performance, dependencies, key delivery risks, issues and other Key Performance Indicators (KPIs).

The PMO obtains performance updates from project sponsors (and their representatives) proportionate to the scale, complexity and risk associated with any given project. All these activities enable information to feed back into the decision-making processes to inform future management of the funds. Sponsors are required to submit the above in the form of a project dashboard once a month, which is scrutinised by an appointed Assurance Manager. The Assurance Manager will visit the site(s) of construction where appropriate.

The PMO is a vital tool in providing independent assurance of project health, providing the following key functions in the management of the SIF:

- Providing programme management expertise and support to the Transport Development Team by coordinating the internal investment decision-making process. They apply a rigorous approach to the management of SIF applications covering risk, project plans and decision-making. It also provides assurance that the decision-making process is consistent with the Investment Strategy and this Assurance Framework;
- PMO, in collaboration with the Transport Development Team, also assists SIF applicants in providing a complete application in the correct format. It scrutinises application data, commercial and legal documentation and highlights any issues of

concern. They also coordinate Business Case appraisals with the independent assessors.

- Once a project moves into its delivery phase, the PMO monitors ongoing contractual performance until project closure. PMO work with Finance to produce regular reports to highlight progress made towards project completion and benefit realisation.

5.3 Key Milestones

KRN Levelling Up has been developed as part of the LCR CRSTS programme of schemes. This is reflected in the delivery programme, with the scheme due to be completed before the funding deadline of 31st March 2027. The programme enables the delivery of each element of the scheme to start on site as and when it is ready and avoiding busy periods where possible to reduce the impact on the network during construction.

A programme-wide summary of the main milestones is available below. The full delivery programme including detail for each individual scheme is provided in Appendix G detailing key milestones, dependencies and the critical path.

Table 5.1 – KRN Delivery Programme

KRN Schemes		2022/23				2023/24				2024/25				2025/26			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
CROSS RIVER CORRIDOR	Lime Street Multimodal Interchange																
	Kingsway Tunnel Safety (VRS)																
	Wirral Resurfacing																
	Low Carbon Birkenhead																
	Queensway Tunnel Decarbonisation																
MERSEY GATEWAY	Speke Hall Bus Priority																
	Delph Lane Housing Gateway																
	Dukesfield Active Travel Connectivity																
	Wavertree High Street Resurfacing																
EASTERN GATEWAY	Active Travel Signals Upgrade																
	Queens Drive Bus Priority																
	West Derby Road Active Travel																
	Roby Road Pedestrian Improvements																
	M62 Flood Prevention																
	Parkside Access Improvements																
	M62 Structures Resilience																
	A562 Structures Resilience																
	Higher Road Active Travel Route Phase 1																
	Higher Road Active Travel Route Phase 2																
COASTAL CORRIDOR	Connecting Sefton																
	A59 Cycling Connectivity																

5.4 Evidence of Delivery

Our recent track record demonstrates our ability to deliver, not only on time and to budget but also to deliver the planned outcomes and impacts. We have successfully delivered £500m of investment through the city region Strategic Investment Fund (SIF), including devolved Local Growth Funding and Transforming Cities Funding.

We will apply lessons learnt in previous scheme delivery to our KRN programme and the wider CRSTS programme, as part of our commitment to continuous improvement. We have learnt the importance of making best use of DfT capacity funding and in the current financial year 21/22, we have topped up our £5.6m allocation to £17m to ensure that each scheme we invest in is robust, viable and meets our vision and the priorities set out by Government. We have identified further development funding requirements which will be factored into future LCRCA budget decisions.

