Carr Mill Station

Strategic Outline Business Case (SOC)

St Helens Borough Council

December 2022

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Executive Summary

Introduction

An effective, efficient, and sustainable transport network is known to support economic growth, wellbeing and health, and environmental objectives, and for this reason the Government's 'levelling up' and growth ambitions have placed a spotlight on improving transport infrastructure, in particular across areas of the country that currently suffer from poor connectivity.

In support of these objectives, St Helens Borough Council with the support of Liverpool City Region, have had a long-standing ambition to reopen a railway station serving the Carr Mill. Carr Mill is part of St Helens to the north of the town centre and contains 35,000 residents. Although the Liverpool Wigan line goes through the area, the station closed in the early 20th century, since when there have been increasing calls to see the station reopened.

The aim of this study is to assess whether reopening the station is technically feasible and economically viable, to identify a preferred location, and to provide a Strategic Outline Business Case (SOC) for the scheme in full compliance with the latest Department for Transport (DfT) and Treasury (HMT) guidance such that further funding and development can be sought. As such the document is structured around the 5 business case elements of an SOC.

Strategic Dimension

Identified issues and constraints

The Strategic Case within the SOC firstly identifies the key challenges and issues faced by residents, business and visitors to Carr Mill. These are;

- **Rail is not easily accessible from Carr Mill area**. Although the Liverpool to Wigan railway line bisects Carr Mill there is no local station, and residents and visitors have to either travel to Garswood Station located 3.5km to the north-east, or St Helens Central located 2.5km to the south-west.
- **Poor bus connectivity.** Although regular bus services are available to St Helens Central Station across much of the study area, in some locations, journeys can take up to 30 minutes. For journeys to Garswood Station from the Carr Mill area, at present driving is a much faster and more convenient option than public transport, although of course this is only an option for those with access to a car.
- **Access to key regional destinations such as Liverpool and Wigan is difficult.** Over three quarters of jobs within an hour of Carr Mill are located more than 40 minutes away, with significantly fewer jobs available within the local area (i.e. under 20 mins travel time). However, residents of the study area struggle to access these jobs via fast, high-quality, and reliable public transport connections. Instead, 89% of commuting journeys from the study area to workplaces outside of the Borough are being undertaken by car due to their significant mobility advantage in terms of journey times, with only 8% being made by bus or train.
- **The region contains some areas of relatively high deprivation** The Borough is the 26th most deprived local authority in the country, with relatively low economic activity, employment rates and skill levels. Areas of extremely high levels of deprivation are located in the western and southern parts of the study area, including within Carr Mill itself. While there are numerous causes of deprivation, poor public transport access to employment, education and leisure opportunities is a key factor in how residents can become isolated from opportunities and services that can improve their quality of life.
- **High car dependency but low car ownership**. Despite the area's poor public transport provision and therefore high dependency on car, due to low incomes Carr Mill itself has relatively low levels of car ownership with an average of 43% of households without a car. Those households without a car have much more limited access to employment, educational and leisure opportunities across the wider region.
- **Local roads can experience high levels of congestion.** 38% of total commuting journeys from the study area are made by car or van to workplaces in the Borough. Similarly, 45% of car commuter trips to the study area originate from locations within the Borough. This creates a high level of demand on the traffic network, with resultant impacts on highway congestion and journey times. This also impacts the journey times and reliability of the bus network.

- **Accommodating planned housing growth will place further strain on the transport network** The Borough's draft Local Plan (2019) includes plans for the development of 1,848 units in the study by 2036/2037. The bulk of this development is to take place on sites at Cowley Hill (1,100 units) and at Florida Farm (522 units). Without high-quality public transport intervention, such developments will face constraints due to their impact on the highway network, causing further congestion and poorer air quality.

- **Dependency on carbon-intensive modes makes achieving net zero challenging.** The lack of a convenient public transport network compounds air quality problems and runs counter to local and national decarbonisation policy. Reducing dependency on car travel is an important facet of reducing carbon emissions and improving local air quality and can only be achieved if there are regular accessible sustainable transport options available to residents, such as restoring connectivity to the rail network.

Identified scheme objectives

Scheme strategic objectives have been identified based on resolving the key problems and opportunities noted above. These are top:

- Improve transport connectivity to key regional destinations and markets to the ensure the local community has better access to jobs, services and opportunities, helping to level up the borough.
- Deliver a scheme which supports the sustainable growth of the borough.
- Increase the share of journeys taken by public transport in the study area and reduce the reliance upon the car for travel.
- Support the Liverpool City Region to reach its target of net zero carbon by 2040.
- Deliver a public transport intervention that is affordable and financially sustainable.

These objectives are shown to be well aligned with local, regional and national policy, including the St Herlens local plan, the Liverpool City Region and Liverpool Combined Authority plans, and the national levelling up, green growth and net zero objectives.

Option Development

A rail solution for Carr Mill

Different modal options for improving transport connectivity to and from Carr Mill were strategically assessed against the identified objectives. As well as options to provide a new railway station these strategic options included delivering enhancements to existing bus services, the road network, and the local active travel network.

This assessment found that compared to other modes, a new rail station can best meet the objectives of the scheme. Rail was found to be the only option to provide Carr Mill with a high quality, fast, and reliable public transport connection to a wide range of destinations, including the key markets of Wigan, Liverpool and central St Helens. For these sorts of journeys rail promotes the strongest shift towards sustainable transport modes and away from private vehicle use. Rail is able to connect Carr Mill residents to more jobs and services while unlocking new markets and opportunities for Carr Mill residents, businesses and visitors.

Travelling by rail is provides the fastest and most reliable journeys, making it highly attractive especially when travelling to a large urban centre like Liverpool or Wigan. It is the option that can promote the strongest shift towards less carbon-intensive modes and away from private vehicle use. Such shift is pivotal in contributing to achieving LCR's net zero target.

Scheme design

The study has identified an intial long list of 7 potential station locations; 6 of these are on the existing Liverpool to Wigan Line, while one is located on the disused branch line that served the Pilkington Glass site. These options were assessed against the scheme objectives, from which a shortlist of 4 options were taken forward for more detailed development and assessment.

Further more detailed analysis of the demand, economics and costs of these 3 shortlisted options, identified a preferred station location between Laffak and Woodlands Road near the site of the original station. This location is located closed to existing communities in the study area, is able to sustainably support the future growth of the Borough, and is the easiest and cheapest location in which to build a new station and supporting

infrastructure. Two sub options using this site were identified with different access points from either Woodlands or Carr Mill roads, and further work and stakeholder engagement would be required to determine a preferred design.

An outline design for a new station at the identified site included the provision of two new 140m platforms that can support 6 car trains, an overbridge bridge with lifts, ticket office and waiting rooms, highway access, a bus and taxi drop off area and a 50 space car park. Capital costs for such a station have been estimated at would be £14.3m to £16.0m in Q2 2022 prices. In line with HMT and DfT guidance, these estimates include an uplift of 56% to account for optimism bias.

Service provision

A key issue investigated in the study is understanding what service might call at any new station. Analysis of the current timetable showed that is possible to allow the existing 2 trains per hour Liverpool Lime Street to Wigan service to additionally call at a new Carr Mill Station. Although this will introduce a slight increase in end to end journey times between Liverpool and Wigan, no additional rolling stock or train crews are required, and there would be no material impact on other services, timetable reliability or line capacity. Beyond the construction of a new station, no other network enhancements would be required to deliver this scheme.

Economic Dimension

Forecast Demand

Demand and benefits have been assessed using a form of trip rate model designed to forecast the demand for the new stations. The model's methodology and assumptions are fully compliant with DfT guidance and industry best practice. It uses trip rates from Thatto Heath and Eccleston Park stations, which has some similar characteristics to Carr Mill, and applies these to Carr Mill Station, while taking account of the different provision of train services, demographics, and catchment areas of each station. Ongoing demand growth is further applied to the baseline forecasts in line with the industry standard methodology which applies a cap to growth after 20 years. For all options, the industry train planning and revenue model known as MOIRA has been used to assess the impacts of the timetable changes to those through passengers who are not using Carr Mill, but whose journeys are extended by a few minutes as a result of the additional station call at Carr Mill.

The forecasting approach shows that all of the service options generate significant levels of demand, benefits and revenue. At the preferred location between Laffak and Woodlands road the model forecasts 151,000 passengers in 2027 rising to 311,000 passengers in 2042. This is a comparable level of demand to other stations on the Wigan to Liverpool line such as Bryn, Thatto Heath and Eccleston Park

The large majority of users of Carr Mill are forecast to be travelling to or from Liverpool and Wigan, with Liverpool much the more popular destination

Journey time benefits

Existing public transport provision between Corsham and key destinations such as Liverpool and Wigan currently requires taking a bus or car to another local station, and then making if necessary an onward connection. A new station at Carr Mill that is directly accessible by walking or cycling can save up to 15 minutes of journey time for those travelling to/from Liverpool, and up to 27 minutes to/from Wigan. It also shows that the station would not have an impact on journey times from locations beyond about a mile from the station

Economic Appraisal

An economic appraisal has been undertaken in full compliance with DfT and HMT guidance. This has assessed and monetised the key benefits of the scheme, and by comparison with the scheme costs has derived a benefit cost ratio (BCR). This assessment captures the primary benefit of providing users with faster journeys, but it also monetises the benefits associated with reduced road use including less noise, air pollution, carbon and congestion. Revenue impacts have also been assessed accounting for the fact that around 10% of users of the station will have been abstracted from other local stations on the rail network, and their use of Carr Mill will not be providing new revenue. The appraisal also accounts for the disbenefits to through passengers who do not want to use Carr Mill station, but whose journeys are extended by a few minutes by the addition of a new station stop.

For the best performing option, the appraisal provides a benefit to cost ratio (BCR) of 4.8, which is categorised as very high of high value for money. Sensitivity testing shows these conclusions are robust around some quite wide variations in cost or demand assumptions, with the scheme still remaining as high value for money even if costs are 25% higher or demand 25% lower. If costs and demand are 25% higher and lower respectively at the same time, then the value for money of the scheme becomes low at 1.4.

A high level assessment of the wider economic impacts shows that these impacts could form an additional 10% uplift to the benefits, although at this stage these have not been included in the appraisal. An assessment of the social and distributional impacts shows the scheme to be slightly beneficial to most users groups. A high level assessment of the environmental impacts shows that while there could be some potential adverse impacts from the construction of the new station, it is not expected that these will be significant, and that the long terms environmental impacts would be positive.

Financial Management and Commercial Dimension

At this stage the scheme is still at an early stage and the Financial, Commercial and Management Cases have only been progressed to a limited extent, and key questions remain over the funding and delivery of this scheme.

Financial Dimension

Capital costs for the station have been assessed at between £14.3m to £16.0m in in 2022 prices, including 56% optimism bias. At this stage land acquisition costs are excluded.

At this stage, the appraisal has not included any assessment of operating costs, either of the station or of the train services.

Additional train operating costs would be limited to the additional expense of slowing down and accelerating trains to stop at Carr Mill.

The operating costs of the station will be very dependent on whether the station is manned or not, but will also be required to cover utility bills, cleaning, ticket vending machine provision, and other general reactive maintenance as well as costs associated with the station Long Term Charge (LTC) that is part of the regulated costs payable to Network Rail. Within the Mersey travel area, of which Carr Mill will sit within, stations are normally staffed providing coverage from first to last train. Garswood, as a local comparator station, provides ticket office coverage from 06.00-23.45 Monday to Saturday and 08.00-23.35 on a Sunday.

Indicative costs, based on comparator stations may be representative of those that may be expected at Carr Mill. At Maghull North, a two-platform station opened in 2018 on the Merseyrail Electrics network, the LTC is set at just under £59k per annum (based on Network Rail's CP6 charges) and estimated station staff costs, based on requiring 4-5 Full Time Equivalents (FTE) to cover a 7-day, 3-shift roster would be between £180k and £225k per year.

Financing options are yet to be determined.

Stakeholder support

With its close alignment to local, regional, and national policy the station has widespread support from both local councillors and the Liverpool City Region local support. Throughout the preparation of the Strategic Outline Business Case key stakeholders have been involved and provided their support in the setting of the strategic objectives, the identification of options associated with both rail and other modes of travel and the analysis undertaken to assess the case for a new rail station at Carr Mill. These stakeholders include Merseytravel, Transport/Highway officers at St Helens MBC, Network Rail and Northern Trains.

Overarching Conclusions

In summary there would seem to be a very strong case for providing a new station in Carr Mill, with the business case showing that the investment would provide very high value for money. A location between Laffak and Woodlands Road provides a preferred location and is shown to be technically feasible and deliverable.

The station would significantly improve the connectivity and accessibility of Carr Mill, improving access to key employment, educational and leisure opportunities across the wider region, in particular Liverpool. Accessibility would be particularly improved for those without access to a car, with the reduction in car dependency also improving highway congestion, air quality and carbon emissions.

Unfortunately, in recent decades Carr Mill's economy has not kept up with other parts of the UK, and it suffers from some areas of high deprivation. The UK Government has an ambition to 'level up' areas in the North West, such that it can provide equal prosperity, economic growth and opportunities as other parts of country. A new station at Carr Mill would help meet this ambition.

With a strong business case it is recommended that further work to take forward this project is undertaken. This needs to include undertaking further local consultation and stakeholder engagement to understand the needs of

local residents and businesses, the development of more detailed designs that identifies a preferred station design and access, and crucially the identification of suitable funding sources and delivery mechanisms.

1. Introduction

1.1 Context for the study

The UK Government has an ambition to 'level up' areas in the North West, such that it can provide equal prosperity, economic growth and opportunities as other parts of country.

An effective, efficient, and sustainable transport network is known to support economic growth, wellbeing and health, and environmental objectives, and hence the 'levelling up' ambition has placed a spotlight on improving transport infrastructure across areas of the country that currently suffer from poor connectivity.

In support of these objectives, St Helens Borough Council with the support of Liverpool City Region, have had a long-standing ambition to reopen a railway station serving the Carr Mill area of St Helens. As such in early 2022, Atkins were commissioned by St Helens Borough Council to undertake an early-stage feasibility and Strategic Outline Business Case (SOC) for the scheme.

The key aims of the study are to establish whether;

- reopening the station is technically feasible and economically viable, and if so to identify a preferred location for the station taking account of technical and economic factors;
- restoring a railway station serving the Carr Mill area is likely to offer a strategic fit with local and national policy ambitions; and,
- there is demonstrated business case for opening a station in Carr Mill, including an assessment of the strategic, economic, commercial, management and financial dimensions undertaken in full compliance with the latest Department for Transport (DfT) and Treasury (HMT) guidance.;

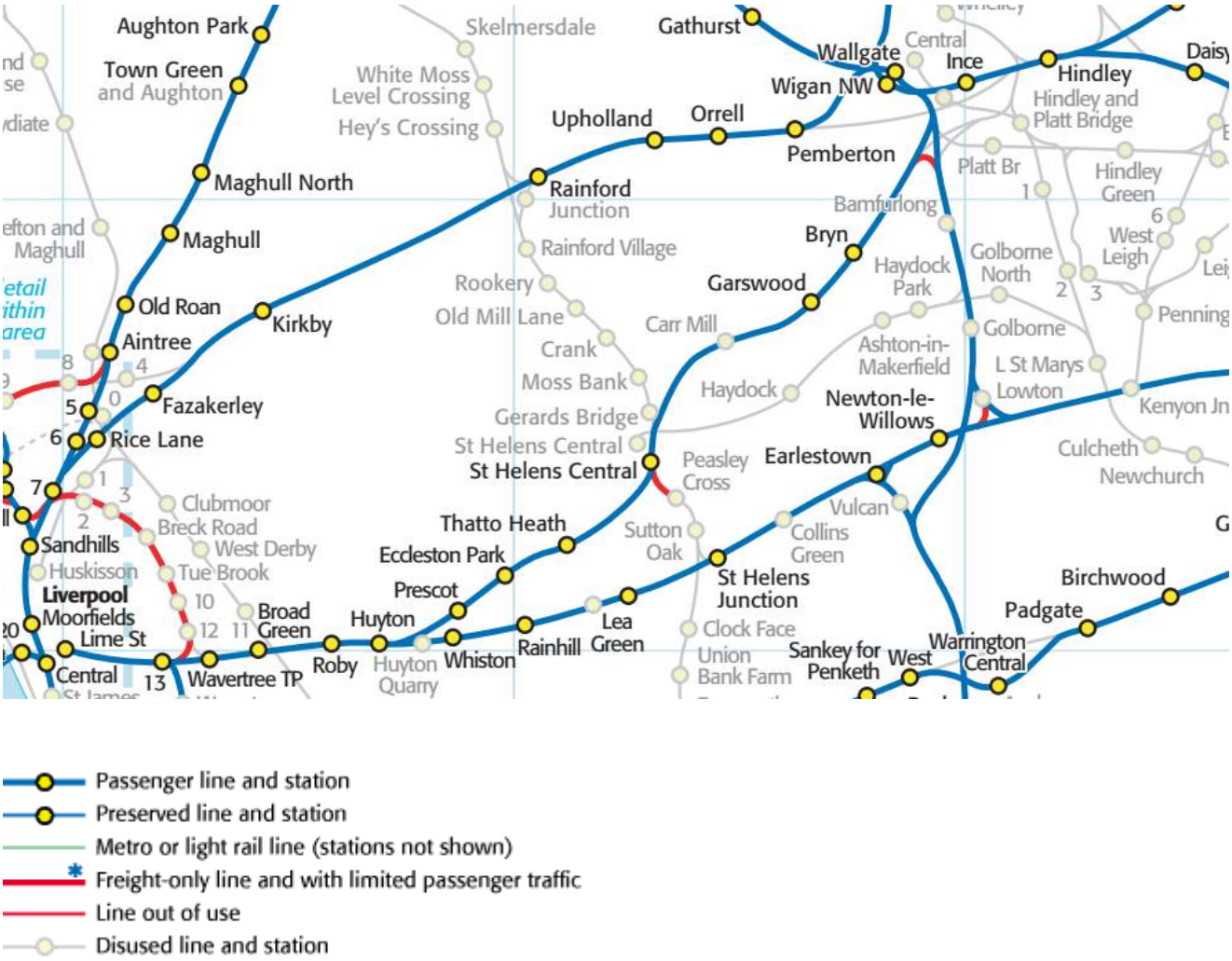
This report and its associated appendices represent the outcomes of this study.

1.2 Description of the scheme

Carr Mill is part of St Helens located around 2 miles to the north of the town centre. The Carr Mill area is bisected by the Liverpool to Wigan Railway and was originally served by a station opened by the Lancashire Union Railway in 1896 accessed from Woodlands Road as shown in Figure 1-1 below. At the time Carr Mill was little more than a rural hamlet with minimal population, and passenger demand at the station was low. As a result the station was closed in 1917 as a war time economy measure and never reopened. Little of the original station now remains, with the platforms and station buildings long since removed.

Since closure Carr Mill and environs have seen significant and ongoing population growth, and the area now forms an urban suburb of St Helens. While St Helens Central Station provides train services to a wide number of destinations including Liverpool and WIgan, access to or from St Helens Central is difficult for those areas away from St Helens town centre such as Carr Mill. As a result there is a long standing ambition to provide a new railway station to residents and businesses located to the north of St Helens town centre in the Carr Mill area.

Figure 1-1 - Existing and closed railway lines and stations in St Helens and surrounding areas[1]



1.3 Aims of this study

The main aim of this study is to present a Strategic Outline Case (SOC) and feasibility study for reopening a station serving Carr Mill, in line with the Department for Transport's (DfT) appraisal guidance. The primary aim of this SOC is to identify the basic feasibility of the scheme from an engineering, operational and business case point of view

The Strategic Outline Business Case (SOC) is the first step in a three-stage process for developing a final business case for the scheme. The key decision being sought at this initial SOC stage is to identify the objectives of the scheme, assesses how different options - including alternative modes - might meet those objectives, and determine whether there any options are worthy of further development.

In accordance with the DfT guidance, the SOC and hence this report is structured around the examination of five key elements which constitute a business case:

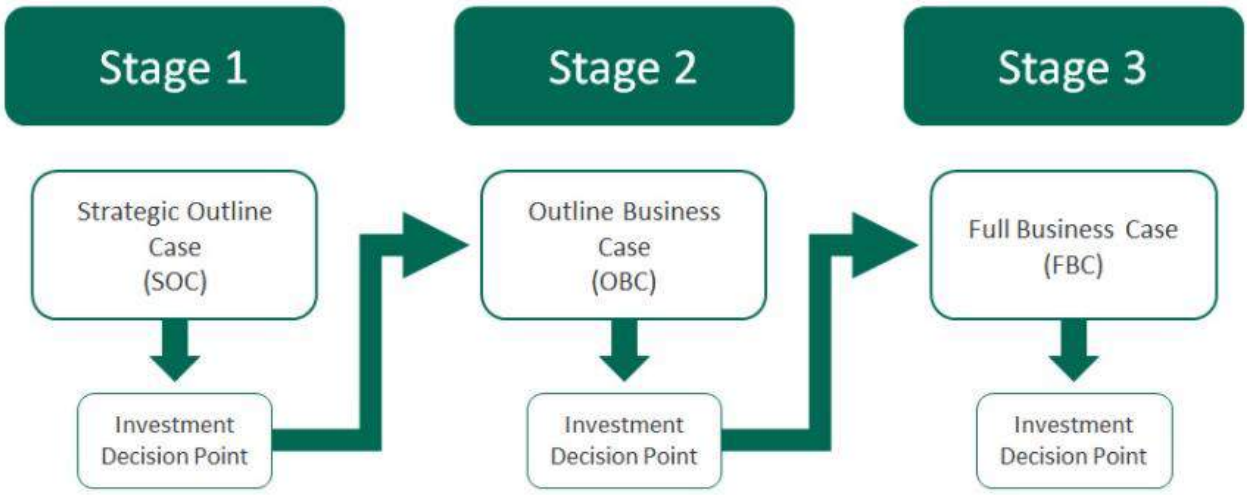
- The **Strategic Dimension**: The strategic dimension sets out the context of the scheme, the rationale for why it is needed, the objectives and the alignment of these with local national and policy, and a high-level assessment of the different options.
- The **Economic Dimension**: The economic dimension sets out the costs and benefits of a preferred option and hence the likely value for money that the scheme can provide.
- The **Financial Dimension**: The financial dimension outlines the delivery partners and their procurement strategy, as well as the statutory and other regulatory processes which need to be managed.

[1] The New Adlestrop Railway Atlas © Richard Fairhust.

- The **Commercial Dimension**: The commercial dimension outlines the delivery partners and their procurement strategy, as well as the statutory and other regulatory processes which need to be managed.
- The **Management Dimension**: The management dimension outlines the appropriate governance structure for the delivery partners, the high-level project programme with key dependencies and milestones, and the project programme.

As per DfT's Transport Business Case Guidance, this Strategic Outline Case forms the first stage in a three-stage business case process, with an investment decision point following each stage. The delivery of further stages to provide first an outline and then final a business case would only be undertaken if the conclusions of the preceding stage support further development.

Figure 1-2 – DfT Transport Business Case Process



2. Strategic Dimension

2.1. Introduction

This chapter makes the strategic case for a station serving the Carr Mill area. The purpose of the strategic dimension is firstly to demonstrate the scheme's 'case for change'. This is undertaken by identifying and assessing the issues that the scheme is seeking to resolve, understanding the rationale for change, and assessing the scheme's alignment with policy objectives at different geographies of scale. This process allows the scheme's objectives to be identified and stated.

Following the case for change, the strategic dimension then presents a summary of the different options under consideration and assesses the ability of those options to meet the identified objectives, whilst taking account of their risks, constraints, and dependencies and is supported by a robust evidence base.

On this basis, the strategic dimension is structured as follows:

- Section 2.2: Presents the alignment of the SOC with local and national policies.
- Section 2.3: Presents the socio-economic, land development and transport contexts of Carr Mill and its surrounding areas.
- Section 2.4: Identifies existing problems and challenge in the area and makes the case for an intervention.
- Section 2.5: Presents the strategic objectives for the scheme.
- Section 2.6: Presents a logic map which links the challenges identified to the strategic objectives and the scheme's desired outputs and outcomes.
- Section 2.7: Identifies and assesses at a strategic level different modal options that are able to meet the objectives, and identifies which rail options should be taken for more detailed assessment.
- Section 2.8: Presents final conclusions to the Strategic Case.

2.2. Alignment of the scheme to national, regional and local policy

This part of the strategic dimension reviews relevant national, regional, sub-regional and local transport strategy and policy for the area to provide an understanding of the current policy context for the scheme.

2.2.1. National policy context

The UK Government's Levelling Up White Paper, published in 2022, recognises how better transport connectivity can improve access to employment opportunities and services, which in turn can boost productivity and economic growth more equally across the country. The Government's 10 Point Plan for Green Industrial Revolution, Net Zero Strategy, Decarbonising Transport Plan, William-Shapp's Plan for Rail and National Policy Statement (NPS) for National Networks all commit to investing in the public transport network which will help achieve the aim of the Levelling Up agenda, whilst also increasing modal shift away from vehicles to help support the ambition for the country to be net zero by 2050.

Rebalancing the UK's economy and net zero are the two key components of national policy and are also evident in policy produced at different levels of government. For example, policy and strategy in the North of England reiterates the need to increase investment in the region to rebalance opportunities and economic growth between the North and South. Improving public transport connectivity is essential to achieving this and will also help support the regions aims for the surface transport network to be near net zero by 2045.

Table 2-1 presents the national policy relevant to the scheme and outlines how well the scheme supports the achievement of each respective policy.

Table 2-1 - Alignment of the Scheme with National Policy

Relevant Policy	Context/Relevant Objectives
Economic growth	
Levelling Up the United Kingdom (White Paper) (Department for Levelling Up, Housing & Communities, 2022)	The Levelling Up paper is a flagship economic programme which will seek to spread opportunities more equally across the country and 'narrow the gap' between all parts of the UK in terms of economic performance, services and opportunities. To achieve this, Levelling Up policy has four 'focus areas': • boosting productivity, pay, jobs and living standards by growing the private sector; • spreading opportunities and improving public services; • restoring a sense of community, local pride and belonging; and • empowering local leaders and communities. Grouped under these four focus areas are 12 'national missions' to be achieved by 2030, which are essentially objectives. Those related to this scheme are provided below: • public transport connectivity across the UK to be 'significantly closer to the standards of London', including improved services, integrated ticketing and simpler fares; • to increase pay, employment and productivity in every part of the UK; • a rise across the whole UK of 'pride in place', defined as 'people's satisfaction with their town centre and engagement in local culture and community'; and • wellbeing to have improved in every area of the UK. **The scheme seeks to improve regional public transport connectivity to key destinations to provide better access to employment opportunities which will boost productivity and economic growth.**
10 Point Plan for a Green Industrial Revolution Department for Business, Energy & Industrial Strategy (2021	The 10 Point Plan sets out the approach the government will take to build back better, support green jobs and accelerate the path to net zero. The Plan focuses on increasing ambition in the following areas related to the scheme: • green public transport, cycling and walking; • protecting our natural environment; • green finance and innovation; and • greener buildings. Other areas of focus include offshore wind power, nuclear power, zero-emission vehicles, 'jet zero', and carbon capture and storage.
Net Zero Strategy: Build Back Greener Department for Business, Energy & Industrial Strategy (2021)	The Net Zero Strategy builds on the foundations set out in this Plan, setting out how the UK can achieve its UK net zero target of 2050 across the different sectors of the economy. This includes commitments to: • increase the share of journeys taken by public transport, cycling and walking; • electrify more railway lines as part of plans to deliver a net zero rail network by 2050; and • build extra capacity on the rail network to meet passenger and rail freight demand.

	The scheme is an example of the UK investing in infrastructure that will support its ambitions for a Green Industrial Revolution, whereby sustainable growth can be achieved in tandem with meeting net zero targets.
Transport	
Decarbonising Transport: A Better, Greener Britain Department for Transport (2021)	Six strategic priorities are provided in the Plan to enable the Government to decarbonise the transport system and achieve its net zero target of 2050. • accelerating modal shift to public and active transport; • decarbonisation of road vehicles; • decarbonising how we get our goods; • place-based solutions; • UK as a hub for green transport technology and innovation; and • reducing carbon in a global economy. **The scheme will help accelerate modal shift to public transport in the St Helens borough.**
Great British Railways: The Williams-Shapps Plan for Rail Department for Transport (2021)	The Williams-Shapps Plan for Rail outlines the creation of a new centralised public body, Great British Railways, to manage the railway sector and be accountable for its performance. The new organisation will be key to delivering 10 outcomes for the industry: • a modernised high-quality passenger experience; • more simple ways of paying for travel; • a railway which supports economic recovery; • a railway more responsive to the needs of local communities; • a cleaner and greener railway; and • improved rail freight. Other outcomes relate to improvements in the industry's workforce, structure and its relationship with the private sector, as well as the construction of rail enhancements. **The provision of new, modern station facilities will support many of the ambitions of the Plan and provide a key transport hub for the local community.**
National Policy Statement (NPS) for National Networks	The NPS for National Networks sets out the Government's priorities for infrastructure projects on the national road and rail networks. Its vision and strategic objectives for the national networks includes: • networks with the capacity, connectivity and resilience to support national and local economic activity and facilitate growth and create jobs; • networks which support and improve journey quality, reliability and safety; • networks which support the delivery of environmental goals and the move to a low carbon economy; and • networks which join up our communities and link effectively to each other. **The scheme will help the Government reach its environment targets, and improve regional connectivity and economic growth.**
Environment	

The Climate Change Act UK Parliament (2008, amended in 2019)	Based on the Committee on Climate Change's Net Zero Report (2019), Government net zero legislation was passed in June 2019 requiring the UK to bring all greenhouse gas emissions to net zero by 2050. **The scheme will encourage more journeys to be made by public transport rather than by car, thereby reducing transport carbon emissions.**

2.2.2. Regional policy context

Regional policy is primarily provided by Transport for the North (TfN) who became England's first sub national transport body in April 2018. As such, TfN is responsible amongst other things for developing and implementing a strategic transport plan, becoming a statutory partner in road and rail investment decisions, and deciding on capital grants.

Table 2-2 presents TfN's regional policy relevant to the scheme and outlines how well the scheme supports the achievement of each respective policy.

Table 2-2 - Alignment of the Scheme with Regional Policy

Relevant Policy	Context/Relevant Objectives
Economic growth	
Northern Powerhouse Independent Economic Review Transport for the North (2016)	The Review identified some of the key factors that contribute to the economic gap between the North and South of England. These include: • lower skills; • technology gap; • lower investment; • a lack of agglomeration; and • poor connectivity and transport. **Improved public transport links will help to promote a higher employment rate by improving access to centres of employment in the region, which in turn will boost productivity.**
Transport	
One North: The Strategic Transport Plan Transport for the North (2019)	The Strategic Transport Plan (STP) is designed to rebalance underinvestment in transport in the North and boost economic growth. Transport for the North's vision is of a thriving North of England where world class transport supports sustainable economic growth, excellent quality of life and improved opportunities for all. The STP has the following objectives: • transforming economic performance; • increasing efficiency, reliability, integration and resilience in the transport system; • improving inclusivity, health and access to opportunities for all; and • promoting and enhancing the built, historic and natural environment. As part of the STP, the **Long-Term Rail Strategy (2018),** sets out the guiding principles for the delivery of high-quality rail services in the North: • Connectivity – frequency and journey time improvements combined with better service integration; • Capacity – longer trains and additional services to meet passenger demand;

	• Customer – a network that is coordinated, accessible and easy to navigate with simple fares; • Community – a railway which supports the community it serves by providing access to opportunities and services; and • Cost effectiveness – minimising the cost of operating and maintaining the railway. **The scheme will increase economic productivity and opportunities improving transport connectivity in the region, as well as providing a vital community resource.**
Environment	
TfN Decarbonisation Strategy TfN (2021)	The Strategy outlines a commitment from the region to achieve near-zero carbon emissions from surface transport by 2045. The Strategy builds on the STP and considers a range of policies which will be required to achieve the decarbonisation targets, grouped under three themes. For one of the themes, modal shift and demand management, the Strategy suggests progress needs to be made in five key policy areas to achieve its targets: • encouraging mode shift to walking, cycling, micro-mobility and public transport; • disincentivizing car use and avoiding unnecessary travel; • encouraging the uptake of shared mobility; • improving freight efficiency; and • ensuring transport and land-use planning processes encourage sustainable choices. **The scheme will encourage modal shift to public transport, which will support the regions efforts to reach near zero carbon emissions from surface transport by 2045.**

2.2.3. Sub-Regional Policy

The boroughs of the county of Merseyside, including St Helens Borough Council (SHBC), form the Liverpool City Region (LCR). Prior to the creation of the Liverpool City Region Combined Authority (LCRCA) in 2014, the six authorities within the LCR had worked closely for many years on strategic policy areas including economic development, transport, housing and planning. The LCRCA therefore formalised the administration of the LCR, with the six authorities collectively responsible for the aforementioned policy areas. Looking forward, the LCRCA Plan for Prosperity and Transport Plan echo the ambition of the Levelling Up agenda, with the aim of further integration of infrastructure to create a more connected city region. The ambition to improve rail connectivity across the city region is also cited, which as noted above will have economic as well as environmental and social benefits to residents.

Table 2-3 presents the sub-regional policy relevant to the scheme and outlines how well the scheme supports the achievement of each respective policy.

Table 2-3 - Alignment of the Scheme with Sub-Regional Policy

Relevant Policy	Context/Relevant Objectives
Economic growth	
The Liverpool City Region Plan for Prosperity	Published by the Liverpool City Region Combined Authority (LCRCA), the Plan provides the long-term vision for the Liverpool City Region (LCR) economy. The Plan includes three strategic priorities:

Liverpool City Region Combined Authority (2022)	• an inclusive city region where levelling up means no one and no place is left behind; • pioneers of the Green Industrial Revolution; and • a global, confident and outward looking city region. To achieve these priorities, the Plan proposes four pillars of the LCR economy that should be strengthened and enhanced: • maximising the impact of innovation for people, places and businesses; • turning people's potential into prosperity; • thriving, sustainable and resilient places; and • integrated infrastructure for a connected city region. **The scheme is an example of infrastructure investment that will support the Green Industrial Revolution and enhance transport connectivity in the LCR, thereby improving economic opportunities for all.**
Transport	
Combined Authority Transport Plan LCRCA (2019)	The Plan articulates the LCRCAs core vision to 'develop a transport system that is comprehensive, affordable, reliable, integrated, easy to use, and supports the development of new and existing communities'. The strategic objectives of the Plan are as follows: • to support inclusive economic growth across the city region by developing a transport network that connects people, freight, businesses and visitors in a way that is fully integrated with wider policy objectives; • to exploit the city region's role as a global gateway to rebalance the UK's economy, through economic agglomeration and de-congestion benefits; • to develop a mobility system that enhances the health and wellbeing of our citizens. This will include the development of a liveable and resilient city region that addresses the challenges of poor air quality and supports the move to a zero-carbon city region by 2040. • To secure a transport network that is well maintained, safe and resilient. The Plan does highlight the ambition to improve rail connectivity in parts of the city underserved by the rail network, with 'Priority Action 3.5' stating that options should be tested, and business cases developed which seek to justify investment in new rail stations to support wider connectivity in the LCR. It should be noted that this Plan acts as a bridge between the Merseyside and Halton 3rd Local Transport Plans (2011) and the forthcoming LCRCAs 4th Local Transport Plan. **The scheme will help to address poor air quality in the region by encouraging modal shift away from vehicles, whilst supporting the LCRs objectives for economic growth, rail connectivity improvements and to support the development of the Borough.**
Long Term Rail Strategy LCRCA (2018)	First developed in 2014 and updated in 2018, the key objective of LCRCA's Long Term Rail Strategy is to ensure that the region's rail network meets LCR's needs over the next 30 years and beyond. The document aims to present a clear vision for the network development and articulate the important role that improved rail connectivity can play in the economic development of the LCR, and its hinterland, to maximise its contribution to the wider UK economy and act as a catalyst for growth. The Strategy identifies certain north-eastern corridors with noticeably weaker connectivity than they deserve, and that St Helen does not emerge as a key

	centre as should be expected. The Strategy also identified and assessed 12 packages of schemes. One of the packages is for selected new stations, including one at Carr Mill. The appraisal process found that a new station at Carr Mill would perform moderately well as a short-term project to deliver the objectives of the Strategy. **The scheme is one of the recommended projects as it aligns well against the strategic aims and objectives of LCRCA's Strategy. It will help to improve rail connectivity, which facilitates economic development of the LCR and its hinterland, and ensures the rail network meets LCR's needs for the next 30 years and beyond.**
Merseyrail for All programme Merseytravel (2021)	Metro Mayor Steve Rotheram has the ambition to create a 'Merseyrail for All' programme that ensures every community is well served by an integrated public transport network. New and refurbished train stations are high on the agenda, which could include: • The Baltic Triangle in Liverpool • Carr Mill in St Helens • Woodchurch on the Wirral **The programme explicitly named the re-opening of a station at Carr Mill as one of its priorities as a means of ensuring good public transport connectivity for all of LCR's communities.**
Environment	
LCR Pathway to Net Zero LCRCA (2022)	LCRCA declared a Climate Emergency in June 2019, pledging the LCR to reach net zero carbon by 2040. The Pathway document sets out the strategic vision for how this can be achieved, with a focus on changing behaviour in four areas of daily life: • Home; • Neighbourhoods; • Journeys; and • Workplaces. **The scheme supports the LCRs target of achieving net zero by 2040 by encouraging the use of public transport for more journeys that previously would have been undertaken by car.**

2.2.4. Local Policy

On the more local level, SHBC are in the process of finalising the 2020-2035 Local Plan. Whilst it is not currently known what the exact policies are that will be proposed by the Local Plan, it is clear that there is a commitment to continue investing in transport infrastructure to support the growing population, benefit the economy and help the borough support the LCR meet its net zero target of 2040.

Table 2-4 presents the local policy relevant to the scheme and outlines how well the scheme supports the achievement of each respective policy.

Table 2-4 - Alignment of the Scheme with Local Policy

Relevant Policy	Context/Relevant Objectives
Environment and Land Use	
St Helen's Climate Emergency (SHBC, 2019)	SHBC declared a Climate Emergency in July 2019 and aligns with the LCRs target to reach net zero carbon by 2040.

	The scheme supports the boroughs target of achieving net zero by 2040 by encouraging the use of public transport for more journeys that previously would have been undertaken by car.
St Helens Borough Local Plan 2020-2035 Submission Draft (St Helens Borough Council, 2020)	The draft Local Plan sets out the ambitions for development in the borough up to 2035, with five key priorities set out: • supporting a growing population and strong economy; • continuing commitment to brownfield sites first; • regenerating our town and district centres; • protecting and enhancing our open green spaces; and • investing in infrastructure and transport. As only the draft submission is currently available, it is not known what the Core Policies of the Local Plan will be. **The provision of a high-quality rail station will support existing and future development near to the scheme, providing sustainable transport connectivity between homes, jobs and services which will improve air quality and reduce carbon emissions from transport.**

In summary, Table 2-1 to Table 2-4 finds that the delivery of public transport improvements to the study area is consistent with both national, regional, sub-regional and local policy.

2.2.5. Summary of policy context

There is a set of consistent overarching themes of the national, regional, unitary and local policies. These can be summarised as;

- **Improving connectivity** by better linking people to work, educational, health, social, and leisure facilities;
- **Levelling up** the wider region by supporting the economic and productivity growth of Carr Mill and St Helens;
- **Supporting sustainable developments** enabled by good transport connections with existing services;
- **Seeking environmental improvements and net zero** by promoting more sustainable modes of travel; and
- **Improving public transport provision** in the region

At the national level, rebalancing the UK's economy and tackling the decarbonisation challenge are evidently the two key themes running through relevant national policy. Transport is recognised as a major influence on achieving both of these objectives, with investment in the public transport network helping to create better connectivity and access to employment opportunities and services, which in turn can boost productivity and spread economic growth more equally across the country. In addition, public transport can increase modal shift away from vehicles, with resultant impacts on traffic congestion, air pollution and carbon, to help support the ambition for the UK to be net zero by 2050.

These two policy themes are also present at a regional level. Key objectives of Transport for the North's Strategic Plan are to improve access to labour markets and better integrate employment areas to improve social mobility in the region, and to encourage higher productivity. Transport for the North also prioritise decarbonising the transport network in their decarbonisation strategy.

At the unitary, town and neighbourhood levels, a railway station at Carr Mill is earmarked as a potential route to achieving the respective policy objectives. The draft local plan provides a commitment to reopening a railway station at Carr Mill on the basis it can provide sustainable transport connectivity between homes, jobs and services which will improve air quality and reduce carbon emissions from transport.

In summary, it has been demonstrated that the delivery of public transport improvements in Carr Mill, in particular the reopening of the railway station, strongly align with the national, regional and local policy objectives.

2.3. Context for the Scheme

This section presents the context for the scheme by assessing the historical, geographic, socio-economic and transport context of the study area. The evidence in this section is then used in subsequent sections to identify the objectives of the scheme.

2.3.1. Historical Context

Over the last 30 years there have been a number of studies that have examined the feasibility of providing a station in Carr Mill.

2.3.1.1. Merseyside LTP Station Feasibility Report (2003)[2]

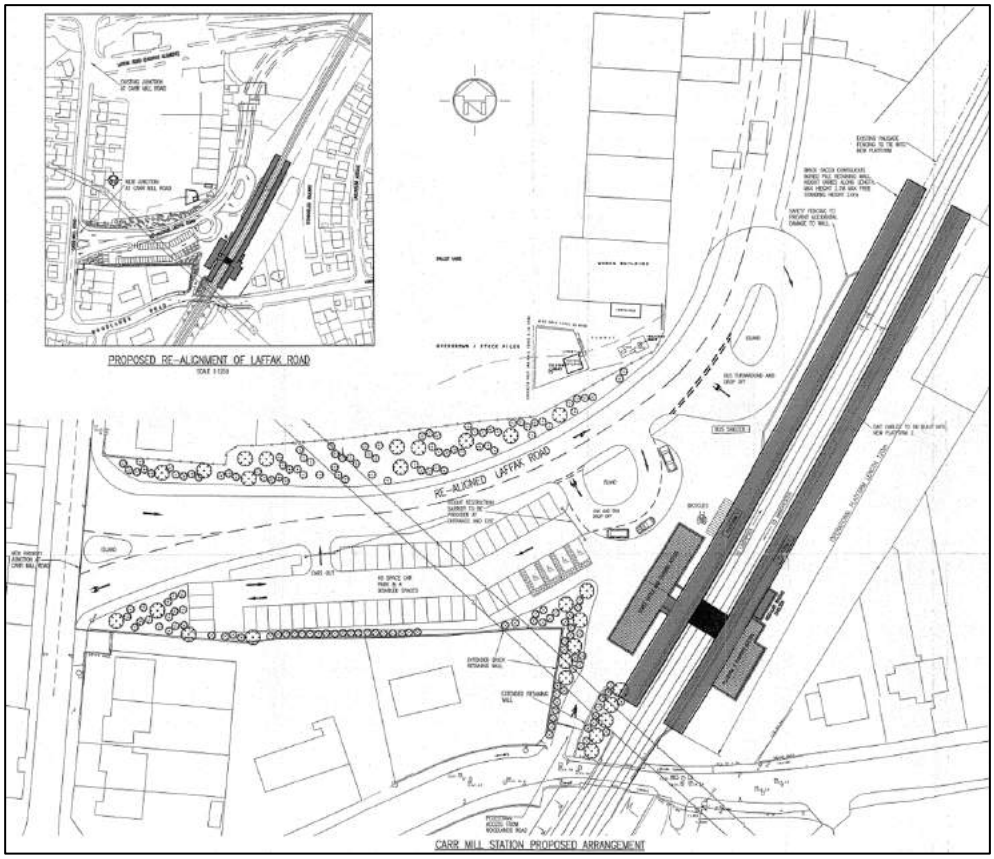
In 2003 a study was commissioned by Merseytravel to examine the design, construction feasibility and costs of a station at Carr Mill. Four design options were taken through a value management exercise to determine a preferred option, with nearly all of the options including the features listed below:

- Two platforms north of the Woodlands Road bridge;
- Ticket office on the western side with access to the eastern platform via either a subway, footbridge or a connection at the street level through the existing Woodlands Road;
- Road access from Carr Mill Road, which would require the realignment of Laffak Road; and
- Several options were considered for the drop-off, bus stop and car parking layouts at the station.

The preferred option, as shown in Figure 2-1, was a hybrid option which included a subway between the platforms.

[2] Railtrack (2003) Merseytravel LTP Station Revitalisation Feasibility Report – Carr Mill.

Figure 2-1 - Station layout of preferred option in 2003 Merseytravel study



2.3.1.2. Merseyside LTP2 (2006-2011)

Following the 2003 study, proposals for a new station at Carr Mill were then included in the Merseyside Local Transport Plan (2006-2011) and the supporting Merseyside Rail Strategy. At this time, discussions between the Council and Merseytravel identified that a new station would require the following:

- Fully staffed ticket office;
- Two 150m length platforms;
- Passenger shelters;
- Subway to provide access to the St Helens Central and Liverpool bound trains;
- Bus lay-bys close to the station entrance;
- On-site parking facilities including disabled parking and drop off facilities; and
- Secure cycle storage facilities.

2.3.1.3. St Helens Borough Council Development Brief (2009)[3]

In 2009, St Helens Borough Council issued a development brief for areas of land near the junction between Carr Mill Road and Laffak Road. Draft plans for a mixed-use residential and employment development at the site at Laffak Road were put to public consultation in 2009, including proposals for a new railway station with access a realigned Laffak Road. This area was in a similar location to, but not the same as, the area indicated in 2003 (see Figure 2-1).

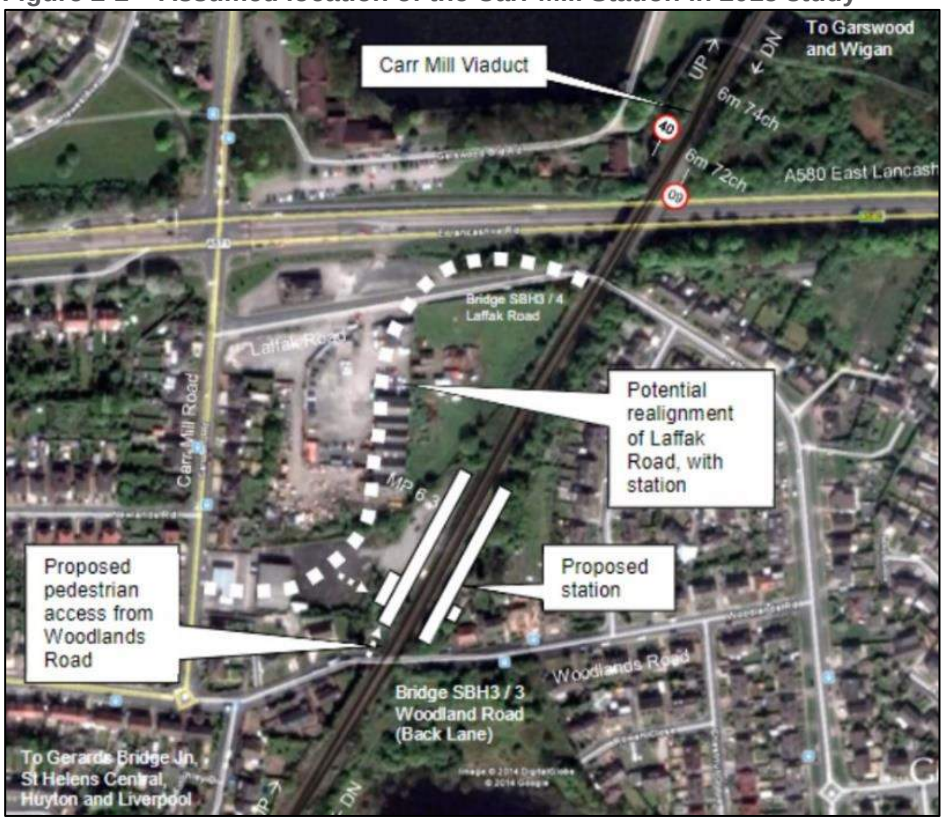
[3] St Helens Borough Council (2009) Development Brief: Land Adjacent to Laffak Road and Carr Mill Road, St Helens. Accessed via: Amphibian and Aquatic Invertebrate Translocation and Managent (sthelens.gov.uk)

2.3.1.4. Carr Mill Station Demand Study (2015)[4]

In 2015, Merseytravel commissioned Parsons Brinckerhoff to carry out a demand study into a proposed station at Carr Mill.

The study used the preferred option from the 2003 feasibility study as a starting point, assuming that the broad specification of the car/bus/drop-off elements remained the same (see Figure 2-2). It was also assumed that half-hourly Northern services would call at the new station, which were deemed to be operationally feasible. Construction and operating costs were determined, with demand forecasting indicating that approximately 576,526 passengers would use the station in the base year. Three scenarios were also used to test how demand would be impacted by population and employment growth, with each scenario producing a Benefit Cost Ratio (BRC) of at least 1.7.

Figure 2-2 – Assumed location of the Carr Mill Station in 2015 study



2.3.1.5. LCRCA Long Term Rail Strategy (2017)[5]

In 2015, Merseytravel announced its plans for the city regions rail network over the next 30 years. As part of its Long-Term Rail Strategy that it produced with LCRCA, which was subsequently updated and endorsed by the Metro Mayor in 2018, it developed a new stations assessment tool that prioritised a number of sites both in the short and long term. A new station at Carr Mill scored moderately well out of all short-term schemes and was recommended for the original work packages.

2.3.1.6. 2020 - Present

Further support for a scheme at Carr Mill was generated in 2020 when the Metro Mayor of the LCR Steve Rotheram included a proposal to open a new station in the area as part of his re-election pledge to deliver 'Merseyrail for All', a plan to extend the local rail network to communities across the city region[6]. Since then, the Mayor has secured £710m of funding from the government to invest in transport in the city region, with a new station at Carr Mill included as part of these plans[7].

[4] Parsons Brinckerhoff (2015) Carr Mill Station Demand Study.

[5] Liverpool City Region Combined Authority (2018) Long Term Rail Strategy. Accessed via: LCRCA_RAIL_STRATEGY_MAY18.pdf (liverpoolcityregion-ca.gov.uk)

[6] Three new areas could be added to the Merseyrail network - Liverpool Echo

[7] Work begins on business case for Carr Mill railway station | St Helens Star

2.3.2. Geographical Context

The proposed station study area is located within the Metropolitan Borough of St Helens. The Borough is situated in Merseyside in the north-west of England and covers a total of 136 square kilometres, with a population of 180,535[8]. As shown in Figure 2-3, the Borough is located between the cities of Liverpool (19km to the west) and Manchester (36km to the east). It is bounded by the boroughs of Knowsley to the west, West Lancashire to the north, Wigan to the east and Halton and Warrington to the south.

Figure 2-3 - St. Helens Borough in the North-West of England

Currently the closest railway stations to Carr Mill are Garswood located around 3.5km to the north-east, and St Helens Central approximately 2.5km to the south-west. Both of these stations are on the Liverpool to Wigan Line with services to Liverpool Lime Street and Wigan North Western.

In terms of highway connections, Carr Mill is located adjacent to the junction between the A571 and the A580. These provide connections to Liverpool to the west, Salford to the east and Wigan to the north

Figure 2-4 provides further geographical detail and outlines the existing highway and rail network within the Borough. A number of principal roads pass through the Borough, providing access to other key locations in the Borough and the wider region. Further details are provided on these below:

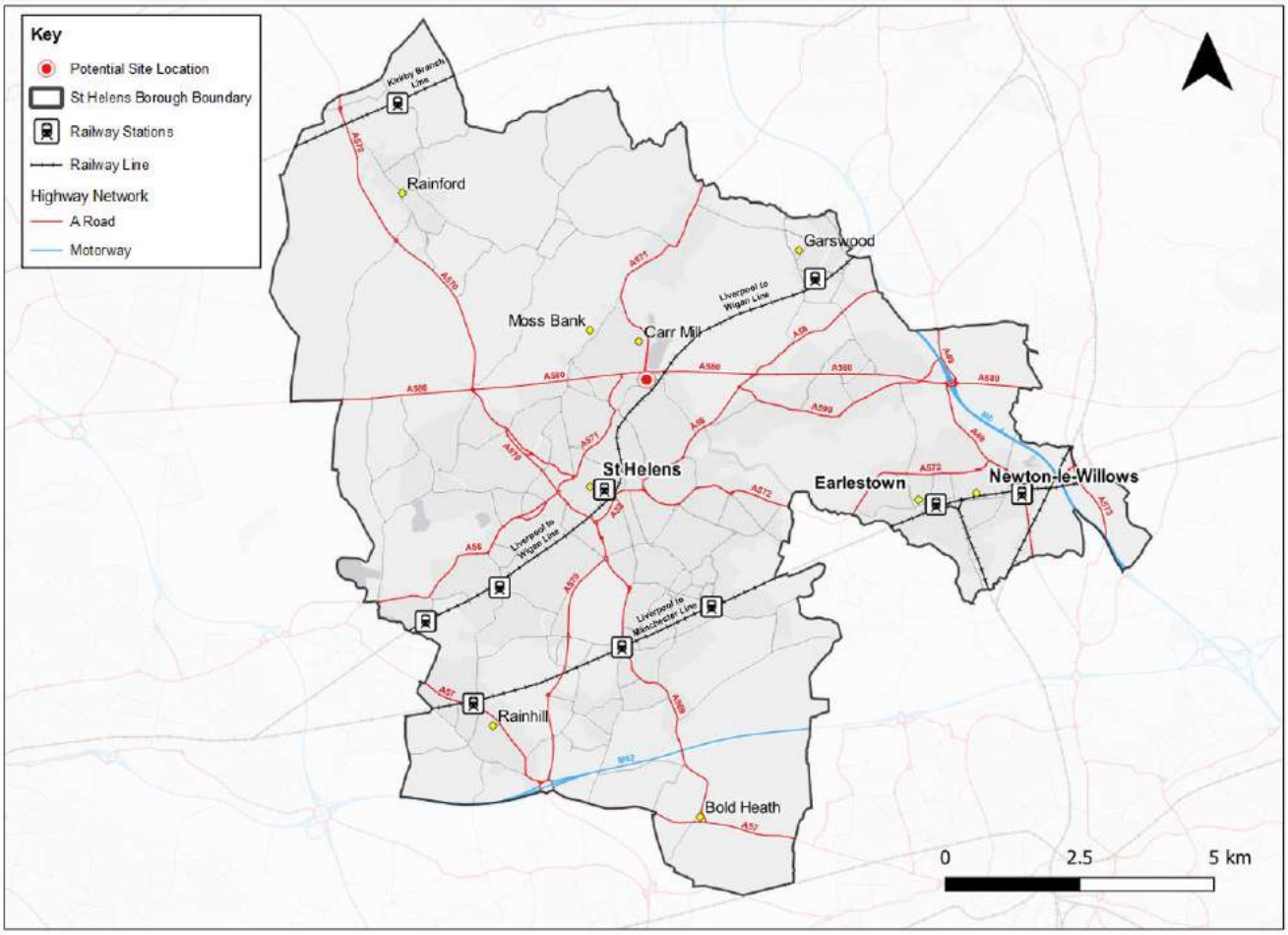
- M6 – The longest motorway in the United Kingdom which provides southbound connectivity to the West Midlands, and northbound access to Wigan, Preston and the Scottish Border. The route passes through the eastern perimeter of the Borough.
- M62 – West-east trans-Pennine motorway which connects Liverpool and Hull via Manchester and Leeds; this runs across the southern area of the Borough.
- A58 – Major road running north-east to south-west between St Helens and Wetherby, West Yorkshire
- A580 – East-west major road which runs across the centre of the Borough, connecting Liverpool to Salford, 3 miles west of Manchester city centre.

[8] Office for National Statistics - Mid-year Population Estimates 2019.

- A570 – Major route which runs north-west to south-east through the Borough between St Helens to Southport.
- A571 – Major route which runs north-east to south-west between St Helens and Wigan.

There are three railway lines that bisect the Borough. The Liverpool to Manchester Line, via Newton-le-Willows, to the south of the Borough, and the two Liverpool to Wigan lines to the north (one being the Kirkby Branch Line). These serve a total of ten stations across the key urban areas of the Borough.

Figure 2-4 - Major Highway and Rail Network in St Helens



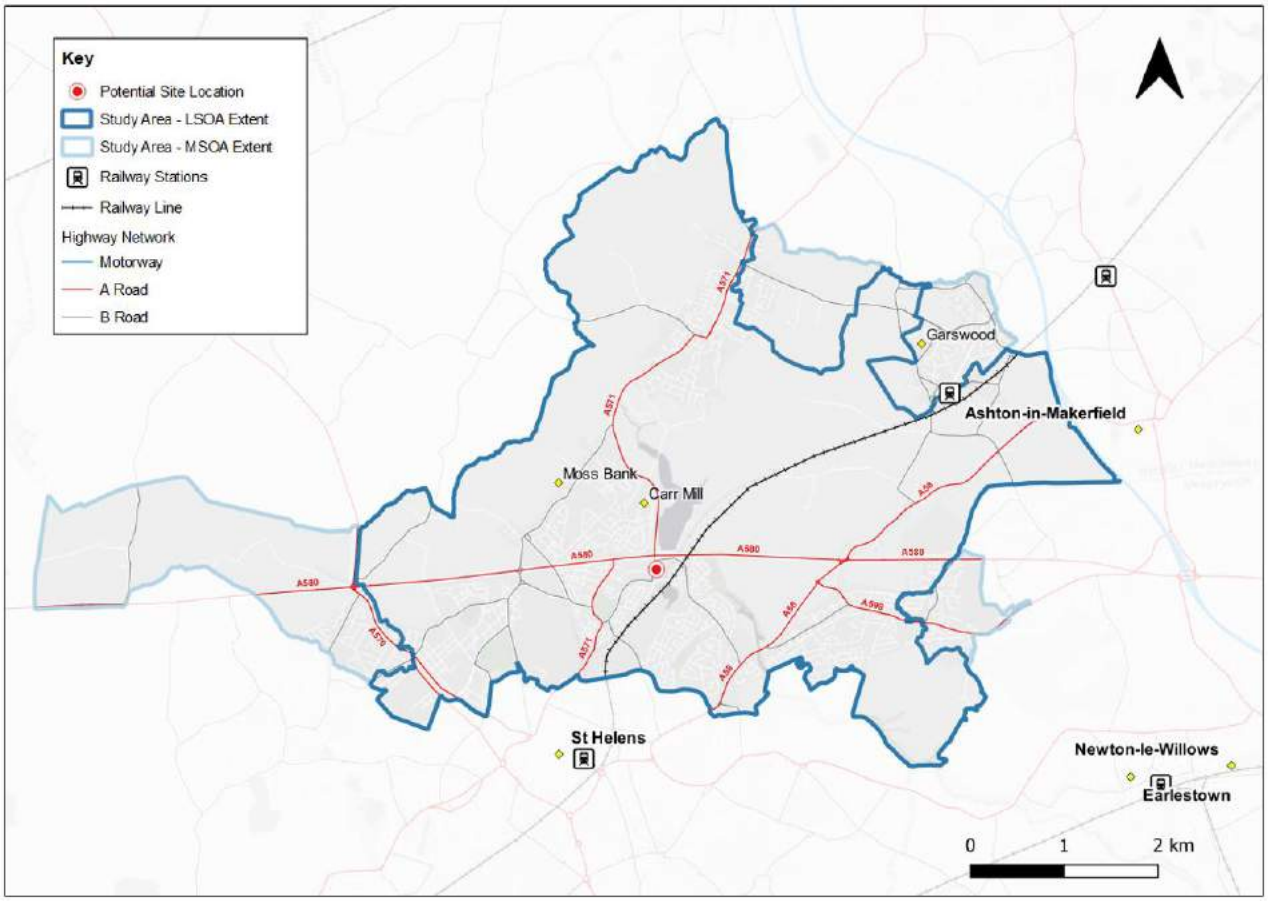
2.3.2.1. Study Area

For the purposes of this study, a study area has been identified which encompasses Carr Mill itself and the surrounding local area. The study area includes the approximate catchment area of a potential station at Carr Mill, including existing settlements such as Carr Mill, Moss Bank, Haresfinch, Laffak, Billinge, Haydock and Windlehurst. It also encompasses areas reserved for future housing developments (see section 2.3.4), as it is anticipated that a public transport intervention would accommodate some of the additional travel demand that these planned developments would generate.

The boundary of the study area has been defined by the digital geographical boundaries that are used to map and analyse UK Census data and other socio-economic statistics. Much of the analysis in sections 2.3.3 and 2.3.5 is therefore based on data collected in Lower Layer Super Output Areas (LSOA) and Middle Level Super Output Areas (MSOA), which enable socio-economic data to be mapped at a variety of geographical levels. The boundaries of the LSOAs and MSOAs broadly align with each other, as demonstrated in Figure 2-5. With the study area created based upon a series of identified LSOAs and MSOAs in the approximate catchment of a potential new station site, this ensures that the analysis carried out in the subsequent sections more accurately represents the socio-economic profile and travel behaviours of the residents who are more likely to use a public transport intervention in the Carr Mill area.

Throughout the following sections it will be stated where data at an LSOA or MSOA scale has been used, with the data then mapped within the respective boundaries which are outlined below in Figure 2-5.

Figure 2-5 – Carr Mill Study Area

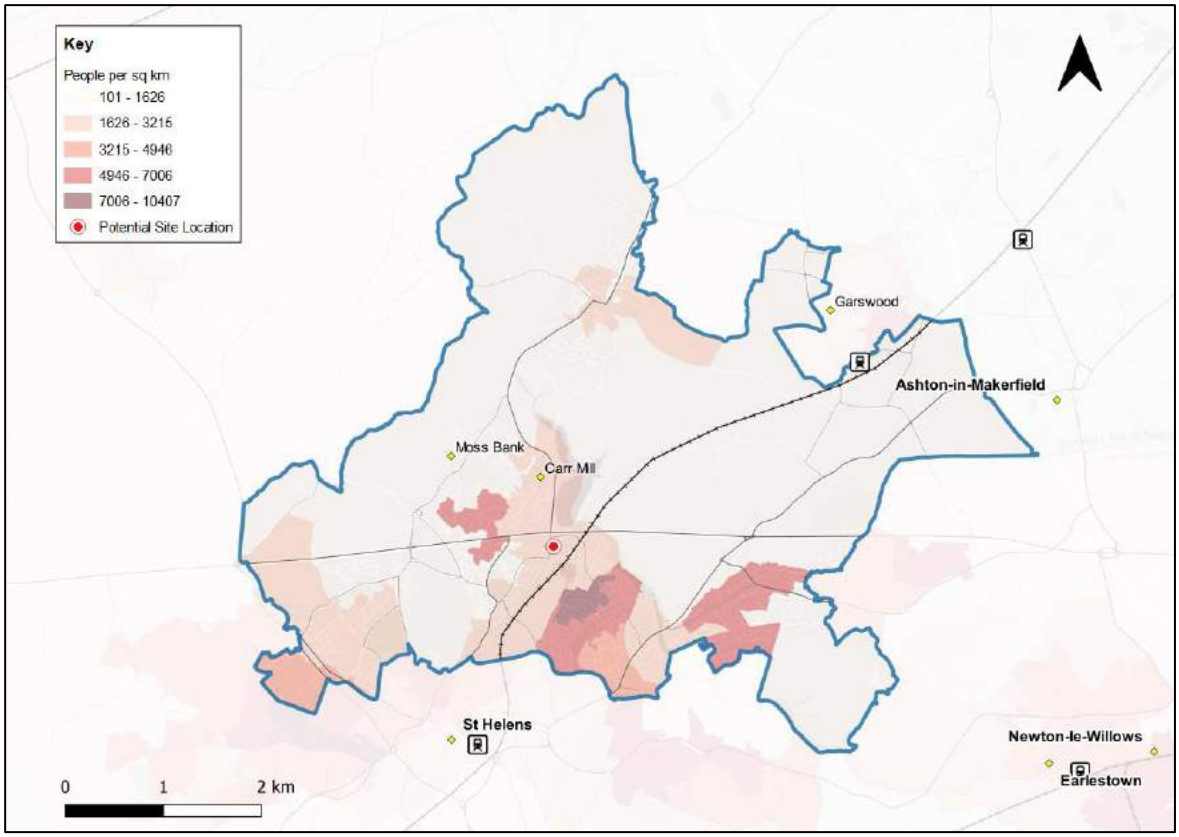


2.3.3. Socio-Economic Context

2.3.3.1. Demographics

As shown in Figure 2-6, the majority of the population within the study area are situated to the south between Carr Mill and St Helens town centre, as well as to the immediate north and west of the potential station site in the settlements of Carr Mill and Moss Bank. The areas to the east, north and west of Carr Mill are largely rural with much lower levels of population.

Figure 2-6 - Population density across the study area



The age profile of the study area is relatively old, with proportionately less people aged 16 than those aged over 65 compared to regional and national statistics. This trend is also apparent within the wider Borough, although it is of note that the difference between the proportion of the population aged under 16 and 65 and over is smaller. Consequently, the study area has a smaller proportion of residents aged under 40 compared to the Borough, North West and England figures. One of the reasons for this could be that younger people may have moved away to study or work due to a lack of affordable and convenient transport options to enable them to reach their place of study or work, especially for those who do not have access to a car they can drive.

Table 2-5 - Population by Age Group[9]

	Under 16	15-64	Under 40s	65 and over	Total
Study Area	17%	60%	44%	24%	35,407[10]
St Helens Borough	18%	62%	47%	21%	181,095
North West	19%	63%	50%	19%	7,365,456
England	19%	63%	50%	19%	56,550,138

Table 2-5 also highlights that the study area has a lower proportion of working age (61%, 15-64) compared to St Helens (62%), and the North West and England (63%). Whilst lower than its wider geography, the study areas working residents require good transport links to enable them to access employment, education and leisure opportunities.

[9] Office for National Statistics Mid-2020 Population Estimates by Year of Age and Sex

[10] This total population accounts for all residents in the LSOAs that are considered to be within the study area.

Wider demographic changes and planned development in the study area (see section 2.3.5) will result in a population increase in the study area, generating additional travel demand on the transport network. Whilst population projection statistics are not available at the LSOA or MSOA geographic level, it can be assumed that the population of the study area is set to grow in the future. For example, the population of the Borough is expected to grow by 6% by 2043, which is slightly below the respected increases projected in the North West (6.7%) and in England (8.2%). The working age population can also be expected to grow in the Borough by 3.6% by 2043, which is higher than the regional projections (2.7%) but lower than the national projections (3.8%)[11].

Demographics

Residents in the study area are primarily concentrated between Carr Mill and St Helens town centre.

The population within the study area is ageing, with younger people potentially leaving to gain better access to services and opportunities.

The ageing population places a burden on the working age population which is proportionately smaller than the Borough, North West and England averages and likely to grow proportionately less than the national average. This working age population will require high-quality public transport connections going forward.

Population growth across the study area and Borough will place additional pressure on the transport network.

2.3.3.2. Industry and Employment

St Helens was once a highly industrialised area and has a proud heritage of coal mining, railways and successful glass and chemical industries. However, along with many other places in the country, the decline of these traditional heavy industries has led to significant economic restructuring and a resultant reduction in jobs and business opportunity.

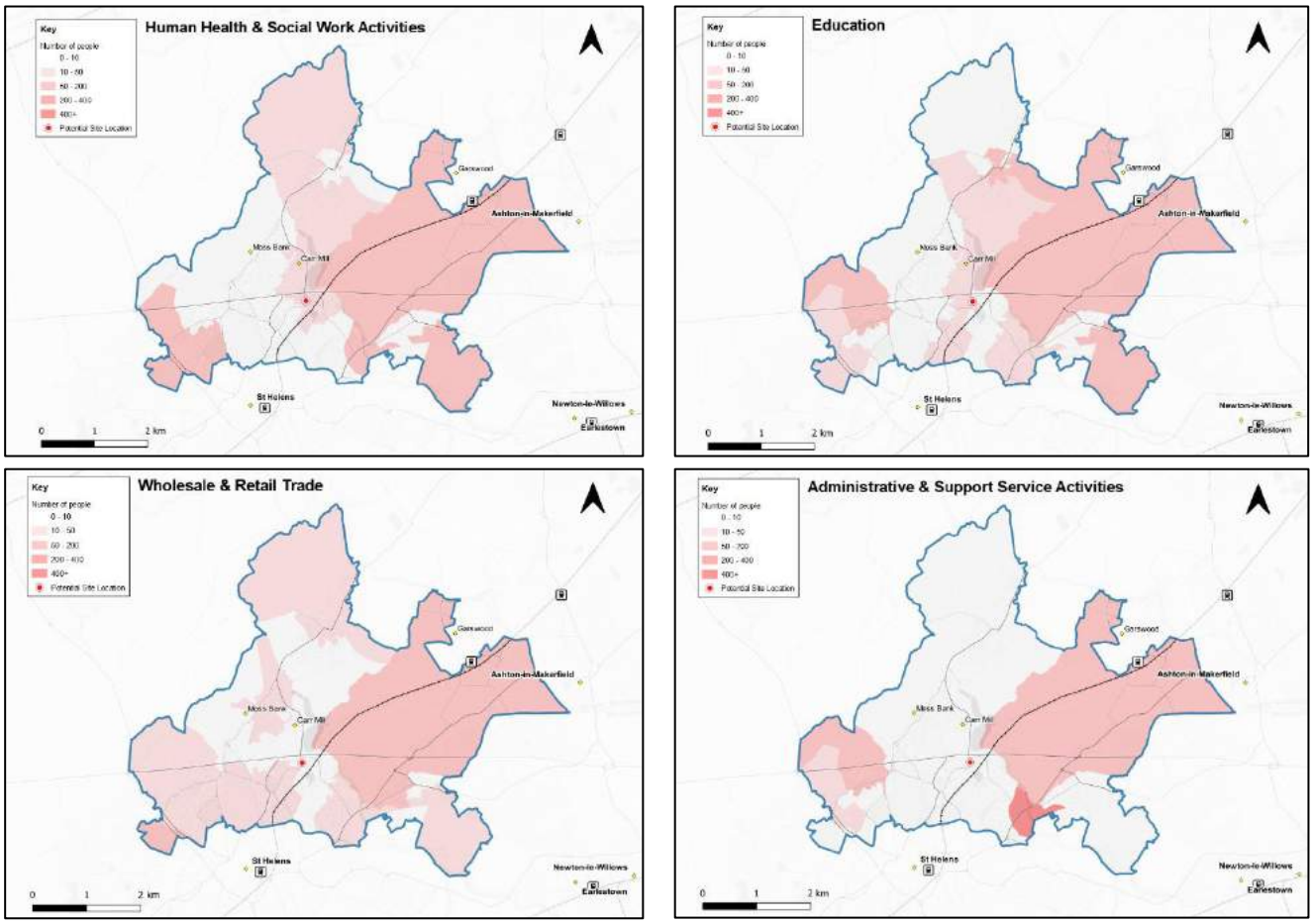
As a result, the study area now consists of less economically productive industrial sectors (in terms of GVA). As of 2019, the largest employment sectors in the study area are as follows:

- Human Health and Social Work Activities;
- Education;
- Wholesale and Retail Trade (including repair of motor vehicles and motorcycles); and
- Administrative and Support Service Activities.

These four industries accounted for about three quarters of the total 5,500 jobs within the study area in 2019. The total number of jobs within the study area dropped by almost 20% in the following year, likely as the result of the COVID-19 pandemic. In that period, the study area lost approximately 800 of its administrative and support service activities jobs, a reduction greater than 80%.

[11] Office for National Statistics (2018) Population projects – local authority based on single year of age

Figure 2-7 - Main industrial clusters in the study area[12]



Productivity, across all broad economic sectors, is lower in the Borough than the national average[13]. This is attributed to the fact that St Helens' industrial structure is weighted towards lower productivity industries, such as the four key industries in the study area highlighted in Figure 2-7. As an indicator of productivity, Gross Value Added (GVA), the measure of the value of goods and services produced in an area, per hour worked for the Borough in 2018 was £26.08, which lags behind the regional average, and is significantly lower (25%) than the national average of £35.00.

In terms of economic prosperity, GVA per head in the Borough in 2018 was £14,900, lower than the North West average, and is 46% below the UK average of £27,500[13].

Table 2-6 - Economic productivity and prosperity

	St Helens Borough	North West	National
Productivity - GVA per hour worked (2018)	£26.08	£31.87[14]	£35.00
Prosperity - GVA per head (2018)	£14,900	£23,600[15]	£27,500

The above evidence points towards a significant gap in terms of economic productivity and prosperity between the Borough and the regional and national averages. It is somewhat difficult to further investigate the economic

[12] Business Register and Employment Survey – Broad Industrial Groups 2019 (LSOAs).

[13] Enc. 2 for Economic Recovery Plan.pdf (sthelens.gov.uk)

[14] Office for National Statistics: Subregional productivity: labour productivity indices by UK ITL2 and ITL3 subregions

[15] Office for National Statistics: Regional gross value added (income approach)

and productivity performance of different parts of St Helens, due to the lack of data at the LSOA and MSOA levels. However, it can be assumed that the gap in economic productivity and prosperity and the resulting challenges apply across the Borough, including the study area.

These gaps between productivity and prosperity are also reflected in the lower economic activity and employment rates. As of 2020[16]:

- St Helens' business density is approximately a third less than the national average. The number of businesses in the Borough per 10,000 population (aged 16-64) is 521, compared to 692 for the North West and 770 for the UK.
- The ratio of jobs to those of working age population in the Borough is nearly a quarter less than nationally and regionally. There are approximately 55 jobs per 100 of the working age population in St Helens in 2020, compared to approximately 75 within the UK and North West.
- Unemployment rate among the Borough's residents is higher than the national and regional rate. St Helens' unemployment rate stands at 5.6%, above the North West and UK rates of 3.9%.

Skill levels in the Borough are lower than national averages. In 2020[16]:

- Approximately 11% of 16-64-year-olds in St Helens hold no qualifications, 3% more than the national average.
- Approximately 33% of 16-64-year-olds hold degree-level qualifications, around 7.5% less than the national average.
- Approximately 5.6% of 16-17-year-olds in the Borough were not in employment, education, or training (NEET), higher than both the rates for England and the North West.

While the proportion of economically inactive people in the Borough is about the same as the UK average, the latest data shows a considerable percentage of these people in the Borough (23.7%) want a job, 5 percentage points higher than the UK average[17]. This suggests there is untapped economic growth potential within the Borough and for its residents, which may currently be supressed by a variety of factors such as skills, transport access and health.

Looking forward, the full impact of the United Kingdom's Exit from the European Union (Brexit) also remains uncertain. Local businesses will likely experience some disruption to trade with EU and non-EU partners and will need to adjust to more stringent border checks and higher duties and fees which may cause some disruption to trade with EU and non-EU partners which may impact upon the labour market and the Boroughs economic performance.

Industry and Employment

St Helens' industrial structure is weighted towards lower productivity industries. As a result, there is a significant gap in terms of economic productivity and prosperity between the Borough and the regional and national averages.

This has also been reflected in the lower economic activity and employment rates in the Borough.

The skill levels of the Borough's residents are also below the national average, with a higher proportion of young people not in employment, education, or training.

Compared to the national average, a considerably higher proportion of economically inactive residents of St Helens want a job but are not involved in the economy for a variety of reasons.

2.3.3.3. Deprivation

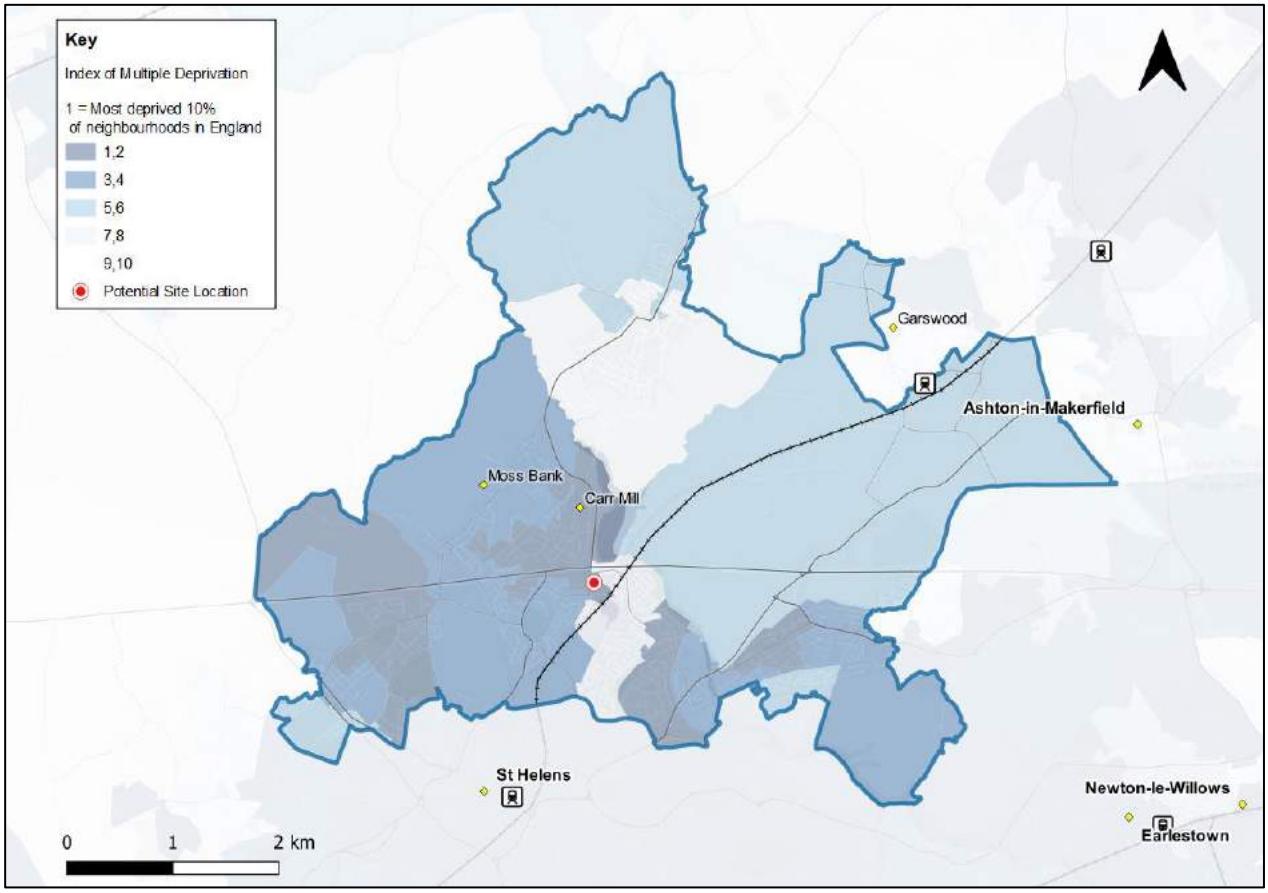
Relatively high levels of health, income and employment deprivation exist across St Helens, including within the study area. The 2019 Index of Multiple Deprivation, which classifies the relative deprivation of small areas in the United Kingdom, ranked the Borough the 26th most deprived local authority in England out of 317.

Nearly a quarter of all neighbourhoods in the Borough fall within the lowest 10th decile of most deprived neighbourhoods nationally. This includes some areas of the study area itself, including Carr Mill, Laffak, Merton Bank and Windlehurst, which face challenges related to access to education and better job prospects, barriers to accessing good quality housing, and health and crime issues.

[16] Enc. 2 for Economic Recovery Plan.pdf (sthelens.gov.uk)

[17] Office for National Statistics: Labour Market Profile (economic inactivity) - (Jan 2021-Dec 2021)

Figure 2-8 - Levels of deprivation in the study area[18]



Deprivation

St Helens is one of the most deprived local authorities in England, and within the study area are some of the most deprived neighbourhoods in the country.

2.3.3.4. Car Ownership

As implied in Figure 2-9, car ownership decreases as population density increases (see Figure 2-6 below), reflecting easier access to key services and amenities in urban areas, thereby reducing reliance on private vehicles. This is particularly evident in the fact that the northern areas of St Helens town centre, a relatively dense urban area, have lower levels of car ownership. However, levels of car ownership also reflect levels of deprivation (see Figure 2-8), with those in deprived areas being less likely to own a private vehicle.

Table 2-7 compares levels of car ownership in the study area with the Borough, regional and national averages. The proportion of households in the study area without a car is slightly lower than the Borough and North West average, but higher than the national average. While car ownership is lower in the study area compared to the Borough, it should be noted that there are areas within the study area with much lower levels of car ownership. In particular, Carr Mill has a relatively high proportion of households (43%) that do not have access to a car. Carr Mill is also one of the more deprived areas in the Borough, highlighting the correlation between levels of deprivation and car ownership in the study area.

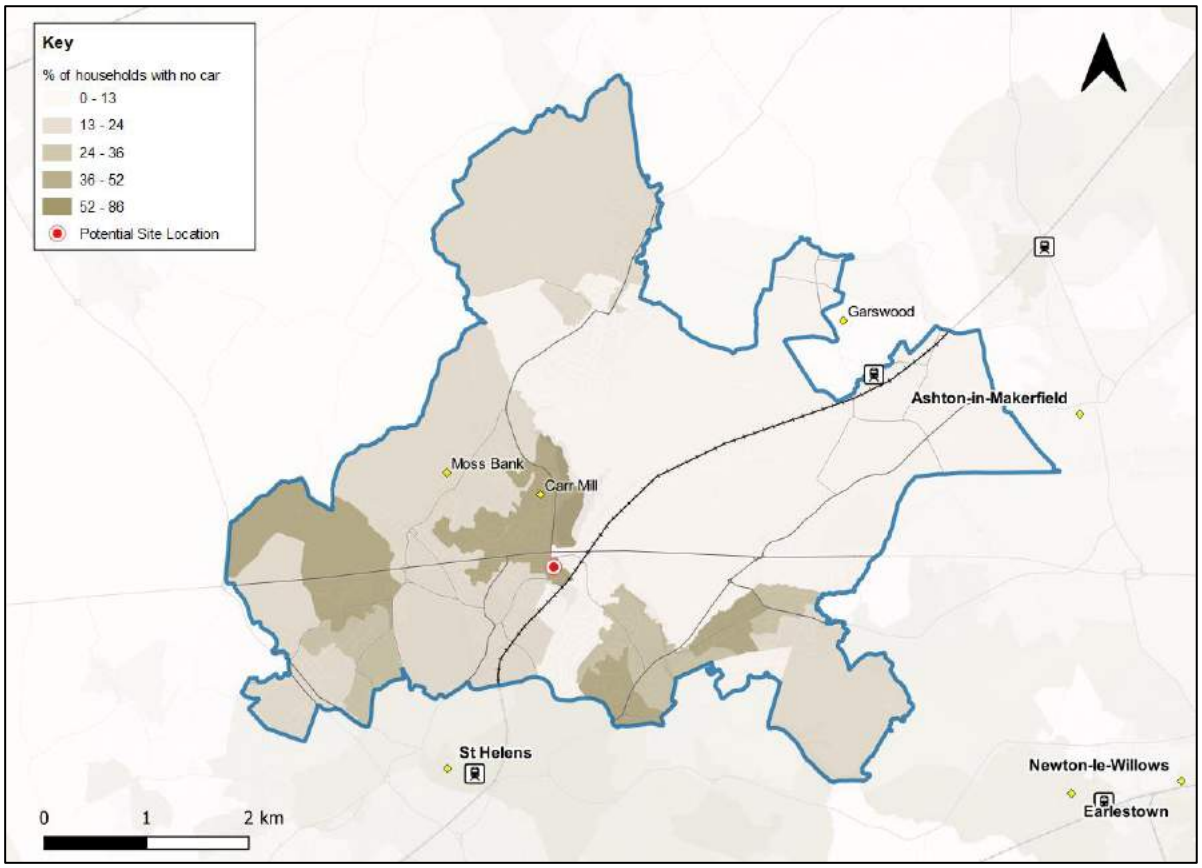
On the other hand, households situated in rural areas to the north and north-west of the study area are some of the more least deprived areas in the Borough, and subsequently have the ability to afford a car for their personal travel. Moreover, residents who have chosen to live in rural, more isolated areas are more likely to be those who are able to afford to buy a car to enable them to travel further to access services and opportunities.

Table 2-7 - Percentage of households with no car

[18] Index of Multiple Deprivation data, LSOA level (Ministry of Housing, Communities & Local Government) – December 2019

	Carr Mill Village[19]	Study Area	St Helens Borough	North West	England
Percentage of households with no car	43%	24%	26%	26%	22%

Figure 2-9 - Levels of car ownership in the study area[20]



Car Ownership

Carr Mill, which is likely the main catchment for a new railway station, is one of the most deprived areas in the Borough with low levels of car ownership. The proportion of households with no car is 21 percentage points higher than the national average**.** More deprived households are less likely to be able to afford a car, placing a greater reliance upon a fast, reliable public transport service to enable residents to access services and opportunities that will enable them to become more productive and prosperous.

2.3.4. Local Development Context

The Borough's draft Local Plan (2019) sets out a proposed vision for future development in the Borough between 2020 and 2035, highlighting where local growth (housing and employment) is planned and therefore where possible additional infrastructure, such as transport, will be needed to support it. The draft Local Plan was submitted for examination by the Planning Inspectorate in October 2020, with the result of this being a schedule of Proposed Main Modifications produced in 2021. These modifications to the Local Plan were consulted on between November 2021 and January 2022, with any resultant proposed changes again passed to the Planning Inspectorate for their consideration. It is anticipated that the Local Plan will be adopted by the Council in 2022.

Whilst there are proposals for housing and employment development across the Borough, the six key potential sites for housing in the study area are outlined in Table 2-8, with these mapped accordingly in Figure 2-10.

[19] LSOA Name: St. Helens 004B

[20] Office for National Statistics – Census 2011 (QS416EW – Car or van availability)

There are 1,848 units proposed across these sites, all to be constructed in a relatively small area of the Borough. As noted in in Table 2-8, it is estimated that the development of all sites will be completed by 2036/2037. The bulk of this development (see Local Plan Ref 111 from Table 2-8), 1,100 units, comes from the St Helens North Housing Access project at the former glassworks site at Cowley Hill, north of the Town Centre.

Currently, however, as there is no railway station between Garswood and St Helens Central it is reasonable to assume that without fast, reliable, high-quality public transport access a large proportion of trips to key destinations from the development sites identified in Table 2-8 would be undertaken by private vehicle. The extent of the impact of these developments on the highway network is illustrated by the Transport Assessment undertaken for the site at Cowley Hill, which identified that the residential elements of the proposed development would generate 798 and 768 two-way movements in the typical AM and PM periods (08:00-09:00)[21]. Whilst the other developments would generate fewer additional trips on the local highway network, cumulatively the traffic impacts of this in the town centre and along key highway corridors (i.e. congestion and air pollution) will be challenging to manage without significant public transport interventions.

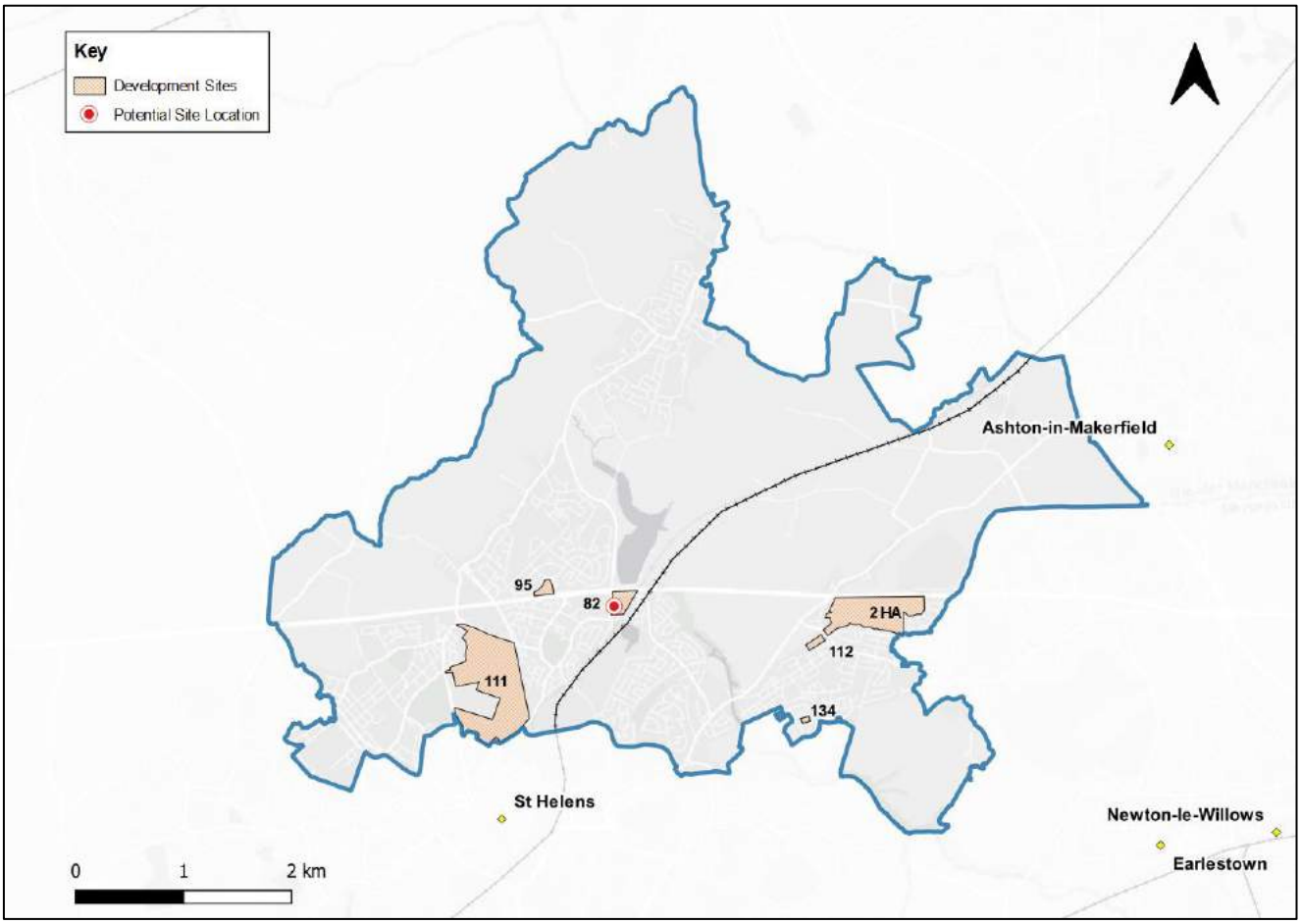
Table 2-8 - Potential development sites in the study area

Local Plan Ref	Site Name	Distance from potential station site[22]	Size (Hectares)	Site Capacity (Units)	Estimated Completion Date
2HA	Land at Florida Farm (South of A580), Slag Lane, Blackbrook	2.0km	23.19	522	2036/2037
82	Land adjacent Laffak Road and Carr Mill Road	0.05km	3.31	150	2026/2027
95	Site of former Carr Mill Infants School, Ullswater Ave	0.6km	1.49	24	2028/2029
111	Land east of City Road, Cowley Hill	1.2km	47.09	1,100	2036/2037
112	Land to the rear of Juddfield Street	1.9km	1.14	41	2033/2034
134	Land at Littler Road	2.1km	0.52	11	2027/2028

[21] P_2020_0083_OUEIA-ES_VOLUME_2_-_09_TRAFFIC___TRANSPORT_PART_1-1120561.pdf (sthelens.gov.uk) Note – the Transport Assessment, produced in 2019, assumed that 1250 residential units would be developed

[22] Destination is 32 Carr Mill Road (WA11 9AF), which is the potential location of a station at Carr Mill. Straight line distances have been used. Distances will vary depending on the point of origin and the location of the proposed intervention.

Figure 2-10 - Map of potential development sites in the study area



Local Development Context

The planned developments within the study area, particularly at Cowley Hill (Ref: 111) and Florida Farm (Ref: 2HA), will likely generate a significant number of private vehicle trips on the highway network as residents travel to the town centre and other key destinations. To mitigate the traffic impacts of these developments, high-quality, attractive public transport services will need to be provided to ensure that the Borough can grow sustainably.

2.3.5. Transport Context

This section assesses the transport context for the study area, and in particular how the current transport facilities and network provides connectivity to and from Carr Mill, the study area and the wider region.

2.3.5.1. Census Travel to Work Data

Analysis of 2011 Census travel to work data highlights that there is a significant difference between commuter flows into and out of the study area, with 13,356 more commuter trips leaving the study area compared to those arriving. This clearly highlights that more employment opportunities are available outside of the study area in the wider Borough and sub-region.

It is also evident from the travel to work data that there is a considerable dependency on the private car for commuter trips. As shown in Table 2-9, the private car (or van) is the dominant mode of travel to work from the study area, with over 82% of residents using the car for commuting purposes. This is 10 percentage points higher than the regional average and 17 above the national average, highlighting the degree to which residents of the study area are dependent on their cars for commuting purposes. There are, however, proportionately fewer commuter trips *into* the study area that are undertaken via car.

Walking and the bus are the next most popular modes for commuter journeys to and from the study area, although these fall below regional and national averages. These journeys are likely to be for more convenient shorter trips in the local area or within the Borough, or in the case of bus trips further afield to key employment

areas such as Wigan. However, these do still fall below the regional and national averages due to the significant modal share of car journeys.

With no railway station easily accessible to residents in the study area, it is no surprise that very few commuters use trains as a means of travelling to or from work.

Table 2-9 - Mode of travel to work - Commute from study area

Mode of Travel	Number[23]	Proportion of Total Trips	North West Average[24]	England Average[24]
Driving a car or van	13,818	75%	66%	60%
On foot	1,221	7%	11%	11%
Passenger in car or van	1,275	7%	6%	5%
Bicycle	251	1%	2%	3%
Bus, minibus or coach	1,236	7%	9%	8%
Train	430	2%	3%	6%
Motorcycle, scooter or moped	119	1%	1%	1%
Other method of travel to work	37	0%	1%	1%
Taxi	117	1%	1%	1%
Underground, metro, light rail or tram	7	0%	1%	4%
TOTAL	**18,511**	**100%**	**100%**	**100%**

Table 2-10 - Mode of travel to work - Commute to study area

Mode of Travel	Number[23]	Proportion of Total Trips	North West Average[24]	England Average[24]
Driving a car or van	3,584	70%	66%	60%
On foot	764	15%	11%	11%
Passenger in car or van	340	7%	6%	5%
Bicycle	65	1%	2%	3%
Bus, minibus or coach	295	6%	9%	8%
Train	40	1%	3%	6%
Motorcycle, scooter or moped	21	0%	1%	1%
Other method of travel to work	12	0%	1%	1%
Taxi	33	1%	1%	1%
Underground, metro, light rail or tram	1	0%	1%	4%
TOTAL	**5,155**	**100%**	**100%**	**100%**

Figure 2-11 maps the origins and destinations commuting patterns of individuals residing or working in the study area. This shows that residents of the study area predominantly work in the Borough (9,448 people, 51%), with other key employment locations including Wigan, Warrington, Knowsley and Liverpool. The significant majority of commuter trips into the study area originate from locations within the Borough (3,422 people, 66%), highlighting that employers within the study area generally attract commuters from more local areas, which is likely to be partially down to the lack of fast, reliable public transport connections from more populated areas that are further away. 14% (738 people) of commuter trips to the study area are from Wigan.

[23] Office for National Statistics - WU03EW - Location of usual residence and place of work by method of travel to work (MSOA level).
[24] Office for National Statistics - QS701EW - Method of travel to work

Figure 2-11 - Place of residence for people working, and place of work for residents in the study area

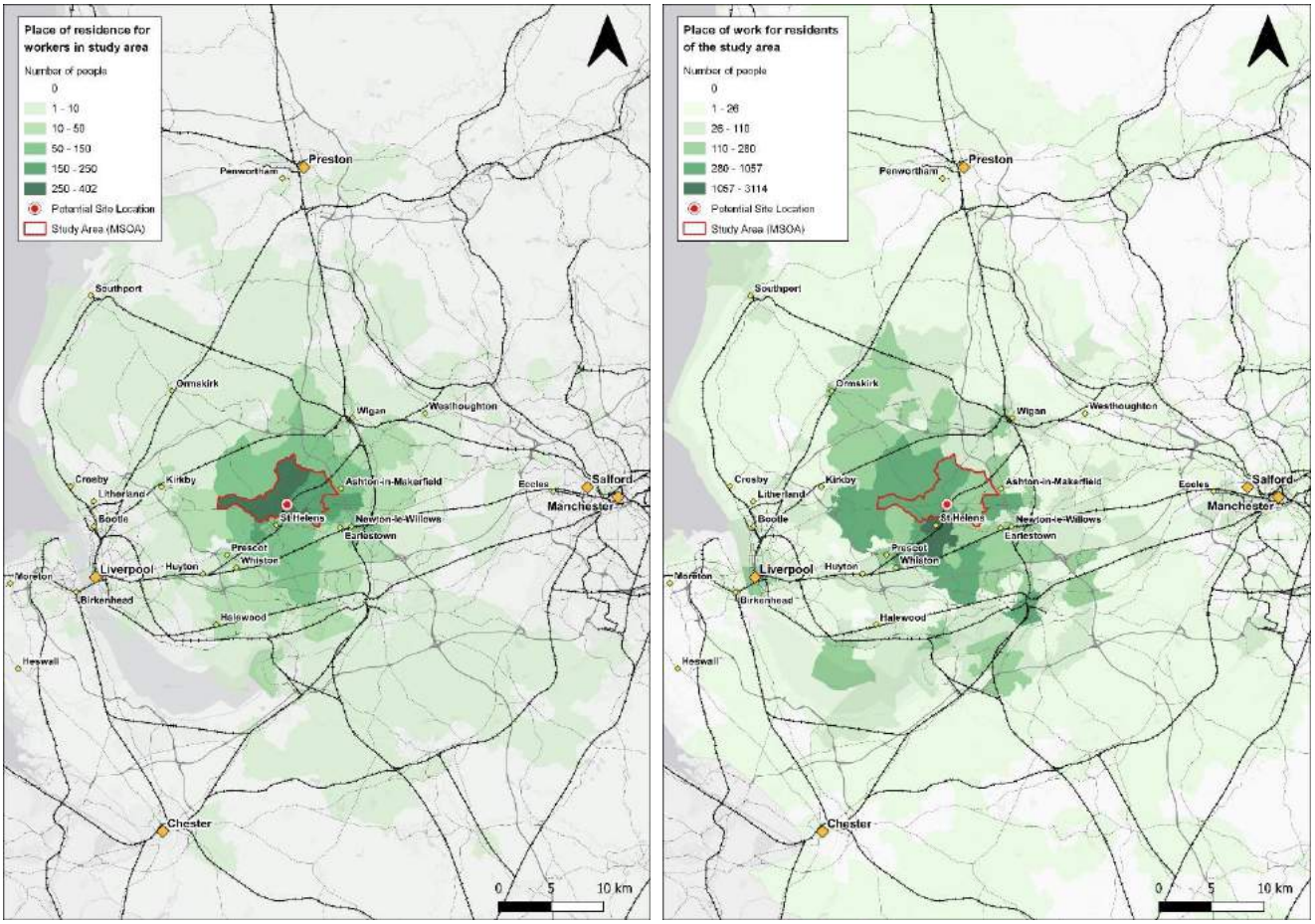


Table 2-11 and Table 2-12 summarise the key locations for commuting to and from the study area and highlight the mode share to these key locations. Table 2-11 displays the places of residence for people working in the study area, showing that the large majority of these journeys originate in the Borough. Whilst a significant proportion (68%) of these journeys are made by car, 21% are made on foot highlighting that many of these shorter commute trips to the study area can be made by active modes of travel. The overwhelming majority of journeys from further afield are made by car, although there is a healthy proportion of commuters travelling by bus and train where these links are provided.

Table 2-12 provides a breakdown of locations that residents in the study area are commuting to. There is roughly an even split of commuters travelling to workplaces located within (51%) and outside (49%) of the Borough, with key destinations outside of the Borough including Wigan, Warrington, Knowsley and Liverpool. In total, 88% of commuter journeys to destinations outside of the Borough are made by car, with this falling to 75% for journeys within the Borough. This highlights the degree to which residents of the study area are dependent on the car for medium to long distance journeys.

A smaller proportion of journeys within the Borough are made by car compared to outside of the Borough with more in-Borough journeys being made on foot and by bus. Notably, an encouraging proportion of residents travelling longer distances to Liverpool (12%) and Manchester (25%) travel to work by train, despite the requirement to first travel to St Helens Central or Garswood to access rail services.

It should be noted that 38% of total commuting journeys from the study area are made by car or van to workplaces in the Borough. Similarly, 45% of total commuter trips to the study area originate from locations within the Borough. This creates a high level of demand on the local highway network at peak periods which can cause congestion.

Table 2-11 - Location of residence: commuters to study area, by mode (local authority)[25]

Usual Residence (Local Authority)	Number of Commuters into Study Area	Commuting Mode				
		% of journeys made by car	% of journeys made by train	% of journeys made by bus	% of journeys made by cycling	% of journeys made by walking
St. Helens	3,422	68%	1%	7%	1%	21%
Wigan	738	92%	0%	3%	1%	3%
Knowsley	143	92%	0%	6%	1%	1%
Warrington	136	99%	0%	0%	1%	0%
Halton	115	96%	0%	3%	0%	2%
Liverpool	113	82%	7%	10%	1%	0%
West Lancashire	109	93%	0%	0%	2%	4%
Sefton	101	85%	4%	4%	2%	5%
Other	278	93%	2%	0%	1%	3%

Table 2-12 - Location of employment: study area residents, by mode (local authority)[26]

Usual Residence (Local Authority)	Number of Commuters from Study Area	Commuting Mode				
		% of journeys made by car	% of journeys made by train	% of journeys made by bus	% of journeys made by cycling	% of journeys made by walking
St Helens	9,448	75%	1%	10%	2%	11%
Wigan	1,857	87%	3%	7%	1%	1%
Warrington	1,285	93%	0%	4%	1%	1%
Knowsley	1,119	92%	1%	4%	1%	1%
Liverpool	1,103	82%	12%	3%	1%	1%
West Lancashire	616	95%	1%	1%	0%	1%
Halton	459	92%	0%	4%	1%	1%
Sefton	392	86%	3%	4%	2%	6%
Manchester	317	71%	25%	3%	0%	0%
Other	1,915	91%	3%	2%	1%	3%

Breaking down the data to investigate spatial patterns of specific modes of travel provides further insight into the commuting patterns of those living and working in the study area.