Table 5.2 - Evidence of Successful Delivery of Similar Projects

Project Name	Description	Project Award	Delivered to Cost?	Delivered on Time?	Type
'Invest for Growth' Key Route Network Package	An integrated programme of interventions in the strategic highway routes to contribute to economic, housing and employment growth in the LCR. This included strategic maintenance, bus and freight priority and structural and communication upgrades across the region.	£25.1m	Yes	Yes	Strategic Maintenance Bus and Freight Priority Structural and Communication Upgrades
A565 North Liverpool Key Corridors	A package of measures aimed at facilitating proposed development and unlocking aspirational development in the North Liverpool area. At the same time the scheme seeks to address the causes of vehicle-based congestion along the A565 corridor and improve east-west linkages for non-motorised users, reducing the existing severance caused by the A565 to allow better access to the proposed regeneration and development areas.	£13.3m	Yes	Delivered successfully within the Local Growth Fund timelines (before March 21).	Highways junction improvements and sustainable travel infrastructure.
Halton Curve New Rail Line	The introduction of the Halton Curve is to provide direct rail services between North Wales/Chester and Liverpool. The scheme has been identified by Merseytravel in conjunction with the Welsh Government as one of the key projects within the region which is required to help revitalise the local and regional economy.	£12.93m	Yes	Delivered successfully within the Local Growth Fund timelines (before March 21).	Rail infrastructure
Maghull North Rail Station	A new station in the northern area of Maghull seeks to provide improved public transport access both for the north of Maghull and the wider hinterland including adjacent areas of West Lancashire.	£10.7m	Yes	Delivered successfully within the Local Growth Fund timelines	Rail infrastructure

Project Name	Description	Project Award	Delivered to Cost?	Delivered on Time?	Type
				(before March 21).	
Princes Avenue Connectivity – Sustainable Travel Link	New pedestrian and cycling route in the central reservation along Princess Avenue, connecting to the Baltic Triangle, Liverpool One, and Liverpool City Centre	£3.5m	Yes	Delivered successfully within the Local Growth Fund timelines (before March 21).	Sustainable Travel Infrastructure
Lime Street Gateway	A scheme to improve and enhance the environment and quality of the Pedestrian corridor between Elliot Street and Church Street within the city's Main Retail Area. The route formed one of the key paths between Lime Street Station and the core retail area.	£2.5m	Yes	Delivered successfully within the Local Growth Fund timelines (before March 21).	Sustainable Travel Infrastructure/Public Realm
A41 Corridor Improvements	Strategic Maintenance of the A41 New Chester Road, New Ferry Bypass and Rock Ferry Bypass carriageway reconstruction. This included replacement and renewal of street lighting columns, cabling and road restraint systems.	£2.36m	Yes	Delivered ahead of schedule (one month) within the Local Growth Fund timelines (before March 21).	Highways/Key Route Network
Kingsway Tunnel Connectivity Project	Part of the Key Route Network programme of works this project is to resurface the Kingsway Tunnel exit and approach roads at Wallasey	£1.1m	Yes	Delivered ahead of schedule (two months) within the Local Growth Fund timelines (before March 21).	Highways/Key Route Network
Queens Drive Connectivity	Improving the ability for pedestrian movement between bus interchanges supporting City Centre connectivity. The scheme forms a radial around the Liverpool City Growth Zone and intertwines with the other schemes being proposed in this zone.	£0.80m	Yes	Delivered successfully within the Local Growth Fund timelines (before March 21).	Bus projects/Sustainable Travel

5.5 Risk Management

We have developed a KRN Programme Risk Register (Appendix D) that identifies all programme-level risks and provides pre and post-mitigation scoring and mitigation measures. This will be maintained as a live register by the KRN manager throughout delivery, informed by individual scheme-level risk registers. Monthly project control meetings will be held throughout delivery to monitor progress, assess risk and monitor spend against budget.

As SRO, Richard McGuckin (Executive Director for Place) will hold overall accountability for project delivery, management, risk management and monitoring and evaluation in line with our SIF Assurance Framework. The top risks and progress against risk mitigation actions will be reported monthly to the Transport Delivery Board, and any risks which exceed the tolerance of the Transport Delivery Board will be escalated to the Executive Leadership Team at the CA for resolution.

Identified in the programme risk register, 5 risks are deemed a major or critical risk ranging from 16 to 20 on the risk scoring scale. Each of the risks identified have the potential to impact the corporate objectives of accelerating plans for a net-zero Carbon economy by 2040 and improving the sustainability of public transport. There are various consequences which may materialise if the identified risks are not addressed, they include:

- Reputational damage
- Loss of political support
- Delay to the programme or schedule delay
- Cost escalation or cost inflation
- Poor governance
- Loss of funding
- Reduced benefits
- Scope reduction or scope change
- Non-delivery

As a result, we have implemented control measures and actions which will mitigate these risks and reduce the associated impacts. Table 5.3 shows the critical risks including risk description and mitigation measures.

Table 5.3 – Critical risks to the Key Route Network Programme

Ref.	Risk Description & Mitigation Measures	Inherent Risk Scoring			Target Risk Scoring		
		Impact Score	Likelihood Score	Total Score	Impact Score	Likelihood Score	Total Score
KRN003	<p>Costs & Procurement</p> <p>Delivery stage: risk that price escalation and inflation – including through Brexit and COVID-19 uncertainty - increases the cost of delivery and reduces the extent of the KRN programme that can be delivered within the project timescales.</p> <p>Requirements for delivery will be contractualised as soon as possible to remove uncertainty.</p>	5	4	20	3	3	9

KRN005	<p>Programme Management</p> <p>There is a risk that the allowances for statutory undertaker diversions are insufficient due to the current level of design and the potential likelihood of discovering unknown stats during the delivery stage.</p> <p>Early engagement with sponsors and contractors will take place.</p>	4	4	16	4	3	12
KRN008	<p>Programme Management</p> <p>Risk that LCRCA and Local Authorities do not have sufficient project and programme management capacity and capability to deliver its KRN programme within the necessary timescales.</p> <p>Resources directed to sponsors and LCRCA for support. Early engagement with the market.</p>	5	4	20	3	1	3
KRN010	<p>Programme Management</p> <p>Risk of significant network disruption if projects are delivered simultaneously or overlap with other interventions, e.g. TCF project at Birkenhead, Highways Maintenance and other CRSTS schemes.</p> <p>Early network management planning and resources to local authorities for network management. Phasing of works and strategic planning.</p>	4	4	16	4	2	8
KRN011	<p>Programme Management</p> <p>Risk that the programme is delayed due to various factors (stats, construction issues etc.)</p> <p>Early consultation with suppliers and sponsors to produce realistic delivery plans. Continued discussions.</p>	4	4	16	3	3	9

5.5 Communications and Stakeholder Management

Stakeholder buy-in for the schemes is critical to the success of the KRN programme. The KRN programme follows a stakeholder and communications strategy which will:

- Map in detail and categorise the stakeholders;
- Identify strategies for ensuring stakeholder support for the programme is maintained throughout the programme lifecycle; and
- Identify interconnected stakeholders across multiple projects in the CRSTS programme

At a programme level we have carried out initial stakeholder mapping and engagement as identified in the Strategic Case. Our mapping has categorised key stakeholders as shown in Figure 5.2.

Figure 5.2 – Key Stakeholder Mapping



Based on the above groupings, the stakeholder and public engagement plan going forward is outlined in Table 5.4, providing information on who will be engaged/consulted with, the key messages, the method of engagement/consultation and the frequency of the activity. Stakeholders with a higher level of interest and/or influence will generally be consulted more frequently and in more detail in terms of ensuring that their feedback is continuously captured in the scheme proposals and the overall KRN programme.

We will follow all statutory processes including reporting to DfT, public consultation during the Traffic Regulation Order (TRO) process and LCRCA’s own internal engagement and reporting procedures. This plan will be revisited and revised as appropriate throughout the programme to reflect changing circumstances.