2.3.5.2. Car/Van travel patterns

As highlighted previously, the car is the dominant mode of travel to and from the study area for travel to workplaces located within and outside of the Borough. Figure 2-12 maps the commuting patterns by car to and from the study area.

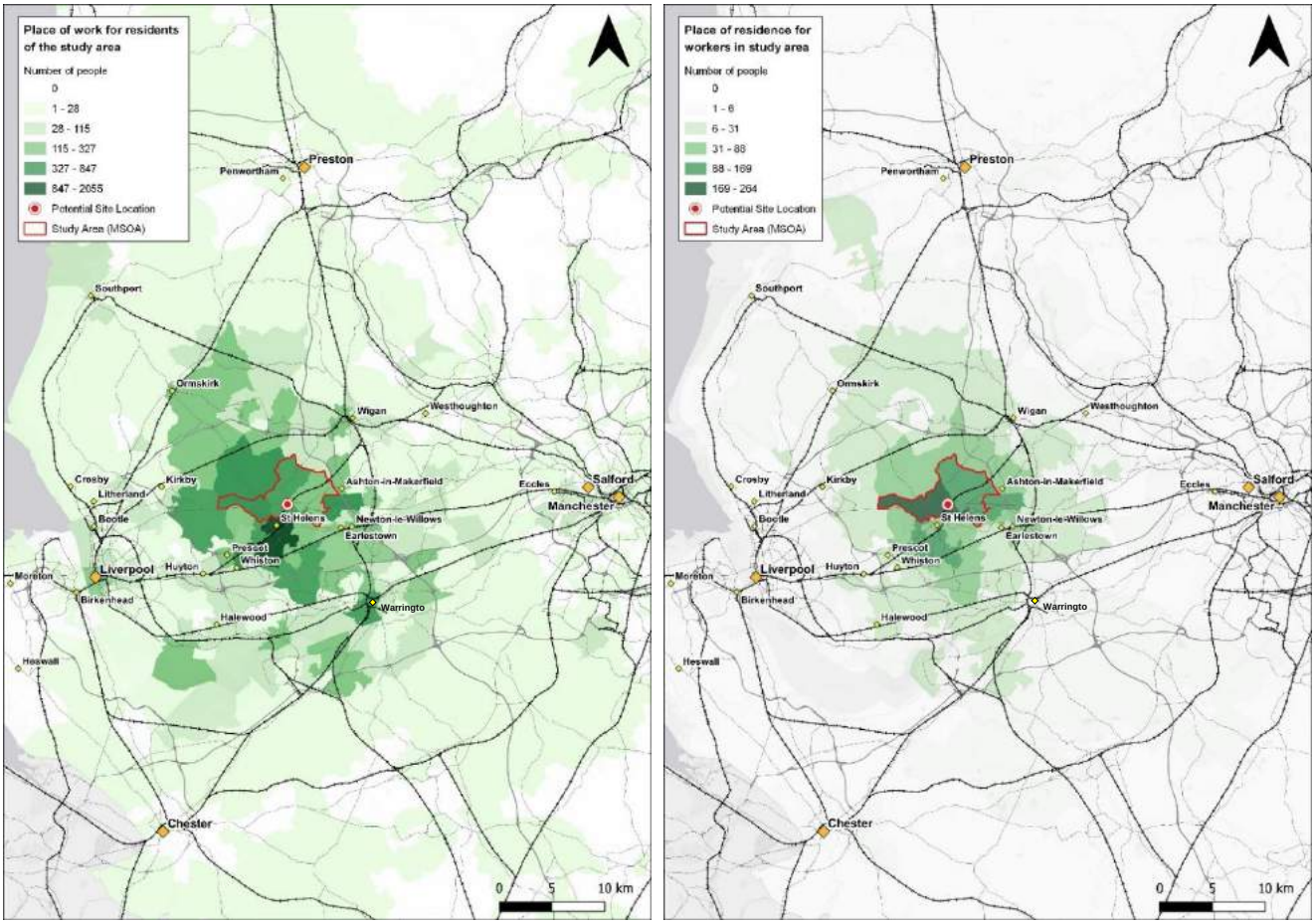
[25] Office for National Statistics - WU03EW - Location of usual residence and place of work by method of travel to work (MSOA level). The table presents local authorities which provide at least 100 journeys to Carr Mill. The 'other' row summarises all other local authorities.

[26] Office for National Statistics - WU03EW - Location of usual residence and place of work by method of travel to work (MSOA level). The table presents local authorities which provide at least 300 journeys to Carr Mill. The 'other' row summarises all other local authorities.

The following spatial patterns have been observed:

- **From the study area** – A significant proportion of commuter journeys by car from the study area are to workplaces within the Borough (47%). Of the commuting journeys to workplaces outside of the Borough, 89% are undertaken by car. Key destinations include St Helens, Whiston, Prescot, Knowsley, Garston and Warrington.
- **To the study area** – 45% of the total number of commuting journeys to the study area are car trips which originate within the Borough, with 13% originating from the Metropolitan Borough of Wigan and in particular the area to the north-west of the study area near to Wigan itself.

Figure 2-12 - Commuting from/to the study area by car/van[27]



2.3.5.3. Rail travel patterns

Figure 2-13 maps the commuting patterns by rail to and from the study area. As noted previously, the proportion of commuters travelling by rail to and from the study area is relatively low, which is to be expected due to the lack of a rail station within the study area itself. Passengers travelling by rail are likely to use the nearest stations at St Helens Central and Garswood to access rail services.

The following spatial patterns have been observed:

- **From the study area** – Rail services from St Helens Central and Garswood provide fast connections to larger towns within the region, with the most popular destination for rail commuters from the study area being Liverpool. Wigan and Manchester the next most popular destinations, with each demonstrating a roughly similar number of trips. There are less commuters using rail services to travel to destinations in St Helens, suggesting that for these shorter trips other more convenient modes are used.

[27] Office for National Statistics - WU03EW - Location of usual residence and place of work by method of travel to work (MSOA level).

- **To the study area** – The number of commuter train trips being undertaken to the study is very low (5 people), with the most common origin being within the north-eastern area of the study area itself which indicates that these trips are most commonly originating at Garswood Station.

Figure 2-13 - Commuting from/to the study area by train[28]

2.3.5.4. Bus Travel Patterns

Figure 2-14 maps the commuter patterns by bus to and from the study area. The majority of the travel demand by bus comes from within the Borough itself, but key destinations including Wigan, Warrington, and towns within Knowsley.

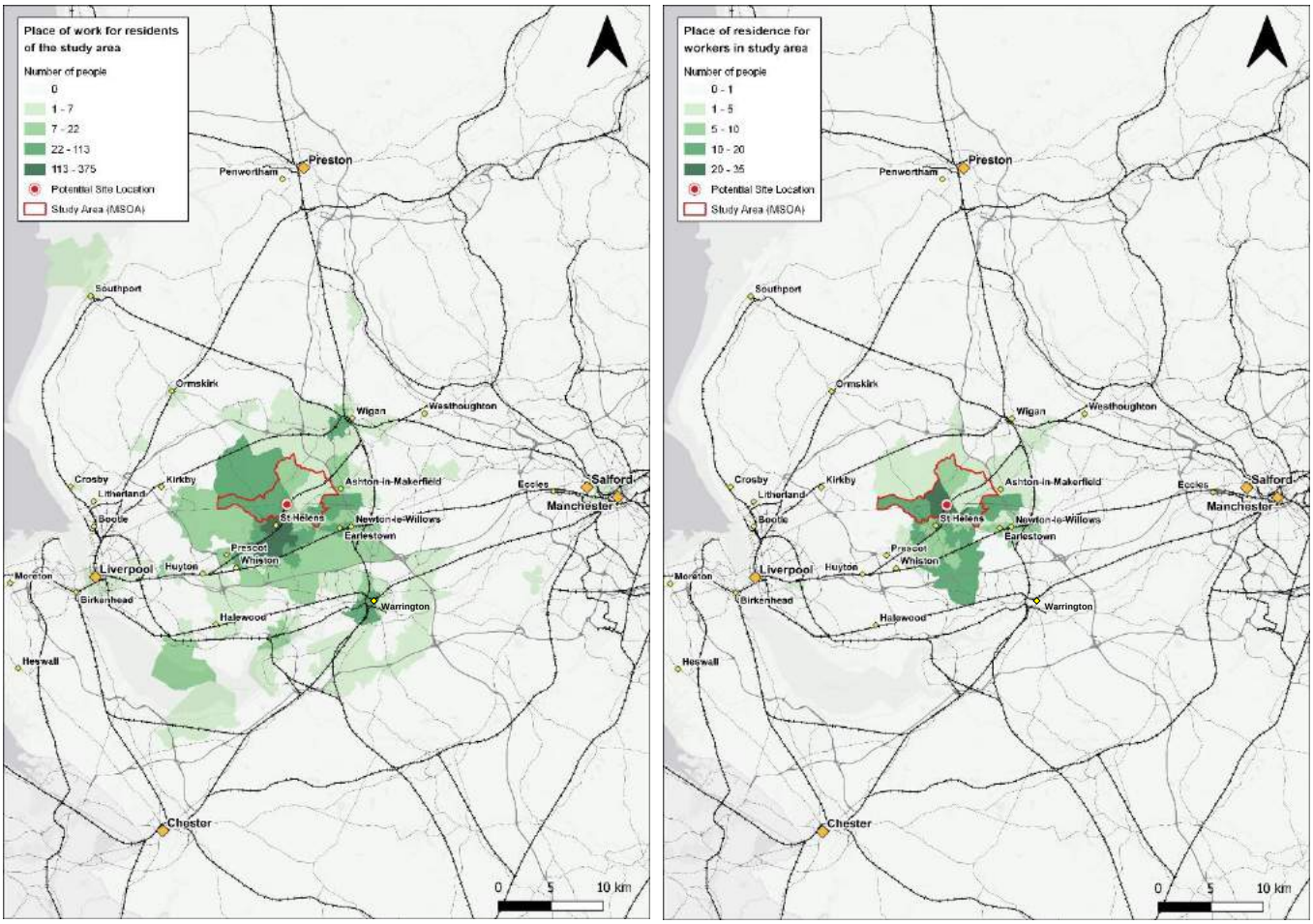
The following spatial patterns have been observed:

- **From the study area** - 73% of commuter bus journeys are to destinations within the Borough, highlighting the importance of bus services for local commuter trips. The most popular destination for bus trips is St Helens town centre. For trips outside of the Borough, Wigan, Warrington, Prescot and Whiston are identified as key destinations for bus commuters.

- **To the study area –** 73% of total commuter bus trips to the study area originate from within the Borough. As per Figure 2-14, residents that live in the dark green areas within the study area to the immediate north and south of the potential station site, and who travel by bus to work in the study area, account for 20% of the total number of bus journeys. This highlights that bus journeys are primarily used for shorter journeys to workplaces in the Borough.

[28] Office for National Statistics - WU03EW - Location of usual residence and place of work by method of travel to work (MSOA level).

Figure 2-14 – Commuting from/to the study area by bus[29]



2.3.5.5. Cycle Travel Patterns

Figure 2-15 maps the commuter patterns by bicycle to and from the study area. In general, due to the physical effort required, cycling journeys are to and from locations within the Borough. As per Table 2-9 and Table 2-10, there is a relatively low overall mode share of cycling. However, with upgrades to cycling infrastructure, the proportion of cycling trips could be increased.

The following spatial patterns have been observed:

- **From the study area** – 71% of cycling commuter trips are to workplaces located within the Borough, with key locations such as St Helens town centre and the area south of Ashton-in-Makerfield (i.e. Haydock Lane Industrial Estate) generating much of the demand.
- **To the study area –** 72% of cycling commuter trips to the study area originate within the Borough itself, with figure 2-15 highlighting that many of these are concentrated within the study area itself.

[29] Office for National Statistics - WU03EW - Location of usual residence and place of work by method of travel to work (MSOA level).

Figure 2-15 - Commute from/to the study area by bicycle[30]

Travel to Work

There are far more commuter trips departing from the study area compared to those arriving in the study area.

There is a significant dependence on the car for commuter trips to workplaces in and out of the Borough, with proportionately fewer public transport commuter trips into and out of the study area compared to national and regional mode share averages.

49% of commuter trips from the study area are to workplaces located outside of the Borough. However, 88% of these journeys are made by car, indicating that medium to longer distance journeys to key employment areas are currently more accessible by car than by public transport. Faster, more direct public transport connections could significantly reduce commuter car trips, with associated benefits in terms of congestion and air quality.

2.3.5.6. Active Travel Provision within the Study Area

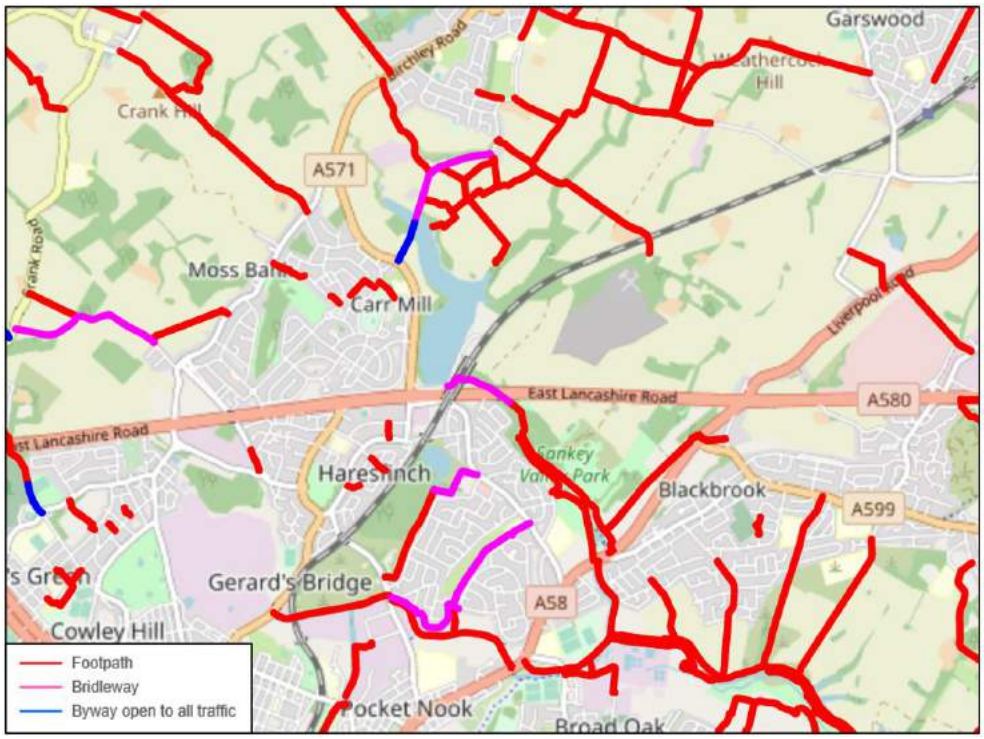
The cycle network in the study area is outlined below in Figure 2-16. Cycle journeys through the study area are supported by on-road cycle routes and off-road cycle tracks in places, although the network itself is relatively disconnected in terms of how well the cycle routes and tracks join with one another across the study area. Off-road cycle tracks along the A580 support east-west journeys by bicycle, providing access to a potential station site along this key highway corridor. North of the A580 on the A571, north-south on-road cycle routes are provided between Carr Mill and Billinge. There are no National Cycle Network (NCN) routes that pass through the study area.

[30] Office for National Statistics - WU03EW - Location of usual residence and place of work by method of travel to work (MSOA level).

Figure 2-16 - Cycle network in the study area[31]

Figure 2-17 outlines the Public Rights of Way (PRoW) within the study area. Footpaths and bridleways provide access across the rural landscape which covers large parts of the study area, particularly to the north of the A580, connecting villages such as Carr Mill, Garswood, Billinge and Crank. Footpaths and bridleways to the south of the A580 predominantly provide connections through the neighbourhoods of Laffak, Blackbrook and Merton Bank. However, it should be noted that the PRoW network is poorly connected to Carr Mill from the north, south and west.

Figure 2-17 - Public Rights of Way in the study area[32]



[31] Adapted from: mrsp_cycle_maps_sthelens_FINAL_-_13-10-21.pdf
[32] The rights of way using an OpenStreetMap map (rowmaps.com)

It should be noted, however, that a Local Cycling and Walking Infrastructure Plan (LCWIP) is currently being developed for the Borough. This will build upon the key strategic routes and principles of the Liverpool City Region LCWIP[33], developing a prioritised local cycling and walking network which connects all of the Borough's key settlements and communities. It is expected that the Borough LCWIP will explore the priority locations identified in the Liverpool City Region LCWIP, including the A580, A571, and proposals to improve east-west journeys through residential areas located between Carr Mill and St Helens town centre.

The future provision of high-quality walking and cycling infrastructure is vital to boosting the proportion of residents in the study area travelling to work by active modes of travel. As Table 2-9 demonstrates, the proportion of residents travelling to work on foot or by bicycle is lower than regional and national figures. The coverage and quality of the existing walking and cycling infrastructure in the study area is likely to be a reason for this, highlighting the importance of the forthcoming LCWIPs in increasing the number of residents travelling by active modes.

Active Travel

The proportion of residents travelling to work on foot or by bicycle is lower than regional and national averages. Although footpaths and bridleways support journeys on foot between villages and neighbourhoods, the PRoW network is poorly connected to Carr Mill from the north, south and west. Whilst there are off-road cycle tracks across much of the study area, they are largely disconnected from one another and to the on-road cycle routes that are provided.

However, an LCWIP is currently being developed for the Borough which will build upon the proposals made in the LCRCA LCWIP, improving the coverage and quality of the active travel network in the study area.

2.3.5.7. Public Transport Provision within the Study Area

As noted previously, while a railway station did exist at Carr Mill between 1896 and 1917, there is no longer a rail connection at Carr Mill nor in the majority of the study area. The closest rail connections are to the north-east at Garswood (approx. 3.5 km from the potential station site) and to the south-west at St Helens Central (approx. 2.5km)[34]. Both are served by Northern Railway, with the latter also being served by TransPennine Express. These are both on the Liverpool to Wigan Line and provide regular connections (two trains per hour) to Liverpool Lime Street (a terminus station), Wigan North Western, Preston and Blackpool North. Passengers wishing to travel to Manchester are able to use northbound services operating on this line to transfer onto connecting services at Wigan North Western.

Both stations can be accessed by existing public transport services, with journey times varying in length. While St Helens Central Station can be accessed by regular bus services which take between 15 and 30 minutes, travel times to Garswood Station range between 30 and 65 minutes and require one transfer. Although bus connections across much of the study area to St Helens Central Station are relatively fast and direct, at present driving is the more convenient and direct option to reach Garswood Station[35].

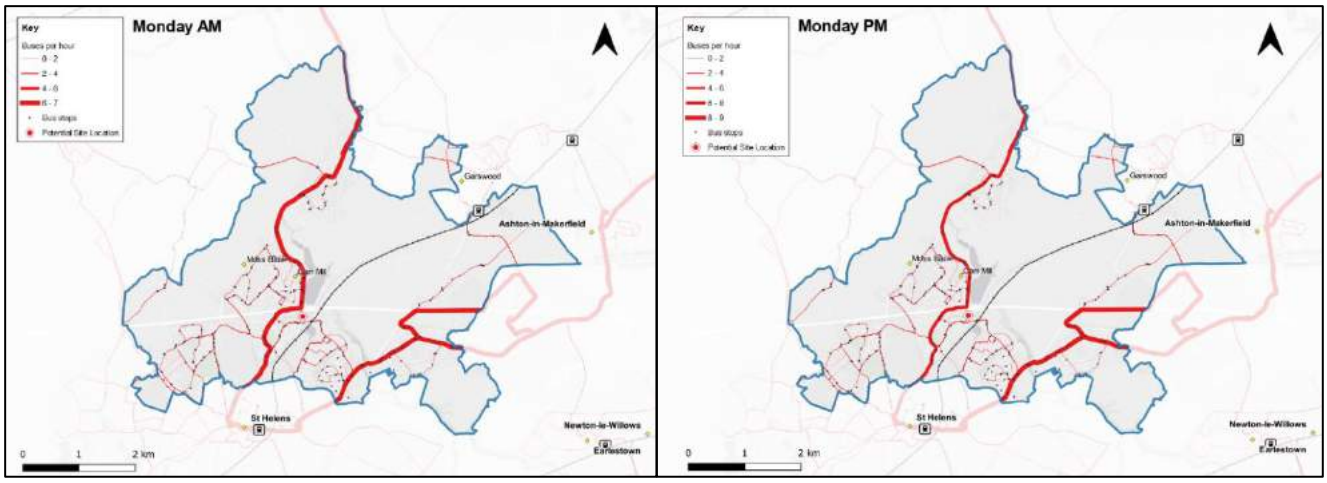
Figure 2-18 displays the frequency of bus services within the study area across the two peak periods on a Monday, based upon timetabled bus data from January 2022. Although overall bus mode share is slightly below the national and regional averages (see Table 2-9 and Table 2-10Table 2-), high frequency bus services are in operation along primary highway routes to support journeys to St Helens town centre and Wigan which are key origin and destination points for commuter trips to/from the study area (see Figure 2-14). Route 320 provides access between St Helens town centre, Ashton-in-Makerfield and Wigan, travelling along the A58 within the study area. Route 352 operates between St Helens town centre and Wigan, and travels along the A571 which is located adjacent to the proposed station site. Less frequent bus services also connect the more residential areas of the study area to the south and west of the potential station site. There is also an ample coverage of bus stops across the study area to enable residents to access the higher and lower frequency services.

[33] LCWIP-REPORT-FULL.pdf (liverpoolcityregion-ca.gov.uk)

[34] For the purposes of this, it is assumed that a future station is located at 32 Carr Mill Road (WA11 9AF)

[35] Origin of journey is 32 Carr Mill Road (WA11 9AF) adjacent to the proposed station site. It should be noted that journey times will differ depending on where people live in the study area

Figure 2-18 - Bus frequency (Monday peak periods)[36]



2.3.5.8. Public transport journey time analysis

To understand the changes in accessibility as a result of opening a new station on the Liverpool to Wigan Line, serving Carr Mill, accessibility analysis was undertaken using the industry standard Basemap TRACC. This software measures the fastest journey time within a given time period between a number of origins and destinations and uses this to create accessibility contours. The OS Open Roads network, public transport timetable data and the location of stops, as well as an origin grid and destination point, were used to run these calculations. For each origin point, the journey time is calculated to the specified single destination point by using the inputted road network and public transport data. The calculations encompass walking journey time to and between public transport stops in addition to a walk from the final public transport stop to the destination. If a public transport journey is not available or slower than walking, the walk journey time is returned. Additionally, the software assumes a 5-minute interchange penalty when interchanging between public transport services. This is to allow for potentially changing platforms at a rail station, while also providing a buffer for potential small delays to public transport services to avoid missing tight connections.

To investigate the service provision of the current public transport network, baseline maps have been compiled using the aforementioned TRACC software to understand present service provisions. A destination grid with 200m between points was used to calculate travel times in the local area. The model was run between 7am and 10am. Contours can then be created using the grid of journey times. The contours are based on the fastest available journey during the given period. Public transport timetables from January 2020 have been used to model the presented journey times.

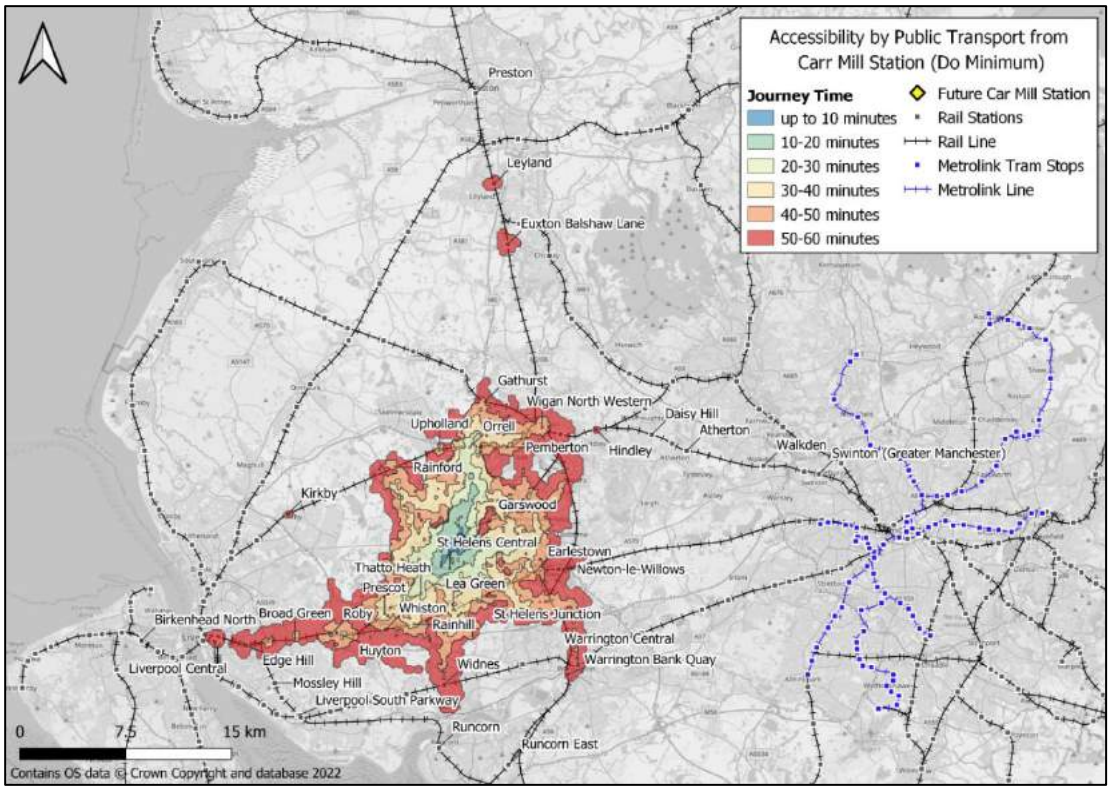
Figure 2-19 displays the current public transport journey times from Carr Mill during the morning peak period. Connectivity by bus from the potential station site is good into St Helens town centre, however due to the lack of a rail station in Carr Mill connectivity to larger areas further afield such as Liverpool, Warrington and Wigan is much poorer with travel times between 40 and 60 minutes. As Figure 2-19 highlights, it is not currently possible to reach Preston or Manchester within 60 minutes.

As Table 2-12Table 2- demonstrated, over 1,000 residents in the study area travel to employment in each of Wigan, Liverpool and Warrington, which represents a significant proportion of the total commuting population of the study area. However, in all cases, the proportion of journeys that are currently undertaken by car is above 80%, and in the case of Wigan and Warrington less than 3% of commuter journeys are via train. Thus, for this large proportion of commuters in the study area, faster car journeys to these areas are a much more attractive option compared to the slower and less direct journeys by public transport.

In general, residents in the study area suffer from poor public transport connectivity to areas beyond the immediate villages and St Helens town centre, inhibiting public transport usage and helping to explain why public transport modal share is relatively low amongst residents in the study area (see Table 2-9).

[36] DfT - National Public Transport Data Repository (Updated in Jan 2022).

Figure 2-19 – Current public transport commuting time from Carr Mill[37]



2.3.5.9. One Hour Journey Time Catchment

Table 2-13 and Table 2-14 display the population that are within an hour commuting distance of Carr Mill in both absolute and percentage terms. There are 515,147 people currently living within an hour of Carr Mill, however 50% (255,111) of these are located 50-60 mins away in more populated towns and cities. Similarly, of the 327,160 working age adults within 60 minutes of Carr Mill, 51% are located between 50 and 60 minutes away. Therefore, for the majority of the economically active population within an hour of Carr Mill, the study area is a challenging destination to travel to access the jobs available to them.

Table 2-13 - Split of population within 60 minutes of Carr Mill

	Within 10 mins	10-20 mins	20-30 mins	30-40 mins	40-50 mins	50-60 mins	Total
Population	7,454	19,620	46,312	90,055	96,595	255,111	515,147
16-24 year olds	685	1,866	4,480	8,531	9,206	36,753	61,521
16-64 year olds	4,478	12,164	28,518	55,093	59,311	167,595	327,160
Population with no car	787	3,065	5,826	9,982	11,062	37,438	68,159

Table 2-14 - Percentages of population within 60 minutes of Carr Mill

	Within 10 mins	10-20 mins	20-30 mins	30-40 mins	40-50 mins	50-60 mins
Population	1%	4%	9%	17%	19%	50%
16-24 year olds	1%	3%	7%	14%	15%	60%
16-64 year olds	1%	4%	9%	17%	18%	51%
Population with no car	1%	4%	9%	15%	16%	55%

[37] Origin point for Carr Mill: 122-202 Woodlands Road, St Helens, WA11 9DY

Table 2-15 highlights that there are only 12,945 jobs (5%) within 20 minutes of Carr Mill, revealing the lack of easily accessible employment opportunities available to residents of the study area and the Borough. In contrast, over three-quarters of jobs (77%) are over 40 minutes away from Carr Mill, likely in denser urban areas such as Wigan, Liverpool, Warrington, Preston and Manchester which are more challenging to reach by public transport. Table 2-15 can therefore be seen as evidence of the economic isolation that residents in the study area are experiencing, with longer journey times to key employment areas which are not currently served by fast, reliable public transport services. As a result, this is likely contributing to the relatively high levels of deprivation that are present in neighbourhoods within the study area (see section 2.3.3.3).

Table 2-15 - Split and percentage of jobs within 60 minutes of Carr Mill

	Within 10 mins	10-20 mins	20-30 mins	30-40 mins	40-50 mins	50-60 mins
Population	1%	4%	9%	17%	19%	50%
16-24 year olds	1%	3%	7%	14%	15%	60%
16-64 year olds	1%	4%	9%	17%	18%	51%
Population with no car	1%	4%	9%	15%	16%	55%

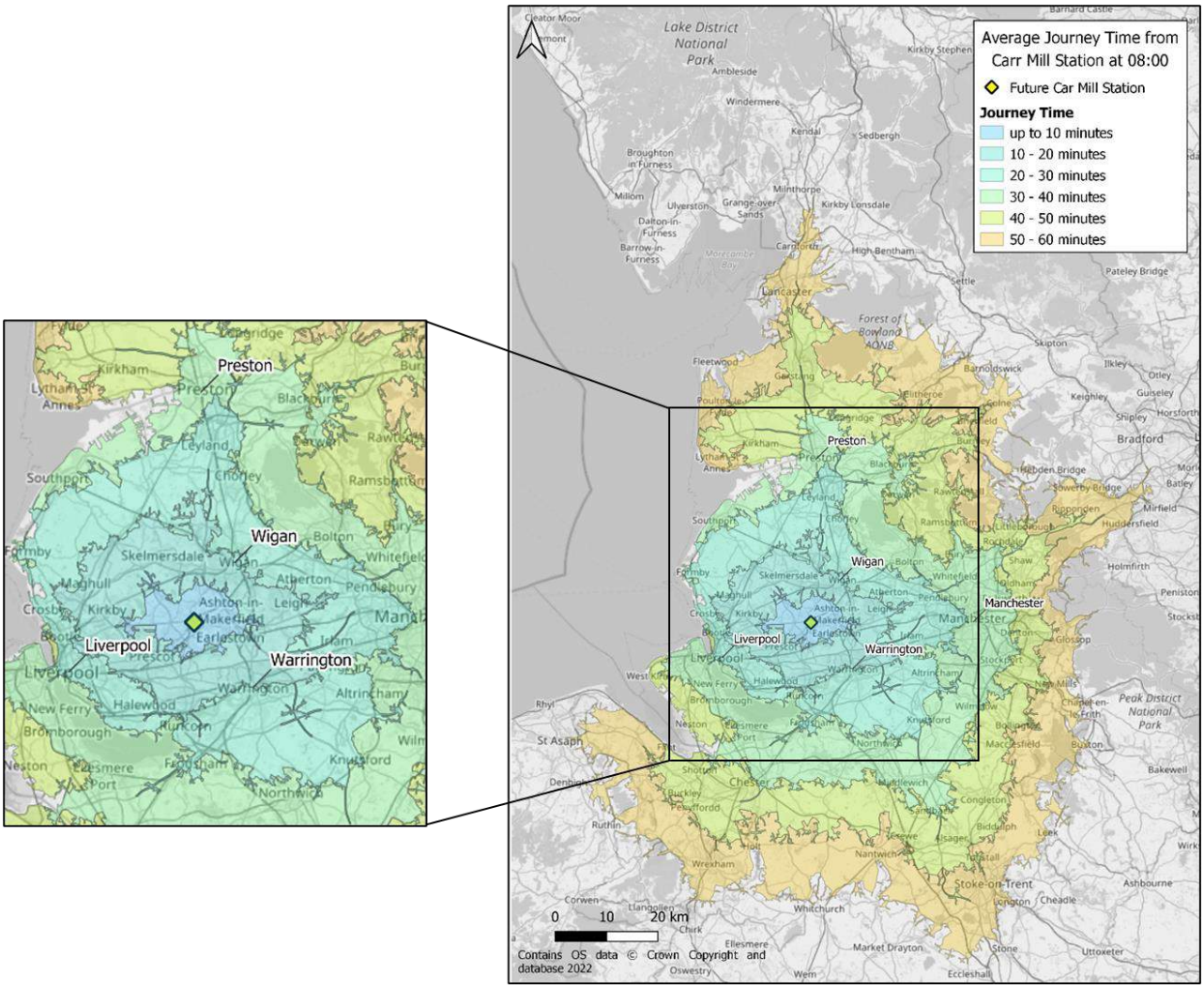
Public Transport

There is currently no rail station at Carr Mill, which has a significant impact upon current public transport journey times to key destinations. Although there are frequent bus services between St Helens and Wigan, journeys to key destinations further afield such as Liverpool and Warrington are much slower and less direct by public transport. With over three quarters of jobs within an hour of Carr Mill more than 40 minutes away, and significantly fewer jobs available within 20 minutes, poor public transport connectivity and slow journey times to key destinations exacerbates the economic isolation of the study areas residents.

2.3.5.10. Highway Network

Figure 2-20 outlines the average journey time by car from Carr Mill during the AM peak (08:00). It is evident that, by car, there is good access to places such as Wigan, Warrington and Liverpool which can be accessed within 30 minutes. Further afield, areas such as Preston and Manchester can be accessed within 40 minutes whilst areas of Wales, Shropshire, Staffordshire, Derbyshire and Lancashire can be reached within 60 minutes. As a comparison with Figure 2-19, it is clear that the car provides a significant mobility advantage over public transport when travelling from Carr Mill.

Figure 2-20 - Average journey time from Carr Mill by car (AM Peak)[38]



2.3.5.11. Comparison of journey times

Table 2- compares journey times for different modes from Carr Mill[39] to key destinations during the morning peak, showing a clear journey time advantage for those travelling by car to/from the study area which has already been highlighted in Figure 2-20. Slow public transport journey times are due to a reliance upon bus services and a requirement on some of the longer journeys to change service or mode, for example from bus to rail. For the journeys outside of the Borough, cycling is not a viable mode choice with only three of the destinations within a one-hour cycle ride. Long journey times by public transport will generally deter people from travelling via these services to key destinations for employment and other opportunities, despite the economic and environmental benefits of travelling by these modes.

Instead, residents of the study area are largely travelling to work via car or van which offer much quicker journey times than public transport. For instance, car or van trips represent 82% of commuter journeys from the study area compared to just 9% by public transport.

[38] Journey times are based on an average of the past 3 years so includes shorter journey times during COVID-19 lockdown periods. Origin point for Carr Mill: 122-202 Woodlands Road, St Helens, WA11 9DY

[39] Origin of journey is 32 Carr Mill Road (WA11 9AF) which is adjacent to the proposed station site. It should be noted that journey times will differ depending on where people live in the study area.

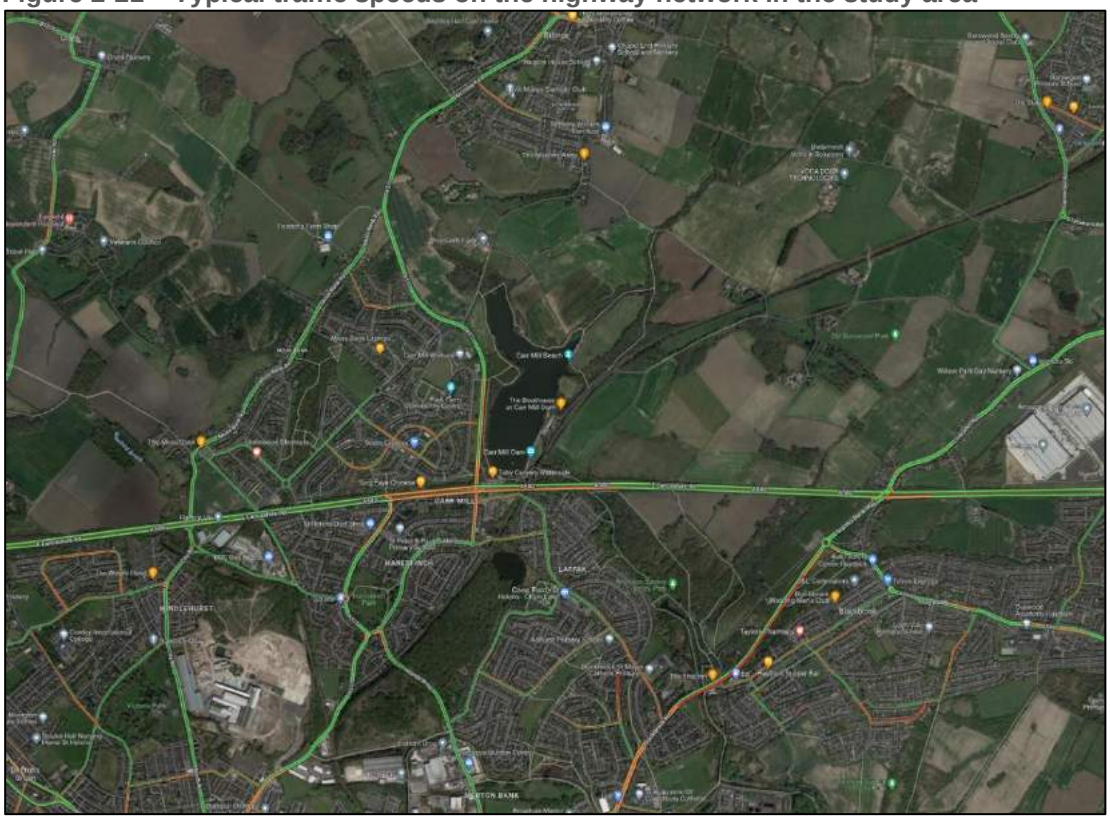
Table 2-16 - Journey times to key locations from Carr Mill[40]

Destination[41]	Distance (miles)	Car	Public Transport	Bicycle
St Helens	1.4	6-12 mins	10-15 mins	10 mins (1.9mi)
Thatto Heath	2.9	10 - 20 mins	30-35 mins	23 mins (3.9 mi)
Wigan	6.1	15 - 30 mins	45-50 mins	40 - 45 mins (7.2 mi)
Warrington	4.7	25-30 mins	55-75 mins	50-55 mins (9.7 mi)
Liverpool	11.5	25 - 55 mins	52 mins	77 mins (13.6 mi)
Preston	19.6	35 - 55 mins	60 mins	>110 mins (28.5 mi)
Manchester	19.6	40 - 60 mins	70-80 mins	>110 mins (21.5 mi)

2.3.5.12. Traffic Congestion

Figure 2-21 highlights typical traffic speeds on the highway network in the study area, which utilises Google Maps traffic data. Traffic speeds are generally fast across the network, with some slower speeds highlighted at key junctions including the A580/A571/Carr Mill Road junction adjacent to the potential station site. Speeds are also slower on the some of the approach roads to the town centre, in particular Stanley Bank Way (southbound).

Figure 2-21 – Typical traffic speeds on the highway network in the study area[42]



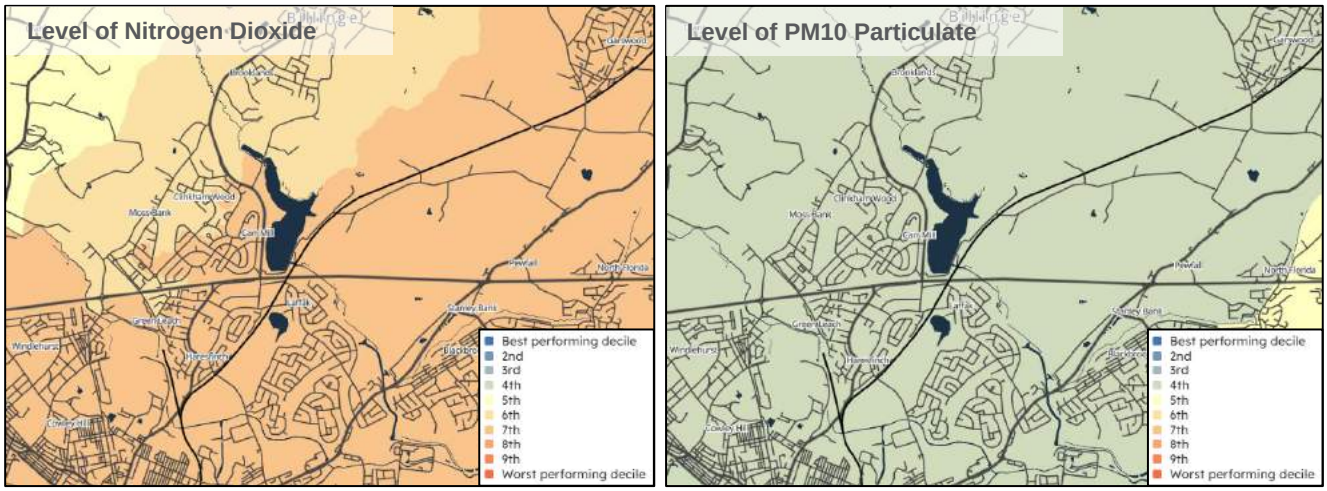
2.3.6. Air Quality

Figure 2-22 indicates that neighbourhoods in the study area have relatively moderate-high levels of NO_2 emissions, with the areas to the south and east of the potential station site falling between the 6th and 7th deciles in the country (where the 10th is the worst performing). This is likely to be due to the higher levels of traffic congestion on key routes into and out of the town centre, as well as the A580 which bisects the study

[40] Google Maps Journey Times – Quickest journey time Mon-Thur in the AM peak (7am-9am)
[41] Destination is the main railway station in the destination town/city.
[42] Google Maps – Typical Traffic on a Monday at 09:00. Sourced on 29th April 2022.

area. In terms of levels of PM10 Particulate Matter, which all road transport modes emit, neighbourhoods across the study area demonstrate emissions which are in the 3rd in the country (where the 1st is the best performing). Thus, whilst there is some concern regarding the levels of NO_2 emissions in the study area, with regards to PM10 emissions the study area is performing relatively well.

Figure 2-22 - Levels of Nitrogen Dioxide (NO_2) and PM10 Particulate Matter in the study area[43]



Despite the levels of NO_2 estimated in the study area, none of the four Air Quality Management Areas (AQMAs) that have been declared in the Borough are located in the study area, which indicates that there are currently no significant air quality issues. However, as noted in section 0, without an effective public transport intervention in the study area the anticipated development will likely result in increased vehicle emissions from the additional travel demand generated by the development.

Air Quality

Levels of NO_2 are moderate to high in some parts of the study area, which is likely due to road traffic congestion on key highway routes. This poses health risks to the population, with air quality likely to worsen as travel demand increases with general demographic changes as well as additional development-induced demand.

2.4. Key Problems and Opportunities

The objectives of the scheme have been informed by the problems and opportunities identified through a review of local, regional, and national policies, and transport and strategic context of the area. The key problems and opportunities that have been identified are summarised below.

1. **Rail services are not easily accessible from Carr Mill area, with access to alternative stations by car, public transport or active travel having high costs and/or journey times**

- The Carr Mill area is not served directly by a railway line, with the closest railway stations being at Garswood (approx. 3.5km) and St Helens Central (approx. 2.5km).
- Although regular bus services are available to St Helens Central Station across much of the study area, in some locations, journeys can take up to 30 minutes. For journeys to Garswood Station from the Carr Mill area, at present driving is a much faster and more convenient (i.e. does not require a service transfer) option than public transport.

2. **Poor public transport connectivity from Carr Mill to key destinations such as Liverpool and Wigan limits employment, educational and leisure opportunities**

[43] Consumer Data Research Centre: Access to Healthy Assets and Hazards (AHAH). Source: CDRC Mapmaker: Access to Healthy Assets & Hazards (Particulate Matter (PM10) Level). Note – The tool utilises open data from DEFRA (2017) which models estimates of the annual mean (µgm3) of Nitrogen Dioxide and Particulate Matter PM10 at the LSOA level.

- Over three quarters of jobs within an hour of Carr Mill are located more than 40 minutes away, with significantly fewer jobs available within the local area (i.e. under 20 mins travel time). However, residents of the study area struggle to access these jobs via fast, high-quality, and reliable public transport connections. Instead, 89% of commuting journeys from the study area to workplaces outside of the Borough are being undertaken by car due to their significant mobility advantage in terms of journey times, with only 8% being made by bus or train.

- Cheaper, more attractive alternatives to the private car are essential to enable the residents of a largely deprived study area to be able to better access employment, educational and leisure opportunities and prevent them from becoming more economically isolated.

3. The region contains some areas of relatively high deprivation

- The Borough is the 26th most deprived local authority in the country, with relatively low economic activity, employment rates and skill levels. Areas of extremely high levels of deprivation are located in the western and southern parts of the study area, including within Carr Mill itself.

- While there are numerous causes of deprivation, poor public transport access to employment and education is a key factor in how residents can become isolated from opportunities and services that can improve their quality of life.

4. Despite poor connectivity, there are low levels of car ownership that results in high dependency on public transport services

- Partly due to the relatively high levels of deprivation, Carr Mill itself has relatively low levels of car ownership with an average of 43% of households without a car. This results in a higher dependency on the public transport network for local, regional, and longer distance journeys, although as noted above the study area suffers from poor public transport accessibility.

- However, there are some parts of the study area where a higher proportion of households own a car. As such, improvements in public transport connectivity in the study area could also reduce reliance upon the car for travel for these households.

5. Local roads can experience high levels of congestion, limiting journey times for car and bus

- 38% of total commuting journeys from the study area are made by car or van to workplaces in the Borough. Similarly, 45% of car commuter trips to the study area originate from locations within the Borough. This creates a high level of demand on the traffic network at peak periods which can cause congestion, slowing journey times for other cars and buses at key junctions and pinch points.

6. Accommodating planned housing growth will place further strain on the transport network

- The Borough's draft Local Plan (2019) includes plans for the development of 1,848 units in the study by 2036/2037. The bulk of this development is to take place on sites at Cowley Hill (1,100 units) and at Florida Farm (522 units).

- Without high-quality public transport intervention, cumulatively these developments will generate a significant increase in private vehicle trips on the highway network, with the resultant traffic impacts causing further congestion and poorer air quality.

7. Dependency on carbon-intensive modes makes achieving net zero challenging

- The proportion of commuter trips from the study area undertaken by car or van is 10 percentage points higher than the regional average, and 17 above the national average. This highlights a significant dependency on private vehicles which will be hugely challenging to overcome without an effective public transport interventions. With some air quality estimates indicating moderate to poor levels of NO2 in the study area, it is likely these will exacerbate without a step change in mode shift.

- The lack of a convenient public transport network compounds air quality problems and runs counter to local and national decarbonisation policy. Reducing dependency on car travel is an important facet of reducing carbon emissions and improving local air quality and can only be achieved if there are regular accessible sustainable transport options available to residents, such as restoring connectivity to the rail network.

2.5. Strategic Scheme Objectives

Based on the analysis in the previous sections, a set of scheme objectives have been developed. These are based on the policy, strategic and transport context of the area, and have been designed to address key problems and opportunities identified. The objectives are set out below.

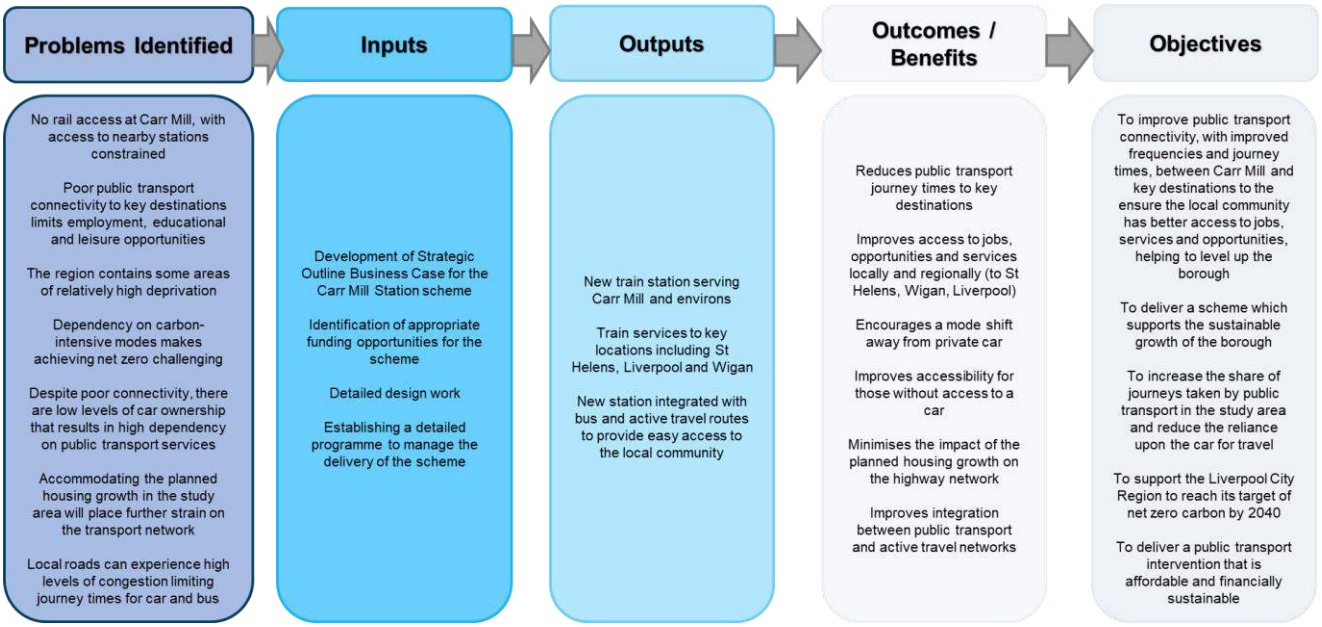
- **Objective 1:** To improve transport connectivity to key regional destinations and markets to the ensure the local community has better access to jobs, services and opportunities, helping to level up the borough
- **Objective 2:** To deliver a scheme which supports the sustainable growth of the borough
- **Objective 3:** To increase the share of journeys taken by public transport in the study area and reduce the reliance upon the car for travel
- **Objective 4:** To support the Liverpool City Region to reach its target of net zero carbon by 2040
- **Objective 5:** To deliver a public transport intervention that is affordable and financially sustainable

2.6. Logic Map

Figure 2-23 sets out the Logic Map for the scheme and shows linkages between its key components and the objectives. It shows the process by which the scheme outputs will deliver the objectives and produces a casual logic pathway.

- **Context and Problems Identified** – a summary of the issues and problems identified, and context in which they are located;
- **Inputs** – what is being invested in terms of money, resources, and activities;
- **Outputs** - what the scheme is producing, including new connections, infrastructure, and opening up of active travel routes etc;
- **Benefits/Outcomes** – short and medium-term results, such as reduced journey times; and
- **Impacts/Meeting Scheme Objectives** – the benefits of the scheme to the study area

Figure 2-23 - Logic Map



2.7. Option Development and Assessment

This section outlines the approach that was taken to identify, assess and shortlist a wide range of different transport options capable of meeting the strategic objective as identified above.

2.7.1. Summary of option development and assessment process

The above sections have outlined the existing policy landscape, the relevant socio-economic context and the transport characteristics of the study area. The findings from these sections have informed the identification of a series of problems which a future scheme would seek to address (see section 0) in order to achieve the scheme objectives defined in section 2.5.

A three-stage assessment framework was developed to guide the option sifting and assessment process, in line with the Transport Analysis Guidance (TAG) - Transport Appraisal Process. The first stage of this process examined at a strategic level how different modal options might perform against the identified objectives. The second stage then examined a long list of rail options developed jointly by Atkins and St Helens Borough Council at an initial optioneering workshop in March 2022, performed a technical and deliverability level. Finally a more detailed economic appraisal was undertaken of the shortlisted options to identify a preferred scheme.

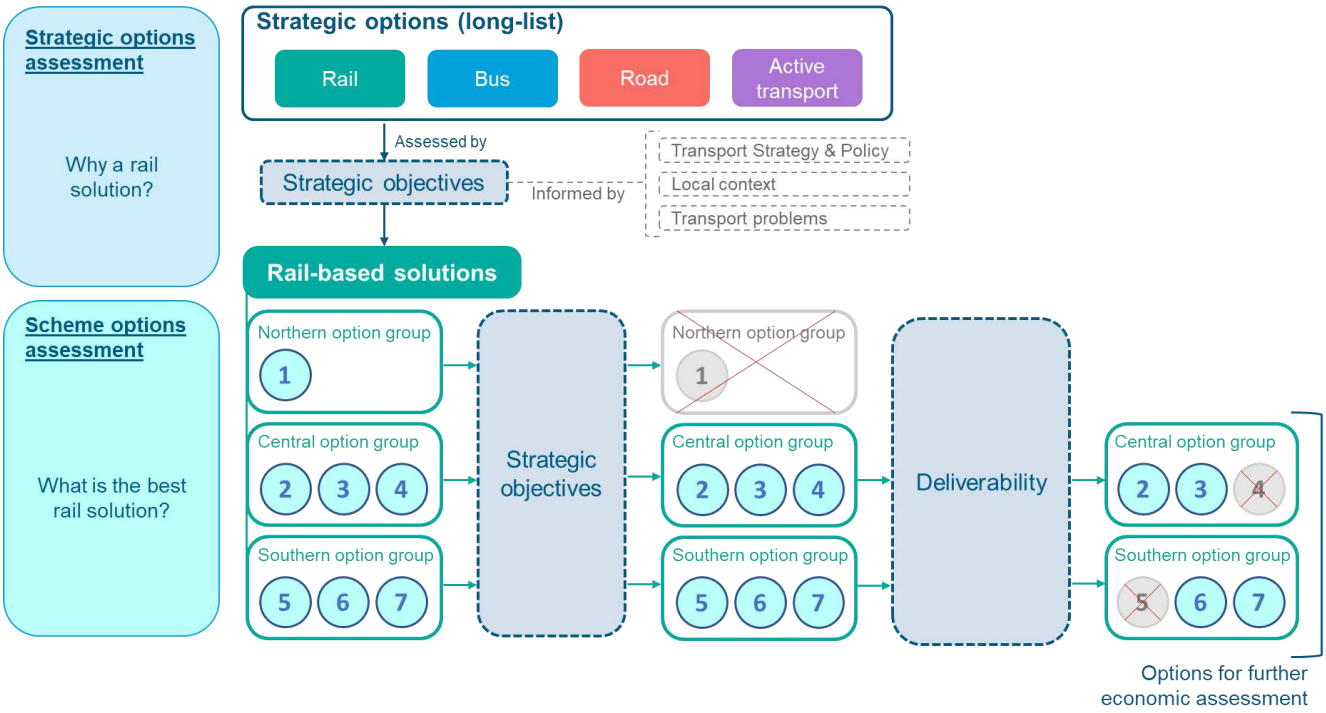
This assessment process is outlined in

Figure 2-24 and aims to answer:

- At a modally strategic level, why is a rail-based solution is a suitable intervention to meet the strategic objectives and tackle the identified transport problems?
- At a scheme level, what are the most likely rail options that will effectively achieve the scheme objectives while being relatively deliverable?

The four strategic modal options are described further in Section 2.7.2, whilst the details of the longlisted rail scheme options are presented Section 2.7.3.

Figure 2-24 – Summary of option development and assessment process



2.7.2. Strategic Options Assessment

2.7.2.1. Strategic options description

Stage one of the assessment framework is the development and assessment of the high-order strategic options across the main alternative modes. It identifies a broad range of solutions that can potentially be implemented in response to the local transport problems. These strategic options are then assessed against the strategic scheme objectives, which have been established in the earlier sections of the document. This initial assessment will determine whether a rail solution is a suitable option in meeting the strategic objectives.

Four main strategic options have been identified and are discussed below respectively:

Table 2-17 – Strategic options and descriptions

Strategic options	Descriptions
Rail-based	Rail-based solutions include all options that will provide stopping passenger rail services at a new station in Carr Mill. These options may have different station locations, designs and service configurations, but will all deliver the same high-level outcome, which is connecting Carr Mill by rail to major centres such as Liverpool and Wigan. The different rail scheme options will be discussed in a later section of this report if a rail-based solution is proven to be superior to other non-rail strategic options.
Bus-based	Bus-based solutions include potential interventions that enhance the existing bus connection between the study area to where rail services are available. In the case of Carr Mill, a suitable option is the expansion of the existing bus service between Carr Mill and St Helens town centre, from which larger centres such as Liverpool and Wigan can be accessed by rail.
Highway-based	The main target of a highway-based solution is to meet the needs of private vehicle users. This can be achieved by improving to the highway network between Carr Mill and St Helens town centre along the A571, which will enhance connectivity and potential journey times for residents to the north of St Helens.
Active travel-based	Active travel-based solutions aim to provide cycling or/and walking linkages between Carr Mill and St Helens town centre, from which larger centres such as Liverpool and Wigan can be accessed by rail. To achieve this, one or more of the following elements may be considered: Provision of cycle path(s) along key roads such as the A571. Higher quality end-of-trip cycle storages and facilities at St Helens Central It is worth noting that an intervention that establishes a new public transport service that can be more easily accessed by walking or cycling is not considered an active travel-based solution.

2.7.2.2. Strategic options sifting

The four strategic response options are then considered and assessed based on their alignment with the strategic scheme objectives listed in Section 2.5. Using the scoring system outlined in Table 2-18, Table 2-19 presents the assessments of the strategic options based on their alignments with the strategic objectives.

Table 2-18: Scoring system used to assess options against the strategic objectives

Score	Description
2	Strong Alignment
1	Alignment
0	Neutral / Not applicable
-1	Contradiction

Table 2-19: Alignment of the strategic options with the strategic scheme objectives

Strategic scheme objectives		Strategic Options			
		Rail	Bus	Highway	Active Transport
OBJ1	Improve transport connectivity to key regional destinations and markets to the ensure the local community has better access to jobs, services and opportunities, helping to level up the borough.	A rail service will provide the highest quality connection from Carr Mill to the many larger centres, such as Liverpool and Wigan. Journeys by train to these centres will be fast and direct. Rail journeys are reliable and will not be affected by existing or future road traffic congestion. Analysis in an earlier section of this report has identified strong travel demand from the study area to these centres. This means a provision of new rail service better link its residents to the jobs, services and opportunities they desire to access.	Expanding the existing bus service 352 will enhance access to St Helens. However, large centres such as Liverpool and Wigan can only be reached by changing in St Helens from the bus network to onward rail journeys. A bus-based option will therefore not achieve the same level of connectivity uplift as a rail option providing direct access to these larger centres.	By tackling highway congestion along the A571 connecting Carr Mill and St Helens town centre can potentially reduce journey times for residents of the study area. However, a highway-based option does have certain limitations, as it: • Will not improve connectivity for those who do not have a car or prefer to travel by public transport • Requires transfer onto rail services at St Helens for journeys to larger centres such as Liverpool and Wigan.	Generally, investing in active travel infrastructure can be effective in improving walking and cycling connectivity and therefore promoting an uptake of these active modes. Currently, St Helens Central is approximately 30-minute walk away from the study area, and 10 minutes by cycling. Given the journey time, it is possible that infrastructure improvements will lead to an update in active travel modes, particularly cycling. However, it is not expected to be as effective as a rail-based solution, which brings direct rail access closer to the study area.
		Strong alignment +2	Alignment +1	Alignment +1	Alignment +1
OBJ2	Deliver a scheme which supports the sustainable growth of the borough.	Sustainable growth in the borough needs to be facilitated by high-quality transport options connection new developments to where jobs, schools and services are. A rail-based solution can offer the highest quality public transport option to the largest range of destinations.	A bus-based solution will provide an adequate option for future residents of the planned developments. However, unlike a rail solution, it will not provide a direct service to larger centres such as Liverpool and Wigan.	Ensuring road connection between Carr Mill and St Helens town centre is crucial in supporting the planned developments in the study area. However, there are limitations associated with a highway-based option, as discussed above. Further, future residents of the planned developments will likely be more reliant on cars if driving is their only option. This may limit the effectiveness of this solution in the long term, as congestions will worsen as the result of increasing car use.	Although it is important to provide high-quality active travel connecting to the planned developments, it alone may not be enough to meet the transport needs for the growing community. Cycling may be an attractive mode for some as their main access St Helens station, from which onward public transport trips can be made. However, walking up to half an hour each way to the nearest rail station may not be an option for most people.
		Strong alignment +2	Alignment +1	Alignment +1	Alignment +1
OBJ3	Increase the share of journeys taken by public transport in the study area	Travelling by rail is generally faster, more direct and reliable when compared to driving. As such, it is the option with the biggest potential	Improving bus services will boost patronage by attracting	Further investments in road infrastructure will encourage more people to drive, leading to induce	Investing in active travel infrastructure can promote a mode shift away from private vehicle for

Strategic scheme objectives		Strategic Options			
		Rail	Bus	Highway	Active Transport
	and reduce the reliance upon the car for travel.	to generate a major shift away from private vehicle modes.	those commuters who would have otherwise driven. However, due to reasons mentioned above, a bus-based option will likely lead to a smaller increase in public transport usage compared to rail.	demand for road travel and a higher reliance on car.	travel some, especially those who cycles. However, for most people, walking up to 30 minutes each way to the nearest rail station will unlikely be an option attractive enough to compete with driving.
		Strong alignment +2	Alignment +1	Contradiction -1	Alignment +1
OBJ4	Support the Liverpool City Region to reach its target of net zero carbon by 2040.	By attaching people who would have otherwise driven, a rail-based solution will directly contribute to LCR's net zero target.	A bus-based option will also lead to fewer cars on the road network, in line with LCR's net zero goals. However, the scale of its impact is likely smaller than a rail solution.	A highway-based option is expected to encourage driving, which will lead to additional carbon emissions,. This is in direct conflict with LCR's net zero target.	Better active infrastructure will promote walking and cycling which will replace some trips that would have otherwise been done by car. This in line with LCR's net zero target. However, as mentioned above, it is not expected to facilitate a major shift away from driving unless there a significant uptake of cycling by Carr Mill residents.
		Strong alignment +2	Alignment +1	Contradiction -1	Alignment +1
OBJ5	Deliver an intervention that is affordable and financially sustainable	All rail-based solutions will likely require a significant amount of up-front capital investment to deliver the required station and other infrastructure, supported by some on-going costs to operate the services and the rail station.	Given that this option will be an extension of an existing bus service it is likely that associated costs and feasibility of operation will be lower than a new rail station.	Although infrastructure costs will be significantly lower than providing a new rail station, it is unknown at this stage if significant improvements and capacity increases can be achieved along the A571.	Although infrastructure costs will be significantly lower than providing a new rail station, there are a number of constraints en-route to provide a suitable direct route to/from the town centre.
		Discussed but not assessed at the strategic response level			

Summary

Strategic Options	Rail	Bus	Highway	Active Transport
Combined score (out of a max of 8)	**8**	**4**	**0**	**4**

2.7.2.3. Strategic options assessment outcome

Of the four broad categories of strategic options assessed, a rail-based solution is found to best meet the strategic objectives.

A rail service will provide the highest quality public transport connection from Carr Mill to a wide range of centres, including Liverpool, Wigan and St Helens. It will establish new direct public transport linkages that will connect the current and future residents of Carr Mill with more jobs, opportunities and services.

Travelling by rail is also expected to be fast, efficient, and reliable, making it highly attractive even when compared to driving in many cases, especially when travelling to a large urban centre like Liverpool. It is the option that can promote the strongest shift towards less carbon-intensive modes and away from private vehicle use. Such shift is pivotal in contributing to achieving LCR's net zero target.

All rail-based strategic options are therefore taken forward for more detailed considerations as well as further scheme assessments.

2.7.3. Scheme Options Assessment

2.7.3.1. Scheme assumptions

Based upon the historical work that has been undertaken to develop options for a new railway station at Carr Mill (see Section 2.3.1), requirements from the client, as well as a review of current station design standards and similar railway infrastructure in the region, the following assumptions have been drawn up for a station design which would be applicable at all of the rail scheme options, unless otherwise stated.

Table 2-20 - Scheme assumptions for a railway station at Carr Mill

Item	Assumption	Rationale
Platform length	140m	As agreed with Northern Trains at Stakeholder Workshop 26 May 2022. Sufficient to accommodate a 6x 23m vehicle train configuration. Note: The 2002 study assumed 120m, whilst the 2015 study reduced it to 100m.
Platform width	3m	As agreed at Stakeholder Workshop 26 May 2022. Exceeds 2.5m minimum width required by RIS-7016-INS.
Staffing	Staffed ticket office	As per Maghull North Station
Station building	100m^2 to accommodate ticket office, staff welfare and waiting room	Approximate size of Maghull North station building
Station Information & Security Systems	Full CCTV and PA coverage; customer information screens; help points	Required by standards
Parking/drop-off	50 space car park including 5no. disabled parking bays and 2no. spaces with EV charging Secure cycling parking Bus stop/turning area Taxi/drop-off area Sheltered waiting facilities	Assumption agreed at Stakeholder Workshop 26 May 2022. Final number of car parking spaces to be agreed at a later stage of development.

2.7.3.2. Scheme options description

Rail options have been considered in seven different locations across the study area, as shown in Figure 2-25, with each of the options having its own unique strengths and weaknesses in terms of its deliverability and the potential benefits it might bring to the area and potential passengers.

These seven rail options are geographically divided into three option groups:

- Option 1 is located north of East Lancashire Road. It is the sole option that forms the northern option group.
- Options 2, 3 and 4 are located centrally within Carr Mill, around which much of the town's current population reside. Options 2 and 3 are the closest to the location of the old Carr Mill Station. These three options form the central option group
- Options 5 to 7 are located further to the south-west towards St Helens town centre, with options 6 and 7 in particular positioned to provide a convenient public transport link for residents of the forthcoming Cowley Hill development. These three options form the southern option group.

Figure 2-25 - Long-list - Rail options

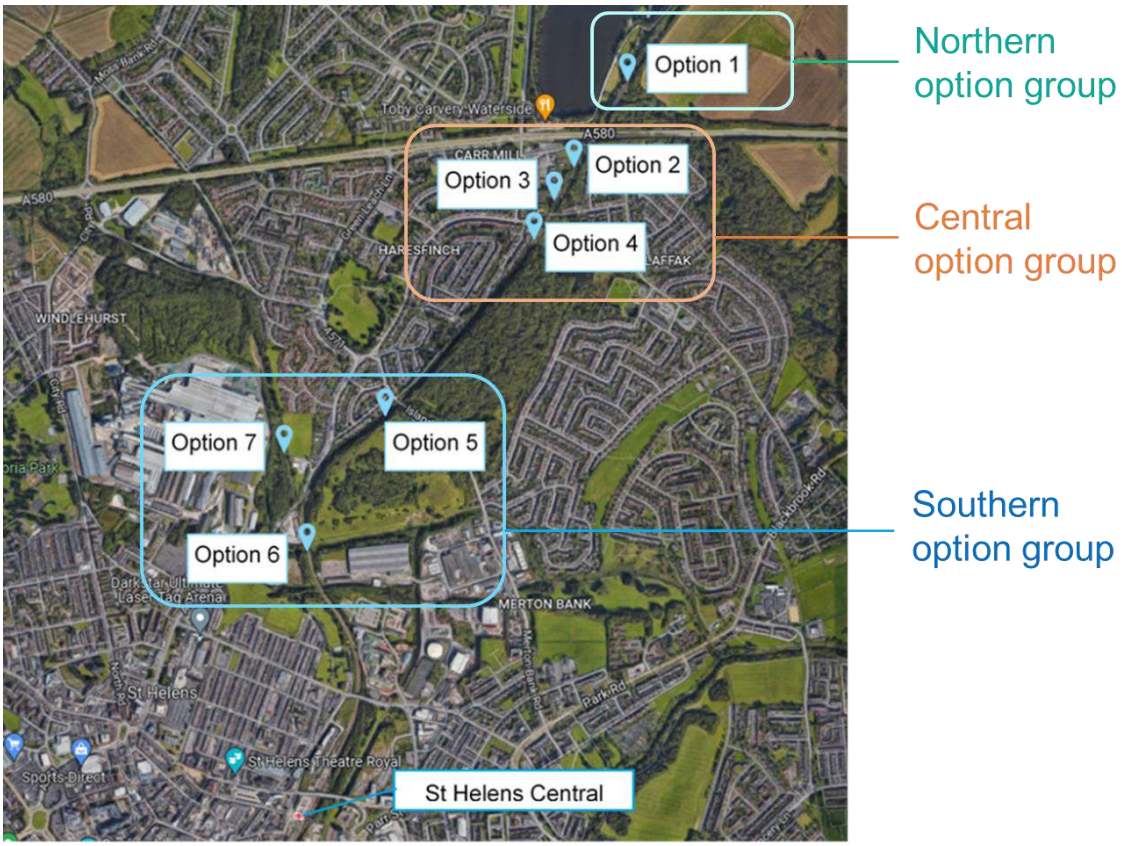
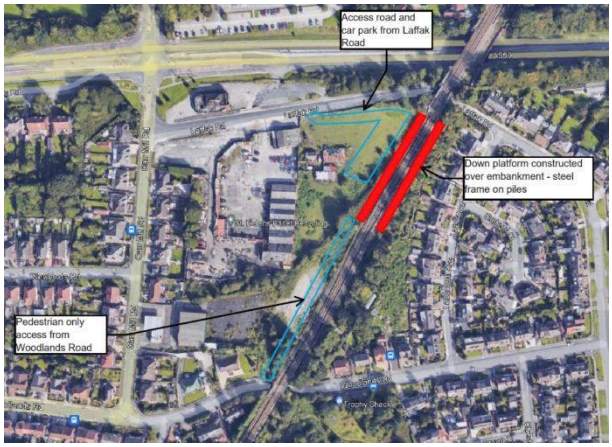


Table 2-21 to Table 2-23 presents a high-level summary of the key strategic, infrastructure and operational features of each of the seven rail options that are considered as part of the long-list of scheme options.

Table 2-21 – Northern option group (Option 1)

Options	Descriptions
Option 1 – North of East Lancashire Road 	Rail station located north of East Lancashire Road (A580), with the platforms positioned north of the viaduct which crosses Carr Mill Dam. Vehicular access to the station would be provided via a new junction on the A580 (location subject to traffic modelling), leading to a car park and station facilities located to the east of the platforms. This site could potentially accommodate a large Park and Ride facility, which may partially compensate for the fact it is in a relatively isolated location.

Table 2-22 - Northern option group (Options 2, 3 and 4)

Options	Descriptions
Option 2 – South of Laffak Road 	Option 2 is located just south of Laffak Road, on the development site which has been subject to previous studies. The platforms are to be constructed on the embankment at the north end of the site. Unlike the historical proposals, Laffak Road is not realigned and instead an access road from it connects to a car park located in the north-eastern corner of the site. Pedestrian only access is also provided from Woodlands Road.
Option 3 – North of Woodlands Road 	As with Option 2, Option 3 is also located on the development site which has been subject to previous studies, but with the platforms constructed at the south end of the site. Vehicular access to the station and its car park is via Carr Mill Road. Pedestrian only access is again provided from Woodlands Road, albeit via a much shorter path due to the platforms being further to the south. The option does not require Laffak Road to be realigned, however provision can be made in the design for this to be done should it be a requirement of any future residential development on the remaining part of the site.

Option 4 – South of Woodlands Road 	Rail station located on the embankment to the south of Woodlands Road, between houses on Finchley Drive and Burgy Pond. Vehicular and pedestrian access to the station would be provided by a new access road and car park constructed on an existing woodland area (Islands Brow Burgy).

Table 2-23 – Southern option group (Options 5, 6 and 7)

Options	Descriptions
Option 5 – Islands Brow 	Rail station located to the north-east of Island's Brow Bridge, between Islands Brow Burgy and residential neighbourhoods near Haresfinch Park. Due to the topography of the land to the east of the railway there is no feasible location for car parking, bus interchange or drop off facilities with this option. Instead, access would be for pedestrians only, via the existing private road to the west of the railway
Option 6 – Gerard's Bridge 	Rail station located close to the Cowley Hill development site, spanning Rainford Brook on a new structure. Potential vehicular access to the station and its small car park would be via College Street (A571).

Option 7 – Gerard's Bridge (Terminus) 	Terminus rail station located to the north of Gerard's Bridge close to the Cowley Hill development site. For rail services to be able to access a new terminus station in this location, the former branch railway line would need to be reinstated. Vehicular access would be from the proposed new road running through the development site between Haresfinch Road (A571) to the south and Washway Lane to the north, providing access to a small car park and drop-off area. The design of the station would need to be carefully coordinated with the emerging plans for the residential development.

2.7.3.3. Scheme options sifting

Scheme assessment 1: against strategic scheme objectives

The first step of the scheme options sifting is the assessment of the three scheme option groups against the strategic scheme objectives. Also using the scoring system outlined in Table 2-18, this step of the assessment will determine the locations suitable for a station that will help to achieve the objectives.

Table 2-24 - Assessment of the scheme option groups against the strategic scheme objectives

Objectives		Northern *Option 1*	Central *Options 2, 3, 4*	Southern *Options 5, 6, 7*
OBJ1	Improve transport connectivity to key regional destinations and markets to the ensure the local community has better access to jobs, services and opportunities, helping to level up the borough.	The northern option (i.e. Option 1) is located further away from Carr Mill's residential areas than most of the other options. Accessing this site from the Carr Mill area would involve at least a 1km walk and crossing the main East Lancs Road. As such it is unlikely that many residents of Carr Mill would use the station, preferring instead to access the rail network via St Helens Central.	The central options are located in the heart of the study area, with the station within easy walking access of the Carr Mill, Laffak, Harefinch, and Moss Bank communities. Both vehicular and pedestrian accesses can be facilitated at these sites, providing the best transport connection out of the three groups.	Compared to the central options, the southern options are located further away from Carr Mill and closer to St Helens town centre. Many Carr Mill residents will therefore need to travel further to get to these stations. However, a station at one of these sites is expected to be the most convenient option for Carr Mill's future residents, given their proximity to the planned Cowley Hill development.
		Alignment +1	Strong alignment +2	Alignment +1
OBJ2	Deliver a scheme which supports the sustainable growth of the borough.	The northern option is the furthest away from the planned development sites in the study area. Being as far away from the planned Cowley Hill development as the existing St Helens Central station, it is not expected to contribute much to the sustainable growth of the borough.	The central options are located further away from the biggest planned development in the study area (i.e. Cowley Hill) than the southern options. However, they are the easiest to access for some other potential developments in the study area, such as the site adjacent Laffak Road and Carr Mill Road (150 units).	The southern options will be the easiest to access for future residents of the planned Cowley Hill development. Given the proximity, a significant portion of these future residents will likely access the station on foot.
		Neutral	Alignment +1	Strong alignment +2
OBJ3	Increase the share of journeys taken by public transport in the study area and reduce the reliance upon the car for travel.	Given its distance from existing and future residential areas, the northern option is better suited as a park and ride station with the provision of a large car park. Although such arrangements may promote public transport as an attractive mode for long-distance trips, local car traffic may also increase as a result. Therefore, this option will be less effective at reducing car dependency than others.	The central options are located close to existing residential areas, meaning many people will be able to walk to the station easily and get to large cities and towns such as a Liverpool and Wigan efficiently without having to drive at all. They are most likely to promote a meaningful modal shift away from driving towards public transport.	The southern options are expected to be slightly less effective than the central options, as they are further away from the existing residential areas in Carr Mill. However, given the proximity to the planned Cowley Hill development, they will be the most attractive options for future residents of the development, encouraging public transport usage and reducing car dependency amongst them.
		Neutral	Strong alignment +2	Alignment +1
OBJ4	Support the Liverpool City Region to reach its target of net zero carbon by 2040.	Consistent with the point above, as the scheme's contribution to LCR's net zero target will likely be directly correlated to the extent to which it can help to facilitate a mode shift away from driving towards less carbon-intensive modes.		
		Neutral	Strong alignment +2	Alignment +1
OBJ5	Deliver an intervention that is affordable and financially sustainable	Not compared at this stage of the assessment, as options within the same option group have varying infrastructure costs, operating expenditure and land take requirements. This will be explored and discussed in detail within the next step of the assessment against scheme deliverability.		
Combined score (out of a max of 8)		**1**	**7**	**5**
Outcome		**✕ Group excluded**	**✓ Groups taken forward for further assessment to identify the highly deliverable options within each group.**	

Scheme assessment 2: against strategic deliverability criteria

After the first step of the scheme assessment process concludes that both the central and southern options are well aligned with the strategic scheme objectives, the purpose of the second step is to identify the more deliverable options within each group, with a range of criteria as follows:

- **Infrastructure feasibility and costs –** Using Ordnance Survey background mapping data, detailed aerial photography and publicly available geo-environmental record information, a high level assessment has been carried out of the infrastructure requirements to facilitate the construction of each option in accordance with current station design standards. Platforms have been positioned according to the existing track geometry and likely form of construction proposed based on topography and site access constraints. Accesses and secondary means of escape have been proposed to achieve full accessibility to all platforms. Additional parking, station building and access route facilities have been proposed to fit within available site boundaries. Required works to railway systems have also been quantified, such as any modifications required to the electrification system, and track & signalling works required to enable the operation of the new station. This has allowed an outline bill of quantities to be developed for each option which has been used to build the cost estimates.

- **Operational feasibility and costs –** Using a combination of RouteRunner and RailSys software Atkins analysed the journey time impact of opening a new station at Carr Mill. This enabled us to calculate, along with the minimum required dwell at the station of 30-seconds, how the overall journey length would be impacted on the route between Liverpool Lime Street / St Helens Central and Garswood / Wigan North Western. Changes to journey time enabled an assessment of the railway timetable to be undertaken using ATTUne Timetable Planning software to ascertain whether the new station services at Carr Mill could be accommodated within the existing timetable structure, or whether other services would need to be amended to help accommodate the new station call. Where required, particularly in relation to Option 6 and 7, it was determined whether additional infrastructure, or changes to the infrastructure would be required to implement this new station.

- **Likely land take and environmental impacts –** Following the development of a proposed layout for each station option as described above, an assessment of the likely permanent land take was required which included any temporary land take for use as construction compounds or access routes. Publicly available geo-environmental information has been used to identify key environmental and ecological constraints such as Sites of Special Scientific Interest (SSSI), priority habitats and land use designations.

- **Project timescales, risks and uncertainties –** A high-level assessment of the likely delivery timescales, risks and uncertainties for each option has been made, based on experience of similar previous station schemes. This takes into account the likely possession requirements and availability for construction, the need to minimise disruption to the operational railway, and other issues to be addressed at future design stages such as the integration of new accesses into the local highway network.

Using the scoring system outlined in Table 2-25, a high-level qualitative assessment has been conducted for options within the central and southern option groups respectively. Table 2-26 and Table 2-27 summarise the options' performance against the deliverability criteria within the respective option group.

Table 2-25: Scoring system used to assess the scheme options against the deliverability criteria

Score	Description
1	No major challenge/ risk
0	Moderate challenges / risks
-1	Major challenges / risks

Table 2-26 – Central options – scheme deliverability assessment

Scheme Options	Option 2 *South of Laffak Road*	Option 3 *North of Woodlands Road*	Option 4 *South of Woodlands Road*
Feasibility and costs of providing required infrastructure	The northbound platform can be constructed as traditional riser wall and fill arrangement above the existing retaining wall. The southbound platform can be constructed using a lightweight steel frame on piled foundations over the existing embankment. Access between platforms would be achieved through the construction of a cut-and-cover subway below the railway, with lifts and steps to the platforms. Car parking and associated facilities would be situated to the west of the platforms, with road access via a new junction on Laffak Road An additional pedestrian-only access would be constructed alongside the western edge of the railway corridor linking the station with Woodlands Road It is worth noting that an existing domestic electrical substation is located next to the former petrol station on Carr Mill Road, which may minimise the costs associated with the provision of a power supply to the station.	Under Option 3, car parking and associated facilities would be situated to the west of the platforms, with road access via a new junction on Carr Mill Road. The other arrangements will be the same as under option 2, including the platforms, access between platforms, additional pedestrian access and power supply.	This station location option is hindered by the proximity of the residential properties on Finchley Road, and the topography of the plot of land to the east of the site which would be used for accesses and car parking, which would require more significant earthworks and retaining structures than other options. Both platforms would be constructed approximately at grade, most likely with standard front and rear riser walls and solid fill. Due to topography, access between platforms would need to be via stairs, lifts and a new station footbridge. Space for access facilities and car parking is limited and would need to be constructed on an area of woodland north of Burgy Pond, with access from Woodlands Road. The poor alignment and visibility on Woodlands Road in this location would make the junction difficult to achieve, and subject to further investigations may result in the need to replace the existing railway bridge to allow the road alignment to be improved.
	No major challenges +1	No major challenges +1	Major challenges / risks -1
Feasibility and costs of providing service	The ability to provide a broadly half hourly service throughout much of the day would appear to be feasible at all three locations. Services calling at Carr Mill would be part of the regular 'all stations' service between Liverpool Lime Street and Wigan North Western and therefore, no additional train crew or rolling stock would be required. The station location would require cognisance of the gradient to be considered given that this is at approximately 1 in 86.		
	No major challenges +1	No major challenges +1	No major challenges +1
Likely land take and environmental impact	Platforms and associated facilities would be located within the Network Rail boundary, however the car park and accesses would require land take from the some brownfield land west of the railway, with additional land take alongside the railway corridor for a pedestrian access to Woodlands Road, and to the east of the railway to provide an emergency evacuation route from the southbound platform. The most significant environmental impacts are likely to be light, noise and visual intrusion to residential properties along the rail alignment and adjacent to the new station car park. Such impacts could likely be mitigated through the provision of an appropriate visual/acoustic barrier to the rear of the southbound platform and car park boundary, and baffles on the lighting columns.		The platforms and footbridge would be situated in close proximity to the residential properties n Finchley Road, with the northbound platform and stairs, lifts and footbridge directly overlooking these properties. Due to the height of the footbridge these negative impacts would be difficult to mitigate. Construction of the accesses and car park would result in loss of woodland listed by Natural England as a Priority Habitat area.

Scheme Options	Option 2 *South of Laffak Road*	Option 3 *North of Woodlands Road*	Option 4 *South of Woodlands Road*
	The site is situated within approximately 700m of the Stanley Bank Meadow SSSI and any impact in this respect will need to be assessed as part of a formal environmental appraisal at a future stage of the project.		
	No major challenges +1	No major challenges +1	Major challenges / risks -1
Project timescales, risks and uncertainties	Access to the southbound platform is limited which will likely necessitate relatively lengthy or numerous possessions for construction of the platforms from the track, in addition to the possession required for construction of the subway. The poor highway alignment, narrow width and lack of visibility at Laffak Road and Woodlands Road underbridges represents a risk to the design of the access points.	The timescales, risks and uncertainties aof Option 3 are almost identical to those of Option 2, except visibility problems at Laffak Road bridge can be avoided by bringing the main station access off Carr Mill Road.	This option would be more difficult to construct due to limited access. It is assumed both platforms would need to be constructed predominantly from track, increasing disruption to the operational station during construction. The environmental issues discussed above represent a significant risk to the project. Construction access for the car park is further constrained by Burgy Pond, the topography of the site, and an existing large electrical transmission pylon.
	Moderate challenges / risks +0	Moderate challenges / risks +0	Major challenges / risks -1
Summary			
Combined score (out of a max of 4)	**3**	**3**	**-2**
Outcome	✓ **Scheme options taken forward for economic appraisal**		✕ **Scheme option excluded**

Table 2-27 – Southern options – scheme deliverability assessment

Scheme Options	Option 5 *Islands Brow*	Option 6 *Gerard's Bridge*	Option 7 *Gerard's Bridge (Terminus)*
Feasibility and costs of providing required infrastructure	Due to the topography of the land to the east of the railway there is no feasible location for car parking, bus interchange or drop off facilities with this option. Instead, access would be for pedestrians only, via the existing private road to the west of the railway, although there will be significant planning issues associated with the use of this road which may render the option not feasibly deliverable. Platforms would be constructed largely at grade with some retaining structures required. Access would be from the adjacent road, with stairs, lifts and a footbridge providing access to the opposite platform.	There is a small length of straight track immediately south of Gerard's Bridge Junction which from a track alignment perspective could accommodate a station. The platforms would be positioned where the railway crosses Rainford Brook. The existing structure would be removed and replaced with a wider bridge to support the platforms. Either side of the new structure, the platforms would be constructed over the existing embankments, most likely as lightweight steel frames on piled foundations. 140m long platforms cannot be accommodated due to the track curvature either side of the station. The exact maximum platform length would need to be determined at a future design stage, however it may be as little as 80m and would therefore require extensive Automatic Selective Door Opening which is unlikely to be acceptable operationally. Access to the platforms would be from the existing footpath alongside Rainford Brook, via stairs and lifts to each platform. A small piece of land could feasibly accommodate a small number of disabled parking spaces and a station building, but any drop off and bus facilities would need to be accommodated on the main road, which may have adverse traffic impacts on what is already a busy and relatively narrow road.	This more radical option involves reinstating the Cowley Hill line with approx. 700m of new single track. The line will require full track renewal and electrification, with a new turnout at Gerard's Bridge junction and a new crossover just south of the junction. Associated signalling works will also be required to facilitate the junction works. The only feasible location for the station along the branch line would be at the current northern extent of the line between the historic rail corridor and the Rainford Brook watercourse. The design of the station would need to be carefully coordinated with the emerging plans for the residential development. As the line would be single track, only a single platform is required, and this could be built relatively easily at grade, with no need for lifts, stairs or structures above or under the track. Space for car parking is limited so it is assumed this would be limited to disabled and staff parking only, alongside the usual bus interchange, drop off and cycle parking facilities. Given the location of this station, and the need to use the former Pilkington Glass/Cowley Hill line additional infrastructure changes would be required at Gerards Bridge Junction to upgrade the signalling and provide a new junction for the circa 700m long branch line to the station.
	Major challenges / risks -1	Major challenges / risks -1	Major challenges / risks -1
Feasibility and costs of providing service	The ability to provide a broadly half hourly service throughout much of the day would appear to be feasible at this location. Services calling at Carr Mill would be part of the regular 'all stations' service between Liverpool Lime Street and Wigan North Western, and therefore, no additional train crew or rolling stock would be required.		Unlike the other options, it would only be feasible to provide a broadly hourly service at this location throughout much of the day, albeit this service would operate as a Liverpool Lime Street to Carr Mill service. Direct rail connection to Wigan is not achievable under this option. To minimise the impact of station working at Liverpool Lime Street services would have a turnround of approximately 45 minutes at Carr Mill. Two trains, and associated train crew (driver/guard on multiple shifts to cover

Scheme Options	Option 5 *Islands Brow*	Option 6 *Gerard's Bridge*	Option 7 *Gerard's Bridge (Terminus)*
			operation throughout the day) would be required to operate a service to this location.
	No major challenges +1	No major challenges +1	Moderate challenges / risks +0
Likely land take and environmental impact	Station accesses need to be provided by the private road to the west of the railway, which may involve significant planning issues. Further, the areas both side of the railway corridor are listed by Natural England as a Priority Habitat woodland area. However, as the station would be constructed predominantly within the railway boundary, negative impacts would be minimal.	Only a small amount of land take is required for this option, but the works could have some impact on the recreational value of the land around Rainford Brook, and on the watercourse itself, which need to be carefully planned and managed.	There would be some negative impacts on neighbouring properties on Blenheim Way but the wooded area between the houses and the railway will act as a buffer, and further mitigation measures could be incorporated into the design. The station access and parking facilities would involve some loss of trees from a relatively small wooded area identified as priority habitat by Natural England.
	Moderate challenges / risks +0	No major challenges +1	No major challenges +1
Project timescales, risks and uncertainties	This option would be difficult to construct due to limited access. It is assumed both platforms would need to be constructed predominantly from track, increasing disruption to the operational station during construction. The environmental issues discussed above also represent a risk to the project.	This would be a relatively lengthy option to deliver due to design, procurement, manufacture and installation of the major new structure, and associated other works. Opportunities to construct the large bridge alongside and slide into place in a short possession are limited by the tightly constrained site and the watercourse. Therefore extensive disruption to the railway during construction is to be expected. This option will also have significant issues with utilities to overcome compared to other options. An existing pipe bridge alongside the existing railway bridge will need to be diverted, and there is evidence of other extensive buried services in the area which may be impacted. Further, this option is also subject to an assessment of the impact of the new access on traffic on the A571.	Some disruptive possessions would be required in order to carry out the junction works, however the station itself would be constructed on the branch line which is currently non-operational, thus causing less disruption to the railway during construction than the other options. Overall construction duration would be lengthened however due to the additional track, OLE & signalling works. The main risk to the deliverability of this option comes from the interface with the proposed development scheme upon which the station proposal would be reliant. This needs to be carefully managed.
	Major challenges / risks -1	Major challenges / risks -1	Moderate challenges / risks +0
Summary			
Combined score (out of a max of 4)	**-1**	**0**	**0**
Outcome	✕ **Scheme option excluded**	✓ **Scheme options taken forward for economic appraisal**	

2.7.3.4. Scheme options assessment outcome

A preliminary assessment against the strategic scheme objectives concludes that the central and southern scheme option groups will likely provide superior strategic fit against these objectives and are therefore more likely to be effectively address the identified transport problems.

Options within each separate option group are then compared with each other against a set of deliverability criteria. The key findings are:

Within the central group,

- Options 2 and 3 are expected to be the least challenging to deliver. Having already been subject to previous studies and public consultations, these sites have few land acquisition, design, construction or operational issues.
- Despite achieving the same transport outcomes as the other options within the central group, Option 4 is considerably harder to deliver due to its proximity to residential properties and a Priority Habitat area.

Within the southern group,

- Option 5 carries significant planning risks as it requires a private road access for pedestrian access. It will also lead to more lengthy disruption to rail operation as both platforms will likely need to be constructed predominantly from track due to limited access. Further, a station at this site is also expected to be less attractive to users, as the provision of a carpark is not feasible under this option.
- Options 6 and 7 both carry some challenges and risks regarding their design and construction. These challenges and risks can potentially be managed but may lead to escalated construction costs.
- Option 7 differs from all other options as it can only accommodate a broadly hourly service (rather than half hourly) that can run between Liverpool and Carr Mill. However, its proximity to the planed Cowley Hill development makes it optimal in supporting the town's future population growth. Therefore, it should still be an option to consider further.

As a result, Options 2, 3 of the central group and 6, 7 of the southern group have been chosen for further economic appraisal, which will be presented in Section 3. The overall scheme assessment and selection process and findings are summarised by Table 2-28.

Table 2-28 - Average scores of each option across the step 1 and 2 assessment process

Group	Option	Strategic alignment score	Deliverability score	Outcome
Northern	**1**	1	No assessed	Excluded
Central	**2**	7	3	Economic assessment
	3		3	Economic assessment
	4		-2	Excluded
Southern	**5**	5	-1	Excluded
	6		0	Economic assessment
	7		0	Economic assessment

2.7.4. Stakeholder views

A new rail station at Carr Mill has been discussed for more than 20 years, but plans have never materialised. However, the concept has widespread support from both local councillors and the Liverpool City Region.

In Autumn 2021 it was reported that the Liverpool City Region is to receive £710m to fund transport in the area, including new stations and destinations on the Merseyrail network as well as other sustainable transport infrastructure.

The proposal for a new station at Carr Mill is still at an early stage but was identified by the Metro Mayor as part of his manifesto pledge to deliver 'Merseyrail for All', an ambitious long-term plan to extend the local rail network into communities right across the city region and beyond. Mayor Steve Rotheram said his 'Merseyrail

for All' scheme is a commitment to ensuring that every community is well served by an integrated public transport network with new and refurbished train stations high on the agenda. It is also included as a key proposal in the Liverpool City Region 'Long Term Rail Strategy'.

Furthermore, it has key local support from St Helens Borough Council's cabinet member for environment and transport. Cllr Bowden said, 'A railway station at Carr Mill has been an aspiration of the council for many years, with strong support shown by the Liverpool City Region Metro Mayor and its inclusion within the Liverpool City Region Combined Authority Long-Term Rail Strategy'.

Throughout the preparation of the Strategic Outline Business Case key stakeholders have been involved and provided their support in the setting of the strategic objectives, the identification of options associated with both rail and other modes of travel and the analysis undertaken to assess the case for a new rail station at Carr Mill. These stakeholders include Merseytravel, Transport/Highway officers at St Helens MBC, Network Rail and Northern Trains.

2.7.5. Risks, Constraints and Dependencies

The key risks, constraints and dependencies identified with the delivery of potential scheme options include:

Strategic:

- Long-term adoption of home working as the result of COVID-19 may reduce travel demand going forward. The potential benefits and viability of the scheme can be negatively impacted if the recovery of passenger demand ends up lower or slower than expected.
- The actual environmental benefits of the scheme may be affected by a faster-than-expected uptake of electric and zero-emission vehicles.
- The full delivery of scheme benefits depends on future developments and population growth in the study are.

Deliverability:

- For both central options (2 and 3), the poor highway alignment, narrow width and lack of visibility at Woodlands Road underbridge represents a risk to the design of the access points. For option 3, visibility risks are also present at the Laffak Road underbridge.
- Both central options (2 and 3) are within approximately 700m of the Stanley Bank Meadow SSSI. The potential environmental impact will need to be assessed as part of a formal environmental appraisal at a future stage of the project, the outcome of which may influence scheme feasibility and design.
- The delivery of Option 6 is dependent on the feasibility of various elements, including the replacement of the existing bridge structure, the diversion of utilities and the outcome of a traffic impact assessment.
- The key risk associated with the Option 7 is the proposed development at Cowley Hill. Interface with the development would pose significant risk to the scheme under this option.

2.8. Strategic Dimension Summary and Conclusions

2.8.1. Context and case for intervention

With a population over 35,000, there are some vibrant communities in Carr Mill and its surrounding areas. However, despite being located the railway line connecting Liverpool with Wigan and beyond, this area is not served by a railway station. The closest railway stations are Garswood to the north-east (approx. 3.5km) and St Helens Central to the south-west (approx. 2.5km).

About half of the population in the study areas work outside of the Borough, with a significant number of them working in key employment locations including Wigan, Warrington, Knowsley and Liverpool. However, there is currently no public transport option providing direct connection to many of these key destinations, such as Liverpool and Wigan. Such limited public transport provision is causing a major accessibility gap between driving and public transport. For example, Wigan, Warrington and Liverpool can be accessed within 30 minutes by car, while public transport journey to these locations can take almost twice as long.

As a result, Carr Mill residents are overly reliant on private vehicle as their main mode of accessing employment and services, reflected by a larger proportion of them commuting by car compared to the regional and national averages. Without intervention, the trend of high car usage is set to continue for existing and

future residents of the study area. This is expected to lead to further traffic congestions, limiting the sustainable growth of the Borough. As a carbon-intensive mode, dependency on private vehicles also makes it challenging to achieve LCR's net zero target.

At the same time, there are low levels of car ownership in and around the study area, possibly due to a relative high level of deprivation within the region. Without an efficient alternative option, those without a car will have access to fewer employment, educational and other opportunities. This will in term lead to further deprivation, forming a vicious circle.

Based on the policy, strategy and transport context of the area, the following strategic scheme objectives have been designed to address the key problems and opportunities identified:

- Improve transport connectivity to key regional destinations and markets to the ensure the local community has better access to jobs, services and opportunities, helping to level up the borough.
- Deliver a scheme which supports the sustainable growth of the borough.
- Increase the share of journeys taken by public transport in the study area and reduce the reliance upon the car for travel.
- Support the Liverpool City Region to reach its target of net zero carbon by 2040.
- Deliver a public transport intervention that is affordable and financially sustainable.

2.8.2. A rail solution for Carr Mill

An assessment of strategic options against the strategic scheme objectives concluded that a rail-based solution is the suitable out of the four broad categories.

A rail service will provide the highest quality public transport connection from Carr Mill to a wide range of centres, including Liverpool, Wigan and St Helens. It will establish new direct public transport linkages that will connect the current and future residents of Carr Mill with more jobs, opportunities and services.

Travelling by rail is also expected to be fast, efficient, and reliable, making it highly attractive even when compared to driving in many cases, especially when travelling to a large urban centre like Liverpool. It is the option that can promote the strongest shift towards less carbon-intensive modes and away from private vehicle use. Such shift is pivotal in contributing to achieving LCR's net zero target.

All rail-based strategic options are therefore taken forward for more detailed considerations as well as further scheme assessments.

2.8.3. Preferred scheme options for economic assessments

A preliminary assessment against the strategic scheme objectives concludes that the central and southern scheme option groups will likely provide superior strategic fit against these objectives, as they are:

- Located closer to the existing communities within the study area.
- Within proximity to planned developments and are therefore well suited to sustainably support the future growth of the borough.
- More easily accessible on foot and are therefore expected to be most effective in reducing car reliance and contributing to LCR's net zero target.

Options within each option group are then compared with each other against a set of deliverability criteria. Options 2, 3 of the central group and 6, 7 of the southern group have been chosen respectively to be tested and assessed in the Economic Dimension for their potential value for money, that can identify a preferred scheme.

3. Economic Dimension

3.1. Introduction to the Economic Dimension

The purpose of the Economic Dimension is to demonstrate the value for money of the scheme in terms of the use of public funds. This is undertaken through an assessment of the scheme's likely costs and benefits, including the economic, environmental, social and distributional impacts of the proposal. In line with Treasury's appraisal requirements, the impacts considered are not limited to those directly affecting the measured economy, nor to those which can be monetised.

An economic assessment has been undertaken for each of the shortlisted options identified in the Strategic Dimension, with the aim to further understand their potential costs, benefits, distributional impacts and value for money. This analysis is used to help identify an optimum solution that best meets the identified objectives of the scheme.

The economic assessment has been undertaken in accordance with HMT Green Book DfT TAG guidance. As such options are assessed on their ability to:

- Provide good Value for Money (VfM) in relation to impacts on public accounts;
- Improve transport economic efficiency for business users and transport providers; and
- Improve transport economic efficiency for consumer users.

Economic assessment results are presented in the form of Transport Economic Efficiency (TEE), Public Accounts (PA), and Analysis of Monetised Costs and Benefits (AMCB) tables. The results are also input to an Appraisal Summary Table (AST) and combined with qualitative assessments which demonstrate overall value for money.

3.1.1. Options under Economic Appraisal

Section 2.7 within the Strategic Dimension presented how a long list of potential scheme options for delivering a new station at Carr Mill were identified and then subsequently sifted to provide a shortlist of 4 shortlisted station sites.

In the first instance this sift was undertaken at a modal level, comparing the ability of high-level rail, road, bus, and active travel options to meet the strategic objectives. This was then followed by sifting a long list of 7 scheme specific rail options on the basis of their strategic alignment, technical feasibility, deliverability, risks, and outcomes to provide a shortlist of 4 options that were felt to be worthy of further design, cost, and economic analysis within the economic dimension. The 4 station sites to be further analysed in this way are;

- **Option 2** – South of Laffak Road, served by 2 trains per hour running between Liverpool and Wigan
- **Option 3** – North of Woodlands Road, served by 2 trains per hour running between Liverpool and Wigan
- **Option 6** – Gerard's Bridge, served by 2 trains per hour running between Liverpool and Wigan
- **Option 7** – Gerard's Bridge Terminus, served by 1 train per hour running between Liverpool and Carr Mill Terminus.

This chapter presents an initial quantitative economic appraisal of costs, benefits and revenues across these 4 options, which alongside further analysis of feasibility and deliverability, identified options 2 and 3 (both of the central option group) as the preferred options, with option 2 being the easiest and cheapest to deliver.

Further qualitative appraisal and analysis of this preferred option was then undertaken in terms of assessing the social, distributional and environmental impacts, and along with some sensitivity testing this more detailed analysis has resulted in the presentation of a value for money assessment of option 2 only.

3.1.2. Appraisal Approach

The value for money of the scheme has been assessed by undertaking a valuation of the economic, social, distributional and environmental impacts of the scheme. As appropriate for this stage of the assessment. some of the impacts, principally user journey time savings, have been monetised using a TAG consistent approach, while other benefits such as the social and environmental have been assessed using more qualitative methods.