Table 5.4 - Stakeholder & Public Engagement Plan

STAKEHOLDER	INTEREST	INFLUENCE	MESSAGE I.E. WHAT STAKEHOLDER NEEDS TO KNOW	METHOD	FREQUENCY
Metro Mayor, City Mayor, Council Leaders, Combined Authority Members	High	High	High level progress / any issues or risks	Update / approval report	Combined Authority and Transport Committee meetings (4 to 8 weeks)
LCR Local Authority Members / MPs	Low	High	High level progress / any issues or risks	Update / approval report	At relevant milestones

STAKEHOLDER	INTEREST	INFLUENCE	MESSAGE I.E. WHAT STAKEHOLDER NEEDS TO KNOW	METHOD	FREQUENCY
Transport Advisory Group (LA Directors, Highways England, LEP, Bus Alliance)	High	High	Regular progress updates	TAG meetings	6 weekly
KRN Group (LA KRN Officers)	High	High	Regular progress updates	KRN Meetings	Monthly
Department for Transport	High	High	High level progress updated	Update / Monitoring report	At relevant milestones
Sustrans	High	Medium	Regular progress updates including forward plan for schemes	Email / Verbal / Meetings / Virtually	6 weekly
Chamber of Commerce	Low	Low	Key scheme updates, ability to cascade key information to members	Newsletter / Email / Verbal	At relevant milestones
Developers	High	Low	Share forward plan for schemes	Email / Verbal / Planning process	As and when information and can be made public
LCR Residents	Low	High	Share outline scheme designs, public consultation of areas affected	Website / Face to Face / Virtually	As and when information and can be made public
Transport Operators, including taxis	Low	High	High level programme updates, to know any impact of services e.g. junction improvements	Email / Bus Alliance / Rail Hub / Taxi Forums	At relevant milestones, as and when information and can be made public
Merseyside Police	Low	Low	High level update on scheme delivery, for future enforcement activities?	Email / Verbal	At relevant milestones
Merseyside Fire and Rescue	Low	Low	High level update on scheme delivery	Email / Verbal	At relevant milestones

STAKEHOLDER	INTEREST	INFLUENCE	MESSAGE I.E. WHAT STAKEHOLDER NEEDS TO KNOW	METHOD	FREQUENCY
Cycling Interest Groups (CTC, Cycle forums)	High	Low	Update on scheme delivery	Email / Verbal	At relevant milestones
Green Transport Partnership	High	Low	Update on LCR Low carbon initiatives	Verbal	At relevant milestones
Police and Crime Commissioner	High	Low	Update on schemes to complement PCC delivery	Verbal	At relevant milestones
Education and Skills sector	Low	Low	To communicate about schemes effecting students	Verbal / Newsletter	At relevant milestones
Health sector	Low	Low	To maximise active travel benefits of schemes introduced, to feed into their delivery plans	Verbal / Newsletter	Quarterly
Road Safety Management Group	High	Low	To maximise road safety activities around schemes	Verbal	6 weekly

An integrated approach to stakeholder engagement aligned with other CRSTS schemes will be adopted where appropriate and possible. The stakeholder engagement plan at a programme level will interface with the programme monitoring and evaluation plan (as outlined in appendix H) to utilise findings in effective stakeholder engagement both during the programme delivery and to promote the success and benefits at programme closure.

This approach will be aided by the tools, templates and how-to guides in our Project Management Framework, available to the project sponsor to utilise.

5.6 Benefits Realisation, Monitoring & Evaluation

LCRCA's Evidence, Research and Intelligence Team (ER&I) will be responsible for developing the detailed monitoring and evaluation programme and carrying out evaluation activity. LCRCA's Programme Management Office (PMO) will lead on the timely and robust collection of monitoring data throughout the delivery of the programme.

Our approach to M&E is aligned to that set out in the Magenta Book, using monitoring as a tool to check progress against planned targets, and through evaluation seek to assess the effectiveness and efficiency of our programmes and whether anticipated benefits are realised. This is set out in Appendix I.

The monitoring and evaluation objectives for the CRSTS portfolio are to:

- Demonstrate local progress and the extent to which the programme has met delivery milestones and objectives, including lessons learnt.
- Generate evidence on which interventions are the most effective at achieving the objectives and the progress of outcomes and impacts.
- Apply knowledge about what has worked, how and why to inform future projects/investments.

We will develop a series of research questions to frame the monitoring and evaluation programme, structured around the rationale and design of the programme, management and delivery, delivery progress, impacts, value for money and additionality. The questions will enable a full critique of the original intervention logic, covering all aspects of the logic model to understand the extent of change and why. Table 1 included in the Monitoring and Evaluation Plan in Appendix I presents the research questions which frame the data collection, analysis and understanding of the evaluation evidence at the programme level.

Based on the research questions, we will develop a series of key metrics that incorporate Government requirements and our own indicators, at both programme and individual project level. These are likely to include metrics such as bus patronage data, cycle count data and measures of wider physical activity levels, journey times, noise, air pollution and economic metrics. These metrics will be collected for the baseline (pre or during delivery) and then at one year and three to five years after implementation, to inform evaluation and reporting.

We will apply lessons learnt from TCF in terms of the monitoring, evaluation and reporting, noting that the DfT highlighted our TCF reporting as 'excellent' and shared it with other Mayoral Combined Authorities as an example of good practice.

The collection of predominantly quantitative data will enable us to compare the outcomes with those predicted within the appraisal and, where possible, existing datasets will be used as part of a proportionate approach to minimise additional costs. This includes:

- Automatic cycling and walking sensors;
- KPI data supplied through the city region's Bus Alliance to monitor change such as punctuality, journey times and patronage data;
- Traffic flow data;
- National Bus Passenger surveys to benchmark satisfaction with public transport schemes
- Cordon count data across key centres to assess modal change;
- City Region wide household travel survey to capture robust trip patterns and mode by journey purpose; and
- Econometric analysis of the impact on transport infrastructure investment on economic growth.

New data will only be collected where there is a gap crucial to understanding an intervention's effectiveness, e.g. primary research with beneficiaries and stakeholder feedback such as:

- Stakeholder interviews;
- Route user surveys;
- Bus passenger surveys; and
- Perception surveys with visitors and businesses.

This will be triangulated with secondary data analysis to understand change. Throughout delivery, our plan for programme evaluation activities considers the different start and completion dates of the individual schemes which make up our CRSTS programme, which will begin to show progress towards outcomes and impact at different times. The PMO will also collect data related to spend, programme and project performance, to inform lessons learnt and future delivery practices.

The Evidence, Research and Intelligence (ER&I) team will collect evidence to inform three key programme evaluation reports:

5. **Annual Monitoring:** report will include project baseline data from September 2022 to 2024 and post project completion data from 2024 onwards.
6. **Interim Programme Evaluation (2026):** focuses on the first two years of delivery.
7. **Final Programme Evaluation (by 2031):** meta-analysis of scheme impacts and full programme evaluation to assess the local effectiveness and impact of investment, value for money; and apply learning of what works to future programmes.

List of Appendices

- A Options Appraisal Report
- B Map of schemes by Investment Corridor
- C Individual Scheme drawings/Maps
- D Risk Register
- E Section 73 and/or Section 151
- F Strategic Investment Fund (SIF) Assurance Framework
- G Delivery programme
- H Communications Plan and Stakeholder Management Strategy
- I Monitoring and Evaluation Plan (including Benefits Realisation)
- J Logic Map
- K Distributional Impact Assessment
- L Equalities Impact Assessment Report
- M Environmental Impact Assessment Report
- N Appraisal Summary Table

- O Transport Economic Efficiency Table
- P Analysis of Monetised Costs and Benefits Table
- Q Public Accounts Table
- R AMAT Tables and HMAT results