The key parameters that will drive the scheme's benefit cost ratio (BCR) and value for money (VfM), and which therefore also provide the focus of the economic case analysis within this chapter, are as follows:

- **Demand and Revenue:** The number of people using the new station is a critical driver of both benefit and revenues. To forecast the expected demand at Carr Mill a bespoke trip rate based demand model has been developed, calibrated to the demand characteristics of other local station on the Liverpool Wigan Line.
- **Time Savings:** The amount of time saved by people using the station over alternative modes or routes drives benefits to both business and non-business users. The time saving impacts have been assessed and monetised by applying the outputs of the demand model to a rule of a half appraisal approach consistent with DfT's TUBA appraisal model and TAG appraisal assumptions.
- **Highway Impacts:** Encouraging mode shift from road to rail benefits not only rail users who experience faster journey times, but also road users and the wider community who benefit from decreased congestion, improved air quality and reduced carbon emissions. Increased mode shift will generate increased benefits. The mode shift impacts are assessed and monetised using a marginal external cost approach in line with TAG guidance. The traffic impacts of passengers accessing the station itself have not been monetised.
- **Social and Distributional Impacts:** These cover the human experience of the transport system and its impact on social factors not considered as part of economic or environmental impacts and include issues such as severance, security and option values. These will be assessed in accordance with requirements set out in TAG A4-1 and A4-2.
- **Environmental Impacts**: Environmental impacts form part of the value for money assessment but are generally not monetised within the benefit cost ratio. At this stage of the business case a high-level qualitative assessment of biodiversity, townscape and landscape impacts, water environment and historic environment has been undertaken.
- **Wider Economic Impacts:** These refer to benefits not assessed as part of the time savings or highway impacts appraisal and include the economic productivity gains resulting from improvements in how well businesses are connected to each other and their employees. It also includes the longer term impacts arising from structural changes in the economic geography and development patters as businesses and households relocate in response to the scheme. At this stage of the business case these impacts have not been assessed and are only described qualitatively.
- **Costs:** The scheme's cost include both the initial capital costs of construction, and the ongoing costs of operation including maintenance and renewal. At this stage of the business case only the capital costs of construction have been considered.

3.2. Journey Time Impacts

As shown in section 2.3.5 of the Strategic Dimension, the Carr Mill area has relatively poor public transport connectivity, in large part due a lack of a convenient rail station. At the moment anyone wanting to travel to or from Carr Mill by rail would have to travel to St Helens Central, or perhaps Garswood, using an alternative mode of travel, with all the associated inconvenience, time and cost that such an interchange and reliance on alternative modes incurs.

This section examines the impact on accessibility and journey times resulting from the provision of a railway station at Carr Mill. It samples a selection of different journeys to key destination such as Liverpool and Wigan, and examines the journey time savings provided by the new station. The analysis also shows the key origins and destinations that are most likely to benefit from using the station, and hence the kind of users that the station might attract. The resulting estimates of journey time saving are then fed into the economic appraisal in Section 3.6.

3.2.1. Train Service Provision

3.2.1.1. Current Services provided on the Wigan – Liverpool Line

Carr Mill is located on the railway between Liverpool Lime Street, St Helens Central and Wigan North Western. The following services operate on this route[44]:

- **2 trains per hour Liverpool Lime Street – Wigan North Western**, calling at all stations. This service is operated by Northern.
- **1 trains per hour Liverpool Lime Street – Blackpool North**, semi-fast service calling at Huyton, St Helens Central, Wigan North Western, Euxton Balshaw Lane, Leyland, Preston, Kirkham and Wesham, Poulton-le-Fylde and Blackpool North. This service is operated by Northern.

[44] Based on the December 2019 timetable

- **4 trains per day calling at Liverpool Lime Street – Glasgow**, fast service calling at Wigan North Western, Preston, Lancaster, Penrith, Carlisle and Glasgow Central. If an intermediate stop were to added it would be St Helen's rather than Carr Mill as St Helens has greater demand and connectivity.

Table 3-1 - December 2019 hourly calling pattern on the Liverpool – Wigan Line

Origin	Liverpool Lime Street	Liverpool Lime Street	Liverpool Lime Street	Liverpool Lime Street
Liverpool Lime Street	X	X	X	X
Edge Hill	X	X		
Wavertree Technology Park	X	X		
Broad Green	X	X		
Roby	X	X		
Huyton	X	X	X	
Prescot	X	X		
Eccleston Park	X	X		
Thatto Heath	X	X		
St. Helens Central*	X	X	X	X
Garswood	X	X	X	
Bryn	X	X		
Wigan North Western	X	X	X	X
Destination	Wigan North Western	Wigan North Western	Blackpool North	Glasgow Central*

Source: December 2019 timetable. *Liverpool-Glasgow service run three times per day with an additional Liverpool-Preston service. Some trains call additionally at St Helens Central

3.2.1.2. Proposed Services at Carr Mill

Options 2, 3 and 6 would provide a station on the existing Liverpool to Wigan Line between St Helens Central and Garswood. Analysis of the current timetable as shown in appendix D shows that for options 2, 3 and 6 it is possible to allow the existing 2 trains per hour Liverpool Lime Street to Wigan service to additionally call at a new Carr Mill Station without undue impact on other services or the overall timetable. These options will not require additional rolling stock or train crews and are relatively simple to implement.

For option 7 which would be delivered on terminating branch line, a wholly new hourly service Liverpool to Carr Mill service would be introduced. Whilst Appendix D shows that this new service is could be deliverable within the current timetable, further work would be required to fully understand the resulting performance and capacity impacts. Further, Option 7 would not provide direct services to Wigan; instead users would be required to change train at St Helens Central. This option would require additional rolling stock and train crew to operate.

A summary of the resultant frequencies and journey times are shown in the table below.

Table 3-2 – Proposed calling pattern for Carr Mill Station

Journey Times from Carr Mill (in minutes)	2tph Scenarios		1tph Scenario
	Options 2 and 3	Option 6	Option 7
Wigan North Western	15	16	-
Bryn	8	9	-
Garswood	5	6	-
Carr Mill	-	-	-
St. Helens Central	3	2	5
Thatto Heath	7	6	9
Eccleston Park	10	9	12
Prescot	12	11	14
Huyton	16	15	18
Roby	18	17	20
Broad Green	22	21	24
Wavertree Technology Park	25	24	27
Edge Hill	27	26	29
Liverpool Lime Street HL/ML	32	31	34

The journey time differences for Option 2/3 over Option 6 are as a result of the station location used for Carr Mill. In Option 6, the journey time to St Helens Central and stations to Liverpool is shorter as the location is closer to these locations, whereas stations north of Carr Mill are further away. The overall journey time impact along the entire line of route from Liverpool Lime Street to Wigan North Western of including a station call at either Options 2, 3 or 6 are the same.

3.2.2. Key Destinations

The journey patterns from Carr Mill can be expected to be very similar to the journey patterns to existing stations on the Wigan – Liverpool Line such as Bryn, Garswood, Thatto Heath and Eccleston Park and St Helens Central.

Bryn, Garswood, Thatto Heath and Eccleston Park have the same train service as will be provided at Carr Mill under options 2, 3 and 6, as well as having a similar demographics within the station catchment area. Although St Helens Central has a slightly different service frequency the type of journeys made from Carr Mill would also be expected to be very similar.

Table 3-3 shows that the most popular destinations for passengers from these stations are Liverpool, and Wigan, with travel to Liverpool and Merseyside being by far the dominant flows[45]. It is therefore expected that future passengers boarding at Carr Mill will demonstrate similar travel patterns, and that most users of Carr Mill station will be travelling to or from Liverpool and Wigan, with Liverpool much the more popular destination.

Table 3-3 – Demand at other stations on the Wigan – Liverpool Line

Location	Bryn	Garswood	St. Helens Central	Thatto Heath	Eccleston Park
Liverpool Lime Street	27.4%	45.7%	45.5%	62.6%	72.6%
Wigan North Western	27.9%	20.2%	7.4%	6.0%	3.3%
St Helens Central	7.2%	10.9%	-	8.9%	3.7%
Central Manchester	14.6%	3.3%	1.7%	1.0%	0.8%
Liverpool – Blackpool Line	12.8%	14.8%	23.2%	13.4%	8.3%
Merseyrail	1.3%	1.6%	15.0%	4.2%	7.1%
Other	8.8%	3.6%	7.2%	3.8%	4.3%

Key conclusions from this analysis are:

- **Bryn:** Top 10 flows account for 88% of demand with Wigan and then Liverpool the dominant flows. Central Manchester more attractive than from other comparitor stations, but then Bryn is within Greater Manchester and further from Liverpool.

[45] Data sourced from the MOIRA model. MOIRA is an industry standard model used to assess rail services and containing data on demand and revenues between stations and on services.

- **Garswood**: Top 10 flows account for over 90% of demand with Liverpool by far the dominant flow. Wigan more attractive than St Helens - noting that Garswood is within St Helens Borough and Wigan slightly further away.
- **St Helens Central**: Top 10 flows account for only 72% of demand with Liverpool by far the dominant flow. Some reasonable flows to regional destinations not served by direct train - e.g Manchester, London, stations on the Merseyrail network.
- **Thatto Heath**: Top 10 flows account for 89% of demand with Liverpool by far the dominant flow, much more so than from Garswood and St Helens. St Helens and Wigan still the second and third highest flows, but attractiveness of St Helens has increased and Wigan has decreased with distance. Other reasonably large flows are typically served by stopping service.
- **Eccleston Park:** Top 10 flows account for 90% of demand with Liverpool by far the dominant flow. Remaining demand spread thinly across a range of stations.

3.2.3. Journey Time Impacts

An assessment of public transport journey times between Carr Mill and Liverpool and Wigan with and without Carr Mill station has been assessed using the Basemap TRACC software. Basemap TRACC determines the public transport journey time between any origin and destination pair using public transport timetable data supplemented with assumptions around walking speeds and interchange times. The outputs from TRACC can be presented graphically to show journey time isochrones or accessibility contours from any particular location. This analysis has been presented on the basis of Carr Mill Station being located at options 2 south of Laffak Road.

The results are presented in Figure 3-1 and Figure 3-2, showing that a new station at Carr Mill can save up to 15 minutes of journey time for those travelling to/from Liverpool, and up to 27 minutes to/from Wigan. It also shows that the station would not have an impact on journey times from locations beyond about a mile from the station. Figure 3-1 and Figure 3-2 therefore also provide a good indication of the likely catchment area of the proposed Carr Mill station, as the shaded areas represent those areas where using Carr Mill station will provide a journey time saving, and therefore those areas where it would be favourable to use Carr Mill over other modes.

Figure 3-1 - Public Transport Journey Time Savings for travellers to Liverpool (Option 2)

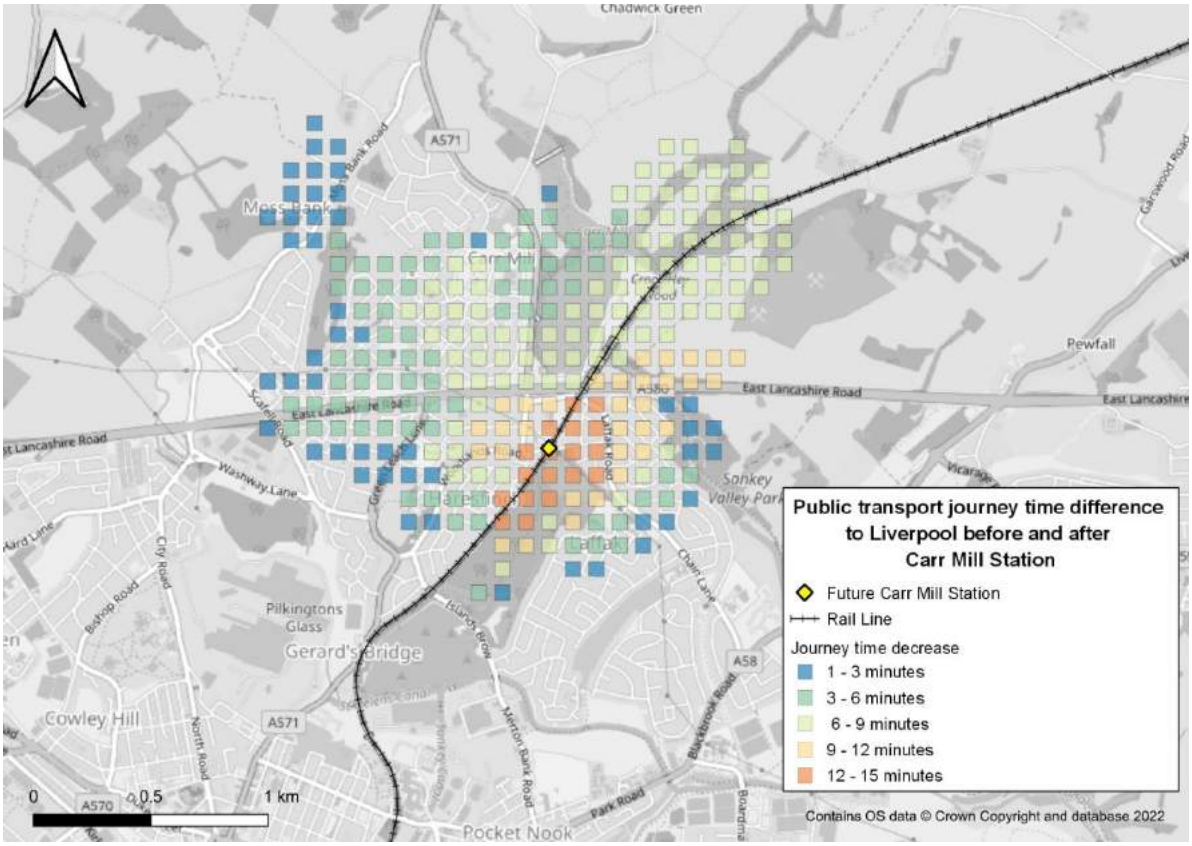
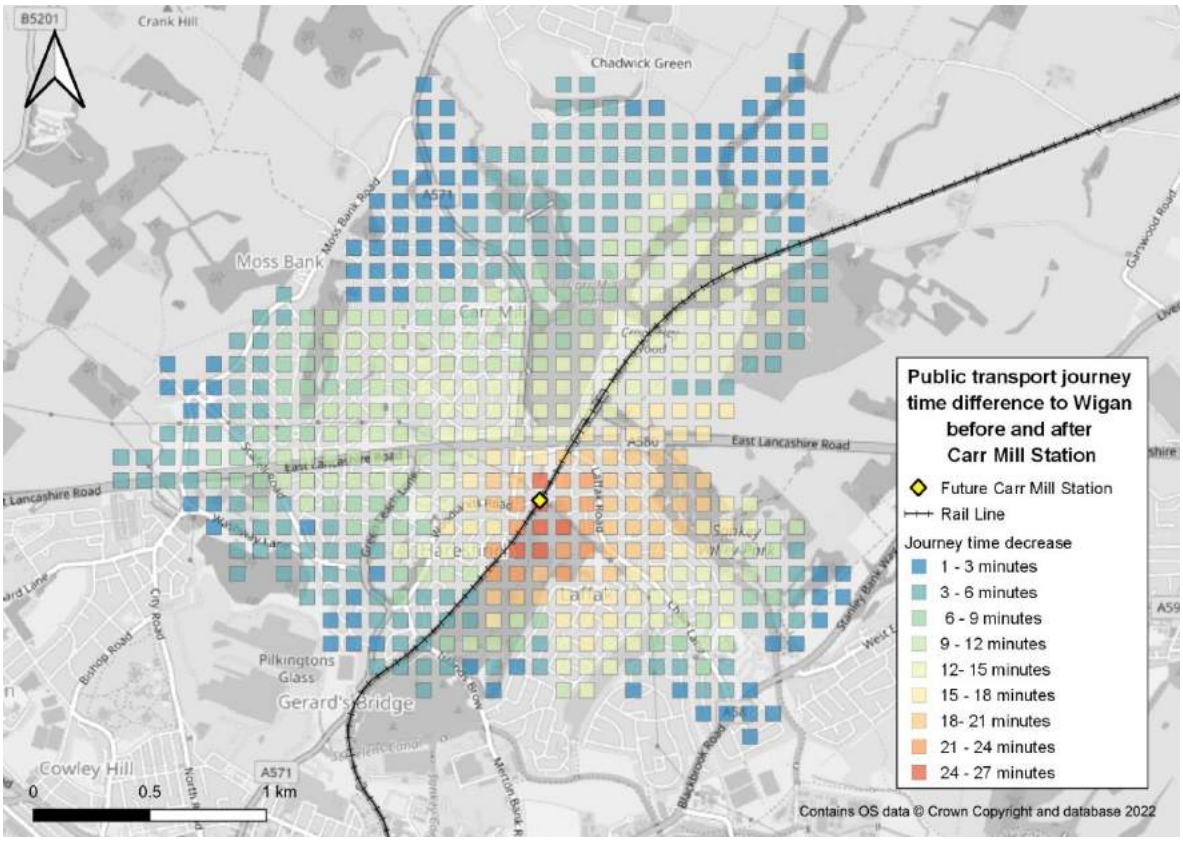


Figure 3-2 - Public Transport Journey Time Savings for travellers to Wigan (Option 2)

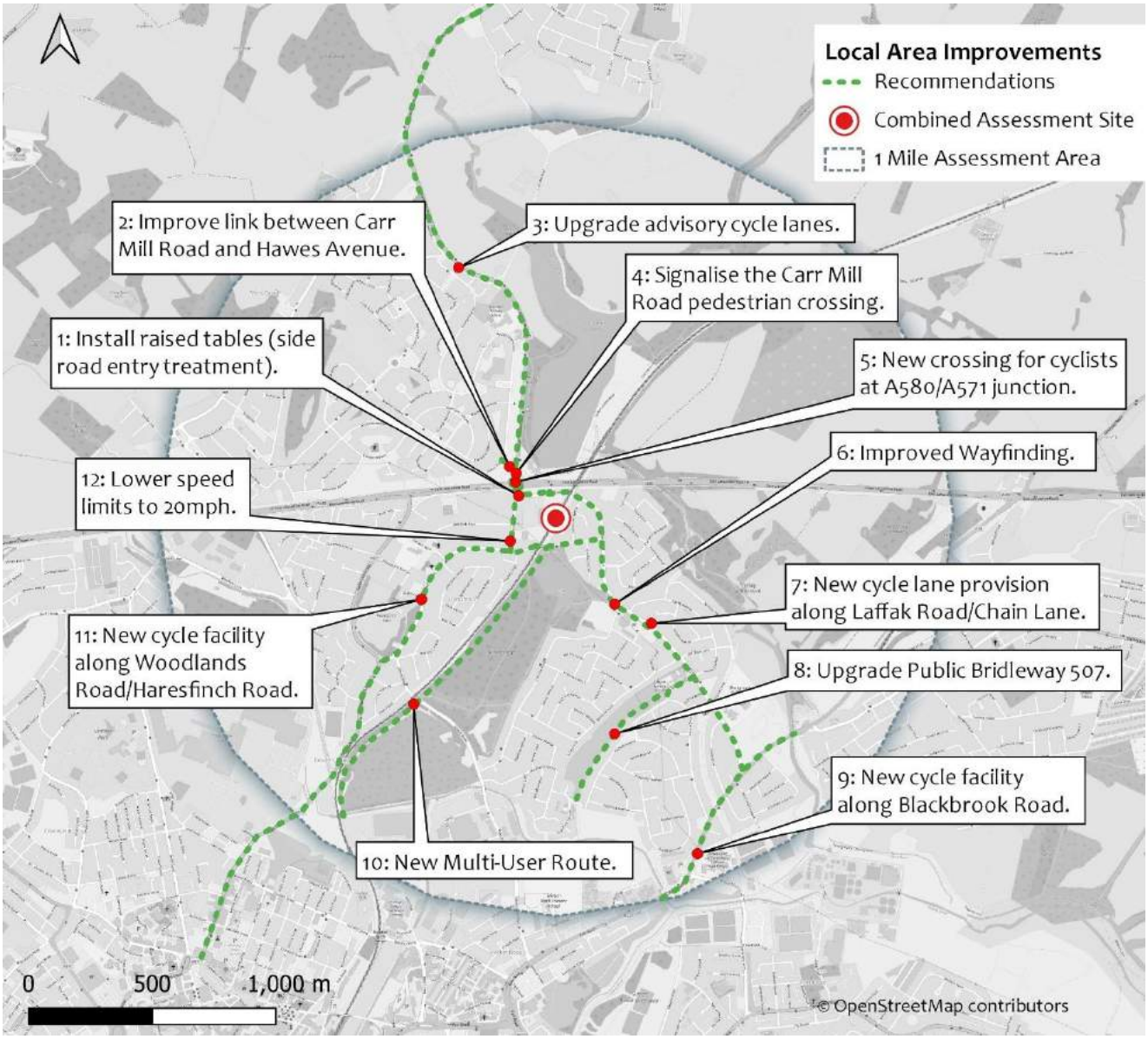


3.2.4. Station Accessibility

It is important that any new station is integrated effectively into the existing public transport network. This might include an optimisation of bus routes and A review of how a new station sited between Laffak and Woodlands Road at either option 2 or 3 can be best integrated into the existing public transport and active travel network has been undertaken. Recommendations of how the existing active travel network might be improved to ensure the new station is accessible as possible to as wide a catchment area as possible are made in Appendix C, and summarised in the figure below.

At this stage of the appraisal the costs and benefits of these enhancements have not been included in the appraisal, which is instead based on the accessibility of the existing local active travel network.

Figure 3-3 - Local Area Improvements



3.3. Forecast Demand and Revenue at Carr Mill

3.3.1. Methodological Approach

The numbers of passengers expected to use Carr Mill Station will be a key driver of the transport user benefits; more users will yield both more benefits and revenue, especially if they are transferring from other non rail modes. For any station the key influencers of passenger demand are:

- **Service Provision:** The types of rail services provided at the new station, such as the service frequency, journey times, destinations, type of rolling stock and reliability.
- **Station Locations:** Passenger demand at different locations could be influenced by the density of resident population, employment, leisure, tourism and other facilities in the vicinity of the station.
- **Station Accessibility:** Demand will be influenced by the accessibility of the station in terms of highway access, parking facilities and costs, and public transport and active travel links.
- **Competitiveness of Alternative Modes and Routes:** The competitiveness of alternative modes and routes, including the use of other rail stations, in terms of journey times and costs is crucial to the level of demand that might be expected at the new station. The level of highway congestion, journey times, parking and fares all determine the competitiveness of different modes. Levels of car ownership can also impact likelihood of public transport use.

- **Fares:** The cost of rail fares comparative to both other modes and to alternative stations and routes will impact the choice of mode and route.
- **Land use and demographic trends:** The propensity for people to undertake journeys is correlated with wider economic and demographic trends. Factors such as future developments impacting population, employment and income all impact the number of journeys that might be expected. At the moment there is a great deal of long-term uncertainty about how long-term trends in travel behaviours might be impacted by the effects of the COVID-19 pandemic and Brexit.

To forecast rail passenger demand and revenue at Carr Mill, a bespoke spreadsheet based station demand forecasting tool has been developed using a trip end based forecasting model. This model has been developed by Atkins to specifically assess the demand for new stations, and in form and structure is both compliant with the Department for Transport's TAG modelling and appraisal guidance, as well as the industry body the Passenger Demand Forecasting Council (PDFC).

The forecasting model is able to assess the impact of different stations locations and service patterns, and provides estimates of demand and revenue generated by passengers to the station and from modal shift. While a full description of the modelling process is provided Appendix E, the approach can be summarised as follows:

- **Determining population catchments** - The process starts by determining station choice by deriving a population catchment for all of the origin-destination pairs taking into account that that the trip rate diminishes as passengers are required to travel further to the station, and to reflect that passengers are less likely to 'double-back' to access a station. The demographic data inherent in this station choice element is sourced from the 2011 Census at Lower-level Super Output Area (LSOA) level and includes resident population, employed population, workplace population, and car ownership.
- **Determining trip rates from a comparator station** - The model then determines the trip rates from two nominated comparator stations Thatto Heath and Eccleston Park by analysing the historic demand levels at these stations against their catchment population. Although the trip rates for these comparator stations are adjusted to account for different characteristics of the comparator stations, including service level and accessibility, these comparator stations have been chosen because they are likely to have similar characteristics to Carr Mill. The resulting trip rates from Thatto Heath and Eccleston Park are then applied to the population catchment of Carr Mill to provide a forecast demand at Carr Mill.
- **Abstraction** – Forecasts include an estimate of abstraction from existing stations based on a 1:1 exchange of demand. As an example, in the Do Minimum situation an output area may have 50 trips from to Liverpool. With the opening of Carr Mill station this area may be estimated to have 150 trips to Liverpool and these are assigned to the new station. In this example it would be assumed that those 50 trips that previously used another station abstract to the new station (in a 1:1 exchange) and the remaining 100 trips are generated as wholly new-to-rail. Revenue on these abstracted flows is net revenue.
- **Decongestion benefits** – the impact in mode shift from road to rail is considered using the Marginal External Cost (MEC) method detailed in Transport Appraisal Guidance Unit A5.4. Diversion factors from the TAG data book are applied to generated demand and then multiplied by trip distance to calculate car vehicle-km saved by the scheme
- **Applying future growth to base demand** - Finally, the future growth in rail demand at Carr Mill over the next 20 years to 2042 has been calculated using the industry standard elasticity-based Passenger Demand Forecasting Handbook (PDFH) approach. This relates changes in a range of external factors such as population, employment and economic growth (including new housing or land use assumptions), to changes in rail demand, and accounts for long term growth trends in the use of rail.
- **Modelling the journey time impact to through passengers** – Services calling at Carr Mill will have their journey times extended by a few minutes to account for the new station call. This will result in longer journey times for those passengers who are travelling on services through the station, but not getting on or off at Corsham. The demand and revenue impact of these increased journey times on through passengers is modelled using the industry standard MOIRA model.

Other key assumptions made in the forecasting model include:

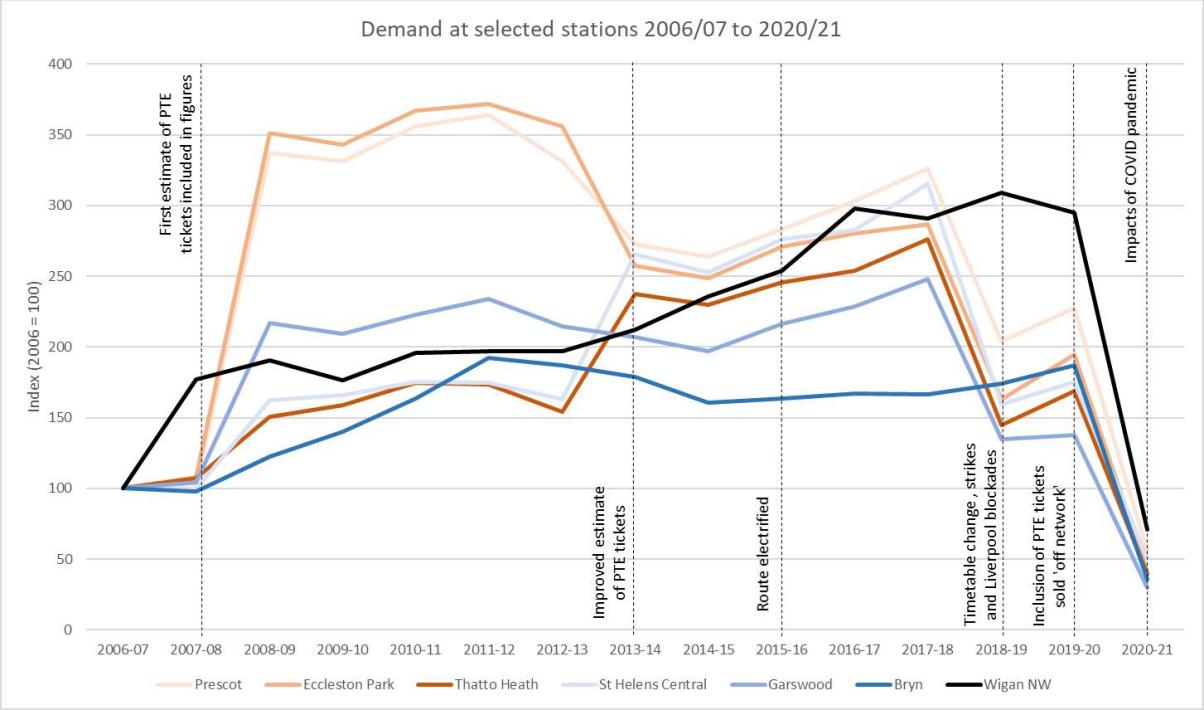
- 50 car park spaces provided for options 2 and 3 and 6 car park spaces provided at options 6 and 7.
- Demand is assumed to ramp up to forecast levels over a 4 year period from opening. This is to account for the fact that it can take a few years for the demand at the station to fully materialise while businesses and people adapt to the new journey opportunities provided by the new station.

3.3.2. Comparator Station Base Year Demand

To forecast the demand at Carr Mill requires understanding the trip rates of the chosen comparator stations at Thato Heath and Eccleston Park. This in turn requires an understanding of the existing and historic demand and revenue from these stations.

Historic patronage figures at stations on the Wigan to Liverpool Line are shown in Figure 3-4 below. This has have therefore been taken from the MOIRA model and ORR station usage statistics, which are themselves derived from the LENNON station ticket sales database. This is adjusted for the distribution of zonal and concessionary tickets within the former Passenger Transport Executive (PTE) areas such as Merseyside.

Figure 3-4 - Demand changes in station usage over previous years



From this it can be seen there is significant variation in the station demand depending on the year. For instance, it was reported Ecclestone Park had over 350,000 passengers per year from 2009-12, 250,000 from 2013 to 2015, 320,000 in 2017 but then 170,000 in 2018 (prior to the pandemic). Thatto Heath has gone from 270,000 per year in 2017 to 150,000 in 2018.

The ORR note[46] that a true comparison time series is not possible as changes in the methodology, particularly around the treatment of PTE ticket sales and concessionary fares, have resulted in fairly sizeable demand changes between years. Additionally, there have been a number of operational issues have potentially impacted on demand along the route. This includes:

- Works to electrify the route between Liverpool-Wigan via St Helens Central and Liverpool-Manchester via Newton-le-Willows potentially impacting demand for the 2014/15 railway year.
- Electric operation between Liverpool-Wigan and Liverpool-Manchester commenced at the May 2015 timetable change potentially impacting demand from the 2015/16 railway year.
- The Northern and TransPennine Express May 2018 timetable change brought considerable disruption to passengers for several weeks, resulting in poor punctuality and increased levels of cancellations, impacting the 2018/19 railway year.
- Blockade of Liverpool Lime Street station in June and July 2018 to allow for remodelling work, impacting on the 2018/19 railway year.
- Continuing industrial action at Northern through 2018/19 amounting to 47 strike days[47].

[46] Estimates of station usage: Quality Report (orr.gov.uk)
[47] https://www.rmt.org.uk/news/rmt-suspends-northern-strike-action/

- Restrictions on movement related to the Covid-19 pandemic, impacting travel patterns from March 2020 – one month within the 2019/20 railway year.

This wide variation in the reported historic demand for other stations on the Liverpool Wigan Line make the forecasting of demand at Carr Mill particularly difficult. As shown in the next section, assumptions around the choice of base year, and therefore the level of observed demand at the comparator stations, has a significant impact on the forecast demand for Carr Mill.

Having had discussion with Liverpool City Region, Northern Trains and Network Rail it is felt that the demand at other local stations recorded in 2018/19 was significantly suppressed due to a combination of timetable disruption, engineering work and industrial action. As such the demand forecasts for Carr Mill have been generated from trip rates that are derived from a base year of 2017/18,

3.3.3. Forecast Demand at Carr Mill

To forecast the demand at Carr Mill, 2017/18 trip rates from Ecclestone Park and Thatto Heath are applied to Carr Mill's station catchment area. The table below shows the demand forecast for the following years;

- 2027 – the assumed opening year of the scheme;
- 2031 – the first year after the assumed ramp up of demand has occurred; and,
- 2042 – the year in which future demand growth is capped in line with TAG guidance.

Table 3-4 – Forecast demand at Carr Mill

	2027/28	2031/32	2042/43
Option 2	151,000	248,000	311,000
Option 3	147,000	244,000	307,000
Option 6	127,000	215,000	276,000
Option 7	84,000	147,000	194,000

The forecast demand at Carr Mill is forecast to be highest for options 2 and 3, which are both in the central option group. This is because a station at these locations has a wider station catchment area than option 6 and 7 of the southern group, offering greater journey time savings to a larger number of people. Options 6 and 7 while nearer some of the major development sites are also nearer to St Helens Central, and therefore has a much smaller catchment area, with lower journey time benefits. Option 7 is also constrained by only having an hourly service frequency in the Liverpool direction, and therefore does not offer significant time savings to anyone travelling the Wigan direction.

3.3.4. Forecast Revenue at Carr Mill

Revenue yields are slightly higher than other local stations, and this is a function of the high proportion of journeys to and from Liverpool and the greater distance as compared to both Thatto Heath and Eccleston Park.

The revenue data is outlined in the Table 3-5 below. The model uses distance-based fares and gives comparison to other local stations for context.

Table 3-5 – Base year demand and revenue at Carr Mill compared to other stations using 2017/18 data

	Demand	Revenue at station	Yield per journey
Carr Mil	177,000	£377,000	£2.13
Bryn	148,000	£502,000	£3.39
Garswood	337,000	608,000	£1.80
Thatto Heath	244,000	489,000	£2.01
Eccleston Park	120,000	240,000	£2.00

Source: MOIRA OR23 data for 2017/18[48]

3.4. Economic Appraisal

3.4.1. Transport Efficiency Impacts

The Transport Economic Efficiency (TEE) table brings together the benefits to transport users and providers derived from the demand and appraisal model, and therefore presents the monetised impacts of user journey time savings, revenue impacts and operating costs. The appraisal results include the benefits to users of Corsham station, as well as the disbenefits to through travellers. As per guidance in TAG Unit A5.3 Rail Appraisal net rail revenue is netted to zero in the TEE table as a reduction in ongoing operating subsidy.

3.4.1.1. Impacts on passengers using Carr Mill

Table 3-6 Monetised Impacts for passengers using Carr Mill

(2010 Prices, 2010PV) Millions	Benefits to station users	Net Revenue from users of Carr Mill
Option 2	£16.10	£6.58
Option 3	£17.41	£6.65
Option 6	£5.44	£4.51
Option 7	£4.46	£4.59

3.4.1.2. Impacts on through passengers not using Carr Mill

Options 2, 3 and 6 introduce a stop onto an existing service, and this increases the journey time of services between St Helens Central and Garswood by 2 mins. Passengers who are travelling on these services, but who are not getting on or off at Carr Mill station will therefore experience a disbenefit related to their increased journey time.

Impacts on through travellers have been assessed using the MOIRA demand and revenue forecasting program. Using estimated loads per train the demand on those services which would call at Carr Mill over a typical day has been isolated. This has been annualised and a journey time disbenefit of 2 minutes has been applied. This applies a conservative assumption that all through travellers will continue to use the train and there will be no loss of demand or revenue.

Option 7 will not accrue any non-user benefits as it will be served by an additional hourly Liverpool Lime Street-St Helens Central train which will be extended to serve Carr Mill once the station is opened.

Table 3-7 Monetised Impacts for through passengers not using Carr Mill

(2010 Prices, 2010PV) Millions	(Dis)Benefits to through passengers	Revenue impacts on through passengers
Option 2	-£3.84	£0
Option 3	-£3.84	£0
Option 6	-£3.84	£0
Option 7	£0	£0

3.4.1.3. Transport Efficiency Impacts summary

Table 3-8 shows the combined the transport efficiency impacts of both users of the station with non users disaggregated across different users and benefit types.

[48] Confidential and/or commercially sensitive information belonging to one or more train companies – not disclosable under FOIA

Table 3-8 - Transport Economic Efficiency (TEE) table for core scenario (in £000s)

Present Value of Benefits, 2010 prices	Option 2	Option 3	Option 6	Option 7
Non-Business: Commuting				
Travel Time	6,459	7,244	372	2,088
Vehicle Operating Costs	-	-	-	-
User Charges	-	-	-	-
Net Non-Business Benefits: Commuting	6,459	7,244	372	2,088
Non-Business: Other				
Travel Time	5,348	5,806	1,300	2,294
Vehicle Operating Costs	-	-	-	-
User Charges	-	-	-	-
Net Non-Business Benefits: Other	5,348	5,806	1,300	2,294
Business User Benefits				
Travel Time	1,310	1,395	491	668
Vehicle Operating Costs	-	-	-	-
User Charges	-	-	-	-
Subtotal	1,310	1,395	491	668
Private Sector Provider Impacts				
Revenue	6,583	6,648	4,508	4,588
Grant Subsidy / Payments	(6,583)	(6,648)	(4,508)	(4,588)
Subtotal	-	-	-	-
Other Business Impacts				
Net Business Impact	1,310	1,395	491	668
Total				
Present Value of Transport Economic Efficiency	**13,117**	**14,446**	**2,163**	**5,049**

3.4.2. Wider Economic Impacts

3.4.2.1. Overview of Wider Economic Impacts

A transport scheme can potentially impact on the economy in a number of ways. The direct route (reflected in established user benefits appraisal) is by improving accessibility and connectivity and reducing the cost (monetary and time) of travel.

If transport and wider markets behaved in a theoretical 'perfectly competitive' manner and transport caused no change in land use, these impacts (as captured by the conventional transport user benefits appraisal in the previous section) would represent the full impact of the transport scheme on the economy. However, in reality, markets are not perfect and transformative transport schemes can cause land use change. Therefore, further economic impacts (termed Wider Economic Impacts, WEI) occur as a result of market failures or distortions. The impacts arise as the effects of the transport scheme feed through to other markets as individuals and businesses change their behaviour in response to the transport change and as a result of the effects of the associated land use change.

TAG terms the conventional user benefits appraisal (based on changes in travel costs) Level 1 (or Established) analysis. The WEI are then captured in two additional levels of appraisal, building on Level 1, established analysis. The Level 2 and 3 analysis covers three main categories of WEI:

- Productivity effects;
- Employment effects; and
- Induced Investment.

Level 2 (or Evolving) analysis includes WEI that do not involve explicit land use change and for which analytical approaches are considered more robust than Level 3 (or Indicative) analysis which captures land use change, including dependent development (land use change that is enabled by changes in planning permission that occur directly in response to the improvement in accessibility associated with a transport scheme) and other less established forms of economic modelling.

3.4.2.2. Wider Economic Impact Assessment for the Carr Mil scheme

As outlined in the Strategic Dimension, residents of Carr Mill are overly reliant on private vehicles as their main mode of transport. Additionally, there is relatively high levels of deprivation in the region, resulting in low levels of car ownership. The construction of Carr Mill station would provide a high quality transport connection from Carr Mill, an alternative to private vehicles and an efficient mode of transport for those who do not own a car.

The Carr Mill station scheme represents an improvement of the existing transport network and a step change in provision. However, land use modelling has not been completed and it is therefore anticipated that the WEI generated would be focussed on Level 2 (without land use change), as a result of two factors:

- The scheme will not generate any dependent development - although it eases the impact of growth in the corridor, the developments are not dependent on the implementation of the scheme for planning permission and therefore the benefits of easing the transport impacts of the development will be captured in the Level 1 assessment; and
- Unlocking development is not a key objective of the scheme. WEI generates should be proportional and based on the relevance of the impacts to the scheme's objectives.

Level 2 WEI include:

- **Induced investment - increased output in imperfectly competitive markets** - reflecting the additional benefits arising from business travel cost savings because firms are able to charge a margin on each unit of output they produce. When travel cost savings allow a firm to increase output, the value to the firm (and society) is greater than the time saving captured in the conventional appraisal of business user benefits and the additional benefit is captured as a WEI.
- **Productivity impacts - static agglomeration** - increased productivity caused by firms being closer to other firms and potential employees as a result of improvements in travel costs only (i.e. connectivity impacts only, assuming no land use change). Benefits arise from effects including increased interactions, knowledge spill-overs and linkages and improved accessibility to customers and inputs, (including labour markets, allowing better matching between employees and jobs).
- **Employment effects – labour supply/more people working** - increased tax income for government resulting from reduced commuting costs effectively causing an increase in wages for the commuters affected and tipping the balance to make employment economically worthwhile for some of the population.

TAG Unit A2.2 identifies that the scale of induced investment benefits can be estimated as a simple uplift on Level 1 Business User Benefits. However, calculations of productivity and employment effects are more complex and time intensive. Due to the nature of the scheme, it is not deemed proportionate to carry out a quantitative assessment for these impacts. Instead, a qualitative discussion of their impact has been provided. Option 2 and 3 have been assessed for WEI, which given their proximity to one another for the purpose of this analysis are both assumed to have the same impacts. Options 2 and 3 are expected to have the highest demand, and thus the WEI for these options will also likely be the greatest.

3.4.2.3. Induced investment

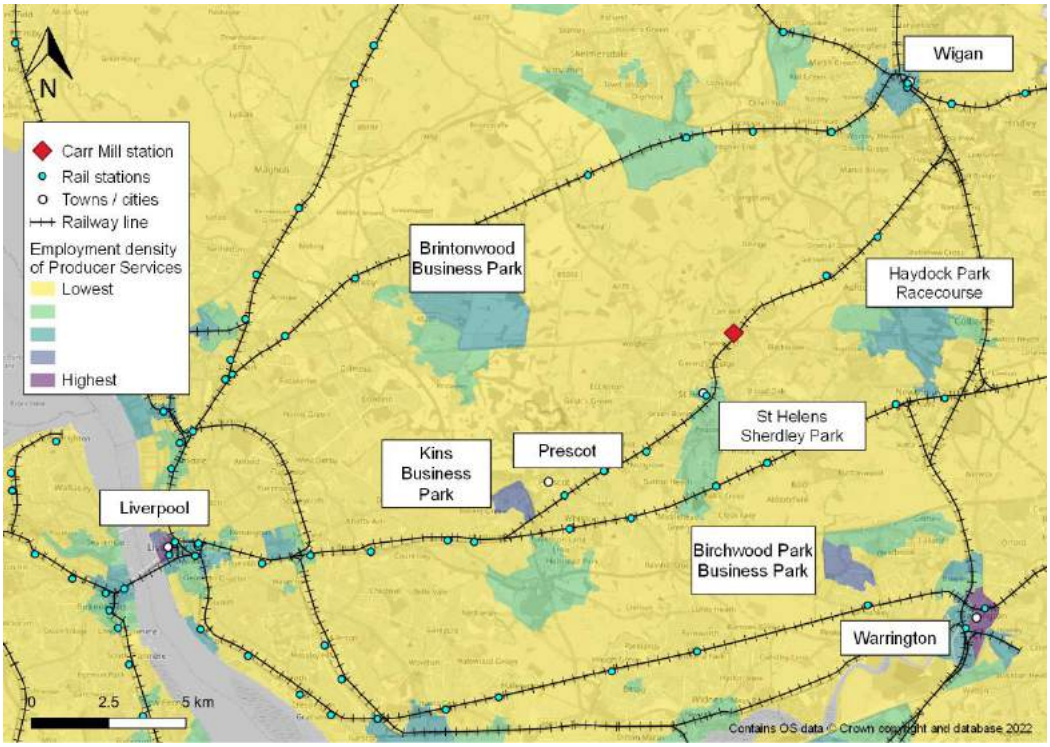
The increased output in imperfectly competitive markets is estimated to be up to 10% of the business benefits, which for option 3 equates to £140m (2010 prices) over the 60 year appraisal period. This reflects the additional benefits arising from business travel cost savings because firms are able to charge a margin on each unit of output they produce.

3.4.2.4. Productivity impacts

As set out in TAG unit A2-4, productivity impacts are based on an increase in effective density of employment causing agglomeration benefits. Industries are considered in terms of four sector groups; manufacturing, construction, consumer services and producer services. The producer services industry is the most responsive to agglomeration impacts. Figure 3-5 shows the density of producer service jobs in proximity to the proposed Carr Mill station within St Helens, Liverpool, Wigan and Warrington, with some key employment areas that may be positively impacted by the scheme's anticipated journey time improvements. These key areas include local business parks, town and district centres, and Liverpool city centre. The impacts on productivity are impacted by both the distance of an employment area from the scheme and the employment density of the area. Areas that are closer to the scheme and that have a greater number of jobs are likely to experience more of a positive impact on productivity than those further away or with fewer jobs.

The improved journey times for these employment hubs (both for commuting and business purposes) as a result of the scheme may lead to minor productivity gains as a result of increased interactions, knowledge spill-overs and linkages, and improved accessibility to customers and inputs. Given the nature of the scheme and the journey time improvements it will generate it is anticipated that productivity benefits would be small in scale and dispersed across the areas identified especially Liverpool, St Helens, Wigan and Prescot where the rail route is expected to pass through from and to Carr Mill.

Figure 3-5 Employment density of producer services (Business Register and Employment Survey 2020)



3.4.2.5. Employment effects

The reduction in commuting costs as a result of the scheme may result in working becoming economically viable for a small subset of people, resulting in a minor increase in tax income due to more people working.

Those affected are likely to be those who live within the vicinity of the proposed Carr Mill station or those who work in proximity to Carr Mill and are travelling via rail. Currently, commuting patterns to the Carr Mill area are primarily from the local area not requiring long distance travel. However, the proposed station would unlock the opportunity for access to employment at Carr Mill from area such as Liverpool, Prescot and Wigan.

For residents of Carr Mill who travel to employment hubs such as Liverpool, Wigan and Prescot and employment centres such as Sherdley Park and Kins Business Park (see Figure 3-5), the proposed Carr Mill station will improve commuting times providing a viable alternative to private vehicle use and opening up economic opportunities.

Carr Mill station may also provide an opportunity for multi-mode travel, for instance, allowing someone commuting to Carr Mill station from active modes or drive a short distance to the station for onward travel via rail. This will open up employment opportunities for those who live in the wider area around Carr Mill not in proximity to an alternative station. For example, Moss Bank, Billinge and Haydock.

3.4.2.6. Summary

The Carr Mill scheme will improve transport connectivity to key regional destinations and markets, ensuring the local community has better access to jobs, services and opportunities, helping to level up the borough. Given the nature of the scheme, the majority of the economic impacts will be captured in the user time and cost savings reflected in the Level 1 economic appraisal using MOIRA.

As the scheme is located within and links to areas of dense economic activity, as illustrated in the previous sections, it is likely to generate some Wider Economic Impacts. Although the scheme does provide a step change in provision through the introduction of a new rail station, no land use modelling has been undertaken, therefore, to keep the assessment proportional the scale of impacts is focused on Level 2 (without land use

change). The scale of benefits is likely to be of the order of 10% of user benefits, reflecting the fact that the Level 1 appraisal captures most of the economic benefit of the scheme.

3.4.3. Social and Distributional Impacts

3.4.3.1. Approach to assessing social and distributional impacts

A high level Social and Distributional Impact (SDI) Appraisal of the Carr Mill Station scheme has been undertaken in accordance with requirements set out in TAG unit A4-1 (Social Impact Appraisal) and TAG unit A4-2 (Distributional Impact Appraisal) published by the Department of Transport (DfT). For the proposed options, a proportionate approach has been undertaken to deliver a social impact assessment. A qualitative assessment of each of the social impact indicators has been undertaken, supplemented by quantitative measures where appropriate.

Social impacts (SIs) cover the human experience of the transport system and its impact on social factors not considered as part of economic or environmental impacts, namely:

- Safety;
- Physical Activity;
- Security;
- Severance;
- Journey Quality;
- Option and Non-Use Values;
- Accessibility;
- Personal Affordability.

These impacts may positively or negatively influence the preferences, well-being, behaviour or perception of residents and other social groups. The Social Impact Appraisal evaluates, and where appropriate quantifies, these impacts in order that they can be considered relative to other outcomes and where possible mitigated.

At this stage of the business case the analysis has been undertaken using a seven-point scale of beneficial, neutral, or adverse, and presented in the Appraisal Summary Table.

Distributional impacts (DIs) consider the variance of transport intervention impacts across different social groups. Both beneficial and adverse DIs of the transport intervention are considered, along with the identification of social groups likely to be affected. These may include children, older people, people with a disability, Black and Minority Ethnic (BME) communities, no car households and people on low incomes. It is important to make sure that the most vulnerable groups are not disadvantaged further by receiving a disproportionately low share of benefits, or a disproportionately high share of the disbenefits. This analysis can inform measures to mitigate the impact of the project on those groups or amendment of the project itself.

It should be noted that the SDI analysis has only been undertaken for single option located based around options 2 and 3, which given their proximity to one another for the purpose of this analysis are both assumed to have the same impacts. Options 2 and 3 have the highest demand, and thus the SDI impacts for these options might be expected to be the greatest. SDI analysis for other options including 6 and 7 has not been undertaken, although it would be expected that the scale of SDI impacts for these impacts are broadly similar or in proportion to the lower demand.

3.4.3.2. Summary of findings

Full details of the Social and Distributional Impacts assessment are provided in Appendix F. A summary of findings for the Social Impact Appraisal and Distributional Impact Appraisal are outlined below. This provides a final assessment for each indicator as a result of the scheme.

Table 3-9 - Summary of findings from the Social Impact Appraisal.

Social Impact Appraisal indicators	Carr Mill Station Option 2 and Option 3	Reasoning
Accidents	Slightly beneficial	The scheme is expected to reduce overall vehicle kilometres and are expected to contribute to reducing the risk of collisions for users on the network.
Physical Activity	Slightly beneficial	Modal shift will instigate a shift from private vehicles to the public transport, increasing the uptake of walking and cycling due to multi-modal journeys to access stations.
Security	Slightly beneficial	The station is expected to positively impact the level of security for transport users and enhance comfort through the provision of high-level design standards.
Severance	Slightly beneficial	The scheme is expected to enable more journeys to be undertaken by rail and reduced vehicle kilometres by car reducing severance.
Journey Quality	Moderately beneficial	The introduction of Carr Mill station will reduce traveller stress, providing modern and high quality rail facilities and greater certainty to travel arrangements for local residents.
Option Values and Non-use Values	Largely beneficial	A large beneficial assessment was determined due to the large number of households (>1000) within a 2km catchment area and the addition of a new rail station which will substantially change the availability of transport services within the study area.
Accessibility	Moderately beneficial	Accessibility is expected to be improved providing improved rail connectivity for those living and working in the Carr Mill area, through the provision of a reliable and accessible service.
Personal Affordability	Slightly beneficial	The scheme will generate large decongestion benefits for road users, encouraging rail users to use rail rather than private vehicles.

Table 3-10 - Summary of findings from the Distributional Impact Appraisal.

Distributional Impact Appraisal indicators	Carr Mill Station Option 2 and Option 3	Reasoning
Accessibility	Moderately beneficial	The scheme is expected to have a beneficial impact through improved journey times via rail to employment and leisure opportunities, especially for vulnerable groups present in the catchment areas such as older people and DLA claimants.
Safety	Slightly beneficial	The scheme proposes a new rail station at Carr Mill which is expected to reduce overall vehicle kilometres as modal shift towards rail occurs. The modal shift will reduce vehicle kilometres and likely bring benefits in terms of safety and collisions.

Air Quality	Moderately beneficial	The new station is expected to generate mode shift away from private vehicles and on to rail, reducing overall vehicle kilometres and creating air quality benefits in the vicinity of the scheme. Notably, benefits are expected for children and income deprived household present in the impact area.
Noise	Slightly beneficial	Groups vulnerable to noise including elderly, children and deprived households are expected to benefit from the scheme due to the overall reduction in vehicle kilometres and expected associated reduction in noise.
Affordability	No assessment required	
Security	No assessment required	
Severance	Slightly beneficial	The scheme expected to benefit children, elderly and disabled residents and no car households through the reduction of vehicle kilometres and mode shift to rail reducing severance.
User benefits	Slightly beneficial	A slight beneficial assessment is expected in the absence of a distributed monetary value for overall user benefits. This is due to the expected decongestion benefits and associated journey time savings.

3.4.4. Environmental Impacts

A high-level environmental appraisal of Carr Mill Station options 2 and 3 has been undertaken to identify the main environmental issues that could affect strategic choices and design. This work has been carried out in the form of a desk-based assessment using data available from public sources only and traffic modelling carried out as part of this business case. No on-site surveys, assessment or additional modelling have been undertaken. The study area comprises a review of constraints within the option 2 and 3 Scheme boundaries, indicative compound areas and appropriate buffers only at this stage. No assessment of construction traffic routes or operational traffic changes have been undertaken.

Both Scheme options are located within the Carr Mill borough of St Helens, Merseyside, and are situated south of the A580 and Laffak Road, and to the north of Woodlands Road. The Scheme area comprises the existing railway within the Network Rail boundary and adjacent disused brownfield land, with commercial properties located to the west and residential properties to the east. Option 3 would also require the demolition of a former petrol station and retail store within the west of the Scheme boundary. The Scheme involves the construction of a new platform either side of the existing railway, as well as a car park, lift, subway, station building and other associated infrastructure.

The following environmental impacts have been qualitatively assessed;

- Landscape and Townscape Impacts
- Ecological Impacts
- Historic Environment Impacts
- Noise and Vibration Impacts

- Water Environment and Flood Risk Impacts
- Air Quality Impacts
- Ground Conditions and Soil Impacts
- Greenhouse Gas Emissions and Climate Impacts

The figures below show the main environmental constraints associated with options 2 and 3. Further detail on each of these constraints is provided in the sections below, with the conclusions then summarised at the end of this section in the form of a Red-Amber-Green (RAG) matrix.

Figure 3-6 - Option 2 Map of Environmental Constraints

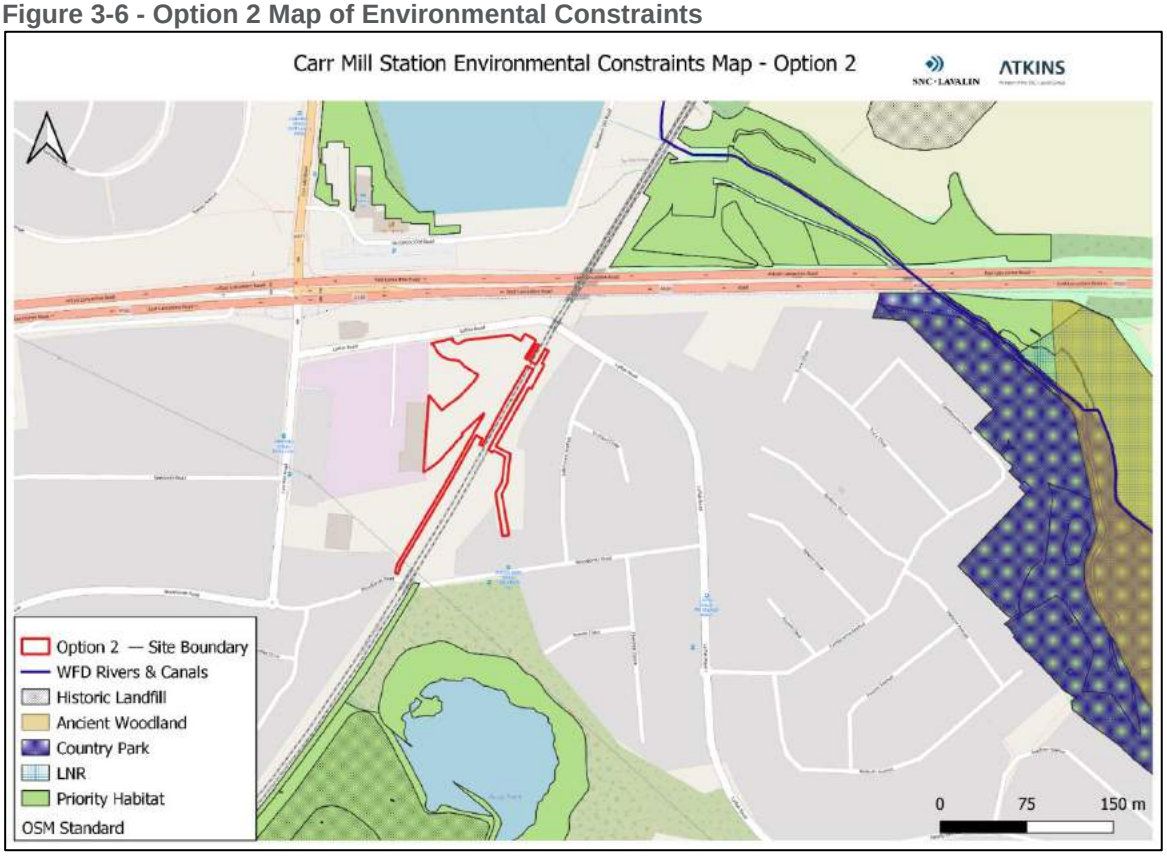
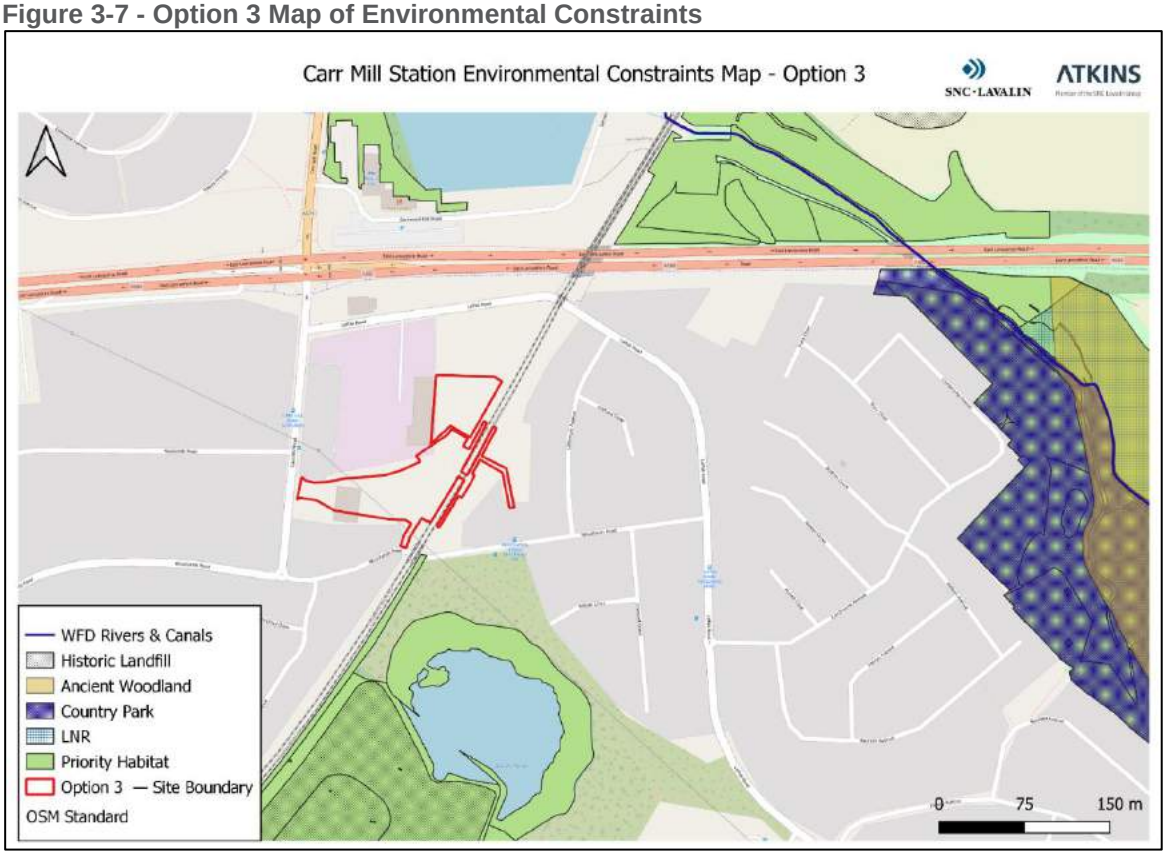


Figure 3-7 - Option 3 Map of Environmental Constraints



3.4.4.1. Landscape and Townscape Impacts

The two Scheme options are not located within any nationally or locally designated landscapes; however, Sankey Valley country park is located approximately 280m and 330m east of options 2 and 3 respectively. The landscape context is urban, with residential properties adjacent to the east, Laffak Road and the A580 to the north, commercial premises to the west and a few residential properties as well as a pond / woodland habitats to the south. The main views of the Scheme are likely to be from the adjacent residential properties, local roads and the adjacent recycling centre, although the latter is not considered to be sensitive to landscape or visual change.

Whilst there is currently vegetation screening some of these receptors, it is anticipated some of this vegetation may be lost as a result of the works. Should night working be required during construction, there is also potential for artificial lighting to impact adjacent receptors if it not sympathetically managed. There will also be a permanent visual change to surrounding receptors during operation, associated with the new infrastructure and lighting requirements. However, given the context of the surrounding urban area, the Scheme is not anticipated to result in a significant change to the local landscape context. Furthermore, impacts could be mitigated in part through a Scheme of high-quality landscaping, including retention and enhancement of boundary trees and vegetation, and the provision of an appropriate visual barrier. A Landscape and Visual Impact Assessment (LVIA) will likely be required to support a planning application, and to determine suitable mitigation measures if any significant impacts during construction or operation are anticipated. A full tree survey in line with BS5837:2012 and an arboricultural impact assessment will also be required to safeguard trees and detail any required root protection zones and mitigation for adverse impacts.

3.4.4.2. Ecological Impacts

Stanley Bank Meadow Site of Special Scientific Interest (SSSI) is located approximately 660m east of the Scheme options, and both lie within the 'impact risk zone' of this SSSI. As such, consultation with Natural England will be required to confirm if development of the site will have a significant effect on the designation and if a Section 28H assent[49] is required. Stanley Bank, Clinkham Wood and Parr Hall Millennium Green Local Nature Reserves (LNR) are also within 1km, located at 400m east, 870m northwest and 1km south at the closest points respectively. There are multiple parcels of deciduous woodland priority habitat within 1km, the closest is located approximately 15m southeast of both options, and lowland fens are located approximately

[49] Wildlife and Countryside Act 1981 (legislation.gov.uk)

65m south. There are additional priority habitats including ancient woodland and good quality semi-improved grassland located further from the Scheme.

No loss of priority habitat is anticipated during construction; however, there will be some loss of woodland habitat, trees and shrubs which may be used by a variety of fauna, including protected and priority species. There are also disused buildings within and adjacent to both Scheme options which may be suitable for bats. As such, there is potential to disturb this protected species during construction if present and not suitably mitigated. The operational impact of the Scheme on habitats and species as a result of habitat loss, and any indirect impacts on the SSSI and LNR sites including local air quality and noise impacts, would also need to be considered. A phase 1 habitat survey and protected and notable species surveys will be required, alongside an Ecological Impact Assessment (EcIA) to determine if there are any likely significant effects, and to identify mitigation measures where required. The passage of the Environment Act will make it mandatory for most new developments to provide a biodiversity net gain, measured by a standard biodiversity offsetting metric. Net gain for biodiversity will likely need to be assessed for the Scheme using the most up to date DEFRA Biodiversity metric and would likely need to demonstrate how a 10% net gain could be delivered.

3.4.4.3. Historic Environment Impacts

There are no statutory or non-statutory historic designations within 1km. The Scheme area comprises the existing railway line and disused brownfield land, as well as a couple of buildings and hardstanding areas within Option 3. Due to the urban nature of the environment and existing development surrounding the railway infrastructure, it is anticipated that any buried archaeology would have likely been encountered during previous excavation and development works. An initial review of Merseyside Historic Environment Records (HER) identifies no records within the boundary of either option, although there are a few records within the surrounding area. As such, the risk of impacts at the construction stage are anticipated to be low, and no permanent impacts to any statutory or non-statutory heritage assets are expected during operation.

A heritage assessment will likely be required in support of a planning application. This document would assess the potential heritage impacts of the proposals and identify requirements for additional surveys and a proportionate programme of archaeological investigation, where appropriate, to mitigate any adverse impacts. However, heritage and archaeology are not anticipated to be a major constraint to the Scheme.

3.4.4.4. Noise and Vibration Impacts

There are no Noise Important Areas (NIA) within 1km of either Scheme option, therefore it has not been identified as an area within the highest 1% of noise levels at residential locations. There are several noise and vibration sensitive receptors within 300m, including properties around Laburnum Avenue, Woodlands Road and Car Mill Road, as well as a hotel, Sankey Valley country park, public open spaces and a public right of way (PRoW). The closest receptors are the residential properties located immediately adjacent on Woodlands Road (option 2 and 3) and on Carr Mill Road (for option 3 only).

The construction of the Scheme is likely to temporarily increase noise and vibration levels at sensitive receptors due to demolition and construction activities, as well as from construction traffic. Due to the nature of the development on a live railway line, it is likely that night-time working would be required, thus increasing the potential for noise and vibration impacts during construction. There would likely be some increase in operational noise associated with the stopping / starting of trains, traffic travelling to the station, and any public address systems. However, under the existing baseline there will be background noise disturbance to surrounding receptors associated with the current rail operation. The impacts upon noise sensitive receptors and any required mitigation will need to be informed by a detailed noise assessment.

3.4.4.5. Water Environment and Flood Risk Impacts

The nearest surface watercourse is Black Brook 170m and 260m north of option 2 and 3 respectively. Burgy pond is also approximately 65m south of both options and Carr Mill Dam is within 200m of both options. According to the Environment Agency (EA) flood mapping, both Scheme areas are within flood zone 1, hence the flood risk from fluvial sources is considered to be low. The EA surface water flood map also shows small areas of surface water flood risk within the Scheme boundary of both options.

The spatial separation between the Scheme options and nearby watercourses, alongside implementation of good practice mitigation are likely to be sufficient to prevent any effects on the quality of these watercourses during the construction stage. However, as the Scheme is larger than 1 hectare, a Flood Risk Assessment will be required, and the increased hardstanding associated with the new infrastructure will require drainage and attenuation. This will need to include a robust surface water drainage strategy, including Sustainable Urban Drainage Systems (SuDS) to ensure that the proposals do not increase flood risk off-Site during the operational

stage of the development. A foul water drainage strategy will also be required. As such, mitigation is anticipated to be required to mitigate any adverse impacts.

3.4.4.6. Air Quality Impacts

There are no Air Quality Management Areas (AQMAs) within 1km of either Scheme option. Consequently, it has not been identified as an area which exceeds national targets on air quality, so it is unlikely that an Air Quality Strategy (AQS) objective is currently exceeded at the Site. There are several sensitive air quality receptors within 200m, particularly residential receptors such as those around Laburnum Avenue, Woodlands Road and Car Mill Road. The closest of these properties are located directly adjacent on Woodlands Road (option 2 and 3) and Carr Mill Road (option 3 only). Other sensitive receptors include Sankey Valley public park, a public right of way (PRoW), hotel and priority habitats.

There are potential impacts at receptors near to the development boundary during the construction phase, particularly dust impacts from demolition / excavation activities and emissions from construction vehicles. During operation, the Scheme has the potential to result in adverse impacts on air quality at existing residences and relevant areas of public exposure within the vicinity of the site due to an increase in vehicle journeys to and from the station. There may also be increased emissions generated from the stop / start of trains and any idling. However, on a regional scale the Scheme may help to address poor air quality by encouraging a model shift away from private vehicle use. This is supported by the traffic modelling which indicates a reduction in vehicle kilometres under both options. An air quality assessment will be required to accompany a planning application to determine the significance of any air quality effects and appropriate mitigation.

3.4.4.7. Ground Conditions and Soil Impacts

The Scheme is not within any groundwater source protection zones (SPZ); however, it is underlain by Secondary bedrock and superficial aquifers. The nearest surface watercourse is Black Brook 196m and 262m north of option 2 and 3 respectively. The Scheme area comprises the existing railway and disused brownfield land. Within option 3 there is also a former petrol station, retail store and associated hardstanding areas within the Scheme boundary. The main potential contamination sources identified at this stage are associated with made ground due to the built-up nature of the area and the existing highway and rail infrastructure which are likely to carry a contamination risk. There are also three historic landfill sites within 500m, the closest of which is approximately 120m south of both Scheme options.

The land class is urban, therefore there shall be no loss of agricultural land as a result of the works. Any required demolition, excavation and piling works during construction could pose a risk of pollution to groundwater, controlled waters and human health if suitable mitigation is not in place. The presence of historic landfills could also increase the risk of ground gas migration into excavations during the works. A phase 1 geo-environmental desk study, followed by further ground investigation and land contamination assessment will be required to identify any likely significant effects and the requirement for any additional mitigation, remediation or reclamation.

3.4.4.8. Greenhouse Gas Emissions and Climate Impacts

There will be changes in Greenhouse Gas Emissions (GHG) during both the construction and operational phases of the Scheme. During construction, the majority of GHG emissions will come from the use of materials and plant/equipment for constructing the station infrastructure. During operation there is anticipated to be an increase in localised GHG emissions, associated with traffic to and from the station, stopping/starting and idling trains, energy consumption, ongoing maintenance activities and land use change. However, on a regional scale the Scheme would provide greater access to and potentially encourage a shift to more sustainable modes of transport and away from the private motorised vehicle. This would support the regional and local objectives to reach net zero carbon emissions by 2040. Further assessment work including carbon modelling and climate vulnerability assessment may be required during design.

3.4.4.9. Environmental RAG Matrix

The conclusions of the environmental appraisal can be summarised as Red-Amber-Green (RAG) matrix.

Table 3-11 – Environmental RAG matrix

Red	**Significant constraints identified** – very challenging/showstoppers
Amber	**Moderate constraints identified** – potential adverse impact but mitigation likely to be possible
Green	**Minor constraints identified** – straightforward/minimal mitigation necessary

Environmental Topic	Risk Rating	Constraint	Impact	Further Assessment / Mitigation
Landscape / Townscape	Green	Change to landscape / townscape	Given the context of the surrounding urban area, the Scheme is not anticipated to result in a significant change to the local landscape context.	A Landscape and Visual Impact Assessment (LVIA) would likely be required to determine suitable mitigation measures if any significant impacts during construction or operation are anticipated.
	Amber	Views from sensitive receptors / change to visual amenity	Views of the construction works and during operation, views of the new station infrastructure and associated lighting from surrounding receptors.	LVIA (as above). A scheme of high-quality landscaping, including retention and enhancement of boundary trees and vegetation and the provision of an appropriate visual barrier to provide some level of containment and visual screening from the surrounding receptors.
	Amber	Trees / vegetation	Loss of trees or damage to the roots of retained vegetation and potential damage to trees with statutory protection if present.	A full tree survey in line with BS5837:2012 and arboricultural impact assessment will also be required to safeguard trees and detail any required root protection zones and mitigation to minimise any adverse impacts. This would also include a search of any trees protected by a Tree Preservation Order (TPO).
Ecological	Amber	Stanley Bank Meadow SSSI and Stanley Bank LNR	Both Scheme options lie within the 'impact risk zone' of the SSSI. Potential indirect impacts on the habitats and species associated with the SSSI and LNR site during construction and operation, including any potential air quality impacts.	Consultation with Natural England will be required to confirm if development of the site will have a significant effect on the designation and if a Section 28H assent[49] is required.
	Green	Habitats	No loss of priority habitat is anticipated during construction. However, there will be some loss of woodland habitat, trees and shrubs.	Best practice to be followed to avoid indirect impacts on habitats. A phase 1 habitat survey will be required and an Ecological Impact Assessment (EcIA) to identify mitigation measures where required. Potential requirement for biodiversity net gain assessment and suitable

Environmental Topic	Risk Rating	Constraint	Impact	Further Assessment / Mitigation
				mitigation to avoid biodiversity loss.
	Amber	Protected and priority species	Permanent loss of habitat suitable for protected and priority species and disturbance during construction and operation. There are disused buildings within and adjacent to both Scheme options which may be suitable for bats. As such, there is potential to disturb this protected species during construction.	A phase 1 habitat survey will be required and an Ecological Impact Assessment (EcIA) to identify mitigation measures where required. Further protected species surveys. Protected species licences may be required.
Historic Environment	Green	Statutory and non-statutory assets	There are no statutory or non-statutory historic designations within 1km. No impacts are anticipated during construction or operation.	N/A
	Green	Archaeology	The potential to encounter buried archaeology during construction is deemed to be low.	A heritage assessment may be required in support of a planning application and will identify requirements for additional surveys and a proportionate programme of archaeological investigation, where appropriate, to mitigate any adverse impacts.
Noise and Vibration	Amber	Sensitive receptors	Temporary increase in noise and vibration levels at sensitive receptors due to demolition and construction activities, as well as construction traffic. Night working is also likely to occur due to the nature of the Scheme. Also, there may be an increase in operational noise associated with the stopping / starting of trains, traffic travelling to the station, and any public address systems.	The impacts upon noise sensitive receptors will need to be informed by a detailed noise assessment.
Water Environment / Flood Risk	Green	Watercourses / water bodies	The spatial separation between the Scheme options and nearby watercourses alongside implementation of good practice mitigation are likely to be sufficient to prevent any effects on the quality of these	Good practice guidelines to be followed at the construction stage.

Environmental Topic	Risk Rating	Constraint	Impact	Further Assessment / Mitigation
			watercourses during construction.	
	Amber	Flood Risk	Potential to increase flood risk and surface water flooding off-site.	A Flood Risk Assessment will be required and suitable drainage and attenuation. This will need to include a robust surface water drainage strategy, including Sustainable Urban Drainage Systems (SuDS) to ensure that the proposals do not increase flood risk off-Site during the operational stage of the development. A foul water drainage strategy will also be required.
Air Quality	Green	Sensitive receptors	Potential for increased dust and emissions during construction to nearby receptors. During operation there could be adverse impacts on local air quality due to vehicle trips to the station, stop/starting of trains and any idling. However, on a regional scale the Scheme may help to address poor air quality by encouraging a model shift away from private vehicle use.	An air quality assessment will be required to determine the significance of any air quality effects and appropriate mitigation to be undertaken.
Ground Conditions and Soil	Amber	Groundwaters and SPZs	Any required demolition, excavation and piling works during construction could pose a risk of pollution to ground, controlled waters and human health if suitable mitigation is not in place.	A phase 1 geo-environmental desk study, followed by further ground investigation and land contamination assessment will be required to identify any likely significant effects and the requirement for any additional mitigation, remediation or reclamation.
	Amber	Contamination risk	Potential for contamination on site, posing a risk to construction workers and the local population. Historic landfills off site and associated risk of ground gas migration into excavations.	A phase 1 geo-environmental desk study, followed by further ground investigation and land contamination assessment will be required to identify any likely significant effects and the requirement for any additional mitigation, remediation or reclamation.
	Green	Agricultural land	There is no agricultural land within the extents of either Scheme option.	N/A

Environmental Topic	Risk Rating	Constraint	Impact	Further Assessment / Mitigation
Greenhouse Gases / Climate	Green	Emissions to air	GHG emissions from the use of materials and plant/equipment for constructing the station infrastructure. During operation there is anticipated to be an increase in localised GHG emissions, associated with traffic to the station, stopping/starting and idling trains, energy consumption, ongoing maintenance activities and land use change. However, on a regional scale the Scheme would provide greater access to a more sustainable mode of transport and away from the private car.	Potential requirement for carbon modelling / assessments and climate vulnerability data to feed into the design.

3.5. Scheme Costs

3.5.1. Capital Cost of Construction – Carr Mill Station.

Faithful + Gould have prepared a high-level estimate of costs of works for providing a new station for options 2, 3, 6 and 7. This cost estimation is based on the following assumptions:

- The estimates have been prepared and presented under the overall structure of Network Rail's RMM1 Method of Measurement. This has been done at Group Element level with coding of individual works items at Sub element and component level being provided only where the level of detail allows.
- The estimates are based at 2nd Quarter 2022 price levels. No allowance has been made for inflation to potential implementation dates.
- In the absence of any formal exercise or modelling being undertaken to establish a 3-point range to the estimate the estimate tolerance/range is assessed to be in the order of +40/-20%.
- The scope of works that form the basis of the estimates are at an extremely early stage of development and it is considered would equate to Network Rail GRIP50 Stage 2 pre-feasibility stage
- The estimates are based on rates and historical cost data derived from similar UK Railway Projects.
- High level items where scope is not confirmed are based on top-down asset level benchmarks, whereas whenever firmer assumptions can be made from the supporting data provided, a bottom-up rate assessment has been conducted.
- The rates used reflect the assumption that the works will be undertaken by Network Rail and carried out by experienced railway contractors with the works being competitively tendered. It is assumed that Green zone working may be possible for the majority of the works but possession working will be required for the construction of the station platforms and footbridge erection.

Full detail of the cost approach and breakdown is provided in Appendix B. A summary of the capital costs for options 2, 3, 6 and 7 are shown below. Note these exclude land acquisition costs, and risk and uncertainty.

[50] https://www.networkrail.co.uk/wp-content/uploads/2018/02/Investing-in-the-Network.pdf

Table 3-12 – Estimated capital costs (Q2, 2022 prices) for Carr Mill Station

Group Element / Package	Option 2	Option 3	Option 6	Option 7
Railway Control Systems	£0	£0	£113,000	£1,293,000
Train Power Systems	£0	£64,000	£0	£303,000
Electric Power and Plant	£0	£0	£192,000	£235,000
Permanent Way / Track	£0	£0	£434,000	£2,655,000
Telecommunication Systems	£402,000	£415,000	£406,000	£314,000
Buildings and Property	£1,752,000	£1,760,000	£1,865,000	£894,000
Civil Engineering	£2,780,000	£3,258,000	£6,446,000	£1,910,000
Enabling Works	£89,000	£116,000	£162,000	£91,000
Rolling Stock	£0	£0	£0	£0
Direct Construction Works	**£5,023,000**	**£5,613,000**	**£9,618,000**	**£7,695,000**
Preliminaries (30%)	£1,507,000	£1,684,000	£2,886,000	£2,308,000
Contractor Overheads and Profit (10%)	£653,000	£730,000	£1,250,000	£1,000,000
Indirect Construction Costs	**£2,160,000**	**£2,414,000**	**£4,136,000**	**£3,308,000**
Base Construction Cost (Direct plus indirect construction)	**£7,183,000**	**£8,027,000**	**£13,754,000**	**£11,003,000**
Project Design Team Fees (15%)	£1,078,000	£1,204,000	£2,063,000	£1,650,000
Project Management Team Fees (8%)	£661,000	£738,000	£1,265,000	£1,012,000
Other Project Costs	£262,000	£262,000	£262,000	£49,000
Employer Indirect Costs	**£2,001,000**	**£2,204,000**	**£3,590,000**	**£2,711,000**
Point Estimate Construction plus development cost (Excludes risk, uncertainty, and optimism bias)	**£9,184,000**	**£10,231,000**	**£17,344,000**	**£13,714,000**

3.5.2. Optimism Bias

The costs presented above exclude risk, uncertainty and optimism bias. DfT's TAG guidance[51] sets out that for a project at this early stage of development, and in line with rail network enhancement projects at GRIP Stage 2[52], a cost uplift known as optimism bias should be applied to the capital costs. For capital costs this uplift is 56% of the point estimate. As per the table below this increases costs to £20.7m for the 5 car station and £22.4m for the 10 car station.

[51] https://www.gov.uk/government/publications/webtag-tag-unit-a5-3-rail-appraisal-may-2018
[52] https://www.gov.uk/government/publications/webtag-tag-unit-a5-3-rail-appraisal-may-2018

Table 3-13 – Estimated capital costs (Q3, 2022 prices) for Corsham Station with optimism bias

	Option 2	Option 3	Option 6	Option 7
Point Estimate excluding risk, uncertainty, and optimism bias)	**£9,184,000**	**£10,231,000**	**£17,344,000**	**£13,714,000**
Optimism Bias at 56%	£5,143,000	£5,729,000	£9,713,000	£7,680,000
Expected Cost including Optimism Bias	**£14,327,000**	**£15,960,000**	**£27,057,000**	**£21,394,000**

3.5.3. Capital Cost benchmarking

Benchmarking of Capital costs for works of these nature at a high level will always provide a challenge as a potentially significant proportion of such costs are likely to be scheme and/or location specific and direct comparison with the overall costs of previous schemes is rarely likely to be wholly possible or appropriate in that respect. Comparison too with such costs will be distorted by the fact that such benchmarks will likely represent outturn costs from the successful (and therefore probably the lowest) tender and will reflect scheme scope following value engineering (VE) activities and detailed design.

As well as this scheme being at an early stage with little design having been undertaken, the estimate as presented is not intended represent the ultimate minimum outturn cost. Instead it is intended to give a robust initial budget figure, and as such there may well be VE opportunities identified as detailed design progresses and/or the assumptions currently made/stated are reviewed or challenged as part of that process. Similarly, the risk/OB allowance will reduce as that process progresses.

Rather than take a “top down” approach from the overall cost of previous projects, the estimate has been undertaken using a ‘bottom up’ approach. As such, rates or allowances for key works items have been based upon adjusted outturn cost data sourced from previous schemes, where the specific works are considered comparable.

A high level benchmarking was undertaken against recently developed/tendered costs for 6 new stations being provided within outlying areas of Birmingham for the West Midlands Combined Authority. The costs of these stations do however demonstrate the potential issues that site specific factors can generate in terms of their impact on cost, as whilst all six stations provided the same basic station infrastructure in terms of platform numbers/lengths, station facilities etc., their CAPEX Point estimate cost ranged from £15.8m to £22.4m.

Whilst further value engineering opportunities may exist to reduce scheme costs in due course, at this stage the estimate provides a central estimate for the purpose of this early stage SOC.

3.5.4. Lifecycle, maintenance costs

It is assumed that the ongoing maintenance and renewals costs for the new station and associated infrastructure would be 1% of the original capital costs per annum. In accordance with TAG guidance all maintenance and renewal costs are uplifted by a further 41% to account for optimism bias.

3.5.5. Operating costs

At this stage, the appraisal has not included any assessment of operating costs, either of the station or of the train services.

The operating costs of the station will be very dependent on whether the station is manned or not, but will also be required to cover utility bills, cleaning, ticket vending machine provision, and other general reactive maintenance as well as costs associated with the station Long Term Charge (LTC) that is part of the regulated costs payable to Network Rail. Within the Mersey travel area, of which Carr Mill will sit within, stations are normally staffed providing coverage from first to last train. Garswood, as a local comparator station, provides ticket office coverage from 06.00-23.45 Monday to Saturday and 08.00-23.35 on a Sunday.

Indicative costs, based on comparator stations may be representative of those that may be expected at Carr Mill. At Maghull North, a two-platform station opened in 2018 on the Merseyrail Electrics network, the LTC is set at just under £59k per annum (based on Network Rail’s CP6 charges) and estimated station staff costs, based on requiring 4-5 Full Time Equivalents (FTE) to cover a 7-day, 3-shift roster would be between £180k and £225k per year.

The train operating costs for options 2, 3 and 6 will be marginal as the station calls can be provided using existing rolling stock diagrams and staff rosters. However, there may some additional fuel (or traction power costs) associated with slowing and accelerating services.

Option 7 will introduce significant operating costs associated with running a new Liverpool – Carr Mill service, and at this stage these have not been assessed. Nor have the wider network benefits of running such a service.

The station in option 7 would attract a LTC charge, although given there would be a single platform only this would be expected to be less than options 2, 3 and 6, although staffing costs to provide cover at the station from first to last train of the day would likely be the same in all options, including option 7.

Additional costs that would be incurred as a result of introducing a brand-new service as a result of option 7 would include Variable Track Usage Charges (VTUC) which are based on £/per vehicle mile, Capacity Charge (CC) which is based on a £/train mile and Electricity Charge for Traction (EC4T) which is based on a £/electrified vehicle mile rate. These rates would all be dependent on the train type that actually operated the service as each has a specific charging regime.

These variable costs would also be in addition to any vehicle leasing costs associated with running the service and staffing costs (driver/guard) required to operate the service on a 7-day basis. No analysis has been undertaken at this stage of these additional costs associated with option 7.

3.5.6. Present Value of Costs

The appraisal of costs follows the approach set out in TAG Unit A1.2 – Scheme Costs. The general assumptions relevant for the economic assessment of costs are:

- Costs are adjusted to 2010 values using the GDP deflator, adjusted to market prices using a rate of 19% and discounted to give Present Value Costs (PVC) in line with WebTAG guidance53;
- The appraisal assumes that construction commences in 2024 and takes three years, with the capital costs distributed evenly from 2024/25 to 2026/27;
- The assumed scheme opening year is 2027, with a 60-year appraisal period ending in 2086;
- For ancillary works, the total operating, whole-life maintenance and renewal costs are estimated as being 1% of capital costs per annum starting in assumed opening year 2027;
- Whole-life maintenance and renewals costs for the station and operating costs for the station and service extensions are as outlined above; and
- This appraisal assumes there would be no net revenue impact, whether on the basis that any positive revenue impacts would offset any potential operating costs, or on the basis that the net effects of abstracted, substituted, or changes in rail demand at an aggregate level are assumed to be insignificant.

In addition to the costs adjustments to convert to present values, as outlined above, this appraisal includes optimism bias at the following rates, in line with rail network enhancement projects at GRIP Stage 2[54]. DfT's TAG guidance[55] sets out that for a project at this early stage of development that an optimism bias

- Capital costs: 56% of present value capital expenditure;
- Lifecycle costs: 41% of present value maintenance, renewal and operational costs.

Table 3-14 – Present values of costs including optimism bias (£m, 2010 prices and values)

	Option 2	Option 3	Option 2	Option 3
Present Value of Costs (PVC)	**£9.15m**	**£10.2m**	**£17.3m**	**£13.7m**

[53] https://www.gov.uk/government/publications/webtag-tag-unit-a1-2-scheme-costs-july-2017
[54] https://www.gov.uk/government/publications/webtag-tag-unit-a5-3-rail-appraisal-may-2018
[55] https://www.gov.uk/government/publications/webtag-tag-unit-a5-3-rail-appraisal-may-2018

3.6. Value for Money Assessment

3.6.1. Analysis of Monetised Costs and Benefits (AMCB) Table

The AMCB table brings together quantified scheme costs and benefits to help determine the economic worth of the transport scheme. This table is based on those elements of the economic appraisal which are considered to produce robust monetised estimates of the impacts. The benefits less costs provide an initial estimate of the net benefits for the scheme. The ratio of these benefits to costs is referred to as the Initial BCR.

In the AMCB table, four critical values are presented:

- The Present Value of Benefits (PVB) is the summation of the stream of discounted benefits over the appraisal period, reduced by the discounted value of the developer contribution.
- The Present Value of Costs (PVC) is the summation of the stream of discounted costs from the current year forward through the 60-year appraisal period, less the discounted value of the developer contribution, although the majority of investment costs are likely to occur before the scheme opening year. The PVC indicates the total cost of the scheme which will be considered against the benefits.
- The Net Present Value (NPV) is the PVB less the PVC and indicates whether there are positive or negative benefits, and their scale, from a scheme.
- The Benefit-Cost Ratio (BCR) is the ratio of the PVB to the PVC.

The BCR for a scheme provides an indicative measure for the value for money of the investment, whereby a BCR greater than 1.0 indicates that the monetised benefits outweigh the costs. It should be noted that the BCR should only provide a starting point for the value for money assessment, which also draws on qualitative assessments of non-monetised impacts, as well as assessing the certainty of the quantified benefits and costs.

Table 3-15 - Analysis of Monetised Costs and Benefits (in £000s)

Present Value of Costs and Benefits, 2010 prices	Option 2	Option 3	Option 6	Option 7
Noise	£0.0m	£0.0m	£0.0m	£0.0m
Local Air Quality	£0.1m	£0.1m	£0.0m	£0.0m
Greenhouse Gases	£0.3m	£0.3m	£0.2m	£0.2m
Journey Quality	£0.0m	£0.0m	£0.0m	£0.0m
Physical Activity	£0.0m	£0.0m	£0.0m	£0.0m
Accidents	£0.3m	£0.3m	£0.2m	£0.2m
Economic Efficiency: Commuting	£6.5m	£7.2m	£0.4m	£2.1m
Economic Efficiency: Other	£5.3m	£5.8m	£1.3m	£2.3m
Economic Efficiency: Business	£1.3m	£1.4m	£0.5m	£0.7m
Indirect Taxation Revenues	-£1.5m	-£1.5m	-£1.0m	-£1.0m
Present Value of Benefits (PVB)	**£12.3m**	**£13.6m**	**£1.6m**	**£4.5m**
Revenue	£6.6m	£6.6m	£4.5m	£4.6m
Operating Costs	-£0.0m	-£0.0m	-£0.0m	-£0.0m
Capital Costs	£9.2m	£10.2m	£17.3m	£13.7m
Private sector contribution	£0.0m	£0.0m	£0.0m	£0.0m
Present Value of Costs (PVC)	**£2.6m**	**£3.5m**	**£12.8m**	**£9.1m**
Net Present Value (NPV)	£9.7m	£10.0m	-£11.2m	-£4.6m
Benefit to Cost Ratio (BCR)	**4.80**	**3.84**	**0.12**	**0.49**
DfT Value for Money Category	**Very High**	**High**	**Poor**	**Poor**

Note: All monetised values are expressed as 2010 present values. Value of wider impacts has not been monetised.

The monetised costs and benefits show the following:

- **Option 2 (South of Laffak Road):** This option generates net positive benefits. The net present value of the scheme is £9.7m over the 60 year appraisal period (in 2010 prices), providing a BCR of 4.8 and the scheme would be expected to represent very high value for money.
- **Option 2 (North of Woodlands Road):** This option is similar to option 2, although it has slightly higher benefits than option 1 it also has slightly higher capital costs. As a result, although the NPV is slightly higher than option 2 at £10.0m, its BCR is slightly lower at 3.8, which represents high value for money.
- **Option 3 (Gerard's Bridge):** This option provides poor value for money and a negative NPV. This option does not provide significant benefits and caries high costs.
- **Option 4 (Gerard's Bridge Terminus)**: This option is also poor value for money, with high costs and low benefits. The appraisal is likely to be overstating the BCR as the costs of running the additional service are not included.

3.6.2. Key Sensitivity Testing

The key drivers of the economic assessment are the estimated costs and demand, with the demand driving both forecast benefits and forecast revenues. To understand the sensitivity of these assumptions to the appraisal results the appraisal of option 2, has been assessed with costs and demand 25% higher and lower. The results are shown below.

Table 3-16 – Sensitivity of option 1 to higher/lower costs and demand

Present Value of Costs and Benefits, 2010 prices (£m)	Option 2	-25% cost	+25% cost	-25% demand	+25% demand	+25% costs and -25% demand
Noise	£0.0m	£0.0m	£0.0m	£0.0m	£0.0m	£0.0m
Local Air Quality	£0.1m	£0.1m	£0.1m	£0.0m	£0.1m	£0.0m
Greenhouse Gases	£0.3m	£0.3m	£0.3m	£0.2m	£0.3m	£0.2m
Journey Quality	£0.0m	£0.0m	£0.0m	£0.0m	£0.0m	£0.0m
Physical Activity	£0.0m	£0.0m	£0.0m	£0.0m	£0.0m	£0.0m
Accidents	£0.3m	£0.3m	£0.3m	£0.2m	£0.3m	£0.2m
Economic Efficiency: Commuting	£6.5m	£6.5m	£6.5m	£4.8m	£8.1m	£4.8m
Economic Efficiency: Other	£5.3m	£5.3m	£5.3m	£4.0m	£6.7m	£4.0m
Economic Efficiency: Business	£1.3m	£1.3m	£1.3m	£1.0m	£1.6m	£1.0m
Indirect Taxation Revenues	-£1.5m	-£1.5m	-£1.5m	-£1.1m	-£1.8m	-£1.1m
Present Value of Benefits (PVB)	£12.3m	£12.3m	£12.3m	£9.2m	£15.3m	£9.2m
Revenue (+ve is cost -ve is income)	£6.6m	£6.6m	£6.6m	£4.9m	£8.2m	£4.9m
Operating Costs	-£0.0m	-£0.0m	-£0.0m	-£0.0m	-£0.0m	-£0.0m
Capital Costs	£9.2m	£6.9m	£11.4m	£9.2m	£9.2m	£11.4m
Private sector contribution	£0.0m	£0.0m	£0.0m	£0.0m	£0.0m	£0.0m
Present Value of Costs (PVC)	£2.6m	£0.3m	£4.8m	£4.2m	£0.9m	£6.5m
Net Present Value (NPV)	£9.7m	£12.0m	£7.4m	£5.0m	£14.4m	£2.7m
Benefit to Cost Ratio (BCR)	**4.80**	**45.87**	**2.53**	**2.19**	**16.85**	**1.42**
DfT Value for Money Category	**Very High**	**Very High**	**High**	**High**	**Very High**	**Low**

This shows that the scheme is expected to remain as high value for money even if costs are 25% higher or demand 25% lower. If costs and demand are 25% higher and lower respectively at the same time, then the value for money of the scheme becomes low at 1.4.

3.7. Economic Dimension Summary and Conclusions

The approach to assessing the Economic Case is consistent with DfT's Restoring Your Railway (Beeching) Ideas Fund guidance, DfT TAG guidance, HMT Greenbook guidance, and the Passenger Demand Forecasting Council's guidance. It has quantified and monetised the main costs and benefits of the scheme and has provided an assessment of the likely economic case appropriate to this stage of the business case.

Demand and benefits have been assessed using a bespoke spreadsheet based trip rate model that uses Thatto Heath and Eccleston Park stations to derive trip rates for Carr Mill Station, while taking account of the

different services and catchment areas of each station. Growth is applied to the forecast in line with PDFH forecasting methodology. The MOIRA model has been used to assess the impacts of through passengers, for whose journeys are extended by a few minutes as a result of the additional station call at Carr Mill.

Following the option development and high level sifting undertaken within the strategic case, four different station options have been assessed within the economic case. Options 2, 3 and 6 are located as new stations on the existing Wigan to Liverpool Line, while option 7 is to provide a new station on a branch line. While options 2, 3 and 6 can be served by the existing 2 train per hour stopping service, option 7 would require a new train service to be introduced and will only provide an hourly service.

High level capital cost estimates have been assessed for each option. This shows the station can be built for between £14 and £27m in 2022 prices, including 56% optimism bias. Option 6 at Gerrards Bridge would be the most expensive option due to the constrained nature of the site over a brook. Train operating costs have not been accounted for at this stage of the appraisal; for options 2, 3 and 6 no new rolling stock or service is required the incremental operating costs are not expected to be large. However, option 7 would require the operation of a new service and these costs could be significant.

The assessment of benefits shows that all of the options generate significant levels of demand, benefits and revenue. Options 2 and 3 which are both located near the site of the old Carr Mill Station, generate the most demand with around 150,000 passengers year forecast on opening growing to 310,000 passengers per year by 2042. Option 6 which is located much closer to the existing St Helens Central station would generate a much lower level of demand as the potential catchment area of the station is smaller. Option 7 would generate the least demand as it only has a 1 train per hour service in the Liverpool direction. Passengers to Wigan would have to change and would therefore be unlikely to use Carr Mill.

The appraisal shows that options 2 and 3 provide high levels of benefits that provide a BCR of 4.8 for option 2 and 3.8 for option 3, which is categorised as very high of high value for money. These options are both the cheapest and provide the highest levels of demand, revenue and benefits. The higher costs and lower demand benefits and revenue of options 6 and 7 mean that neither of these options provide a BCR above 1 with both options providing low value for money.

On this basis the economic analysis shows that options 2 and 3 are clearly preferential to options 6 and 7. While option 2 performs slightly better than option 3, in practice it would be recommended that both options are taken forward for more detailed design work as the accessibility differences between each option are marginal.

Sensitivity testing shows these conclusions are robust around some quite wide variations in cost or demand assumptions, with the scheme still remaining as high value for money even if costs are 25% higher or demand 25% lower. If costs and demand are 25% higher and lower respectively at the same time, then the value for money of the scheme becomes low at 1.4.

A high level assessment of the wider economic impacts shows that these impacts could form an additional 10% uplift to the benefits, although at this stage these have not been included in the appraisal. An assessment of the social and distributional impacts shows the scheme to be slightly beneficial to most users groups. A high level assessment of the environmental impacts shows that while there could be some potential adverse impacts from the construction of the new station, it is not expected that these will be significant

4. Financial Dimension

4.1. Introduction

This chapter presents, at a high level, the costs and affordability of the Carr Mill Station scheme. A number of potential funding sources for the scheme have been considered, as has a high-level budget profile.

4.2. Scheme Costs

As set out in the Economic Case, four options have been appraised with a range of forecast benefits and costs considered. From this appraisal process it is clear that options 2 and 3 with a station site located near the old station site between Laffak and Woodlands Roads is the preferred scheme. Table 3-12 presents that the expected capital costs of construction, including optimism bias, for these options would be £14.3m to £16.0m in Q2 2022 prices.

Assuming a 3 year construction period, this would mean expected annual capital expenditure over the construction period might be around £4-5m per annum.

Operating costs have not been assessed at this stage of the appraisal. The incremental train operating costs are expected to be relatively small as for the preferred scheme there no additional rolling stock or crew diagrams required, and the only additional cost are related to the traction costs of accelerating the trains from the station. Station operating costs are dependent on whether the station is manned or not, which the next stage of the study would need to give further consideration to.

4.3. Funding Sources

At this stage a funding source has not yet been identified for the scheme. The Government's Restoring Your Railway Fund (RYR) could be one source of funding, although an application to the scheme is yet to be made.

4.4. Funding Profile

Timescales for funding the scheme have yet to be developed, so the funding profile for the scheme is uncertain at this stage. This will become clearer at the next stage of the Business Case process.

4.5. Conclusion

At this stage of the Business Case process the Financial Case is still at an early stage. Once a preferred option has been selected, the capital and operating costs will be developed, and the funding source and profile will be set out. It is clear however, that the scheme will be heavily dependent on national rather than local funding.

5. Commercial Case

5.1. Introduction

The Commercial Case outlines the delivery partners and their procurement strategy, as well as the statutory and other regulatory processes which need to be managed for the scheme to be delivered successfully. The Commercial Case provides evidence on the commercial viability of the proposal and the procurement strategy that will be used to construct the scheme.

The outcomes which the preferred procurement strategy must deliver are to:

- Achieve cost certainty, or certainty that the scheme can be delivered within the available funding constraints.
- Minimise further preparation costs with respect to scheme design by ensuring best value, and appropriate quality.
- Obtain contractor experience and input to the construction programme to ensure the implementation programme is robust and achievable.
- Obtain contractor input to risk management and appraisals, including mitigation measures, to capitalise at an early stage on opportunities to reduce construction risk and improve outturn certainty thereby reducing risks to a level that is 'As Low As Reasonably Practicable' (ALARP).

The structure of the Commercial Case is as follows:

- Procurement Strategy including:
  - Delivery Partners
  - Procurement Timescales
  - Contract Management
  - Risk Allocation and Transfer
- Statutory and Other Regulatory Consents.

5.2. Delivery Partners

Lancashire County Council have identified the following key partners for delivering the scheme;.

- Network Rail
- Department for Transport
- St Helens Borough Council
- Liverpool City Region Combined Authority
- Transport for the North

5.3. Procurement Strategy

Given the early stage of the scheme Were St Helens Borough Council to have responsibility for the procurement of this scheme, then they would follow the most economically advantageous tender (MEAT) criterion during the procurement process to enable the best reflection of qualitative, technical, and sustainable aspects of the tender submissions, as well as prices. This process will also consider the comparative risk of delivering options. For example, Network Rail are likely to be best placed to deliver the Heavy Rail option, and therefore a direct award for this would seem most appropriate to manage the risks and overall delivery of the scheme.

5.4. Statutory and Other Regulatory Consents

Although St Helens Borough Council would prefer to acquire any land via negotiation, there may be the need for Compulsory Purchase Orders (CPO) required for land.

5.5. Conclusion

At this stage of the Business Case process the Commercial Case has identified the key delivery partners and introduced the proposed procurement method, which will follow MEAT principles.

6. Management Case

6.1. Introduction

The Management Case outlines the appropriate governance structure for the delivery partners, the high-level project programme with key dependencies and milestones. The Management Case ensures that the project is deliverable. It demonstrates that timescales and phasing are well established and realistic, that an appropriate governance structure is in place to oversee delivery, that risks have been identified and suitable management processes developed, and that there are robust plans for communications and stakeholder management. The management case also includes measures to ensure that the benefits set out in the economic case are realised and to assess and evaluate the impacts.

At this stage the management case has been prepared on the basis of St Helens Council's approach, but this may change in due course if there is a change of project sponsor and delivery agency.

The station would be developed in accordance with the DfT's Rail Network Enhancements Pipeline (RNEP) process and using Network Rail's Governance for Rail Investment Projects (GRIP) process or Project Acceleration in a Controlled Environment (PACE). Using this process will ensure rail industry support for the scheme and demonstrate that the station is deliverable.

The structure of the Management Case is as follows:

- Implementation of similar projects.
- Governance structure.
- Project programme.
- Assurance and approvals.
- Communications and stakeholder management.
- Key risks.

6.2. Implementation of Similar Projects

The next stage of the Business Case process will further set out how the project will be delivered and implemented, and which organisations will lead the work. At this point those organisations will demonstrate its experience of delivery and implementing transport projects.

6.3. Governance Structure

At this next stage of the Business Case process the proposed governance structures for St Helens Borough Council and Network Rail for delivering the scheme will be set out.

6.4. Project Programme

At the next stage of the Business Case process a project programme will be set out. This will include the key milestones and dependencies which are crucial to the scheme's delivery.

6.5. Key Risks

At the next stage of the Business Case process a Risk Register will be developed. This will include many different types of risks to the delivery of the scheme, such as strategic risks to funding and political alignment, and those specific to engineering challenges. Mitigation measures will also be identified at this stage.

6.6. Conclusion

At this stage of the Business Case process the Management Case is at a very early stage, and further development of this would be required in the next stage of the scheme's development.

7. Conclusions and Recommended Next Steps

7.1. Overarching Conclusions

7.1.1. Strategic Case

With a population over 35,000, there are some vibrant communities in Carr Mill and its surrounding areas. However, despite being located the railway line connecting Liverpool with Wigan and beyond, this area is not served by a railway station. The closest railway stations are Garswood to the north-east (approx. 3.5km) and St Helens Central to the south-west (approx. 2.5km).

About half of the population in the study areas work outside of the Borough, with a significant number of them working in key employment locations including Wigan, Warrington, Knowsley and Liverpool. However, there is currently no public transport option providing direct connection to many of these key destinations, such as Liverpool and Wigan. Such limited public transport provision is causing a major accessibility gap between driving and public transport. For example, Wigan, Warrington and Liverpool can be accessed within 30 minutes by car, while public transport journey to these locations can take almost twice as long.

As a result, Carr Mill residents are overly reliant on private vehicle as their main mode of accessing employment and services, reflected by a larger proportion of them commuting by car compared to the regional and national averages. Without intervention, the trend of high car usage is set to continue for existing and future residents of the study area. This is expected to lead to further traffic congestions, limiting the sustainable growth of the Borough. As a carbon-intensive mode, dependency on private vehicles also makes it challenging to achieve LCR's net zero target.

At the same time, there are low levels of car ownership in and around the study area, possibly due to a relative high level of deprivation within the region. Without an efficient alternative option, those without a car will have access to fewer employment, educational and other opportunities. This will in term lead to further deprivation, forming a vicious circle.

Based on the policy, strategy and transport context of the area, the following strategic scheme objectives have been designed to address the key problems and opportunities identified:

- Improve transport connectivity to key regional destinations and markets to the ensure the local community has better access to jobs, services and opportunities, helping to level up the borough.
- Deliver a scheme which supports the sustainable growth of the borough.
- Increase the share of journeys taken by public transport in the study area and reduce the reliance upon the car for travel.
- Support the Liverpool City Region to reach its target of net zero carbon by 2040.
- Deliver a public transport intervention that is affordable and financially sustainable.

7.1.2. A rail solution for Carr Mill

An assessment of strategic options against the strategic scheme objectives concluded that a rail-based solution is the suitable out of the four broad categories.

A rail service will provide the highest quality public transport connection from Carr Mill to a wide range of centres, including Liverpool, Wigan and St Helens. It will establish new direct public transport linkages that will connect the current and future residents of Carr Mill with more jobs, opportunities and services.

Travelling by rail is also expected to be fast, efficient, and reliable, making it highly attractive even when compared to driving in many cases, especially when travelling to a large urban centre like Liverpool. It is the option that can promote the strongest shift towards less carbon-intensive modes and away from private vehicle use. Such shift is pivotal in contributing to achieving LCR's net zero target.

All rail-based strategic options are therefore taken forward for more detailed considerations as well as further scheme assessments.

7.1.3. Economic Assessment

The approach to assessing the Economic Case is consistent with DfT's Restoring Your Railway (Beeching) Ideas Fund guidance, DfT TAG guidance, HMT Greenbook guidance, and the Passenger Demand Forecasting Council's guidance. It has quantified and monetised the main costs and benefits of the scheme and has provided an assessment of the likely economic case appropriate to this stage of the business case.

Demand and benefits have been assessed using a bespoke spreadsheet based trip rate model that uses Thatto Heath and Eccleston Park stations to derive trip rates for Carr Mill Station, while taking account of the different services and catchment areas of each station. Growth is applied to the forecast in line with PDFH forecasting methodology. The MOIRA model has been used to assess the impacts of through passengers, for whose journeys are extended by a few minutes as a result of the additional station call at Carr Mill.

Following the option development and high level sifting undertaken within the strategic case, four different station options have been assessed within the economic case. Options 2, 3 and 6 are located as new stations on the existing Wigan to Liverpool Line, while option 7 is to provide a new station on a branch line. While options 2, 3 and 6 can be served by the existing 2 train per hour stopping service, option 7 would require a new train service to be introduced and will only provide an hourly service.

High level capital cost estimates have been assessed for each option. This shows the station can be built for between £14 and £27m in 2022 prices, including 56% optimism bias. Option 6 at Gerrards Bridge would be the most expensive option due to the constrained nature of the site over a brook. Train operating costs have not been accounted for at this stage of the appraisal; for options 2, 3 and 6 no new rolling stock or service is required the incremental operating costs are not expected to be large. However, option 7 would require the operation of a new service and these costs could be significant.

The assessment of benefits shows that all of the options generate significant levels of demand, benefits and revenue. Options 2 and 3 which are both located near the site of the old Carr Mill Station, generate the most demand with around 150,000 passengers year forecast on opening growing to 310,000 passengers per year by 2042. Option 6 which is located much closer to the existing St Helens Central station would generate a much lower level of demand as the potential catchment area of the station is smaller. Option 7 would generate the least demand as it only has a 1 train per hour service in the Liverpool direction. Passengers to Wigan would have to change and would therefore be unlikely to use Carr Mill.

The appraisal shows that options 2 and 3 provide high levels of benefits that provide a BCR of 4.8 for option 2 and 3.8 for option 3, which is categorised as very high of high value for money. These options are both the cheapest and provide the highest levels of demand, revenue and benefits. The higher costs and lower demand benefits and revenue of options 6 and 7 mean that neither of these options provide a BCR above 1 with both options providing low value for money.

On this basis the economic analysis shows that options 2 and 3 are clearly preferential to options 6 and 7. While option 2 performs slightly better than option 3, in practice it would be recommended that both options are taken forward for more detailed design work as the accessibility differences between each option are marginal.

Sensitivity testing shows these conclusions are robust around some quite wide variations in cost or demand assumptions, with the scheme still remaining as high value for money even if costs are 25% higher or demand 25% lower. If costs and demand are 25% higher and lower respectively at the same time, then the value for money of the scheme becomes low at 1.4.

A high level assessment of the wider economic impacts shows that these impacts could form an additional 10% uplift to the benefits, although at this stage these have not been included in the appraisal. An assessment of the social and distributional impacts shows the scheme to be slightly beneficial to most users groups. A high level assessment of the environmental impacts shows that while there could be some potential adverse impacts from the construction of the new station, it is not expected that these will be significant

7.1.4. Commercial Financial and Management Cases

While high level capital costs estimates for four of the options have been developed, the financial, commercial and management cases are still at an early stage of their development, and further work would be required in this area as the scheme further develops. In particular it will be important to identify which organisations are based placed to lead delivery of the scheme.

7.2. Next steps

As per the DfT business case process, the next stage of scheme development is the Outline Business Case (OBC) and then the Full Business Case (FBC) with each stage incrementally building additional levels of detail and technical analysis.

Key areas of work that will need to be undertaken to deliver these next steps should include:

- Further working with Northern Trains and NR in their development of a future timetable that includes a stop at Carr Mill.
- Further developing the demand and appraisal model to improve the calibration of the demand forecasts, and to undertake additional uncertainty analysis
- Undertaking detailed topographical site surveys and developing a more detailed station design that brings together the best elements of options 2 and 3. This will result in a more refined estimate of costs.
- Further engagement with landowners, to understand potential land acquisition costs.
- Development of an integrated transport hub at the station, involving the provision of active travel routes to the station, and the integration of bus routes
- Formal stakeholder consultation.
- Clarification over the consents route to progress the scheme.

7.2.1. Network Rail PACE Approach

PACE (Project Acceleration in Controlled Environment) is an approach to project management that Network Rail use in order to minimise the risks associated with project development and delivery. Developed as part of project SPEED it supersedes Network Rail's previous approach known as GRIP (Governance for Railway Investment Projects). While PACE is similar in concept to GRIP it is a more flexible control framework and allows sponsors and project management to tailor controls to better meet the requirements of their project. After being approved in November 2020, PACE has been applied to projects since January 2021. As shown in the figure below, PACE is divided up into five main stages to manage efficient delivery of rail infrastructure:

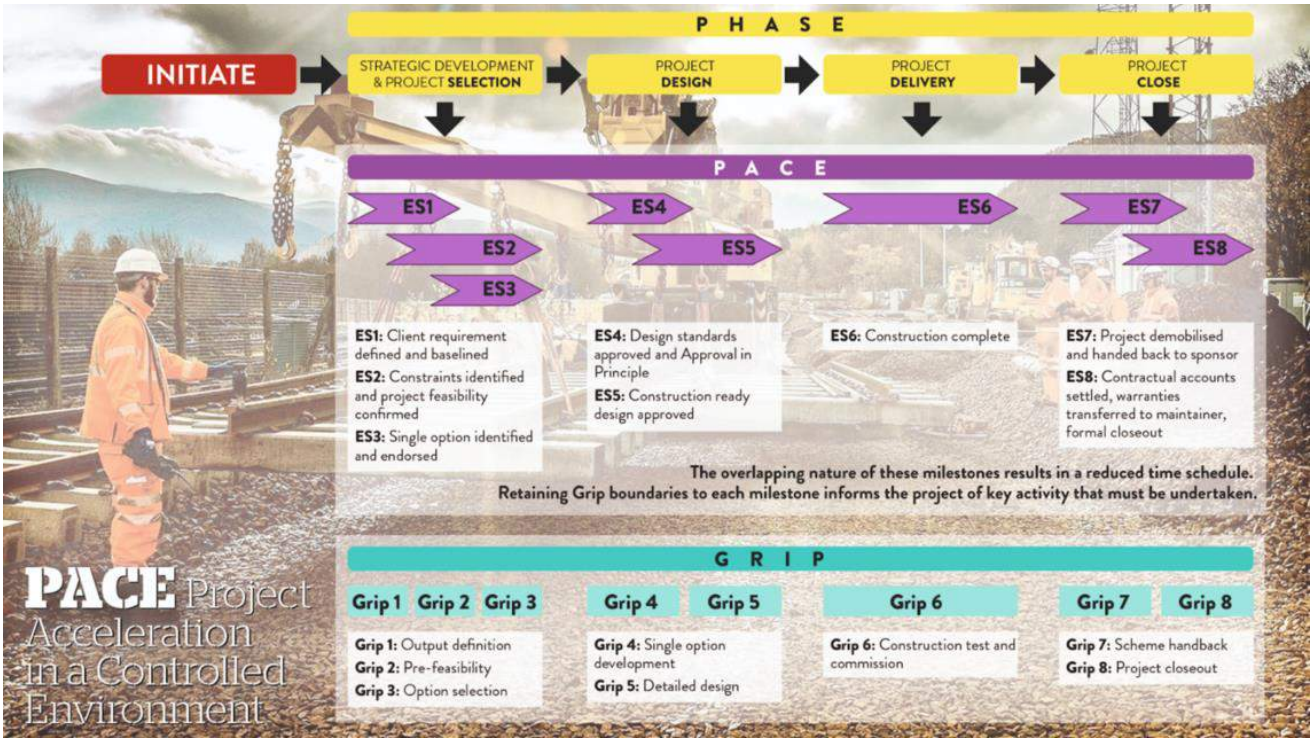
- project initiation
- development and project selection
- project design
- project delivery
- project close

Straddling these stages are 8 ES milestones that are similar to the previous 8 GRIP stages, and provide more information on the detailed activity expected to be undertaken.

The Carr Mill Station project can currently be considered to be within the strategic development and project selection stage of PACE and have achieved ES2 or GRIP 2, whereby client requirements and required outputs have been defined, and project feasibility confirmed.

The next stage of the scheme's development would therefore be to undertake ES3 to select and develop a detailed project design for a single option that can then be subsequently taken into an Outline Business Case. Once funding, procurement of a tender cost and planning is obtained, a Final Business Case can then be prepared prior to a final investment decision.

Figure 7-1 – Network Rail PACE process[56]



7.2.2. Development Overview

For stations proposed by a third party such as St Helens Council, the Network Rail Basic Asset Protection Agreement (BAPA) process is usually followed. In this approach the scheme promotor is responsible for meeting Network Rail's requirements and for following the PACE (or previously GRIP) processes.

To do this the scheme promotor would normally be supported by a developer or delivery partner along with engineering consultant and business case development team. The immediate task will be to advance the current SOBC status of design, through more detailed option development as part of ES3 or GRIP stage 3. This process requires undertaking detailed ground and topographical surveys and developing a leading option through to seeking planning permission, and can generate critical issues to overcome, in terms of funding, design or environmental mitigation that require close engagement with other external bodies & partners.

Engagement will be required with Network Rail as the asset owner on issues such as Network Rail's Common Safety Method (CSM), interoperability compliance, mining risk management, station fire strategy development and station security. Agreement design and operational details will also be required throughout the development process with Northern Trains who will be both operating the station and providing train services.

More generally a public consultation and engagement with local user groups would be undertaken to better understand local requirements or concerns. This may include questions on location, accessibility, design, facilities and staffing. It may be that on occasions the requirements of different stakeholders and funding partners contradict, and managing these potential conflicts will be vital to successful project delivery.

Local authority planning procedures should be sufficient to obtain the necessary powers to deliver the station. Although a DCO (Development Consents Order) or TWA (Transport Works Act) are also available routes to obtaining planning powers. Use of either approach would likely only be necessary if the location and footprint of the station requires a complex arrangement of parcels of land to be negotiated or compulsory purchased, and as such following local authority planning procedures would be preferable. Experience suggests that seeking early planning approval (in the latter part of GRIP stage 3) is advisable to allow the outline design to take into account any conditions of the planning as well as early input from key stakeholders and Network Rail, and that establishing early negotiations with any key landowners is likely to be helpful.

To maximise the benefits of a new station it would be expected that the scheme would also include some enhancements to the existing road, public transport and active travel networks, so that the new station is as

[56] Reproduced from New Civil Engineer Interview | Mike Wright of Network Rail on setting a new tone for project delivery | New Civil Engineer

accessible as possible. Any such work required outside of the main station site would normally be delivered separately by the local authority through a separate planning and funding process.

7.2.3. Indicative Timescales

Based on the development overview described above, the figure below provides indicative timescales for delivering a new station such as Carr Mill. Typically, it might be expected that a new station of this kind would take around 6 years to deliver, although there is considerable variation across different schemes, with particular dependency on timely agreements on funding, procurement, and planning.

Table 7-1 – Carr Mill Station Development Indicative Timeline

Development Stage	Approximate Timescale	Ongoing Activities Throughout

Option Development: GRIP Stage 3 (ES3)
• Develop timetable
• Undertake further surveys
• Investigate mining risks and process
• Agree Fire Strategy approach
• Develop Options to allow Option selection
• Select Option
• Review chosen design with NR's Built Environment Design Accessibility Panel (BEAP) and Design Advisory Panel
• Submit Local Authority Planning Application
	1.5 years	• Business Case Development
		• Planning approach
		• CSM / Interoperability issues
		• Assessment Body engagement (SRP / NRAP)
		• BAPA process with Network Rail
		• Consultation with User Groups
		• Stakeholder & Requirements Management
		  ○ NR (Free holder)
		  ○ Northern (leaseholder / station facility operator)
		  ○ Other service providers
		  ○ British Transport Police

Outline Design: GRIP Stage 4 (ES4) • Complete planning application and land negotiations • Complete any remaining detailed surveys • Conclude Mining Risk Assessment if necessary • Produce AIP (Approval in Principle) Design	**1 year**	
Detailed Design: GRIP Stage 5 (ES5) • Appoint contractor for early contractor involvement • Complete detailed design • Agree wayfinding, branding, operation details	**2.5 years**	
Construction: GRIP Stage 6-8 (ES6-8) • Construction • Test & Commission • EIS & Handover	**1 year**	

Appendices

8. Appendix A: Station Design

8.1. Introduction

The purpose of this Appendix is to outline the high-level engineering design decisions and assumptions that have been made in developing the high-level options for the station location and layout. This work has been key in enabling a cost estimate to be developed for the scheme in support of the business case.

8.2. Design Approach

In the absence of detailed survey / site investigation information, various desktop sources of information have been used to develop the design proposals as follows:

- Ordnance Survey background mapping in CAD format, provided by St Helens Council, has been used for an overview of the existing site and to produce the dimensioned outline sketches;
- Publicly available aerial mapping from Google Maps has provided an overview of the existing site features;
- Network Rail's Routeview aerial photography system has been used to identify features on the existing railway corridor more clearly, and to provide indicative information on site topography;
- Utilities records have been sourced from statutory undertakers in order to identify key utilities risks associated with each option; and
- A site visit, to publicly accessible areas only, has been carried out by the design team to inform the identification and development of options.

A separate Geotechnical and Geo-environmental desktop study has been carried out, informed by historic information on ground conditions, land use, mining and unexploded ordnance risk. Refer to 5210780-TN-GEO-000001 for details.

8.3. Proposed Station Specification

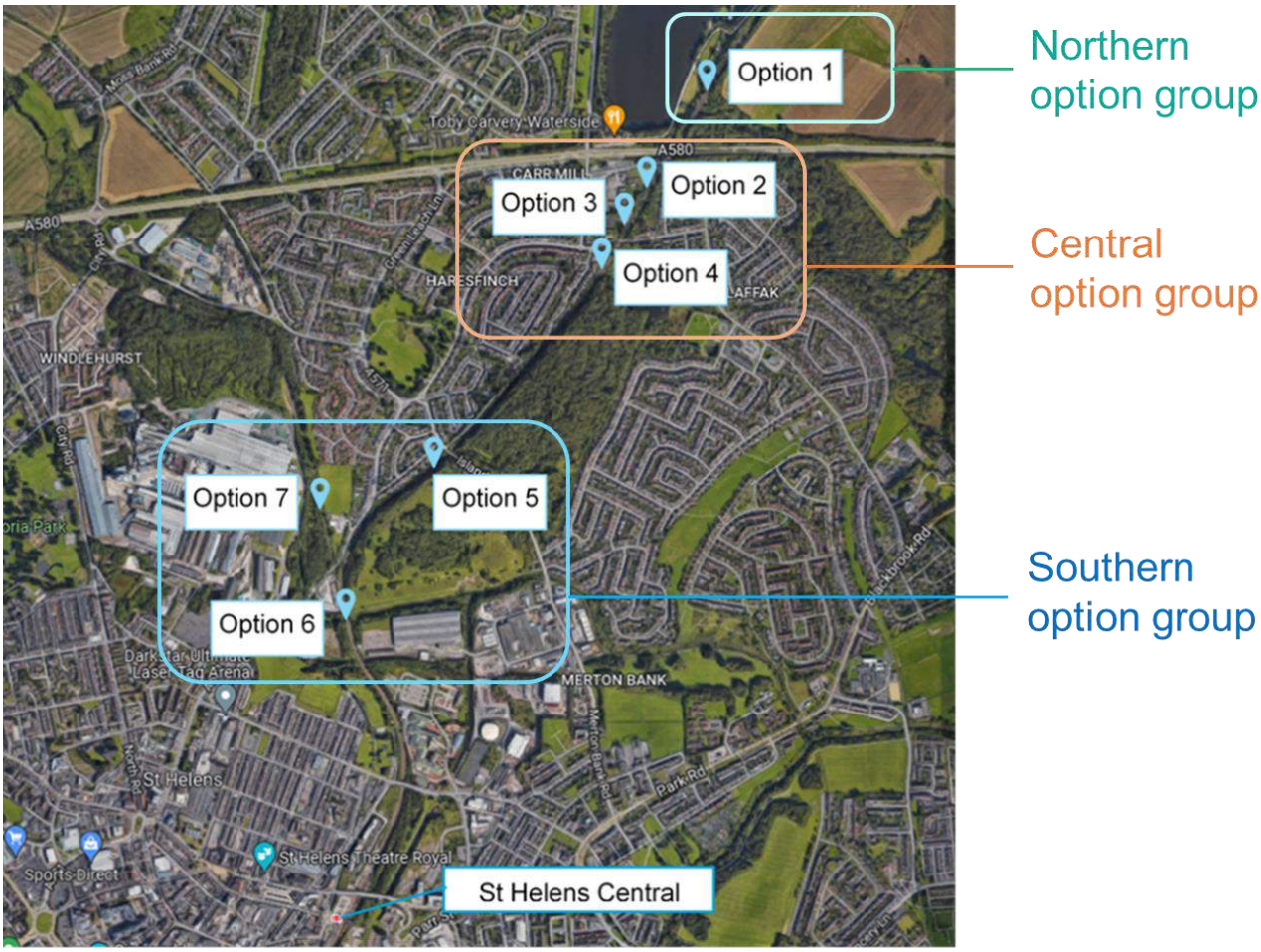
Following discussions with St Helens Council, Liverpool City Region and Northern Trains, the following key criteria were agreed for the new station which were to be applied to all options identified.

Item	Assumption	Rationale
Platform length	140m	As agreed with Northern Trains at Stakeholder Workshop 26 May 2022. Sufficient to accommodate a 6x 23m train configuration. Note: The 2002 study assumed 120m, whilst the 2015 study reduced it to 100m.
Platform width	3m	As agreed at Stakeholder Workshop 26 May 2022. Exceeds 2.5m minimum width required by RIS-7016-INS.
Staffing	Staffed ticket office	As per Maghull North Station
Station building	100m^2 to accommodate ticket office, staff welfare and waiting room	Approximate size of Maghull North station building
Station Information & Security Systems	Full CCTV and PA coverage; customer information screens; help points	Required by standards
Parking/drop-off	50 space car park including 5no. disabled parking bays and 2no. spaces with EV charging Secure cycling parking Bus stop/turning area Taxi/drop-off area Sheltered waiting facilities	Assumption agreed at Stakeholder Workshop 26 May 2022. Final number of car parking spaces to be agreed at a later stage of development.

8.4. Station Location Options

An initial long list of seven potential station locations to the north of St Helens Central were identified from a desktop exercise, and a site visit was carried out to investigate the local site conditions and constraints at each. The seven locations are shown on Figure 8-1 below, and are discussed in more detail in the SOBC report, including justifications for the selection of shortlisted options.

Figure 8-1 – Proposed Station Location Options



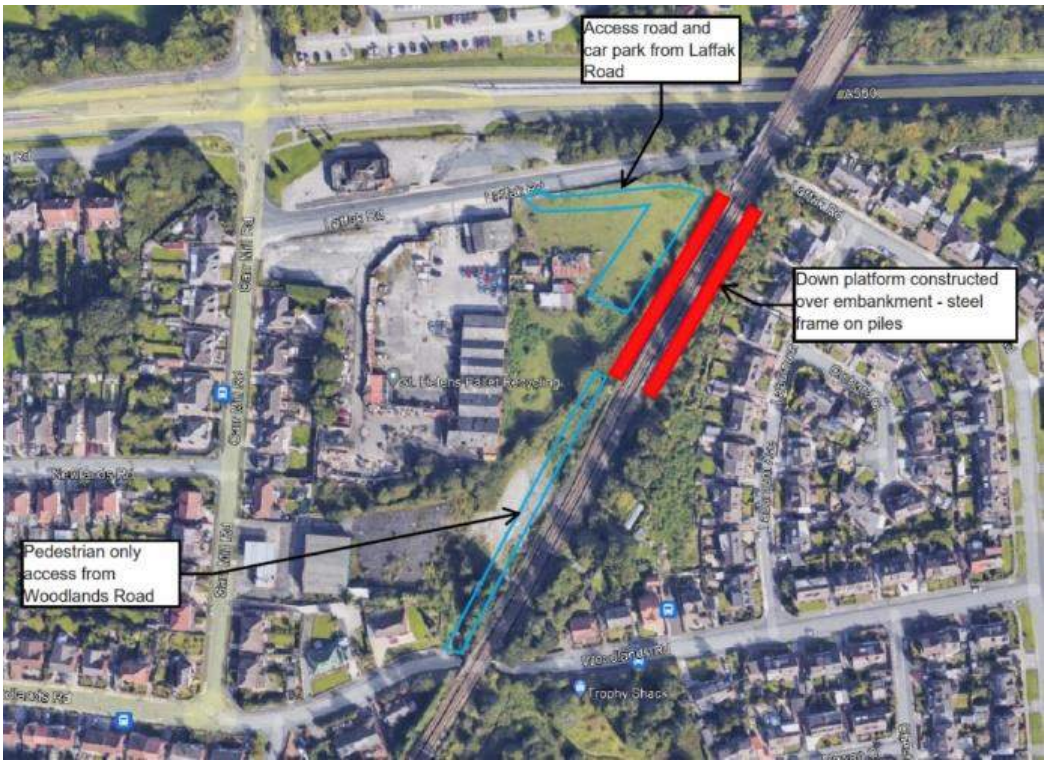
Of the seven options above. Options 1, 4 and 5 were deemed unfeasible during the early sifting process. Options 2 and 3 in the north of the study area close to the site of the old Carr Mill station, and Options 6 and 7 in the south closer to St Helens town centre, were selected to be developed further and are subsequently described in this report. Each of these options is presented as a dimensioned sketch using background mapping data at the end of this appendix.

Further information on the initial sifting process is provided in the SOBC report.

8.5. Option 2: South of Laffak Road

Option 2 is located in the northern part of the development site situated alongside the railway between Laffak Road and Woodlands Road. Unlike the historical proposals, Laffak Road is not realigned and instead an access road from it connects to a car park located in the north-eastern corner of the site.

Figure 8-2 - Option 2 Proposed Station Location



The station would be situated on a section of the route with a relatively steep track gradient of 1:86. While this is steeper than gradients preferred by standards, this is not unprecedented and is considered likely to be acceptable. The station would comprise side platforms each side of the tracks.

Platforms would be situated immediately south of Laffak Road underbridge, with the northbound platform constructed as traditional riser wall and fill arrangement above the existing retaining wall here, and the southbound platform constructed using a lightweight steel frame on piled foundations over the existing embankment, which would be designed in accordance with Network Rail standards NR/L2/CIV/030 and RIS-7016-INS. Access between platforms would be achieved through the construction of a cut-and-cover subway below the railway, with lifts and steps to each platform.

Car parking and associated facilities would be situated to the west of the platforms, with road access via a new junction on Laffak Road. The junction would be located sufficiently far from the Laffak Road underbridge to provide adequate visibility, and at a point where the site is approximately level with the road, so as to avoid the need for significant retaining structures.

An additional pedestrian-only access would be constructed alongside the western edge of the railway corridor linking the station with Woodlands Road. Some highway modifications at this point will likely be required to improve accessibility and visibility through the Woodlands Road underbridge.

A secondary means of escape from northbound platform is relatively easy to achieve, while from the southbound platform this is likely to require an emergency staircase down the embankment and across an area of privately owned land to the rear of the housing to join Woodlands Road.

Utilities issues associated with this option are expected to be relatively minor. There are existing telecoms and electricity cables buried along the southern side of Laffak Road which could be affected by the construction of the new road junction, but otherwise the site appears to be largely clear of buried services. An existing domestic electrical substation is located next to the former petrol station on Carr Mill Road, which may minimise the costs associated with the provision of a power supply to the station.

Accessibility to the station is relatively poor as the alignment and visibility along Laffak Road is severely restricted by the existing Laffak Road underbridge.

8.6. Option 3: North of Woodlands Road

Option 3 is also located on the site earmarked for development between Laffak and Woodlands Roads but is situated at the south end of the site adjacent to Woodlands Road, broadly as proposed by previous studies,

with access from Carr Mill Road. The option does not require the realignment of Laffak Road as previous studies have proposed in order to suit potential housing developments on the site, however this can be accommodated within the design of a station in this location.

Figure 8-3 - Option 3 Proposed Station Location

The station would be situated on a section of the route with a relatively steep track gradient of 1:86. While this is steeper than gradients preferred by standards, this is not unprecedented and is considered likely to be acceptable. The station would comprise side platforms each side of the tracks.

Platforms would be constructed just north of Woodlands Road underbridge, with the northbound platform constructed as traditional riser wall and fill arrangement above the existing retaining wall here, and the southbound platform constructed using a lightweight steel frame on piled foundations over the existing embankment, which would be designed in accordance with Network Rail standards NR/L2/CIV/030 and RIS-7016-INS. Access between platforms would be achieved through the construction of a cut-and-cover subway below the railway, with lifts and steps to the platforms.

Car parking and associated facilities would be situated to the west of the platforms, with road access via a new junction on Carr Mill Road, on the site of the former petrol station and retail store, where the junction design will be easier to achieve than Option 2 due to better alignment and visibility.

An additional pedestrian-only access would be constructed alongside the western edge of the railway corridor linking the station with Woodlands Road. Some highway modifications at this point will likely be required to improve accessibility and visibility through the Woodlands Road underbridge.

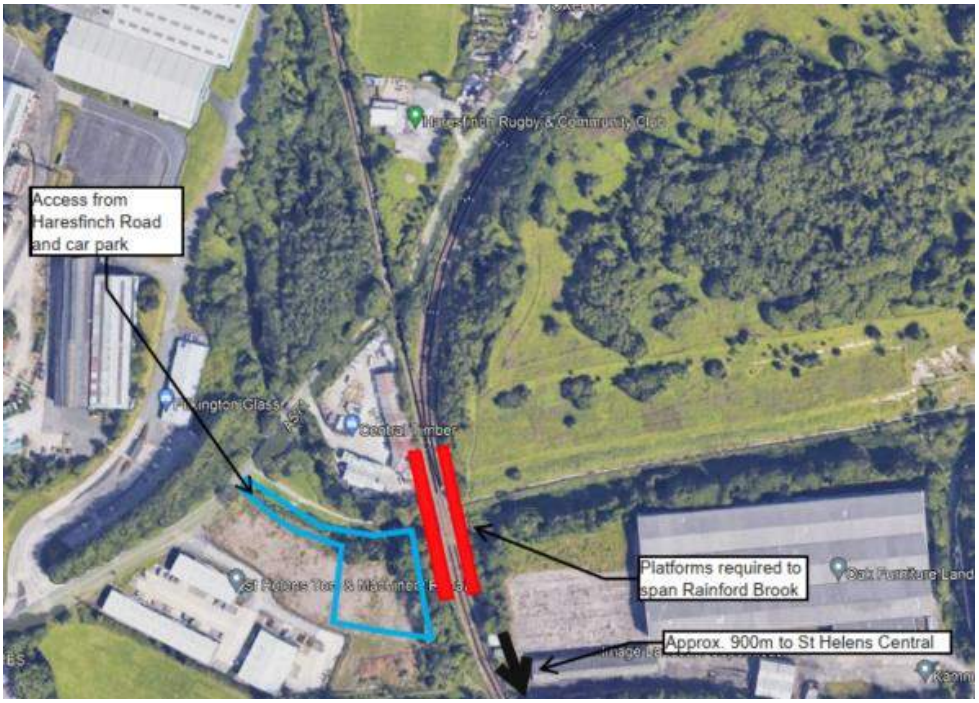
A secondary means of escape from northbound platform is relatively easy to achieve, while from the southbound platform this is likely to require an emergency staircase down the embankment and across an area of privately owned land to the rear of the housing to join Woodlands Road.

Utilities issues again are expected to be relatively minor although there may be some impact on gas, water, electricity and telecoms cables along the eastern side of Carr Mill Road associated with the construction of the new access. An existing domestic electrical substation is located next to the former petrol station, which may minimise the costs associated with the provision of a power supply to the station. Construction of the access road and car park will involve demolition of the former petrol station site and associated remediation works.

8.7. Option 6: Gerard's Bridge

Option 6 is an attempt to provide a station closer to St Helens town centre and the proposed housing development at the former Pilkington glassworks site. The only feasible location on the existing railway between St Helens Central and Woodlands Road is a position where the railway crosses Rainford Brook on an existing underbridge. To accommodate a station here, the existing structure would be replaced with a new bridge, of sufficient width to support platforms on either side. Access to the station for pedestrians, and very limited vehicle access, would be from College Street (A571).

Figure 8-4 - Option 6 Proposed Station Location



Either side of the new structure, the platforms would be constructed over the existing embankments, most likely as lightweight steel frames on piled foundations, which would be designed in accordance with Network Rail standards NR/L2/CIV/030 and RIS-7016-INS. The station would comprise side platforms each side of the tracks.

140m long platforms cannot be accommodated due to the track curvature either side of the station. The exact maximum platform length would need to be determined at a future design stage, however it may be as little as 80m and would therefore require extensive Automatic Selective Door Opening which is unlikely to be acceptable operationally.

Access to the platforms would be from the existing footpath alongside Rainford Brook, via stairs and lifts to each platform. Much of the brownfield land to the west of the site has recently been developed as Gerard's Park Phase 2 business park, leaving only a small area of land to be used for station access facilities. This could feasibly accommodate a small number of disabled parking spaces and a small station building, but any drop off and bus facilities would need to be accommodated on the main road, which may have adverse traffic impacts on what is already a busy and relatively narrow road. No other parking facilities could be accommodated in the area, and the walking route from the main road to the platforms would be relatively significant.

This option would also have significant issues with utilities compared to other options. Two large nitrogen and nitrogen/hydrogen mix pipelines run through the site and cross Rainford Brook on a pipe bridge alongside the existing railway bridge which will need to be diverted. Combined and surface water sewers also run through the site with various outfalls and overflow facilities into the watercourse which all have above ground assets likely to be impacted by the station works.

This would be a relatively lengthy project to deliver due to design, procurement, manufacture and installation of the major new structure, and any utility diversion works required. Opportunities to construct the large bridge alongside and slide into place in a short possession are limited by the tightly constrained site and the watercourse. Therefore, extensive disruption to the railway during construction would be expected. There are

significant risks also associated with the utilities issues above which could be time consuming and expensive to resolve, and with the assessment of the impact of the new access on traffic on the A571.

8.8. Option 7: Gerard's Bridge (Terminus)

This option would provide a terminal station for services to and from Liverpool only at the end of the existing disused Cowley Hill branch line, on the edge of the proposed housing development at the former Pilkington site. The option provides a simpler station layout involving only a single at-grade platform; however, reinstatement of the former branch line and associated electrification would be required, along with some track and signalling works at Gerard's Bridge Junction. Vehicular access would be from the proposed new road running through the development site between Haresfinch Road (A571) to the south and Washway Lane to the north, providing access to a small car park and drop-off area.

Figure 8-5 - Option 7 Proposed Station Location

The option involves reinstating the Cowley Hill line with approx. 700m of new single track. The line will require full track renewal and electrification, with a new turnout at Gerard's Bridge junction and a new crossover just south of the junction. Associated signalling works will also be required to facilitate the junction works. The only feasible location for the station along the branch line would be at the current northern extent of the line between the historic rail corridor and the Rainford Brook watercourse. The design of the station would need to be carefully coordinated with the emerging plans for the residential development.

As the line would be single track, only a single platform is required, and this could be built relatively easily at grade, with no need for lifts, stairs or structures above or under the track. Space for car parking is limited so it is assumed this would be limited to disabled and staff parking only, alongside the usual bus interchange, drop off and cycle parking facilities. The site proposed for the station and car park is between the railway and Rainford Brook, at the point where the watercourse enters a culvert to pass beneath the Pilkington site.

Utilities issues at the station site are likely to be relatively minor, however records indicate that the local nitrogen and nitrogen/hydrogen mix pipelines, and a large, combined sewer, run alongside and under the branch line, which presents a risk to the design of the electrification works in particular due to any piling works required. This would require further investigation at a future design stage.

8.9. Summary

Based on the assessment carried out and summarised in the sections above, Options 2 & 3 were determined to be broadly feasible, and both were selected as preferred options to be taken forward as the differences between these two options are very minor at this stage of development.

Option 6 was considered not to be feasible as associated capital costs are significantly higher, the utilities and planning issues present too great a risk to the project, and the site cannot accommodate the required platform lengths or parking facilities.

Option 7 is also not to be taken forward to further development due to the higher costs than Options 2 & 3 and the operational limitations of only being able to provide a service to Liverpool.

8.10. Proposed Station Layout Sketches

Figure 8-6 - Option 2 Station Layout

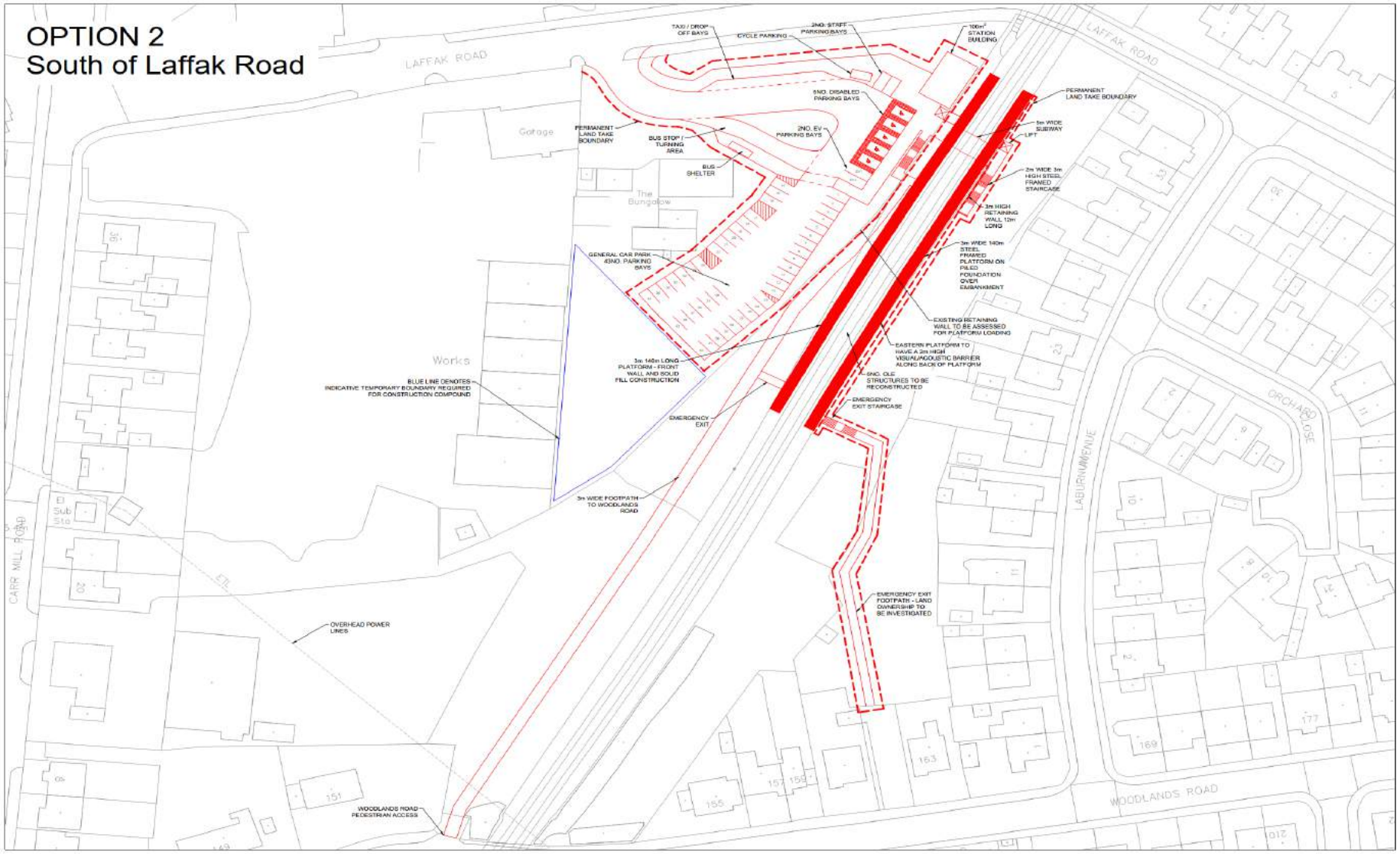


Figure 8-7 - Option 3 Station Layout

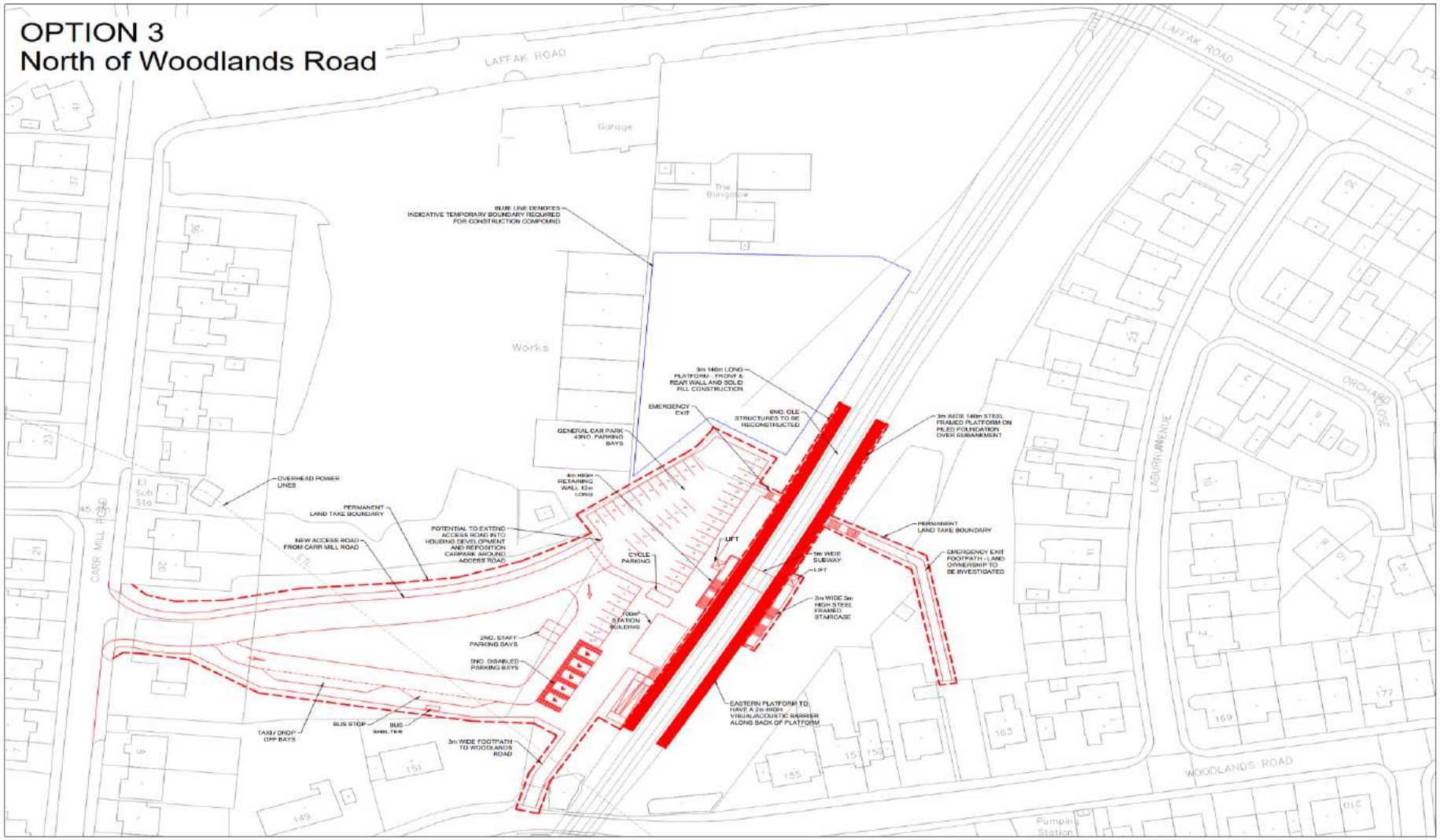


Figure 8-8 - Option 6 Station Layout

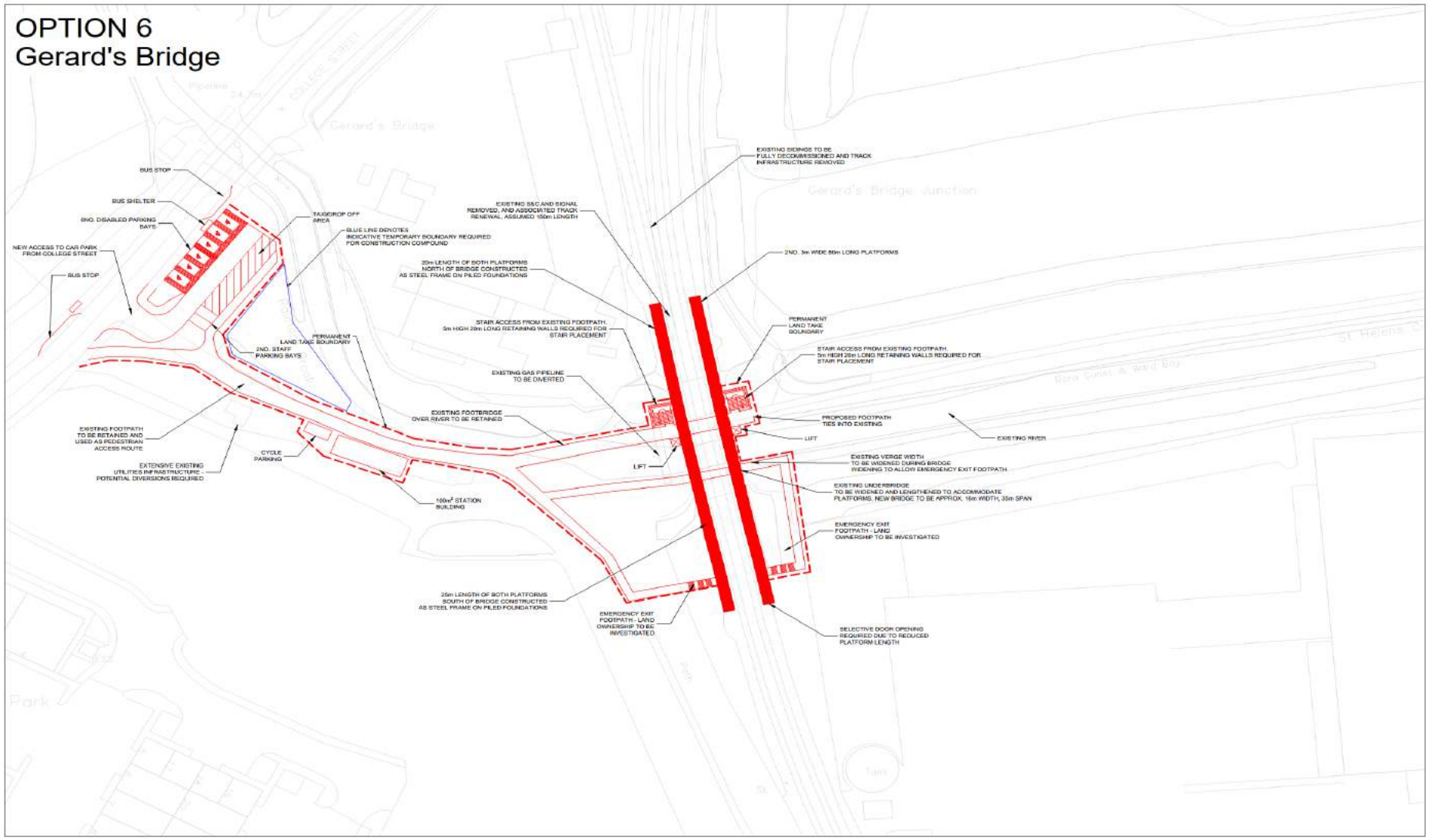


Figure 8-9 - Option 7 Station Layout

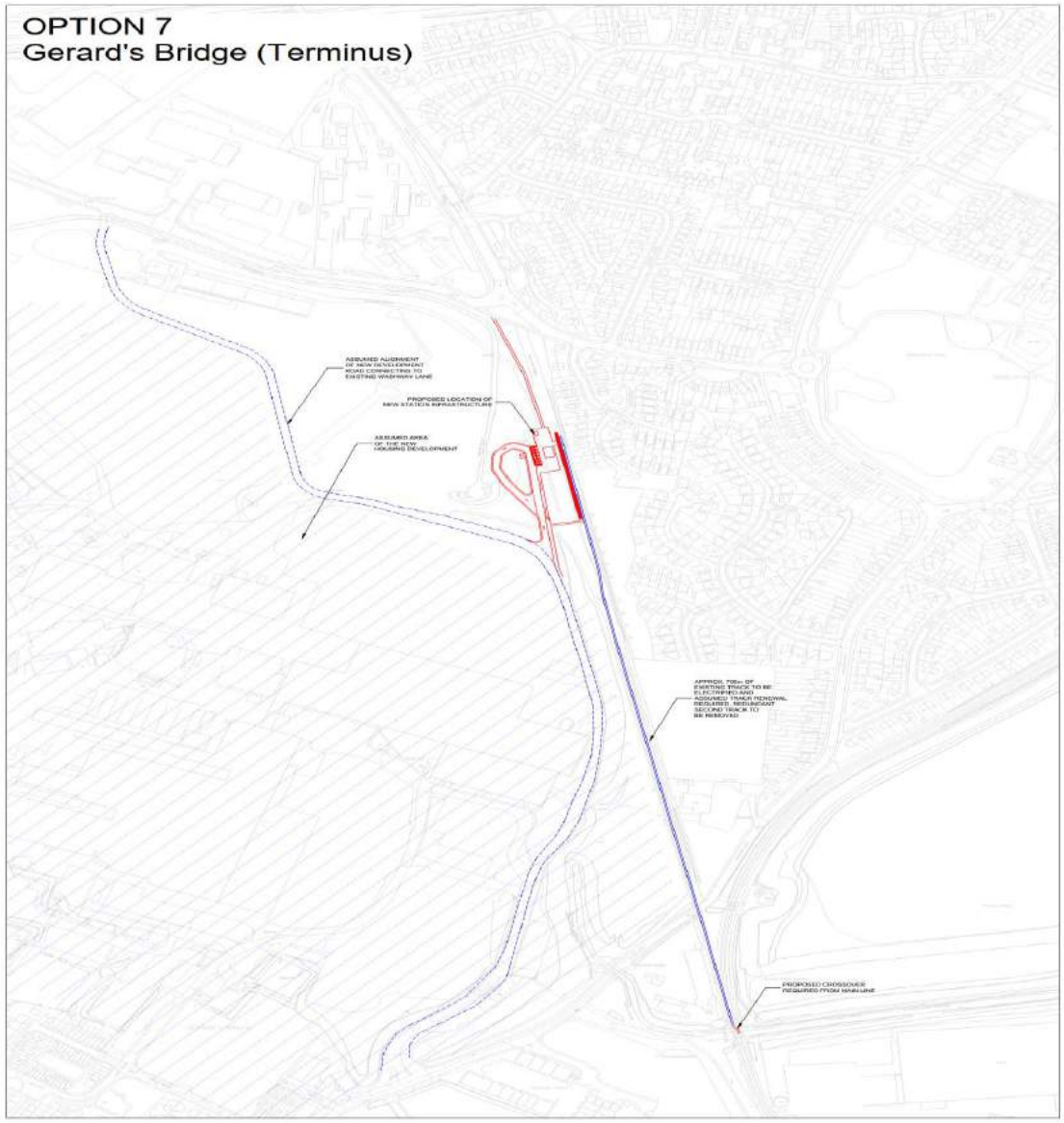
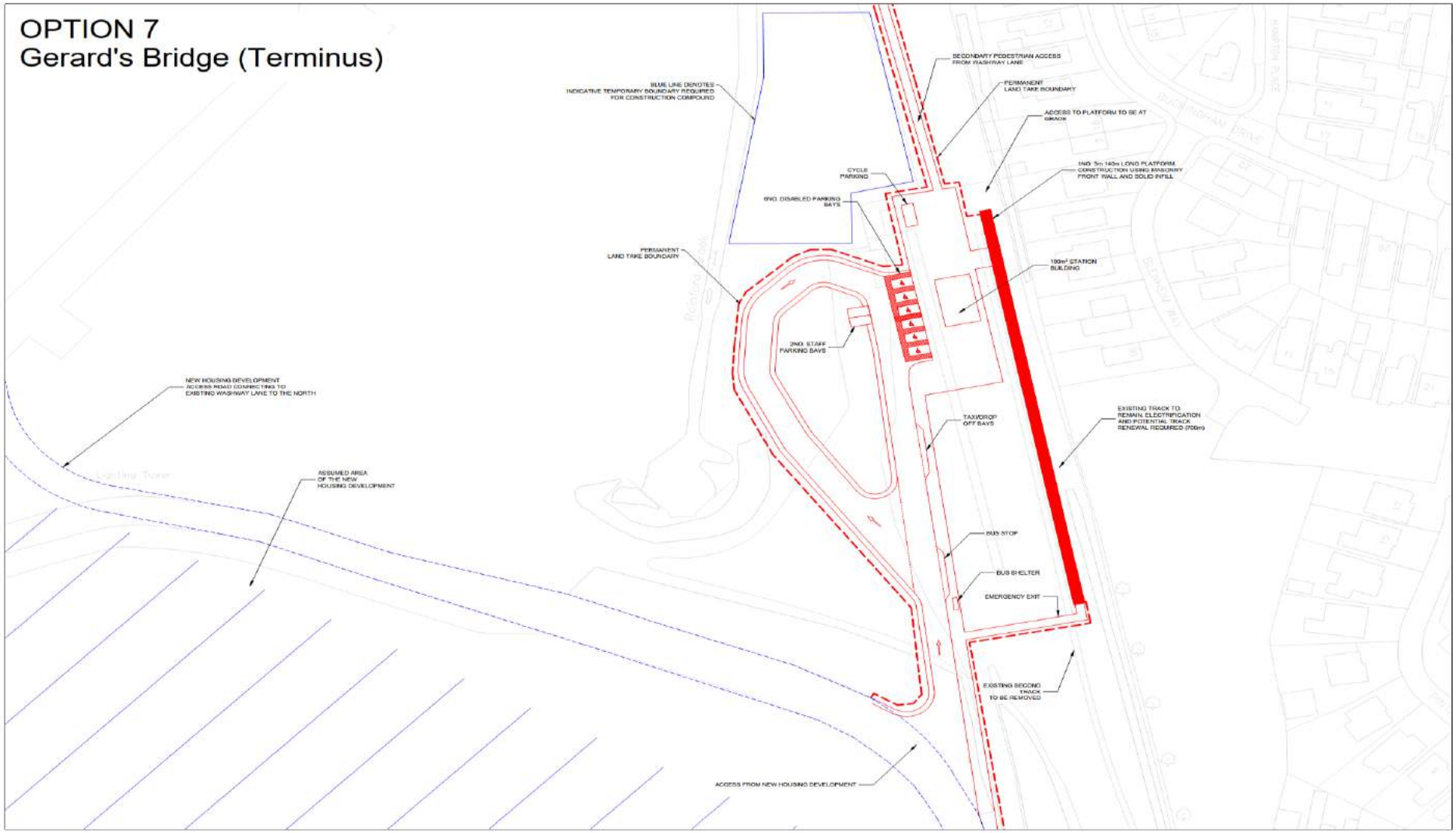


Figure 8-10 - Option 7 Station Layout



9. Appendix B: Station Costs

9.1. Assumptions and Qualifications

Station costs have been estimated by Faithful+Gould on the basis of design requirements outlined in Appendix A. The following assumptions and qualifications have been made

Table 9-1 – Assumptions to derive capital cost estimates

Item	Elements
General	• Presentation: The estimates have been prepared and presented under the overall structure of Network Rail's RMM1 Method of Measurement. This has been done at Group Element level with coding of individual works items at Sub element and component level being provided only where the level of detail allows. • Price base date: The estimates are based at 2nd Quarter 2022 price levels. No allowance has been made for inflation to potential implementation dates. • Currency: Prices are expressed in Pounds Sterling. • Estimate Tolerance: In the absence of any formal exercise or modelling being undertaken to establish a 3-point range to the estimate we would currently assess this tolerance to be in the order of +40/-20%. • Risk/ Uncertainty: Allowance has been made for Risk & Contingency based on a 40% Risk Allowance. No further allowance has been made for Optimism Bias which it is assumed would be factored in if necessary, as part of the business case reviews. • Design maturity: The scope of works that form the basis of the estimates are at an extremely early stage of development and it is considered would equate to Network Rail GRIP Stage 2 Feasibility • Pricing: The Unit rate estimates are based on rates and historical cost data derived from similar UK Railway Projects. • High level items where scope is not confirmed are based on top down asset level benchmarks. Where firmer assumptions can be made from the supporting data provided, a bottom up rate assessment has been conducted. • The rates reflect the assumption that the works will be undertaken by Network Rail and carried out by experienced railway contractors with the works being competitively tendered. It is assumed that green zone working may be possible for the majority of the works, but possession working will be required for the construction of the station platforms and subway (varies by option). • Cost coverage: The estimates are for CAPEX costs only and no allowance has been made for future operation or maintenance costs within these figures.
Indirect costs	• Preliminaries have been included at 30% on Direct Construction Cost • Overheads and Profit have been included at 10% on Direct Construction Cost plus Preliminaries • Design Team Fees have been included at 15% on Base Construction Cost • Project Management Team Fees have been included at 8% on Base Construction Cost plus Design Team Fees • Disruptive possession requirements are as follows: ○ Option 2 - 1no. 4-day possession for construction of subway, 4no. 2-day possessions for installation of piles and OLE works ○ Option 3 - 1no. 4-day possession for construction of subway, 4no. 2-day possessions for installation of piles and OLE works ○ Option 6 - 1no. 4-day possession for bridge replacement, 4no. 2-day possessions for installation of piles, S&C, signalling and OLE works ○ Option 7 - 2no. 2-day possessions for S&C, signalling and OLE works • All remaining works on or near the line undertaken on nights • Risk / uncertainty allowance has been included at 40% on Point Estimate
Railway control systems	• Panel alterations required (Options 6 & 7) for new branch line to Carr Mill Station • New points mechanism is Type C switch (up to 30mph) • 2nr track circuits allowed for per main signal

	• 2nr IBJs allowed for per main signal • 1nr AWS and board allowed for per main signal • 1nr TPWS allowed for per main signal • 250m cabling allowed for per motorised equipment • 1nr location case allowed for per main signal • Testing and commissioning allowance based on 15% of new works cost (also applies to Train Power Systems, E&P and Telecoms)
Train power systems	• New OLE support structures are single track cantilevers
Electric Power and Plant	• UPS assumed to be 250 kVA • Cabling allowed to platform length and new track length
Permanent Way / Track	• New track is 3m wide and includes G44 concrete sleepers with 200mm ballast depth • New switches and crossings are NR60D
Telecommunication Systems	• Allowance for station control room and GSM-R connection • Telephones included 1nr per station building, 1nr per main signal and 1nr per points end • CCTV cameras allowed for 3nr per lift, 2nr per staircase, 2nr per platform and 2nr per subway • CCTV cameras not required to access road and car park • Public address speakers allowed for every 14m along platforms, plus 2nr per station building • Passenger help points allowed for 1nr per platform • Video display unit allowed for 1nr per platform and 1nr per station building • 1nr location case allowed for all telecoms equipment
Buildings & property	• Station building is single storey and includes substructure, superstructure, finishes, FF&E and services • Station building is assumed to be unmanned, therefore no allowance has been made for staff facilities • Station building to contain passenger waiting facilities • Passenger lifts are 4-person with 2 stops, lift shaft is steel framed with external cladding • 1nr ticket vending machine and 'tap-in' validator allowed for per platform • Allowances for connections to existing water, electricity and telecoms supply • Existing water, electricity and telecoms supply assumed to be available in nearby main road • Allowance for lighting columns to access road, car park and pedestrian footways • Cycle parking facility assumed to be glazed enclosed structure containing bike racks
Civil Engineering	• In the absence of any construction details, levels or sections for either the station location or the access road, it has not been possible to establish the extent to which any adjustment of levels (in respect or either excavation or fill) may be needed. A provisional allowance has therefore been made for general earthworks. This would be subject to review once further design development has taken place. • For Option 6, a provisional allowance has been included for widening the existing verge during the bridge replacement as no design details at this stage • Subway construction is reinforced concrete with anti-slip surfacing • For Option 6, the new underbridge is steel construction and 15m wide x 35m span • New facing platforms assumed to be precast concrete construction and include foundations, deck and supporting structure, paving, surfacing and markings • Ramps and staircases are steel construction with anti-slip surfacing and handrails (Kee Klamp or similar) • Allowances for signs, notices and platform furniture • Retaining walls assumed to be reinforced concrete, 500mm thick with 250kg/m3 reinforcement • For Option 2, assumed existing retaining wall is suitable for platform loading • Noise reflective barrier at back of platform included to length of platform, plus allowance for modifications to any existing fencing

	• Allowance for surface water general drainage to road, car park and footway areas • Surfaced access ways (vehicular and pedestrian) include earthworks, formation, surfacing, kerbs and highway drainage system • Bellmouth junction included to connect new access road to existing main road • Allowance for 3nr electric vehicle charging bays • Allowance for landscaping and potential reinstatement of trees/habitat removed • Traditional concrete troughing included to length of new track
Enabling Works	• Allowance for general site clearance and vegetation clearance to entire site area • No remedial works are required to any existing footpaths, roads, bridges or other structures (unless stated otherwise)
Exclusions	• VAT • Third party compensation costs • Planning and approval fees and charges, and any works arising from any future planning conditions arising from the planning process • Costs associated with statutory fees (e.g. HMRI, Local Authority, etc.) unless stated otherwise • Costs associated with services and utilities, unless stated otherwise • Taxes or levies • Licences and all associated costs and fees • Costs associated with changes in legislation and any form of applicable standards • Costs associated with changes in legislation, regulation and interpretation covering discriminatory, specific and general issues that may lead to design and cost changes • Schedule 4 TOC / FOC compensation costs • Schedule 8 compensation costs • Network Rail Asset Protection costs • Land purchase and/or rental costs • Wayleaves or access rights • Inflation or escalation during the lead in and construction periods • Removal and disposal of any asbestos • Statutory undertakings • Local authority highways fees • Any costs or delays associated with the COVID-19 pandemic • Any costs or delays associated with the impact of Brexit • Any costs or delays associated with the conflict in Ukraine • Dealing with unexploded ordinance • Dealing with unidentified voids • Land remediation works • Fresh or foul service connections • Temporary haul roads to provide access to the site during construction • External security systems along access road • Fencing to station car park and access road • Works associated with the bungalow adjacent to the site (Options 2 & 3 only) • Costs associated with ecological works • Any and all surveys • Selective door opening • Waiting shelters to platforms

9.2. Cost Summary

On the basis of the above assumptions, estimated costs for the different station location options are presented in Table 12-5 below

Table 9-2 – Estimated capital costs (Q2, 2022 prices) for Carr Mill Station

Group Element / Package	**Option 2**	**Option 3**	**Option 6**	**Option 7**
Option Title	South of Laffak Road	North of Woodlands Road	Gerard's Bridge	Gerard's Bridge (Terminus)
Railway Control Systems	-	-	£113,000.00	£1,293,000.00
Train Power Systems	-	£64,000.00	-	£303,000.00
Electric Power and Plant	-	-	£192,000.00	£235,000.00
Permanent Way / Track	-	-	£434,000.00	£2,655,000.00
Telecommunication Systems	£402,000.00	£415,000.00	£406,000.00	£314,000.00
Buildings and Property	£1,752,000.00	£1,760,000.00	£1,865,000.00	£894,000.00
Civil Engineering	£2,780,000.00	£3,258,000.00	£6,446,000.00	£1,910,000.00
Enabling Works	£89,000.00	£116,000.00	£162,000.00	£91,000.00
Rolling Stock	-	-	-	-
Direct Construction Works	**£5,023,000.00**	**£5,613,000.00**	**£9,618,000.00**	**£7,695,000.00**
Preliminaries (30%)	£1,507,000.00	£1,684,000.00	£2,886,000.00	£2,308,000.00
Contractor Overheads and Profit (10%)	£653,000.00	£730,000.00	£1,250,000.00	£1,000,000.00
Indirect Construction Costs	**£2,160,000.00**	**£2,414,000.00**	**£4,136,000.00**	**£3,308,000.00**
Base Construction Cost (Direct plus indirect construction)	**£7,183,000.00**	**£8,027,000.00**	**£13,754,000.00**	**£11,003,000.00**
Project Design Team Fees (15%)	£1,078,000.00	£1,204,000.00	£2,063,000.00	£1,650,000.00
Project Management Team Fees (8%)	£661,000.00	£738,000.00	£1,265,000.00	£1,012,000.00
Other Project Costs	£262,000.00	£262,000.00	£262,000.00	£49,000.00
Employer Indirect Costs	**£2,001,000.00**	**£2,204,000.00**	**£3,590,000.00**	**£2,711,000.00**
Point Estimate Construction plus development cost (Excludes risk, uncertainty, and optimism bias)	**£9,184,000.00**	**£10,231,000.00**	**£17,344,000.00**	**£13,714,000.00**
Risk/Uncertainty (40%)	**£3,674,000.00**	**£4,092,000.00**	**£6,939,000.00**	**£5,486,000.00**
Expected Final Cost – EFC Total Cost Limit	**£12,858,000.00**	**£14,323,000.00**	**£24,283,000.00**	**£19,200,000.00**

9.3. Detailed Cost Breakdown

A detailed cost breakdown for each of the options demonstrated in Appendix A above has been provided in the tables below

9.3.1. Option 2 Detailed costs

Option 2 Cost Estimates						
RMM Code	**Item Description**	**Quantity**	**UoM**	**Rate / £**	**Total / £**	**Assumptions/Comments**
1.01	**Railway Control Systems**					
	Not Applicable to proposed works					
1.02	**Train Power Systems**					
	Not Applicable to proposed works					
1.03	**Electric Power & Plant**					
	Not Applicable to proposed works					
1.04	**Permanent Way**					
	Not Applicable to proposed works					
1.05	**Operational Telecommunications Systems**				**£401,983.00**	
1.05.01	**Control Centre**					
1.05.01.01.01	Station Control Room	1	nr	85,000.00	85,000.00	
1.05.01.01.01	GSM-R connection	1	item	20,000.00	20,000.00	
1.05.07	**Audio-visual Management Systems**					

Option 2 Cost Estimates					
1.05.07.04	*Surveillance Systems*				
1.05.07.04.01	CCTV Cameras	18	nr	1,860.00	33,480.00
1.05.10	**Customer Information System (CIS)**				
1.05.10.01	*Audio*				
1.05.10.01.01	Public address speakers	22	nr	3,800.00	83,600.00
1.05.10.01.02	Passenger Help Point	2	nr	13,985.00	27,970.00
1.05.10.02	*Video*				
1.05.10.02.01	Video display units; double sided	3	nr	22,500.00	67,500.00
1.05.11	**Equipment Housings, Platforms and Foundations**				
1.05.11.01	Location case: complete with racking and equipment	1	nr	32,000.00	32,000.00
1.05.12	**Testing and Commissioning**				
1.05.12.01	Testing and commissioning (15% allowance)	15%	%	349,550.00	52,433.00
1.06	**Buildings & Property**				**£1,752,373.00**
1.06.02	**Buildings**				
1.06.02.01	*Station Building*				
1.06.02.01.01	Station building; including substructure, superstructure, finishes, FF&E and services	100	m^2	5,705.00	570,500.00

Option 2 Cost Estimates					
1.06.10	**Services to Platform**				
1.06.10.08	*Electrical Installations*				
1.06.10.08.01	Electrical mains and sub-mains distribution	840	m^2	40.00	33,600.00
1.06.10.08.03	Lighting installations; including columns and foundations	840	m^2	65.00	54,600.00
1.06.10.10	*Lift and Conveyor Installations*				
1.06.10.10.01	Lifts; Passenger (4 person); 2 stops; including lift shaft and pit	2	nr	345,000.00	690,000.00
1.06.10.01	Testing and commissioning (15% allowance)	15%	%	690,000.00	103,500.00
1.06.10.13	*Specialist Installations*				
1.06.10.13.06	Ticket vending machine	2	nr	35,000.00	70,000.00
1.06.10.13.06	Ticket "tap-in" validator	2	nr	14,000.00	28,000.00
1.06.12	**External Services**				
1.06.12.01	*External Services*				
1.06.12.01.01	Water mains supply; connection to existing water supply (Provisional Allowance)	1	Psum	15,000.00	15,000.00
1.06.12.01.01	Water mains supply; provision of supply from connection to new station site; including trenching and other BWIC	75	m	95.00	7,125.00

Option 2 Cost Estimates					
1.06.12.01.02	Electricity mains supply; connection to existing HV supply (Provisional Allowance)	1	Psum	20,000.00	20,000.00
1.06.12.01.02	Electricity mains supply; provision of supply from connection to new station site; including trenching and other BWIC	75	m	85.00	6,375.00
1.06.12.01.06	Telecommunications system connections; connection to existing public telecoms system	1	Psum	15,000.00	15,000.00
1.06.12.01.06	Telecommunications system connections; provision of supply from connection to new station site; including trenching and other BWIC	75	m	55.00	4,125.00
1.06.12.01.09	External / street lighting systems; lighting columns to access road and car park	17	nr	3,100.00	52,948.00
1.06.12.01.09	External / street lighting systems; cabling and duct route	700	m	38.00	26,600.00
1.06.13	**Prefabricated Buildings and Building Units**				
1.06.13.01	*Prefabricated Buildings and Building Units and Minor Ancillary Buildings*				
1.06.13.01.04	Cycle parking facility	1	nr	55,000.00	55,000.00
1.07	**Civil Engineering**				**£1,752,373.00**
1.07.01	**Earthworks**				
1.07.01.01	*Level Ground*				

Option 2 Cost Estimates						
1.07.01.01.01	General excavation; including disposal (Provisional Allowance)	1	Psum	150,000.00	150,000.00	
1.07.04	**Subways and Underpasses**					
1.07.04.01	*Subways*					
1.07.04.01	Subway; 5m wide, beneath platforms and railway corridor	17	m	5,000.00	83,700.00	
1.07.07	**Platforms**					
1.07.07.01	*Platforms*					
1.07.07.01.01	New facing platforms; including foundations, deck and supporting structure, paving, surfacing and markings; assumed PCC construction with tarmac surfacing	840	m^2	1,700.00	1,428,000.00	140m long, 3m wide
1.07.07.03	*Access Structures for Platforms*					
1.07.07.03.02	Staircases; Straight; Steel framed; 2m wide; 3m height between levels	2	nr	25,000.00	50,000.00	
1.07.07.03.02	Staircases; Straight; Steel framed; 2m wide; 3m height between levels; emergency exit	1	nr	25,000.00	25,000.00	
1.07.07.06	*Platform Fittings and Furniture*					
1.07.07.06.01	Signs / notices (Provisional Allowance)	1	Psum	10,000.00	10,000.00	
1.07.07.06.02	Other platform furniture; seating (Provisional Allowance)	1	Psum	15,000.00	15,000.00	
1.07.08	**Retaining Walls**					

Option 2 Cost Estimates					
1.07.08.02	*Retaining Walls*				
1.07.08.02.01	Reinforced concrete retaining wall; 3m height; 500mm thick with 250kg/m3 reinforcement	18	m^3	660.00	11,880.00
1.07.09	**Fencing and Enclosures**				
1.07.09.01	*Fencing and Railings*				
1.07.09.01.01	Noise reflective barrier; 1.8m height; to back of new platforms	280	m	400.00	112,000.00
1.07.09.01.03	Modification of existing fencing (Provisional Allowance)	1	item	20,000.00	20,000.00
1.07.10	**General Drainage**				
1.07.10.01	*Surface Water Drainage*				
1.07.10.01.01	Surface water general drainage (Provisional Allowance)	1	Psum	30,000.00	30,000.00
1.07.10.02	Drainage to back of retaining wall	12	m	420.00	5,040.00
1.07.12	**Roads, Pavements and Hardstandings**				
1.07.12.01	*Roads*				
1.07.12.01.03	Surfaced access way: Vehicular; station access road	647	m^2	160.00	103,520.00
1.07.12.01.03	Surfaced access way: Vehicular; taxi drop off area	70	m^2	350.00	24,500.00
1.07.12.01.03	Surfaced access way: Vehicular; bus stop	108	m^2	350.00	37,800.00

Option 2 Cost Estimates					
1.07.12.01.03	Surfaced access way: Vehicular; bell mouth junction	1	nr	45,000.00	45,000.00
1.07.12.02	*Hardstandings and Carparks*				
1.07.12.02.01	Staff / passenger parking bays	44	nr	3,000.00	132,000.00
1.07.12.02.02	Disabled parking bays	6	nr	3,450.00	20,700.00
1.07.12.02.03	Allowance for electric vehicle charging facility	3	nr	65,000.00	195,000.00
1.07.12.03	*Pavements and Walkways*				
1.07.12.01.02	Surfaced access ways: Pedestrian	585	m^2	120.00	70,200.00
1.07.12.01.03	Surfaced access ways: Pedestrian; emergency exit	168	m^2	100.00	16,800.00
1.07.12.01.04	Surfaced access ways: Pedestrian; to Woodlands Road	588	m^2	100.00	58,800.00
1.07.12.07	*Other Street Furniture*				
1.07.12.02.05	Bus shelter	1	nr	35,000.00	35,000.00
1.07.13	**Landscaping and Ecology Outside Railway Corridor**				
1.07.13.01	*Soft Landscaping, Planting and Irrigation Systems*				
1.07.13.01.02	Landscaping and potential reinstatement of trees/habitat removed (Provisional Allowance)	1	Psum	100,000.00	100,000.00
1.08	**Enabling Works**				**£89,150.00**

Option 2 Cost Estimates					
1.08.02	**Site Clearance and Preparation Works**				
1.08.02.01	*Site Clearance*				
1.08.02.01.01	General clearance	3,566	m^2	5.00	17,830.00
1.08.02.01.02	Clearance of vegetation	3,566	m^2	20.00	71,320.00
1.09	**Rolling Stock**				
	Not applicable to proposed works				
2.01	**Preliminaries**				**£1,507,033.80**
2.01.01	Main Contractor's Preliminaries	30%	%	5,023,446.00	1,507,033.80
2.02	**Overheads & Profit**				**£653,047.98**
2.02.01	Main Contractor's Overheads & Profit	10%	%	6,530,479.80	653,047.98
3.01	**Design Team Fees**				**£1,077,529.17**
3.01.01	Design Team Fees	15%	%	7,183,527.78	1,077,529.17
3.02	**Project Management Team Fees**				**£660,884.56**
3.02.01	Project Management Team Fees	8%	%	8,261,056.95	660,884.56
3.03	**Other Project Costs**				**£262,400.00**
3.03.02	*Disruption of Asset Use*				
3.03.02.01	Employer's costs; Permanent way possessions management; 48hr	1	shifts	24,600.00	24,600.00

Option 2 Cost Estimates					
3.03.02.01	Employer's costs; Permanent way possessions management; 96hr	4	shifts	49,200.00	196,800.00
3.03.02.01	Employer's costs; Permanent way possessions management; Mid-week nights	10	shifts	4,100.00	41,000.00
4.01	**Risk**				**£3,673,736.60**
4.01.02	Total risk allowance	40%	%	9,184,341.50	3,673,736.60

9.3.2. Option 3 Detailed Costs

Option 3 Cost Estimates						
RMM Code	**Item Description**	**Quantity**	**UoM**	**Rate / £**	**Total / £**	**Assumptions/Comments**
1.01	**Railway Control Systems**					
	Not Applicable to proposed works					
1.02	**Train Power Systems**				**£63,665.00**	
1.02.02	**Overhead Line Equipment (OLE)**					
1.02.02.01	*Support Structures*					
1.02.02.01.01	Piled foundation	4	nr	8,200.00	32,800.00	
1.02.02.01.01	Support structure: Single track cantilever	4	nr	1,575.00	6,300.00	
1.02.02.03	*Wiring*					
1.02.02.03.06	Protection of existing wiring / raise and lower wiring; to enable construction works	280	m	50.00	14,000.00	
1.02.02.08	*Testing and Commissioning*					
1.02.02.03.01	Testing and Commissioning (15% allowance)	15%	%	53,100.00	7,965.00	
1.02.02.09	*Abandonment and Recovery of Redundant Equipment*					
1.02.02.09.01	Support structure; Single track cantilever	4	nr	650.00	2,600.00	
1.03	**Electric Power & Plant**					
	Not Applicable to proposed works					

Option 3 Cost Estimates					
1.04	**Permanent Way**				
	Not Applicable to proposed works				
1.05	**Operational Telecommunications Systems**				**£414,817.00**
1.05.01	**Control Centre**				
1.05.01.01.01	Station Control Room	1	nr	85,000.00	85,000.00
1.05.01.01.01	GSM-R connection	1	item	20,000.00	20,000.00
1.05.07	**Audio-visual Management Systems**				
1.05.07.04	*Surveillance Systems*				
1.05.07.04.01	CCTV Cameras	24	nr	1,860.00	44,640.00
1.05.10	**Customer Information System (CIS)**				
1.05.10.01	*Audio*				
1.05.10.01.01	Public address speakers	22	nr	3,800.00	83,600.00
1.05.10.01.02	Passenger Help Point	2	nr	13,985.00	27,970.00
1.05.10.02	*Video*				
1.05.10.02.01	Video display units; double sided	3	nr	22,500.00	67,500.00
1.05.11	**Equipment Housings, Platforms and Foundations**				

Option 3 Cost Estimates					
1.05.11.01	Location case: complete with racking and equipment	1	nr	32,000.00	32,000.00
1.05.12	**Testing and Commissioning**				
1.05.12.01	Testing and commissioning (15% allowance)	15%	%	360,710.00	54,107.00
1.06	**Buildings & Property**				£1,760,550.00
1.06.02	**Buildings**				
1.06.02.01	*Station Building*				
1.06.02.01.01	Station building; including substructure, superstructure, finishes, FF&E and services	100	m^2	5,705.00	570,500.00
1.06.10	**Services to Platform**				
1.06.10.08	*Electrical Installations*				
1.06.10.08.01	Electrical mains and sub-mains distribution	840	m^2	40.00	33,600.00
1.06.10.08.03	Lighting installations; including columns and foundations	840	m^2	65.00	54,600.00
1.06.10.10	*Lift and Conveyor Installations*				
1.06.10.10.01	Lifts; Passenger (4 person); 2 stops; including lift shaft and pit	2	nr	345,000.00	690,000.00
1.06.10.01	Testing and commissioning (15% allowance)	15%	%	690,000.00	103,500.00
1.06.10.13	*Specialist Installations*				

Option 3 Cost Estimates					
1.06.10.13.06	Ticket vending machine	2	nr	35,000.00	70,000.00
1.06.10.13.06	Ticket "tap-in" validator	2	nr	14,000.00	28,000.00
1.06.12	**External Services**				
1.06.12.01	*External Services*				
1.06.12.01.01	Water mains supply; connection to existing water supply (Provisional Allowance)	1	Psum	15,000.00	15,000.00
1.06.12.01.01	Water mains supply; provision of supply from connection to new station site; including trenching and other BWIC	50	m	95.00	4,750.00
1.06.12.01.02	Electricity mains supply; connection to existing HV supply (Provisional Allowance)	1	Psum	20,000.00	20,000.00
1.06.12.01.02	Electricity mains supply; provision of supply from connection to new station site; including trenching and other BWIC	50	m	85.00	4,250.00
1.06.12.01.06	Telecommunications system connections; connection to existing public telecoms system	1	Psum	15,000.00	15,000.00
1.06.12.01.06	Telecommunications system connections; provision of supply from connection to new station site; including trenching and other BWIC	50	m	55.00	2,750.00
1.06.12.01.09	External / street lighting systems; lighting columns to access road and car park	21	nr	3,100.00	65,100.00
1.06.12.01.09	External / street lighting systems; cabling and duct route	750	m	38.00	28,500.00

Option 3 Cost Estimates						
1.06.13	**Prefabricated Buildings and Building Units**					
1.06.13.01	*Prefabricated Buildings and Building Units and Minor Ancillary Buildings*					
1.06.13.01.04	Cycle parking facility	1	nr	55,000.00	55,000.00	
1.07	**Civil Engineering**				**£3,258,032.00**	
1.07.01	**Earthworks**					
1.07.01.01	*Level Ground*					
1.07.01.01.01	General excavation; including disposal (Provisional Allowance)	1	Psum	150,000.00	150,000.00	
1.07.04	**Subways and Underpasses**					
1.07.04.01	*Subways*					
1.07.04.01	Subway; 5m wide, beneath platforms and railway corridor	16	m	5,000.00	81,800.00	
1.07.07	**Platforms**					
1.07.07.01	*Platforms*					
1.07.07.01.01	New facing platforms; including foundations, deck and supporting structure, paving, surfacing and markings; assumed PCC construction with tarmac surfacing	840	m^2	1,700.00	1,428,000.00	140m long, 3m wide x2 nr
1.07.07.03	*Access Structures for Platforms*					
1.07.07.03.01	Ramps; Steel framed; Anti-slip surfacing; including handrails	61	m^2	4,850.00	295,850.00	

Option 3 Cost Estimates					
1.07.07.03.02	Staircases; Straight; Steel framed; 2m wide; 3m height between levels	2	nr	25,000.00	50,000.00
1.07.07.03.02	Staircases; Straight; Steel framed; 2m wide; 3m height between levels; emergency exit	1	nr	25,000.00	25,000.00
1.07.07.03.02	Staircases; Straight; Steel framed; 2m wide; 3m height between levels; emergency exit	2	nr	25,000.00	50,000.00
1.07.07.06	*Platform Fittings and Furniture*				
1.07.07.06.01	Signs / notices (Provisional Allowance)	1	Psum	10,000.00	10,000.00
1.07.07.06.02	Other platform furniture; seating (Provisional Allowance)	1	Psum	15,000.00	15,000.00
1.07.08	**Retaining Walls**				
1.07.08.02	*Retaining Walls*				
1.07.08.02.01	Reinforced concrete retaining wall; 4m height; 500mm thick with 250kg/m3 reinforcement	48	m^3	660.00	31,680.00
1.07.09	**Fencing and Enclosures**				
1.07.09.01	*Fencing and Railings*				
1.07.09.01.01	Noise reflective barrier; 1.8m height; to back of new platforms	280	m	400.00	112,000.00
1.07.09.01.03	Modification of existing fencing (Provisional Allowance)	1	item	20,000.00	20,000.00
1.07.10	**General Drainage**				

Option 3 Cost Estimates					
1.07.10.01	*Surface Water Drainage*				
1.07.10.01.01	Surface water general drainage (Provisional Allowance)	1	Psum	30,000.00	30,000.00
1.07.10.02	Drainage to back of retaining wall	24	m	420.00	10,080.00
1.07.12	**Roads, Pavements and Hardstandings**				
1.07.12.01	*Roads*				
1.07.12.01.03	Surfaced access way: Vehicular; station access road	1,296	m^2	160.00	207,304.00
1.07.12.01.03	Surfaced access way: Vehicular; taxi drop off area	59	m^2	350.00	20,671.00
1.07.12.01.03	Surfaced access way: Vehicular; bus stop	43	m^2	350.00	15,127.00
1.07.12.01.03	Surfaced access way: Vehicular; bell mouth junction	1	nr	45,000.00	45,000.00
1.07.12.02	*Hardstandings and Carparks*				
1.07.12.02.01	Staff / passenger parking bays	44	nr	3,000.00	132,000.00
1.07.12.02.02	Disabled parking bays	6	nr	3,450.00	20,700.00
1.07.12.02.03	Allowance for electric vehicle charging facility	3	nr	65,000.00	195,000.00
1.07.12.03	*Pavements and Walkways*				
1.07.12.01.02	Surfaced access ways: Pedestrian	1,291	m^2	120.00	154,920.00

Option 3 Cost Estimates					
1.07.12.01.03	Surfaced access ways: Pedestrian; emergency exit	229	m^2	100.00	22,900.00
1.07.12.07	*Other Street Furniture*				
1.07.12.02.05	Bus shelter	1	nr	35,000.00	35,000.00
1.07.13	**Landscaping and Ecology Outside Railway Corridor**				
1.07.13.01	*Soft Landscaping, Planting and Irrigation Systems*				
1.07.13.01.02	Landscaping and potential reinstatement of trees/habitat removed (Provisional Allowance)	1	Psum	100,000.00	100,000.00
1.08	**Enabling Works**				**£116,050.00**
1.08.02	**Site Clearance and Preparation Works**				
1.08.02.01	*Site Clearance*				
1.08.02.01.01	General clearance	4,642	m^2	5.00	23,210.00
1.08.02.01.02	Clearance of vegetation	4,642	m^2	20.00	92,840.00
1.09	**Rolling Stock**				
	Not applicable to proposed works				
2.01	**Preliminaries**				**£1,683,934.20**
2.01.01	Main Contractor's Preliminaries	30%	%	5,613,114.00	1,683,934.20
2.02	**Overheads & Profit**				**£729,704.82**

Option 3 Cost Estimates					
2.02.01	Main Contractor's Overheads & Profit	10%	%	7,297,048.20	729,704.82
3.01	**Design Team Fees**				**£1,204,012.95**
3.01.01	Design Team Fees	15%	%	8,026,753.02	1,204,012.95
3.02	**Project Management Team Fees**				**£738,461.28**
3.02.01	Project Management Team Fees	8%	%	9,230,765.97	738,461.28
3.03	**Other Project Costs**				**£262,400.00**
3.03.02	*Disruption of Asset Use*				
3.03.02.01	Employer's costs; Permanent way possessions management; 48hr	1	shifts	24,600.00	24,600.00
3.03.02.01	Employer's costs; Permanent way possessions management; 96hr	4	shifts	49,200.00	196,800.00
3.03.02.01	Employer's costs; Permanent way possessions management; Mid-week nights	10	shifts	4,100.00	41,000.00
4.01	**Risk**				**£4,092,650.90**
4.01.02	Total risk allowance	40%	%	10,231,627.25	4,092,650.90

9.3.3. Option 6 Detailed Costs

Option 6 Cost Estimates						
RMM Code	**Item Description**	**Quantity**	**UoM**	**Rate / £**	**Total / £**	**Assumptions/Comments**
1.01	**Railway Control Systems**				**£113,350.00**	
1.01.01	**Signalling Systems**					
1.01.01.01	*Controls and Monitoring Systems*					
1.01.01.03.01	Panel alterations (Provisional Sum)	1	item	100,000.00	100,000.00	
1.01.01.16	*Abandonment, Recovery and Disposal of Redundant Equipment*					
1.01.01.16.01	Existing ground frame	1	nr	3,900.00	3,900.00	
1.01.01.16.01	Existing points mechanism	1	nr	1,750.00	1,750.00	
1.01.01.16.01	Existing colour light signal	1	nr	7,700.00	7,700.00	
1.02	**Train Power Systems**					
	Not applicable to proposed works					
1.03	**Electric Power & Plant**				**£192,350.15**	
1.03.01	**Primary Power Supply**					
1.03.01.02	*Distribution Network Operator (DNO) Substation*					
1.03.01.02.01	DNO supply; including foundation and cabling	1	nr	26,481.00	26,481.00	
1.03.01.05	*Small Power for Equipment*					

Option 6 Cost Estimates					
1.03.01.05.02	Principal supply points; UPS; assumed 250kVA	1	nr	97,000.00	97,000.00
1.03.01.07	*Cables and Containment*				
1.03.01.07.01	Cables; platform supply	280	m	106.00	29,680.00
1.03.01.07.01	Cables; signalling systems	150	m	94.00	14,100.00
1.03.01.08	*Testing and Commissioning*				
1.03.01.08.01	Testing and commissioning (15% allowance)	15%	%	167,261.00	25,089.15
1.04	**Permanent Way**				**£434,200.00**
1.04.01	**Plain Line**				
1.04.01.01	*Ballast Track*				
1.04.01.01.01	Plain line ballasted track; G44 concrete sleeper with 200mm ballast depth and 3m width	150	m	1,328.00	199,200.00
1.04.04	**Abandonment, Recovery and Disposal of Redundant Equipment**				
1.04.04.01	*Plain Line*				
1.04.04.01.01	Recovery of existing second track; Ballast track inc disposal	700	m	300.00	210,000.00
1.04.04.02	*Switches and Crossings*				
1.04.04.02.01	Recovery of existing turnout; Ballast inc disposal	1	nr	25,000.00	25,000.00

Option 6 Cost Estimates					
1.05	**Operational Telecommunications Systems**				**£406,261.00**
1.05.01	**Control Centre**				
1.05.01.01.01	Station Control Room	1	nr	85,000.00	85,000.00
1.05.01.01.01	GSM-R connection	1	item	20,000.00	20,000.00
1.05.07	**Audio-visual Management Systems**				
1.05.07.04	*Surveillance Systems*				
1.05.07.04.01	CCTV Cameras	20	nr	1,860.00	37,200.00
1.05.10	**Customer Information System (CIS)**				
1.05.10.01	*Audio*				
1.05.10.01.01	Public address speakers	22	nr	3,800.00	83,600.00
1.05.10.01.02	Passenger Help Point	2	nr	13,985.00	27,970.00
1.05.10.02	*Video*				
1.05.10.02.01	Video display units; double sided	3	nr	22,500.00	67,500.00
1.05.11	**Equipment Housings, Platforms and Foundations**				
1.05.11.01	Location case: complete with racking and equipment	1	nr	32,000.00	32,000.00
1.05.12	**Testing and Commissioning**				

Option 6 Cost Estimates					
1.05.12.01	Testing and commissioning (15% allowance)	15%	%	353,270.00	52,991.00
1.06	**Buildings & Property**				**£1,866,625.00**
1.06.02	**Buildings**				
1.06.02.01	*Station Building*				
1.06.02.01.01	Station building; including substructure, superstructure, finishes, FF&E and services	100	m^2	5,705.00	570,500.00
1.06.10	**Services to Platform**				
1.06.10.08	*Electrical Installations*				
1.06.10.08.01	Electrical mains and sub-mains distribution	840	m^2	40.00	33,600.00
1.06.10.08.03	Lighting installations; including columns and foundations	840	m^2	65.00	54,600.00
1.06.10.10	*Lift and Conveyor Installations*				
1.06.10.10.01	Lifts; Passenger (4 person); 2 stops; including lift shaft and pit	2	nr	345,000.00	690,000.00
1.06.10.01	Testing and commissioning (15% allowance)	15%	%	690,000.00	103,500.00
1.06.10.13	*Specialist Installations*				
1.06.10.13.06	Ticket vending machine	2	nr	35,000.00	70,000.00
1.06.10.13.06	Ticket "tap-in" validator	2	nr	14,000.00	28,000.00
1.06.12	**External Services**				

Option 6 Cost Estimates					
1.06.12.01	*External Services*				
1.06.12.01.01	Water mains supply; connection to existing water supply (Provisional Allowance)	1	Psum	15,000.00	15,000.00
1.06.12.01.01	Water mains supply; provision of supply from connection to new station site; including trenching and other BWIC	75	m	95.00	7,125.00
1.06.12.01.02	Electricity mains supply; connection to existing HV supply (Provisional Allowance)	1	Psum	20,000.00	20,000.00
1.06.12.01.02	Electricity mains supply; provision of supply from connection to new station site; including trenching and other BWIC	75	m	85.00	6,375,00
1.06.12.01.06	Telecommunications system connections; connection to existing public telecoms system	1	Psum	15,000.00	15,000.00
1.06.12.01.06	Telecommunications system connections; provision of supply from connection to new station site; including trenching and other BWIC	75	m	55.00	4,125.00
1.06.12.01.09	External / street lighting systems; lighting columns to access road and car park	8	nr	3,100.00	24,800.00
1.06.12.01.09	External / street lighting systems; cabling and duct route	500	m	38.00	19,000.00
1.06.13	**Prefabricated Buildings and Building Units**				
1.06.13.01	*Prefabricated Buildings and Building Units and Minor Ancillary Buildings*				

Option 6 Cost Estimates						
1.06.13.01.04	Cycle parking facility	1	nr	55,000.00	55,000.00	
1.07	**Civil Engineering**				**£6,445,900.00**	
1.07.01	**Earthworks**					
1.07.01.01	*Level Ground*					
1.07.01.01.01	General excavation; including disposal (Provisional Allowance)	1	Psum	150,000.00	150,000.00	
1.07.01.01.01	Widening existing verge during bridge replacement; including disposal (Provisional Allowance)	1	Psum	50,000.00	50,000.00	
1.07.04	**Subways and Underpasses**					
1.07.04.01	*Subways*					
1.07.04.01	Subway; 5m wide, beneath platforms and railway corridor	32	m	5,000.00	115,000.00	
1.07.05	**Bridges and Viaducts for Road or Rail Vehicles**					
1.07.05.01	*Bridges*					
1.07.05.01.01	New underbridge; Steel construction; 15m wide x 35m span	525	m2	7,000.00	3,675,000.00	
1.07.07	**Platforms**					
1.07.07.01	*Platforms*					
1.07.07.01.01	New facing platforms; including foundations, deck and supporting structure, paving, surfacing and	840	m^2	1,700.00	1,428,000.00	140m long, 3m wide x2 nr

Option 6 Cost Estimates					
	markings; assumed PCC construction with tarmac surfacing				
1.07.07.03	*Access Structures for Platforms*				
1.07.07.03.02	Staircases; Straight; Steel framed; 2m wide; 3m height between levels	2	nr	25,000.00	50,000.00
1.07.07.03.02	Staircases; Straight; Steel framed; 2m wide; 3m height between levels; emergency exit	1	nr	25,000.00	25,000.00
1.07.07.06	*Platform Fittings and Furniture*				
1.07.07.06.01	Signs / notices (Provisional Allowance)	1	Psum	10,000.00	10,000.00
1.07.07.06.02	Other platform furniture; seating (Provisional Allowance)	1	Psum	15,000.00	15,000.00
1.07.08	**Retaining Walls**				
1.07.08.02	*Retaining Walls*				
1.07.08.02.01	Reinforced concrete retaining wall; 5m height; 500mm thick with 250kg/m3 reinforcement	100	m^3	660.00	66,000.00
1.07.09	**Fencing and Enclosures**				
1.07.09.01	*Fencing and Railings*				
1.07.09.01.01	Noise reflective barrier; 1.8m height; to back of new platforms	280	m	400.00	112,000.00
1.07.09.01.03	Modification of existing fencing (Provisional Allowance)	1	item	20,000.00	20,000.00
1.07.10	**General Drainage**				

Option 6 Cost Estimates					
1.07.10.01	*Surface Water Drainage*				
1.07.10.01.01	Surface water general drainage (Provisional Allowance)	1	Psum	30,000.00	30,000.00
1.07.11	**Track Foundations**				
1.07.11.01	*Ballasted Track Bed*				
1.07.11.01.01	Excavation and disposal; 250mm skim dig	150	m^3	104.00	15,600.00
1.07.12	**Roads, Pavements and Hardstandings**				
1.07.12.01	*Roads*				
1.07.12.01.03	Surfaced access way: Vehicular; station access road	235	m^2	160.00	37,600.00
1.07.12.01.03	Surfaced access way: Vehicular; taxi drop off area	112	m^2	350.00	39,200.00
1.07.12.01.03	Surfaced access way: Vehicular; bus stop	17	m^2	350.00	5,950.00
1.07.12.01.03	Surfaced access way: Vehicular; bell mouth junction	1	nr	45,000.00	45,000.00
1.07.12.02	*Hardstandings and Carparks*				
1.07.12.02.01	Staff parking bays	2	nr	3,000.00	6,000.00
1.07.12.02.02	Disabled parking bays	6	nr	3,450.00	20,700.00
1.07.12.02.03	Allowance for electric vehicle charging facility	3	nr	65,000.00	195,000.00

Option 6 Cost Estimates					
1.07.12.03	*Pavements and Walkways*				
1.07.12.01.02	Surfaced access ways: Pedestrian	705	m^2	120.00	84,600.00
1.07.12.01.03	Surfaced access ways: Pedestrian; emergency exit	225	m^2	100.00	22,500.00
1.07.12.07	*Other Street Furniture*				
1.07.12.02.05	Bus shelter	2	nr	35,000.00	70,000.00
1.07.13	**Landscaping and Ecology Outside Railway Corridor**				
1.07.13.01	*Soft Landscaping, Planting and Irrigation Systems*				
1.07.13.01.02	Landscaping and potential reinstatement of trees/habitat removed (Provisional Allowance)	1	Psum	100,000.00	100,000.00
1.07.14	**Troughing**				
1.07.14.01	*Troughing: Ground Level*				
1.07.14.01.01	Traditional concrete troughing	150	m	65.00	9,750.00
1.08	**Enabling Works**				**£161,750.00**
1.08.02	**Site Clearance and Preparation Works**				
1.08.02.01	*Site Clearance*				
1.08.02.01.01	General clearance	4,470	m^2	5.00	23,350.00
1.08.02.01.02	Clearance of vegetation	4,470	m^2	20.00	89,400.00

Option 6 Cost Estimates						
1.08.03.01	Demolition Works					
1.08.03.01.01	Demolition of existing underbridge	1	item	50,000.00	50,000.00	existing bridge 13 m^2
1.09	**Rolling Stock**					
	Not applicable to proposed works					
2.01	**Preliminaries**				**£2,886,130.85**	
2.01.01	Main Contractor's Preliminaries	30%	%	9,620,436.15	2,886,130.85	
2.02	**Overheads & Profit**				**£1,250,656.70**	
2.02.01	Main Contractor's Overheads & Profit	10%	%	12,506,567.00	1,250,656.70	
3.01	**Design Team Fees**				**£2,063,583.55**	
3.01.01	Design Team Fees	15%	%	13,757,223.69	2,063,583.55	
3.02	**Project Management Team Fees**				**£1,265,664.58**	
3.02.01	Project Management Team Fees	8%	%	15,820,807.25	1,265,664.58	
3.03	**Other Project Costs**				**£262,400.00**	
3.03.02	*Disruption of Asset Use*					
3.03.02.01	Employer's costs; Permanent way possessions management; 48hr	1	shifts	24,600.00	24,600.00	
3.03.02.01	Employer's costs; Permanent way possessions management; 96hr	4	shifts	49,200.00	196,800.00	
3.03.02.01	Employer's costs; Permanent way possessions management; Mid-week nights	10	shifts	4,100.00	41,000.00	

Option 6 Cost Estimates					
4.01	**Risk**				**£6,939,548.73**
4.01.02	Total risk allowance	40%	%	17,348,871.83	6,939,548.73

9.3.5. Option 7 Detailed Costs

Option 7 Cost Estimates						
RMM Code	**Item Description**	**Quantity**	**UoM**	**Rate / £**	**Total / £**	**Assumptions/Comments**
1.01	**Railway Control Systems**				**£1.293,469.00**	
1.01.01	**Signalling Systems**					
1.01.01.01	*Controls and Monitoring Systems*					
1.01.01.03.01	Panel alterations (Provisional Sum)	1	item	100,000.00	100,000.00	
1.01.01.03	*Point Mechanisms*					
1.01.01.03.01	Electrical; Type D switch	3	nr	59,000.00	177,000.00	
1.01.01.04	*Signals and Indicators*					
1.01.01.04.01	Colour light signal; 2 aspect	1	nr	8,150.00	8,150.00	
1.01.01.04.01	Colour light signal; 3 aspect	3	nr	8,150.00	24,450.00	
1.01.01.04.04	Junction indicator	1	nr	8,800.00	8,800.00	
1.01.01.05	*Train Detection Systems*					
1.01.01.05.01	Track circuits	8	nr	5,700.00	45,600.00	
1.01.01.05.03	Insulated block joints (IBJs)	8	nr	8,900.00	71,200.00	
1.01.01.06	*Train Protection Systems*					
1.01.01.06.01	Automatic Warning System (AWS)	4	nr	6,785.00	27,140.00	
1.01.01.06.01	Automatic Warning System (AWS) Board	4	nr	106.00	424.00	

Option 7 Cost Estimates					
1.01.01.06.02	Train Protection Warning System (TPWS); including TSS and OSS	4	nr	19,000.00	76,000.00
1.01.01.08	*Cables and Containment*				
1.01.01.08.01	Cables	5,000	m	85.00	425,000.00
1.01.01.09	*Signal Support Structures and Foundations*				
1.01.01.09.01	Freestanding single post: Straight	4	nr	9,900.00	39,600.00
1.01.01.10	*Equipment Housings, Platforms and Foundations*				
1.01.01.10.01	Location case: complete with racking and equipment	4	nr	32,000.00	128,000.00
1.01.01.14	*Testing and Commissioning*				
1.01.01.14.01	Testing and Commissioning (15% allowance)	15%	%	1,031,364.00	154,705.00
1.01.01.16	*Abandonment, Recovery and Disposal of Redundant Equipment*				
1.01.01.16.01	Existing ground frame	1	nr	3,900.00	3,900.00
1.01.01.16.01	Existing points mechanism	2	nr	1,750.00	3,500.00
1.02	**Train Power Systems**				**£302,823.75**
1.02.02	**Overhead Line Equipment (OLE)**				
1.02.02.01	*Support Structures*				
1.02.02.01.01	Piled foundation	23	nr	8,200.00	188,600.00

Option 7 Cost Estimates					
1.02.02.01.01	Support structure: Single track cantilever	23	nr	1,575.00	36,225.00
1.02.02.03	*Wiring*				
1.02.02.03.01	Contact wire	700	m	30.00	21,000.00
1.02.02.03.02	Catenary wire	700	m	25.00	17,500.00
1.02.02.08	*Testing and Commissioning*				
1.02.02.03.01	Testing and Commissioning (15% allowance)	15%	%	263,325.00	39,498.75
1.03	**Electric Power & Plant**				**£234,823.75**
1.03.01	**Primary Power Supply**				
1.03.01.02	*Distribution Network Operator (DNO) Substation*				
1.03.01.02.01	DNO supply; including foundation and cabling	1	nr	26,481.00	26,481.00
1.03.01.05	*Small Power for Equipment*				
1.03.01.05.02	Principal supply points; UPS; assumed 250kVA	1	nr	97,000.00	97,000.00
1.03.01.07	*Cables and Containment*				
1.03.01.07.01	Cables; platform supply	140	m	106.00	14,840.00
1.03.01.07.01	Cables; signalling systems	700	m	94.00	65,800.00
1.03.01.08	*Testing and Commissioning*				

Option 7 Cost Estimates					
1.03.01.08.01	Testing and commissioning (15% allowance)	15%	%	204,121.00	30,619.00
1.04	**Permanent Way**				**£2,654,600.00**
1.04.01	**Plain Line**				
1.04.01.01	*Ballast Track*				
1.04.01.01.01	Plain line ballasted track; G44 concrete sleeper with 200mm ballast depth and 3m width	700	m	1,328.00	929,600.00
1.04.02	**Switches and Crossing**				
1.04.02.01	*Ballast Track*				
1.04.02.01.02	Turnout; NR60D	1	nr	335,000.00	335,000.00
1.04.02.01.03	Crossover; NR60D	1	nr	670,000.00	670,000.00
1.04.04	**Abandonment, Recovery and Disposal of Redundant Equipment**				
1.04.04.01	*Plain Line*				
1.04.04.01.01	Recovery of existing track; Ballast track inc disposal; for track removal	700	m	300.00	210,000.00
1.04.04.01.01	Recovery of existing second track; Ballast track inc disposal	700	m	300.00	210,000.00
1.04.04.02	*Switches and Crossings*				
1.04.04.02.01	Recovery of existing turnout; Ballast inc disposal	1	nr	300,000.00	300,000.00

Option 7 Cost Estimates					
1.05	**Operational Telecommunications Systems**				**£314,301.00**
1.05.01	**Control Centre**				
1.05.01.01.01	Station Control Room	1	nr	85,000.00	85,000.00
1.05.01.01.01	GSM-R connection	1	item	20,000.00	20,000.00
1.05.06	**Operational Telephones**				
1.05.06.02	Station telephone	1	nr	3,500.00	3,500.00
1.05.06.06	Signal post telephone (SPT)	4	nr	3,500.00	14,000.00
1.05.06.07	Point zone telephone (PZT)	3	nr	3,500.00	10,500.00
1.05.07	**Audio-visual Management Systems**				
1.05.07.04	*Surveillance Systems*				
1.05.07.04.01	CCTV Cameras	2	nr	1,860.00	3,7200.00
1.05.10	**Customer Information System (CIS)**				
1.05.10.01	*Audio*				
1.05.10.01.01	Public address speakers	12	nr	3,800.00	45,600.00
1.05.10.01.02	Passenger Help Point	1	nr	13,985.00	13,985.00
1.05.10.02	*Video*				
1.05.10.02.01	Video display units; double sided	3	nr	22,500.00	67,500.00

Option 7 Cost Estimates					
1.05.11	**Equipment Housings, Platforms and Foundations**				
1.05.11.01	Location case: complete with racking and equipment	1	nr	32,000.00	32,000.00
1.05.12	**Testing and Commissioning**				
1.05.12.01	Testing and commissioning (15% allowance)	15%	%	273,305.00	40,996.00
1.06	**Buildings & Property**				**£893,775.00**
1.06.02	**Buildings**				
1.06.02.01	*Station Building*				
1.06.02.01.01	Station building; including substructure, superstructure, finishes, FF&E and services	100	m^2	5,705.00	570,500.00
1.06.10	**Services to Platform**				
1.06.10.08	*Electrical Installations*				
1.06.10.08.01	Electrical mains and sub-mains distribution	420	m^2	40.00	16,800.00
1.06.10.08.03	Lighting installations; including columns and foundations	420	m^2	65.00	23,700.00
1.06.10.13	*Specialist Installations*				
1.06.10.13.06	Ticket vending machine	1	nr	35,000.00	35,000.00
1.06.10.13.06	Ticket "tap-in" validator	1	nr	14,000.00	14,000.00

Option 7 Cost Estimates					
1.06.12	**External Services**				
1.06.12.01	*External Services*				
1.06.12.01.01	Water mains supply; connection to existing water supply (Provisional Allowance)	1	Psum	15,000.00	15,000.00
1.06.12.01.01	Water mains supply; provision of supply from connection to new station site; including trenching and other BWIC	175	m	95.00	16,625.00
1.06.12.01.02	Electricity mains supply; connection to existing HV supply (Provisional Allowance)	1	Psum	20,000.00	20,000.00
1.06.12.01.02	Electricity mains supply; provision of supply from connection to new station site; including trenching and other BWIC	175	m	85.00	14,875,00
1.06.12.01.06	Telecommunications system connections; connection to existing public telecoms system	1	Psum	15,000.00	15,000.00
1.06.12.01.06	Telecommunications system connections; provision of supply from connection to new station site; including trenching and other BWIC	75	m	55.00	4,125.00
1.06.12.01.09	External / street lighting systems; lighting columns to access road and car park	17	nr	3,100.00	52,700.00
1.06.12.01.09	External / street lighting systems; cabling and duct route	825	m	38.00	31,350.00
1.06.13	**Prefabricated Buildings and Building Units**				

Option 7 Cost Estimates					
1.06.13.01	*Prefabricated Buildings and Building Units and Minor Ancillary Buildings*				
1.06.13.01.04	Cycle parking facility	1	nr	55,000.00	55,000.00
1.07	**Civil Engineering**				**£1,909,750.00**
1.07.01	**Earthworks**				
1.07.01.01	*Level Ground*				
1.07.01.01.01	General excavation; including disposal (Provisional Allowance)	1	Psum	100,000.00	100,000.00
1.07.04	**Subways and Underpasses**				
1.07.07	**Platforms**				
1.07.07.01	*Platforms*				
1.07.07.01.01	New facing platform; including foundations, deck and supporting structure, paving, surfacing and markings; assumed PCC construction with tarmac surfacing	420	m^2	1,700.00	714,000.00
1.07.07.06	*Platform Fittings and Furniture*				
1.07.07.06.01	Signs / notices (Provisional Allowance)	1	Psum	10,000.00	10,000.00
1.07.07.06.02	Other platform furniture; seating (Provisional Allowance)	1	Psum	15,000.00	15,000.00
1.07.09	**Fencing and Enclosures**				
1.07.09.01	*Fencing and Railings*				

Option 7 Cost Estimates					
1.07.09.01.01	Noise reflective barrier; 1.8m height; to back of new platforms	140	m	400.00	56,000.00
1.07.09.01.03	Modification of existing fencing (Provisional Allowance)	1	item	20,000.00	20,000.00
1.07.10	**General Drainage**				
1.07.10.01	*Surface Water Drainage*				
1.07.10.01.01	Surface water general drainage (Provisional Allowance)	1	Psum	30,000.00	30,000.00
1.07.11	**Track Foundations**				
1.07.11.01	*Ballasted Track Bed*				
1.07.11.01.01	Excavation and disposal; 250mm skim dig	700	m^3	104.00	72,800.00
1.07.12	**Roads, Pavements and Hardstandings**				
1.07.12.01	*Roads*				
1.07.12.01.03	Surfaced access way: Vehicular; station access road	1,505	m^2	160.00	240,800.00
1.07.12.01.03	Surfaced access way: Vehicular; taxi drop off area	17	m^2	350.00	5,950.00
1.07.12.01.03	Surfaced access way: Vehicular; bus stop	16	m^2	350.00	5,600.00
1.07.12.01.03	Surfaced access way: Vehicular; bell mouth junction	1	nr	45,000.00	45,000.00
1.07.12.02	*Hardstandings and Carparks*				

Option 7 Cost Estimates					
1.07.12.02.01	Staff parking bays	2	nr	3,000.00	6,000.00
1.07.12.02.02	Disabled parking bays	6	nr	3,450.00	20,700.00
1.07.12.02.03	Allowance for electric vehicle charging facility	3	nr	65,000.00	195,000.00
1.07.12.03	*Pavements and Walkways*				
1.07.12.01.02	Surfaced access ways: Pedestrian	1,470	m^2	120.00	176,400.00
1.07.12.01.03	Surfaced access ways: Pedestrian; emergency exit	60	m^2	100.00	195,000.00
1.07.12.07	*Other Street Furniture*				
1.07.12.02.05	Bus shelter	1	nr	35,000.00	35,000.00
1.07.13	**Landscaping and Ecology Outside Railway Corridor**				
1.07.13.01	*Soft Landscaping, Planting and Irrigation Systems*				
1.07.13.01.02	Landscaping and potential reinstatement of trees/habitat removed (Provisional Allowance)	1	Psum	100,000.00	100,000.00
1.07.14	**Troughing**				
1.07.14.01	*Troughing: Ground Level*				
1.07.14.01.01	Traditional concrete troughing	700	m	65.00	45,500.00
1.08	**Enabling Works**				**£90,575.00**

Option 7 Cost Estimates					
1.08.02	**Site Clearance and Preparation Works**				
1.08.02.01	*Site Clearance*				
1.08.02.01.01	General clearance	4,470	m^2	5.00	23,350.00
1.08.02.01.02	Clearance of vegetation	4,470	m^2	20.00	89,400.00
1.09	**Rolling Stock**				
	Not applicable to proposed works				
2.01	**Preliminaries**				**£2,308,210.13**
2.01.01	Main Contractor's Preliminaries	30%	%	7,694,033.75	2,308,210.13
2.02	**Overheads & Profit**				**£1,000,224.39**
2.02.01	Main Contractor's Overheads & Profit	10%	%	10,002,243.88	1,000,224.39
3.01	**Design Team Fees**				**£1,650,370.24**
3.01.01	Design Team Fees	15%	%	11,002,468.26	1,650,370.24
3.02	**Project Management Team Fees**				**£1,012,227.08**
3.02.01	Project Management Team Fees	8%	%	12,652,838.50	1,012,227.08
3.03	**Other Project Costs**				**£49,200.00**
3.03.02	*Disruption of Asset Use*				
3.03.02.01	Employer's costs; Permanent way possessions management; 48hr	2	shifts	24,600.00	49,200.00
4.01	**Risk**				**£5,485,706.23**

Option 7 Cost Estimates					
4.01.02	Total risk allowance	40%	%	13,714,265.58	5,485,706.23

10. Appendix C: Active Travel

10.1. Introduction

This Appendix considers active travel measures surrounding the proposed Car Mill Station site. The purpose of this note is to review the existing active travel provision surrounding the site and recommend interventions that would encourage walking and cycling in the local area, supporting 'first and last mile' journeys to/from the station.

Active travel refers to journeys that are undertaken by physically active means, including walking and cycling. Encouraging a modal shift towards active travel can help alleviate road congestion, improve air quality and benefit individual health and well-being. Given the strong environmental, social and economic benefits, the government has committed investment to active travel and declared the ambitions aim that 50% of all journeys in towns and cities should be walked or cycled by 2030[57].

To support a modal shift towards active travel, it is essential that new developments, such as the proposed Carr Mill Railway Station, can be easily accessed by walking and cycling. High-quality active travel infrastructure should therefore be provided in the vicinity of the station to enable this.

The technical note is organised as follows:

- **Section 1** provides background information on the scheme and the objectives of this technical note.
- **Section 2** reviews existing walking and cycling infrastructure, highlighting issues and opportunities.
- **Section 3** reviews existing levels of active travel and considers future demand, which would influence future recommendations for new walking and cycling infrastructure.
- **Section 4** suggests recommendations for active travel improvements at the proposed station site and in the surrounding local area, including potential challenges to delivery and estimated costings.

10.1.1. Study Area

To support 'first mile, last mile' journeys, this note aims to review active travel provision within a 1mile radius of the proposed station site and propose recommendations that can support a modal shift towards walking and cycling for short distance journeys to and from the station.

Two preferred scheme options have been identified for the proposed station at this stage. Given the close proximity of these options, a combined assessment site has been created for the purposes of this Active Travel technical note. The location of the combined assessment site is shown on Figure 10-1 below, along with the locations of the two scheme options.

[57] The second cycling and walking investment strategy (CWIS2) - GOV.UK (www.gov.uk)

Figure 10-1 - Active Travel Study Area

10.2. Existing Active Travel Network

10.2.1. Methodology

A desktop review of the active travel network was completed to understand the walking and cycling opportunities currently available. Existing infrastructure within a 1mile radius of the station site was identified, in addition to current network issues and potential opportunities for improvements. Consideration was given to Public Highways, Public Rights of Way (PRoW) and Cycle Tracks, with the outcome of this analysis presented in the following sub-sections.

10.2.2. Highways

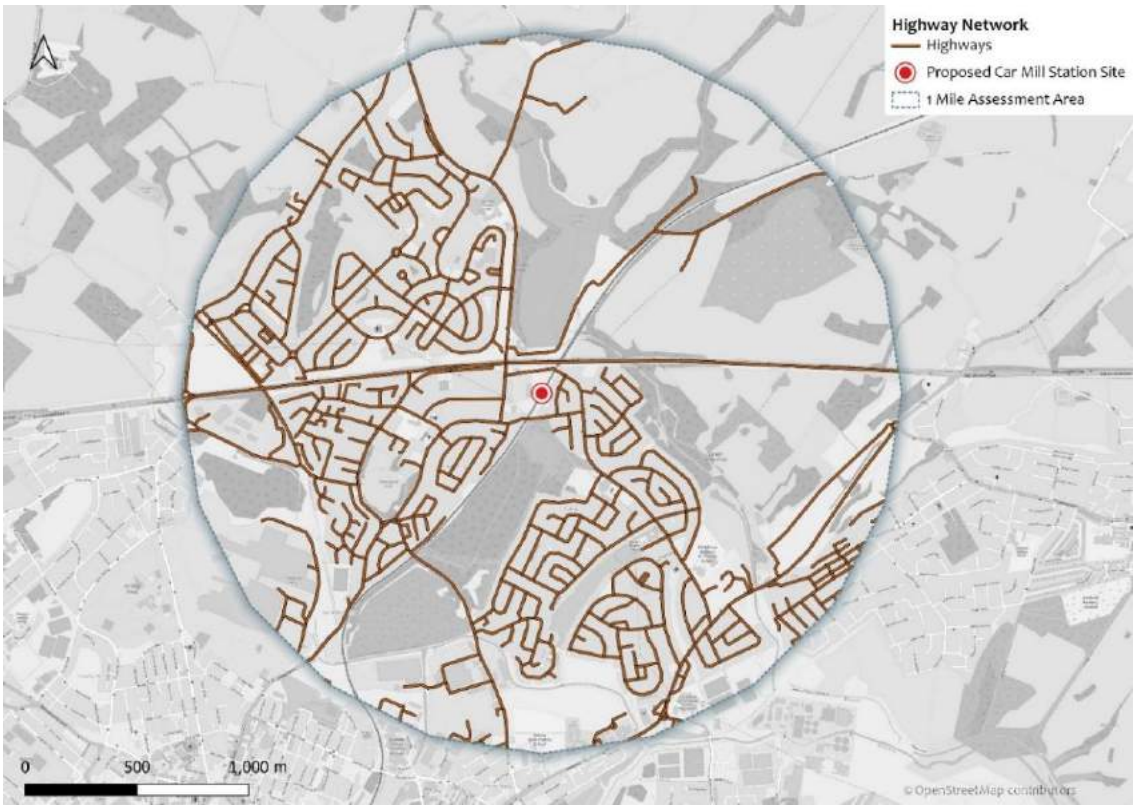
10.2.2.1. Existing Network Provision

The road network may primarily be used by motor vehicles, but it provides essential access opportunities for cyclists, with supporting footway infrastructure providing safe access for walking. Figure 10-2 shows the local highways surrounding the proposed station site, revealing a comprehensive road network that has good connections to nearby residential neighbourhoods and the wider region. There are footways aligned along most of the roads in the study area that provide useful access for pedestrians, though the condition, width and accessibility of these paths is variable. The distinctive gaps in the network reflect pockets of open green space, woodland and recreational park facilities for the public.

The local roads surrounding the proposed station site are predominately residential and suburban in character with variable speed limits in place. Carr Mill Road, Woodlands Road, Laffak Road and Laburnum Avenue surround the proposed station area and have 30mph speed limits, but there are quieter residential routes nearby with 20mph speed limits, including Newlands Road to the west, which may be conducive for cycling.

The A580 East Lancashire Road bisects the 1mile study area, providing regional connectivity to Liverpool Salford. The A571 (Carr Mill Road) is another key route through the study area, as it provides north-south connectivity between St Helens town centre, the proposed station site and Carr Mill to the north. Given the direct nature of this route, this is an important travel corridor, though the road has a 40mph speed limit north of the A580 that may deter casual cyclists. Advisory cycle lanes are provided on Carr Mill Road north of the A580, but these do not meet current design standards.

Figure 10-2 - Local Highways



10.2.2.2. Issues, Challenges and Constraints

Known issues with the existing highway network, which create challenges for walking and cycling, were identified through desktop analysis. These are summarised in Table 10-1 below.

Table 10-1 - Highways Issues and Constraints

Issue Number	Description of the Issue/Constraint	Impact on Active Travel
1	Limited road crossing infrastructure for pedestrians and cyclists.	With limited road crossing infrastructure available, pedestrians and cyclists informally cross carriageways along desire aligns. These desire lines may not be at suitable locations to cross the carriageway, increasing the potential for collisions with passing traffic. Wheelchair users and those with pushchairs may also encounter difficulty crossing roads informally, as there are no designated crossings with dropped kerbs in place. For example, there are shops and schools along Laffak Road-Chain Lane, but the only formal crossing is at the signalised junction with the A58/Blackbrook Road.
2	Street Furniture	Lighting columns, bus stops and signposts have been identified along the footways. The positioning of these features can reduce the accessible width of the footway and reduce comfort levels for pedestrians.
3	A580	The A580 is a barrier to north south non-motorised user movements, channelling pedestrians and cyclists towards limited crossing points. These crossings may not be located on the direct alignment of their routes, which can consequently increase journey times.
4	A571/A580 Junction	The staggered signalised crossing across the A580 is an indirect route. The guardrails and narrow refuge space also confine pedestrians and cyclists, increasing the potential for conflict between users.
5	A571 crossing (north of the A580 junction)	There is an uncontrolled crossing with dropped kerbs and tactile paving at this location. Given the nature of the junction, users must wait during busy peak flows, disrupting their journey times.
6	Surface Maintenance	The condition of carriageways and footways is variable, with potholed sections creating accessibility issues for pedestrians and cyclists.

Issue Number	Description of the Issue/Constraint	Impact on Active Travel
7	Narrow widths	Roads and footways have variable widths, reducing accessibility for active travel users, e.g., Laffak Road and Woodlands Road are narrow where they pass underneath the railway, with poor pedestrian provision.
8	Footway/On-street parking	Nuisance parking along footways obstructs access for pedestrians, while there on-street parking prevalent in the area. Residents who park on the road may object to the introduction of new cycle lanes if they reduce on-road parking capacity.

Figure 10-3 - Uncontrolled Pedestrian Crossing at Carr Mill Road (Heading North from A580)

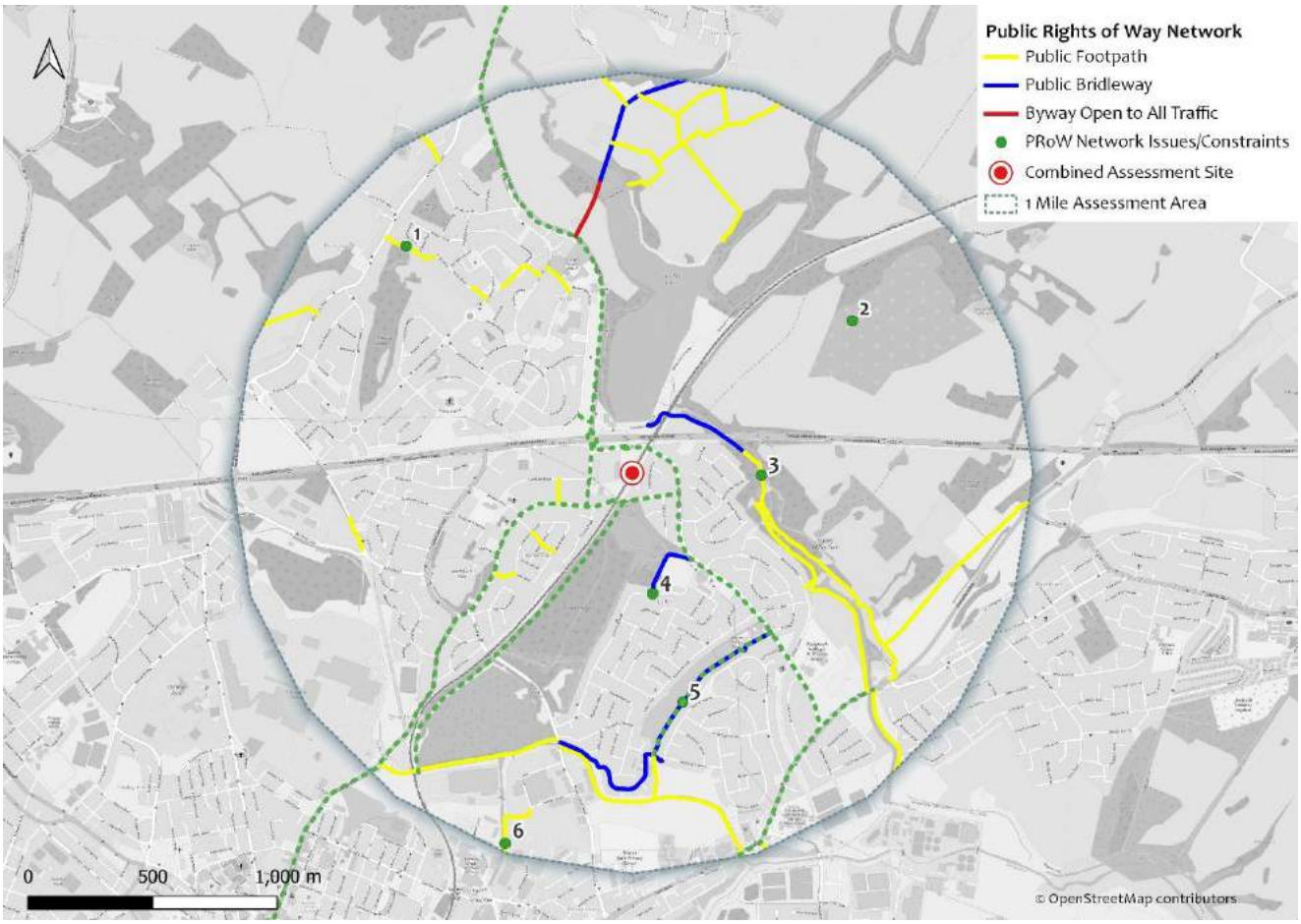
10.2.3. Public Rights of Way (PRoW)

10.2.3.1. Existing Network Provision

PRoW are a vital component of the highways network, providing off-road opportunities for commuting and recreational activity. From an active travel perspective, they can provide convenient links between main roads that create direct routes for walking and cycling. Figure 10-4 shows recorded PRoW within 1mile of the station site.

Given the suburban context of the study area, the existing provision of PRoW at Carr Mill is considered to be relatively good. While there are no PRoWs within the immediate vicinity of the station, there are Public Footpaths within the 1-mile study area that provide useful pedestrian links between roads. There are also a small number of Public Bridleways and Byways further afield that offer valuable off-road access rights for cyclists.

Figure 10-4 - PRoW Network



10.2.3.2. Issues, Challenges and Constraints

The PRoW network may have a provide active travel opportunities in Carr Mill, but there are also issues and constraints with the current network. These are summarised in Table 10-2 and highlighted on the PRoW Network map in Figure 10-4.

Table 10-2 - PRoW Network Issues

Issue Number	Description of the Issue/Constraint	Impact on Active Travel
1	Limited PRoW with higher rights of access.	Pedestrians may have the right to use all classifications of PRoW, but cyclists are restricted to using Bridleways, Restricted Byways and Byways Option to All Traffic. While there are several PRoW within the study area, most of these routes are classified as footpaths and cannot legally be used by cyclists.
2	Incoherent Network	There are visible gaps in the existing PRoW network that create continuity issues for path users, potentially forcing them to use undesirable routes along busy roads to access off-road paths and continue their journey. For example, there are few PRoW on the northern side of the A580 (east of Carr Mill), where there is a significant expanse of open farmland. Public Footpath 917 also terminates at Carr Mill Dam with no onward connectivity.
3	Sankey Valley Path	Public Bridleway 903 provides access into Sankey Valley from the Carr Mill Road. This is an attractive off-road route for the public that would appeal to cyclists, but the bridleway terminates approximately 420m from the road, effectively creating a cul-de-sac route for cyclists with no onward connectivity.

Issue Number	Description of the Issue/Constraint	Impact on Active Travel
4	Signage	PRoW should be clearly waymarked where they leave a metalled road, with a sign indicating the status of the public to the public. While most of the PRoW in this study area are waymarked, some of the routes are missing signs and their destinations are not always clear.
5	Surface Condition	The quality and condition of each PRoW varies. In particular, Public Bridleway 507 connects Chain Lane with Merton Bank Road and could potentially be used by cyclists. While the northern part of the route consists of a sealed tarmac surface, middle sections of the route pass across open fields that are unsurfaced. The quality of these off-road sections could deteriorate during winter months and become unattractive for walking and cycling.
6	Lighting	Despite passing through populated urban areas, most of the PRoW are unlit, which may deter public use outside daylight hours.

It should be noted that it is possible to evolve the PRoW network in response to changing public user demands. While the existing network may have its limitations, there is potential to upgrade the status of existing routes and create new paths, which would provide new active travel opportunities for the public.

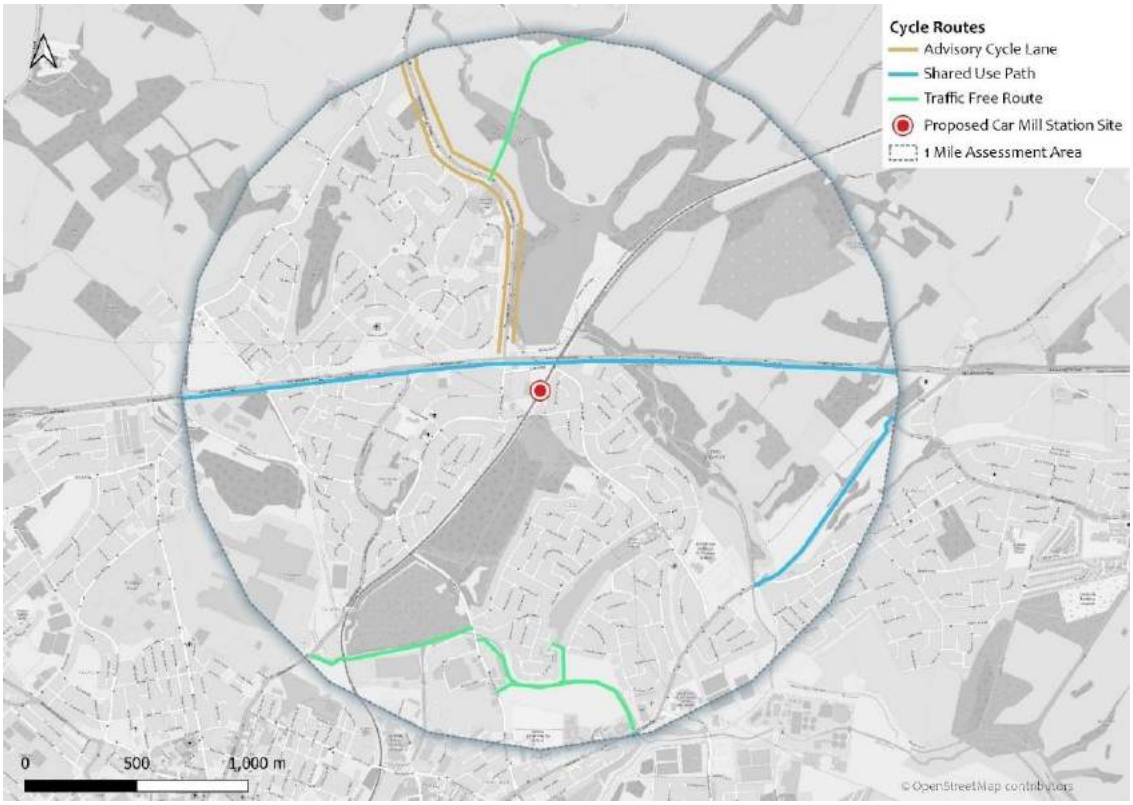
Figure 10-5 - Public Bridleway 514 (Hinckey Road) Missing Sign

10.2.4. Cycle Routes

Existing Network Provision

Figure 10-6 illustrates the existing network of cycle routes in the study area. These routes are a mixture of on-road and off-road paths that form a vital component of the active travel network.

Figure 10-6 – Existing Cycle Routes



There are Shared User Paths (SUP) alongside the A58 (Stanley Bank Way) and A580 that provide useful off-road connectivity for cyclists, though the proximity of these routes alongside busy roads can diminish their attractiveness for some cyclists, creating an unpleasant or uncomfortable environment. In addition to these facilities, there are advisory cycle lanes painted along the carriageway of Carr Mill Road north of the A580, which could provide a useful connection between the new station and residential neighbourhoods of Carr Mill. The Ravenhead Greenway is an off-road route linking the A571 (College Street) to the A58 (Park Road), which provides an east-west connectivity (Figure 10-7).

Figure 10-7 - Ravenhead Greenway

10.2.4.1. Issues, Challenges and Constraints

A summary of the issues and constraints identified with the existing network of cycle routes are highlighted in Table 10-3.

Table 10-3 - Cycle Route Issues

Issue Number	Description of the Issue/Constraint	Impact on Active Travel
1	Limited off-road cycle provision	On balance, there are few existing off-road cycle routes available for the public to use. On-road routes may deter cyclists who lack confidence sharing the carriageway with vehicular traffic, particularly given the lack of protected on-road cycle infrastructure in the area.
2	Incoherent network	Cyclists may have to ride along unpleasant roads to connect their journey, as there are significant gaps in the existing cycle network.
3	Advisory Cycle Lanes	Carr Mill Road provides an important north-south link with the proposed station, but existing cycle infrastructure along this road is limited to advisory 'on-road' cycle lanes. While these road markings depict an area of the carriageway for cyclists to use, passing vehicles can encroach into the space, which can introduce safety concerns. They do not meet current design standards set out in Local Transport Note 1/20.
5	Signage	Visitors unfamiliar with the area may be deterred from using cycle routes on the ground if they are not clearly signed. Routes may be promoted online, but their status and destination is not always clear on the ground for path users.

10.2.5. Additional Barriers

In addition to the network issues highlighted above, the following severance factors should be taken into consideration, as they can act as a significant barrier to mobility, particularly for active travel.

- The Liverpool to Wigan Railway Line: This traverses through the study area, severing the local road network and funnelling all modes of traffic towards a limited number of crossing points.
- Topography: the relatively flat nature of the local area appears to be conducive for cycling, though the gradient heading north towards Billinge increases uphill, which may deter casual cyclists.
- Streams and canals pass through the study area, which may act as a barrier to movements. On a positive note, there is potential for mitigating these water features with minor bridge structures.

10.3. Active Travel: Use and Demand

Having reviewed the existing active travel network provision, it is important to understand user behaviour and identify trip generators. This approach helps to ensure that suitable infrastructure is provided in appropriate areas to support user demand. This chapter gives a brief overview of popular routes and key destinations in the assessment area, which may generate journeys to and from the proposed train station.

10.3.1. Key Destinations and Trip Generation

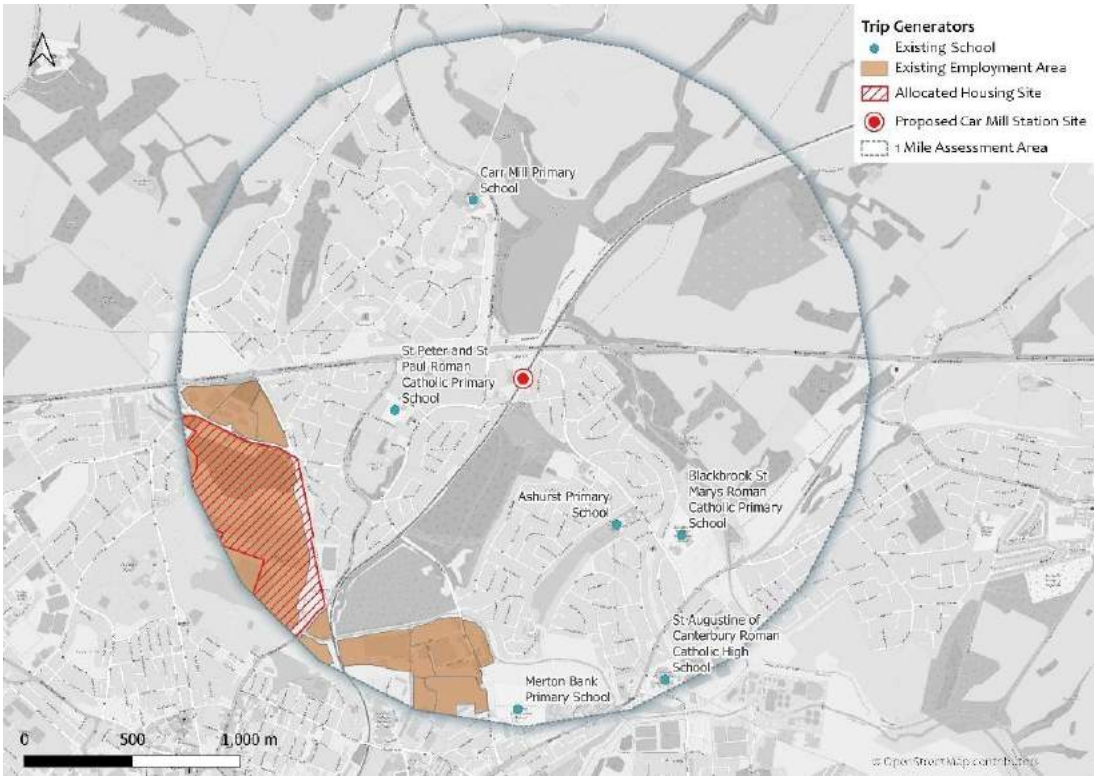
As a broad 'rule of thumb', it is considered that trips up to 5km could be made by cycling and trips less than 2km could be undertaken by walking and cycling. Based on this approach, there are a number of residential neighbourhoods within 1mile of the proposed station site that could realistically be accessed by walking and cycling modes. This includes the settlements of Carr Mill, Moss Bank, Haresfinch and Laffak.

A significant development site has been proposed to the west of the station at the Pilkingtons Glass works site (Cowley Hill Works). Outline planning consent has been granted for up to 1,100 new homes at this location, which would increase the local population and the potential number of people travelling between the train station. Due to the scale of this development and its proximity to the proposed station, high quality active travel connections between the two sites should be provided.

The location of this allocated housing site is indicated on Figure 10-8, along with existing employment areas and schools within 1 mile of the proposed station site. Employment areas have been included within the assessment as employees could potentially commute to work via the new station. The schools have also been identified within this analysis, as staff and pupils from outside the study area could potentially travel via the train

station. Given the majority of these schools are primary rather than secondary education, it is accepted that teachers are more likely to be using the train station than pupils. However, local children within the study area would still benefit from the introduction of new walking and cycling facilities on their doorstep.

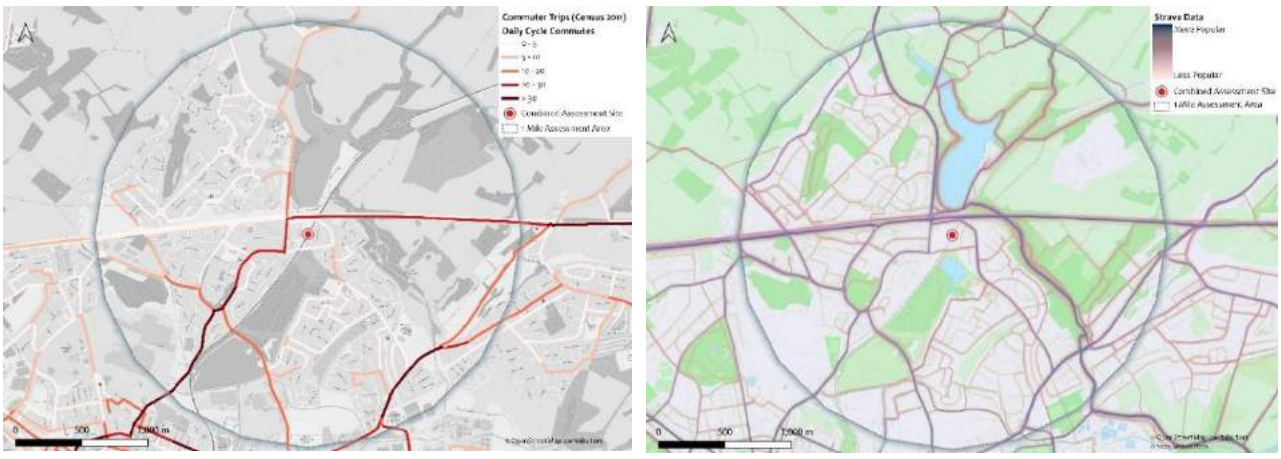
Figure 10-8 - Trip Generators



10.3.2. Current Flows

Based on 2011 Census data, the Propensity to Cycle Tool (PCT) was used to provide an indication of existing cycle commuter trips within the study area. Figure 10-9a shows that the highest rates of daily cycle commuting took place along the A580 SUP, A571 and A58.

Figure 10-9 a) Cycle Commuter Trips **b) Strava Data**



Publicly available data for cycle trips recorded using Strava was also taken into consideration to understand existing levels of cycling activity and identify key routes. Strava is an application used for tracking various activities, including walking, cycling and running. Figure 10-9b represents cycling trips recorded by Strava users. While the data is skewed heavily towards recreational activity rather than utilitarian trips, it does help to provide an illustration of preferred routes for cycling trips.

The Strava data shows high levels of use along the A580 Shared User Path and A58, reinforcing the patterns illustrated by the commuter data. Analysis indicates relatively high levels of cycling along the Carr Mill Road

(north of the A580) and along Public Footpaths through Sankey Valley Park, even though these PRoW do not formally carry recorded public rights of access for cyclists.

Figure 10-10 - A571 (Haresfinch Road)

10.3.3. Collisions involving Pedestrians and cyclists

A high-level review of recent collision data (2015-2020) involving pedestrians and cyclists was undertaken. This insight can provide a useful understanding of where collisions are occurring and help to identify locations where new active travel infrastructure could be of the greatest benefit.

10.3.3.1. Pedestrian Collisions

Figure 10-11 illustrates the location and severity of collisions involving pedestrians within the study area. The data reveals there were a total of 30 incidents recorded during the survey period, included one fatality on the A58 Blackbrook Road. Most of the collisions were in the southern half of the study area, with notable clusters visible along the Blackbrook Road and A571, suggesting a need for interventions in these areas.

Figure 10-11 - Pedestrian Collisions

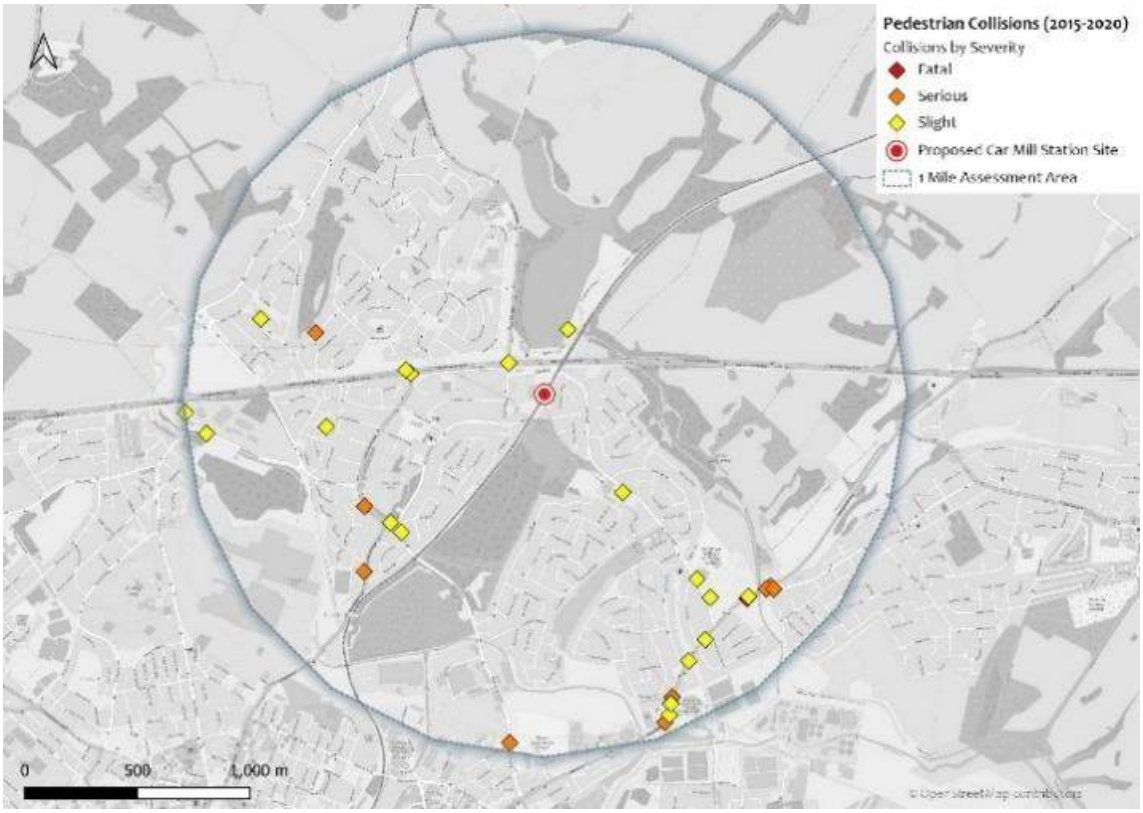
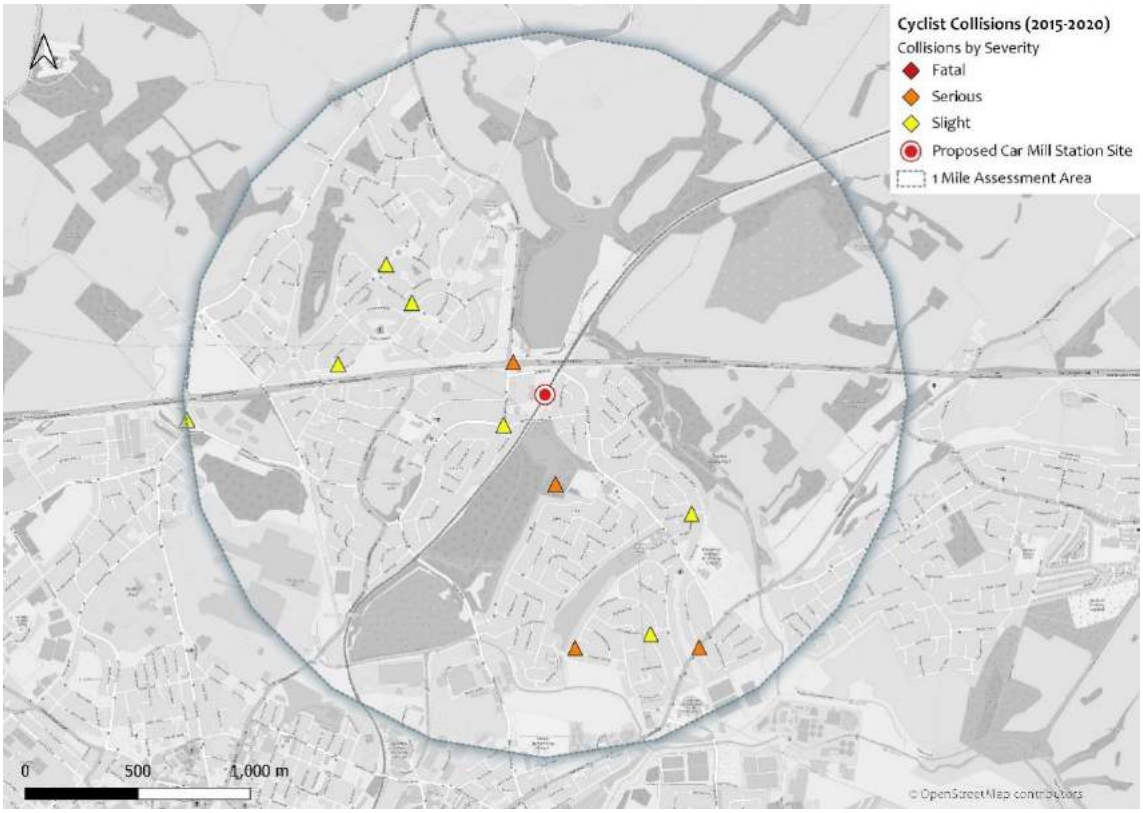


Figure 10-12 - Cyclist Collisions



10.3.3.2. Cyclist Collisions

The data shows there were 11 collisions involving cyclists that occurred within 1m of the Carr Mill Station site. The locations and level of severity of these collisions are presented in Figure 10-12. It can be seen that collisions were recorded across the assessment area and there were few noticeable clusters, though there were two collisions near the proposed station site on the Carr Mill Road.

10.3.4. Public Feedback

To understand public attitudes towards existing active travel issues and opportunities, comments from the online platform 'Commonplace' were reviewed. This Commonplace St Helens Liveable Streets website was originally launched in 2020 to gather public suggestions for active travel improvements in response to the Covid-19 pandemic[58]. While this online consultation has now closed, the comments logged by the public remain relevant, as they provide a useful insight into public travel behaviours and their concerns.

With regards to the Carr Mill Study Area, two relevant topics of interest were identified:

- Carr Mill Road – A580 (East Lancashire Road) crossing: This was highlighted as a 'dangerous crossing' by the public. Concerns were raised with the existing pedestrian/cyclist crossing infrastructure at this location, with a suggestion for upgraded facilities.
- Carr Mill Road/Martindale Road Cycle Lane: It was noted that the existing cycle lanes along this road are only painted lines on the carriageway. Concerns were raised over the narrow width of these cycle lanes, with fast moving cars passing adjacent to cyclists.

Figure 10-13 - Advisory Cycle lanes along the A571

These comments both related to the Carr Mill Road, located north of the proposed station site (Figure 10-13). Given the proposed station is likely to attract commuters from Carr Mill, there should ideally be high quality walking and cycling infrastructure between the two sites to support active travel journeys.

[58] Community Forum – St. Helens Liveable Streets – Commonplace

10.4. Recommendations

This chapter suggests improvements that would support “first mile, last mile” active travel to the proposed station at Carr Mill. The primary aim of these interventions is to encourage walking and cycling journeys between the station and the local community, but they would have the additional benefit of supporting active travel journeys across the wider region.

The recommendations have been split into two sub-categories. The first section considers improvements that would help maximise the accessibility of the station The second section then considers local area improvements that would integrate the station into the local neighbourhood and support “first mile, last mile” journeys. Both sets of recommendations are based on Cycle Infrastructure Design LTN 1/20, published by the Department of Transport (DfT), which provides guidance for high quality cycling infrastructure.

It should be noted that the following proposals are based on a high-level assessment, with estimated costings provided where possible, which are based on previous works and DfT guidance. A comprehensive site survey and feasibility study would need to be undertaken to fully assess each proposal and refine the costs.

10.4.1. Station Accessibility Improvements

In addition to the local area improvements, consideration should be given to the design and layout of the proposed station with regards to active travel. Table 10-4 includes site specific measures that could be incorporated into the final station design to encourage walking and cycling. These include improvements considered appropriate for all station options and some of targeted measures that are tailored towards a specific option being considered at the time of writing. Where possible, estimated costs have been provided based on previous works and DfT guidance.

Table 10-4 - Station Recommendations

Number	Scheme Option	Recommendation	Estimated Cost (£)
1	2	Introduce a new uncontrolled crossing facility across Laffak Road for pedestrians and cyclists. This would enable people to easily access the existing cycle infrastructure located north of the station and encourage active travel journeys with Carr Mill.	10,000
3	2	The potential to create a Shared User Path link to the northeast of the station, connecting the proposed eastern platform with Laffak Road, should be investigated. This could potentially link into to a new cycle route along Laffak Road (heading southeast), which avoids the narrow underpass of the railway bridge.	80,000
4	3	Provide a new Shared User Path between the proposed car park and Laffak Road. This would enhance access for cyclists travelling north towards Carr Mill, linking with existing active travel routes along the A580 and A571. This short link would also provide an alternative route to the Carr Mill Road.	50,000
5	2 and 3	The current designs include emergency exit footpaths that link to Woodlands Road. Consideration should be given to formalising these emergency routes as permanent Shared User Paths. This would improve access to the station and avoid the narrow railway underpass along Woodlands Road.	70,000
6	All	Proposed footpaths on the station approaches should be designated as Shared User Paths, so that they can be used by cyclists and pedestrians.	-
7	All	New access paths should be compliant with LTN 1/20 Design standards. This includes appropriate widths, surfacing, lighting and gradients.	-
8	All	Adequate cycle parking facilities should be provided that are secure and accessible to use.	-
9	All	Ramps should be installed instead of steps to provide access to all. Where this is not possible, consideration should be given to wheeling ramps that can assist cyclists.	-
10	All	High quality wayfinding should be provided to make it easier for people to navigate the local area. Signage should indicate journey times and encourage active travel with local destinations.	14,000 / km

Number	Scheme Option	Recommendation	Estimated Cost (£)
11	All	Consideration should be given to a promotional campaign that raises awareness of active travel opportunities. Ideally this should coincide with opening of station.	-

10.4.2. Local Area Improvements

The previous chapters of this technical note identified key routes and trip generators within 1mile of the station site. Taking these into consideration, local area improvements have been proposed for the 1mile assessment area, which would improve active travel opportunities between the station and the key destinations. Figure 10-14 provides a visual summary of the proposed recommendations, with further details included within Table 10-5.

Figure 10-14 - Local Area Improvements

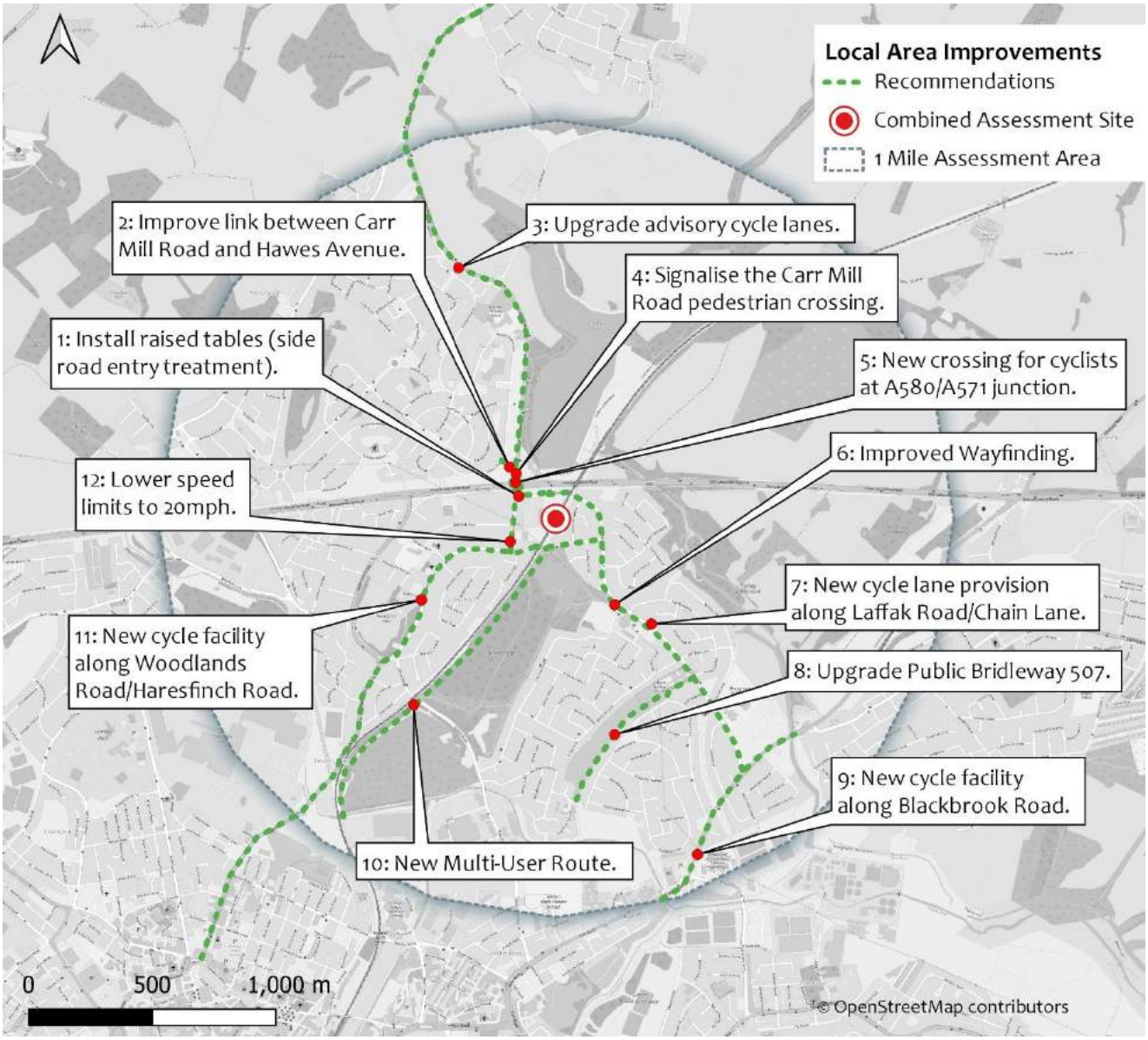


Table 10-5 - Local Area Improvements

No.	Proposal	Benefits	Challenges to Delivery	Estimated Cost (£)
1	Raised tables (Side Road Entry Treatment)	Encourages motorists to reduce speeds Enhances crossing provision for pedestrians, maintaining continuity of footway level	Introduction of traffic calming measures may receive objections from motorists.	40,000
2	Improve the link between Carr Mill Road and Hawes Avenue, by widening paths and replacing steps with a ramp (or installing a wheeling ramp for cyclists).	This link provides a valuable connection between residential neighbourhoods and Carr Mill Station. The improvements would enhance accessibility for pedestrians, cyclists and potentially wheelchair users. Enabling more popular to use the direct route to the station.	May not be insufficient space to replace the steps with a ramp that has a compliant gradient. Wheeling ramp for cyclists may restrict access for people using the steps and create a trip hazard. Would need to confirm with design standards, e.g., colour and position.	10,000
3	Upgrade advisory cycle lanes along the A571 (Carr Mill Road / Martindale Road) to segregated cycle facilities.	This is a key travel corridor that would link the proposed station with residential communities to the north. High quality active travel infrastructure would encourage walking and cycling for this short distance trip. Address existing safety concerns regarding advisory lanes, as vehicles encroach into the cycle lane and park on the route, causing an obstruction.	Roads and footways are enclosed by fencing and walls of private properties and curtilage. There may be insufficient space available to increase footway width, without reducing the carriageway width. Existing Bus Stops would need to be accommodated within the layout of the cycle lanes. Additional land may be needed for path widening beyond highway boundary, which would increase costs and is not guaranteed. Mature trees along potential route may need removing. Could be difficult to obtain consent for work. Existing utilities, lighting and street furniture may need to be relocated. Potential reduction in carriageway space may impact traffic flows. This would need to be assessed and mitigated.	1,500,000
5	Signalise the Carr Mill Road pedestrian crossing (north of the A580).	Address local safety concerns. Support pedestrian movements across this critical junction.	Would need to consider implications on traffic flows. Signalised crossing periods would need to be synchronised with adjacent signals to minimise disruption on traffic flow.	100,000

No.	Proposal	Benefits	Challenges to Delivery	Estimated Cost (£)
			Limited space may restrict ability to install new infrastructure.	
5	A580/A571 junction: Introduce a separate single stage crossing for cyclists, next to the staggered pedestrian crossing.	Provide a direct and comfortable crossing for pedestrians and cyclists. Reduce potential for conflict between waiting pedestrians and cyclists. Improve journey times for cyclists.	Limited space may restrict ability to install new infrastructure. The impact on traffic flows would need to be considered as the new crossing facility would reduce highway capacity.	64,000
6	Improved wayfinding: New signage should highlight active travel opportunities, including key destinations and travel times.	Increasing awareness of active travel opportunities available should increase walking and cycling activity. Assist those unfamiliar with the area, potentially improving their journey times. Support walkers and cyclists who may not be confident with their navigation skills.	Design and appearance of the wayfinding would need to be consistent and avoid confusion, especially with existing signs. Joined up approached with highways and local stakeholders would help to create universal wayfinding strategy. Would need to obtain consents to install new signs from relevant authorities and landowners.	14,000 / km
7	New segregated cycle lane along Laffak Road / Chain Lane	Provides a safe facility for cyclists along key travel corridor Wider community benefits, providing access to schools in addition to the station.	Roads and footways are enclosed by fencing and walls of private properties and curtilage. Consequently, there is limited space available to increase footway width, without reducing the carriageway width. Potential reduction in carriageway space may impact traffic flows. This would need to be assessed and mitigated. Additional land would need to be acquired for path widening beyond highway boundary, which would increase costs and is not guaranteed. Mature trees along potential route may need removing. Could be difficult to obtain consent for work. Existing utilities, lighting and street furniture may need to be relocated.	1,485,000
8	Upgrade Public Bridleway 507 by surfacing the path	Improve accessibility between Chain Lane and Grantham Crescent. Surfaced route would provide a defined	Loss of green space as vegetated path becomes surfaced.	160,000

No.	Proposal	Benefits	Challenges to Delivery	Estimated Cost (£)
		route and clarify the alignment of the PRoW. Providing an accessible path that can be used all year would reduce the potential for wider degradation of the playing fields as people are concentrated along a single route.		
9	New Shared Use Path along the A58, between 'The Ship Inn' Public House and Sankey Canal Footpath.	Provide off-road cycling facility. Enhance network connectivity by addressing this significant gap in the cycle network. Improve safety for pedestrians and cyclists (there has been a cluster of collisions along this section). Direct link to St Augustine of Canterbury Catholic High School, providing access for staff and pupils.	Roads and footways are enclosed by fencing and walls of private properties and curtilage. Consequently, there is limited space available to increase footway width, without reducing the carriageway width. Additional land would need to be acquired for path widening beyond highway boundary, which would increase costs and is not guaranteed. Mature trees along potential route may need removing. Could be difficult to obtain consent for work. Existing utilities, lighting and street furniture may need to be relocated. Potential reduction in carriageway space may impact traffic flows. This would need to be assessed and mitigated.	710,000
10	New multi-user route between Woodlands Road and the Ravenhead Greenway, through Sand lodge woodland	Avoids busy local roads where it may not be possible to provide segregated cycle facilities. Provides an attractive traffic-free route, between the station, Cowley Hill Works development site and St Helens town centre, with links to via avoiding local roads. Links with the Ravenhead Greenway, improving wider cycle network coherence. Opportunity to formalise existing public access	New public access rights would need to be negotiated with landowner. Ecological constraints may restrict physical path establishment works. Potential safety and security concerns using the path after daylight ours may deter users. New road crossing infrastructure would need to be provided at Islands Brow Road.	1,410,000

No.	Proposal	Benefits	Challenges to Delivery	Estimated Cost (£)
		rights through the woodland. Provides opportunities for recreation and commuting activity.		
11	New segregated cycle facility along Woodlands Road / Haresfinch Road	Provides a direct route between the station, Cowley Hill Works development site and St Helens town centre. Improve safety and accessibility for pedestrians and cyclists	Roads and footways are enclosed by fencing and walls of private properties and curtilage. Consequently, there is limited space available to increase footway width, without reducing the carriageway width. Potential reduction in carriageway space may impact traffic flows. This would need to be assessed and mitigated. Additional land would need to be acquired for path widening beyond highway boundary, which would increase costs and is not guaranteed. Mature trees along potential route may need removing. Could be difficult to obtain consent for work. Existing utilities, lighting and street furniture may need to be relocated.	2,350,000
12	Lower speed limits, including the creation of a 20mph zone surrounding the station and Carr Mill residential neighbourhood.	Improve conditions for walking and cycling, especially when there is no space available for segregated facilities and cyclists share the road with vehicles.	The impact on traffic flows would need to be considered, as a reduced speed limit may impact journey times for motorists. Consideration would need to be given to the enforcement of lower speed limits.	12,000 / km

11. Appendix D: Rail Operations

11.1. Introduction

The objective of the rail operations workstream is to assess the following:

- The operational practicality and feasibility of opening a new station at Carr Mill,
- To understand how the timetable might be adapted to serve this new station,
- The journey time impact on existing passengers,
- Any additional rolling stock requirements to provide the service,
- Additional infrastructure that might be required, and
- The potential implications on the journey times and reliability of other services.

As part of the analysis, we have:

- Carried out analysis and calculated the journey time impact of opening a new station at Carr Mill. This has been done by using RailSys software.
- Assessed the timetable implications of a services stopping at Carr Mill. This has been carried out through a number of different scenarios using ATTUne software.
- Carried out analysis to determine if additional infrastructure is required to implement this new station.

11.2. Station Locations

As part of our rail operations review, we have at a high-level, studied the possible station locations to understand whether there are benefits or dis-benefits to each of the sites that are being considered.

Station Options 1-6 are located on the current line between St Helens Central and Wigan North Western, whereas station Option 7 is situated on the former line to Rainford/Ormskirk (also known as the Pilkington Glass, or Cowley Hill branch) and is therefore not of the line currently providing passenger services through the Carr Mill area. The s station locations are as follows.

11.2.1. Station Location 1

This station would be located north of the A580, East Lancashire Road, and be located at approximately 7 miles and 10 chains between Gerards Bridge Junction and Garswood station. The station could be served by trains running between Liverpool Lime Street, St Helens Central and Wigan North Western.

11.2.2. Station Location 2

This location would be south of Laffak Road and located at approximately 6 miles and 65 chains between Gerards Bridge Junction and Garswood. This site is immediately north of the former station at Carr Mill that closed in 1917. This location could be served by trains running between Liverpool Lime Street, St Helens Central and Wigan North Western.

11.2.3. Station Location 3

This location would be immediately north of Woodlands Road and located at approximately 6 miles and 60 chains between Gerards Bridge Junction and Garswood. This site is where the former station at Carr Mill was located. The station at Carr Mill closed in 1917. A station here could be served by trains running between Liverpool Lime Street, St Helens Central and Wigan North Western.

11.2.4. Station Location 4

This location would be immediately south of Woodlands Road and located at approximately 6 miles and 50 chains between Gerards Bridge Junction and Garswood. A station at this location could be served by trains running between Liverpool Lime Street, St Helens Central and Wigan North Western.

11.2.5. Station Location 5

A station at this location would be at Islands Brow and be situated at approximately 6 miles and 10 chains between Gerards Bridge Junction and Garswood. A station at this location could be served by trains running between Liverpool Lime Street, St Helens Central and Wigan North Western.

11.2.6. Station Location 6

A station at this location would be immediately south of the current Gerards Bridge Junction located at approximately 5 miles and 60 chains and the closest of all locations to the current St Helens Central station. The station would therefore be than ¾ mile (approximately 1km), from St Helens Central station. This could be served by trains running between Liverpool Lime Street, St Helens Central and Wigan North Western.

11.2.7. Station Location 7

This possible station option is situated on the former railway line between St Helens, Rainford, Skelmersdale and Ormskirk. This railway line closed as a through route in the 1960s with only a short connection from Gerards Bridge Junction to the former Pilkington Glass factory, which was also known as the Cowley Hill branch, remaining until sometime around 2015.

A station on this site would only be able to serve trains running to/from St Helens Central and intermediate stations to Liverpool Lime Street and customers wishing to travel to Wigan would be required to change at St Helens Central. For the purposes of our study, we have assumed that some improvements to the current railway junctions and track layout between St Helens Central and Gerards Bridge has been undertaken. This would remove the need for southbound services to operate against the normal flow of rail traffic for approximately 1 kilometre. Whilst this was normal operational practice for the limited number of trains that served Pilkington Glass, operating an at least hourly service to/from Liverpool Lime Street would likely reduce overall train performance on the route without some form of infrastructure improvements.

The former alignment north of the Pilkington Glass site has been built upon and is now Scafell Road and any future extension along the former alignment towards Rainford/Ormskirk would not be possible.

11.3. Operational Considerations

The location of a new station can have an impact on the current infrastructure, or current infrastructure can impact the feasibility of a station location. For this study, we have carried out high level analysis to determine what impact the new station might have on the signalling of this route, if the gradient of the route is suitable and whether additional rolling stock/train crew are required to operate the service.

Station Options 1-6 are located on the route between St Helens Central and Wigan Springs Branch Junction. The Network Rail Engineer's Line Reference for this route is SBH2 and SBH3 and the Network Rail Route ID is NW2023. Station Option 7 is located on the Network Rail Engineer's Line Reference SRD and is also shown within the NW2023 route.

11.3.1. Signalling

11.3.1.1. Station Location Options 1-6

The current signalling on the route within the possible area that Carr Mill station may be situated (on the main line) is as follows:

- Up Line – 5 miles and 60 chains (SH4 signal), 6 miles 35 chains (WN85R signal) and 7 miles and 15 chains (WN85 signal).
- Down Line – 7 miles 45 chains (WN86 signal) and 6 miles 5 chains (SH23R signal).
- None of the possible locations proposed for Carr Mill is likely to interfere with current signal locations and signal sighting, although further analysis would be required during design stages of the project.

11.3.1.2. Station Location Option 7

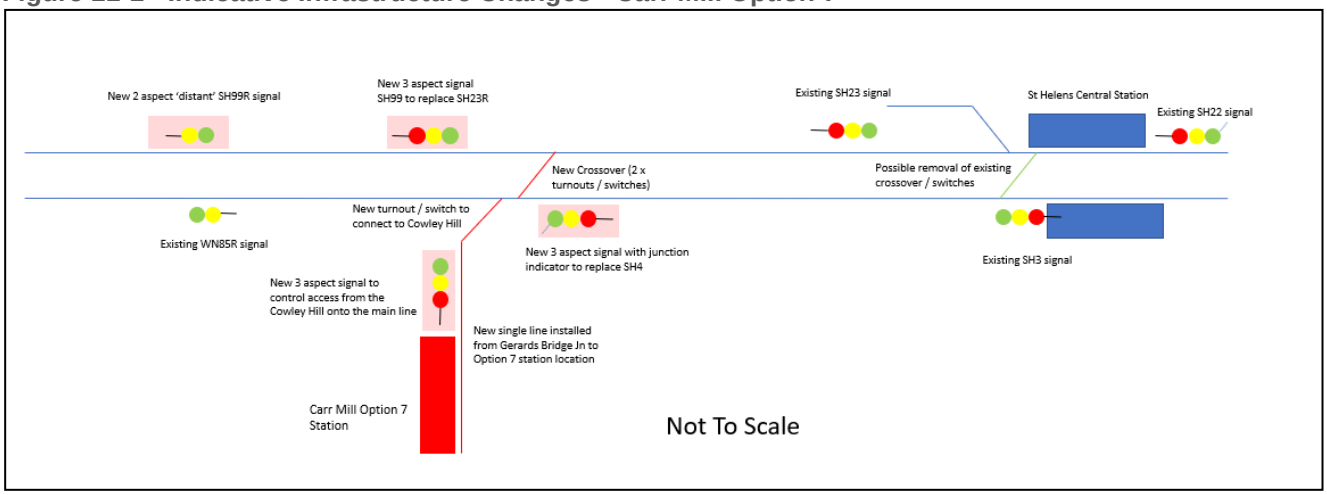
We understand that access to/from the former Pilkington Glass site, on the Cowley Hill line, is currently accessed via a manually controlled ground frame and this would not be suitable for any future operations if this location was taken forward. The ground frame is controlled from St Helens Central signal box and signal SH4 (on the Up line at 5 miles and 60 chains) is immediately in advance of Gerrards Bridge Junction that provides access to the Cowley Hill line.

According to the Network Rail Sectional Appendix GSM-R coverage is also provided on the Cowley Hill line is provided to 8 miles and 11 chains.

Therefore, we would expect that re-signalling, and changes to the track layout to reduce the amount of 'wrong line' running would likely be required to enable this to be a more workable solution for the operation of a passenger service if Option 7 was taken forward.

An indicative signalling layout, along with likely infrastructure changes is shown below for reference.

Figure 11-1 - Indicative Infrastructure Changes - Carr Mill Option 7



Source: Atkins

The Option 7 location for Carr Mill station is expected to need at least four new signals, new single track to be installed to the station location as well as three new switches to be installed at Gerards Bridge Junction. In addition, there would be the need for TPWS equipment and signalling control systems to be installed as well as new 25kV overhead electrification.

The new crossover and track extending to the station at the Option 7 station location is shown in 'red', the removal of the present crossover at St Helens Central (switches 12A and 12B) has also been assumed and is shown in 'green', although these may be required for other operational reasons outside of this Carr Mill station study. Signals shown with a shaded red background are new, or converted signals, that would be required to operate regular passenger services.

Given the station and much of the single line would be constructed away from the live railway there may be some possible cost savings associated with this, however the re-signalling and installation of a new crossovers and switches at Gerards Bridge Junction will require the closure of the railway to undertake this activity which would be an additional cost associated with this scheme.

11.3.2. Gradients

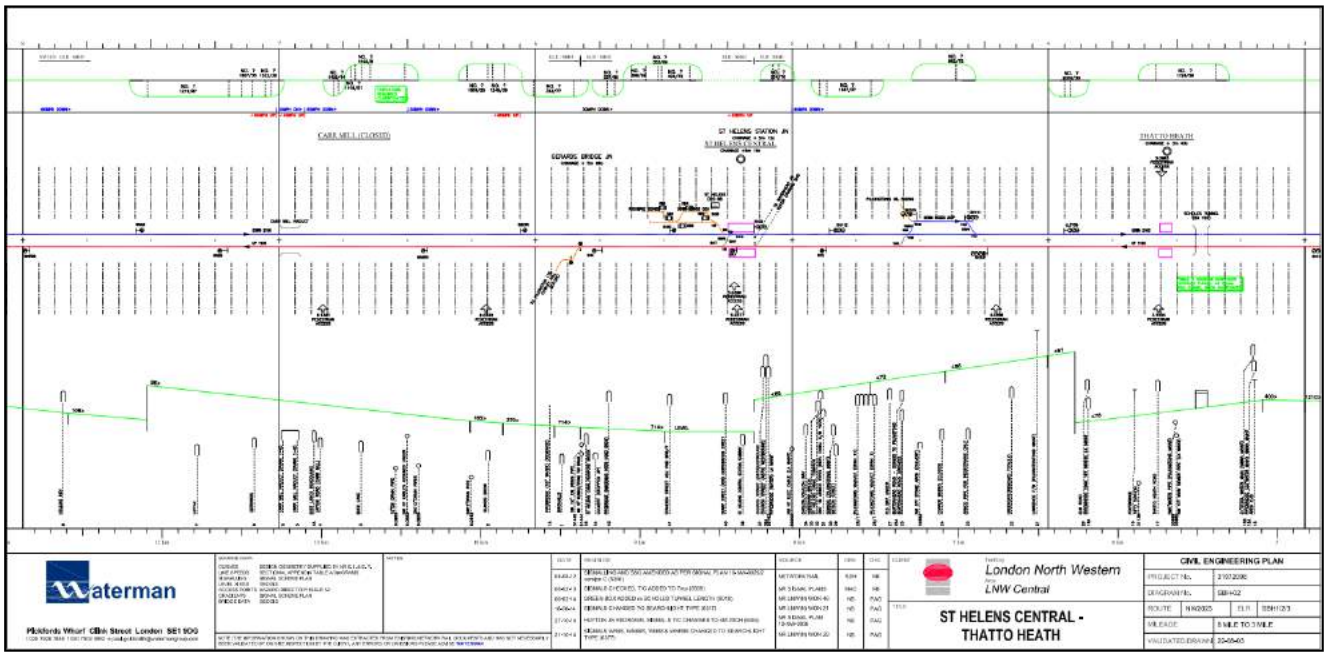
Network Rail have a set of standards and guidance around designing and building new stations. The standards "*Station Design Guidance, Design Manual NR/GN/CIV/100/02 (March 2021)*" state that where possible the average gradient of track where it runs alongside a platform should not exceed 1 in 500.

The possible locations where the new Carr Mill station is proposed has a gradient of 1 in 86 (Options 1-4), and 1 in 270 (Option 5) so is steeper than the guidance, Option 6 has a gradient of over 1 in 700. New stations can be built on gradients that exceed 1 in 500, but approval and likely that some form of derogation would be required. The fact that there was a station at Carr Mill, albeit this closed in 1917, within the proposed area on a gradient that exceeds 1 in 86, may make it easier to gain approval.

It should also be noted that other stations on this route already are located on gradients that exceed 1 in 500, these being: Thatto Heath (1 in 76), Garswood (between 1 in 69 and 1 in 90), Bryn (between 1 in 118 and 1 in 96). The train operators and Network Rail will be required to work together to ensure that the necessary arrangements are in place for the opening of a station on these gradients.

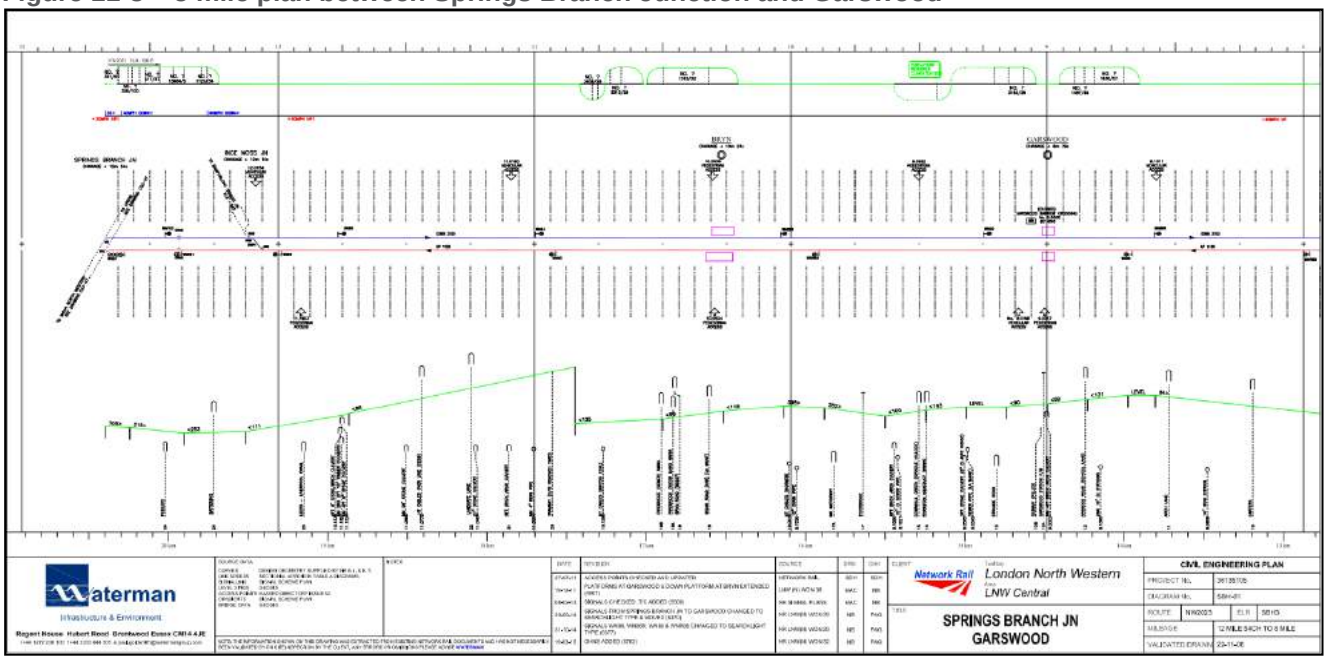
Two 5-mile diagrams are presented in Figure 11-2 and Figure 11-3, which show the gradients between Springs Branch Junction and Thatto Heath. The gradient is represented by the green lines shown at the bottom of the figures.

Figure 11-2 – 5 mile plan between Carr Mill and Thatto Heath



Source: Waterman Group

Figure 11-3 – 5 mile plan between Springs Branch Junction and Garswood



Source: Waterman Group

11.3.3. Rolling Stock and Train Crew Requirements

11.3.3.1. Station Location Options 1-6

Our timetable analysis has shown that it is possible to include additional calls at a proposed Carr Mill station at location Options 1-6 within the existing timetable structure, and therefore no additional rolling stock or train crew costs would be expected to be incurred.

11.3.3.2. Station Location 7

To operate a service to/from Option 7 there would be the requirement for additional rolling stock and train crew to be employed to deliver the service. The indicative timetable that has been devised by Atkins shows that an hourly service would require either one (Option 7B) or two (Option 7A) train sets to deliver an hourly timetabled

service, plus there would be the need for additional train crew (drivers/guards) to be employed to deliver this service on a 7-day a week basis. Section 11.4.4 of this Technical Note outlines the different timetable options that we have initially identified for Option 7 in more detail.

In addition to the rolling stock leasing and train crew costs there would be payment of variable costs associated with operating a train including the Variable Track Usage Charge (VTUC), Capacity Charge (CC) and Electricity Charge for Traction (EC4T) to be considered. These additional charges are levied on a £/mile basis either per vehicle mile or per train mile as contained within the published Network Rail access charges.

11.4. Timetable Analysis

11.4.1. Journey Time Analysis

The journey time impact of making a call at the proposed station at Carr Mill is based on two elements: the dwell time at the station and the additional time taken due to acceleration and braking. The Timetable Planning Rules require a minimum of ½ minute on this route for each station call, therefore this has been used for this study.

To calculate the additional journey time requirement for the acceleration and braking differences for stopping at Carr Mill, we have used both Route Runner and then RailSys to calculate the difference. The initial RouteRunner analysis showed that there was very little difference between each of the six station locations that have been identified on the line between St Helens Central and Garswood. The analysis showed that at least 1 minute of additional journey time was required to allow for a stop at Carr Mill. Following consultation with Northern, this was increased to 1½ minutes plus the ½ minute dwell time at the new station.

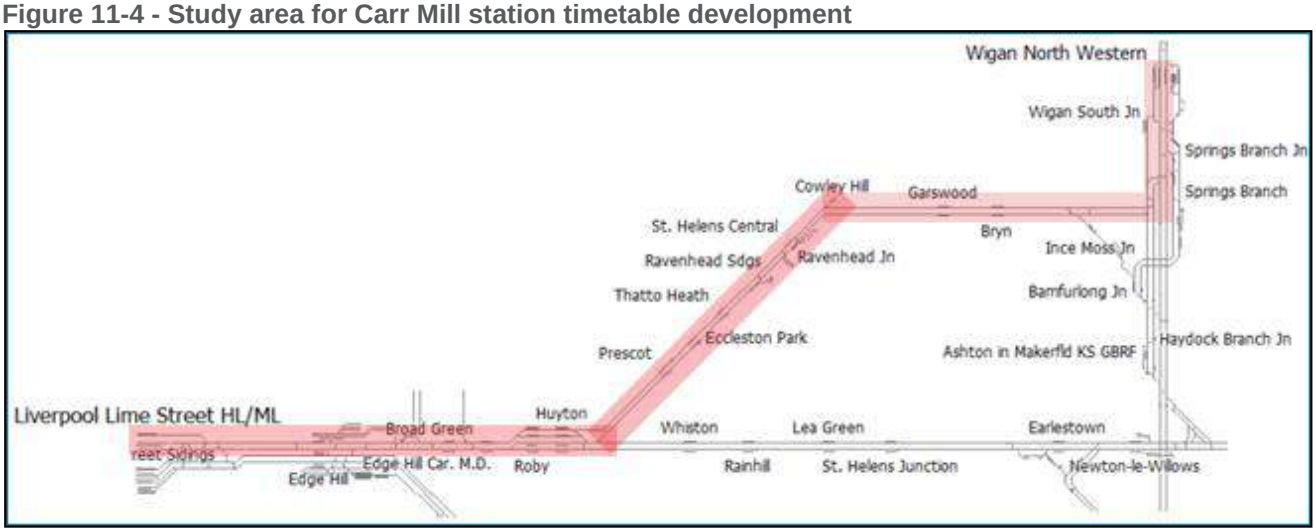
This results in a total of 2 minutes additional journey time for services stopping at Carr Mill.

For the purposes of undertaking our timetable analysis, for the Option 7 locations Atkins have used an indicative three-minute journey time in each direction between the proposed station location and St Helens Central station.

11.4.2. December 2019 Timetable Analysis

The December 2019 timetable has been used as a basis for the purpose of this analysis. Further to this, our analysis is based on a typical weekday (SX) timetable between 06.00 and 22.00, including the relevant passenger and freight services. The geographical study area is constrained to Liverpool Lime St, Huyton and Wigan North Western. Our timetable also included services arriving from the Earlestown direction into Liverpool Lime Street, as shown in the figure below, and where required consideration of the impact of retiming services on the wider network, e.g., on the West Coast Main Line heading south towards Warrington and Crewe.

Figure 11-4 - Study area for Carr Mill station timetable development



Source: ATTUne

Within the ATTUne infrastructure manager we have amended the infrastructure to include a station at Carr Mill, included the newly calculated Indicative Run Times (IRTs) based on the journey time analysis carried out in both RouteRunner and RailSys. We have then amended the timetable to include calls at the new station, so that we can assess the impact of the station call on the wider timetable. Where the changes to the stopping service introduce non-compliances to the Timetable Planning Rules (TPRs), we have identified changes to the timetable to resolve any conflicts where possible.

It should be noted that some TPR non-compliances are already present in the December 19 timetable, and we have not resolved these for the purpose of the exercise that we have carried out. A common conflict is present at Springs Branch Junction, where services should be separated by 4 minutes, but are separated by 3.5 minutes, or less. We have not made these non-compliances worse than the base December 2019 timetable that we hold on-file.

11.4.3. Carr Mill Options 1-6 (between St Helens Central and Garswood)

Within this section we present the trains that have had a stop added at Carr Mill Station, with timings that would be representative of a call at either Options 1-6 station locations. It should be noted that there are small, one minute timing differences, to be expected if using Option 6 over the other options due to the change in distance between this station location and St Helens Central or Garswood, although the overall journey time would remain the same.

The table below presents the December 2019 services, which have had a stop at Carr Mill Station added. This represents a total of 62 services have had a stop added in the Monday to Friday (SX) timetable. This delivers, throughout much of the day, a half-hourly service in both directions at Carr Mill. There are however some services where it was not possible to introduce a station call at Carr Mill and maintain the correct Timetable Planning Rules headways, or junction margins within the revised timetable

The full Public Timetable between Liverpool and Wigan North Western (both directions) is shown within section 11.7.

Table 11-1 – Carr Mill Station stopping services

Eastbound

Origin	Departure Time	Destination	Arrival Time	Headcode
Wigan North Western	05:34:00	Liverpool Lime Street HL/ML	06:22:00	2C00FA
Wigan North Western	05:49:00	Liverpool Lime Street HL/ML	06:40:00	2C90FA
Wigan North Western	06:21:00	Liverpool Lime Street HL/ML	07:12:00	2C01FA
Wigan North Western	06:51:00	Liverpool Lime Street HL/ML	07:39:00	2C02FA
Wigan North Western	07:21:00	Liverpool Lime Street HL/ML	08:10:00	2C03FA
Wigan North Western	07:51:00	Liverpool Lime Street HL/ML	08:41:00	2C04FA
Wigan North Western	08:21:00	Liverpool Lime Street HL/ML	09:12:00	2C05FA
Blackpool North	08:05:00	Liverpool Lime Street HL/ML	09:40:00	1F04FC^
Wigan North Western	09:20:00	Liverpool Lime Street HL/ML	10:10:00	2C07FA
Blackpool North	09:02:00	Liverpool Lime Street HL/ML	10:38:00	1F06FA^
Wigan North Western	10:20:00	Liverpool Lime Street HL/ML	11:09:00	2C09FA
Wigan North Western	10:50:00	Liverpool Lime Street HL/ML	11:40:00	2C10FA
Wigan North Western	11:20:00	Liverpool Lime Street HL/ML	12:09:00	2C11FA
Wigan North Western	11:51:00	Liverpool Lime Street HL/ML	12:43:00	2C12FA
Wigan North Western	12:20:00	Liverpool Lime Street HL/ML	13:09:00	2C13FA
Wigan North Western	12:51:00	Liverpool Lime Street HL/ML	13:40:00	2C14FA
Wigan North Western	13:20:00	Liverpool Lime Street HL/ML	14:09:00	2C15FA
Wigan North Western	14:20:00	Liverpool Lime Street HL/ML	15:09:00	2C17FA
Wigan North Western	14:52:00	Liverpool Lime Street HL/ML	15:42:00	2C18FA
Wigan North Western	15:20:00	Liverpool Lime Street HL/ML	16:09:00	2C19FA
Wigan North Western	15:53:00	Liverpool Lime Street HL/ML	16:42:00	2C20FA
Wigan North Western	16:20:00	Liverpool Lime Street HL/ML	17:09:00	2C21FA
Wigan North Western	16:55:00	Liverpool Lime Street HL/ML	17:46:00	2C22FA
Wigan North Western	17:20:00	Liverpool Lime Street HL/ML	18:09:00	2C23FA
Wigan North Western	18:20:00	Liverpool Lime Street HL/ML	19:09:00	2C25FA
Wigan North Western	18:51:00	Liverpool Lime Street HL/ML	19:41:00	2C26FA
Wigan North Western	19:20:00	Liverpool Lime Street HL/ML	20:10:00	2C27FA
Wigan North Western	19:54:00	Liverpool Lime Street HL/ML	20:45:00	2C28FA
Wigan North Western	20:22:00	Liverpool Lime Street HL/ML	21:12:00	2C29FA
Wigan North Western	20:52:00	Liverpool Lime Street HL/ML	21:42:00	2C30FA
Wigan North Western	21:20:00	Liverpool Lime Street HL/ML	22:10:00	2C31FA
Wigan North Western	22:01:00	Liverpool Lime Street HL/ML	22:50:00	2C32FA
Blackpool North	22:18:00	Liverpool Lime Street HL/ML	23:53:00	2C33FA

Westbound

Origin	Departure Time	Destination	Arrival Time	Headcode
Liverpool Lime Street HL/ML	05:42:00	Wigan North Western	06:17:00	2F66FN
Liverpool Lime Street HL/ML	06:14:00	Wigan North Western	07:02:00	2F50FA
Liverpool Lime Street HL/ML	06:45:00	Wigan North Western	07:33:00	2F52FA
Liverpool Lime Street HL/ML	07:13:00	Wigan North Western	08:01:00	2F54FA
Liverpool Lime Street HL/ML	07:43:00	Wigan North Western	08:32:00	2F56FA

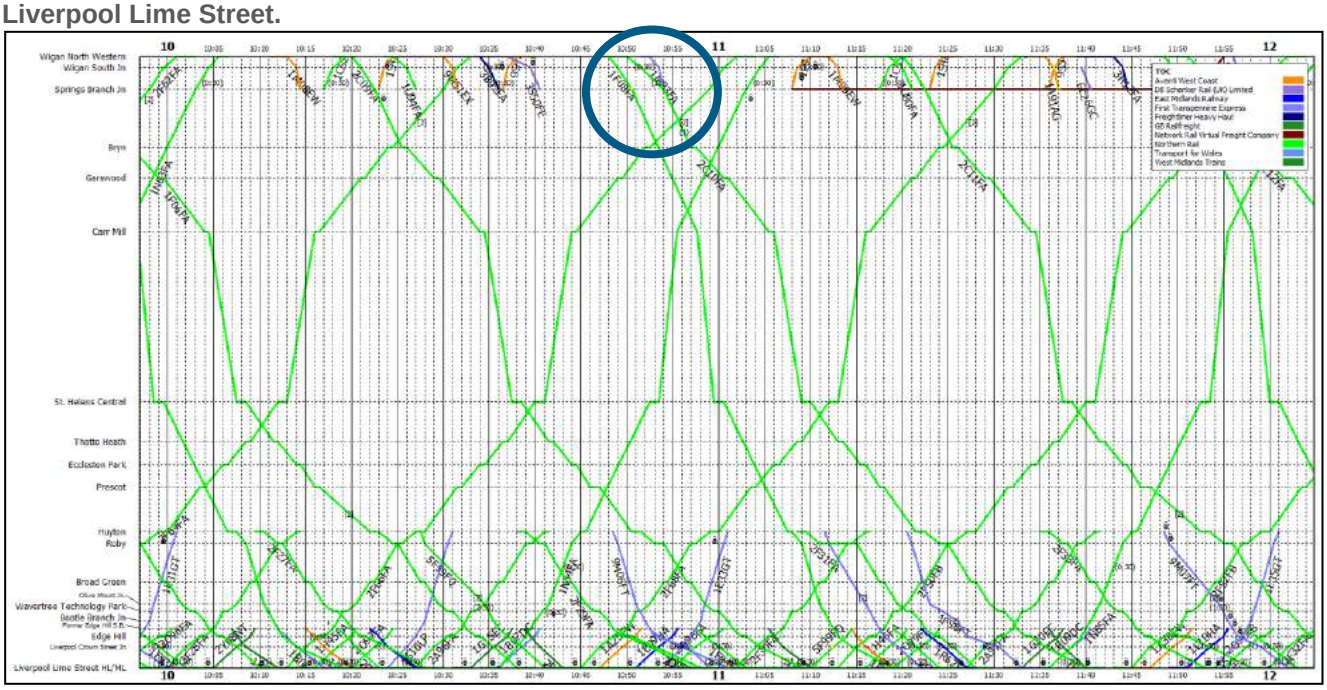
Liverpool Lime Street HL/ML	08:45:00	Wigan North Western	09:33:00	2F60FA
Liverpool Lime Street HL/ML	09:13:00	Wigan North Western	10:01:00	2F62FA
Liverpool Lime Street HL/ML	09:45:00	Wigan North Western	10:33:00	2F64FA
Liverpool Lime Street HL/ML	10:13:00	Wigan North Western	11:02:00	2F66FA
Liverpool Lime Street HL/ML	10:45:00	Wigan North Western	11:33:00	2F68FA
Liverpool Lime Street HL/ML	11:13:00	Wigan North Western	12:02:00	2F50FB
Liverpool Lime Street HL/ML	11:45:00	Wigan North Western	12:33:00	2F52FB
Liverpool Lime Street HL/ML	12:45:00	Wigan North Western	13:33:00	2F56FB
Liverpool Lime Street HL/ML	13:14:00	Wigan North Western	14:02:00	2F58FB
Liverpool Lime Street HL/ML	13:45:00	Wigan North Western	14:33:00	2F60FB
Liverpool Lime Street HL/ML	14:13:00	Wigan North Western	15:01:00	2F62FB
Liverpool Lime Street HL/ML	14:45:00	Wigan North Western	15:33:00	2F64FB
Liverpool Lime Street HL/ML	15:15:00	Wigan North Western	16:04:00	2F66FB
Liverpool Lime Street HL/ML	15:45:00	Wigan North Western	16:33:00	2F68FB
Liverpool Lime Street HL/ML	16:45:00	Wigan North Western	17:33:00	2F52FC
Liverpool Lime Street HL/ML	17:13:00	Wigan North Western	18:01:00	2F54FC
Liverpool Lime Street HL/ML	17:48:00	Wigan North Western	18:36:00	2F56FC
Liverpool Lime Street HL/ML	18:13:00	Wigan North Western	19:02:00	2F60FC
Liverpool Lime Street HL/ML	18:47:00	Wigan North Western	19:35:00	2F62FC
Liverpool Lime Street HL/ML	19:45:00	Wigan North Western	20:33:00	2F66FC
Liverpool Lime Street HL/ML	20:46:00	Wigan North Western	21:34:00	2F50FT
Liverpool Lime Street HL/ML	21:15:00	Blackpool North	22:47:00	1N85FB
Liverpool Lime Street HL/ML	22:15:00	Blackpool North	23:48:00	1N86FB
Liverpool Lime Street HL/ML	23:15:00	Preston	24:25:00	1N87FB

Source: Atkins

^ in the December 2019 timetable 1F04FC and 1F06FA form the all-stations services from Wigan North Western to Liverpool Lime Street at 08:51 and 09:51. Note that in December 2022 that the 09:05 Blackpool North-Liverpool Lime Street does not call at all intermediate stations, but there is a 09:53 Wigan North Western-Liverpool Lime Street service in the normal service pattern for this route.

This analysis has enabled us to understand the feasibility of adding a stop at Carr Mill station. By adding a stop at Carr Mill station, has shown that the change in timetable schedules does not cause any conflicts between Huyton and Bryn, but it is rather around Springs Branch Jn where conflicts can appear. These are minimal, and an example is shown below, highlighted by the blue circle. In this case the 1F08FA (Blackpool North to Liverpool Lime Street) service is 30 seconds too close to the 2C10FA according to the TPRs. It is likely that this conflict can be solved in a future timetable recast if Carr Mill station were to go ahead. Further to this, as previously highlighted, conflicts with the TPRs at Springs Branch Junction are present in base version of the December 2019 timetable that is held by Atkins.

Figure 11-5 – Timetable Graph between 10:00 and 12:00, for servcies between Wigan North Western and Liverpool Lime Street.



Source: Atkins

We have carried out comparative analysis to show the different journey times between the original December 2019 services and the services that now include a stop at Carr Mill Station. The table below shows the journey time differences between the original and new services across a sample of services for morning services. Similar journey time changes are present in services throughout the day.

Table 11-2 – Comparison of Original December 2019 services and services with a stop at Carr Mill

		Carr Mill Station Stop Timetable		Original December 2019 Timetable		
Origin	**Destination**	**Departure Time**	**Arrival Time**	**Departure Time**	**Arrival Time**	**Additional Journey Time**
Blackpool North	Liverpool Lime Street HL/ML	09:02:00	10:38:00	09:03:00	10:38:00	00:01:00
Liverpool Lime Street HL/ML	Wigan North Western	09:13:00	10:01:00	09:15:00	10:01:00	00:02:00
Liverpool Lime Street HL/ML	Wigan North Western	09:45:00	10:33:00	09:45:00	10:31:00	00:02:00
Liverpool Lime Street HL/ML	Wigan North Western	10:13:00	11:02:00	10:15:00	11:01:00	00:03:00
Liverpool Lime Street HL/ML	Wigan North Western	10:45:00	11:33:00	10:45:00	11:31:00	00:02:00
Liverpool Lime Street HL/ML	Wigan North Western	11:13:00	12:02:00	11:15:00	12:01:00	00:03:00
Wigan North Western	Liverpool Lime Street HL/ML	10:20:00	11:09:00	10:21:00	11:09:00	00:01:00
Wigan North Western	Liverpool Lime Street HL/ML	10:50:00	11:40:00	10:51:00	11:40:00	00:01:00
Wigan North Western	Liverpool Lime Street HL/ML	11:20:00	12:09:00	11:21:00	12:09:00	00:01:00
Wigan North Western	Liverpool Lime Street HL/ML	11:51:00	12:43:00	11:51:00	12:43:00	00:00:00

Source: Atkins

As we can see some services require additional journey time to that above the 2 minutes related to the additional journey time for stopping at the Car Mill Station. Although some services have had pathing time removed, which has allowed for less than 2 minutes journey time being added to these services.

11.4.4. Carr Mill Option 7 timetable (Cowley Hill Line option)

We have carried out high-level analysis looking at the Option 7 station location. For this we have looked at two different options, which are also based on the December 2019 timetable:

- Option 7A (1 tph, 46 minutes turnround at Carr Mill).
- Option 7B (1 tph, 15 minutes turnround at Carr Mill).

For the two options we have created a service between the new Option 7 Carr Mill station *(and to be able to use the existing ATTUne infrastructure data trains have been timed to/from Cowley Hill)* and Liverpool Lime Street with the service calling at all intermediate calling points as per the existing Wigan North Western to Liverpool Lime Street service. For the purposes of this exercise a three-minute indicative running time (IRT) has been assumed in both directions between St Helens Central and the Option 7 station location.

Northbound services have also had a 2-minute Engineering Allowance added to services as per existing practice on this route, shown as "[2]" in the Working Timetable, between St Helens Central and the terminal station location. Therefore, the St Helens Central to Carr Mill Option 7 overall journey time is 5 minutes.

Our two indicative timetable options (Option 7A and 7B), as noted below, both work within the existing service pattern on the main line between St Helens Central and Gerrards Bridge Junction and changes to the station location, which may impact on the overall journey time to/from St Helens Central, can be accommodated.

11.4.4.1. Option 7A (1 tph, 46 minutes turnround at Carr Mill)

The proposed timetable would see the following additional services:

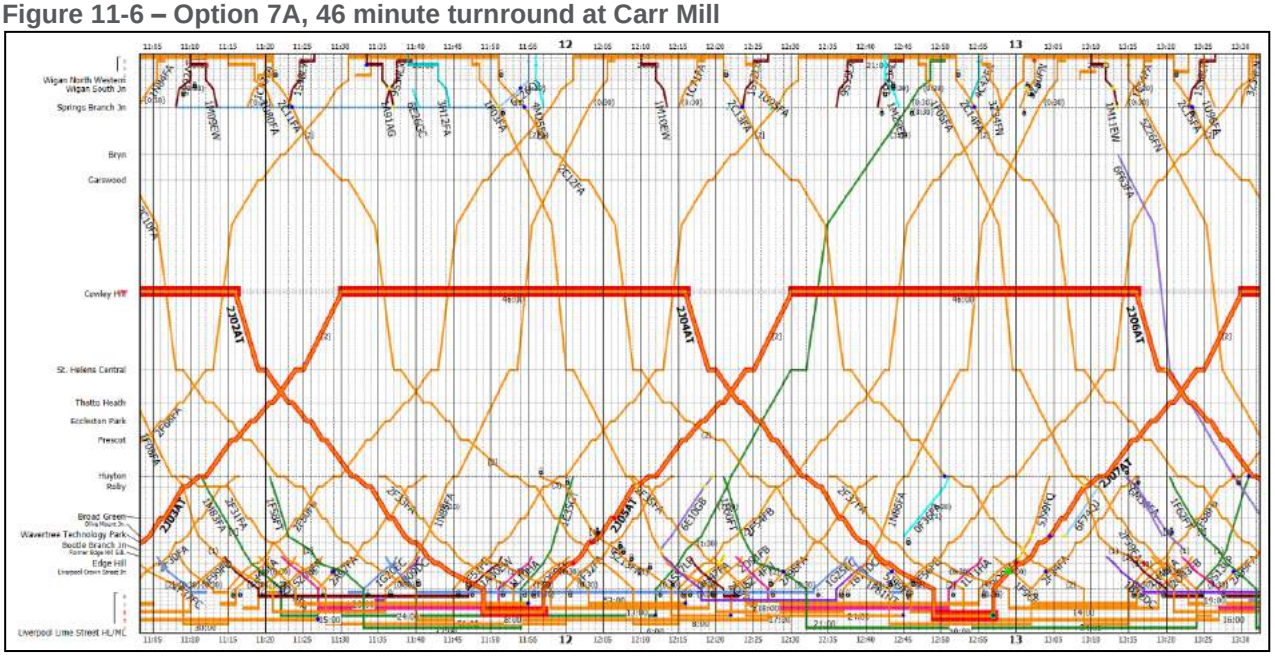
- Departing Liverpool Lime Street every xx:57, arriving in Carr Mill at xx:30.
- Departing Carr Mill every xx:16, arriving in Liverpool Lime Street at xx:49.

This service pattern does not require any major re-timing of other services, and we believe that there is platform availability at Liverpool Lime Street to support an 8-minute turnround. There would be the need for some minor re-timing of freight and Empty Coaching Stock services if an additional train path associated with Option 7A was to be introduced.

It should be noted that two train units would be required to operate this Carr Mill service, and that inefficient crew diagramming would occur, as train crew must stay at Carr Mill for 46 minutes before the next departure.

We have not undertaken any performance modelling of this option timetable, although the introduction of an additional 1 tph service associated with Option 7A may have a detrimental impact on the operation of services to/from Liverpool Lime Street, however as the service is likely to be self-contained wider knock-on delays may be better mitigated. An indicative timetable graph of the proposed services is shown below.

Figure 11-6 – Option 7A, 46 minute turnround at Carr Mill



Source: Atkins

11.4.4.2. Option 7B (1 tph, 15 minutes turnround at Carr Mill)

The proposed timetable would see the following additional services:

Departing Liverpool Lime Street at xx:57, arriving in Carr Mill at xx:30.

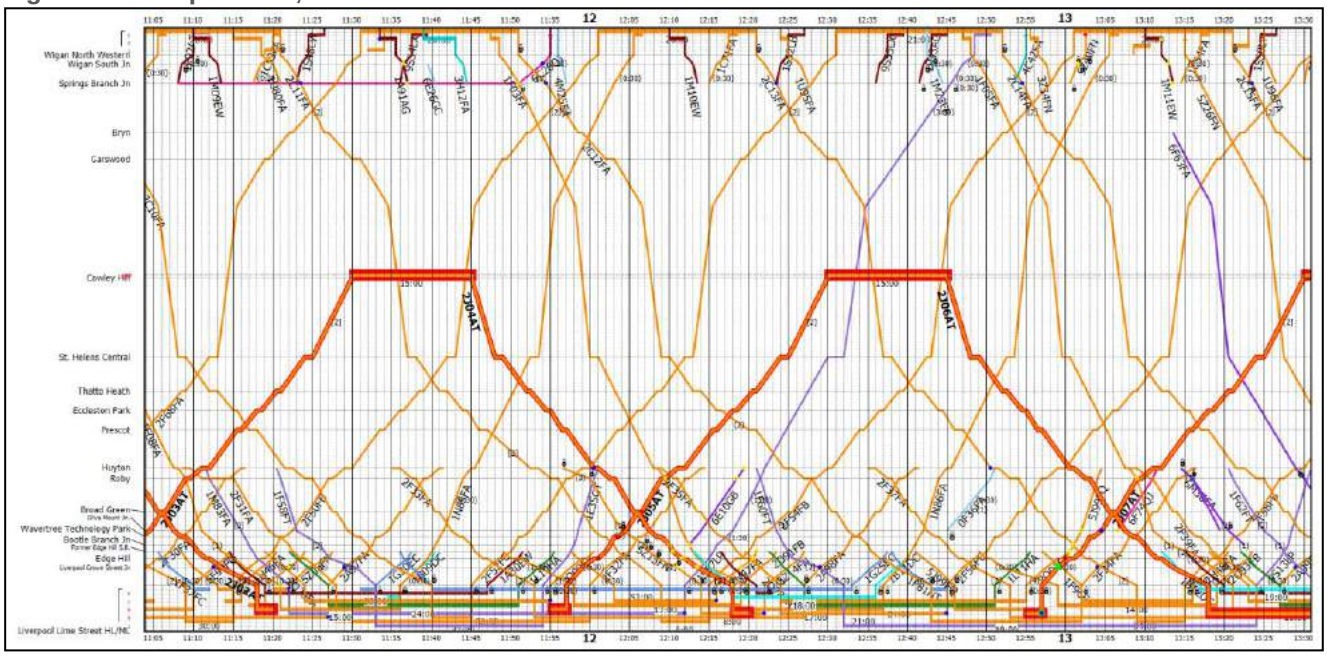
Departing Carr Mill at xx:45, arriving in Liverpool Lime Street at xx:18.

Minor retiming's to the Liverpool Lime Street departures and arrivals are required to allow the xx:45 Up service to be conflict free. Also, it is unlikely that a platform will be available Liverpool Lime Street station if a Down Carr Mill service (arriving at xx:18) is forming an Up service back to Carr Mill (departing at xx:57)

To turnround compliantly at Liverpool Lime Street, the Carr Mill service would likely require to form / be formed off either a Crewe service or Wigan North Western service, and this would involve re-diagramming of services. At this stage of analysis, we have not undertaken any detailed study of how these trains could be interworked at Liverpool Lime Street to help maintain platform capacity.

Atkins believes that at least one additional train would likely be required to operate this Carr Mill service, and that the faster turnround at Carr Mill compared to option 7A means more efficient use of crew and stock diagrams, however this is based on interworking with other services which has not been fully validated.

Figure 11-7 - Option 7B, 15-minute turnround at Carr Mill



Source: Atkins

Atkins has not undertaken any performance modelling of these options; however, we believe that the introduction of a 1 tph service associated with Option 7B may have a more detrimental impact on the operation of services to/from Liverpool Lime Street than Option 7A and have a wider impact on other services due to the interworking of services required to manage platform capacity.

11.4.5. December 2022 Timetable

The December 2022 timetable was not available to Atkins in detailed, Working Timetable (WTT) format, during the period of this study, however public consultation timetables have been published by Northern Rail.

The Public Timetables (PTT) that were available do not contain information such as additional time added to schedules for maintaining the planning headway (or gap between services) on the line of route or at key junctions. Only station locations, and those services operated by Northern Rail on that route are generally visible within these timetables, so it is not possible to see interaction with other services on the same line of route, including those of other operators (e.g., TransPennine Express, Avanti West Coast or freight services).

The PTT also does not contain the information such as station dwell times which are generally a half minute or one minute time to enable passengers to board/alight the train, nor does it contain platform numbers or information that enables an understanding of train/unit diagrams (i.e., Train A arrival, forms Train B, or C departing) at a terminal location. Our analysis of the December 2019 timetable also highlighted that were examples of trains having inconsistent one-minute dwells at stations where the Network Rail Timetable Planning Rules (TPR) say that a half minute is the required minimum dwell time allowance required when planning service. These have probably been introduced for numerous reasons over several years either because of observed station overtime – therefore requiring more than the minimum allowances at certain times of the day – or that it was possible within the timetable to include additional dwell time rather adding 'pathing

time' within train schedules to maintain the minimum headways between services. We expect that the December 2022 timetable also replicates this in relation to station dwell times, but from the data we have available it has not been possible to confirm this.

Atkins have been able to undertake a review of the base December 2019 timetable and the consulted December 2022 PTT to understand whether there are any significant changes to the structure of the timetable pattern including arrival/departure times at key locations as well as calling patterns. The following table shows a summary of our findings.

Table 11-3 - December 2019 / 2022 Passenger Timetable (Monday to Friday)

Timetable Comparator	December 2019	December 2022
Service Pattern	2 tph Northern (all stations) 1 tph Northern (semi-fast) 4 tpd TransPennine Express	2 tph Northern (all stations) 1 tph Northern (semi-fast) 4 tpd TransPennine Express
Standard Hour Timings	NT xx:15 Liverpool LS-Wigan NW 01:01 NT xx:36 Liverpool LS-Blackpool North 01:54 NT xx:45 Liverpool LS-Wigan NW 01:31 NT xx:21 Wigan NW-Liverpool LS 01:43 NT xx:03 Blackpool North-Liverpool LS 01:20 NT xx:52 Wigan NW-Liverpool LS 01:43	NT xx:15 Liverpool LS-Wigan NW 01:04 NT xx:39 Liverpool LS-Blackpool North 01:57 NT xx:45 Liverpool LS-Wigan NW 01:32 NT xx:21 Wigan NW-Liverpool LS 01:43 NT xx:05 Blackpool North-Liverpool LS 01:21 NT xx:52 Wigan NW-Liverpool LS 01:43
Earliest Trains	NT 05:35 Wigan NW-Liverpool LS 06:22 TP 07:05 Preston-Liverpool LS 07:59 NT 05:42 Liverpool LS-Wigan NW 06:17 TP 08:12 Liverpool LS-Glasgow Central 11:29	NT 05:35 Wigan NW-Liverpool LS 06:24 TP 05:48 Carlisle-Liverpool LS 07:59^ NT 05:42 Liverpool LS-Wigan NW 06:17 TP 08:12 Liverpool LS-Glasgow Central*
Last Trains	NT 22:18 Blackpool North-Liverpool LS 23:52 TP 16:28 Glasgow Central-Liverpool LS 19:59 NT 23:15 Liverpool LS-Preston 00:25 TP 20:12 Liverpool LS-Oxenholme 21:30	NT 22:17 Blackpool North-Liverpool LS 23:52 TP 16:09 Glasgow Central-Liverpool LS 19:48 NT 23:15 Liverpool LS-Preston 00:26 TP 20:12 Liverpool LS-Oxenholme#

Source: Atkins

*Unable to confirm arrival time at Glasgow, however in December 2019 TPE service arrive Preston at 08:59, December 2022 TPE service arrives Preston 08:57

#Unable to confirm arrival time at Oxenholme, however in December 2019 TPE service arrives Preston at 20:58, and in December 2022 TPE service arrives Preston at 20:58

^05:48 Carlisle to Liverpool Lime Street TPE service departs Preston at 07:03 in December 2022

Overall, the timetable pattern of the consulted December 2022 service is very similar to that shown to have been in operation in December 2019, the reference timetable we have used for our analysis of train service alterations required for Carr Mill.

Atkins therefore believe that it would be possible, within this latter timetable, to be able to accommodate the additional station calls at Carr Mill as per our work undertaken using the December 2019 timetable. This would be subject to final analysis being undertaken against the published December 2022 Working Timetable.

11.5. Conclusions

The opening of a new station at Carr Mill, being served by the services that currently call at intermediate stations between Liverpool Lime Street, St Helens Central and Wigan North Western appears to be feasible.

Our journey time analysis shows that there is no discernible difference to the timetable structure regardless of any of the station location Options 1-6 are taken forward.

The additional station calls can be accommodated within most services that currently call at all intermediate stations on this route (and these are nominally the Wigan North Western to Liverpool Lime Street services). A small overall journey time increase of between 1 and 2 minutes is expected to be seen because of the opening of a new station at Carr Mill located between St Helens Central and Garswood.

Given the gradients on this route, there may be a requirement for the train operator and Network Rail to discuss any operational implications of these in relation to the introduction of a station at Carr Mill.

The Option 7 location shows that both additional rolling stock and train crew would be required to introduce a service to this location on the former Pilkington Glass/Cowley Hill line. We believe that a one train per hour service could be accommodated, however each of the options identified have differing impacts on either requiring interworking with existing services, or inefficient diagramming of trains and the associated train crew.

A station on the Cowley Hill line would also trigger several infrastructure enhancements to be required in the St Helens and Gerards Bridge Junction area for the service to be introduced. Additionally, services to/from the Option 7 location could only provide a service to/from St Helens Central and intermediate station to Liverpool Lime Street with customers travelling north (towards Wigan) needing to change train at St Helens Central.

A new station at the Option 7 location to serve Carr Mill would therefore require additional rolling stock, additional train crew, and have increased infrastructure costs over a new station being opened at any of location Options 1-6 and would only serve the to/from Liverpool market with direct services.

11.6. Journey Time Changes

11.6.1. RouteRunner Journey Time Analysis

RouteRunner was used to initially review the possible journey time differences between the six possible locations identified on the route between St Helens Central and Garswood for Carr Mill station.

This enabled any significant differences of location to be identified, for most locations the Indicative Run Time difference between the base case and the option location was 1 minute of journey time difference (without any allowance for the ½ minute dwell at the station location).

Table 11-4 - RouteRunner Analysis (all stations service)

From/To	Option	'Raw' Minutes/Seconds	+10% Uplift	Indicative Run Time
St Helens C-Wigan NW	Base	14m 6s	15m 31s	16m 00s
	Option 1	15m 19s	16m 51s	17m 00s
	Option 2	15m 17s	16m 48s	17m 00s
	Option 3	15m 17s	16m 48s	17m 00s
	Option 4	15m 19s	16m 51s	17m 00s
	Option 5	15m 06s	16m 37s	17m 00s
	Option 6	14m 55s	16m 24s	16m 30s
Wigan NW-St Helens C	Base	14m 12s	15m 37s	16m 00s
	Option 1	15m 13s	16m 44s	17m 00s
	Option 2	15m 11s	16m 42s	17m 00s
	Option 3	15m 13s	16m 44s	17m 00s
	Option 4	15m 16s	16m 48s	17m 00s
	Option 5	15m 08s	16m 39s	17m 00s
	Option 6	15m 00s	16m 30s	16m 30s

Source: Atkins

11.6.2. RailSys Journey Time Analysis

RailSys was also used to model services calling at the intermediate station location Option 3, the former station site, to better understand the journey time increases between Garswood and St Helens. This work looked at using 4-car Class 319 and Class 331 rolling stock on services calling at Carr Mill and helped to validate possible journey time increases associated with a new station call by looking at modelled train performance data providing Theoretical Run Times (TRT). These have had no uplift/rounding applied.

Table 11-5 - RailSys Analysis (all stations service) Option 3 location

From/To	Class 319 (4-car)			Class 331 (4-car)		
	Base	With Call	Difference	Base	With Call	Difference
Garswood-Carr Mill	194 secs	206 secs	12 secs	175 secs	189 secs	12 secs
Carr Mill-St Helens Central	165 secs	198 secs	33 secs	161 secs	185 secs	23 secs
			45 secs			**35 secs**
St Helens Central-Carr Mill	179 secs	194 secs	15 secs	167 secs	184 secs	17 secs
Carr Mill-Garswood	173 secs	202 secs	29 secs	169 secs	186 secs	17 secs
			44 secs			**34 secs**

Atkins

The above analysis shows that For a Class 319, travelling southbound an increase in the TRT of 45 seconds and southbound 44 seconds would be expected, therefore increasing the journey time by 1½ minutes (excluding dwell time), as requested by Northern Rail, (to allow for uplift/rounding) would be deliverable.

11.7. Indicative Public Timetables

The indicative Public Timetables that have been generated as part of this study are shown below.

11.7.1. Northbound timetable (Options 1-6)

TID			2F66FN	2F68FN	2F50FA	1N80FA	2F52FA	2F54FA	1N81FA
Departure Time			05 42	05 46	06 14	06 36	06 45	07 13	07 36
Origin			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
Destination			Wigan North Western	Wigan North Western	Wigan North Western	Blackpool North	Wigan North Western	Wigan North Western	Blackpool North
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			SX	EWD	EWD	SX	SX	SX	SX
Changes			New	New	New	New	New	New	New
Liverpool Lime Street	dep	1	**05 42**	**05 46**	**06 14**	**06 36**	**06 45**	**07 13**	**07 36**
Edge Hill	dep	2	.	**05 50**	**06 18**	.	**06 49**	**07 17**	.
Wavertree Technology Park	dep	3	.....	**05 52**	**06 20**	.....	**06 52**	**07 19**	.....
Broad Green	dep	4	.	**05 55**	**06 23**	.	**06 55**	**07 22**	.
Roby	dep	5	.....	**05 58**	**06 26**	.....	**06 58**	**07 25**	.....
Huyton	dep	6	**05 50**	**06 01**	**06 29**	**06 45**	**07 00**	**07 28**	**07 45**
Prescot	dep	7	.....	**06 05**	**06 33**	.....	**07 04**	**07 32**	.....
Eccleston Park	dep	8	.	**06 07**	**06 35**	.	**07 06**	**07 34**	.
Thatto Heath	dep	9	.....	**06 10**	**06 38**	.....	**07 09**	**07 37**	.....
St. Helens Central	dep	10	**05 58**	**06 14**	**06 42**	**06 53**	**07 13**	**07 41**	**07 53**
Carr Mill	dep	11	**06 02**	.....	**06 45**	.....	**07 16**	**07 44**	.....
Garswood	dep	12	**06 07**	**06 20**	**06 50**	.	**07 21**	**07 49**	.
Bryn	dep	13	.....	**06 23**	**06 53**	.....	**07 24**	**07 52**	.....
Wigan North Western	arr	14	**06 17**	**06 32**	**07 02**	**07 06**	**07 33**	**08 01**	**08 05**

TID			2F56FA	1S41LP	2F58FA	1N82FA	2F60FA	2F62FA	1N83FA
Departure Time			07 43	08 12	08 16	08 36	08 45	09 13	09 36
Origin			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
Destination			Wigan North Western	Glasgow Central High Level	Wigan North Western	Blackpool North	Wigan North Western	Wigan North Western	Blackpool North
TOC			NT	TP	NT	NT	NT	NT	NT
Day of Operation			SX	SX	SX	EWD	EWD	EWD	EWD
Changes			New	New	New	New	New	New	New
Liverpool Lime Street	dep	1	**07 43**	**08 12**	**08 16**	**08 36**	**08 45**	**09 13**	**09 36**
Edge Hill	dep	2	**07 47**	.	**08 20**	.	**08 49**	**09 17**	.
Wavertree Technology Park	dep	3	**07 49**	.....	**08 22**	.....	**08 51**	**09 19**	.....
Broad Green	dep	4	**07 52**	.	**08 25**	.	**08 54**	**09 22**	.
Roby	dep	5	**07 55**	.....	**08 28**	.....	**08 57**	**09 25**	.....
Huyton	dep	6	**07 58**	.	**08 31**	**08 45**	**09 00**	**09 28**	**09 45**
Prescot	dep	7	**08 03**	.....	**08 35**	.....	**09 04**	**09 32**	.....
Eccleston Park	dep	8	**08 05**	.	**08 37**	.	**09 06**	**09 34**	.
Thatto Heath	dep	9	**08 08**	.....	**08 40**	.....	**09 09**	**09 37**	.....
St. Helens Central	dep	10	**08 12**	.	**08 44**	**08 53**	**09 13**	**09 41**	**09 53**
Carr Mill	dep	11	**08 15**	.....	.....	.....	**09 16**	**09 44**	.....
Garswood	dep	12	**08 20**	.	**08 50**	.	**09 21**	**09 49**	.
Bryn	dep	13	**08 23**	.....	**08 53**	.....	**09 24**	**09 52**	.....
Wigan North Western	arr	14	**08 32**	**08 43**	**09 02**	**09 06**	**09 33**	**10 01**	**10 06**

TID			2F64FA	2F66FA	1N84FA	2F68FA	2F50FB	1N85FA	2F52FB
Departure Time			09 45	10 13	10 36	10 45	11 13	11 36	11 45
Origin			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
Destination			Wigan North Western	Wigan North Western	Blackpool North	Wigan North Western	Wigan North Western	Blackpool North	Wigan North Western
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			EWD	EWD	EWD	EWD	EWD	EWD	SX
Changes			New	New	New	New	New	New	New
Liverpool Lime Street	dep	1	**09 45**	**10 13**	**10 36**	**10 45**	**11 13**	**11 36**	**11 45**
Edge Hill	dep	2	**09 49**	**10 17**	.	**10 49**	**11 17**	.	**11 49**
Wavertree Technology Park	dep	3	**09 51**	**10 19**	.....	**10 51**	**11 19**	.....	**11 51**
Broad Green	dep	4	**09 54**	**10 22**	.	**10 54**	**11 22**	.	**11 54**
Roby	dep	5	**09 57**	**10 25**	.....	**10 57**	**11 25**	.....	**11 57**
Huyton	dep	6	**10 00**	**10 28**	**10 45**	**11 00**	**11 28**	**11 45**	**12 00**
Prescot	dep	7	**10 04**	**10 32**	.....	**11 04**	**11 32**	.....	**12 04**
Eccleston Park	dep	8	**10 06**	**10 34**	.	**11 06**	**11 34**	.	**12 06**
Thatto Heath	dep	9	**10 09**	**10 37**	.....	**11 09**	**11 37**	.....	**12 09**
St. Helens Central	dep	10	**10 13**	**10 41**	**10 53**	**11 13**	**11 41**	**11 53**	**12 13**
Carr Mill	dep	11	**10 16**	**10 44**	.....	**11 16**	**11 44**	.....	**12 16**
Garswood	dep	12	**10 21**	**10 49**	.	**11 21**	**11 49**	.	**12 21**
Bryn	dep	13	**10 24**	**10 52**	.....	**11 24**	**11 52**	.....	**12 24**
Wigan North Western	arr	14	**10 33**	**11 02**	**11 06**	**11 33**	**12 02**	**12 06**	**12 33**

TID			1S57LP	2F54FB	1N86FA	2F56FB	2F58FB	1N87FA	2F60FB
Departure Time			12 12	12 15	12 37	12 45	13 14	13 37	13 45
Origin			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
Destination			Glasgow Central High Level	Wigan North Western	Blackpool North	Wigan North Western	Wigan North Western	Blackpool North	Wigan North Western
TOC			TP	NT	NT	NT	NT	NT	NT
Day of Operation			SX	SX	EWD	SX	EWD	SX	SX
Changes			New	New	New	New	New	New	New
Liverpool Lime Street	dep	1	**12 12**	**12 15**	**12 37**	**12 45**	**13 14**	**13 37**	**13 45**
Edge Hill	dep	2	.	**12 19**	.	**12 49**	**13 18**	.	**13 49**
Wavertree Technology Park	dep	3	.....	**12 21**	.....	**12 51**	**13 20**	.....	**13 51**
Broad Green	dep	4	.	**12 25**	.	**12 54**	**13 23**	.	**13 54**
Roby	dep	5	.....	**12 28**	.....	**12 57**	**13 26**	.....	**13 57**
Huyton	dep	6	.	**12 30**	**12 45**	**13 00**	**13 29**	**13 45**	**14 00**
Prescot	dep	7	.....	**12 34**	.....	**13 04**	**13 33**	.....	**14 04**
Eccleston Park	dep	8	.	**12 37**	.	**13 06**	**13 35**	.	**14 06**
Thatto Heath	dep	9	.....	**12 39**	.....	**13 09**	**13 38**	.....	**14 09**
St. Helens Central	dep	10	**12 32**	**12 43**	**12 53**	**13 13**	**13 42**	**13 53**	**14 13**
Carr Mill	dep	11	.....	.....	.....	**13 16**	**13 45**	.....	**14 16**
Garswood	dep	12	.	**12 49**	.	**13 21**	**13 50**	.	**14 21**
Bryn	dep	13	.....	**12 52**	.....	**13 24**	**13 53**	.....	**14 24**
Wigan North Western	arr	14	**12 49**	**13 01**	**13 06**	**13 33**	**14 02**	**14 06**	**14 33**

TID			2F62FB	1N88FA	2F64FB	2F66FB	1N89FA	2F68FB	1S74LP
Departure Time			14 13	14 37	14 45	15 15	15 37	15 45	16 12
Origin			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
Destination			Wigan North Western	Blackpool North	Wigan North Western	Wigan North Western	Blackpool North	Wigan North Western	Glasgow Central High Level
TOC			NT	NT	NT	NT	NT	NT	TP
Day of Operation			SX	SX	SX	SX	EWD	EWD	SX
Changes			New	New	New	New	New	New	New
Liverpool Lime Street	dep	1	**14 13**	**14 37**	**14 45**	**15 15**	**15 37**	**15 45**	**16 12**
Edge Hill	dep	2	**14 17**	.	**14 49**	**15 19**	.	**15 49**	.
Wavertree Technology Park	dep	3	**14 19**	.....	**14 51**	**15 21**	.....	**15 51**	.....
Broad Green	dep	4	**14 22**	.	**14 54**	**15 24**	.	**15 54**	.
Roby	dep	5	**14 25**	.....	**14 57**	**15 27**	.....	**15 57**	.....
Huyton	dep	6	**14 28**	**14 46**	**15 00**	**15 29**	**15 46**	**16 00**	.
Prescot	dep	7	**14 32**	.....	**15 04**	**15 33**	.....	**16 04**	.....
Eccleston Park	dep	8	**14 34**	.	**15 06**	**15 36**	.	**16 06**	.
Thatto Heath	dep	9	**14 37**	.....	**15 09**	**15 38**	.....	**16 09**	.....
St. Helens Central	dep	10	**14 41**	**14 54**	**15 13**	**15 42**	**15 54**	**16 13**	.
Carr Mill	dep	11	**14 44**	.....	**15 16**	**15 46**	.....	**16 16**	.....
Garswood	dep	12	**14 49**	.	**15 21**	**15 51**	.	**16 21**	.
Bryn	dep	13	**14 52**	.....	**15 24**	**15 54**	.....	**16 24**	.....
Wigan North Western	arr	14	**15 01**	**15 06**	**15 33**	**16 04**	**16 06**	**16 33**	**16 43**

TID			2F50FC	1N80FB	2F52FC	2N99FN	2F54FC	1N81FB	2F56FC
Departure Time			16 15	16 36	16 45	17 09	17 13	17 36	17 48
Origin			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
Destination			Wigan North Western	Blackpool North	Wigan North Western	Preston	Wigan North Western	Blackpool North	Wigan North Western
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			EWD	EWD	EWD	EWD	EWD	SX	SX
Changes			New	New	New	New	New	New	New
Liverpool Lime Street	dep	1	**16 15**	**16 36**	**16 45**	**17 09**	**17 13**	**17 36**	**17 48**
Edge Hill	dep	2	**16 19**	.	**16 49**	.	**17 17**	.	**17 52**
Wavertree Technology Park	dep	3	**16 21**	.....	**16 51**	.....	**17 19**	.....	**17 54**
Broad Green	dep	4	**16 24**	.	**16 54**	.	**17 22**	.	**17 57**
Roby	dep	5	**16 27**	.....	**16 57**	.....	**17 25**	.....	**18 00**
Huyton	dep	6	**16 30**	**16 45**	**17 00**	**17 18**	**17 28**	**17 44**	**18 03**
Prescot	dep	7	**16 34**	.....	**17 04**	**17 22**	**17 32**	**17 48**	**18 07**
Eccleston Park	dep	8	**16 36**	.	**17 06**	**17 24**	**17 34**	**17 51**	**18 09**
Thatto Heath	dep	9	**16 39**	.....	**17 09**	**17 27**	**17 37**	**17 53**	**18 12**
St. Helens Central	dep	10	**16 43**	**16 53**	**17 13**	**17 31**	**17 41**	**17 57**	**18 16**
Carr Mill	dep	11	.....	.....	**17 16**	.....	**17 44**	.....	**18 19**
Garswood	dep	12	**16 49**	.	**17 21**	**17 37**	**17 49**	**18 04**	**18 24**
Bryn	dep	13	**16 52**	.....	**17 24**	**17 40**	**17 52**	**18 07**	**18 27**
Wigan North Western	arr	14	**17 02**	**17 06**	**17 33**	**17 47**	**18 01**	**18 13**	**18 36**

TID			2F60FC	1N82FB	2F62FC	2F64FC	1N83FB	2F66FC	1C81LP
Departure Time			18 13	18 35	18 47	19 14	19 36	19 45	20 12
Origin			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
Destination			Wigan North Western	Blackpool North	Wigan North Western	Wigan North Western	Blackpool North	Wigan North Western	Preston
TOC			NT	NT	NT	NT	NT	NT	TP
Day of Operation			SX	SX	EWD	EWD	SX	SX	SX
Changes			New	New	New	New	New	New	New
Liverpool Lime Street	dep	1	**18 13**	**18 35**	**18 47**	**19 14**	**19 36**	**19 45**	**20 12**
Edge Hill	dep	2	**18 17**	.	**18 51**	**19 18**	.	**19 49**	.
Wavertree Technology Park	dep	3	**18 19**	.....	**18 53**	**19 20**	.....	**19 51**	.....
Broad Green	dep	4	**18 22**	.	**18 56**	**19 23**	.	**19 54**	.
Roby	dep	5	**18 25**	.....	**18 59**	**19 27**	.....	**19 57**	.....
Huyton	dep	6	**18 28**	**18 46**	**19 02**	**19 30**	**19 45**	**20 00**	.
Prescot	dep	7	**18 32**	.....	**19 06**	**19 34**	.....	**20 04**	.....
Eccleston Park	dep	8	**18 34**	.	**19 08**	**19 36**	.	**20 06**	.
Thatto Heath	dep	9	**18 37**	.....	**19 11**	**19 39**	.....	**20 09**	.....
St. Helens Central	dep	10	**18 41**	**18 54**	**19 15**	**19 43**	**19 53**	**20 13**	**20 28**
Carr Mill	dep	11	**18 44**	.....	**19 18**	.....	.....	**20 16**	.....
Garswood	dep	12	**18 49**	.	**19 23**	**19 49**	.	**20 21**	.
Bryn	dep	13	**18 52**	.....	**19 26**	**19 52**	.....	**20 24**	.....
Wigan North Western	arr	14	**19 02**	**19 06**	**19 35**	**20 01**	**20 06**	**20 33**	**20 43**

TID			2F68FC	1N84FB	2F50FT	1N85FB	1N86FB	1N87FB
Departure Time			20 15	20 36	20 46	21 15	22 15	23 15
Origin			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
Destination			Wigan North Western	Blackpool North	Wigan North Western	Blackpool North	Blackpool North	Preston
TOC			NT	NT	NT	NT	NT	NT
Day of Operation			SX	SX	SX	SX	SX	SX
Changes			New	New	New	New	New	New
Liverpool Lime Street	dep	1	**20 15**	**20 36**	**20 46**	**21 15**	**22 15**	**23 15**
Edge Hill	dep	2	**20 19**	.	**20 50**	**21 19**	**22 19**	**23 19**
Wavertree Technology Park	dep	3	**20 21**	.....	**20 52**	**21 21**	**22 21**	**23 21**
Broad Green	dep	4	**20 24**	.	**20 55**	**21 24**	**22 24**	**23 24**
Roby	dep	5	**20 27**	.....	**20 58**	**21 27**	**22 27**	**23 27**
Huyton	dep	6	**20 30**	**20 45**	**21 01**	**21 30**	**22 30**	**23 30**
Prescot	dep	7	**20 34**	.....	**21 05**	**21 34**	**22 34**	**23 34**
Eccleston Park	dep	8	**20 36**	.	**21 07**	**21 36**	**22 36**	**23 36**
Thatto Heath	dep	9	**20 39**	.....	**21 10**	**21 39**	**22 39**	**23 39**
St. Helens Central	dep	10	**20 43**	**20 53**	**21 14**	**21 43**	**22 43**	**23 43**
Carr Mill	dep	11	.....	.....	**21 17**	**21 46**	**22 46**	**23 46**
Garswood	dep	12	**20 49**	.	**21 22**	**21 51**	**22 51**	**23 51**
Bryn	dep	13	**20 52**	.....	**21 25**	**21 54**	**22 54**	**23 54**
Wigan North Western	arr	14	**21 01**	**21 05**	**21 34**	**22 00**	**23 02**	**00 04**

11.7.2. Southbound Timetable (Options 1-6)

TID			2C00FA	2C90FA	2C01FA	1F00FA	2C02FA	1M89FA	2C03FA
Departure Time			05 34	05 49	06 21	06 03	06 51	07 05	07 21
Origin			Wigan North Western	Wigan North Western	Wigan North Western	Blackpool North	Wigan North Western	Preston	Wigan North Western
Destination			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
TOC			NT	NT	NT	NT	NT	TP	NT
Day of Operation			EWD	SX	EWD	SX	EWD	SX	SX
Changes			New	New	New	New	New	New	New
Wigan North Western	dep	1	**05 34**	**05 49**	**06 21**	**06 47**	**06 51**	**07 17**	**07 21**
Bryn	dep	2	**05 40**	**05 55**	**06 27**	.	**06 57**	.	**07 27**
Garswood	dep	3	**05 43**	**05 59**	**06 30**	.....	**07 00**	.....	**07 30**
Carr Mill	dep	4	**05 48**	**06 04**	**06 35**	.	**07 05**	.	**07 35**
St. Helens Central	dep	5	**05 52**	**06 08**	**06 39**	**07 00**	**07 09**	**07 32**	**07 39**
Thatto Heath	dep	6	**05 56**	**06 11**	**06 43**	.	**07 13**	.	**07 43**
Eccleston Park	dep	7	**05 58**	**06 14**	**06 46**	.....	**07 15**	.....	**07 46**
Prescot	dep	8	**06 00**	**06 16**	**06 48**	.	**07 17**	.	**07 48**
Huyton	dep	9	**06 05**	**06 23**	**06 53**	**07 07**	**07 23**	.....	**07 54**
Roby	dep	10	**06 07**	**06 26**	**06 55**	.	**07 26**	.	**07 57**
Broad Green	dep	11	**06 10**	**06 29**	**06 58**	.....	**07 29**	.....	**08 00**
Wavertree Technology Park	dep	12	**06 13**	**06 32**	**07 03**	.	**07 32**	.	**08 03**
Edge Hill	dep	13	**06 16**	**06 36**	**07 06**	.....	**07 35**	.....	**08 06**
Liverpool Lime Street	arr	14	**06 22**	**06 40**	**07 12**	**07 19**	**07 39**	**07 59**	**08 10**

TID			1F02FA	2C04FA	2C05FA	2C06FA	1F04FC	2C07FA	2C08FA
Departure Time			07 03	07 51	08 21	08 47	08 05	09 20	09 47
Origin			Blackpool North	Wigan North Western	Wigan North Western	Wigan North Western	Blackpool North	Wigan North Western	Wigan North Western
Destination			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			SX	EWD	EWD	EWD	EWD	EWD	EWD
Changes			New	New	New	New	New	New	New
Wigan North Western	dep	1	**07 48**	**07 51**	**08 21**	**08 47**	**08 51**	**09 20**	**09 47**
Bryn	dep	2	.	**07 58**	**08 27**	.	**08 57**	**09 26**	.
Garswood	dep	3	**07 57**	**08 01**	**08 31**	.....	**09 01**	**09 30**	.....
Carr Mill	dep	4	.	**08 06**	**08 36**	.	**09 06**	**09 35**	.
St. Helens Central	dep	5	**08 04**	**08 10**	**08 40**	**08 59**	**09 10**	**09 39**	**09 59**
Thatto Heath	dep	6	.	**08 14**	**08 44**	.	**09 13**	**09 43**	.
Eccleston Park	dep	7	.....	**08 16**	**08 46**	.....	**09 16**	**09 45**	.....
Prescot	dep	8	**08 10**	**08 19**	**08 49**	.	**09 18**	**09 48**	.
Huyton	dep	9	**08 16**	**08 23**	**08 54**	**09 07**	**09 24**	**09 54**	**10 07**
Roby	dep	10	**08 18**	**08 26**	**08 57**	.	**09 27**	**09 57**	.
Broad Green	dep	11	**08 21**	**08 29**	**09 00**	.....	**09 30**	**10 00**	.....
Wavertree Technology Park	dep	12	.	**08 32**	**09 03**	.	**09 33**	**10 03**	.
Edge Hill	dep	13	.....	**08 35**	**09 06**	.....	**09 36**	**10 06**	.....
Liverpool Lime Street	arr	14	**08 31**	**08 41**	**09 12**	**09 19**	**09 40**	**10 10**	**10 19**

TID			1F06FA	2C09FA	1F08FA	2C10FA	2C11FA	1F03FA	2C12FA
Departure Time			09 02	10 20	10 03	10 50	11 20	11 03	11 51
Origin			Blackpool North	Wigan North Western	Blackpool North	Wigan North Western	Wigan North Western	Blackpool North	Wigan North Western
Destination			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			SX	EWD	EWD	SX	SX	SX	EWD
Changes			New	New	New	New	New	New	New
Wigan North Western	dep	1	**09 50**	**10 20**	**10 48**	**10 50**	**11 20**	**11 48**	**11 51**
Bryn	dep	2	**09 56**	**10 26**	.	**10 57**	**11 26**	.	**11 58**
Garswood	dep	3	**09 59**	**10 29**	.....	**11 01**	**11 29**	.....	**12 02**
Carr Mill	dep	4	**10 04**	**10 34**	.	**11 06**	**11 34**	.	**12 07**
St. Helens Central	dep	5	**10 08**	**10 38**	**11 00**	**11 10**	**11 38**	**12 01**	**12 11**
Thatto Heath	dep	6	**10 12**	**10 42**	.	**11 13**	**11 42**	.	**12 15**
Eccleston Park	dep	7	**10 14**	**10 44**	.....	**11 16**	**11 44**	.....	**12 18**
Prescot	dep	8	**10 16**	**10 47**	.	**11 18**	**11 47**	.	**12 20**
Huyton	dep	9	**10 23**	**10 51**	**11 08**	**11 22**	**11 53**	**12 08**	**12 25**
Roby	dep	10	**10 25**	**10 54**	.	**11 25**	**11 56**	.	**12 27**
Broad Green	dep	11	**10 28**	**10 57**	.....	**11 28**	**11 59**	.....	**12 30**
Wavertree Technology Park	dep	12	**10 31**	**11 00**	.	**11 31**	**12 02**	.	**12 33**
Edge Hill	dep	13	**10 34**	**11 03**	.....	**11 34**	**12 05**	.....	**12 36**
Liverpool Lime Street	arr	14	**10 38**	**11 09**	**11 19**	**11 40**	**12 09**	**12 20**	**12 43**

TID			2C13FA	1F05FA	2C14FA	2C15FA	1F07FA	2C16FA	2C17FA
Departure Time			12 20	12 03	12 51	13 20	13 06	13 53	14 20
Origin			Wigan North Western	Blackpool North	Wigan North Western	Wigan North Western	Blackpool North	Wigan North Western	Wigan North Western
Destination			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			EWD	EWD	EWD	SX	EWD	SX	EWD
Changes			New	New	New	New	New	New	New
Wigan North Western	dep	1	**12 20**	**12 48**	**12 51**	**13 20**	**13 50**	**13 53**	**14 20**
Bryn	dep	2	**12 26**	.	**12 57**	**13 26**	.	**14 00**	**14 26**
Garswood	dep	3	**12 29**	.....	**13 01**	**13 29**	.....	**14 04**	**14 29**
Carr Mill	dep	4	**12 34**	.	**13 06**	**13 34**	.	.	**14 34**
St. Helens Central	dep	5	**12 38**	**13 00**	**13 10**	**13 38**	**14 03**	**14 11**	**14 38**
Thatto Heath	dep	6	**12 42**	.	**13 13**	**13 42**	.	**14 15**	**14 42**
Eccleston Park	dep	7	**12 44**	.....	**13 16**	**13 44**	.....	**14 17**	**14 44**
Prescot	dep	8	**12 47**	.	**13 18**	**13 47**	.	**14 19**	**14 47**
Huyton	dep	9	**12 51**	**13 08**	**13 22**	**13 51**	**14 11**	**14 24**	**14 51**
Roby	dep	10	**12 54**	.	**13 25**	**13 54**	.	**14 26**	**14 54**
Broad Green	dep	11	**12 57**	.....	**13 28**	**13 57**	.....	**14 29**	**14 57**
Wavertree Technology Park	dep	12	**13 00**	.	**13 31**	**14 00**	.	**14 32**	**15 00**
Edge Hill	dep	13	**13 03**	.....	**13 34**	**14 03**	.....	**14 35**	**15 03**
Liverpool Lime Street	arr	14	**13 09**	**13 20**	**13 40**	**14 09**	**14 22**	**14 41**	**15 09**

TID			1F09FA	2C18FA	2C19FA	1F01FA	2C20FA	2C21FA	1F00FB
Departure Time			14 03	14 52	15 20	15 05	15 53	16 20	16 05
Origin			Blackpool North	Wigan North Western	Wigan North Western	Blackpool North	Wigan North Western	Wigan North Western	Blackpool North
Destination			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			EWD	EWD	EWD	SX	EWD	EWD	SX
Changes			New	New	New	New	New	New	New
Wigan North Western	dep	1	**14 48**	**14 52**	**15 20**	**15 50**	**15 53**	**16 20**	**16 50**
Bryn	dep	2	.	**14 58**	**15 26**	.	**15 59**	**16 26**	.
Garswood	dep	3	.....	**15 01**	**15 29**	.....	**16 03**	**16 29**	.....
Carr Mill	dep	4	.	**15 06**	**15 34**	.	**16 08**	**16 34**	.
St. Helens Central	dep	5	**15 00**	**15 10**	**15 38**	**16 02**	**16 12**	**16 38**	**17 04**
Thatto Heath	dep	6	.	**15 14**	**15 42**	.	**16 15**	**16 42**	.
Eccleston Park	dep	7	.....	**15 17**	**15 44**	.....	**16 18**	**16 44**	.....
Prescot	dep	8	.	**15 19**	**15 47**	.	**16 20**	**16 47**	.
Huyton	dep	9	**15 08**	**15 24**	**15 51**	**16 10**	**16 26**	**16 51**	**17 11**
Roby	dep	10	.	**15 26**	**15 54**	.	**16 29**	**16 54**	.
Broad Green	dep	11	.....	**15 29**	**15 57**	.....	**16 32**	**16 57**	.....
Wavertree Technology Park	dep	12	.	**15 32**	**16 00**	.	**16 35**	**17 00**	.
Edge Hill	dep	13	.....	**15 35**	**16 03**	.....	**16 38**	**17 03**	.....
Liverpool Lime Street	arr	14	**15 19**	**15 42**	**16 09**	**16 21**	**16 42**	**17 09**	**17 27**

TID			2C22FA	2C23FA	2C24FA	1F02FB	2C25FA	1F04FB	2C26FA
Departure Time			16 55	17 20	17 37	17 03	18 20	18 03	18 51
Origin			Wigan North Western	Wigan North Western	Wigan North Western	Blackpool North	Wigan North Western	Blackpool North	Wigan North Western
Destination			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			SX	SX	SX	SX	SX	EWD	SX
Changes			New	New	New	New	New	New	New
Wigan North Western	dep	1	**16 55**	**17 20**	**17 37**	**17 50**	**18 20**	**18 47**	**18 51**
Bryn	dep	2	**17 02**	**17 26**	**17 44**	.	**18 26**	.	**18 57**
Garswood	dep	3	**17 06**	**17 29**	**17 47**	.....	**18 29**	.....	**19 01**
Carr Mill	dep	4	**17 11**	**17 34**	.	.	**18 34**	.	**19 06**
St. Helens Central	dep	5	**17 15**	**17 38**	**17 54**	**18 03**	**18 38**	**19 00**	**19 10**
Thatto Heath	dep	6	**17 19**	**17 42**	**17 58**	.	**18 42**	.	**19 13**
Eccleston Park	dep	7	**17 21**	**17 44**	**18 00**	.....	**18 44**	.....	**19 16**
Prescot	dep	8	**17 24**	**17 47**	**18 02**	.	**18 47**	.	**19 18**
Huyton	dep	9	**17 30**	**17 53**	**18 07**	**18 11**	**18 53**	**19 07**	**19 23**
Roby	dep	10	**17 33**	**17 56**	**18 09**	.	**18 56**	.	**19 26**
Broad Green	dep	11	**17 36**	**17 59**	.....	**18 14**	**18 59**	.....	**19 29**
Wavertree Technology Park	dep	12	**17 39**	**18 02**	**18 13**	.	**19 02**	.	**19 32**
Edge Hill	dep	13	**17 42**	**18 05**	.....	.....	**19 05**	.....	**19 35**
Liverpool Lime Street	arr	14	**17 46**	**18 09**	**18 21**	**18 24**	**19 09**	**19 19**	**19 41**

TID			2C27FA	1F06FB	2C28FA	2C29FA	1F08FB	1F08FB	2C30FA
Departure Time			19 20	19 05	19 54	20 22	20 03	20 03	20 52
Origin			Wigan North Western	Blackpool North	Wigan North Western	Wigan North Western	Blackpool North	Blackpool North	Wigan North Western
Destination			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			SX	SX	SX	SX	FSX	FO	SX
Changes			New	New	New	New	New	New	New
Wigan North Western	dep	1	**19 20**	**19 49**	**19 54**	**20 22**	**20 47**	**20 47**	**20 52**
Bryn	dep	2	**19 26**	.	**20 00**	**20 28**	.	.	**20 58**
Garswood	dep	3	**19 29**	.....	**20 04**	**20 31**	.....	.....	**21 01**
Carr Mill	dep	4	**19 34**	.	**20 09**	**20 36**	.	.	**21 06**
St. Helens Central	dep	5	**19 38**	**20 02**	**20 13**	**20 40**	**21 00**	**21 00**	**21 10**
Thatto Heath	dep	6	**19 42**	.	**20 17**	**20 44**	.	.	**21 14**
Eccleston Park	dep	7	**19 44**	.....	**20 19**	**20 47**	.....	.....	**21 17**
Prescot	dep	8	**19 47**	.	**20 22**	**20 49**	.	.	**21 19**
Huyton	dep	9	**19 53**	**20 09**	**20 26**	**20 54**	**21 07**	**21 07**	**21 24**
Roby	dep	10	**19 56**	.	**20 29**	**20 56**	.	.	**21 26**
Broad Green	dep	11	**19 59**	.....	**20 32**	**20 59**	.....	.....	**21 29**
Wavertree Technology Park	dep	12	**20 02**	.	**20 35**	**21 02**	.	.	**21 32**
Edge Hill	dep	13	**20 05**	.....	**20 39**	**21 05**	.....	.....	**21 35**
Liverpool Lime Street	arr	14	**20 10**	**20 21**	**20 45**	**21 12**	**21 19**	**21 23**	**21 42**

TID			2C31FA	1F09FB	2C32FA	2C33FA
Departure Time			21 20	21 01	22 01	22 18
Origin			Wigan North Western	Blackpool North	Wigan North Western	Blackpool North
Destination			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
TOC			NT	NT	NT	NT
Day of Operation			SX	SX	SX	SX
Changes			New	New	New	New
Wigan North Western	dep	1	**21 20**	**21 51**	**22 01**	**23 04**
Bryn	dep	2	**21 26**	.	**22 07**	**23 10**
Garswood	dep	3	**21 29**	.....	**22 10**	**23 13**
Carr Mill	dep	4	**21 34**	.	**22 15**	**23 18**
St. Helens Central	dep	5	**21 38**	**22 04**	**22 19**	**23 22**
Thatto Heath	dep	6	**21 42**	.	**22 23**	**23 26**
Eccleston Park	dep	7	**21 44**	.....	**22 25**	**23 28**
Prescot	dep	8	**21 47**	.	**22 28**	**23 31**
Huyton	dep	9	**21 53**	**22 12**	**22 32**	**23 35**
Roby	dep	10	**21 56**	**22 14**	**22 35**	**23 38**
Broad Green	dep	11	**21 59**	**22 17**	**22 38**	**23 41**
Wavertree Technology Park	dep	12	**22 02**	**22 20**	**22 41**	**23 44**
Edge Hill	dep	13	**22 05**	**22 24**	**22 44**	**23 47**
Liverpool Lime Street	arr	14	**22 10**	**22 30**	**22 50**	**23 53**

11.7.3. Northbound timetable (Option 7A)

TID			2F66FN	2F68FN	2J93AT	2F50FA	1N80FA	2F52FA	2J95AT
Departure Time			05 42	05 46	05 57	06 16	06 36	06 45	06 57
Origin			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
Destination			Wigan North Western	Wigan North Western	Cowley Hill	Wigan North Western	Blackpool North	Wigan North Western	Cowley Hill
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			SX	EWD	EWD	EWD	SX	SX	EWD
Changes			New	New	New	New	New	New	New
Liverpool Lime Street	dep	1	**05 42**	**05 46**	**05 57**	**06 16**	**06 36**	**06 45**	**06 57**
Edge Hill	dep	2	.	**05 50**	**06 01**	**06 20**	.	**06 49**	**07 01**
Wavertree Technology Park	dep	3	.....	**05 52**	**06 03**	**06 22**	.....	**06 52**	**07 03**
Broad Green	dep	4	.	**05 55**	**06 06**	**06 25**	.	**06 55**	**07 06**
Roby	dep	5	.....	**05 58**	**06 09**	**06 28**	.....	**06 58**	**07 09**
Huyton	dep	6	**05 52**	**06 01**	**06 12**	**06 31**	**06 45**	**07 00**	**07 12**
Prescot	dep	7	.....	**06 05**	**06 16**	**06 35**	.....	**07 04**	**07 16**
Eccleston Park	dep	8	.	**06 07**	**06 18**	**06 37**	.	**07 06**	**07 18**
Thatto Heath	dep	9	.....	**06 10**	**06 21**	**06 40**	.....	**07 09**	**07 21**
St. Helens Central	arr	10	**05 59**	**06 13**	**06 24**	**06 43**	**06 53**	**07 12**	**07 24**
	dep	11	.....	.....	**06 25**	.....	.....	.....	**07 25**
Cowley Hill (CM Option 7)	arr	12	.	.	**06 30**	.	.	.	**07 30**

TID			2F54FA	1N81FA	2F56FA	2J97AT	2F58FA	1N82FA	2F60FA
Departure Time			07 15	07 36	07 43	07 57	08 16	08 36	08 45
Origin			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
Destination			Wigan North Western	Blackpool North	Wigan North Western	Cowley Hill	Wigan North Western	Blackpool North	Wigan North Western
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			SX	SX	SX	EWD	SX	EWD	EWD
Changes			New	New	New	New	New	New	New
Liverpool Lime Street	dep	1	**07 15**	**07 36**	**07 43**	**07 57**	**08 16**	**08 36**	**08 45**
Edge Hill	dep	2	**07 19**	.	**07 47**	**08 01**	**08 20**	.	**08 49**
Wavertree Technology Park	dep	3	**07 21**	.....	**07 49**	**08 03**	**08 22**	.....	**08 51**
Broad Green	dep	4	**07 24**	.	**07 52**	**08 06**	**08 25**	.	**08 54**
Roby	dep	5	**07 27**	.....	**07 55**	**08 09**	**08 28**	.....	**08 57**
Huyton	dep	6	**07 30**	**07 45**	**07 58**	**08 12**	**08 31**	**08 45**	**09 00**
Prescot	dep	7	**07 34**	.....	**08 04**	**08 16**	**08 35**	.....	**09 04**
Eccleston Park	dep	8	**07 36**	.	**08 06**	**08 18**	**08 37**	.	**09 06**
Thatto Heath	dep	9	**07 39**	.....	**08 09**	**08 21**	**08 40**	.....	**09 09**
St. Helens Central	arr	10	**07 42**	**07 52**	**08 12**	**08 24**	**08 43**	**08 53**	**09 12**
	dep	11	.....	.....	.....	**08 25**	.....	.....	.....
Cowley Hill (CM Option 7)	arr	12	.	.	.	**08 30**	.	.	.

TID			2J99AT	2F62FA	1N83FA	2F64FA	2J01AT	2F66FA	1N84FA
Departure Time			08 57	09 15	09 36	09 45	09 57	10 15	10 36
Origin			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
Destination			Cowley Hill	Wigan North Western	Blackpool North	Wigan North Western	Cowley Hill	Wigan North Western	Blackpool North
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			EWD	EWD	EWD	EWD	EWD	EWD	EWD
Changes			New	New	New	New	New	New	New
Liverpool Lime Street	dep	1	**08 57**	**09 15**	**09 36**	**09 45**	**09 57**	**10 15**	**10 36**
Edge Hill	dep	2	**09 01**	**09 19**	.	**09 49**	**10 01**	**10 19**	.
Wavertree Technology Park	dep	3	**09 03**	**09 21**	.....	**09 51**	**10 03**	**10 21**	.....
Broad Green	dep	4	**09 06**	**09 24**	.	**09 54**	**10 06**	**10 24**	.
Roby	dep	5	**09 09**	**09 27**	.....	**09 57**	**10 09**	**10 27**	.....
Huyton	dep	6	**09 12**	**09 30**	**09 45**	**10 00**	**10 12**	**10 30**	**10 45**
Prescot	dep	7	**09 16**	**09 34**	.....	**10 04**	**10 16**	**10 34**	.....
Eccleston Park	dep	8	**09 18**	**09 36**	.	**10 06**	**10 18**	**10 36**	.
Thatto Heath	dep	9	**09 21**	**09 39**	.....	**10 09**	**10 21**	**10 39**	.....
St. Helens Central	arr	10	**09 24**	**09 42**	**09 53**	**10 12**	**10 24**	**10 42**	**10 53**
	dep	11	**09 25**	.....	.....	.....	**10 25**	.....	.....
Cowley Hill (CM Option 7)	arr	12	**09 30**	.	.	.	**10 30**	.	.

TID			2F68FA	2J03AT	2F50FB	1N85FA	2F52FB	2J05AT	1S57LP
Departure Time			10 45	10 57	11 15	11 36	11 45	11 57	12 12
Origin			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
Destination			Wigan North Western	Cowley Hill	Wigan North Western	Blackpool North	Wigan North Western	Cowley Hill	Glasgow Central High Level
TOC			NT	NT	NT	NT	NT	NT	TP
Day of Operation			EWD	EWD	EWD	EWD	SX	EWD	SX
Changes			New	New	New	New	New	New	New
Liverpool Lime Street	dep	1	**10 45**	**10 57**	**11 15**	**11 36**	**11 45**	**11 57**	**12 12**
Edge Hill	dep	2	**10 49**	**11 01**	**11 19**	.	**11 49**	**12 01**	.
Wavertree Technology Park	dep	3	**10 51**	**11 03**	**11 21**	.....	**11 51**	**12 03**	.....
Broad Green	dep	4	**10 54**	**11 06**	**11 24**	.	**11 54**	**12 06**	.
Roby	dep	5	**10 57**	**11 09**	**11 27**	.....	**11 57**	**12 09**	.....
Huyton	dep	6	**11 00**	**11 12**	**11 30**	**11 45**	**12 00**	**12 12**	.
Prescot	dep	7	**11 04**	**11 16**	**11 34**	.....	**12 04**	**12 16**	.....
Eccleston Park	dep	8	**11 06**	**11 18**	**11 36**	.	**12 06**	**12 18**	.
Thatto Heath	dep	9	**11 09**	**11 21**	**11 39**	.....	**12 09**	**12 21**	.....
St. Helens Central	arr	10	**11 12**	**11 24**	**11 42**	**11 53**	**12 12**	**12 24**	**12 30**
	dep	11	.....	**11 25**	.....	.....	.....	**12 25**	.....
Cowley Hill (CM Option 7)	arr	12	.	**11 30**	.	.	.	**12 30**	.

TID			2F54FB	1N86FA	2F56FB	2J07AT	2F58FB	1N87FA	2F60FB
Departure Time			12 15	12 37	12 45	12 57	13 15	13 37	13 45
Origin			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
Destination			Wigan North Western	Blackpool North	Wigan North Western	Cowley Hill	Wigan North Western	Blackpool North	Wigan North Western
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			SX	EWD	SX	EWD	EWD	SX	SX
Changes			New	New	New	New	New	New	New
Liverpool Lime Street	dep	1	**12 15**	**12 37**	**12 45**	**12 57**	**13 15**	**13 37**	**13 45**
Edge Hill	dep	2	**12 19**	.	**12 49**	**13 01**	**13 19**	.	**13 49**
Wavertree Technology Park	dep	3	**12 21**	.....	**12 51**	**13 03**	**13 21**	.....	**13 51**
Broad Green	dep	4	**12 25**	.	**12 54**	**13 06**	**13 24**	.	**13 54**
Roby	dep	5	**12 28**	.....	**12 57**	**13 09**	**13 27**	.....	**13 57**
Huyton	dep	6	**12 30**	**12 45**	**13 00**	**13 12**	**13 30**	**13 45**	**14 00**
Prescot	dep	7	**12 34**	.....	**13 04**	**13 16**	**13 34**	.....	**14 04**
Eccleston Park	dep	8	**12 37**	.	**13 06**	**13 18**	**13 36**	.	**14 06**
Thatto Heath	dep	9	**12 39**	.....	**13 09**	**13 21**	**13 39**	.....	**14 09**
St. Helens Central	arr	10	**12 43**	**12 53**	**13 12**	**13 24**	**13 42**	**13 53**	**14 12**
	dep	11	.....	.....	.....	**13 25**	.....	.....	.....
Cowley Hill (CM Option 7)	arr	12	.	.	.	**13 30**	.	.	.

TID			2J09AT	2F62FB	1N88FA	2F64FB	2J11AT	2F66FB	1N89FA
Departure Time			13 57	14 15	14 37	14 45	14 57	15 15	15 37
Origin			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
Destination			Cowley Hill	Wigan North Western	Blackpool North	Wigan North Western	Cowley Hill	Wigan North Western	Blackpool North
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			EWD	SX	SX	SX	EWD	SX	EWD
Changes			New	New	New	New	New	New	New
Liverpool Lime Street	dep	1	**13 57**	**14 15**	**14 37**	**14 45**	**14 57**	**15 15**	**15 37**
Edge Hill	dep	2	**14 01**	**14 19**	.	**14 49**	**15 01**	**15 19**	.
Wavertree Technology Park	dep	3	**14 03**	**14 21**	.....	**14 51**	**15 03**	**15 21**	.....
Broad Green	dep	4	**14 06**	**14 24**	.	**14 54**	**15 06**	**15 24**	.
Roby	dep	5	**14 09**	**14 27**	.....	**14 57**	**15 09**	**15 27**	.....
Huyton	dep	6	**14 12**	**14 30**	**14 46**	**15 00**	**15 12**	**15 30**	**15 46**
Prescot	dep	7	**14 16**	**14 34**	.....	**15 04**	**15 16**	**15 34**	.....
Eccleston Park	dep	8	**14 18**	**14 36**	.	**15 06**	**15 18**	**15 36**	.
Thatto Heath	dep	9	**14 21**	**14 39**	.....	**15 09**	**15 21**	**15 39**	.....
St. Helens Central	arr	10	**14 24**	**14 42**	**14 53**	**15 12**	**15 24**	**15 42**	**15 53**
	dep	11	**14 25**	.....	.....	.....	**15 25**	.....	.....
Cowley Hill (CM Option 7)	arr	12	**14 30**	.	.	.	**15 30**	.	.

TID			2F68FB	2J13AT	2F50FC	1N80FB	2F52FC	2J15AT	2N99FN
Departure Time			15 45	15 57	16 15	16 36	16 45	16 57	17 09
Origin			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
Destination			Wigan North Western	Cowley Hill	Wigan North Western	Blackpool North	Wigan North Western	Cowley Hill	Preston
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			EWD	EWD	EWD	EWD	EWD	EWD	EWD
Changes			New	New	New	New	New	New	New
Liverpool Lime Street	dep	1	**15 45**	**15 57**	**16 15**	**16 36**	**16 45**	**16 57**	**17 09**
Edge Hill	dep	2	**15 49**	**16 01**	**16 19**	.	**16 49**	**17 01**	.
Wavertree Technology Park	dep	3	**15 51**	**16 03**	**16 21**	.....	**16 51**	**17 03**	.....
Broad Green	dep	4	**15 54**	**16 06**	**16 24**	.	**16 54**	**17 06**	.
Roby	dep	5	**15 57**	**16 09**	**16 27**	.....	**16 57**	**17 09**	.....
Huyton	dep	6	**16 00**	**16 12**	**16 30**	**16 45**	**17 00**	**17 12**	**17 18**
Prescot	dep	7	**16 04**	**16 16**	**16 34**	.....	**17 04**	**17 16**	**17 22**
Eccleston Park	dep	8	**16 06**	**16 18**	**16 36**	.	**17 06**	**17 18**	**17 24**
Thatto Heath	dep	9	**16 09**	**16 21**	**16 39**	.....	**17 09**	**17 21**	**17 27**
St. Helens Central	arr	10	**16 12**	**16 24**	**16 42**	**16 53**	**17 12**	**17 24**	**17 30**
	dep	11	.....	**16 25**	.....	.....	.....	**17 25**	.....
Cowley Hill (CM Option 7)	arr	12	.	**16 30**	.	.	.	**17 30**	.

TID			2F54FC	1N81FB	2F56FC	2J17AT	2F60FC	1N82FB	2F62FC
Departure Time			17 13	17 36	17 48	17 57	18 13	18 35	18 47
Origin			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
Destination			Wigan North Western	Blackpool North	Wigan North Western	Cowley Hill	Wigan North Western	Blackpool North	Wigan North Western
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			EWD	SX	SX	EWD	SX	SX	EWD
Changes			New	New	New	New	New	New	New
Liverpool Lime Street	dep	1	**17 13**	**17 36**	**17 48**	**17 57**	**18 13**	**18 35**	**18 47**
Edge Hill	dep	2	**17 17**	.	**17 52**	**18 01**	**18 17**	.	**18 51**
Wavertree Technology Park	dep	3	**17 19**	.....	**17 54**	**18 03**	**18 19**	.....	**18 53**
Broad Green	dep	4	**17 22**	.	**17 57**	**18 06**	**18 22**	.	**18 56**
Roby	dep	5	**17 25**	.....	**18 00**	**18 09**	**18 25**	.....	**18 59**
Huyton	dep	6	**17 28**	**17 44**	**18 03**	**18 12**	**18 28**	**18 46**	**19 02**
Prescot	dep	7	**17 32**	**17 48**	**18 07**	**18 16**	**18 32**	.....	**19 06**
Eccleston Park	dep	8	**17 34**	**17 51**	**18 09**	**18 18**	**18 34**	.	**19 08**
Thatto Heath	dep	9	**17 37**	**17 53**	**18 12**	**18 21**	**18 37**	.....	**19 11**
St. Helens Central	arr	10	**17 40**	**17 57**	**18 15**	**18 24**	**18 40**	**18 53**	**19 14**
	dep	11	.....	.....	.....	**18 25**	.....	.....	.....
Cowley Hill (CM Option 7)	arr	12	.	.	.	**18 30**	.	.	.

TID			2J19AT	2F64FC	1N83FB	2F66FC	2J21AT	1C81LP	2F68FC
Departure Time			18 57	19 14	19 36	19 45	19 57	20 12	20 15
Origin			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
Destination			Cowley Hill	Wigan North Western	Blackpool North	Wigan North Western	Cowley Hill	Preston	Wigan North Western
TOC			NT	NT	NT	NT	NT	TP	NT
Day of Operation			EWD	EWD	SX	SX	EWD	SX	SX
Changes			New	New	New	New	New	New	New
Liverpool Lime Street	dep	1	**18 57**	**19 14**	**19 36**	**19 45**	**19 57**	**20 12**	**20 15**
Edge Hill	dep	2	**19 01**	**19 18**	.	**19 49**	**20 01**	.	**20 19**
Wavertree Technology Park	dep	3	**19 03**	**19 20**	.....	**19 51**	**20 03**	.....	**20 21**
Broad Green	dep	4	**19 06**	**19 23**	.	**19 54**	**20 06**	.	**20 24**
Roby	dep	5	**19 09**	**19 27**	.....	**19 57**	**20 09**	.....	**20 27**
Huyton	dep	6	**19 12**	**19 30**	**19 45**	**20 00**	**20 12**	.	**20 30**
Prescot	dep	7	**19 16**	**19 34**	.....	**20 04**	**20 16**	.....	**20 34**
Eccleston Park	dep	8	**19 18**	**19 36**	.	**20 06**	**20 18**	.	**20 36**
Thatto Heath	dep	9	**19 21**	**19 39**	.....	**20 09**	**20 21**	.....	**20 39**
St. Helens Central	arr	10	**19 24**	**19 42**	**19 53**	**20 12**	**20 24**	**20 28**	**20 42**
	dep	11	**19 25**	.....	.....	.....	**20 25**	.....	.....
Cowley Hill (CM Option 7)	arr	12	**19 30**	.	.	.	**20 30**	.	.

TID			1N84FB	2F50FT	2J23AT	1N85FB	2J25AT	1N86FB	2J27AT
Departure Time			20 36	20 46	20 57	21 15	21 57	22 15	22 57
Origin			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
Destination			Blackpool North	Wigan North Western	Cowley Hill	Blackpool North	Cowley Hill	Blackpool North	Cowley Hill
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			SX	SX	EWD	SX	EWD	SX	EWD
Changes			New	New	New	New	New	New	New
Liverpool Lime Street	dep	1	**20 36**	**20 46**	**20 57**	**21 15**	**21 57**	**22 15**	**22 57**
Edge Hill	dep	2	.	**20 50**	**21 01**	**21 19**	**22 01**	**22 19**	**23 01**
Wavertree Technology Park	dep	3	.....	**20 52**	**21 03**	**21 21**	**22 03**	**22 21**	**23 03**
Broad Green	dep	4	.	**20 55**	**21 06**	**21 24**	**22 06**	**22 24**	**23 06**
Roby	dep	5	.....	**20 58**	**21 09**	**21 27**	**22 09**	**22 27**	**23 09**
Huyton	dep	6	**20 45**	**21 01**	**21 12**	**21 30**	**22 12**	**22 30**	**23 12**
Prescot	dep	7	.....	**21 05**	**21 16**	**21 34**	**22 16**	**22 34**	**23 16**
Eccleston Park	dep	8	.	**21 07**	**21 18**	**21 36**	**22 18**	**22 36**	**23 18**
Thatto Heath	dep	9	.....	**21 10**	**21 21**	**21 39**	**22 21**	**22 39**	**23 21**
St. Helens Central	arr	10	**20 52**	**21 13**	**21 24**	**21 42**	**22 24**	**22 42**	**23 24**
	dep	11	.....	.....	**21 25**	.....	**22 25**	.....	**23 25**
Cowley Hill (CM Option 7)	arr	12	.	.	**21 30**	.	**22 30**	.	**23 30**

11.7.4. Southbound Timetable (Option 7A)

TID			2C00FA	2C90FA	2J92AT	2C01FA	1F00FA	2C02FA	2J94AT
Departure Time			05 35	05 51	06 16	06 21	06 03	06 52	07 16
Origin			Wigan North Western	Wigan North Western	Cowley Hill	Wigan North Western	Blackpool North	Wigan North Western	Cowley Hill
Destination			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			EWD	SX	EWD	EWD	SX	EWD	EWD
Changes			New	New	New	New	New	New	New
Cowley Hill (CM Option 7)	dep	1	.....	.....	**06 16**	.....	.....	.....	**07 16**
St. Helens Central	arr	2	.	.	**06 19**	.	.	.	**07 19**
	dep	3	**05 51**	**06 08**	**06 20**	**06 38**	**07 00**	**07 08**	**07 20**
Thatto Heath	dep	4	**05 55**	**06 11**	**06 23**	**06 42**	.	**07 12**	**07 23**
Eccleston Park	dep	5	**05 57**	**06 14**	**06 26**	**06 44**	.....	**07 14**	**07 26**
Prescot	dep	6	**06 00**	**06 16**	**06 28**	**06 47**	.	**07 17**	**07 28**
Huyton	dep	7	**06 04**	**06 23**	**06 32**	**06 51**	**07 07**	**07 23**	**07 32**
Roby	dep	8	**06 07**	**06 26**	**06 34**	**06 54**	.	**07 26**	**07 34**
Broad Green	dep	9	**06 10**	**06 29**	**06 37**	**06 57**	.....	**07 29**	**07 37**
Wavertree Technology Park	dep	10	**06 13**	**06 32**	**06 40**	**07 02**	.	**07 32**	**07 40**
Edge Hill	dep	11	**06 16**	**06 36**	**06 43**	**07 05**	.....	**07 35**	**07 43**
Liverpool Lime Street	arr	12	**06 22**	**06 40**	**06 49**	**07 11**	**07 19**	**07 39**	**07 49**

TID			1M89FA	2C03FA	1F02FA	2C04FA	2J96AT	2C05FA	2C06FA
Departure Time			07 05	07 21	07 03	07 51	08 16	08 21	08 47
Origin			Preston	Wigan North Western	Blackpool North	Wigan North Western	Cowley Hill	Wigan North Western	Wigan North Western
Destination			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
TOC			TP	NT	NT	NT	NT	NT	NT
Day of Operation			SX	SX	SX	EWD	EWD	EWD	EWD
Changes			New	New	New	New	New	New	New
Cowley Hill (CM Option 7)	dep	1	.....	.....	.....	.....	**08 16**	.....	.....
St. Helens Central	arr	2	.	.	.	.	**08 19**	.	.
	dep	3	**07 32**	**07 38**	**08 04**	**08 09**	**08 20**	**08 38**	**08 59**
Thatto Heath	dep	4	.	**07 42**	.	**08 13**	**08 23**	**08 42**	.
Eccleston Park	dep	5	.....	**07 44**	.....	**08 15**	**08 26**	**08 44**	.....
Prescot	dep	6	.	**07 47**	**08 10**	**08 18**	**08 28**	**08 47**	.
Huyton	dep	7	.....	**07 53**	**08 16**	**08 22**	**08 32**	**08 54**	**09 07**
Roby	dep	8	.	**07 57**	**08 18**	**08 25**	**08 34**	**08 57**	.
Broad Green	dep	9	.....	**08 00**	**08 21**	**08 28**	**08 37**	**09 00**	.....
Wavertree Technology Park	dep	10	.	**08 03**	.	**08 31**	**08 40**	**09 03**	.
Edge Hill	dep	11	.....	**08 06**	.....	**08 34**	**08 43**	**09 06**	.....
Liverpool Lime Street	arr	12	**07 59**	**08 10**	**08 31**	**08 40**	**08 49**	**09 12**	**09 19**

TID			1F04FC	2J98AT	2C07FA	2C08FA	1F06FA	2J00AT	2C09FA
Departure Time			08 04	09 16	09 21	09 47	09 03	10 16	10 21
Origin			Blackpool North	Cowley Hill	Wigan North Western	Wigan North Western	Blackpool North	Cowley Hill	Wigan North Western
Destination			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			EWD	EWD	EWD	EWD	SX	EWD	EWD
Changes			New	New	New	New	New	New	New
Cowley Hill (CM Option 7)	dep	1	.....	**09 16**	.....	.....	.....	**10 16**	.....
St. Helens Central	arr	2	.	**09 19**	.	.	.	**10 19**	.
	dep	3	**09 08**	**09 20**	**09 38**	**09 59**	**10 07**	**10 20**	**10 38**
Thatto Heath	dep	4	**09 11**	**09 23**	**09 42**	.	**10 11**	**10 23**	**10 42**
Eccleston Park	dep	5	**09 14**	**09 26**	**09 44**	.....	**10 13**	**10 26**	**10 44**
Prescot	dep	6	**09 16**	**09 28**	**09 47**	.	**10 15**	**10 28**	**10 47**
Huyton	dep	7	**09 22**	**09 32**	**09 53**	**10 07**	**10 22**	**10 32**	**10 51**
Roby	dep	8	**09 25**	**09 34**	**09 56**	.	**10 24**	**10 34**	**10 54**
Broad Green	dep	9	**09 28**	**09 37**	**09 59**	.....	**10 27**	**10 37**	**10 57**
Wavertree Technology Park	dep	10	**09 31**	**09 40**	**10 02**	.	**10 30**	**10 40**	**11 00**
Edge Hill	dep	11	**09 34**	**09 43**	**10 05**	.....	**10 33**	**10 43**	**11 03**
Liverpool Lime Street	arr	12	**09 40**	**09 49**	**10 10**	**10 19**	**10 38**	**10 49**	**11 09**

TID			1F08FA	2C10FA	2J02AT	2C11FA	1F03FA	2C12FA	2J04AT
Departure Time			10 03	10 51	11 16	11 21	11 03	11 51	12 16
Origin			Blackpool North	Wigan North Western	Cowley Hill	Wigan North Western	Blackpool North	Wigan North Western	Cowley Hill
Destination			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			EWD	SX	EWD	SX	SX	EWD	EWD
Changes			New	New	New	New	New	New	New
Cowley Hill (CM Option 7)	dep	1	.....	.....	**11 16**	.....	.....	.....	**12 16**
St. Helens Central	arr	2	.	.	**11 19**	.	.	.	**12 19**
	dep	3	**11 00**	**11 09**	**11 20**	**11 38**	**12 01**	**12 10**	**12 20**
Thatto Heath	dep	4	.	**11 13**	**11 23**	**11 42**	.	**12 14**	**12 23**
Eccleston Park	dep	5	.....	**11 15**	**11 26**	**11 44**	.....	**12 16**	**12 26**
Prescot	dep	6	.	**11 18**	**11 28**	**11 47**	.	**12 21**	**12 28**
Huyton	dep	7	**11 08**	**11 22**	**11 32**	**11 53**	**12 08**	**12 25**	**12 32**
Roby	dep	8	.	**11 25**	**11 34**	**11 56**	.	**12 28**	**12 34**
Broad Green	dep	9	.....	**11 28**	**11 37**	**11 59**	.....	**12 31**	**12 37**
Wavertree Technology Park	dep	10	.	**11 31**	**11 40**	**12 02**	.	**12 34**	**12 40**
Edge Hill	dep	11	.....	**11 34**	**11 43**	**12 05**	.....	**12 37**	**12 43**
Liverpool Lime Street	arr	12	**11 21**	**11 40**	**11 49**	**12 09**	**12 20**	**12 43**	**12 49**

TID			2C13FA	1F05FA	2C14FA	2J06AT	2C15FA	1F07FA	2C16FA
Departure Time			12 21	12 03	12 52	13 16	13 21	13 06	13 53
Origin			Wigan North Western	Blackpool North	Wigan North Western	Cowley Hill	Wigan North Western	Blackpool North	Wigan North Western
Destination			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			EWD	EWD	EWD	EWD	SX	EWD	SX
Changes			New	New	New	New	New	New	New
Cowley Hill (CM Option 7)	dep	1	.....	.....	.....	**13 16**	.....	.....	.....
St. Helens Central	arr	2	.	.	.	**13 19**	.	.	.
	dep	3	**12 38**	**13 00**	**13 09**	**13 20**	**13 38**	**14 03**	**14 11**
Thatto Heath	dep	4	**12 42**	.	**13 13**	**13 23**	**13 42**	.	**14 15**
Eccleston Park	dep	5	**12 44**	.....	**13 15**	**13 26**	**13 44**	.....	**14 17**
Prescot	dep	6	**12 47**	.	**13 18**	**13 28**	**13 47**	.	**14 19**
Huyton	dep	7	**12 51**	**13 08**	**13 22**	**13 32**	**13 51**	**14 11**	**14 24**
Roby	dep	8	**12 54**	.	**13 25**	**13 34**	**13 54**	.	**14 26**
Broad Green	dep	9	**12 57**	.....	**13 28**	**13 37**	**13 57**	.....	**14 29**
Wavertree Technology Park	dep	10	**13 00**	.	**13 31**	**13 40**	**14 00**	.	**14 32**
Edge Hill	dep	11	**13 03**	.....	**13 34**	**13 43**	**14 03**	.....	**14 35**
Liverpool Lime Street	arr	12	**13 09**	**13 21**	**13 40**	**13 49**	**14 09**	**14 22**	**14 41**

TID			2J08AT	2C17FA	1F09FA	2C18FA	2J10AT	2C19FA	1F01FA
Departure Time			14 16	14 21	14 03	14 52	15 16	15 21	15 05
Origin			Cowley Hill	Wigan North Western	Blackpool North	Wigan North Western	Cowley Hill	Wigan North Western	Blackpool North
Destination			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			EWD	EWD	EWD	EWD	EWD	EWD	SX
Changes			New	New	New	New	New	New	New
Cowley Hill (CM Option 7)	dep	1	**14 16**	.....	.....	.....	**15 16**	.....	.....
St. Helens Central	arr	2	**14 19**	.	.	.	**15 19**	.	.
	dep	3	**14 20**	**14 38**	**15 00**	**15 09**	**15 20**	**15 38**	**16 02**
Thatto Heath	dep	4	**14 23**	**14 42**	.	**15 13**	**15 23**	**15 42**	.
Eccleston Park	dep	5	**14 26**	**14 44**	.....	**15 15**	**15 26**	**15 44**	.....
Prescot	dep	6	**14 28**	**14 47**	.	**15 18**	**15 28**	**15 47**	.
Huyton	dep	7	**14 32**	**14 51**	**15 08**	**15 23**	**15 32**	**15 51**	**16 10**
Roby	dep	8	**14 34**	**14 54**	.	**15 26**	**15 34**	**15 54**	.
Broad Green	dep	9	**14 37**	**14 57**	.....	**15 29**	**15 37**	**15 57**	.....
Wavertree Technology Park	dep	10	**14 40**	**15 00**	.	**15 32**	**15 40**	**16 00**	.
Edge Hill	dep	11	**14 43**	**15 03**	.....	**15 35**	**15 43**	**16 03**	.....
Liverpool Lime Street	arr	12	**14 49**	**15 09**	**15 21**	**15 41**	**15 49**	**16 09**	**16 21**

TID			2C20FA	2J12AT	2C21FA	1F00FB	2C22FA	2J14AT	2C23FA
Departure Time			15 51	16 16	16 21	16 05	16 56	17 16	17 21
Origin			Wigan North Western	Cowley Hill	Wigan North Western	Blackpool North	Wigan North Western	Cowley Hill	Wigan North Western
Destination			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			EWD	EWD	EWD	SX	SX	EWD	SX
Changes			New	New	New	New	New	New	New
Cowley Hill (CM Option 7)	dep	1	.....	**16 16**	.....	.....	.....	**17 16**	.....
St. Helens Central	arr	2	.	**16 19**	.	.	.	**17 19**	.
	dep	3	**16 10**	**16 20**	**16 38**	**17 04**	**17 13**	**17 20**	**17 38**
Thatto Heath	dep	4	**16 14**	**16 23**	**16 42**	.	**17 17**	**17 23**	**17 42**
Eccleston Park	dep	5	**16 16**	**16 26**	**16 44**	.....	**17 19**	**17 26**	**17 44**
Prescot	dep	6	**16 18**	**16 28**	**16 47**	.	**17 22**	**17 28**	**17 47**
Huyton	dep	7	**16 25**	**16 32**	**16 51**	**17 11**	**17 28**	**17 32**	**17 53**
Roby	dep	8	**16 27**	**16 34**	**16 54**	.	**17 31**	**17 34**	**17 56**
Broad Green	dep	9	**16 30**	**16 37**	**16 57**	.....	**17 34**	**17 37**	**17 59**
Wavertree Technology Park	dep	10	**16 33**	**16 40**	**17 00**	.	**17 37**	**17 40**	**18 02**
Edge Hill	dep	11	**16 36**	**16 43**	**17 03**	.....	**17 40**	**17 43**	**18 05**
Liverpool Lime Street	arr	12	**16 41**	**16 49**	**17 09**	**17 27**	**17 44**	**17 49**	**18 09**

TID			2C24FA	1F02FB	2J16AT	2C25FA	1F04FB	2C26FA	2J18AT
Departure Time			17 38	17 03	18 16	18 21	18 03	18 52	19 16
Origin			Wigan North Western	Blackpool North	Cowley Hill	Wigan North Western	Blackpool North	Wigan North Western	Cowley Hill
Destination			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			SX	SX	EWD	SX	EWD	SX	EWD
Changes			New	New	New	New	New	New	New
Cowley Hill (CM Option 7)	dep	1	.....	.....	**18 16**	.....	.....	.....	**19 16**
St. Helens Central	arr	2	.	.	**18 19**	.	.	.	**19 19**
	dep	3	**17 54**	**18 03**	**18 20**	**18 38**	**19 00**	**19 09**	**19 20**
Thatto Heath	dep	4	**17 58**	.	**18 23**	**18 42**	.	**19 13**	**19 23**
Eccleston Park	dep	5	**18 00**	.....	**18 26**	**18 44**	.....	**19 15**	**19 26**
Prescot	dep	6	**18 02**	.	**18 28**	**18 47**	.	**19 18**	**19 28**
Huyton	dep	7	**18 07**	**18 11**	**18 32**	**18 53**	**19 07**	**19 23**	**19 32**
Roby	dep	8	**18 09**	.	**18 34**	**18 56**	.	**19 26**	**19 34**
Broad Green	dep	9	.....	**18 14**	**18 37**	**18 59**	.....	**19 29**	**19 37**
Wavertree Technology Park	dep	10	**18 13**	.	**18 40**	**19 02**	.	**19 32**	**19 40**
Edge Hill	dep	11	.....	.....	**18 43**	**19 05**	.....	**19 35**	**19 43**
Liverpool Lime Street	arr	12	**18 21**	**18 24**	**18 49**	**19 09**	**19 19**	**19 41**	**19 49**

TID			2C27FA	1F06FB	2C28FA	2J20AT	2C29FA	1F08FB	2C30FA
Departure Time			19 21	19 05	19 54	20 16	20 21	20 03	20 52
Origin			Wigan North Western	Blackpool North	Wigan North Western	Cowley Hill	Wigan North Western	Blackpool North	Wigan North Western
Destination			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			SX	SX	SX	EWD	SX	FSX	SX
Changes			New	New	New	New	New	New	New
Cowley Hill (CM Option 7)	dep	1	.....	.....	.....	**20 16**	.....	.....	.....
St. Helens Central	arr	2	.	.	.	**20 19**	.	.	.
	dep	3	**19 38**	**20 02**	**20 11**	**20 20**	**20 38**	**21 00**	**21 09**
Thatto Heath	dep	4	**19 42**	.	**20 15**	**20 23**	**20 42**	.	**21 13**
Eccleston Park	dep	5	**19 44**	.....	**20 17**	**20 26**	**20 44**	.....	**21 15**
Prescot	dep	6	**19 47**	.	**20 20**	**20 28**	**20 47**	.	**21 18**
Huyton	dep	7	**19 53**	**20 09**	**20 25**	**20 32**	**20 51**	**21 07**	**21 22**
Roby	dep	8	**19 56**	.	**20 28**	**20 34**	**20 54**	.	**21 25**
Broad Green	dep	9	**19 59**	.....	**20 31**	**20 37**	**20 57**	.....	**21 28**
Wavertree Technology Park	dep	10	**20 02**	.	**20 34**	**20 40**	**21 00**	.	**21 31**
Edge Hill	dep	11	**20 05**	.....	**20 38**	**20 43**	**21 03**	.....	**21 34**
Liverpool Lime Street	arr	12	**20 10**	**20 21**	**20 45**	**20 49**	**21 12**	**21 19**	**21 40**

TID			2J22AT	2C31FA	1F09FB	2C32FA	2J24AT	2C32FA	2J26AT
Departure Time			21 16	21 21	21 01	22 02	22 16	22 02	23 16
Origin			Cowley Hill	Wigan North Western	Blackpool North	Wigan North Western	Cowley Hill	Wigan North Western	Cowley Hill
Destination			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			EWD	SX	SX	SX	EWD	SX	EWD
Changes			New	New	New	New	New	New	New
Cowley Hill (CM Option 7)	dep	1	**21 16**	.....	.....	.....	**22 16**	.....	**23 16**
St. Helens Central	arr	2	**21 19**	.	.	.	**22 19**	.	**23 19**
	dep	3	**21 20**	**21 38**	**22 04**	**22 19**	**22 20**	.....	**23 20**
Thatto Heath	dep	4	**21 23**	**21 42**	.	**22 23**	**22 23**	.	**23 23**
Eccleston Park	dep	5	**21 26**	**21 44**	.....	**22 25**	**22 26**	.....	**23 26**
Prescot	dep	6	**21 28**	**21 47**	.	**22 28**	**22 28**	<---	**23 28**
Huyton	dep	7	**21 32**	**21 53**	**22 12**	**22 32**	**22 32**	**22 32**	**23 32**
Roby	dep	8	**21 34**	**21 56**	**22 14**	--->	**22 34**	**22 35**	**23 34**
Broad Green	dep	9	**21 37**	**21 59**	**22 17**	.....	**22 37**	**22 38**	**23 37**
Wavertree Technology Park	dep	10	**21 40**	**22 02**	**22 20**	.	**22 40**	**22 41**	**23 40**
Edge Hill	dep	11	**21 43**	**22 05**	**22 24**	.....	**22 43**	**22 44**	**23 43**
Liverpool Lime Street	arr	12	**21 49**	**22 10**	**22 30**	.	**22 49**	**22 50**	**23 49**

11.7.5. Northbound Timetable (Option 7B)

TID			2F66FN	2F68FN	2J93AT	2F50FA	1N80FA	2F52FA	2J95AT
Departure Time			05 42	05 46	05 57	06 16	06 36	06 45	06 57
Origin			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
Destination			Wigan North Western	Wigan North Western	Cowley Hill	Wigan North Western	Blackpool North	Wigan North Western	Cowley Hill
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			SX	EWD	EWD	EWD	SX	SX	EWD
Changes			New	New	New	New	New	New	New
Liverpool Lime Street	dep	1	**05 42**	**05 46**	**05 57**	**06 16**	**06 36**	**06 45**	**06 57**
Edge Hill	arr	2	.	**05 50**	**06 01**	**06 20**	.	**06 49**	**07 01**
	dep	3	.....	**05 50**	**06 01**	**06 20**	.....	**06 49**	**07 01**
Wavertree Technology Park	arr	4	.	**05 52**	**06 03**	**06 22**	.	**06 51**	**07 03**
	dep	5	.....	**05 52**	**06 03**	**06 22**	.....	**06 52**	**07 03**
Broad Green	arr	6	.	**05 55**	**06 06**	**06 25**	.	**06 55**	**07 06**
	dep	7	.....	**05 55**	**06 06**	**06 25**	.....	**06 55**	**07 06**
Roby	arr	8	.	**05 58**	**06 09**	**06 28**	.	**06 58**	**07 09**
	dep	9	.....	**05 58**	**06 09**	**06 28**	.....	**06 58**	**07 09**
Huyton	arr	10	**05 52**	**06 00**	**06 11**	**06 30**	**06 45**	**07 00**	**07 11**
	dep	11	**05 52**	**06 01**	**06 12**	**06 31**	**06 45**	**07 00**	**07 12**
Prescot	arr	12	.	**06 05**	**06 16**	**06 35**	.	**07 04**	**07 16**
	dep	13	.....	**06 05**	**06 16**	**06 35**	.....	**07 04**	**07 16**
Eccleston Park	arr	14	.	**06 07**	**06 18**	**06 37**	.	**07 06**	**07 18**
	dep	15	.....	**06 07**	**06 18**	**06 37**	.....	**07 06**	**07 18**
Thatto Heath	arr	16	.	**06 10**	**06 21**	**06 40**	.	**07 09**	**07 21**
	dep	17	.....	**06 10**	**06 21**	**06 40**	.....	**07 09**	**07 21**
St. Helens Central	arr	18	**05 59**	**06 13**	**06 24**	**06 43**	**06 53**	**07 12**	**07 24**
	dep	19	.....	.....	**06 25**	.....	.....	.....	**07 25**
Cowley Hill (CM Option 7)	arr	20	.	.	**06 30**	.	.	.	**07 30**

TID			2F54FA	1N81FA	2F56FA	2J97AT	2F58FA	1N82FA	2F60FA
Departure Time			07 15	07 36	07 43	07 57	08 16	08 36	08 45
Origin			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
Destination			Wigan North Western	Blackpool North	Wigan North Western	Cowley Hill	Wigan North Western	Blackpool North	Wigan North Western
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			SX	SX	SX	EWD	SX	EWD	EWD
Changes			New	New	New	New	New	New	New
Liverpool Lime Street	dep	1	**07 15**	**07 36**	**07 43**	**07 57**	**08 16**	**08 36**	**08 45**
Edge Hill	arr	2	**07 19**	.	**07 47**	**08 01**	**08 20**	.	**08 49**
	dep	3	**07 19**	.....	**07 47**	**08 01**	**08 20**	.....	**08 49**
Wavertree Technology Park	arr	4	**07 21**	.	**07 49**	**08 03**	**08 22**	.	**08 51**
	dep	5	**07 21**	.....	**07 49**	**08 03**	**08 22**	.....	**08 51**
Broad Green	arr	6	**07 24**	.	**07 52**	**08 06**	**08 25**	.	**08 54**
	dep	7	**07 24**	.....	**07 52**	**08 06**	**08 25**	.....	**08 54**
Roby	arr	8	**07 27**	.	**07 55**	**08 09**	**08 28**	.	**08 57**
	dep	9	**07 27**	.....	**07 55**	**08 09**	**08 28**	.....	**08 57**
Huyton	arr	10	**07 29**	**07 45**	**07 57**	**08 11**	**08 30**	**08 45**	**08 59**
	dep	11	**07 30**	**07 45**	**07 58**	**08 12**	**08 31**	**08 45**	**09 00**
Prescot	arr	12	**07 34**	.	**08 03**	**08 16**	**08 35**	.	**09 04**
	dep	13	**07 34**	.....	**08 04**	**08 16**	**08 35**	.....	**09 04**
Eccleston Park	arr	14	**07 36**	.	**08 06**	**08 18**	**08 37**	.	**09 06**
	dep	15	**07 36**	.....	**08 06**	**08 18**	**08 37**	.....	**09 06**
Thatto Heath	arr	16	**07 39**	.	**08 09**	**08 21**	**08 40**	.	**09 09**
	dep	17	**07 39**	.....	**08 09**	**08 21**	**08 40**	.....	**09 09**
St. Helens Central	arr	18	**07 42**	**07 52**	**08 12**	**08 24**	**08 43**	**08 53**	**09 12**
	dep	19	.....	.....	.....	**08 25**	.....	.....	.....
Cowley Hill (CM Option 7)	arr	20	.	.	.	**08 30**	.	.	.

TID			2J99AT	2F62FA	1N83FA	2F64FA	2J01AT	2F66FA	1N84FA
Departure Time			08 57	09 15	09 36	09 45	09 57	10 15	10 36
Origin			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
Destination			Cowley Hill	Wigan North Western	Blackpool North	Wigan North Western	Cowley Hill	Wigan North Western	Blackpool North
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			EWD	EWD	EWD	EWD	EWD	EWD	EWD
Changes			New	New	New	New	New	New	New
Liverpool Lime Street	dep	1	**08 57**	**09 15**	**09 36**	**09 45**	**09 57**	**10 15**	**10 36**
Edge Hill	arr	2	**09 01**	**09 19**	.	**09 49**	**10 01**	**10 19**	.
	dep	3	**09 01**	**09 19**	.....	**09 49**	**10 01**	**10 19**	.....
Wavertree Technology Park	arr	4	**09 03**	**09 21**	.	**09 51**	**10 03**	**10 21**	.
	dep	5	**09 03**	**09 21**	.....	**09 51**	**10 03**	**10 21**	.....
Broad Green	arr	6	**09 06**	**09 24**	.	**09 54**	**10 06**	**10 24**	.
	dep	7	**09 06**	**09 24**	.....	**09 54**	**10 06**	**10 24**	.....
Roby	arr	8	**09 09**	**09 27**	.	**09 57**	**10 09**	**10 27**	.
	dep	9	**09 09**	**09 27**	.....	**09 57**	**10 09**	**10 27**	.....
Huyton	arr	10	**09 11**	**09 29**	**09 45**	**09 59**	**10 11**	**10 29**	**10 45**
	dep	11	**09 12**	**09 30**	**09 45**	**10 00**	**10 12**	**10 30**	**10 45**
Prescot	arr	12	**09 16**	**09 34**	.	**10 04**	**10 16**	**10 34**	.
	dep	13	**09 16**	**09 34**	.....	**10 04**	**10 16**	**10 34**	.....
Eccleston Park	arr	14	**09 18**	**09 36**	.	**10 06**	**10 18**	**10 36**	.
	dep	15	**09 18**	**09 36**	.....	**10 06**	**10 18**	**10 36**	.....
Thatto Heath	arr	16	**09 21**	**09 39**	.	**10 09**	**10 21**	**10 39**	.
	dep	17	**09 21**	**09 39**	.....	**10 09**	**10 21**	**10 39**	.....
St. Helens Central	arr	18	**09 24**	**09 42**	**09 53**	**10 12**	**10 24**	**10 42**	**10 53**
	dep	19	**09 25**	.....	.....	.....	**10 25**	.....	.....
Cowley Hill (CM Option 7)	arr	20	**09 30**	.	.	.	**10 30**	.	.

TID			2F68FA	2J03AT	2F50FB	1N85FA	2F52FB	2J05AT	1S57LP
Departure Time			10 45	10 57	11 15	11 36	11 45	11 57	12 12
Origin			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
Destination			Wigan North Western	Cowley Hill	Wigan North Western	Blackpool North	Wigan North Western	Cowley Hill	Glasgow Central High Level
TOC			NT	NT	NT	NT	NT	NT	TP
Day of Operation			EWD	EWD	EWD	EWD	SX	EWD	SX
Changes			New	New	New	New	New	New	New
Liverpool Lime Street	dep	1	**10 45**	**10 57**	**11 15**	**11 36**	**11 45**	**11 57**	**12 12**
Edge Hill	arr	2	**10 49**	**11 01**	**11 19**	.	**11 49**	**12 01**	.
	dep	3	**10 49**	**11 01**	**11 19**	.....	**11 49**	**12 01**	.....
Wavertree Technology Park	arr	4	**10 51**	**11 03**	**11 21**	.	**11 51**	**12 03**	.
	dep	5	**10 51**	**11 03**	**11 21**	.....	**11 51**	**12 03**	.....
Broad Green	arr	6	**10 54**	**11 06**	**11 24**	.	**11 54**	**12 06**	.
	dep	7	**10 54**	**11 06**	**11 24**	.....	**11 54**	**12 06**	.....
Roby	arr	8	**10 57**	**11 09**	**11 27**	.	**11 57**	**12 09**	.
	dep	9	**10 57**	**11 09**	**11 27**	.....	**11 57**	**12 09**	.....
Huyton	arr	10	**10 59**	**11 11**	**11 29**	**11 45**	**11 59**	**12 11**	.
	dep	11	**11 00**	**11 12**	**11 30**	**11 45**	**12 00**	**12 12**	.....
Prescot	arr	12	**11 04**	**11 16**	**11 34**	.	**12 04**	**12 16**	.
	dep	13	**11 04**	**11 16**	**11 34**	.....	**12 04**	**12 16**	.....
Eccleston Park	arr	14	**11 06**	**11 18**	**11 36**	.	**12 06**	**12 18**	.
	dep	15	**11 06**	**11 18**	**11 36**	.....	**12 06**	**12 18**	.....
Thatto Heath	arr	16	**11 09**	**11 21**	**11 39**	.	**12 09**	**12 21**	.
	dep	17	**11 09**	**11 21**	**11 39**	.....	**12 09**	**12 21**	.....
St. Helens Central	arr	18	**11 12**	**11 24**	**11 42**	**11 53**	**12 12**	**12 24**	**12 30**
	dep	19	.....	**11 25**	.....	.....	.....	**12 25**	.....
Cowley Hill (CM Option 7)	arr	20	.	**11 30**	.	.	.	**12 30**	.

TID			2F54FB	1N86FA	2F56FB	2J07AT	2F58FB	1N87FA	2F60FB
Departure Time			12 15	12 37	12 45	12 57	13 15	13 37	13 45
Origin			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
Destination			Wigan North Western	Blackpool North	Wigan North Western	Cowley Hill	Wigan North Western	Blackpool North	Wigan North Western
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			SX	EWD	SX	EWD	EWD	SX	SX
Changes			New	New	New	New	New	New	New
Liverpool Lime Street	dep	1	**12 15**	**12 37**	**12 45**	**12 57**	**13 15**	**13 37**	**13 45**
Edge Hill	arr	2	**12 19**	.	**12 49**	**13 01**	**13 19**	.	**13 49**
	dep	3	**12 19**	.....	**12 49**	**13 01**	**13 19**	.....	**13 49**
Wavertree Technology Park	arr	4	**12 21**	.	**12 51**	**13 03**	**13 21**	.	**13 51**
	dep	5	**12 21**	.....	**12 51**	**13 03**	**13 21**	.....	**13 51**
Broad Green	arr	6	**12 25**	.	**12 54**	**13 06**	**13 24**	.	**13 54**
	dep	7	**12 25**	.....	**12 54**	**13 06**	**13 24**	.....	**13 54**
Roby	arr	8	**12 28**	.	**12 57**	**13 09**	**13 27**	.	**13 57**
	dep	9	**12 28**	.....	**12 57**	**13 09**	**13 27**	.....	**13 57**
Huyton	arr	10	**12 30**	**12 45**	**12 59**	**13 11**	**13 29**	**13 45**	**13 59**
	dep	11	**12 30**	**12 45**	**13 00**	**13 12**	**13 30**	**13 45**	**14 00**
Prescot	arr	12	**12 34**	.	**13 04**	**13 16**	**13 34**	.	**14 04**
	dep	13	**12 34**	.....	**13 04**	**13 16**	**13 34**	.....	**14 04**
Eccleston Park	arr	14	**12 37**	.	**13 06**	**13 18**	**13 36**	.	**14 06**
	dep	15	**12 37**	.....	**13 06**	**13 18**	**13 36**	.....	**14 06**
Thatto Heath	arr	16	**12 39**	.	**13 09**	**13 21**	**13 39**	.	**14 09**
	dep	17	**12 39**	.....	**13 09**	**13 21**	**13 39**	.....	**14 09**
St. Helens Central	arr	18	**12 43**	**12 53**	**13 12**	**13 24**	**13 42**	**13 53**	**14 12**
	dep	19	.....	.....	.....	**13 25**	.....	.....	.....
Cowley Hill (CM Option 7)	arr	20	.	.	.	**13 30**	.	.	.

TID			2J09AT	2F62FB	1N88FA	2F64FB	2J11AT	2F66FB	1N89FA
Departure Time			13 57	14 15	14 37	14 45	14 57	15 15	15 37
Origin			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
Destination			Cowley Hill	Wigan North Western	Blackpool North	Wigan North Western	Cowley Hill	Wigan North Western	Blackpool North
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			EWD	SX	SX	SX	EWD	SX	EWD
Changes			New	New	New	New	New	New	New
Liverpool Lime Street	dep	1	**13 57**	**14 15**	**14 37**	**14 45**	**14 57**	**15 15**	**15 37**
Edge Hill	arr	2	**14 01**	**14 19**	.	**14 49**	**15 01**	**15 19**	.
	dep	3	**14 01**	**14 19**	.....	**14 49**	**15 01**	**15 19**	.....
Wavertree Technology Park	arr	4	**14 03**	**14 21**	.	**14 51**	**15 03**	**15 21**	.
	dep	5	**14 03**	**14 21**	.....	**14 51**	**15 03**	**15 21**	.....
Broad Green	arr	6	**14 06**	**14 24**	.	**14 54**	**15 06**	**15 24**	.
	dep	7	**14 06**	**14 24**	.....	**14 54**	**15 06**	**15 24**	.....
Roby	arr	8	**14 09**	**14 27**	.	**14 57**	**15 09**	**15 27**	.
	dep	9	**14 09**	**14 27**	.....	**14 57**	**15 09**	**15 27**	.....
Huyton	arr	10	**14 11**	**14 29**	**14 46**	**14 59**	**15 11**	**15 29**	**15 46**
	dep	11	**14 12**	**14 30**	**14 46**	**15 00**	**15 12**	**15 30**	**15 46**
Prescot	arr	12	**14 16**	**14 34**	.	**15 04**	**15 16**	**15 34**	.
	dep	13	**14 16**	**14 34**	.....	**15 04**	**15 16**	**15 34**	.....
Eccleston Park	arr	14	**14 18**	**14 36**	.	**15 06**	**15 18**	**15 36**	.
	dep	15	**14 18**	**14 36**	.....	**15 06**	**15 18**	**15 36**	.....
Thatto Heath	arr	16	**14 21**	**14 39**	.	**15 09**	**15 21**	**15 39**	.
	dep	17	**14 21**	**14 39**	.....	**15 09**	**15 21**	**15 39**	.....
St. Helens Central	arr	18	**14 24**	**14 42**	**14 53**	**15 12**	**15 24**	**15 42**	**15 53**
	dep	19	**14 25**	.....	.....	.....	**15 25**	.....	.....
Cowley Hill (CM Option 7)	arr	20	**14 30**	.	.	.	**15 30**	.	.

TID			2F68FB	2J13AT	2F50FC	1N80FB	2F52FC	2J15AT	2N99FN
Departure Time			15 45	15 57	16 15	16 36	16 45	16 57	17 09
Origin			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
Destination			Wigan North Western	Cowley Hill	Wigan North Western	Blackpool North	Wigan North Western	Cowley Hill	Preston
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			EWD	EWD	EWD	EWD	EWD	EWD	EWD
Changes			New	New	New	New	New	New	New
Liverpool Lime Street	dep	1	**15 45**	**15 57**	**16 15**	**16 36**	**16 45**	**16 57**	**17 09**
Edge Hill	arr	2	**15 49**	**16 01**	**16 19**	.	**16 49**	**17 01**	.
	dep	3	**15 49**	**16 01**	**16 19**	.....	**16 49**	**17 01**	.....
Wavertree Technology Park	arr	4	**15 51**	**16 03**	**16 21**	.	**16 51**	**17 03**	.
	dep	5	**15 51**	**16 03**	**16 21**	.....	**16 51**	**17 03**	.....
Broad Green	arr	6	**15 54**	**16 06**	**16 24**	.	**16 54**	**17 06**	.
	dep	7	**15 54**	**16 06**	**16 24**	.....	**16 54**	**17 06**	.....
Roby	arr	8	**15 57**	**16 09**	**16 27**	.	**16 57**	**17 09**	.
	dep	9	**15 57**	**16 09**	**16 27**	.....	**16 57**	**17 09**	.....
Huyton	arr	10	**15 59**	**16 11**	**16 29**	**16 45**	**16 59**	**17 11**	**17 18**
	dep	11	**16 00**	**16 12**	**16 30**	**16 45**	**17 00**	**17 12**	**17 18**
Prescot	arr	12	**16 04**	**16 16**	**16 34**	.	**17 04**	**17 16**	**17 22**
	dep	13	**16 04**	**16 16**	**16 34**	.....	**17 04**	**17 16**	**17 22**
Eccleston Park	arr	14	**16 06**	**16 18**	**16 36**	.	**17 06**	**17 18**	**17 24**
	dep	15	**16 06**	**16 18**	**16 36**	.....	**17 06**	**17 18**	**17 24**
Thatto Heath	arr	16	**16 09**	**16 21**	**16 39**	.	**17 09**	**17 21**	**17 27**
	dep	17	**16 09**	**16 21**	**16 39**	.....	**17 09**	**17 21**	**17 27**
St. Helens Central	arr	18	**16 12**	**16 24**	**16 42**	**16 53**	**17 12**	**17 24**	**17 30**
	dep	19	.....	**16 25**	.....	.....	.....	**17 25**	.....
Cowley Hill (CM Option 7)	arr	20	.	**16 30**	.	.	.	**17 30**	.

TID			2F54FC	1N81FB	2F56FC	2J17AT	2F60FC	1N82FB	2F62FC
Departure Time			17 13	17 36	17 48	17 57	18 13	18 35	18 47
Origin			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
Destination			Wigan North Western	Blackpool North	Wigan North Western	Cowley Hill	Wigan North Western	Blackpool North	Wigan North Western
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			EWD	SX	SX	EWD	SX	SX	EWD
Changes			New	New	New	New	New	New	New
Liverpool Lime Street	dep	1	**17 13**	**17 36**	**17 48**	**17 57**	**18 13**	**18 35**	**18 47**
Edge Hill	arr	2	**17 17**	.	**17 52**	**18 01**	**18 17**	.	**18 51**
	dep	3	**17 17**	.....	**17 52**	**18 01**	**18 17**	.....	**18 51**
Wavertree Technology Park	arr	4	**17 19**	.	**17 54**	**18 03**	**18 19**	.	**18 53**
	dep	5	**17 19**	.....	**17 54**	**18 03**	**18 19**	.....	**18 53**
Broad Green	arr	6	**17 22**	.	**17 57**	**18 06**	**18 22**	.	**18 56**
	dep	7	**17 22**	.....	**17 57**	**18 06**	**18 22**	.....	**18 56**
Roby	arr	8	**17 25**	.	**18 00**	**18 09**	**18 25**	.	**18 59**
	dep	9	**17 25**	.....	**18 00**	**18 09**	**18 25**	.....	**18 59**
Huyton	arr	10	**17 27**	**17 44**	**18 02**	**18 11**	**18 27**	**18 46**	**19 01**
	dep	11	**17 28**	**17 44**	**18 03**	**18 12**	**18 28**	**18 46**	**19 02**
Prescot	arr	12	**17 32**	**17 48**	**18 07**	**18 16**	**18 32**	.	**19 06**
	dep	13	**17 32**	**17 48**	**18 07**	**18 16**	**18 32**	.....	**19 06**
Eccleston Park	arr	14	**17 34**	**17 51**	**18 09**	**18 18**	**18 34**	.	**19 08**
	dep	15	**17 34**	**17 51**	**18 09**	**18 18**	**18 34**	.....	**19 08**
Thatto Heath	arr	16	**17 37**	**17 53**	**18 12**	**18 21**	**18 37**	.	**19 11**
	dep	17	**17 37**	**17 53**	**18 12**	**18 21**	**18 37**	.....	**19 11**
St. Helens Central	arr	18	**17 40**	**17 57**	**18 15**	**18 24**	**18 40**	**18 53**	**19 14**
	dep	19	.....	.....	.....	**18 25**	.....	.....	.....
Cowley Hill (CM Option 7)	arr	20	.	.	.	**18 30**	.	.	.

TID			2J19AT	2F64FC	1N83FB	2F66FC	2J21AT	1C81LP	2F68FC
Departure Time			18 57	19 14	19 36	19 45	19 57	20 12	20 15
Origin			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
Destination			Cowley Hill	Wigan North Western	Blackpool North	Wigan North Western	Cowley Hill	Preston	Wigan North Western
TOC			NT	NT	NT	NT	NT	TP	NT
Day of Operation			EWD	EWD	SX	SX	EWD	SX	SX
Changes			New	New	New	New	New	New	New
Liverpool Lime Street	dep	1	**18 57**	**19 14**	**19 36**	**19 45**	**19 57**	**20 12**	**20 15**
Edge Hill	arr	2	**19 01**	**19 18**	.	**19 49**	**20 01**	.	**20 19**
	dep	3	**19 01**	**19 18**	.....	**19 49**	**20 01**	.....	**20 19**
Wavertree Technology Park	arr	4	**19 03**	**19 20**	.	**19 51**	**20 03**	.	**20 21**
	dep	5	**19 03**	**19 20**	.....	**19 51**	**20 03**	.....	**20 21**
Broad Green	arr	6	**19 06**	**19 23**	.	**19 54**	**20 06**	.	**20 24**
	dep	7	**19 06**	**19 23**	.....	**19 54**	**20 06**	.....	**20 24**
Roby	arr	8	**19 09**	**19 27**	.	**19 57**	**20 09**	.	**20 27**
	dep	9	**19 09**	**19 27**	.....	**19 57**	**20 09**	.....	**20 27**
Huyton	arr	10	**19 11**	**19 29**	**19 45**	**19 59**	**20 11**	.	**20 29**
	dep	11	**19 12**	**19 30**	**19 45**	**20 00**	**20 12**	.....	**20 30**
Prescot	arr	12	**19 16**	**19 34**	.	**20 04**	**20 16**	.	**20 34**
	dep	13	**19 16**	**19 34**	.....	**20 04**	**20 16**	.....	**20 34**
Eccleston Park	arr	14	**19 18**	**19 36**	.	**20 06**	**20 18**	.	**20 36**
	dep	15	**19 18**	**19 36**	.....	**20 06**	**20 18**	.....	**20 36**
Thatto Heath	arr	16	**19 21**	**19 39**	.	**20 09**	**20 21**	.	**20 39**
	dep	17	**19 21**	**19 39**	.....	**20 09**	**20 21**	.....	**20 39**
St. Helens Central	arr	18	**19 24**	**19 42**	**19 53**	**20 12**	**20 24**	**20 28**	**20 42**
	dep	19	**19 25**	.....	.....	.....	**20 25**	.....	.....
Cowley Hill (CM Option 7)	arr	20	**19 30**	.	.	.	**20 30**	.	.

TID			1N84FB	2F50FT	2J23AT	1N85FB	2J25AT	1N86FB	2J27AT
Departure Time			20 36	20 46	20 57	21 15	21 57	22 15	22 57
Origin			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
Destination			Blackpool North	Wigan North Western	Cowley Hill	Blackpool North	Cowley Hill	Blackpool North	Cowley Hill
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			SX	SX	EWD	SX	EWD	SX	EWD
Changes			New	New	New	New	New	New	New
Liverpool Lime Street	dep	1	**20 36**	**20 46**	**20 57**	**21 15**	**21 57**	**22 15**	**22 57**
Edge Hill	arr	2	.	**20 50**	**21 01**	**21 19**	**22 01**	**22 19**	**23 01**
	dep	3	.....	**20 50**	**21 01**	**21 19**	**22 01**	**22 19**	**23 01**
Wavertree Technology Park	arr	4	.	**20 52**	**21 03**	**21 21**	**22 03**	**22 21**	**23 03**
	dep	5	.....	**20 52**	**21 03**	**21 21**	**22 03**	**22 21**	**23 03**
Broad Green	arr	6	.	**20 55**	**21 06**	**21 24**	**22 06**	**22 24**	**23 06**
	dep	7	.....	**20 55**	**21 06**	**21 24**	**22 06**	**22 24**	**23 06**
Roby	arr	8	.	**20 58**	**21 09**	**21 27**	**22 09**	**22 27**	**23 09**
	dep	9	.....	**20 58**	**21 09**	**21 27**	**22 09**	**22 27**	**23 09**
Huyton	arr	10	**20 45**	**21 00**	**21 11**	**21 29**	**22 11**	**22 29**	**23 11**
	dep	11	**20 45**	**21 01**	**21 12**	**21 30**	**22 12**	**22 30**	**23 12**
Prescot	arr	12	.	**21 05**	**21 16**	**21 34**	**22 16**	**22 34**	**23 16**
	dep	13	.....	**21 05**	**21 16**	**21 34**	**22 16**	**22 34**	**23 16**
Eccleston Park	arr	14	.	**21 07**	**21 18**	**21 36**	**22 18**	**22 36**	**23 18**
	dep	15	.....	**21 07**	**21 18**	**21 36**	**22 18**	**22 36**	**23 18**
Thatto Heath	arr	16	.	**21 10**	**21 21**	**21 39**	**22 21**	**22 39**	**23 21**
	dep	17	.....	**21 10**	**21 21**	**21 39**	**22 21**	**22 39**	**23 21**
St. Helens Central	arr	18	**20 52**	**21 13**	**21 24**	**21 42**	**22 24**	**22 42**	**23 24**
	dep	19	.....	.....	**21 25**	.....	**22 25**	.....	**23 25**
Cowley Hill (CM Option 7)	arr	20	.	.	**21 30**	.	**22 30**	.	**23 30**

11.7.6. Southbound Timetable (Option 7B)

TID			2J92AT	2C00FA	2C90FA	2C01FA	2J94AT	1F00FA	2C02FA
Departure Time			05 45	05 35	05 51	06 21	06 45	06 03	06 52
Origin			Cowley Hill	Wigan North Western	Wigan North Western	Wigan North Western	Cowley Hill	Blackpool North	Wigan North Western
Destination			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			EWD	EWD	SX	EWD	EWD	SX	EWD
Changes			New	New	New	New	New	New	New
Cowley Hill (CM Option 7)	dep	1	**05 45**	.....	.....	.....	**06 45**	.....	.....
St. Helens Central	arr	2	**05 48**	.	.	.	**06 48**	.	.
	dep	3	**05 49**	**05 51**	**06 08**	**06 38**	**06 49**	**07 00**	**07 08**
Thatto Heath	arr	4	**05 52**	**05 55**	**06 11**	**06 41**	**06 52**	.	**07 12**
	dep	5	**05 52**	**05 55**	**06 11**	**06 42**	**06 52**	.....	**07 12**
Eccleston Park	arr	6	**05 55**	**05 57**	**06 14**	**06 44**	**06 55**	.	**07 14**
	dep	7	**05 55**	**05 57**	**06 14**	**06 44**	**06 55**	.....	**07 14**
Prescot	arr	8	**05 57**	**05 59**	**06 16**	**06 46**	**06 57**	.	**07 16**
	dep	9	**05 57**	**06 00**	**06 16**	**06 47**	**06 57**	.....	**07 17**
Huyton	arr	10	**06 01**	**06 04**	**06 22**	**06 51**	**07 01**	**07 07**	**07 23**
	dep	11	**06 01**	**06 04**	**06 23**	**06 51**	**07 01**	**07 07**	**07 23**
Roby	arr	12	**06 03**	**06 06**	**06 25**	**06 53**	**07 03**	.	**07 25**
	dep	13	**06 03**	**06 07**	**06 26**	**06 54**	**07 03**	.....	**07 26**
Broad Green	arr	14	**06 06**	**06 10**	**06 29**	**06 57**	**07 06**	.	**07 29**
	dep	15	**06 06**	**06 10**	**06 29**	**06 57**	**07 06**	.....	**07 29**
Wavertree Technology Park	arr	16	**06 09**	**06 13**	**06 32**	**07 02**	**07 09**	.	**07 32**
	dep	17	**06 09**	**06 13**	**06 32**	**07 02**	**07 09**	.....	**07 32**
Edge Hill	arr	18	**06 12**	**06 16**	**06 35**	**07 05**	**07 12**	.	**07 35**
	dep	19	**06 12**	**06 16**	**06 36**	**07 05**	**07 12**	.....	**07 35**
Liverpool Lime Street	arr	20	**06 18**	**06 22**	**06 40**	**07 11**	**07 18**	**07 19**	**07 39**

TID			1M89FA	2C03FA	2J96AT	1F02FA	2C04FA	2C05FA	2J98AT
Departure Time			07 05	07 21	07 45	07 03	07 51	08 21	08 45
Origin			Preston	Wigan North Western	Cowley Hill	Blackpool North	Wigan North Western	Wigan North Western	Cowley Hill
Destination			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
TOC			TP	NT	NT	NT	NT	NT	NT
Day of Operation			SX	SX	EWD	SX	EWD	EWD	EWD
Changes			New	New	New	New	New	New	New
Cowley Hill (CM Option 7)	dep	1	.....	.....	**07 45**	.....	.....	.....	**08 45**
St. Helens Central	arr	2	.	.	**07 48**	.	.	.	**08 48**
	dep	3	**07 32**	**07 38**	**07 49**	**08 04**	**08 09**	**08 38**	**08 49**
Thatto Heath	arr	4	.	**07 41**	**07 52**	.	**08 13**	**08 41**	**08 52**
	dep	5	.....	**07 42**	**07 52**	.....	**08 13**	**08 42**	**08 52**
Eccleston Park	arr	6	.	**07 44**	**07 55**	.	**08 15**	**08 44**	**08 55**
	dep	7	.....	**07 44**	**07 55**	.....	**08 15**	**08 44**	**08 55**
Prescot	arr	8	.	**07 46**	**07 57**	**08 10**	**08 17**	**08 46**	**08 57**
	dep	9	.....	**07 47**	**07 57**	**08 10**	**08 18**	**08 47**	**08 57**
Huyton	arr	10	.	**07 53**	**08 01**	**08 16**	**08 22**	**08 54**	**09 01**
	dep	11	.....	**07 53**	**08 01**	**08 16**	**08 22**	**08 54**	**09 01**
Roby	arr	12	.	**07 55**	**08 03**	**08 18**	**08 24**	**08 56**	**09 03**
	dep	13	.....	**07 57**	**08 03**	**08 18**	**08 25**	**08 57**	**09 03**
Broad Green	arr	14	.	**08 00**	**08 06**	**08 21**	**08 28**	**09 00**	**09 06**
	dep	15	.....	**08 00**	**08 06**	**08 21**	**08 28**	**09 00**	**09 06**
Wavertree Technology Park	arr	16	.	**08 03**	**08 09**	.	**08 31**	**09 03**	**09 09**
	dep	17	.....	**08 03**	**08 09**	.....	**08 31**	**09 03**	**09 09**
Edge Hill	arr	18	.	**08 06**	**08 12**	.	**08 34**	**09 06**	**09 12**
	dep	19	.....	**08 06**	**08 12**	.....	**08 34**	**09 06**	**09 12**
Liverpool Lime Street	arr	20	**07 59**	**08 10**	**08 18**	**08 31**	**08 40**	**09 12**	**09 18**

TID			2C06FA	1F04FC	2C07FA	2J00AT	2C08FA	1F06FA	2C09FA
Departure Time			08 47	08 04	09 21	09 45	09 47	09 03	10 21
Origin			Wigan North Western	Blackpool North	Wigan North Western	Cowley Hill	Wigan North Western	Blackpool North	Wigan North Western
Destination			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			EWD	EWD	EWD	EWD	EWD	SX	EWD
Changes			New	New	New	New	New	New	New
Cowley Hill (CM Option 7)	dep	1	.....	.....	.....	**09 45**	.....	.....	.....
St. Helens Central	arr	2	.	.	.	**09 48**	.	.	.
	dep	3	**08 59**	**09 08**	**09 38**	**09 49**	**09 59**	**10 07**	**10 38**
Thatto Heath	arr	4	.	**09 11**	**09 41**	**09 52**	.	**10 11**	**10 41**
	dep	5	.....	**09 11**	**09 42**	**09 52**	.....	**10 11**	**10 42**
Eccleston Park	arr	6	.	**09 14**	**09 44**	**09 55**	.	**10 13**	**10 44**
	dep	7	.....	**09 14**	**09 44**	**09 55**	.....	**10 13**	**10 44**
Prescot	arr	8	.	**09 16**	**09 46**	**09 57**	.	**10 15**	**10 46**
	dep	9	.....	**09 16**	**09 47**	**09 57**	.....	**10 15**	**10 47**
Huyton	arr	10	**09 07**	**09 22**	**09 53**	**10 01**	**10 07**	**10 21**	**10 51**
	dep	11	**09 07**	**09 22**	**09 53**	**10 01**	**10 07**	**10 22**	**10 51**
Roby	arr	12	.	**09 25**	**09 55**	**10 03**	.	**10 24**	**10 53**
	dep	13	.....	**09 25**	**09 56**	**10 03**	.....	**10 24**	**10 54**
Broad Green	arr	14	.	**09 28**	**09 59**	**10 06**	.	**10 27**	**10 57**
	dep	15	.....	**09 28**	**09 59**	**10 06**	.....	**10 27**	**10 57**
Wavertree Technology Park	arr	16	.	**09 31**	**10 02**	**10 09**	.	**10 30**	**11 00**
	dep	17	.....	**09 31**	**10 02**	**10 09**	.....	**10 30**	**11 00**
Edge Hill	arr	18	.	**09 34**	**10 05**	**10 12**	.	**10 33**	**11 03**
	dep	19	.....	**09 34**	**10 05**	**10 12**	.....	**10 33**	**11 03**
Liverpool Lime Street	arr	20	**09 19**	**09 40**	**10 10**	**10 18**	**10 19**	**10 38**	**11 09**

TID			2J02AT	1F08FA	2C10FA	2C11FA	2J04AT	1F03FA	2C12FA
Departure Time			10 45	10 03	10 51	11 21	11 45	11 03	11 51
Origin			Cowley Hill	Blackpool North	Wigan North Western	Wigan North Western	Cowley Hill	Blackpool North	Wigan North Western
Destination			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			EWD	EWD	SX	SX	EWD	SX	EWD
Changes			New	New	New	New	New	New	New
Cowley Hill (CM Option 7)	dep	1	**10 45**	.....	.....	.....	**11 45**	.....	.....
St. Helens Central	arr	2	**10 48**	.	.	.	**11 48**	.	.
	dep	3	**10 49**	**11 00**	**11 09**	**11 38**	**11 49**	**12 01**	**12 10**
Thatto Heath	arr	4	**10 52**	.	**11 12**	**11 41**	**11 52**	.	**12 13**
	dep	5	**10 52**	.....	**11 13**	**11 42**	**11 52**	.....	**12 14**
Eccleston Park	arr	6	**10 55**	.	**11 15**	**11 44**	**11 55**	.	**12 16**
	dep	7	**10 55**	.....	**11 15**	**11 44**	**11 55**	.....	**12 16**
Prescot	arr	8	**10 57**	.	**11 17**	**11 46**	**11 57**	.	**12 20**
	dep	9	**10 57**	.....	**11 18**	**11 47**	**11 57**	.....	**12 21**
Huyton	arr	10	**11 01**	**11 08**	**11 22**	**11 53**	**12 01**	**12 08**	**12 25**
	dep	11	**11 01**	**11 08**	**11 22**	**11 53**	**12 01**	**12 08**	**12 25**
Roby	arr	12	**11 03**	.	**11 24**	**11 55**	**12 03**	.	**12 27**
	dep	13	**11 03**	.....	**11 25**	**11 56**	**12 03**	.....	**12 28**
Broad Green	arr	14	**11 06**	.	**11 28**	**11 59**	**12 06**	.	**12 31**
	dep	15	**11 06**	.....	**11 28**	**11 59**	**12 06**	.....	**12 31**
Wavertree Technology Park	arr	16	**11 09**	.	**11 31**	**12 02**	**12 09**	.	**12 34**
	dep	17	**11 09**	.....	**11 31**	**12 02**	**12 09**	.....	**12 34**
Edge Hill	arr	18	**11 12**	.	**11 34**	**12 05**	**12 12**	.	**12 37**
	dep	19	**11 12**	.....	**11 34**	**12 05**	**12 12**	.....	**12 37**
Liverpool Lime Street	arr	20	**11 18**	**11 21**	**11 40**	**12 09**	**12 18**	**12 20**	**12 43**

TID			2C13FA	2J06AT	1F05FA	2C14FA	2C15FA	2J08AT	1F07FA
Departure Time			12 21	12 45	12 03	12 52	13 21	13 45	13 06
Origin			Wigan North Western	Cowley Hill	Blackpool North	Wigan North Western	Wigan North Western	Cowley Hill	Blackpool North
Destination			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			EWD	EWD	EWD	EWD	SX	EWD	EWD
Changes			New	New	New	New	New	New	New
Cowley Hill (CM Option 7)	dep	1	.....	**12 45**	.....	.....	.....	**13 45**	.....
St. Helens Central	arr	2	.	**12 48**	.	.	.	**13 48**	.
	dep	3	**12 38**	**12 49**	**13 00**	**13 09**	**13 38**	**13 49**	**14 03**
Thatto Heath	arr	4	**12 41**	**12 52**	.	**13 12**	**13 41**	**13 52**	.
	dep	5	**12 42**	**12 52**	.....	**13 13**	**13 42**	**13 52**	.....
Eccleston Park	arr	6	**12 44**	**12 55**	.	**13 15**	**13 44**	**13 55**	.
	dep	7	**12 44**	**12 55**	.....	**13 15**	**13 44**	**13 55**	.....
Prescot	arr	8	**12 46**	**12 57**	.	**13 17**	**13 46**	**13 57**	.
	dep	9	**12 47**	**12 57**	.....	**13 18**	**13 47**	**13 57**	.....
Huyton	arr	10	**12 51**	**13 01**	**13 08**	**13 22**	**13 51**	**14 01**	**14 11**
	dep	11	**12 51**	**13 01**	**13 08**	**13 22**	**13 51**	**14 01**	**14 11**
Roby	arr	12	**12 53**	**13 03**	.	**13 24**	**13 53**	**14 03**	.
	dep	13	**12 54**	**13 03**	.....	**13 25**	**13 54**	**14 03**	.....
Broad Green	arr	14	**12 57**	**13 06**	.	**13 28**	**13 57**	**14 06**	.
	dep	15	**12 57**	**13 06**	.....	**13 28**	**13 57**	**14 06**	.....
Wavertree Technology Park	arr	16	**13 00**	**13 09**	.	**13 31**	**14 00**	**14 09**	.
	dep	17	**13 00**	**13 09**	.....	**13 31**	**14 00**	**14 09**	.....
Edge Hill	arr	18	**13 03**	**13 12**	.	**13 34**	**14 03**	**14 12**	.
	dep	19	**13 03**	**13 12**	.....	**13 34**	**14 03**	**14 12**	.....
Liverpool Lime Street	arr	20	**13 09**	**13 18**	**13 21**	**13 40**	**14 09**	**14 18**	**14 22**

TID			2C16FA	2C17FA	2J10AT	1F09FA	2C18FA	2C19FA	2J12AT
Departure Time			13 53	14 21	14 45	14 03	14 52	15 21	15 45
Origin			Wigan North Western	Wigan North Western	Cowley Hill	Blackpool North	Wigan North Western	Wigan North Western	Cowley Hill
Destination			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			SX	EWD	EWD	EWD	EWD	EWD	EWD
Changes			New	New	New	New	New	New	New
Cowley Hill (CM Option 7)	dep	1	.....	.....	**14 45**	.....	.....	.....	**15 45**
St. Helens Central	arr	2	.	.	**14 48**	.	.	.	**15 48**
	dep	3	**14 11**	**14 38**	**14 49**	**15 00**	**15 09**	**15 38**	**15 49**
Thatto Heath	arr	4	**14 15**	**14 41**	**14 52**	.	**15 12**	**15 41**	**15 52**
	dep	5	**14 15**	**14 42**	**14 52**	.....	**15 13**	**15 42**	**15 52**
Eccleston Park	arr	6	**14 17**	**14 44**	**14 55**	.	**15 15**	**15 44**	**15 55**
	dep	7	**14 17**	**14 44**	**14 55**	.....	**15 15**	**15 44**	**15 55**
Prescot	arr	8	**14 19**	**14 46**	**14 57**	.	**15 17**	**15 46**	**15 57**
	dep	9	**14 19**	**14 47**	**14 57**	.....	**15 18**	**15 47**	**15 57**
Huyton	arr	10	**14 23**	**14 51**	**15 01**	**15 08**	**15 23**	**15 51**	**16 01**
	dep	11	**14 24**	**14 51**	**15 01**	**15 08**	**15 23**	**15 51**	**16 01**
Roby	arr	12	**14 26**	**14 53**	**15 03**	.	**15 25**	**15 53**	**16 03**
	dep	13	**14 26**	**14 54**	**15 03**	.....	**15 26**	**15 54**	**16 03**
Broad Green	arr	14	**14 29**	**14 57**	**15 06**	.	**15 29**	**15 57**	**16 06**
	dep	15	**14 29**	**14 57**	**15 06**	.....	**15 29**	**15 57**	**16 06**
Wavertree Technology Park	arr	16	**14 32**	**15 00**	**15 09**	.	**15 32**	**16 00**	**16 09**
	dep	17	**14 32**	**15 00**	**15 09**	.....	**15 32**	**16 00**	**16 09**
Edge Hill	arr	18	**14 35**	**15 03**	**15 12**	.	**15 35**	**16 03**	**16 12**
	dep	19	**14 35**	**15 03**	**15 12**	.....	**15 35**	**16 03**	**16 12**
Liverpool Lime Street	arr	20	**14 41**	**15 09**	**15 18**	**15 21**	**15 41**	**16 09**	**16 18**

TID			1F01FA	2C20FA	2C21FA	2J14AT	1F00FB	2C22FA	2C23FA
Departure Time			15 05	15 51	16 21	16 45	16 05	16 56	17 21
Origin			Blackpool North	Wigan North Western	Wigan North Western	Cowley Hill	Blackpool North	Wigan North Western	Wigan North Western
Destination			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			SX	EWD	EWD	EWD	SX	SX	SX
Changes			New	New	New	New	New	New	New
Cowley Hill (CM Option 7)	dep	1	.....	.....	.....	**16 45**	.....	.....	.....
St. Helens Central	arr	2	.	.	.	**16 48**	.	.	.
	dep	3	**16 02**	**16 10**	**16 38**	**16 49**	**17 04**	**17 13**	**17 38**
Thatto Heath	arr	4	.	**16 14**	**16 41**	**16 52**	.	**17 16**	**17 41**
	dep	5	.....	**16 14**	**16 42**	**16 52**	.....	**17 17**	**17 42**
Eccleston Park	arr	6	.	**16 16**	**16 44**	**16 55**	.	**17 19**	**17 44**
	dep	7	.....	**16 16**	**16 44**	**16 55**	.....	**17 19**	**17 44**
Prescot	arr	8	.	**16 18**	**16 46**	**16 57**	.	**17 21**	**17 46**
	dep	9	.....	**16 18**	**16 47**	**16 57**	.....	**17 22**	**17 47**
Huyton	arr	10	**16 10**	**16 24**	**16 51**	**17 01**	**17 11**	**17 28**	**17 53**
	dep	11	**16 10**	**16 25**	**16 51**	**17 01**	**17 11**	**17 28**	**17 53**
Roby	arr	12	.	**16 27**	**16 53**	**17 03**	.	**17 30**	**17 55**
	dep	13	.....	**16 27**	**16 54**	**17 03**	.....	**17 31**	**17 56**
Broad Green	arr	14	.	**16 30**	**16 57**	**17 06**	.	**17 34**	**17 59**
	dep	15	.....	**16 30**	**16 57**	**17 06**	.....	**17 34**	**17 59**
Wavertree Technology Park	arr	16	.	**16 33**	**17 00**	**17 09**	.	**17 37**	**18 02**
	dep	17	.....	**16 33**	**17 00**	**17 09**	.....	**17 37**	**18 02**
Edge Hill	arr	18	.	**16 36**	**17 03**	**17 12**	.	**17 40**	**18 05**
	dep	19	.....	**16 36**	**17 03**	**17 12**	.....	**17 40**	**18 05**
Liverpool Lime Street	arr	20	**16 21**	**16 41**	**17 09**	**17 18**	**17 27**	**17 44**	**18 09**

TID			2J16AT	2C24FA	1F02FB	2C25FA	2J18AT	1F04FB	2C26FA
Departure Time			17 45	17 38	17 03	18 21	18 45	18 03	18 52
Origin			Cowley Hill	Wigan North Western	Blackpool North	Wigan North Western	Cowley Hill	Blackpool North	Wigan North Western
Destination			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			EWD	SX	SX	SX	EWD	EWD	SX
Changes			New	New	New	New	New	New	New
Cowley Hill (CM Option 7)	dep	1	**17 45**	.....	.....	.....	**18 45**	.....	.....
St. Helens Central	arr	2	**17 48**	.	.	.	**18 48**	.	.
	dep	3	**17 49**	**17 54**	**18 03**	**18 38**	**18 49**	**19 00**	**19 09**
Thatto Heath	arr	4	**17 52**	**17 58**	.	**18 41**	**18 52**	.	**19 12**
	dep	5	**17 52**	**17 58**	.....	**18 42**	**18 52**	.....	**19 13**
Eccleston Park	arr	6	**17 55**	**18 00**	.	**18 44**	**18 55**	.	**19 15**
	dep	7	**17 55**	**18 00**	.....	**18 44**	**18 55**	.....	**19 15**
Prescot	arr	8	**17 57**	**18 02**	.	**18 46**	**18 57**	.	**19 17**
	dep	9	**17 57**	**18 02**	.....	**18 47**	**18 57**	.....	**19 18**
Huyton	arr	10	**18 01**	**18 06**	**18 11**	**18 53**	**19 01**	**19 07**	**19 23**
	dep	11	**18 01**	**18 07**	**18 11**	**18 53**	**19 01**	**19 07**	**19 23**
Roby	arr	12	**18 03**	**18 09**	.	**18 55**	**19 03**	.	**19 25**
	dep	13	**18 03**	**18 09**	.....	**18 56**	**19 03**	.....	**19 26**
Broad Green	arr	14	**18 06**	.	**18 14**	**18 59**	**19 06**	.	**19 29**
	dep	15	**18 06**	.....	**18 14**	**18 59**	**19 06**	.....	**19 29**
Wavertree Technology Park	arr	16	**18 09**	**18 13**	.	**19 02**	**19 09**	.	**19 32**
	dep	17	**18 09**	**18 13**	.....	**19 02**	**19 09**	.....	**19 32**
Edge Hill	arr	18	**18 12**	.	.	**19 05**	**19 12**	.	**19 35**
	dep	19	**18 12**	.....	.....	**19 05**	**19 12**	.....	**19 35**
Liverpool Lime Street	arr	20	**18 18**	**18 21**	**18 24**	**19 09**	**19 18**	**19 19**	**19 41**

TID			2C27FA	2J20AT	1F06FB	2C28FA	2C29FA	2J22AT	1F08FB
Departure Time			19 21	19 45	19 05	19 54	20 21	20 45	20 03
Origin			Wigan North Western	Cowley Hill	Blackpool North	Wigan North Western	Wigan North Western	Cowley Hill	Blackpool North
Destination			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			SX	EWD	SX	SX	SX	EWD	FSX
Changes			New	New	New	New	New	New	New
Cowley Hill (CM Option 7)	dep	1	.....	**19 45**	.....	.....	.....	**20 45**	.....
St. Helens Central	arr	2	.	**19 48**	.	.	.	**20 48**	.
	dep	3	**19 38**	**19 49**	**20 02**	**20 11**	**20 38**	**20 49**	**21 00**
Thatto Heath	arr	4	**19 41**	**19 52**	.	**20 14**	**20 41**	**20 52**	.
	dep	5	**19 42**	**19 52**	.....	**20 15**	**20 42**	**20 52**	.....
Eccleston Park	arr	6	**19 44**	**19 55**	.	**20 17**	**20 44**	**20 55**	.
	dep	7	**19 44**	**19 55**	.....	**20 17**	**20 44**	**20 55**	.....
Prescot	arr	8	**19 46**	**19 57**	.	**20 19**	**20 46**	**20 57**	.
	dep	9	**19 47**	**19 57**	.....	**20 20**	**20 47**	**20 57**	.....
Huyton	arr	10	**19 53**	**20 01**	**20 09**	**20 25**	**20 51**	**21 01**	**21 07**
	dep	11	**19 53**	**20 01**	**20 09**	**20 25**	**20 51**	**21 01**	**21 07**
Roby	arr	12	**19 55**	**20 03**	.	**20 27**	**20 53**	**21 03**	.
	dep	13	**19 56**	**20 03**	.....	**20 28**	**20 54**	**21 03**	.....
Broad Green	arr	14	**19 59**	**20 06**	.	**20 31**	**20 57**	**21 06**	.
	dep	15	**19 59**	**20 06**	.....	**20 31**	**20 57**	**21 06**	.....
Wavertree Technology Park	arr	16	**20 02**	**20 09**	.	**20 34**	**21 00**	**21 09**	.
	dep	17	**20 02**	**20 09**	.....	**20 34**	**21 00**	**21 09**	.....
Edge Hill	arr	18	**20 05**	**20 12**	.	**20 37**	**21 03**	**21 12**	.
	dep	19	**20 05**	**20 12**	.....	**20 38**	**21 03**	**21 12**	.....
Liverpool Lime Street	arr	20	**20 10**	**20 18**	**20 21**	**20 45**	**21 12**	**21 18**	**21 19**

TID			2C30FA	2C31FA	2J24AT	1F09FB	2C32FA	2J26AT	2C33FA
Departure Time			20 52	21 21	21 45	21 01	22 02	22 45	22 18
Origin			Wigan North Western	Wigan North Western	Cowley Hill	Blackpool North	Wigan North Western	Cowley Hill	Blackpool North
Destination			Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML	Liverpool Lime Street HL/ML
TOC			NT	NT	NT	NT	NT	NT	NT
Day of Operation			SX	SX	EWD	SX	SX	EWD	SX
Changes			New	New	New	New	New	New	New
Cowley Hill (CM Option 7)	dep	1	.....	.....	**21 45**	.....	.....	**22 45**	.....
St. Helens Central	arr	2	.	.	**21 48**	.	.	**22 48**	.
	dep	3	**21 09**	**21 38**	**21 49**	**22 04**	**22 19**	**22 49**	**23 21**
Thatto Heath	arr	4	**21 12**	**21 41**	**21 52**	.	**22 23**	**22 52**	**23 24**
	dep	5	**21 13**	**21 42**	**21 52**	.....	**22 23**	**22 52**	**23 25**
Eccleston Park	arr	6	**21 15**	**21 44**	**21 55**	.	**22 25**	**22 55**	**23 27**
	dep	7	**21 15**	**21 44**	**21 55**	.....	**22 25**	**22 55**	**23 27**
Prescot	arr	8	**21 17**	**21 46**	**21 57**	.	**22 27**	**22 57**	**23 29**
	dep	9	**21 18**	**21 47**	**21 57**	.....	**22 28**	**22 57**	**23 30**
Huyton	arr	10	**21 22**	**21 53**	**22 01**	**22 11**	**22 32**	**23 01**	**23 34**
	dep	11	**21 22**	**21 53**	**22 01**	**22 12**	**22 32**	**23 01**	**23 34**
Roby	arr	12	**21 24**	**21 55**	**22 03**	**22 14**	**22 34**	**23 03**	**23 36**
	dep	13	**21 25**	**21 56**	**22 03**	**22 14**	**22 35**	**23 03**	**23 37**
Broad Green	arr	14	**21 28**	**21 59**	**22 06**	**22 17**	**22 38**	**23 06**	**23 40**
	dep	15	**21 28**	**21 59**	**22 06**	**22 17**	**22 38**	**23 06**	**23 40**
Wavertree Technology Park	arr	16	**21 31**	**22 02**	**22 09**	**22 20**	**22 41**	**23 09**	**23 43**
	dep	17	**21 31**	**22 02**	**22 09**	**22 20**	**22 41**	**23 09**	**23 43**
Edge Hill	arr	18	**21 34**	**22 05**	**22 12**	**22 23**	**22 44**	**23 12**	**23 46**
	dep	19	**21 34**	**22 05**	**22 12**	**22 24**	**22 44**	**23 12**	**23 46**
Liverpool Lime Street	arr	20	**21 40**	**22 10**	**22 18**	**22 30**	**22 50**	**23 18**	**23 52**

12. Appendix E: Demand Forecasting Report

12.1. Introduction

St Helen's Borough Council have developed proposals for a new railway station at Carr Mill. The station will be located on the Liverpool to Wigan line, located to the north of St Helens Town Centre, as shown in Figure 12-1.

Figure 12-1 - Proposed locations of Carr Mill railway station

Part of this work has included the development of a Strategic Outline Business Case (SOBC), and a major constituent of this is the production of demand and revenue forecasts for the new station. Demand has been forecast using a trip-end model which includes a station choice element.

The demand forecasts are only as accurate as the models which have been developed. The *Station Usage and Demand Forecasts for Newly Opened Railway Line and Stations* written in 2010 on behalf of the Department for Transport suggests, given the absence of formal guidance, that demand forecasts for stations are reasonably accurate if they are within +/-20% of observed demand. Some of the main reasons for forecasting inaccuracies include:

- Incorrect train service assumptions;
- Misunderstanding the 'function' (e.g. park and ride) of the station; and
- Failure to represent local factors.

Note that our modelling specifically takes account of current and future train service specifications through the modelled timetable. Our demand forecasts are sensitive to the timetable modelled at each station, and this can be seen in the modelling of various sensitivity tests. Should the service pattern at the stations be amended that these demand forecasts would be subject to change and would need to be revisited.

This report is a comprehensive revision of the Demand Forecasting Report produced for the Outline Business Case. This has included updates to the baseline service pattern to reflect changes to the timetable since 2018/19.

12.2. Existing Situation

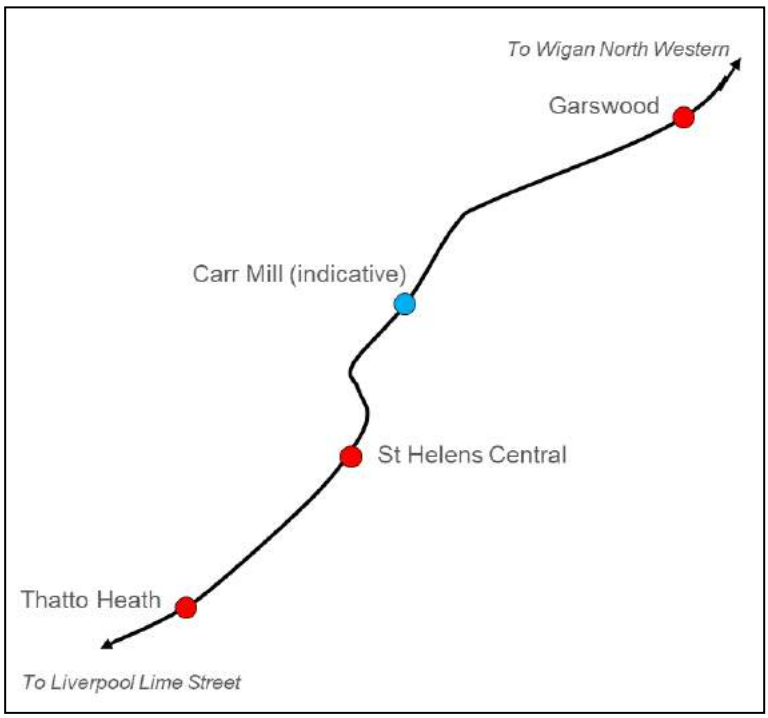
12.2.1. Introduction

This section provides a short overview of the existing situation on the routes which serve Carr Mill. Note that demand and revenue data for the Outline Business Case dates from 2018/19 (Year to September 2019) and is based on the December 2019 timetable. Due to various factors such as timetable disruption in May 2018 and the demand impacts and timetable changes relating to the Covid-19 pandemic, the demand forecasts have therefore used this baseline as the most appropriate on which to build future demand forecasts.

12.2.2. Train Services

The proposed station at Carr Mill lies on the Liverpool to Wigan line, located to the north of St Helens Central.

Figure 12-2 - Lines serving Carr Mill



The proposed station at Carr Mill is located on the railway between Liverpool Lime Street, St Helens Central and Wigan North Western. On this section of route three services operated under the December 2019 timetables as follows:

2tph Liverpool Lime Street – Wigan North Western, calling at all stations. This service is operated by Northern.

1 tph Liverpool Lime Street – Blackpool North, semi-fast service calling at Huyton, St Helens Central, Wigan North Western, Euxton Balshaw Lane, Leyland, Preston, Kirkham and Wesham, Poulton-le-Fylde and Blackpool North. This service is operated by Northern.

4 trains per day calling at Liverpool Lime Street, Wigan North Western, Preston, Lancaster, Penrith, Carlisle and Glasgow Central..

The existing service pattern is shown in Table 12-1.

Table 12-1 – December 2019 hourly calling pattern on the Liverpool – Wigan Line

Origin	Liverpool Lime Street	Liverpool Lime Street	Liverpool Lime Street	Liverpool Lime Street
Liverpool Lime Street	X	X	X	X
Edge Hill	X	X		
Wavertree Technology Park	X	X		
Broad Green	X	X		
Roby	X	X		
Huyton	X	X	X	

Prescot	X	X		
Eccleston Park	X	X		
Thatto Heath	X	X		
St. Helens Central*	X	X	X	X
Garswood	X	X	X	
Bryn	X	X		
Wigan North Western	X	X	X	X
Destination	Wigan North Western	Wigan North Western	Blackpool North	Glasgow Central*

Source: December 2019 timetable. *Liverpool-Glasgow service run three times per day with an additional Liverpool-Preston service. Some trains call additionally at St Helens Central

12.2.3. Existing Demand and Revenue

Existing demand and revenue is sourced from the Northern version of MOIRA (OR23) rail demand forecasting program This has been sourced from Transport for the North (TfN) and models all stations served by Northern operator with station outside that area aggregated to groups.

Data from MOIRA allows us to analyse existing demand patterns by origin, ticket type and by destination. Data has been analysed at those stations which are adjacent to the proposed site at Carr Mill. 2018/19 data has been taken as the baseline in order to exclude any demand impacts associated with the Covid-19 pandemic.

Demand and revenue data by station is shown in Table 12-2 and by origin-destination in Table 12-3

Table 12-2 - Total demand and revenue at potential comparator stations

Station	Total Demand	Total Revenue
Bryn	173,750	£580,300
Garswood	209,500	£557,400
St. Helens Central	720,000	£2,817,900
Thatto Heath	154,200	£446,100
Eccleston Park	85,000	£275,300

Source: MOIRA OR23 data for 2018/19

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Table 12-3 - Demand breakdown for potential comparator stations

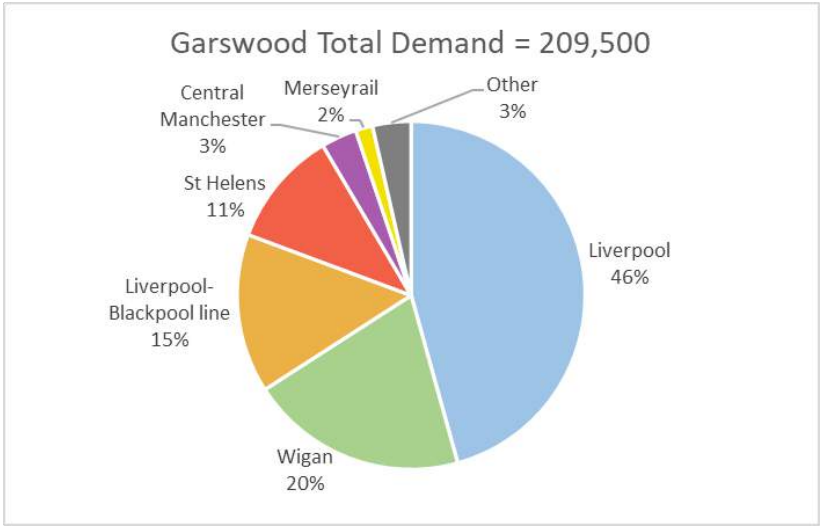
Location	Bryn	Garswood	St. Helens Central	Thatto Heath	Eccleston Park
Liverpool Lime Street	27.4%	45.7%	45.5%	62.6%	72.6%
Wigan North Western	27.9%	20.2%	7.4%	6.0%	3.3%
St Helens Central	7.2%	10.9%	-	8.9%	3.7%
Central Manchester	14.6%	3.3%	1.7%	1.0%	0.8%

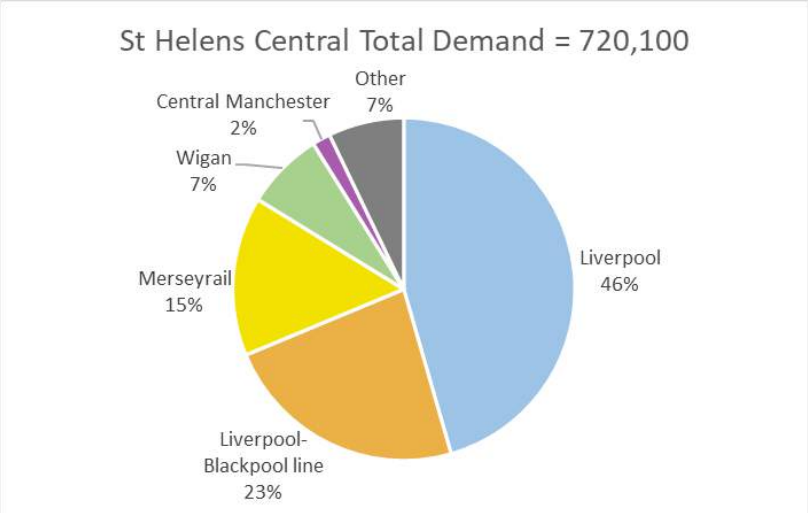
Liverpool – Blackpool Line	12.8%	14.8%	23.2%	13.4%	8.3%
Merseyrail	1.3%	1.6%	15.0%	4.2%	7.1%
Other	8.8%	3.6%	7.2%	3.8%	4.3%
Comments	*Top 10 flows account for 88% of demand.* *Wigan and then Liverpool the dominant flows.* *Central Manchester more attractive than from other stations, given Bryn is within Greater Manchester.*	*Top 10 flows account for over 90% of demand.* *Liverpool by far the dominant flow.* *Wigan more attractive than St Helens - noting that Garswood is within St Helens Borough and Wigan slightly further away.*	*Top 10 flows account for only 72% of demand.* *Liverpool by far the dominant flow.* *Some reasonable flows to regional destinations not served by direct train - e.g Manchester, London, stations on the Merseyrail network.*	*Top 10 flows account for 89% of demand.* *Liverpool by far the dominant flow, much more so than from Garswood and St Helens.* *St Helens and Wigan still the second and third highest flows, but attractiveness of St Helens has increased and Wigan has decreased with distance. Other reasonably large flows are typically served by stopping service.*	*Top 10 flows account for 90% of demand.* *Liverpool by far the dominant flow.* *Remaining demand spread thinly across a range of stations.*

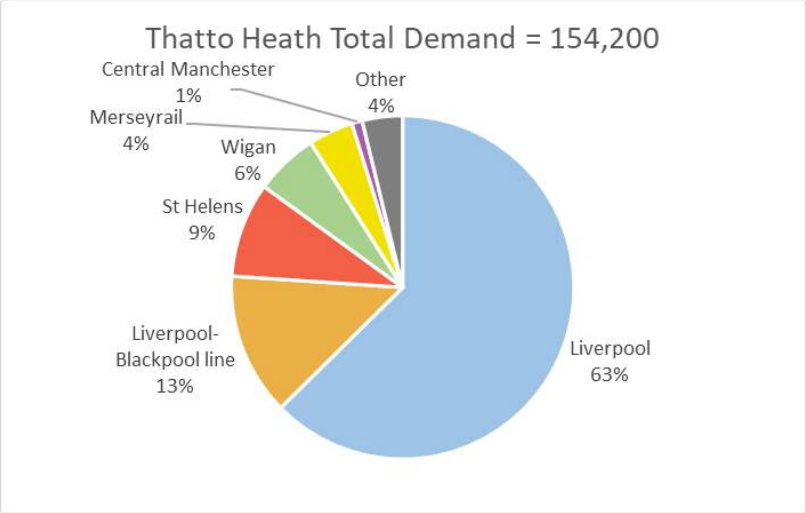
Source: MOIRA OR23 data for 2018/19

CONFIDENTIAL AND/OR COMMERCIALLY SENSITIVE INFORMATION BELONGING TO ONE OR MORE TRAIN COMPANIES – NOT DISCLOSABLE UNDER FOIA

Figure 12-3 - Breakdown of demand from nearby stations







This indicates that typically Liverpool is the dominant destination from stations surrounding Carr Mill. The attractiveness of both Wigan and St. Helens varies significantly according to distance from the relevant station, whilst closer towards Wigan journeys towards Central Manchester which would require an interchange become more attractive. Demand at St. Helens Central reflects its location as a Town Centre rail hub, with reasonable flows to destinations which are not directly served, such as Manchester, London and stations on the Merseyrail network.

Demand and revenue by ticket type has also been compared as shown in Table 12-4.

Table 12-4 - Total demand and revenue by ticket type at potential comparator stations

Demand	Bryn	Garswood	St. Helens Central	Thatto Heath	Eccleston Park
Full	61,500	43,650	210,350	52,900	32,000
Reduced	77,300	87,700	278,750	58,800	30,800
Season	35,000	78,100	231,000	42,500	22,200
Total	**173,750**	**209,500**	**720,000**	**154,200**	**85,000**
% full	35%	21%	29%	34%	38%
% reduced	44%	42%	39%	38%	36%
% season	21%	37%	32%	28%	26%

Revenue	Bryn	Garswood	St. Helens Central	Thatto Heath	Eccleston Park
Full	250,200	162,900	994,350	187,300	130,250
Reduced	232,750	257,100	1,459,100	203,900	118,050
Season	97,300	137,500	364,450	54,900	27,000
Total	**580,300**	**557,400**	**2,817,900**	**446,100**	**275,300**
% full	43%	29%	35%	42%	47%
% reduced	40%	46%	52%	46%	43%
% season	17%	25%	13%	12%	10%
Yield / journey	**£3.34**	**£2.66**	**£3.91**	**£2.89**	**£3.23**

Source: MOIRA OR23 data for 2018/19

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This shows that there is a relatively even split in ticket types at the stations between Bryn and Eccleston Park. Garswood shows a higher proportion of season ticket demand. Average yields per journey are relatively low falling between £2.66 at Garswood and £3.91 at St. Helens, which reflects the relatively short distance, low yield journeys which predominate at the stations.

12.2.4. Historic Demand Patterns

Data from the ORR station footfall figures have investigated to show historic demand changes. These figures take LENNON ticket sales and also provide a distribution of zonal and concessionary tickets within the former Passenger Transport Executive (PTE) areas such as Merseyside. The same methodology is used in developing the demand and revenue matrices for MOIRA.

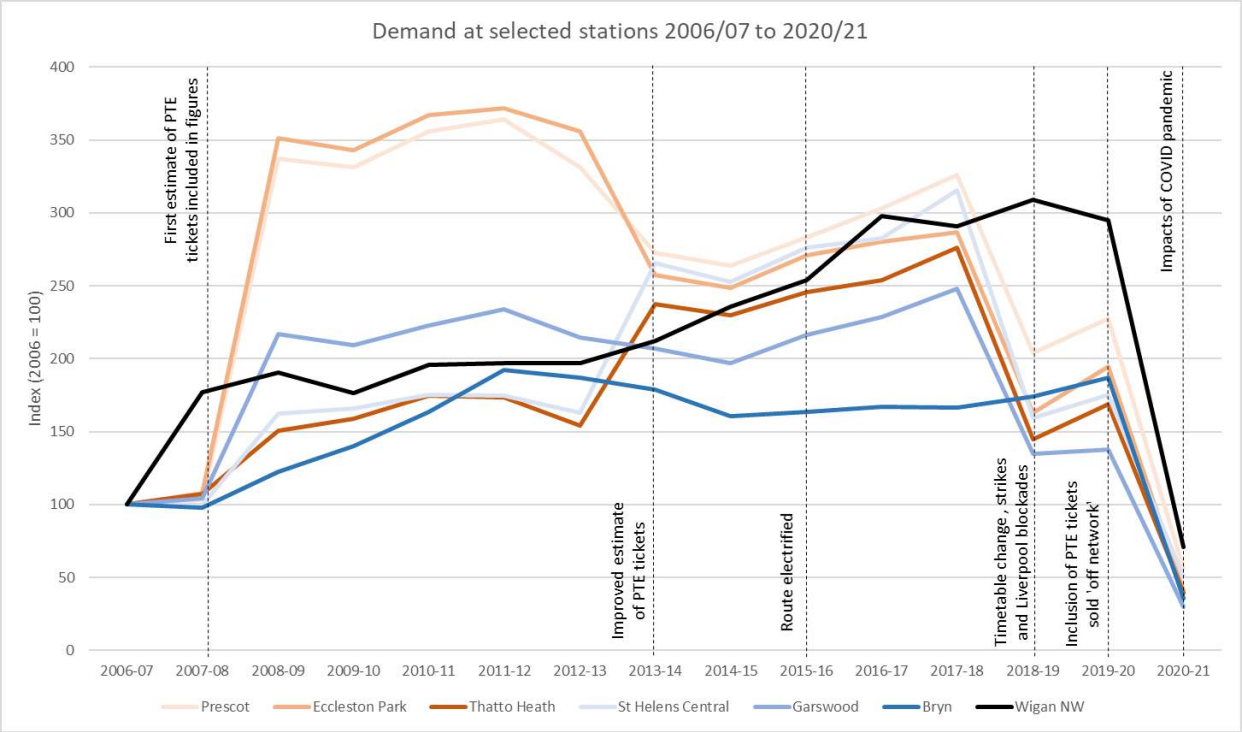
The station footfall figures note[59] that a true comparison time series is not possible as changes in the methodology have resulted in fairly sizeable demand changes between years. For particular relevance to Merseyside are:

- First estimate of PTE tickets included in the matrix from 2008/09;
- Improvement to estimates of Merseyside tickets included from 2013/14 which also included concessionary travel arrangements; and
- Inclusion of off-network sales (i.e. not at station or on train) of multi-modal Saveaway and Trio tickets from 2019/20.
- In addition to these changes to methodology a number of operational issues have potentially impacted on demand along the route. This includes:
- Works to electrify the route between Liverpool-Wigan via St Helens Central and Liverpool-Manchester via Newton-le-Willows potentially impacting demand for the 2014/15 railway year.
- Electric operation between Liverpool-Wigan and Liverpool-Manchester commenced at the May 2015 timetable change potentially impacting demand from the 2015/16 railway year.
- The Northern and TransPennine Express May 2018 timetable change brought considerable disruption to passengers for several weeks, resulting in poor punctuality and increased levels of cancellations, impacting the 2018/19 railway year.
- Blockade of Liverpool Lime Street station in June and July 2018 to allow for remodelling work, impacting on the 2018/19 railway year.
- Continuing industrial action at Northern through 2018/19 amounting to 47 strike days[60].
- Restrictions on movement related to the Covid-19 pandemic, impacting travel patterns from March 2020 – one month within the 2019/20 railway year.

These changes can be seen in Figure 12-4 below.

[59] Estimates of station usage: Quality Report (orr.gov.uk)
[60] https://www.rmt.org.uk/news/rmt-suspends-northern-strike-action/

Figure 12-4 - Demand changes over previous years



Source: Office of Rail and Road Station Footfall figures

There have been several changes in methodology to account for the Merseyside zonal and multi-modal tickets, and various operational changes which can be seen as:

- 2008/09 first inclusion of Merseyside zonal / multi-modal tickets seen as a large increase in demand at all stations except Bryn and Wigan NW (both outside of Merseyside);
- 2013/14 major revision to Merseyside zonal /multi-modal tickets seen as large increases in demand at St Helens Central and Thatto Heath, and reductions at Prescot and Eccleston Park;
- 2014/15 disruption related to electrification works, seen as a dip in demand at all stations except Wigan NW;
- 2018/19 disruption related to May 2018 timetable implementation and blockade at Liverpool Lime Street, seen as an approximate halving of demand at all stations except Bryn and Wigan NW (both outside of Merseyside); and
- 2019/20 fall in demand related to one month's worth of data during the Covid-19 pandemic, but also first inclusion of off-network sales of Merseyside zonal / multi-modal tickets.

Due to the large changes in demand observed between 2017/18 and 2018/19 clarity was sought from the ORR rail statistics team. They confirmed that there were no further changes to methodology in the Merseyside area and the reduction in demand was likely to be a combination of the Liverpool blockade, timetable issues and rail strikes.

Clearly there has been some instability in demand patterns over the last few years. This means that the baseline demand assumption represents one of the key areas of uncertainty in the demand forecasts. In order to consider the impacts of baseline demand further tests have been undertaken looking at likely results with demand levels equivalent to 2017/18 levels.

12.3. Model Development and Calibration

12.3.1. Introduction

The following section of the report details the development of the models used to forecast demand at the new stations. It also presents the results of the calibration exercise that has been undertaken.

12.3.2. Methodology

The Department for Transport's *Guidance note on passenger demand forecasting for third party funded local rail schemes* (2011) details a number of possible model types which can be used to forecast demand at new stations. These are ordered by complexity and cost (showing the simplest model form first) as follows:

- Trip rate model;
- Trip-end model;
- Gravity model;
- Mode choice model; and
- Four stage model – trip generation, distribution, mode choice, assignment.

Further guidance is also given in the Passenger Demand Forecasting Handbook (PDFH). However, there is a recognised trade-off between model complexity on the one hand and more intensive data requirements and time commitments on the other.

In this study a trip-end model has been developed which uses trip rates at existing 'comparator' stations to forecast demand at new stations. It includes adjustments for Generalised Journey Time (GJT), rail fares and car time using elasticities specified in PDFH6. Within the model the existing trip rate at a 'comparator' station is applied to the catchment of the new station. Factors such as modal competition are not specifically considered but can be included through the selection of an appropriate comparator station. For example, Thatto Heath or Eccleston Park can be considered as an appropriate comparator for Carr Mill which has a similar level of service.

12.3.3. Model Form

The trip-end model is a two-stage process. The first element is a station choice model which is used to derive a population catchment for each origin-destination pair, whilst the second element uses this data to develop trip rates. The model uses data from adjacent stations to a list of all stations within Merseyside, plus stations between Liverpool-Ormskirk and the following stations which may be impacted:

- Rainford;
- Upholland;
- Orrell;
- Pemberton;
- Bryn, and
- Both main stations in Wigan and Warrington.
- Stations which are 'external' to the model are also modelled as destinations only. These stations are:
- Blackpool North;
- Poulton-le-Fylde;
- Kirkham and Wesham;
- Preston;
- Euxton Balshaw Lane; and
- Leyland.
- Reasonable comparator stations for Carr Mill have been assessed. These are:
- Thatto Heath; and
- Eccleston Park

These comparator stations are both adjacent to the proposed station at Carr Mill. This maintains local characteristics which could reasonably apply to the new station, including local geography, access and modal competition. St. Helens Central has been discounted as a comparator station as it has a greater service

frequency than would be provided at Carr Mill and is a Town Centre hub station. Garswood has also been discounted as it is the last station within the Merseyside ticketing area, and so that any demand and revenue impacts associated with being a boundary station (such as split-ticketing) are not carried through into the analysis.

The station choice stage assigns populations from 'output area' geography to the origin station which minimises the overall rail journey time from that output area. Weighting is then applied to this population to reflect that the trip rate diminishes as passengers are required to travel further to the station and to reflect that passengers are less likely to 'double-back' to access a station. The demographic data inherent in this station choice element is sourced from the 2011 Census at Lower-level Super Output Area (LSOA) level and includes:

- Resident population within the catchment zone;
- Employed population within the zone – i.e. those living within the zone who are in employment;
- Households within the zone without access to a car; and
- Workplace population – i.e. those working within the zone.

A maximum 'cut-off' has been applied to the catchment area based on the size of the station car park. Catchment areas are limited to an absolute maximum of 20km where the station has more than 75 parking spaces, 5km if the station has up to 75 spaces and 2km where the station has no parking spaces.

Access time to the station is limited to the minimum value of either the walking or the driving distance. The walking catchment is assumed to be the crow-fly distance multiplied by 1.1 between the LSOA centroid and station location at an assumed walking speed of 4kph. The driving catchment is based on the crow-fly distance multiplied by 1.1 between centroid and station assuming a speed of 30kph limited to a maximum access time of 30 minutes.

In our experience this is an area where demand forecasting for new stations (including the calibration of gravity models) is generally restricted. Many models will take a standard catchment area size for each station and not reflect choice between origin stations. This can lead to over forecasting between origin-destination pairs where one station has a reduced level of service compared to a neighbouring station.

The result of the station choice process is a modelled catchment population specific to each origin-destination pair which forms the basis for forecasting. For example, the catchment of the proposed station for journeys towards Liverpool will be different to that for journeys towards Wigan.

The second stage of the model is to take these origin-destination specific catchment populations and forecast demand for the new stations at an origin-destination level. A 'trip-rate' for each origin-destination has been taken directly from a comparator station (or stations), and this has been subject to further modification to account for changes in GJT, fares and car journey times. Fare elasticities are specific to each station, calculated using MOIRA demand data to account for differences in elasticity by trip purpose and by journey destination. Elasticities are shown in Table 12-5 below; averaged elasticities for Eccleston Park and Thatto Heath have been calculated given that an average trip rate from these stations will be used as the comparator.

Table 12-5 - Elasticities used in station trip rate adjustments

Car Time	GJT	Fares (Thatto Heath)	Fares (Eccleston Park)	Fares (Averaged)
0.20	-1.10 (<32km)	-0.589 (<32km)	-0.595 (<32km)	-0.591 (<32km)
	-1.20 (>32km)	-0.853 (>32km)	-0.853 (>32km)	-0.853 (>32km)
	-1.50 (Airport)	-1.000 (Airport)	-1.000 (Airport)	-1.000 (Airport)
	-1.35 (London)	-0.950 (London)	-0.950 (London)	-0.950 (London)

Source: PDFH6 and MOIRA demand data

The premise is that, other than the modifications described above, once a passenger has chosen to use one station over a neighbouring / competing station then they are as likely to travel to a given destination as from that competing station. Much of the demand differences are driven by changes in the catchment size of each station once any amended service patterns or new station location has been added to the calculation. To an extent using a trip-rate adjusted in this way is incorporating outturn data inherent in the ticket sales from the existing stations (e.g. the attractiveness of Liverpool vs. Wigan) and removes the need to approximate this from populations.

A calibration exercise has been undertaken using this model. As a starting point the model used changes in residential population to adjust the trip rate. This has since been adjusted to use a trip rate based on employment and workplace population in the station catchment. Employment population is the measure of the number of people in an area who are employed and is used as a proxy for the attractiveness of the station as a trip generator. Workplace population is a measure of the number of jobs in the catchment and is used as a proxy for the attractiveness of the station as a destination.

The model uses the following formula applying the change to GJT, fare and car journey times between the comparator station and the forecast station:

$$D^2 = D^1 \, P \, GJT^b \, f^c \, t^d$$

Where:

D^2=Demand at new station

D^1=Demand at comparator station

P = change in population at origin and destination (i.e. employment and workplace population are both at the Carr Mill end of the journey)

GJT=change in rail GJT

^{b}=GJT elasticity

f=change in rail fare

^{c}=fare elasticity

t=change in car journey time

^{d}=car time elasticity

Fare elasticities are station specific (to account for different ticket and journey purposes) varying by distance, whereas GJT elasticities vary by journey distance.

The model has been used to forecast demand at adjacent stations to show the goodness of fit.

12.3.4. Calibration

To provide comfort that the model form is accurately predicting demand a calibration exercise has been undertaken. This has forecast demand for Thatto Heath using calculated trip rates from Eccleston Park and forecast demand for Eccleston Park using calculated trip rates from Thatto Heath.

The first step has been to vary the *P* variable in the calculation above. This term includes population at the origin and destination end of the trip, and the calibration has focussed on varying the population at the origin. This process is shown in Table 12-6 below, showing how varying the *P* variable impacts on predicted demand and revenue.

Table 12-6 - Calibration in trip end model: observed vs. calculated demand and revenue

Origin Population	Residential population	Employed population	No car households
Destination Population	Workplace population	Workplace population	Workplace population

Thatto Heath			
Demand	16%	(12%)	(20%)
Revenue	17%	(10%)	(8%)
Eccleston Park			
Demand	(10%)	16%	30%
Revenue	(10%)	16%	29%

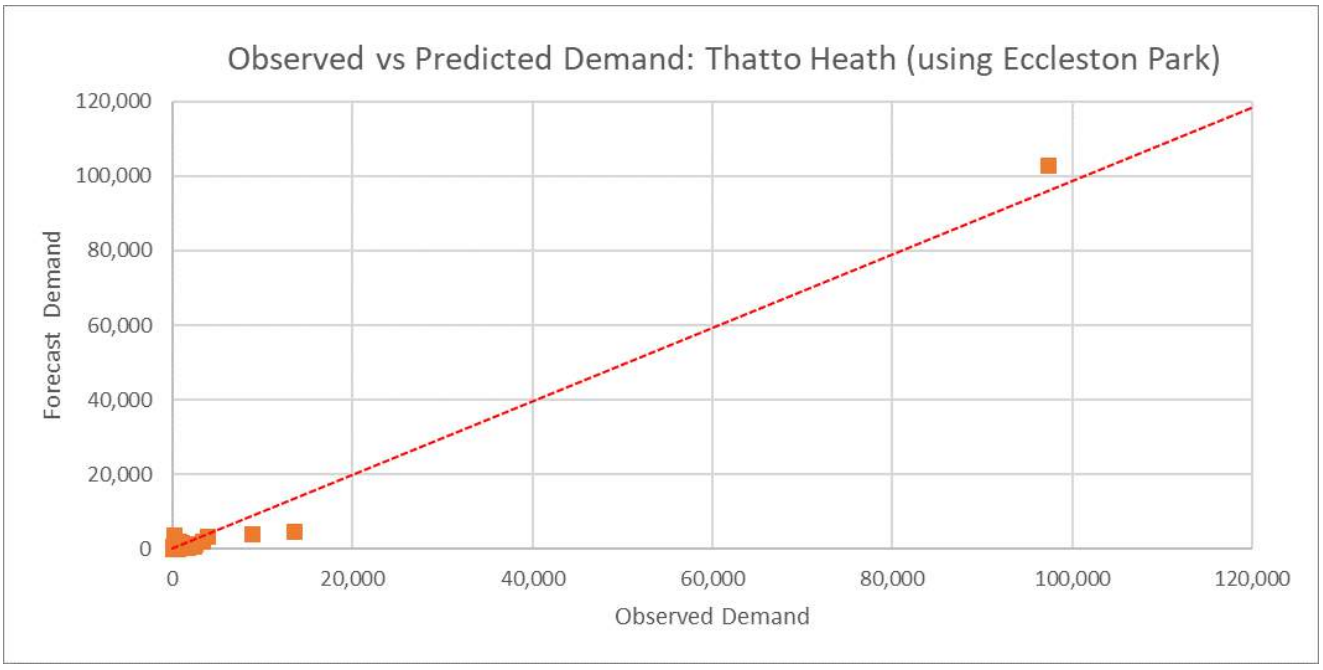
Note: Demand and revenue figures are for stations which are directly forecast from Carr Mill: all stations served by services between Liverpool Lime Street, Wigan North Western, Preston and Blackpool North via Huyton and St Helens Central

As a result of this process the calibration exercise has established that the *P* variable in the model should use workplace population in the station catchment added to employment in the station catchment. Using this variable, the model shows that:

- Total predicted demand at Thatto Heath using trip rates from Eccleston Park is within 12% of observed demand with variation by flow. Originating trips are within 10% and destined trips within 18% of observed demand. Total demand to/from Liverpool, the largest flow, is within 6% of observed demand.
- Total predicted demand at Eccleston Park using trip rates from Thatto Heath is within 16% of observed demand. Originating trips are within 13% and destined trips within 24% of observed demand. Total demand to/from Liverpool is within 5% of observed demand.

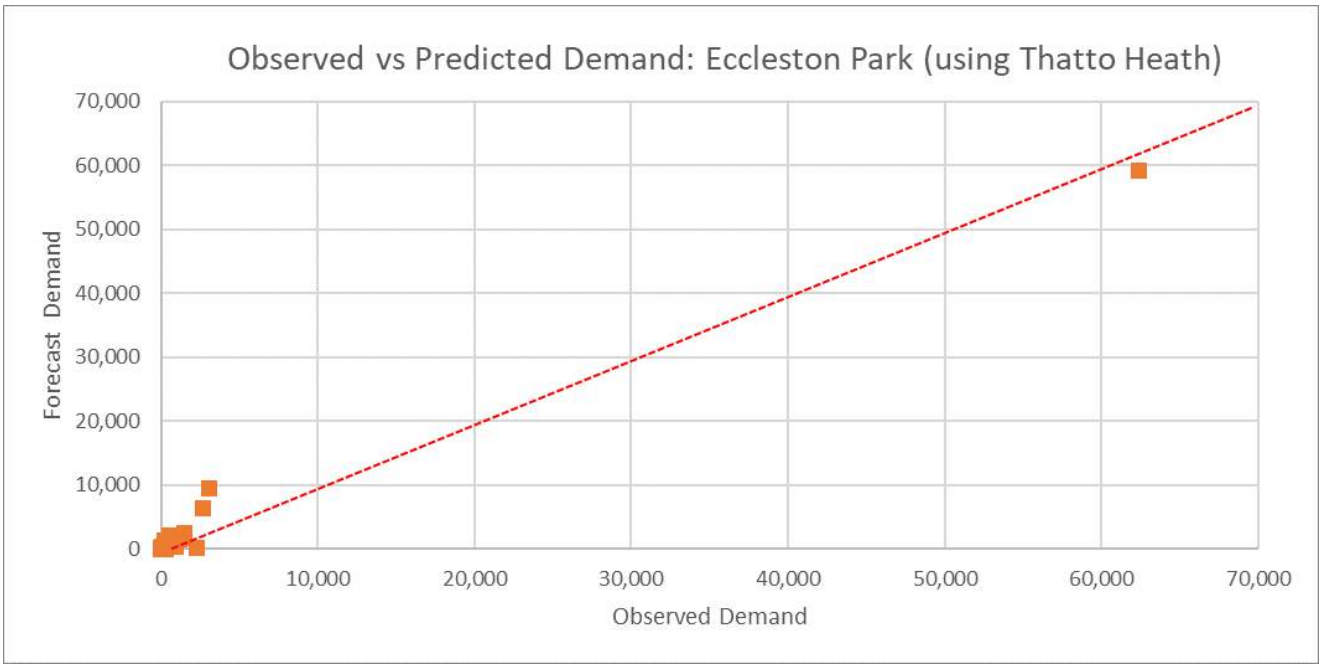
Predicted against observed demand is shown in Figure 12-5 and Figure 12-6.

Figure 12-5 – Observed vs predicted demand: applying trip rates from Eccleston Park to Thatto Heath



Note: Demand figures are for stations which are directly forecast from Carr Mill: all stations served by services between Liverpool Lime Street, Wigan North Western, Preston and Blackpool North via Huyton and St Helens Central

Figure 12-6 - Observed vs predicted demand: applying trip rates from Thatto Heath to Eccleston Park



Note: Demand figures are for stations which are directly forecast from Carr Mill: all stations served by services between Liverpool Lime Street, Wigan North Western, Preston and Blackpool North via Huyton and St Helens Central

The calibration findings have been compared to the advice contained within *Station Usage and Demand Forecasts for Newly Opened Railway Lines and Stations*, which suggests that demand forecasts for stations are reasonably accurate if they fall within +/-20% of observed demand. At a station level for both Eccleston Park and Thatto Heath predicted demand is within the +/-20% range, which suggests that the model is performing reasonably well.

As demand forecast using Eccleston Park trip rates is slightly over-predicted and that using Thatto Heath trip rates is slightly under-predicted, the model has been amended to use an average trip rate calculated from both stations.

12.4. Forecasting

12.4.1. Introduction

This section of the report details the forecasting exercise that has been undertaken. It first presents the service pattern and car parking provision which has been modelled at the station. It then presents the base year forecasts which have been developed for the stations.

12.4.2. Service Patterns

For the Do Minimum scenario the December 2019 timetable has been used as shown the table below.

Table 12-7 – Do Minimum hourly calling pattern of Liverpool – Wigan Line services

Origin	Liverpool Lime Street	Liverpool Lime Street	Liverpool Lime Street	Liverpool Lime Street
Liverpool Lime Street	X	X	X	X
Edge Hill	X	X		
Wavertree Technology Park	X	X		
Broad Green	X	X		
Roby	X	X		
Huyton	X	X	X	
Prescot	X	X		
Eccleston Park	X	X		
Thatto Heath	X	X		
St. Helens Central*	X	X	X	X
Garswood	X	X	X	
Bryn	X	X		
Wigan North Western	X	X	X	X
Destination	Wigan North Western	Wigan North Western	Blackpool North	Glasgow Central*

Source: MOIRA OR23. *Liverpool-Glasgow service run three times per day with an additional Liverpool-Preston service. Some trains call additionally at St Helens Central

Building on this Do Minimum scenario a timetabling exercise has been undertaken to develop a working Do Something timetable to enable services to call at the new station. The 2tph Liverpool - Wigan has been amended to call at Carr Mill.

Table 12-8 shows the modelled service pattern from Carr Mill. Destinations not listed are modelling using the GJTs from Garswood adjusted by the 5-minute journey time from Carr Mill to Garswood; destinations west of Carr Mill are assumed to be 5-minutes slower than to Garswood and destinations east of Carr Mill are assumed to be 5-minutes faster than to Garswood. For Option 7 where a wholly new 1tph Liverpool-Carr Mill service would be provided, journeys are extended by 5-minutes compared to that from St Helens Central with an appropriate interchange penalty included.

Table 12-8 - Modelled service frequency and times from Carr Mill

Destination	Journey Times for 2tph Scenarios			Journey Times for 1tph Scenario
	Option 2	Option 3	Option 6	Option 7
Wigan North Western	15	15	16	-
Bryn	8	8	9	-
Garswood	5	5	6	-
St. Helens Central	3	3	2	5
Thatto Heath	7	7	6	9
Eccleston Park	10	10	9	12
Prescot	12	12	11	14
Huyton	16	16	15	18
Roby	18	18	17	20
Broad Green	22	22	21	24
Wavertree Technology Park	25	25	24	27
Edge Hill	27	27	26	29
Liverpool Lime Street HL/ML	32	32	31	34

Source: Do Something timetable.

12.4.3. Catchment Areas

Station parking is an important consideration within the station choice element of the model. The size of the car park limits the maximum size of the station catchment area therefore it is important to include the correct amount of car parking. Within the station choice model the following bands are applied:

- Maximum 2km catchment where no car parking is provided at the station;
- Maximum 5km catchment where up to 75 car parking spaces are provided at the station; and
- Maximum 20km catchment where more than 75 car parking spaces are provided.

Within the model Carr Mill is assumed to fall within the second band with options 2 & 3 having 50 parking spaces and options 6 & 7 having 6 car parking spaces. This sets the catchment area to a maximum of 5km.

Each destination is considered in turn, producing a unique catchment area for each station-to-station flow. As examples Figure 12-7 and

Figure 12-8 below show the station catchments towards Liverpool and St Helens Central respectively. These show that in general catchment areas for shorter-distance trips tend to be more tightly bound around the stations when compared to catchments for longer-distance trips. For example, rail trips from Billinge to Liverpool are predicted to use St Helens Central, whereas the model predicts no trips from Billinge to St Helens by rail.

Catchment areas are based on Census Lower-level Super Output Areas (LSOAs), with demand being assigned on an all-or-nothing basis. Distances between the zones and origin station are based on crow-fly distances from the population-weighted zone centroid. This partly explains seemingly erroneous catchments – for example the large zone immediately south of Garswood station which stretches between Garswood, Haydock and Carr Mill, where most of the population is likely to be close to Garswood station.

Figure 12-7 - Catchment areas to Liverpool, with Carr Mill Option 3

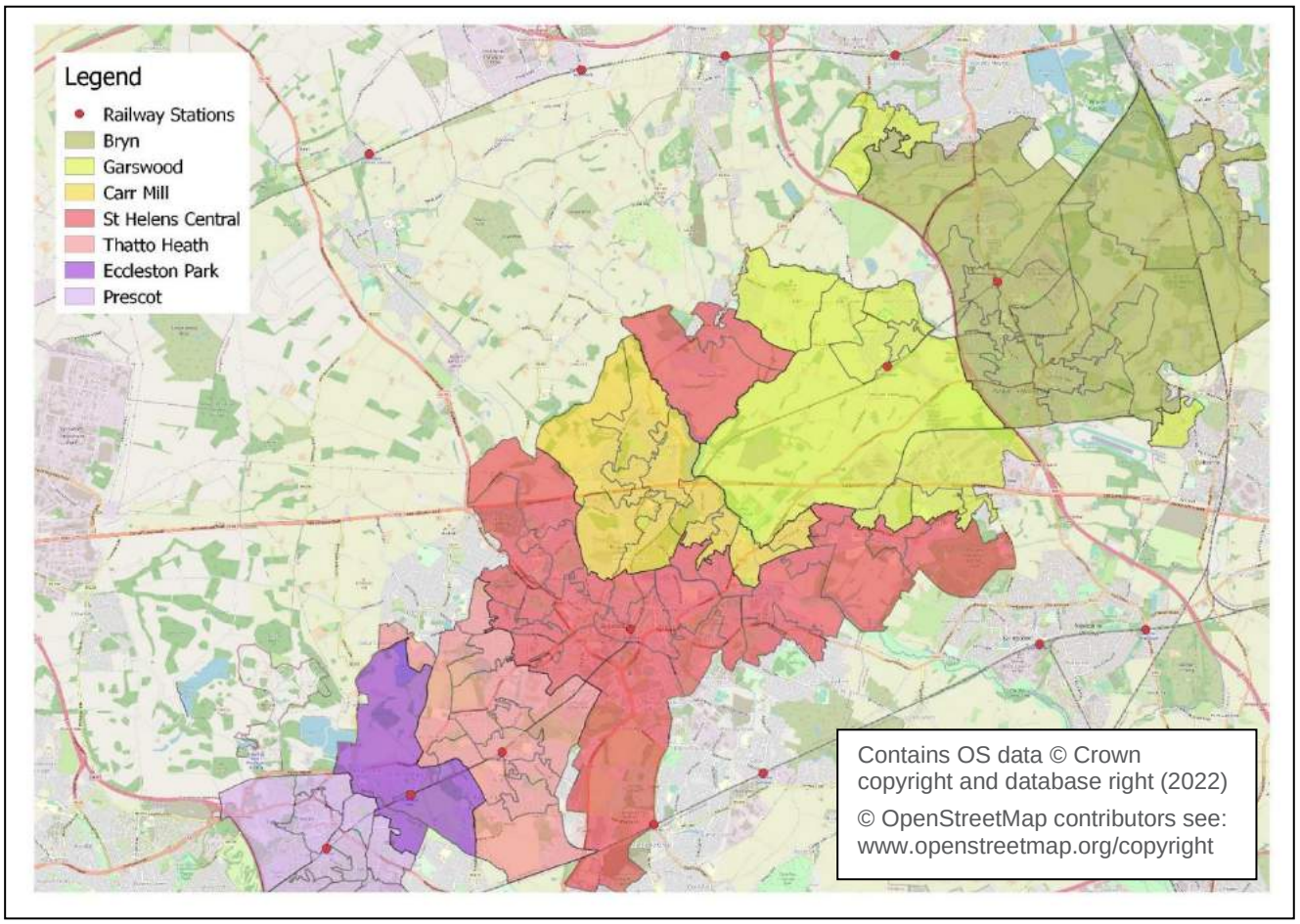
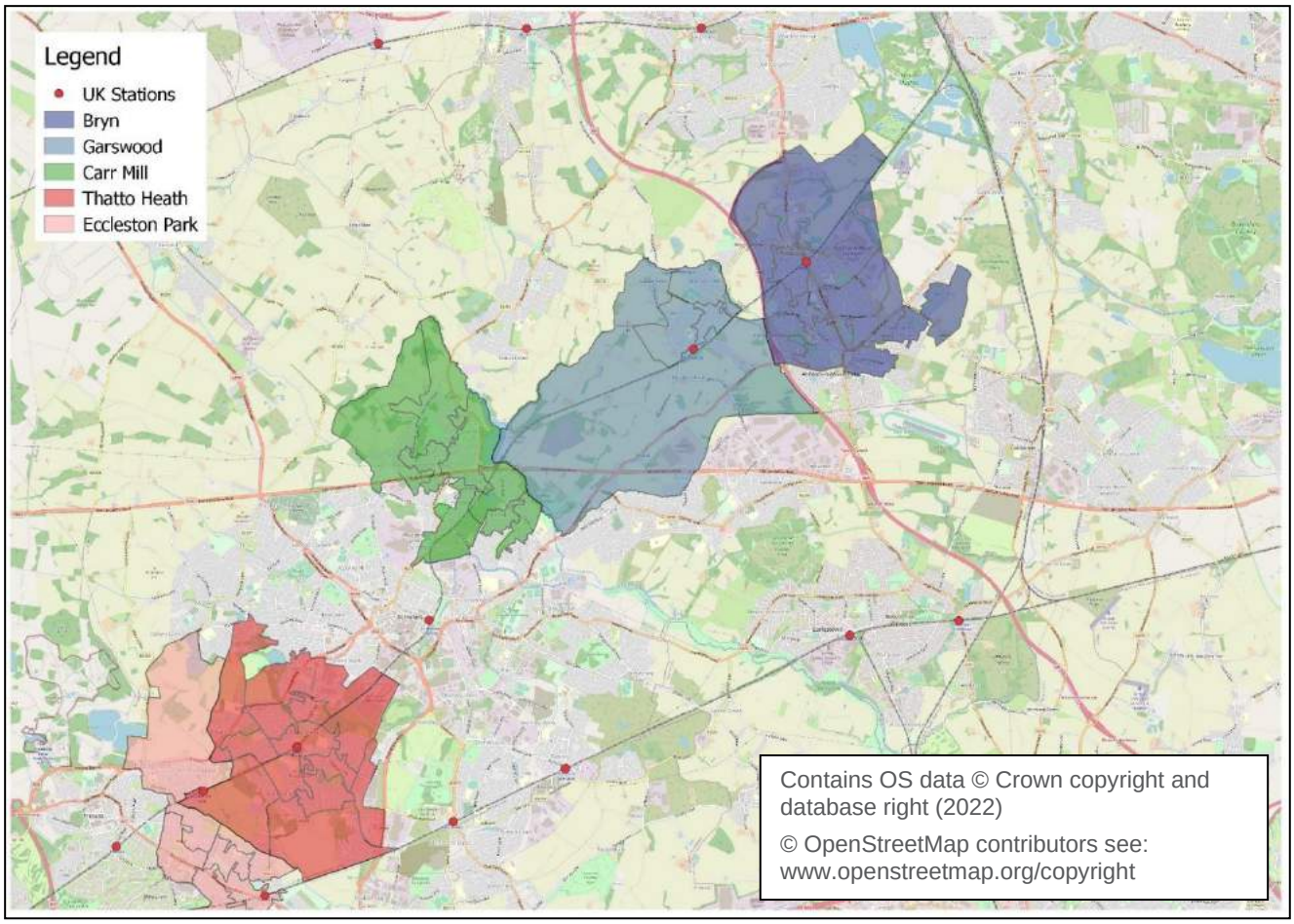


Figure 12-8 - Catchment area to St Helens Central, with Carr Mill Option 3



12.4.4. Base Year Forecasts

The trip-end model used to forecast for Carr Mill is based on average trip-rates calculated for Thatto Heath and Eccleston Park. Forecasts are limited to origin/destination flows for those stations served directly by trains from Carr Mill plus origins to seven external destinations (Blackpool North, Euxton Balshaw Lane, Kirkham & Wesham, Leyland, Poulton-le-Fylde, and Preston). Demand and revenue for the remaining origins and destinations are calculated using an uplift based on MOIRA data for the appropriate comparator station. These factors are shown in Table 12-.

Table 12-5 - Uplifts applied for non-modelled flows in the model

	Demand	Revenue
Uplift for Thatto Heath	1.105	1.576
Uplift for Eccleston Park	1.139	1.751
Applied uplift for Carr Mill	**1.117**	**1.643**

Source: MOIRA.

Forecasts include an estimate of abstraction from existing stations based on a 1:1 exchange of demand. As an example, in the Do Minimum situation an output area may have 50 trips from Garswood to Liverpool. With the opening of Carr Mill station this area may have 150 trips to Liverpool and these are assigned to the new station (due to distance decay inherent in the trip rate model demand from the area would increase). In this case it would be assumed that those 50 trips previously using Garswood abstract to the new station (in a 1:1 exchange) and the remaining 100 trips are generated as wholly new-to-rail.

This method is based on demand originating at the new station. It is assumed that demand destined to the new station will abstract in similar proportions (i.e. if 2% of St Helens-Wigan demand abstracts then 2% of Wigan-St Helens demand will abstract). Forecast demand and revenue at Carr Mill is shown Table 12-9 below.

Table 12-9 - Forecast demand and revenue at Carr Mill

	Option 2		Option 3		Option 6		Option 7	
	Demand	Net Revenue	Demand	Net Revenue	Demand	Net Revenue	Demand	Net Revenue
Modelled origins	64,200	£92,750	61,400	£90,150	49,700	£49,600	29,850	£44,450
Modelled destinations	21,050	£30,850	20,350	£30,150	16,800	£17,350	9,000	£13,850
Non-modelled uplift	10,000	£79,400	9,600	£77,350	7,800	£43,000	4,550	£37,450
Totals	**95,300**	**£203,000**	**91,400**	**£197,650**	**74,300**	**£109,950**	**43,400**	**£95,750**
Origins	**73%**		**72%**		**72%**		**74%**	
Abstracted	**45%**		**44%**		**60%**		**43%**	

Source: Demand forecasting model

Forecasts show that Carr Mill will be predominantly a generative station, with around 70% of demand originating at the station. Net revenue includes the impacts of abstraction from nearby stations – Carr Mill is forecast to attract relatively small amounts of net revenue as large proportions of demand are predicted to abstract from existing stations. The majority of demand is to/from Liverpool in all four options, with demand abstracting from St. Helens Central.

Modelled Origins and Destinations at Carr Mill

The top five modelled origins and destinations at Carr Mill are shown in the tables below. Liverpool is by far the largest flow under all options, followed by Wigan North Western and St Helens Central in those three options which provide services in both directions. Option 7, which would see less frequent services towards St Helens

and Liverpool only sees much lower levels of demand with Wavertree Technology Park and Huyton the next largest flows after Liverpool.

Table 12-10 - Forecast demand and revenue at Carr Mill by origin and destination (Option 2)

Origins from Carr Mill	Demand	% abstracted	Net Revenue
Liverpool Stations	50,300	54%	£68,650
Wigan North Western	4,250	17%	£7,850
St Helens Central	2,850	-	£3,450
Huyton	1,300	22%	£2,950
Wavertree Technology Park	1,250	39%	£1,900
Destined to Carr Mill	**Demand**	**% abstracted**	**Net Revenue**
Liverpool Stations	13,100	54%	£17,900
Wigan North Western	2,000	17%	£3,700
St.Helens Central	850	-	£900
Wavertree Technology Park	800	43%	£1,200
Garswood	750	-	£700

Table 12-11 - Forecast demand and revenue at Carr Mill by origin and destination (Option 3)

Origins from Carr Mill	Demand	% abstracted	Net Revenue
Liverpool Stations	46,900	53%	£65,600
Wigan North Western	4,250	17%	£7,900
St Helens Central	3,350	-	£3,450
Huyton	1,400	31%	£2,450
Wavertree Technology Park	1,150	40%	£1,750
Destined to Carr Mill	**Demand**	**% abstracted**	**Net Revenue**
Liverpool Stations	12,250	53%	£17,100
Wigan North Western	2,000	17%	£3,750
St.Helens Central	1,000	-	£1,050
Wavertree Technology Park	750	40%	£1,100
Prescot	750	13%	£1,600

Table 12-12 - Forecast demand and revenue at Carr Mill by origin and destination (Option 6)

Origins from Carr Mill	Demand	% abstracted	Net Revenue
Liverpool Stations	41,000	65%	£38,250
Wigan North Western	2,950	42%	£4,300
Wavertree Technology Park	1,150	54%	£1,200
Huyton	1,100	33%	£1,550
Edge Hill	750	62%	£700
Destined to Carr Mill	**Demand**	**% abstracted**	**Net Revenue**
Liverpool Stations	10,700	65%	£10,000
Wigan North Western	1,400	42%	£2,000
Wavertree Technology Park	750	54%	£750
Prescot	750	23%	£1,150
Bryn	550	46%	£600

Table 12-13 - Forecast demand and revenue at Carr Mill by origin and destination (Option 7)

Origins from Carr Mill	Demand	% abstracted	Net Revenue
Liverpool Stations	27,300	47%	£39,650
Wavertree Technology Park	650	21%	£1,200
Huyton	650	15%	£1,250
Edge Hill	450	31%	£750
Broad Green	350	-	£650
Destined to Carr Mill	**Demand**	**% abstracted**	**Net Revenue**
Liverpool Stations	7,100	47%	£10,350
Wavertree Technology Park	400	21%	£750
Huyton	350	15%	£650
Prescot	350	-	£700
Broad Green	300	-	£550
Edge Hill	300	31%	£500

Source: Demand forecasting model

Alternative Forecasts

A key area of risk is the baseline demand and revenue figures. As explained in Section 12.2.4 rail demand on the route between 2017/18 and 2018/19 varied significantly at the comparator stations and at St Helens Central. This is shown in Table 12-14.

Table 12-14 - Demand changes between 2017/18 and 2018/19

	2017/18	2018/19	Factor from 2018/19 to 2017/18
Eccleston Park	126,620	72,060	1.757
Thatto Heath	257,130	134,750	1.908
Averaged	**383,750**	**206,800**	**1.8556**
St Helens Central	1,301,480	657,270	1.980

Source: ORR Station Footfall Figures

Reasons given for the demand impacts, including timetable changes, industrial action and blockades at Liverpool, do not show the expected 'bounce-back' in demand in 2019/20, whilst stations outside of Merseyside do not show these same large demand reductions.

In order to provide a range of demand forecasts an alternative demand scenario test has been developed to show the impact of reverting to a baseline using 2017/18 levels of demand. Demand, revenue and user benefits have been inflated by the average demand factor calculated for Eccleston Park and Thatto Heath, the two comparator stations. The forecast ranges are shown in Table 12-15.

Table 12-15 - Forecast baseline demand ranges at Carr Mill

	Option 2		Option 3		Option 6		Option 7	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Total	95,300	176,800	91,400	169,500	74,300	137,900	43,400	80,550

Benchmarking

Demand and revenue forecasts for Carr Mill are shown alongside nearby stations in the table below. Revenue at station indicates all revenue at the station (i.e. it does not include the reduction due to abstraction) in order to provide a fair comparison.

Table 12-16 - Forecast demand and revenue at Carr Mill compared to other stations using 2018/19 data

	Demand	Revenue at station	Yield per journey
Bryn	173,750	£580,300	£3.34
Garswood	209,500	£557,400	£2.66
CARR MILL (higher)	**95,300**	**£352,100**	**£3.69**
CARR MILL (lower)	**43,400**	**£159,200**	**£3.67**
Thatto Heath	154,200	£446,100	£2.89
Eccleston Park	85,000	£275,300	£3.23

Source: Demand forecasting model and MOIRA Do Something timetable using 2018/19 demand and revenue data

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This indicates that Carr Mill is forecast to have demand and revenue levels roughly mid-way between Thatto Heath and Eccleston Park. Revenue yields are slightly higher than other local stations, and this is a function of the high proportion of journeys to and from Liverpool and the greater distance as compared to both Thatto Heath and Eccleston Park.

12.4.5. Car Parking at Carr Mill

For Carr Mill the required number of car parking spaces has been calculated through a simple calculation of mode split as follows:

- Identify all trips originating at Carr Mill from greater than 1.33km away, which when assuming a 4kph walking speed represents a 20-minute walk from the station;
- Assume that all trips from greater than 1.33km travel to the station by car;
- Identify mode split for individual movements (splits will be different by destination); and
- Calculate mode splits, producing an estimate for parking demand at Carr Mill.

The parking rate from the forecasting model has been used to produce an estimate of demand parking at the station each year as follows:

- Take parking numbers for trips originating at Carr Mill only and divide by two to calculate journeys from trips;
- De-annualise to an average weekday using a factor of 310 (assumes 253 weekdays, 52 Saturdays valued at 75% of a weekday, and 52 Sundays plus 6 Bank Holidays valued at 33% of a weekday);
- Divide by the average vehicle occupancy (sourced from TAG databook for an average weekday peak) of 1.13; and
- Apply a 'churn' of 1.10, to assume that some spaces are used by more than one car each day.

This latter step provides a more robust assumption than assuming all spaces will be occupied on each day, weighting the result more towards a weekday situation. The resulting car parking spaces which are required at Carr Mill is summarised in Table 12-17 below as a range.

Table 12-17 - Parking Spaces at Carr Mill 2018/19

	Option 2	Option 3	Option 6*	Option 7*
Modelled Rates	15-25	15-25	0-10	0-10
Applying 15% Rates	30-40	30-40	20-30	10-20

Source: Demand forecasts. *The parking in options 6 & 7 are disabled parking only.

12.4.6. Future Year Forecasts

12.4.6.1. Future Developments

The Borough's draft Local Plan (2019) sets out a proposed vision for future development in the Borough between 2020 and 2035, highlighting where local growth (housing and employment) is planned and therefore where possible additional infrastructure, such as transport, will be needed to support it. The draft Local Plan was submitted for examination by the Planning Inspectorate in October 2020, with the result of this being a schedule of Proposed Main Modifications produced in 2021. These Modifications to the Local Plan were consulted on between November 2021 and January 2022, with any resultant proposed changes again passed to the Planning Inspectorate for their consideration. It is anticipated that the Local Plan will be adopted by the Council in 2022.

Whilst there are proposals for housing and employment development across the Borough, the nine key potential sites for housing and employment in the study area which have been included in the model are summarised inTable 12-18.

Each development site has been assigned to the most appropriate output area for inclusion in the demand forecasting model. For residential sites it is assumed that there will be 2.24 people per household which is consistent with the English average, whilst for employment sites it is assumed that one additional job will be supported by 81m^2.

Table 12-18 - Potential development sites in the study area

Local Plan Ref	Site Name	Output Area	Size (Hectares)	Site Capacity (households)	Additional Population	Additional Jobs
2HA	Land at Florida Farm (South of A580), Slag Lane, Blackbrook	E01006803	23.19	522	1,169	-
82	Land adjacent Laffak Road and Carr Mill Road	E01006852	3.31	150	336	-
95	Site of former Carr Mill Infants School, Ullswater Ave	E01006850	1.49	24	54	-
111	Land east of City Road, Cowley Hill	E01006853	47.09	1,100	2,464	-
112	Land to the rear of Juddfield Street	E01006803	1.14	41	92	-
134	Land at Littler Road	E01006818	0.52	11	25	-
EA2	Florida Farm (completed but not included in census data)	E01006803	35.17	-	-	4,360
EA6	West of Haydock Industrial Estate	E01006840	7.75	-	-	961
EA7	West of Millfield Lane, Haydock	E01006803	20.58	-	-	2,551

All of these developments are assumed to accrue up to 2036. Forecasts with the developments in place have been developed. These are assumed to represent the situation in 2036 and are shown in Table 12-19 below.

Table 12-19 - Demand and revenue at Carr Mill in 2036/37

	Option 2	Option 3	Option 6	Option 7
Demand	140,050	147,000	123,900	83,900
Net Revenue	£68,050	£71,250	£20,450	£30,050

Source: Demand forecasting model using MOIRA data. Note net revenue is presented in 2018/19 prices.

12.4.6.2. Background Growth

The 2019 and 2036 forecasts have been used to develop the forecasts for intermediate years. Figures have been interpolated between the two years to give demand, revenue and benefits for the period 2019 through to 2036.

Background demand and revenue growth post-2036 has been estimated using the PDFH6 elasticity framework. This assumes:

- GVA per capita – from Annual Parameters of TAG data book, May 2022
- Employment – from TEMPRO 7.2 data for Merseyside, Halton, Warrington, Wigan and West Lancashire
- Population – from TEMPRO 7.2 data for Merseyside, Halton, Warrington, Wigan and West Lancashire
- Participation – from TEMPRO 7.2 data for Merseyside, Halton, Warrington, Wigan and West Lancashire
- Car Fuel Costs – non-London major values from M4.2.2 of TAG data book, May 2022
- Car Journey Times – non-London major values from M4.2.2 of TAG data book, May 2022
- Bus Costs – assumed to rise at 2% above RPI
- Bus Journey Times– non-London major values from M4.2.2 of TAG data book, May 2022

- Bus Headway – assumed no change
- Rail fare – assumed to rise at RPI+1%
- GJT trend – assumed no change.

Demand growth is capped in 2042, 20 years from the current year. After this date demand is assumed to rise in line with population growth – note that TEMPRO population growth itself is capped in 2051.

12.4.6.3. Impacts of COVID-19

The business case for Carr Mill station has been assembled after the COVID-19 pandemic, which represents one of the most disruptive periods in history. Much of daily life was disrupted, many businesses were shut down for several months and long-term transport patterns changed from mid-March 2020.

In addition to the impacts on transport demand, the economic impacts of the pandemic have also been severe. Economic activity declined significantly between April and June 2020[61] and despite growth throughout the rest of the year GDP per head was around 2% lower compared to January, one of the swiftest and most significant economic contractions recorded. In addition to these headline indicators there have been significant rises in unemployment as the economy has contracted.

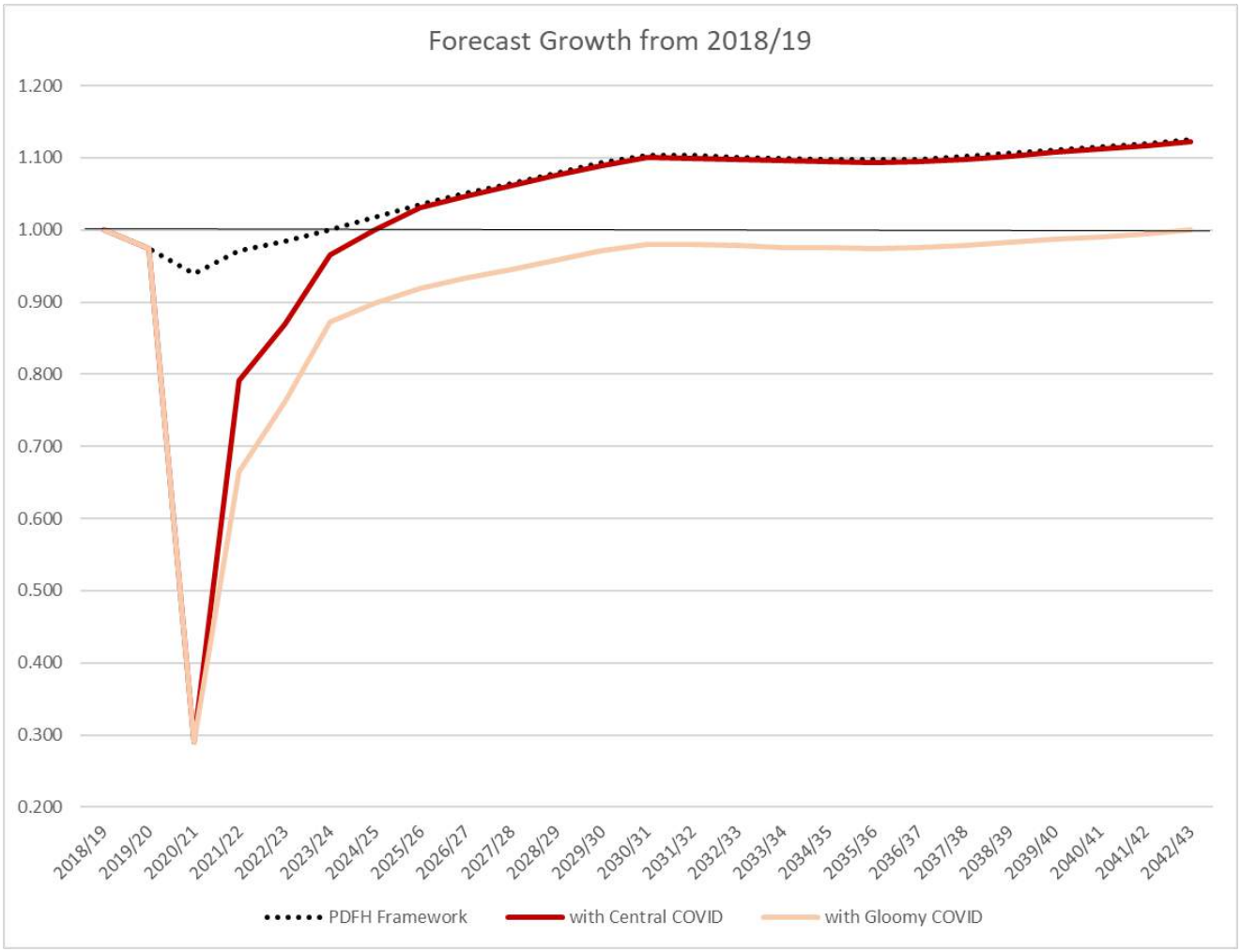
The impacts of the pandemic are taken account of within a demand sensitivity test. This is based on data presented to the Passenger Demand Forecasting Council (PDFC) in October 2020. This gives two scenarios, a central case and a gloomy scenario with impacts disaggregated by business, commute and leisure use compared to a 2019/20 baseline as follows:

Central Case Impacts	**Commute**	**Business**	**Leisure**
2020/21	-70%	-70%	-70%
2021/22	-18%	-32%	-27%
2023/24	-9%	-16%	-1%
2025/26 and onwards	-7%	-	+8%
Gloomy Case COVID Impacts	**Commute**	**Business**	**Leisure**
2020/21	-70%	-70%	-70%
2021/22	-35%	-38%	-36%
2023/24	-24%	-21%	-6%
2025/26 and onwards	-21%	-9%	-1%

Impacts on intermediate years have been extrapolated and long-term growth is assumed to revert to pre-pandemic levels from 2025/26. This results in much reduced demand in the gloomy COVID scenarios, with the Central Case tracking slightly below pre-COVID demand from 2024/25. Note that the standard PDFH growth framework also shows a downturn through the 2020-22 pandemic period due to a downturn in economic indicators.

[61] Quarterly National Accounts, Q4 (Oct to Dec) 2020 GDP per head

Figure 12-9 - Impacts of COVID-19 on future demand growth



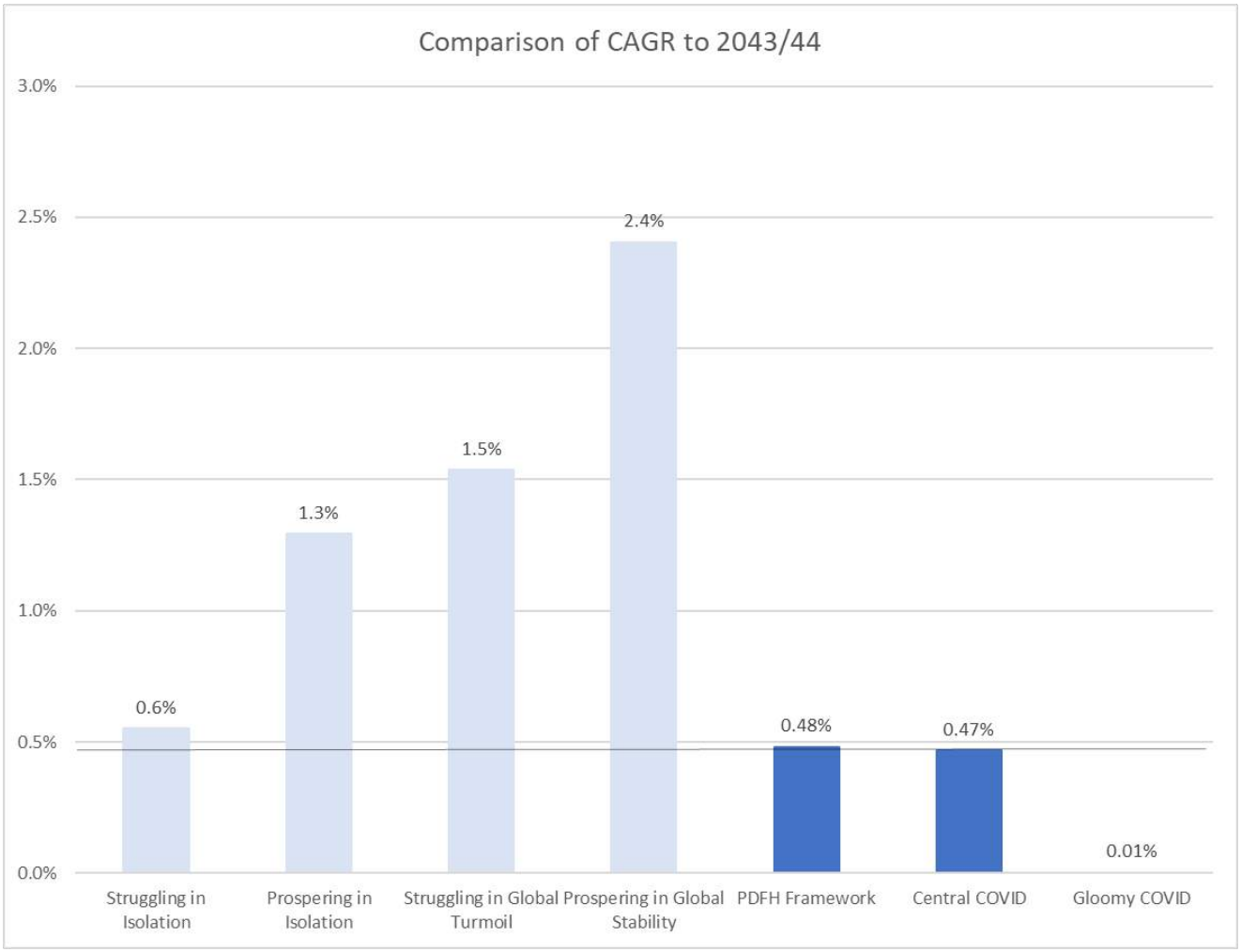
12.4.6.4. Comparisons with published growth rates

A comparison with growth rates published by Network Rail as part of their Regional Urban Market Study[62] has been undertaken. Compound Annual Growth Rates (CAGR) have been calculated up to a horizon year of 2043/44 to enable a fair comparison as shown in Figure 12-10 below. Network Rail forecasts are shown in light blue whilst project-specific rates for Carr Mill are shown in dark blue.

This shows that the central case forecasts which have been developed to include COVID are similar to the lowest growth forecasts produced by Network Rail back in 2013.

[62] https://www.networkrail.co.uk/wp-content/uploads/2016/11/Regional-urban-market-study-2013-1.pdf

Figure 12-10 - Predicted Compound Annual Growth Rates (CAGR) to 2043/44



12.5. Demand Forecasts

The following tables summarise the range of demand and revenue forecasts for the new station at Carr Mill. These are provided for:

- Opening year – 2027/28, including the PDFH-standard demand ramp-up to account for the fact that new demand will take up to four years to fully accrue;
- Intermediate year – 2031/32, the first full year after ramp-up of demand is completed; and
- Forecast year – 2042/43, which represents the demand cap after which trip rates are assumed to rise in line with population growth.

Table 12-20 - Demand and revenue forecasts at Carr Mill for selected years

Option 2	Lower Demand	Upper Demand	Lower Revenue	Upper Revenue
2027/28	81,250	150,750	£185,250	£347,000
2031/32	133,900	248,450	£308,750	£575,750
2042/43	167,600	311,000	£407,150	£755,550
Option 3	**Lower Demand**	**Upper Demand**	**Lower Revenue**	**Upper Revenue**
2027/28	79,350	147,250	£184,550	£346,100
2031/32	131,550	244,100	£310,000	£578,350
2042/43	165,650	307,350	£412,100	£764,700
Option 6	**Lower Demand**	**Upper Demand**	**Lower Revenue**	**Upper Revenue**
2027/28	68,600	127,300	£116,950	£220,400
2031/32	115,800	214,900	£204,250	£381,900
2042/43	148,500	275,550	£282,300	£523,850
Option 7	**Lower Demand**	**Upper Demand**	**Lower Revenue**	**Upper Revenue**
2027/28	45,400	84,250	£113,550	£214,800
2031/32	79,250	147,000	£203,900	£381,850
2042/43	104,800	194,400	£289,250	£536,750

Note: Revenue is nominal, including annual increases over and above RPI measure of inflation

12.6. Appraisal Methodology

12.6.1. Introduction

This section of the report describes the calculation of journey time benefits and marginal external costs for the core scenario.

12.6.2. Assumptions

The following high-level assumptions are used in the calculation.

Assumption	Value	Source / Comments
Scheme opening	2026/27	Assumed scheme opening
Appraisal period	60 years from scheme opening	TAG Unit A1.1 Cost-Benefit Analysis
Discount rate	3.5% for 30 years from current year, 3%, years 31-60: TAG Unit A1.1	
Present value year	2010	TAG Unit A1.1 Cost-Benefit Analysis

Journey purpose splits are dependent on the comparator station. These are derived from the Do Minimum MOIRA demand data for Thatto Heath and Eccleston Park and TAG data book recommended journey purpose splits. They are specific to each flow.

12.6.3. User Benefits

User benefits relate to the impacts of the scheme on demand which is attracted to the new station. This includes the impacts on both new-to-rail demand and demand abstracted from existing stations. A summary of the various user benefits at the stations are provided in Table 12-21 and Table 12-22 below.

Table 12-21 - Benefits for new to rail demand

	Result	Impact
Demand	Demand induced by new station	Induced demand at new station
Rail Revenue	Revenue per km applied to new demand	No overall change for private sector. Increased revenue balanced by reduced subsidy. Reduced public cost due to reduced subsidy. Loss of indirect taxation to Government.
Journey Time	Change in end-to-end journey times applied using rule-of-half.	Decrease in journey time gives benefits to new users.
Marginal Economic Costs	Rail distance applied to calculate change in highway km. Assume 27%-31% of rail trips are transfers from car.	Decrease in highway km gives decongestion benefits. Loss of indirect taxation to Government.

Table 12-22 - Benefits for abstracted rail demand

	Result	Impact
Demand	Demand induced by new station	Induced demand at new station
Rail Revenue	Revenue per km applied to new demand	No overall change for private sector. Increased revenue balanced by reduced subsidy. Reduced public cost due to reduced subsidy. Loss of indirect taxation to Government.
Journey Time	Change in end-to-end journey times applied using rule-of-half.	Decrease in journey time gives benefits to new users.
Marginal Economic Costs	Crow-fly distance applied to calculate change in access distance between existing and new station. Assume set percent of demand uses car to access station.	Decrease in highway km gives decongestion benefits. Loss of indirect taxation to Government.

When disaggregating user benefits appropriate journey purpose splits from each comparator station have been used (i.e. Carr Mill takes the averaged journey purpose splits for Thatto Heath and Eccleston Park). These are derived from the Do Minimum MOIRA demand data for each comparator station and vary by destination. PDFH6 journey purpose splits for full, reduced and season tickets have then been used.

12.6.3.1. Journey Time Savings

In order to estimate the time savings for abstracted trips a population weighted GJT has been calculated in the Do Minimum and Do Something scenarios for each movement (i.e. Carr Mill to St Helens, Carr Mill to Wigan etc). This figure is taken to be the journey time saving for that movement. This figure is then used to calculate a journey time saving for new-to-rail trips applying the rule-of-a-half.

For those movements which are not directly modelled a demand weighted average journey time saving from those modelled flows has been calculated and applied.

12.6.3.2. Marginal External Costs

The change in vehicle kms for both abstracted and new-to-rail trips has also been calculated. The average change per abstracted trip is taken to be the distance between the original station of origin and the new station of origin. Data from the comparator station has been used to derive a 'drive-up' access mode split which is then applied to limit this mileage change.

New-to-rail trips take the full distance between the station of origin and station of destination, assuming an appropriate diversion factor for the flow. These are taken from the TAG data book A5.4.5 and assume that a set percentage of new to rail users divert from private vehicle as follows:

- 27% of non-London PTE demand of <32km length divert from private vehicle;
- 31% of non-London non-PTE demand of <32km length divert from private vehicle; and
- 30% of non-London demand of >32km length divert from private vehicle.

For non-modelled flows (e.g. Carr Mill-outside of PTE) the km change has been capped using an assumption derived from MOIRA data. Outputs have allowed us to calculate an average journey distance weighted by demand for the top 50 flows at each station. This calculation has been undertaken whilst removing those origin-destination movements which are included in the model. This calculates a demand-weighted average distance for the top non-modelled flows. This has been applied to Carr Mill and assumes that non-modelled flows would split equally east-and west-bound to interchange for onward connections. The distance cap for these non-modelled flows is shown in Table 12-23 below.

Table 12-23 - Distance saving applied for non-modelled flows in the model

Comparator Station	Distance Cap (km)
Thatto Heath Average	46.14

Source: Demand forecasts

12.6.3.3. Results

The net change in demand, revenue, journey time and vehicle-km for Carr Mill are shown in Table 12-24 and Table 12-25 below.

Table 12-24 – Lower range of user benefits at Carr Mill in 2018/19 and 2035/36

2018/19 – Baseline	Option 2	Option 3	Option 6	Option 7
Demand	95,300	91,400	74,300	43,400
Rail Revenue	£203,000	£197,650	£109,950	£95,750
Net Time Savings (hours)	7,307	8,736	(11,972)	4,508
User Time Savings (hours)	*27,829*	*29,258*	*8,550*	*4,508*
Through Traveller Impacts (hours)	*(20,522)*	*(20,522)*	*(20,522)*	-
Change in vehicle km (thousands)	(297)	(285)	(173)	(144)
2035/36 – With Development	**Option 2**	**Option 3**	**Option 6**	**Option 7**
Demand	149,350	147,550	132,300	93,350
Rail Revenue	£293,850	£297,450	£203,750	£208,800
Net Time Savings (hours)	22,658	26,542	(7,460)	9,636
User Time Savings (hours)	*45,191*	*49,075*	*15,073*	*9,636*
Through Traveller Impacts (hours)	*(22,533)*	*(22,533)*	*(22,533)*	-
Change in vehicle km (thousands)	(417)	(419)	(312)	(312)

Source: Demand forecasts

Table 12-25 – Upper range of user benefits at Carr Mill of using a 2017/18 demand baseline

2017/18 – Baseline	Option 2	Option 3	Option 6	Option 7
Demand	176,800	169,550	137,900	80,550
Rail Revenue	£376,700	£366,800	£204,050	£177,700
Net Time Savings (hours)	28,575	31,227	(7,199)	8,364
User Time Savings (hours)	*51,639*	*54,291*	*15,865*	*8,364*
Through Traveller Impacts (hours)	*(23,064)*	*(23,064)*	*(23,064)*	-
Change in vehicle km (thousands)	(551)	(529)	(321)	(268)
2035/36 – With Development	**Option 2**	**Option 3**	**Option 6**	**Option 7**
Demand	277,100	273,800	245,500	173,200
Rail Revenue	£545,290	£551,900	£378,100	£387,400
Net Time Savings (hours)	58,533	65,739	2,646	17,881
User Time Savings (hours)	*83,857*	*91,063*	*27,970*	*17,881*
Through Traveller Impacts (hours)	*(25,324)*	*(25,324)*	*(25,324)*	-
Change in vehicle km (thousands)	(774)	(777)	(579)	(580)

Source: Demand forecasts

12.6.4. Non-User Benefits

Non-user benefits relate to the impacts suffered by through travellers by calling trains at a new station. Likely impacts on non-users are shown in Table 12-26.

Table 12-26 - Impacts for through travellers

	Result	Impact
Demand	Demand on existing services sees additional journey time to call at new station, resulting in some demand switching to alternative modes	Demand decrease on through movements. High-level assumption that all passengers will remain rail users as a high-level assumption.
Rail Revenue	Loss of demand leads to loss of revenue. Highest proportional losses are likely on short distance / low revenue movements	No overall change for private sector. High-level assumption that all passengers will remain rail users as a high-level assumption.
Journey Time	Amended journey times to call at new station	Extended journey times giving negative impacts to through travellers who remain on services
Marginal Economic Costs	Rail distance applied to calculate change in highway km. Assume 30% of rail km are lost as mode switch to car.	Increase in highway km gives congestion dis-benefits. High-level assumption that all passengers will remain rail users as a high-level assumption.

Impacts on through travellers have been assessed using the MOIRA demand and revenue forecasting program. Using loads per train the demand on those services which would call at Carr Mill over a typical day has been isolated. This has been annualised at a rate of 310 and a journey time disbenefit of 2 minutes has been applied. This applies a conservative assumption that all through travellers will continue to use the train and there will be no loss of demand or revenue.

Using this approach, the additional call at Carr Mill in 2018/19 will impact on **615,650 passengers per year** and will result in journey time impacts of just over **20,500 hours per year**. Using the 2017/18 data this rises to **691,900 passengers per year** resulting in journey time impacts of **23,050 hours per year**. For 2035/36 through traveller impacts have been multiplied by 1.098 which is the exogenous growth rate.

Note that Option 7 will not accrue any non-user disbenefits as it will be served by an additional Liverpool Lime Street-St. Helens Central train which will be extended to serve Carr Mill once the station is opened.

13. Appendix F: Social And Distributional Impact Assessment

13.1. Social Impacts Appraisal

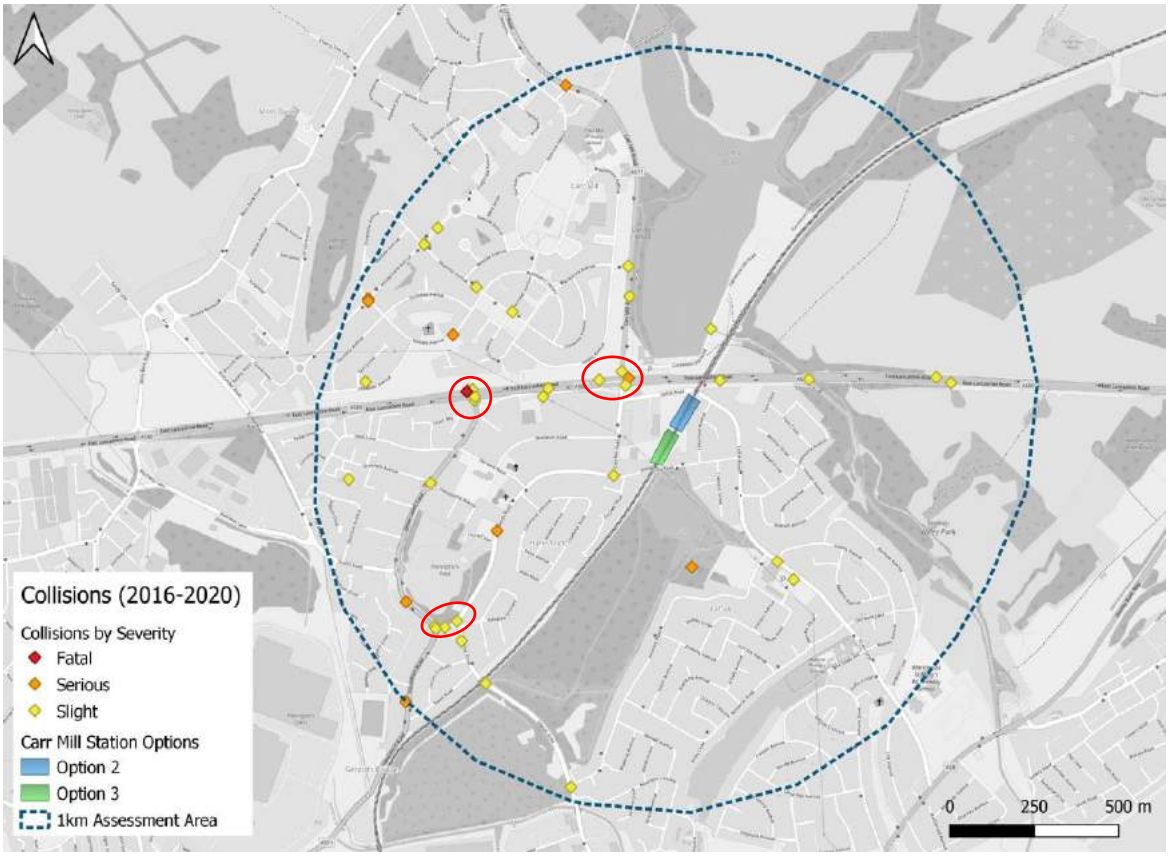
13.1.1. Safety Impacts

Historic accident data from 2016 to 2020 indicates there were 44 collisions that occurred within a 1km assessment area of the Carr Mill Station preferred options. Due to the geographical proximity of the two options being considered, one assessment has been undertaken for safety with a combined assessment area covering a 1km buffer of the two options. The collision locations and level of severity are presented in Figure 13-1 .

There were 34 slight collisions, 9 serious collisions, and 1 fatal collision in the area in the five-year period assessed. As shown in the figure, the accidents are spread across the assessment area, with a few noticeable clusters. The fatal accidents took place in 2020 occurring on the A580 near the A571 Green Leach Lane junction.

There are clusters noticeable along the A580 including around the A571 Green Leach Lane junction and Carr Mill Road junction. In addition, other hotspots for accidents include the A571 / Woodlands Road junction.

Figure 13-1 Collisions within 1km of Carr Mill Station options, 2016-2020 (STATS19)



The table below summarises the clusters or hotspots identified within the assessment area.

Table 13-1 - Collision clusters identified within 1km assessment area

Location	Number of Collisions	Severity
A571 / Woodlands Road junction	4	All slight

A580 East Lancashire Road / A571 Green Leach Lane junction	5	1 fatal; 4 slight
A580 East Lancashire Road / Carr Mill Road junction	4	1 serious; 3 slight

The proposed scheme is a public transport improvement scheme which intends to introduce a new rail station/rail link in the Carr Mill area. Rail services are currently not easily accessible from Carr Mill, and accessing alternative stations by car, public transport, or active travel have high costs and/ or journey times associated. The scheme intends to improve provision and access to rail services in this area, and is expected to bring some impacts to safety, in two main ways:

The new station will support a modal shift away from private vehicle with increased journeys by rail. At present there is poor public transport connectivity to key destinations such as Liverpool and Wigan, with journeys typically quicker by car. The new station will encourage journeys by rail, and a consequent reduction in vehicle kilometres resulting in reduced collisions.

The demand forecast modelling found that users switching from road to rail provides a reduction of 774,000 vehicle km on the road network. This provides decongestion, air quality, accident, carbon, noise and road maintenance benefits.

The new station is expected to increase footfall and traffic in the vicinity of the station as people travel by other modes to reach it. Whilst there are different options being considered, each option is designed to improve safety and create a safe environment for pedestrians and cyclists. Key design elements incorporated into each design include dedicated footpaths for pedestrians.

The scheme intends to improve rail accessibility in the local area which should encourage a modal shift away from private cars. The station designs will be delivered to optimise safety for pedestrians and cyclists accessing the rail station. The scheme is expected to reduce overall vehicle kilometres and are expected to contribute to reducing the risk of collisions for users on the network. The higher the modal shift to public transport, the more the higher the reduction of vehicle kilometres. Safety benefits are anticipated from the implementation of a rail station and, overall, it is expected that the impact of the scheme on Safety will be **Slightly Beneficial** under both Option 2 and Option 3.

13.1.2. Physical Activity Impacts

DfT's TAG Unit A4-1 notes that transport and the physical environment of urban areas both play a major role in the amount of physical activity that people are engaged in on a day-to-day basis. However, as noted by Litman[63], few published studies have quantified the health benefits of transport and land use planning decisions that increase physical activity.

There is however a longstanding recognition of the interrelationship between increased physical activity, active transport and reduced morality risk and absenteeism. Changing mobility behaviours towards more active travel could have huge benefits for physical and mental health. For people who cycle or walk a minimum of 150 minutes a week as recommended by the World Health Organisation (WHO), the risk of mortality is reduced by 10%.

Walking and cycling to rail stations as part of a multi-modal door-to-door journey is becoming more popular. It offers sustainable access to the rail network when demand for rail travel is increasing. It often provides the most reliable journey time and is the fastest option for short trips being affected by congestion on the highway network.

The Carr Mill station proposal is a public transport scheme encouraging modal shift away from private vehicles, which can be the most effective if non-vehicle based options are promoted to the main station access modes. This can be achieved by complimenting the public transport provision with improvements to the active transport infrastructure connecting to the station.

As shown in Appendix C the Carr Mill Station scheme has some active travel elements incorporated into its design options, including either the introduction of new footpaths or enhancement of existing footpaths in most of the design options being considered. Both Option 2 and Option 3 will introduce a new 3m wide footpath

[63] Litman, T. A. (2017). Economic value of walkability. Canada: Victoria Transport Policy Institute.

connecting the station to Woodlands Road as well as secure cycle parking at the station to encourage active travel by users.

Both options are expected to encourage a small uptake in active travel as a result of more trips being undertaken by rail. A substantial change is not expected, and journeys are likely to be short in distance[64]. The change in active travel and physical activity levels will be dependent on the level of modal shift caused by the scheme from private vehicles to the public transport network. The higher the modal shift to public transport, the more the uptake of walking and cycling as people complete multi-modal journeys to access stations. Due to this mode shift being currently unknown, the overall assessment for physical activity for all the scheme options is preliminary assessed as **Slightly Beneficial** at this stage.

13.1.3. Security Impacts

Transport interventions may affect the level of security transport users or other persons. The guidance (TAG Unit A4-1) states that security concerns relating to transport interventions generally refer to requirement for motorists to slow or stop their vehicle. At this stage of the scheme development, security measures have not been confirmed in detail. In accordance with the requirements of TAG Unit 4-1, an indicative high-level assessment of key security indicators is shown below in Table .

Table 13-2 - Summary of security appraisal

Security Indicator	Relative Importance	Scheme Impact	Comments
Site perimeters, entrances and exits	Medium	Neutral	The scheme is not expected to have any material impact on site perimeter issues. Materials to be used at station perimeters and exits are yet to be confirmed. Options 2 and 3 will provide a pedestrian entrance via a footpath from Woodlands Road, which should be clearly marked with open fencing rather than solid walls. A shorter walk will be made to reach the station for Option 3 than Option 2.
Formal surveillance	High	Slight beneficial	Changes to CCTV have not been confirmed for each option at this stage. It is assumed full CCTV coverage will be provided in line with Network Rail standards. Each of the station option proposals should incorporate good quality CCTV to improve safety and security of users. Part time station staffing through a ticket office is proposed for all site options.
Informal surveillance	Medium	Slight Beneficial	Options 2 and 3 are located on embankments which may be less visible from the road and respective car parks. Overall, it is anticipated that the scheme and all options will have a material impact on informal surveillance through the increase of users, meaning potential security issues are more likely to be perceived/reported.
Landscaping	Medium	Neutral	Public realm and landscaping improvements are expected as part of the scheme but have not yet been finalised at the time of writing.

[64] According to the literature*, 1,200m is considered to be the accepted walking distance to rail stations and 15min is the accepted time that a cyclist is willing to ride. **Bueno Cadena, P. C. (2017). Assessing social and distributional impacts of transportation policies for optimizing sustainability (Doctoral dissertation, Universidad Politécnica de Madrid).*

Lighting and visibility	High	Slight beneficial	Good quality lighting will be provided in the new station to improve safety and security of users in accordance with Network Rail standards. Details of lighting have not yet been finalised at the time of writing.
Emergency call	Low	Slight beneficial	It is expected that emergency call points will be provided in accordance with Network Rail standards. Details of the locations of emergency call points have not yet been finalised at the time of writing.

As the appraisal has resulted in a Slight Beneficial assessment for four of the six security indicators, the overall assessment for security is considered to be **Slightly Beneficial** for both options. It should be noted that the proposed station and service improvements are assumed to positively impact the level of security for transport users to some extent and to enhance passenger comfort through the provision of high-level design standards. Care should be taken when considering the result of this assessment as the level of data available affecting security are limited at this stage.

13.1.4. Severance Impacts

Community severance is defined in TAG Unit A4-1 as the separation of residents from the facilities and services they use within their community caused by substantial changes in transport infrastructure, or by changes in traffic flows. This primarily concerns non-motorised modes, especially pedestrians.

As recognised in the literature, motorised traffic using the infrastructure can be a physical barrier, as it reduces the opportunities for crossing the road[65]. This is also expected to be true to an even higher extent for public transport infrastructure which may physically separate or isolate communities. On the contrary, the provision of better integrated cycling and pedestrian facilities and crossing points is expected to reduce severance. As such, severance can either be affected by substantial physical changes in transport infrastructure or through changes to traffic conditions. As a result, the assessment is focused on the following key questions:

- Key question 1: Does the proposed scheme infrastructure or complementary measures cause or remove physical barriers between residents and community facilities and services?
- Key question 2: Do changes in traffic flows resulting from the scheme option cause or remove barriers between residents and community facilities and services?

The assessment of severance in this context focuses on the first key question. This is according to the guidance, which states that severance impacts should be assessed and presented qualitatively in the Appraisal Summary Table (AST) (from the social point of view).

The scheme proposes a new station at Carr Mill, which should enable more journeys to be undertaken by rail and reduce the number of kilometres travelled by car, having some impact to severance. The overall Severance impact of the scheme has been assessed as **Slightly Beneficial**.

13.1.5. Journey Quality Impacts

Journey quality is generally understood as the cumulative travelling experience of the quality and ambience of a journey[66]. As recognised in TAG Unit A4-1, it represents a measure of the real and perceived physical and social environment experienced while travelling and includes factors such as perceptions of safety, information provision and comfort.

TAG Unit A4-1 also states that in most cases travel is a derived demand that arises from people's desire to access other services or engage in other activities. Therefore, a poor journey experience is easily noticed by travellers. Travel on an urban road is likely to be exclusively a derived demand due to the lack of traveller care facilities and traveller views that the journey will provide compared to scenic drive or rail journey for example.

[65] Anciaes, P. R., Jones, P., & Mindell, J. S. (2016). Community severance: where is it found and at what cost?. Transport Reviews, 36(3), 293-317.

[66] Geurs, K. T., Boon, W., & Van Wee, B. (2009). Social impacts of transport: literature review and the state of the practice of transport appraisal in the Netherlands and the United Kingdom. Transport reviews, 29(1), 69-90.

For example, it is assumed that urban motorway trips result from people wanting to access services and amenities quickly, rather than for the pleasure of the journey.

As a consequence, it is important that journeys are made as simple and easy as possible to improve the perceived physical and social environment experienced while travelling, as well as to prevent boredom and associated psychological issues. Research on travel behaviour has shown that journey quality factors are of significant importance and that users are willing to pay to improve the quality of a journey. Specifically, journey quality impacts can be sub-divided into three groups:

- Traveller care (cleanliness, level of facilities, information);
- Travellers' views (the view and pleasantness of external surroundings for the duration of the journey); and;
- Traveller stress (frustration, fear of accidents and route uncertainty).

The following table presents a high-level qualitative assessment of the scheme in respect to these sub-categories.

Table 13-3 - Journey quality assessment

Category	Impact assessment
Traveller care	A new station will improve traveller care through provision of a fully integrated, modern, and inclusive rail link in the Carr Mill area. It will provide residents living in the locality with modern facilities to support rail travel on to Wigan-Liverpool mainline. The proposals will also incorporate active travel elements (new and/or enhanced footpaths and cycle parking) to support sustainable 'first mile, last mile' journeys, contributing to improvements in traveller care. Bus stops will also be provided at the station, providing an integrated service. The proposed new station and facilities are expected to improve traveller care factors, resulting in a better user experience. Examples of specific measures include: • Upgrades to street lighting and CCTV where necessary improving pleasantness of journey for users. Lighting, visibility, and CCTV will be designed in line with National Rail standards. • New and/or enhanced footpaths and cycle parking and bus stops.
Travellers' views	Journey quality is likely to be improved for pedestrians and cyclists using the network. The improvements are expected to deliver benefits to users by enhancing pedestrian rail connectivity in the Carr Mill area. More specifically, the quality and ambience of a journey is expected to be upgraded by the following improvements: • New, modern and integrated rail station and rail facilities • Scheme will deliver upgrades to lighting where necessary improving pleasantness of journey for users. • Proposals incorporate active travel improvements including either new or enhanced footways which will be delivered along the station to integrate the station with the local community e.g. footpath connections to Woodlands Road.
Traveller stress	The scheme will provide a new rail link at Carr Mill which will improve journeys by rail for people living or working in Carr Mill. The new station will improve the journeys to/from large centres including Liverpool and Wigan and encourage modal shift from private vehicles to rail. This mode shift to rail should provide benefits to users in terms of traveller stress, by reducing fear of traffic collisions and improving route uncertainty due

to congestion and traffic delays. The mode shift will also improve traveller stress for highway users with a reduction in vehicles and collisions expected.

The overall Journey Quality impact of the scheme has been assessed as **Moderately Beneficial**.

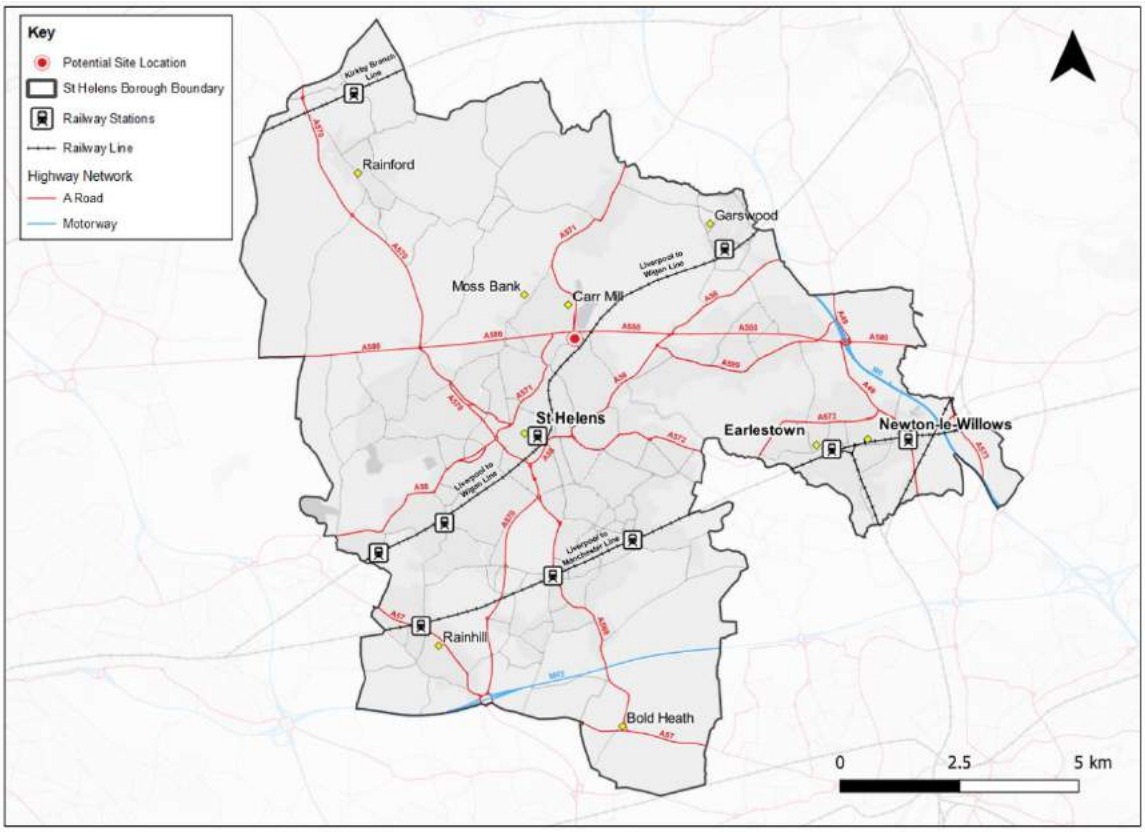
13.1.6. Option Values and Non-use Values

As stated in the literature, the total economic value for a transportation service consists of use, option, and non-use value. The use benefit is based on a traveller's willingness to pay for usual consumption of the service. The optional value, on the other hand, is related to the possible use of the service for trips not yet anticipated or currently accommodated by other travel modes. The non-use value, however, is derived from the intrinsic merit of the service, even though a trip-maker never actually or potentially depends on the mode[67].

Currently Carr Mill is not served directly by a railway line, the closest stations are Garswood to the north-east (approx. 3.5km) and St Helens Central to the south-west (approx. 2.5km). The proposed station would, therefore, provide a key link station reducing the distance needed to travel to alternative stations such as St Helens or Garswood. There is currently bus provision from Carr Mill to St Helens, Wigan and local trips to areas such as Laffak. Multiple bus stops are located within 500m from the proposed Carr Mill station site.

In the interest of proportionality, a qualitative assessment of option values and non-use values has been completed. As outlined within TAG unit A4-2 a catchment area for minor stations is 2km. The inclusion of option and non-use values in appraisal is very sensitive to the size of the population affected by the proposals. Within the 2km buffer there are 12,820 households[68], which instigates that there would be a large impact from the proposed Carr Mill station, as there are greater than 1,000 households within the 2km catchment area. It is worth noting that the south western portion of the Carr Mill 2km catchment does overlap with the 2km catchment area of the existing St Helens Station.

Figure 13-2 - Current rail service provision within the local area



[67] Chang, J. S., Cho, S. Y., Lee, B. S., Kim, Y., & Yun, S. K. (2012). A dichotomous choice survey for quantifying option and non-use values of bus services in Korea. Transportation, 39(1), 33-54.
[68] Index of Multiple Deprivation Data, 2019, Ministry of Housing, Communities & Local Government

Due to the number of household within the 2km catchment area and the addition of a new rail station, the overall option values and non-use values impact of the scheme has been assessed as **Largely Beneficial**.

13.1.6.1.1. Accessibility Impacts

Accessibility benefits can be similar to transport user benefits as the changes in journey time and operating costs reduce the generalised cost associated with travel and hence make transport more affordable. Reduced journey times and operating costs also increase the range of services that can be accessed for the same cost.

- Apart from the cost of transport the following barriers can impact accessibility:
- Availability and physical accessibility of transport
- Services and activities located in inaccessible places
- Safety and security
- Travel horizons – knowing and trusting using a service

The table below presents a summary of the assessment in the context of the previously described key barriers.

Table 13-4 - Accessibility assessment

Barrier to Accessibility	Impact Assessment
Cost of transport	Affordable and straightforward tickets are outlined as a key aim of the Merseytravel: Liverpool City Region Bus Strategy. Revenue and demand forecasting models show yield per journey is between £3.67-£3.69 for Carr Mill, higher than local nearby stations. This is only an indicative fare estimation and is not representative of final fares. Regardless of what the fare ends up being, almost all user groups of the scheme are expected to benefit from the service, including: • Those who are currently use bus to access the rail system at St Helens will save on bus fare as they no longer need to use the bus service. • Those who are currently driving to St Helens to catch the train will no longer need to pay for parking or vehicle operating cost. • Those who are driving all the way to their destinations will be able to save on vehicle operating cost and parking at destinations. Without a single group that will be negatively impacted in terms of cost of transport, the scheme is assessed to be **Moderately Beneficial.**
The availability and physical accessibility of transport	The scheme will improve public transport provision and a reliable service. The new station will provide better rail connectivity for people living and working in the Carr Mill area. Service pattern is at least hourly, although a half-hourly pattern throughout much of the day to Liverpool Lime Street and Wigan North Western is possible. The scheme has therefore been assessed as **Moderately Beneficial** for this barrier to accessibility.
Services and activities located in inaccessible places	Although the station is located in a predominately urban location, it will provide greater accessibility and connectivity to rail for the local community of Carr Mill, and provide a reliable, accessible service connecting to Liverpool and Wigan, both important employment and leisure destinations in the region. The scheme has therefore been assessed as **Moderately Beneficial** for this barrier to accessibility.

Safety and security	The scheme design will align to National Rail standards in terms of safety and security. Option 2 is accessible for cars from Laffak Road, and Option 3 accessible from Carr Mill Road. Both sites propose pedestrian access from Woodlands Road as well, which will be delivered with appropriate lighting and CCTV surveillance. The scheme will provide safe facilities equipped with CCTV and high-quality lighting at the new station and along footpaths accessing the station to increase safety and formal surveillance. The station will have part-time staffing at the ticket office. As a result, this scheme has been assessed as **Slightly Beneficial.**
Travel horizons	Calls at Carr Mill Station will be contained within current timetable pattern, and generally delivered by earlier departures/ later arrivals at Liverpool Lime Street. The indicative timetable for Station Options 2 and 3 shows that most trains could stop at the new station, with overall a 2-minute journey time extension including ½ minute dwell at the new station. Travel horizons may be slightly disimproved for those travelling on the stopping services who are not accessing Carr Mill. However, the station will provide a reduced journey time for those travelling to or from the Carr Mill area. As a result, this scheme has been assessed as **Neutral**

The above qualitative assessment for accessibility has outlined beneficial outcomes for all barriers to accessibility with the exception of cost of transport and travel horizons for which scheme details are not yet available or there is a neutral appraisal. The proposed scheme is expected to deliver positive net impact on public transport accessibility as a result of the new station opening at Carr Mill. Therefore, the overall impact of the scheme on accessibility is assessed as **Moderately Beneficial.**

13.1.6.1.2. Personal Affordability

There is a substantial body of research to demonstrate that the monetary cost of travel can be a major barrier to mobility for certain groups of people, with particularly acute effects on their ability to access key destinations. Although affordability of transportation is primarily a distributional issue, the assessment presented in this section provides a general consideration of personal affordability from a wider perspective (net outcomes instead of a complete identification of 'winners' and 'losers').

The guidance states that consideration of personal affordability issues should take place throughout the appraisal process in cases where the following changes occur:

- Parking charges
- Car fuel and non-fuel operating costs (where, for example, rerouting or changes in journey speeds and congestion occur resulting in changes in costs)
- Road user charges
- Public transport fare changes; and
- Public transport concession availability

The Carr Mill station scheme is expected to have an impact on affordability, due to a change of mode from vehicle to train, resulting in a reduction in congestion on the highway network and subsequent reduction in car fuel and operating costs. The following observations are made regarding the impact of the scheme on personal affordability:

- The parking available at the station is likely to incur parking charges, however at this stage of the project development the charges are not confirmed.

- In terms of car fuel and non-fuel operating costs, the scheme will result in a mode shift from car to rail, and result in decongestion benefits to road users. The Road Economic Efficiency (Decongestion) benefits for the scheme are outlined in the table below.

Table 13-5 - Decongestion 60-year NPV, 2010 prices and values

	Option 2	Option 3
Road Economic Efficiency (Commuting)	£156,141	£156,465
Road Economic Efficiency (Other)	£1,573,889	£1,577,149
Road Economic Efficiency (Business)	£629,525	£630,829
Road Economic Efficiency (Total)	**£2,359,556**	**£2,364,443**

In terms of the public transport fares and charges, these are not confirmed at this stage. However, the demand forecast modelling has forecast station revenue and yield per journey (average revenue per journey) giving an indication of average rail fares. The net revenue is shown in Section 3.3.4 above. On this basis the affordability impacts of the Carr Mill station have been summarised in the table below.

Table 13-6 - Affordability assessment

Mode	Monetary Modal Cost Change	Description	Impact Assessment
Car	Car fuel and non-fuel cost	• The scheme will result in mode shift from private vehicle to rail, with decongestion benefits expected. • Decongestion will reduce car operating costs. The decongestion benefits are summarised in Table above.	Slightly beneficial
	Public Parking	• Parking charge at the new station is expected but is yet to be confirmed. • The scheme is expected to benefit those who are currently driving to St Helens Central or other nearby stations to use the rail system. As the result of a station that can be more easily accessed on foot, these travellers are expected to save on parking charges.	Slightly beneficial
Public Transport	Fare spent on public transport	• The overall revenue yield per journey from Carr Mill is higher than when compared to other local stations, at £3.67 and £3.69. This gives an indication of average fare costs, and when compared to other local stations the fares from Carr Mill are more expensive. • However, the scheme is expected to benefit those who are currently using bus services to access rail at St Helens Central or other nearby stations,	Slightly beneficial

		as they will no longer need to pay the bus fare.

The above assessment for affordability has outlined adverse outcomes for some elements affecting affordability, specifically with regards to parking charges and rail fares. Having said this, the assessment of rail fares has been based on yield per journey and provides only an indicative assessment and is not representative of finalised fares. Additionally, parking charges are unconfirmed at this stage. Conversely, demand forecast modelling has shown the scheme will generate large decongestion benefits for road users as more people are encouraged to use rail over private vehicles, as well as journey time benefits for rail users. Based on this, the overall impact of the scheme on affordability is assessed as **Slightly beneficial.**

13.2. Distributional Impact Appraisal

Distributional impacts relate to the extent to which there are differences in the way impacts affect different groups in society. For example, the noise impacts of an intervention will affect different groups of households, with some experiencing increases, and others decreases.

This distributional impact appraisal was undertaken in accordance with requirements set out in Transport Appraisal Guidance (TAG) Unit A4-2 published by the Department of Transport (DfT). A proportionate three-step approach has been applied to undertake the analysis as per the table below.

Table 13-7 - Overview of the DI process

Step		Description	Output
Screening	**1**	Identification of likely impacts for each indicator	Screening Results
Full appraisal	**2**	Assessment: • Confirmation of the area impacted by the transport intervention (impact area), • Identification of social groups in the impact area (such as transport users, people living in those areas affected by the scheme), • Identification of amenities in the impact area,	DIs social groups statistics and amenities affected within the impact area
	3	Appraisal of impacts: • Core analysis of the impacts (including providing an assessment score for each indicator based on a seven-point scale – large beneficial to large adverse).	Appraisal tables

Source: DfT (2020). TAG unit A4-2 Distributional Impact Appraisal.

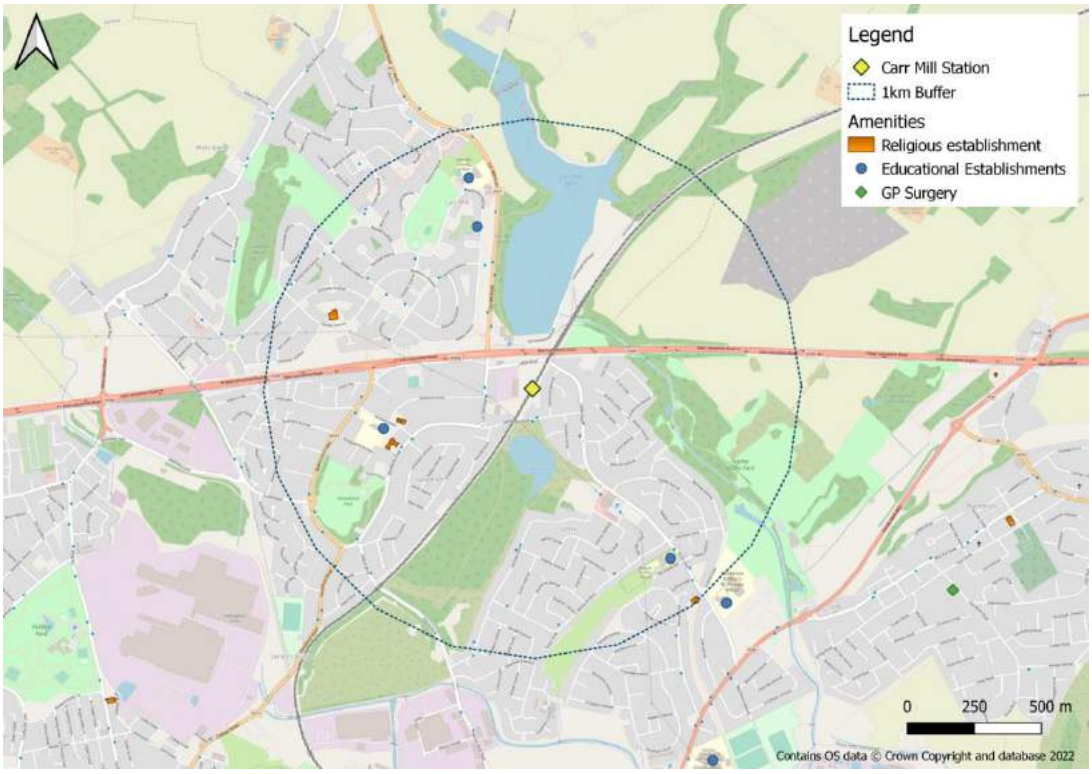
Step 1 consists of a screening exercise that should be undertaken in order to identify whether a full appraisal is required. In order to ensure a proportionate approach, the analysis is carried out for each of the following distributional impact indicators:

- Air Quality;
- Noise;
- Personal Security;
- Severance;
- Accessibility;
- Safety;
- User Benefits; and
- Personal Affordability.

Step 2 consists of a high-level spatial analysis to confirm the overall geographical area experiencing impacts and consider which specific areas are relevant to the appraisal. This step also requires consideration of the socio-economic, social, and demographic characteristics of social groups in the impact area. Supporting socio-demographic mapping has been included in section 13.3.

In addition, it is a requirement under TAG guidance to identify amenities that are in geographic areas that could be affected by proposed measures, and which may attract vulnerable groups within the impact area for each of the eight DI indicators. Potential destinations around the site include public transport stations/stops, parks, places of worship, schools/colleges, hospitals/GP surgeries, existing cycle network, among others. The amenities map below shows the main amenities in the 1km assessment area around the scheme are schools and places of worship. There are no care homes, hospitals or GP surgeries present in the area, but many of these amenities present in the wider area of St Helens.

Figure 13-3 - Amenities in 1km assessment area



Finally, Step 3 provides an assessment of the impact each indicator is likely to experience, as a result of the intervention on each relevant social group. The assessment score follows the broad principles set out in the table below:

Table 13-8 - General system for grading of DIs

Impact	Assessment
Beneficial and the population impacted is significantly greater than the proportion of the group in the total population	largely beneficial (✓✓✓)
Beneficial and the population impacted is broadly in line with the proportion of the group in the total population	moderately beneficial (✓✓)
Beneficial and the population impacted is smaller than the proportion of the group in the total population	slightly beneficial (✓)

There are no significant benefits or disbenefits experienced by the group for the specified impact	neutral (0)
Adverse and the population impacted is smaller than the proportion of the population of the group in the total population	slightly adverse (×)
Adverse and the population impacted is broadly in line with the proportion of the population of the group in the total population	moderately adverse (××)
Adverse and the population impacted is significantly greater than the proportion of the group in the total population	largely adverse (×××)

Source: DfT (2020). TAG unit A4-2 Distributional Impact Appraisal.

A summary of the analysis undertaken (including steps 1 to 3) is provided below for each indicator. A final assessment score for each indicator and each of the social groups under consideration is also presented. The outputs from the assessment are summarised in the 'Summary of findings' section.

13.2.1. Accessibility Distributional Impacts

Step 1: Screening	
Comments:	As recommended in TAG Unit A4-1 and TAG Unit 4-2, accessibility impacts of an intervention proposal should be considered throughout the appraisal process. This is mainly because accessibility is of key importance in the operation of the transport system. TAG Unit 4-2 states that accessibility is primarily a distributional issue which impacts vulnerable groups such as people with disabilities, older people, children and households with no access to a car. The scheme will change the choice and availability, and hence accessibility, of transport services in the study area. The new station will provide certainty to travel options and provide less mobile populations with better access to rail services. The scheme is considered likely to have a beneficial impact on accessibility. Further work is required to assess differences in public transport accessibility to key locations. The appraisal of accessibility focuses on the public transport accessibility aspect of accessing employment, services, and social networks.
Outcome:	**Continue to full DI appraisal**
Full appraisal	
Step 2: Assessment	
Step 2a: Confirmation of Impacted Area	As stated in the literature, an 800 m (0.50 mi) walking distance to a rail station is considered good access to rail services. A catchment area of 800 m (0.50 mi) has been used consistently across research as an accepted standard for the radial service area of most rail stations[69]. In line with these finding, the accessibility area impacted by the intervention has been defined as the catchment area of the proposed new station and have been assumed for the purposes of assessment, that is, 800 m from the station. The assessment area for this appraisal has included consideration of changes to accessibility due to the changes in rail connectivity resulting from a new station at Carr Mill.

[69] See: (1) Hess, D. B. (2012). Walking to the bus: perceived versus actual walking distance to bus stops for older adults. Transportation, 39(2), 247-266; (2) Foda, M. A., & Osman, A. O. (2010). Using GIS for measuring transit stop accessibility considering actual pedestrian road network. Journal of Public Transportation, 13(4), 2; and (3) Pikora, T. J., Giles-Corti, B., Knuiman, M. W., Bull, F. C., Jamrozik, K., & Donovan, R. J. (2006). Neighborhood environmental factors correlated with walking near home: Using SPACES. Medicine and science in sports and exercise, 38(4), 708-714.

<table>
<tr><td></td><td></td></tr>
<tr><td>Step 2b: Identification of Social Groups in Impact Area</td><td>There are certain groups that are particularly vulnerable to the effects of poor accessibility, including people on low incomes or living in households with no access to a car, children, older people and those with disabilities.

Table 13-9 compares the proportions of the population in each area from the selected social groups with the local authority and national average and highlight where there are significant concentrations of these groups. As per the guidance, this analysis takes place at Output Area level.

Table 13-9 - Proportions of vulnerable groups within England and the accessibility area (800 m)
<table>
<tr><th>Vulnerable group</th><th>England</th><th>Scheme Assessment Area (800 m buffer)</th></tr>
<tr><td>Children</td><td>19.0%</td><td>16.6%</td></tr>
<tr><td>Older People (aged 70+)</td><td>13.5%</td><td>17.2%</td></tr>
<tr><td>Disability Living Allowance Claimants</td><td>2.9%</td><td>4.0%</td></tr>
<tr><td>Proportion of households without access to a car or van</td><td>26.1%</td><td>9.6%</td></tr>
</table>

As shown in the above table the proportion of older people (70+) and those claiming disability living allowance in the accessibility impact area is higher than national rates. The proportion of children and households without access to a private car remained below the national average.</td></tr>
<tr><td>Step 2c: Identification of Amenities in Impact Area</td><td>A map showing the key amenities within the 1km impact area of the scheme is presented in Figure 13-3 The map shoes there are a minimal number of amenities that would attract vulnerable groups to the area. However, there are four schools and a number of religious establishments. The amenities present suggest a presence of children and ethnic minority groups both in terms of travelling around the impact area and also within the daytime population whilst visiting the local amenities. There are no care homes or medical facilities such as GPs or hospitals in the impact area.</td></tr>
<tr><td colspan="2">Step 3: Appraisal</td></tr>
<tr><td>Appraisal</td><td>In the absence of a site audit of the impact area, the core analysis of accessibility Dis consists of a high-level strategic accessibility assessment to identify journey time changes in public transport accessibility and changes in opportunity to access services. TRACC software has been used to assess accessibility for the ‘without scheme’ and ‘with scheme’ scenarios, to determine JT changes to the key employment and leisure destinations of Liverpool and Wigan. The TRACC results are shown in Figure 3-1 and Figure 3-2 above.

As shown in the figures, the highest reduction in journey times is experienced by those living within close proximity to the new station. Journey times to Liverpool are expected to decrease by 12-15 minutes for those living closest to the station. For passengers living close to Carr Mill Station and travelling to Wigan, journey times are expected to reduce by 24-27 minutes. The overall catchment for journey time improvements is wider for those travelling to Wigan when compared to Liverpool.

The catchment for improved journeys for Wigan covers the whole of the Carr Mill area, extending east to Stanley Bank Way, and west to Moss Bank Road. In</td></tr>
</table>

comparison, the catchment for journey time improvements for those travelling to Liverpool is smaller, but still covers most of Carr Mill. By overlaying these catchments on top of population data, it was possible to quantify the number of households (and people) who will experience improved access using the public transport network in the do-something scenario. The appraisal score has been informed by the scoring criteria suggested in TAG Unit 4-2 (see Table 15 on Section 8), using the seven-point score based on the proportion of change (e.g., household numbers) as a result of the intervention. The table below presents how public transport accessibility would change with the scheme for residents of the study area.

Summary of journey time difference by total population for those travelling to Liverpool and Wigan

Journey time difference	Population	
	Travelling to Liverpool on public transport	Travelling to Wigan on public transport
0-2 minutes decrease	1,669	1,783
2-4 minutes decrease	2,272	2,636
4-6 minutes decrease	1,326	1,739
6-8 minutes decrease	-	-
8-10 minutes decrease	-	1,519
10-12 minutes decrease	1,263	2,910
Greater than 12 minutes decrease	-	2,434

The impact of the scheme on accessibility to key amenities has been assessed by reviewing concentrations of vulnerable groups in relation to the catchment areas. There are high concentrations of older people in Carr Mill and DLA claimants, and therefore, the scheme is expected to have a beneficial impact on this group from the improved journey times and accessibility to employment and leisure opportunities. There are sparser populations of children within the area, with the highest concentrations in the north-west of the assessment area. The proportion of households without a private car is significantly below the national average, with less than 10% having no access.

There is expected to be a slight to moderate beneficial impact on access to employment centres and employment for no car households, older people and disabled people.

Overall, an assessment of **moderately beneficial** is made for accessibility owing to the high levels of vulnerable groups within the catchment areas, notably, older people and DLA claimants. Based on the above assessment, a summary of the accessibility effects for different sensitive groups is provided.

Summary of accessibility DI appraisal by vulnerable group

Group	Assessment Option 2	Assessment Option 3
Children	✓	✓
Older people	✓✓	✓✓
Proportion without access to a car or van	✓	✓
Disability Living Allowance claimants	✓✓	✓✓
Overall score	✓✓	✓✓

Outcome:	**Moderate beneficial**

AST Entry / Qualitative comment:	*There are high concentrations of older people in Carr Mill and DLA claimants, and therefore, the scheme is expected to have a beneficial impact on this group from the improved journey times and accessibility to employment and leisure opportunities. Overall, an assessment of **moderate beneficial** is made for accessibility owing to the high levels of vulnerable groups within the catchment areas, notably, older people and DLA claimants.*

13.2.2. Safety Distributional Impacts

Step 1: Screening	
Comments:	Changes in the volume of vehicles along a route are likely to give rise to changes in levels of safety. However, given the nature of the transport interventions, the scheme is not expected to impact highway demand in a significant way. Change in highway demand has not been assessed and as such, the following distributional impact analysis for safety will be based on a high-level, qualitative assessment.
Outcome:	**Continue to qualitative DI appraisal**

Full Appraisal

Step 2: Assessment

Step 2a: Confirmation of Impacted Area:

The scheme is not expected to impact highway demand in a significant way due to it being a public and active transport improvement scheme. Considering this, the following qualitative assessment analyses the collisions within a 1km impact area and considers the proportions of vulnerable groups and vulnerable users involved.

Step 2b: Identification of Social Groups in Impact Area:

Table 13-10 presents information regarding the 44 collisions that occurred within the 1km impact area of the scheme between 2016-2020. The data is broken down by casualty type to show proportion of vulnerable users. Vulnerable users include pedestrians, cyclists, motorcyclists, and male drivers or riders between the ages of 16-24. The table also shows the proportion of casualties involving vulnerable groups including children and elderly populations, and the number of collisions occurring in the 20% most and least deprived LSOAs.

Table 13-10 - All collision casualties (2016-2020)

Casualty Type	All Casualties (national rate)		Scheme area	
	N	%	N	%
Vulnerable Users				
Pedestrians	124,258	12.9%	9	**20.5%**
Cyclists	97,875	10.2%	6	**13.6%**
Motorcyclists	98,496	10.2%	4	9.1%
Male drivers/riders aged 16-24	4,617	0.5%	3	**6.8%**
Vulnerable Groups				
Under 16	85,311	8.8%	10	**22.7%**
People aged 70+	58,527	6.1%	6	**13.6%**
Deprivation				
Occurred in 20% Most deprived LSOAs in UK	-	-	19	43.2%
Occurred in 20% Least	-	-	0	0%

	deprived LSOAs in UK				
	Total Casualties	964,009	-	44	-

Step 2c: Identification of Amenities in Impact Area	A map showing the key amenities within the 1km impact area of the scheme is presented in Figure 13-3. The map shows there are a minimal number of amenities that would attract vulnerable groups to the area. However, there are four schools and a number of religious establishments. The amenities present suggest a presence of children and ethnic minority groups both in terms of travelling around the impact area and also within the daytime population whilst visiting the local amenities. There are no care homes or medical facilities such as GPs or hospitals in the impact area.
Step 3: Appraisal	
Appraisal	As shown in Table 13-10, the rate of collisions involving pedestrians and cyclists in the impact area is higher than the national rates. In particular, the rate of pedestrian casualties in the scheme impact area is approximately 7% higher than the national rate. The proportion of collisions involving motorcyclists is slightly below the national average of 10.2% at 9.1%. The proportion of male drivers and riders involved in collisions is significantly higher than the national rate, with 6.8% of the collisions within the impact area involving male drivers and riders between 16-24 years old. The proportion of collisions involving children (under 16) and elderly (over 70) is significantly above the national rate. Almost a quarter of all accidents involved children (under 16 years old) and 13.6% involved an elderly person. It is not possible to identify the income deprivation of each casualty at an individual level, therefore, the deprivation level of the area the collision occurs in is used as a proxy. The north west area of scheme impact area is predominately deprived and a large proportion of the collisions occurred in this area. Approximately 43.2% of the total collisions that occurred within the impact area over the five-year period were within the 20% most deprived LSOAs nationally. No accidents occurred within the 20% least deprived LSOAs, due to the little coverage in the assessment area of this income quintile group. Socio-demographic maps are presented in Section 13.3 showing concentrations of vulnerable groups across the scheme impact area. Collisions can primarily impact vulnerable user groups such as children and older people. The following observations have been made: • **Children –** There are high concentrations of children in the north-west of the impact area. There is a lower concentration of children present in other areas captured in the impact area, for example in areas south of the A580 in Haresfinch and Laffak. • **Elderly** – There are particularly high concentrations of elderly residents within the scheme impact area. Notably, there are clusters in the immediate locality of the new station and in the south-east of the assessment area. The high proportions are generally located to the south of the A580. • **Deprivation** – Levels of deprivation varies across the scheme impact. The north-west segment of the impact area shows high levels of deprivation. The impact area only captures a small area classified in the 20% least deprived LSOAs to the vert north. The scheme intends to improve provision and access to rail services in this area, and is expected to bring some impacts to safety, in two main ways: The new station will support a modal shift away from private vehicle with increased journeys by rail. At present there is poor public transport connectivity to key destinations such as Liverpool and Wigan, with journeys typically quicker by car. The new station will encourage journeys by rail, and a consequent reduction in vehicle kilometres is expected with associated safety benefits expected.

	The new station will increase footfall and traffic in the vicinity of the station as people travel by other modes, for example walking and cycling to reach it. The station will be designed to improve safety and create a safe environment for pedestrians and cyclists at the station with associated footpaths, however the footpaths will not extend far beyond the station. The scheme is expected to reduce overall vehicle kilometres and are expected to contribute to reducing the risk of collisions for users on the network. The higher the modal shift to public transport, the more the higher the reduction of vehicle kilometres. Demand forecast modelling has been undertaken for the scheme for the different scheme options. For Option 2 the accidents net present value (NPV) is £259,009 (2010 PV), showing the scheme's beneficial impact on accidents. Given the presence of most vulnerable groups in the impact area, safety benefits are anticipated from the implementation of a rail station and, overall, it is expected that the impact of the scheme on Safety will be **Slightly Beneficial** for both options. The table below provides a summary of the DI Appraisal by vulnerable group. **Summary of DI Appraisal by vulnerable group**

Group	Assessment
Pedestrians	✓
Cyclists	✓
Motorcyclists	✓
Children	✓
Young male drivers	✓
Older people	✓
Deprived residents	***O***
Overall score	✓

Outcome:	The overall DI Appraisal for safety is **Slightly Beneficial.**
AST Entry/ Qualitative Comment:	*The rate of collisions involving pedestrians and cyclists, elderly people, young male drivers and children are all higher than the national rate. Only the rate of collisions involving motorcyclists is lower than it is nationally.* *The scheme is located in an area with high deprivation. There are no LSOAs in the 20% least deprived nationally (income quintile 5). Over 40% of the collisions took place in LSOAs classified as income quintile 1.* *The scheme proposes a new rail station at Carr Mill which is expected to reduce overall vehicle km as modal shift towards rail occurs. The modal shift will reduce vehicle km and likely bring benefits in terms of safety and collisions. As such the overall appraisal of safety is **Slightly Beneficial**.*

13.2.3. Air Quality Distributional Impacts

Step 1: Screening	
Comments:	Changes in vehicle volumes and vehicle kilometres are likely to give rise to changes in air pollutants, which may impact receptors in close proximity to the scheme. The area surrounding the Carr Mill station is largely a suburban-urban setting with high numbers of properties and population living in proximity. The scheme should encourage a shift in mode away from private car usage and on to the rail network. The reduced car usage could generate air quality benefits for vulnerable groups living and visiting the local area. The impact on air quality will need to be examined for vulnerable groups.
Outcome:	**Continue to DI appraisal**
Full appraisal	

<table>
<tr><th colspan="2">Step 2: Assessment</th></tr>
<tr><td>Step 2a: Confirmation of Impacted Area</td><td>Due to the nature of the scheme, highway demand on relevant links has not been assessed in proximity to the scheme. Air quality impacts are considered, therefore, through a qualitative assessment and the presence of vulnerable groups in relation to income quintiles and children, supported with quantitative results from the demand modelling undertaken. In the absence of a detailed air quality assessment, the impact area has been defined as a 1km buffer around the scheme. This impact area was chosen to view the impact of changes in vehicle kilometres and traffic flows, and the theoretical impact on air quality resulting from those changes.</td></tr>
<tr><td>Step 2b: Identification of Social Groups in Impact Area</td><td>The table below presents the proportions of vulnerable groups within the 1km impact area of the scheme against the national averages. As outlined in TAG Unit 4-2, air quality can have a particular impact on children and the most deprived households.

Table 13-11 - Proportions of vulnerable groups within England and the air quality impact area (1km)
<table>
<tr><th>Vulnerable group</th><th>England</th><th>Scheme (1km buffer)</th></tr>
<tr><td>Income Quintile 1 (most deprived)</td><td>20.0%</td><td>23.6 %</td></tr>
<tr><td>Income Quintile 2</td><td>20.0%</td><td>34.8%</td></tr>
<tr><td>Income Quintile 3</td><td>20.0%</td><td>8.3%</td></tr>
<tr><td>Income Quintile 4</td><td>20.0%</td><td>26.9%</td></tr>
<tr><td>Income Quintile 5</td><td>20.0%</td><td>6.4%</td></tr>
<tr><td>Children (People Aged Under 16)</td><td>18.9%</td><td>17.6%</td></tr>
</table></td></tr>
<tr><td>Step 2c: Identification of Amenities in Impact Area</td><td>A map showing the key amenities within the 1km impact area of the scheme is presented in Figure 13-3. The map shoes there are a minimal number of amenities that would attract vulnerable groups to the area. However, there are four schools and a number of religious establishments. The amenities present suggest a presence of children and ethnic minority groups both in terms of travelling around the impact area and also within the daytime population whilst visiting the local amenities. There are no care homes or medical facilities such as GPs or hospitals in the impact area.</td></tr>
<tr><th colspan="2">Step 3: Appraisal</th></tr>
<tr><td>Appraisal:</td><td>Socio-demographic maps are presented in Section 13.3 showing concentrations of vulnerable groups across the scheme impact area. Air quality can primarily impact on vulnerable user groups such as children and deprived households. The following observations have been made:
Children – There is a high concentration of children to the north-west of the impact area in Carr Mill. There is a lower concentration of children present in other areas captured in the impact area, for example in areas south of the A580 in Haresfinch and Laffak. As discussed above, there are also four schools located in the study area which suggests a daytime populations of children in these locations. Table 13-11 shows the proportion of children within the 1km area is 17.6% which is just marginally below the national average for England at 18.9%.
Deprived households – The scheme is located in an area with varying levels of deprivation. It shows that the proportion of households in income quintiles 1, 2 and 4 is above the national average, whilst the proportions classified in income quintiles 3 and 5 are significantly below national averages. It suggests the area is deprived with 58.4% of households being within income quintiles 1 and 2. In terms of the distribution of these vulnerable groups within the scheme impact area, the majority of Carr Mill is classified in the 20% most deprived LSOAs nationally</td></tr>
</table>

	(income quintile 1). Figure shows Carr Mill and the north-west section of the study area has the highest levels of deprivation. The scheme proposes a new station at Carr Mill, which should enable more journeys to be undertaken by rail and reduce the number of kilometres travelled by car, having some impact on local air quality. Demand forecast modelling has been undertaken for the scheme for the different scheme options. The results of the modelling are outlined below: • **Option 2:** The local air quality 60-year NPV for Option 2 is £53,406 showing a positive or beneficial impact to air quality. • **Option 3:** The air quality net present value (NPV) is £53,490, showing the scheme's beneficial impact on air quality. As previously outlined, there are high concentrations of children and deprived households in the impact area, particularly around Carr Mill. As the demand modelling has shown, the scheme is expected to reduce kilometres travelled by car in the study area as people use the train rather than private vehicles, leading to mode shift. The impact of this mode shift is expected to provide some beneficial impact to air quality for children and deprived households in the area. The table below provides a summary of the DI Appraisal by vulnerable group. **Summary of DI Appraisal by vulnerable group** **Group** / **Assessment** Income Deprived Households (Quintile 1 and 2) — ✓✓ Children (People Aged Under 16) — ✓ Overall score — ✓✓
Outcome:	The overall DI Appraisal for air quality is **Moderately Beneficial** based on the high presence of children and deprived households in the immediate vicinity of the scheme and the expected reduction in vehicle kilometres by car as a result of mode shift towards rail.
AST Entry / Qualitative comment:	*The scheme 1km impact area has a high concentration of children and deprived households (income quintile 1 and 2) present, mainly in the north-west, Carr Mill area. These groups are particularly vulnerable to air quality issues.* *The new station is expected to generate mode shift away from private vehicles and on to rail, reducing overall vehicle kilometres and creating air quality benefits in the vicinity of the scheme.* *Given the concentrations of the vulnerable group and the mode shift ambition of the new station, the overall appraisal for air quality is considered Moderate Beneficial.*

13.2.4. Noise Distributional Impacts

Step 1: Screening	
Comments:	Changes in vehicle volumes and vehicle kilometres are likely to give rise to changes to noise levels, which may impact receptors in close proximity to the scheme. The area surrounding the Carr Mill station is largely a suburban-urban setting with high numbers of properties and population living in proximity. The scheme should encourage a shift in mode away from private car usage and on to the rail network. The reduced car usage could generate noise benefits for vulnerable groups living and visiting the local area. The impact on noise will need to be examined for vulnerable groups.
Outcome:	**Continue to DI appraisal**
Full appraisal	
Step 2: Assessment	

<table>
<tr><td>Step 2a: Confirmation of Impacted Area</td><td>Due to the nature of the scheme, highway demand on relevant links has not been assessed in proximity to the scheme. Noise impacts are considered, therefore, through a qualitative assessment and the presence of vulnerable groups in relation to income quintiles, children and elderly people (aged over 70), supported with quantitative results from the demand modelling undertaken. In the absence of a detailed noise assessment, the impact area has been defined as a 1km buffer around the scheme. This impact area was chosen to view the impact of changes in vehicle kilometres and traffic flows, and the theoretical impact on noise resulting from those changes.</td></tr>
<tr><td>Step 2b: Identification of Social Groups in Impact Area</td><td>Table 13-12 presents the proportions of vulnerable groups within the 1km impact area of the scheme against the national averages. As outlined in TAG Unit 4-2, noise can have a particular impact on elderly people, children, and the most deprived households.

Table 13-12 - Proportions of vulnerable groups within England and the noise impact area (1km)
<table>
<tr><th>Vulnerable group</th><th>England</th><th>Scheme (1km buffer)</th></tr>
<tr><td>Income Quintile 1 (most deprived)</td><td>20.0%</td><td>23.6 %</td></tr>
<tr><td>Income Quintile 2</td><td>20.0%</td><td>34.8%</td></tr>
<tr><td>Income Quintile 3</td><td>20.0%</td><td>8.3%</td></tr>
<tr><td>Income Quintile 4</td><td>20.0%</td><td>26.9%</td></tr>
<tr><td>Income Quintile 5</td><td>20.0%</td><td>6.4%</td></tr>
<tr><td>Children (People Aged Under 16)</td><td>18.9%</td><td>17.6%</td></tr>
<tr><td>Elderly (People Aged Over 70)</td><td>7.8%</td><td>15.9%</td></tr>
</table></td></tr>
<tr><td>Step 2c: Identification of Amenities in Impact Area</td><td>A map showing the key amenities within the 1km impact area of the scheme is presented in Figure 13-3. The map shows there are not many amenities that attract vulnerable groups to the area. However, there are four schools which suggest a presence of children both in terms of travelling around the impact area and also within the daytime population whilst visiting the local amenities. There are no care homes or medical facilities such as GPs or hospitals in the impact area.</td></tr>
<tr><td colspan="2">Step 3: Appraisal</td></tr>
<tr><td>Appraisal:</td><td>Socio-demographic maps showing concentrations of vulnerable groups across the scheme impact area. Noise can primarily impact on vulnerable user groups such as elderly people, children, and deprived households. The following observations have been made:

Children – As presented in Figure F-2 within Section 13.3, there is a high concentration of children to the north-west of the impact area in Carr Mill. There is a lower concentration of children present in other areas captured in the impact area, for example in areas south of the A580 in Haresfinch and Laffak. As discussed above, there are also four schools located in the study area which suggests daytime populations of children in these locations. Table 13-12 shows the proportion of children within the 1km area is 17.6% which is just marginally below the national average for England at 18.9%.
Elderly people – The scheme is located in an area with high concentrations of elderly residents. Table 13-12 shows approximately 16% of the impact area population is over the age of 70; double the national average for England. When looking at the distribution of elderly people within the impact area of the scheme,</td></tr>
</table>

there are much higher concentrations to the south of the A580, particularly in the immediate vicinity of the new station, and to the south-east in Laffak.

Deprived households – As shown Table 13-12, the scheme is located in an area with varying levels of deprivation. It shows that the proportion of households in income quintiles 1, 2 and 4 is above the national average, whilst the proportions classified in income quintiles 3 and 5 are significantly below national averages. It suggests the area is quite deprived with 58.4% of households being within income quintiles 1 and 2. In terms of the distribution of these vulnerable groups within the scheme impact area, the majority of Carr Mill is classified in the 20% most deprived LSOAs nationally (income quintile 1). Figure F-7 shows Carr Mill and the north-west section of the study area has the highest levels of deprivation.

The scheme proposes a new station at Carr Mill, which should enable more journeys to be undertaken by rail and reduce the number of kilometres travelled by car, having some impact to local noise levels. Demand modelling has been undertaken for the scheme for the different scheme options. The results of the modelling are outlined below:

- **Option 2:** The noise 60-year net present value (NPV) for Option 2 is £18,276 showing a beneficial impact to noise.
- **Option 3:** The noise NPV is £18,310, showing the scheme's beneficial impact on noise.

As previously outlined, there are high concentrations of children, elderly, and deprived households in the impact areal. As the demand modelling has shown, the scheme is expected to reduce kilometres travelled by car in the study area as people travel via rail rather than private vehicles, instigating mode shift away from private vehicles. The impact of this mode shift is expected to provide some beneficial impact to noise for the vulnerable populations within the local area.

The table below provides a summary of the DI Appraisal by vulnerable group.

Summary of DI Appraisal by vulnerable group

Group	Assessment
Income Deprived Households (Quintile 1 and 2)	✓
Children (People Aged Under 16)	✓
Elderly (People Aged Over 70)	✓
Overall score	✓

Outcome:

The overall DI Appraisal for noise is **Slightly Beneficial** based on the very high presence of elderly people and deprived households in the immediate vicinity of the scheme, and the expected reduction in vehicle kilometres by car as a result of mode shift towards rail, which is expected to result in a reduction in noise.

AST Entry / Qualitative comment:

The scheme 1km impact area has a very high concentration of elderly people and deprived households (income quintile 1 and 2) present, as well as a high presence of children in the Carr Mill area. These groups are particularly vulnerable to noise issues.
The new station is expected to generate mode shift away from private vehicles and to rail, reducing overall vehicle kilometres and creating noise benefits in the vicinity of the scheme.
Given the very high concentrations of the vulnerable group and the mode shift ambition of the new station, the overall appraisal for noise is considered Slight Beneficial.

13.2.5. Affordability Distributional Impacts

Step 1: Screening	
Comments:	The Carr Mill station scheme is expected to have an impact on affordability, as outlined in the personal affordability section in the social impacts appraisal due to a change of mode from vehicle to train, resulting in a reduction in congestion on the highway network and subsequent reduction in car fuel and operating costs. At this stage of the project development the charges are not confirmed, therefore, at this stage of the assessment, it is not known how vulnerable groups in terms of affordability will be impacted. As such, there is no further appraisal of affordability.
Outcome:	**No further appraisal is required of this indicator**

13.2.6. Security Distributional Impacts

Step 1: Screening	
Comments:	The scheme will introduce a new rail station at Carr Mill. Whilst design elements are still being determined, it is expected that the station will be delivered alongside appropriate security measures including CCTV surveillance and good visibility and lighting. In addition to the new station, there will be footpath links providing pedestrian access from nearby roads, as well as vehicular access proposed. Like the station, the footpaths and access routes are expected to have appropriate CCTV and lighting to provide a positive impact to the level of security of transport users accessing the station. The scheme proposes changes in an urban-suburban, well-lit environment but will provide enhancements to lighting, visibility and CCTV in areas where lighting is not of good quality. Locations where enhancements might be required have not been confirmed or proposed at this stage. Based on available information at this stage, a security assessment based on the design element was undertaken as part of the Social Impacts. At this stage in the assessment, it is not known how vulnerable groups in terms of security (children, older people, people with a disability and BME) will be impacted. The DI security impacts have not been appraised in this section.
Outcome:	**No further appraisal is required of this indicator**

13.2.7. Severance Distributional Impacts

Step 1: Screening	
Comments:	Due to the nature of the Carr Mill station, highway demand on relevant links has not been assessed in proximity to the station due to it being a public transport scheme. Considering this, severance has been considered through a mostly qualitative assessment of the proposed new station, supported by some quantitative analysis of vehicle kilometre savings extracted from the demand modelling. The impact of the scheme on the severance of vulnerable groups in the area has been considered..
Outcome:	**Continue to DI appraisal**

Full Appraisal	
Step 2: Assessment	
Step 2a: Confirmation of Impacted Area:	Highway demand on relevant links has not been assessed due to the nature of the scheme. Considering this, severance has been considered through a qualitative assessment of the proposed scheme could benefit or disbenefit severance of vulnerable groups present in the scheme 1km impact area.
Step 2b: Identification	Table 13-13 presents the proportions of vulnerable groups within the 1km impact area of the scheme against the national averages. As outlined in TAG Unit A4-2

of Social Groups in Impact Area:

severance can have a particular impact on children, elderly people, people with disabilities, and no car households.

Table 13-13 - Proportions of vulnerable groups within England and the severance impact area (1km)

Vulnerable group	England	Scheme (1km buffer)
Older People (People Aged Over 70)	7.8%	**15.9%**
Children (People Aged Under 16)	18.9%	17.6%
No Car Households	10.7%	**23.7%**
Disability Living Allowance (DLA) Claimants	8.6%	4.2%

Step 2c: Identification of Amenities in Impact Area

A map showing the key amenities within the 1km impact area of the scheme is presented in Figure 13-3. The map shoes there are not that many amenities to attract vulnerable groups to the area. However, there are four schools and a number of religious establishments. The amenities present suggest a presence of children and ethnic minority groups both in terms of travelling around the impact area and also within the daytime population whilst visiting the local amenities. There are no care homes or medical facilities such as GPs or hospitals in the impact area.

Step 3: Appraisal

Appraisal

Socio-demographic maps are presented Section 13.3 showing concentrations of vulnerable groups across the scheme impact area. Noise can primarily impact on vulnerable user groups such as elderly people, children, disabled people and households without access to a car. The following observations have been made:
Children – The proportion of children is broadly in line with the national average, or slightly below at 17.6%. There is a high concentration of children in the north-west of the impact area in and around Carr Mill. There are lower concentrations of children in other areas captured in the impact area. As discussed previously, there are also four schools located in the study area which suggests daytime populations of children in these locations

Elderly people – There are significantly higher proportions of older people (over 70) in the 1km severance impact area, over double the national average for England. As discussed previously and shown in Figure F -3 when looking at the distribution of elderly people within the 1km area around the station, there are much higher concentrations to the south of the A580, particularly in the immediate vicinity of the new station and to the south-east in Laffak.

Disabled people – The impact area for the scheme has lower proportions of people with a disability with 4.2% of the impact area's population claiming disability benefits compared to the national average of 8.6%. Section 13.3 shows the distribution of disabled residents in the impact area. It shows the highest proportions are present in Carr Mill (to the north-west of the impact area). In addition, high concentrations are also found to the south-east of Laffak, and directly adjacent to the A580 in north Haresfinch.

No Car households – As shown in Table 13-13, almost a quarter of households in the 1km severance impact area have no access to a private vehicle (23.7%). This is significantly higher than the national average for England and suggests a large proportion of the population will rely on public transport networks and active travel modes. The distribution of households without a private vehicle is shown in Section 13.3, and shows high concentrations particularly around Carr Mill, as well as south-east Laffak and west in Haresfinch.

The scheme proposes a new station at Carr Mill, which should enable more journeys to be undertaken by rail and reduce the number of kilometres travelled by car, having some impact to severance. Demand forecast modelling has been undertaken for the

<table>
<tr><td></td><td>scheme for the different scheme options. The results of the modelling are outlined below:

• Option 2: The total number of new to rail km savings is 518,947 which includes journeys with origins from Carr Mill Station, and journeys destined to Carr Mill Station. In addition to new to rail savings, there is 31,967 abstracted km savings.
• Option 3: The total number of new to rail km savings is 506,439. In addition to new to rail savings, there is 22,554 abstracted km savings

As previously outlined, there are very high concentrations of households without a car and elderly people present in the impact area, as well as certain areas with high concentrations of children and disabled people, specifically in Carr Mill. As the demand forecast modelling suggests, the scheme is expected to reduce kilometres travelled by car in the study area as people mode shift away from private vehicles. The impact of this mode shift is expected to provide some beneficial impact to severance for the vulnerable populations within the local area, as it suggests a reduction in vehicles in certain areas as people switch to travel by rail. The scheme will also provide active travel access routes to the station benefiting severance.

The table below provides a summary of the DI Appraisal by vulnerable group.
Summary of DI Appraisal by vulnerable group
<table>
<tr><th>Group</th><th>Assessment</th></tr>
<tr><td>Children (People Aged Under 16)</td><td>✓</td></tr>
<tr><td>Elderly (People Aged Over 70)</td><td>✓✓</td></tr>
<tr><td>DLA Claimants</td><td>✓</td></tr>
<tr><td>No Car Households</td><td>✓✓</td></tr>
<tr><td>Overall score</td><td>✓</td></tr>
</table>
</td></tr>
<tr><td>Outcome:</td><td>The overall DI Appraisal for severance is Slightly Beneficial.</td></tr>
<tr><td>AST Entry/ Qualitative Comment:</td><td>The scheme has been assessed as Slight Beneficial for this DI appraisal of severance. There are high concentrations of vulnerable groups both living in the area and visiting in daytime population, particularly elderly people and households with no access to a private vehicle. Due to these high concentrations, it is expected they will benefit from vehicle kilometre savings expected from the new station being introduced and active travel access, and hence experience a reduction in both actual and perceived severance.</td></tr>
</table>

13.2.8. User Benefits Distributional Impacts

Step 1: Screening	
Comments:	The Carr Mill scheme may provide user benefits, such as a reduction in vehicle operating costs due to modal shift away from private car on to rail. The distribution of benefits across different areas will need to be examined. A full DI analysis of user benefits has not been completed for the scheme due to the scale of the scheme and the lack of available modelled data at the time of writing. Therefore, a qualitative assessment is applied. A high-level user benefits impact assessment has been conducted to understand how these benefits should be distributed hypothetically to achieve a beneficial assessment in line with the Economic case.
Outcome:	**Continue to DI appraisal**

Full Appraisal
Step 2: Assessment

Step 2a: Confirmation of Impacted Area:

In the interest of proportionality, this analysis has used the single assessment area of 1km to investigate spatial impacts related to user benefits in relation to the proportions of the income quintile groups.

Step 2b: Identification of Social Groups in Impact Area:

Table 13-14 presents the proportions of the Income Quintile groups within the 1km impact area of the scheme against the national averages.

Table 13-14 - Proportions of Income Quintiles within England and the 1km impact area (1km)

Vulnerable group	England	Scheme (1km buffer)
Income Quintile 1 (Most Deprived)	20.0%	**23.6%**
Income Quintile 2	20.0%	**34.8%**
Income Quintile 3	20.0%	8.3%
Income Quintile 4	20.0%	**26.9%**
Income Quintile 5 (Least Deprived)	20.0%	6.4%

As shown in Table 13-14, the scheme impact area covers mostly deprived area, with over half the scheme's 1km impact area classified in income quintile 1 and 2. Only 6.4% of the impact area is classified in income quintile 5.

Step 2c: Identification of Amenities in Impact Area

A map showing the key amenities within the 1km impact area of the scheme is presented in Figure 13-3. The map shoes there are not that many amenities to attract vulnerable groups to the area. However, there are four schools and a number of religious establishments. The amenities present suggest a presence of children and ethnic minority groups both in terms of travelling around the impact area and also within the daytime population whilst visiting the local amenities. There are no care homes or medical facilities such as GPs or hospitals in the impact area.

Step 3: Appraisal

Appraisal

Summary of user benefits DI appraisal by vulnerable group

Group	Income Quintile					Total
	Income Quintile 1	Income Quintile 2	Income Quintile 3	Income Quintile 4	Income Quintile 5	
Population in each income quintile	4,573	6,747	1,614	5,215	1,244	19,393
Proportion of each group in impact area	23.6%	34.8%	8.3%	26.9%	6.4%	100%
Distribution of benefits	25.5%	40.5%	3.0%	29.5%	1.5%	100%
Assessment	**Slight Beneficial**	**Moderate Beneficial**	**Slight Beneficial**	**Slight Beneficial**	**Slight Beneficial**	**Slight Beneficial**

Key to individual assessment of each Income Quintile

Beneficial and 5% greater (or more) than the proportion of the group in total population	*Largely Beneficial*
Beneficial and in line (+/-5%) with the proportion of the group in the total population	*Moderately Beneficial*
Beneficial and 5% smaller (or less) than the proportion of the group in total population	*Slightly Beneficial*

	There are no user benefits or disbenefits experienced by this group — *Neutral* *A disbenefit which is 5% smaller (or less) than the proportion of the group in the total population* — *Slightly Adverse* *A disbenefit which is in line (+/-5%) with the proportion of the group in the total population* — *Moderately Adverse* *A disbenefit which is 5% greater (or more) than the proportion of the group in the total population* — *Largely Adverse* As shown above, the overall assessment across the income quintile groups is beneficial in terms of user benefits as the scheme is expected to instigate mode shift from car to rail reducing vehicle operating costs. Income quintile 1, 3, 4 and 5 have all been assessed as Slight Beneficial. Income quintile 2 has been assessed as Moderate Beneficial due to having a larger presence across the area.
Outcome:	The overall DI Appraisal for user benefits is **Slightly Beneficial.**
AST Entry/ Qualitative Comment:	*A full DI analysis of user benefits has not been completed for this scheme due to the unavailability of distributed monetary values at the time of writing. As it was not deemed necessary to apply findings at such a disaggregated level, this assessment therefore focuses on more aggregated findings and should be used as an indicative assessment. This high-level user benefits impact assessment has been conducted to understand how these benefits should be distributed according to the distribution of population per income group.* *All quintiles receive net benefits overall as the scheme is expected to instigate mode shift from car to rail.. The distribution of benefits is indicative solely to be proportional to the overall distribution of population and demonstrates the distribution of benefits for the scheme to be assessed as **Slightly Beneficial.** A slight beneficial assessment is expected in the absence of a monetary value for overall user benefits. This should be considered a conservative approach and is based on a hypothetical distribution of user benefits.*

13.3. Mapping of Vulnerable Groups

The figures in this section map each of the vulnerable groups identified for the study area, including income deprivation, the elderly (over 70 years old), children (under 16 years old), young people (16-24 years), DLA claimants and disability (Population with a limiting long-term illness). Further income indicators have also been identified for the local population, including households with no car or van, households with dependent children and index of Multiple Deprivation.

Figure F-1 - Female population - Highest 20% Output Areas (OAs) nationally

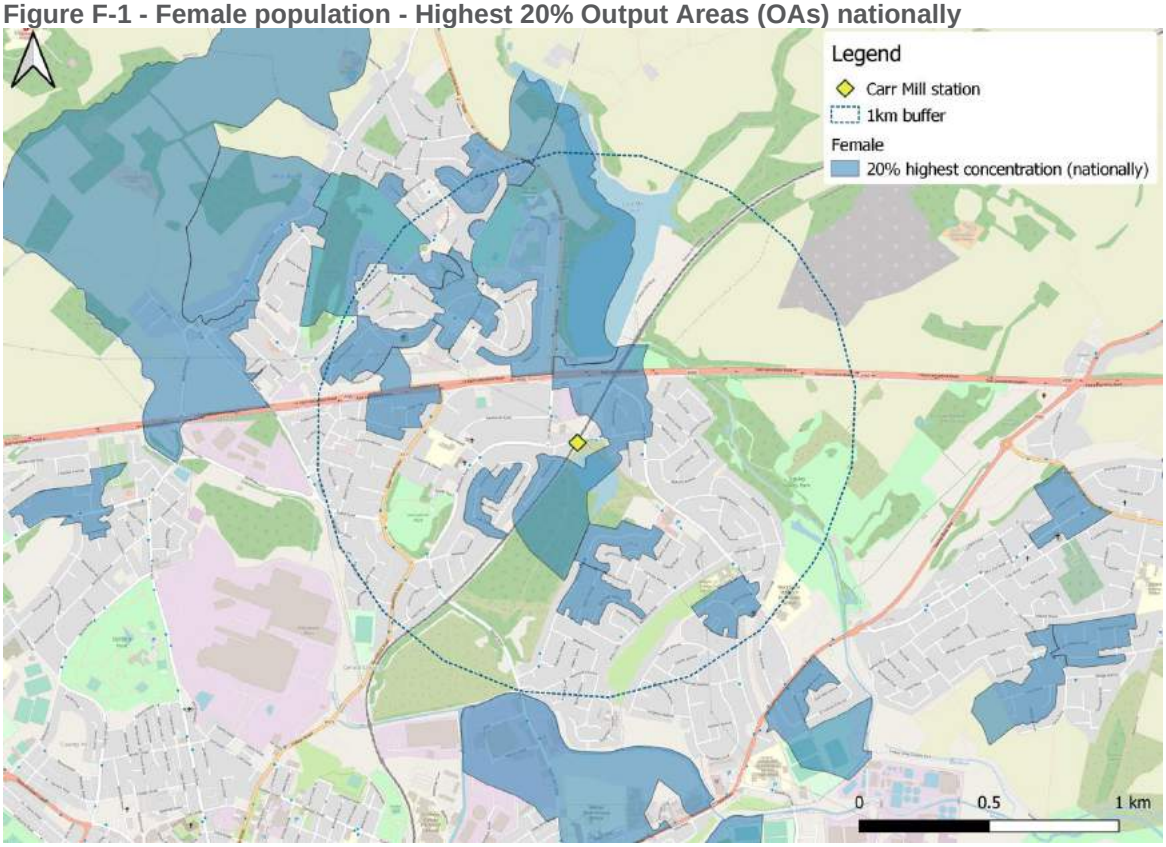


Figure F-2 - Children (aged 16 and under) population - Highest 20% Output Areas (OAs) nationally

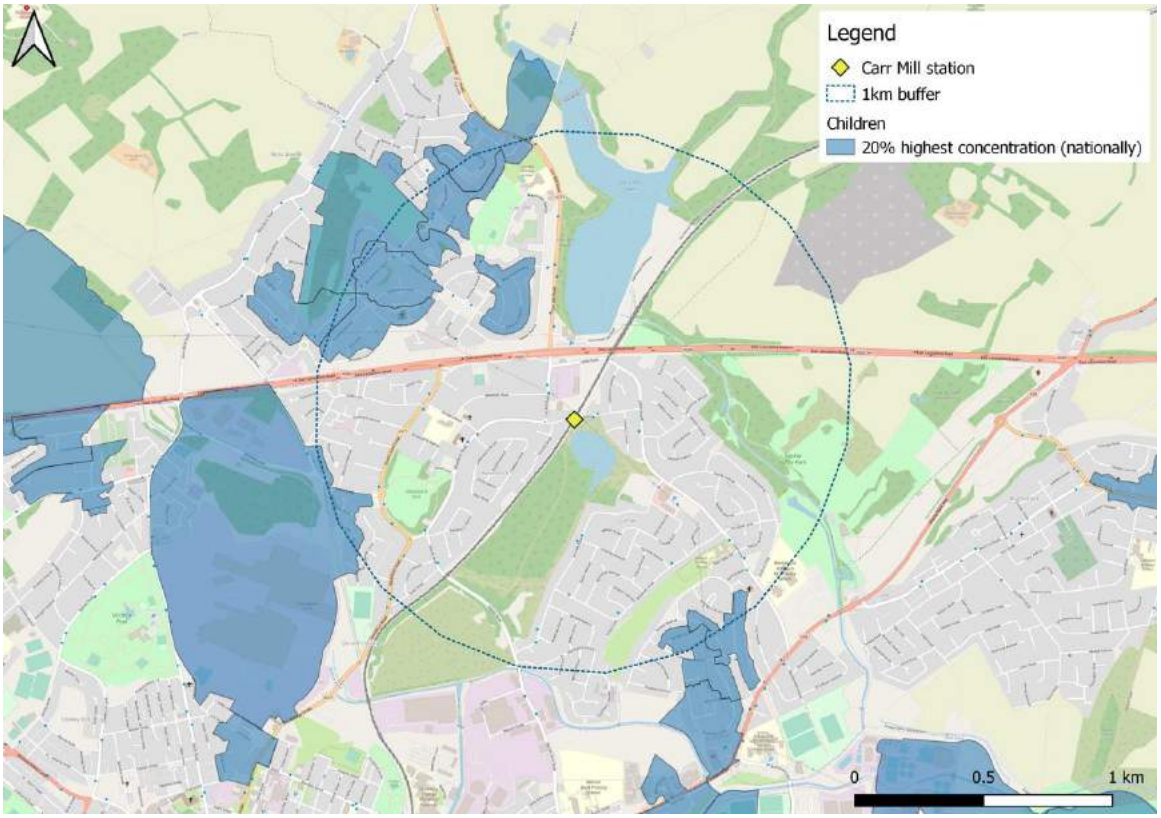


Figure F -3 - Older people (aged 70 and over) population - Highest 20% Output Areas (OAs) nationally

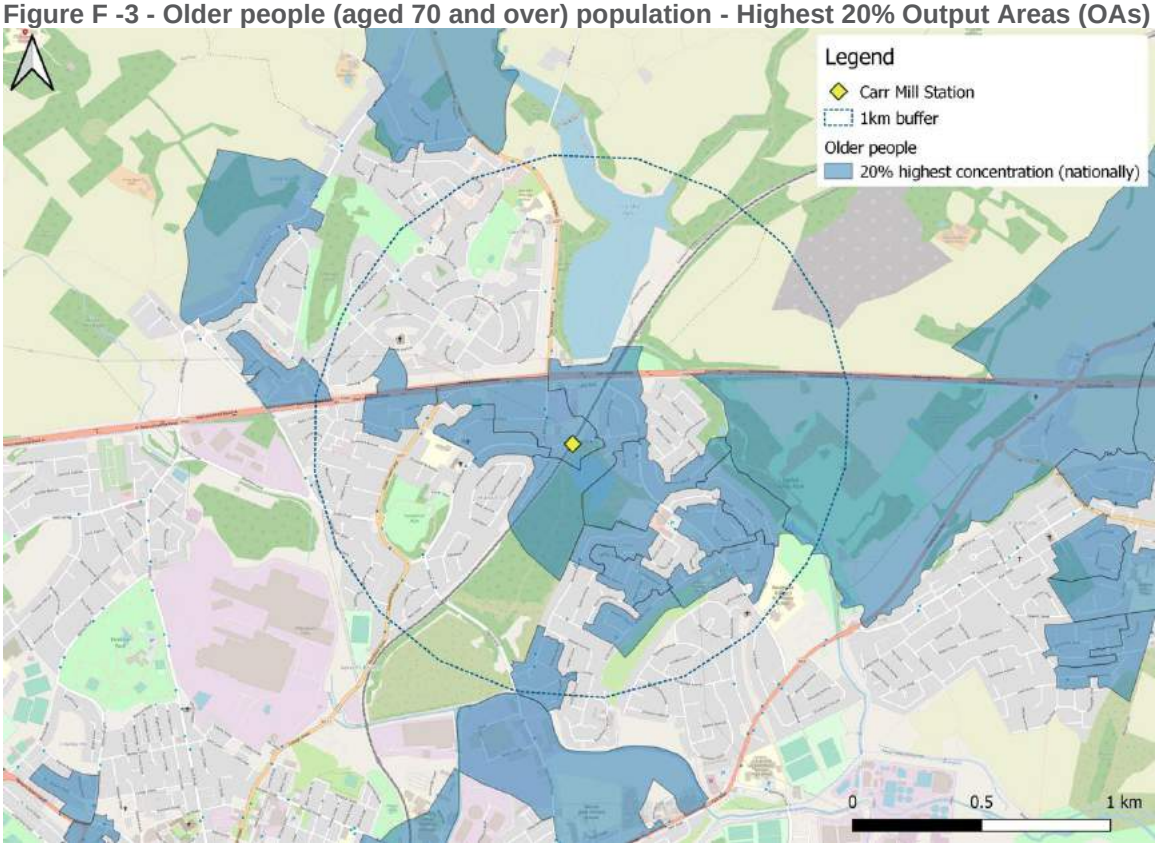


Figure F-4 - DLA Claimants - Highest 20% Lower Super Output Areas (LSOAs) nationally

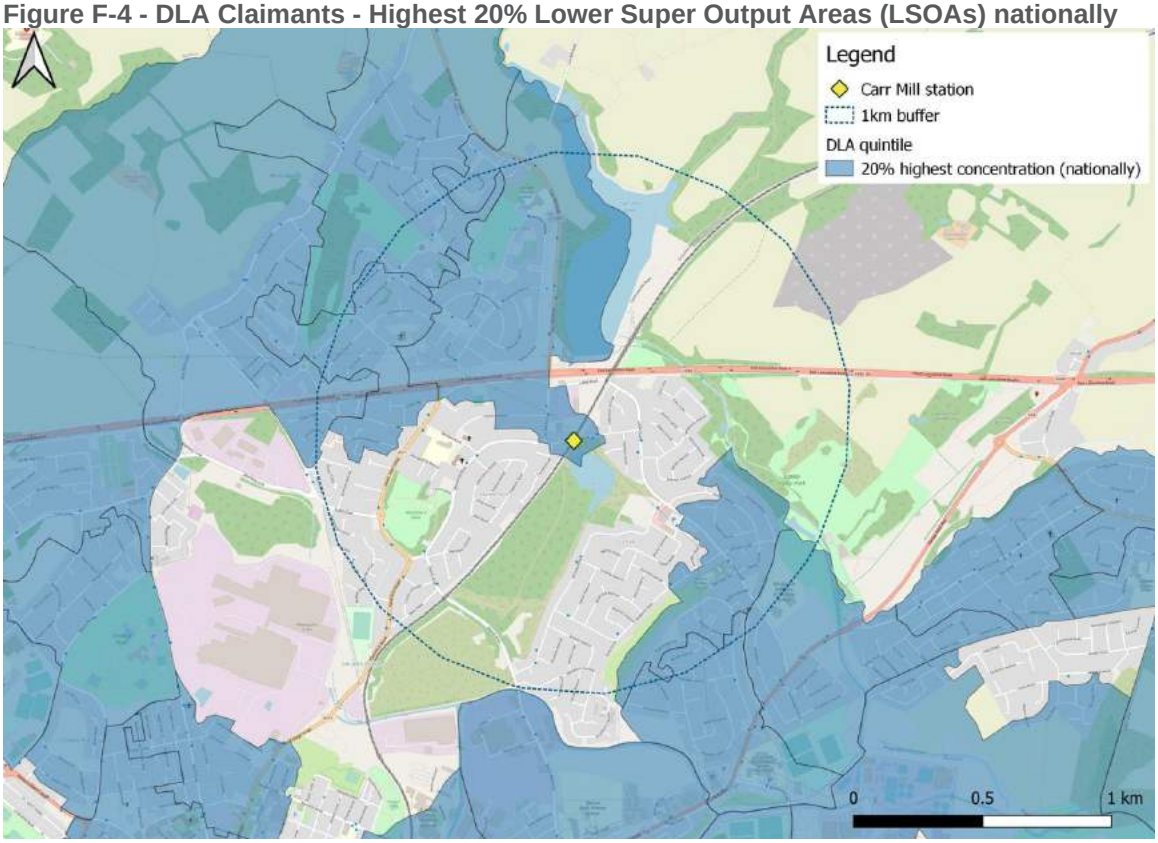


Figure F-5 - Black and Minority Ethnic (BME) population – Highest 20% Output Areas (OAs) nationally

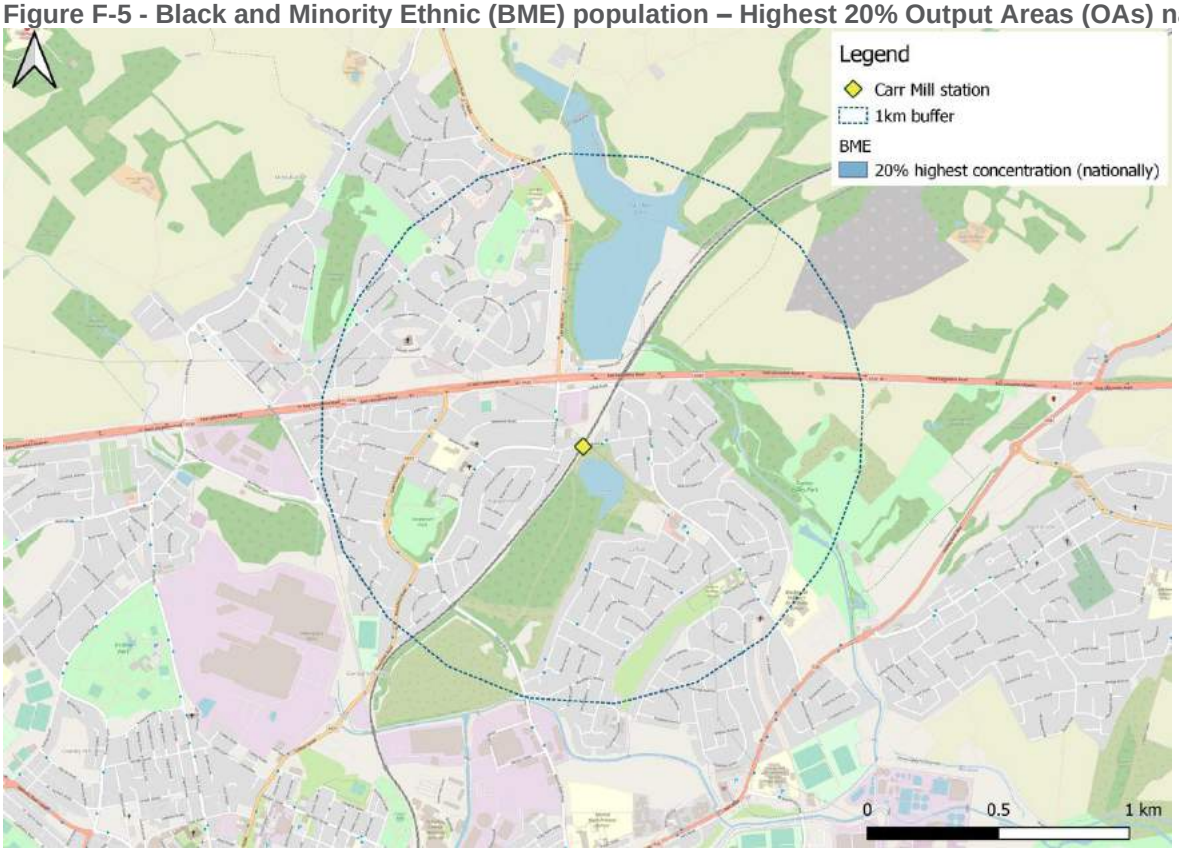


Figure F-6 - Households with no car/van – Highest 20% Output Areas (OAs) nationally

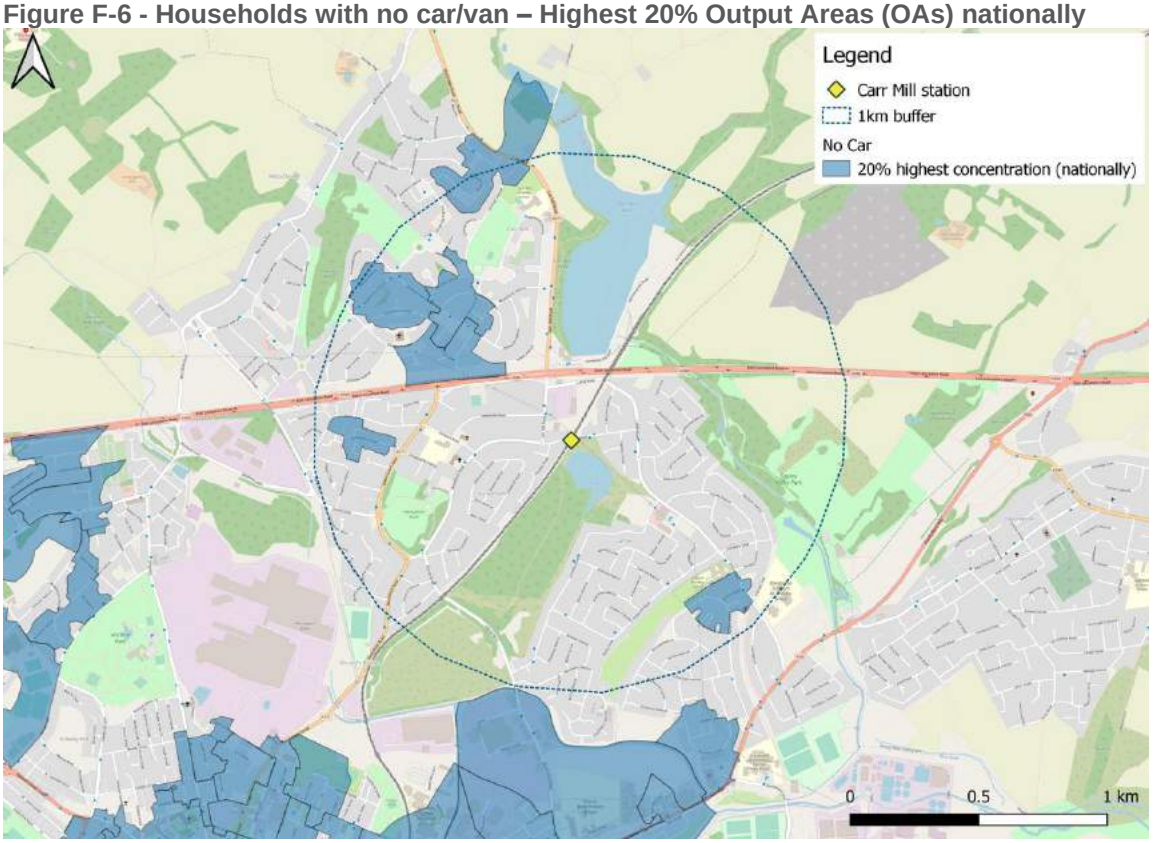


Figure F-7 - Income deprivation in proximity to Carr Mill station .