



**LIVERPOOL
CITY REGION**
COMBINED AUTHORITY



METROMAYOR
LIVERPOOL CITY REGION

Headbolt Lane Station

Full Business Case

2 March 2022

Mott MacDonald
Ground floor
Royal Liver Building
Pier Head
Liverpool L3 1JH
United Kingdom

T +44 (0)151 482 9910
mottmac.com

Headbolt Lane Station

Full Business Case

2 March 2022

Liverpool City Region
Combined Authority
1 Mann Island
Liverpool
L3 1BP

Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
02A	December 2021	KD/KW	NO	JC	First Issue
02B	March 2022	KD/KW	NO	JC	Final Issue

Document reference: 100417188 | 02 | B

Information class: Standard

This document is issued for the party which commissioned it and for specific purposes connected with the above-captioned project only. It should not be relied upon by any other party or used for any other purpose.

We accept no responsibility for the consequences of this document being relied upon by any other party, or being used for any other purpose, or containing any error or omission which is due to an error or omission in data supplied to us by other parties.

This document contains confidential information and proprietary intellectual property. It should not be shown to other parties without consent from us and from the party which commissioned it.

Table of Contents

Executive summary	i
1 Introduction	1
1.1 Project Background	1
1.2 The Scheme	1
1.3 Purpose of this FBC Document	2
1.4 Structure	4
2 Strategic Case	5
2.1 Strategic Case Approach	5
3 Strategic Case- Scheme Definition and Context	7
3.1 Scheme History	7
3.2 Existing Situation	7
3.2.1 Location and Context	7
3.2.2 Rail services	10
3.2.3 Indicative Station Catchment	11
3.2.4 Existing Travel Options	13
4 Strategic Case- Policy Context and Alignment	15
4.1 Local Policy Context	15
4.1.1 Knowsley Local Plan	15
4.1.2 Strategy for Knowsley: The Borough of Choice	16
4.1.3 Tower Hill (Kirkby) Action Area Supplementary Planning Document (SPD)	16
4.2 Regional Policy Context	17
4.2.1 Transforming Cities Fund	17
4.2.2 Liverpool City Region Combined Authority (LCR CA) Long Term Rail Strategy	18
4.2.3 LCR CA Strategic Rail Study	19
4.2.4 LCR CA Transport Plan	20
4.2.5 LCR CA Local Journeys Strategy	21
4.2.6 Liverpool City Region Climate Emergency	22
4.3 National Policy Context	22
4.3.1 Rail Network Enhancements Pipeline (RNEP): A New Approach for Rail Enhancements	22
4.3.2 National Planning Policy Framework (July 2018)	23
4.4 Summary	23
5 Strategic Case- Socio Economic Context	24

5.1	Population	24
5.2	Employment	25
5.2.1	Knowsley's Employment Sectors	27
5.3	Deprivation	28
5.4	Car Ownership	30
5.5	Economy and Business	33
5.6	Business Counts	34
5.7	Health and Education	34
5.7.1	Personal Wellbeing Index	35
6	Strategic Case- Growth and Regeneration	37
6.1	Knowsley Growth and Regeneration	37
6.1.1	Development of Knowsley's Strategic Investment Corridors	37
6.1.2	Housing Development Across Knowsley	39
6.1.3	Kirkby Town Centre	39
6.2	Wider Growth and Regeneration- Liverpool City Centre	40
7	Strategic Case- Key Issues and Opportunities	43
7.1	Rail Connectivity Constraints and Access to Opportunity	43
7.2	Accessibility	44
7.3	Connectivity and the Wider Transport Network	45
7.3.1	Highways	45
7.3.2	Bus	48
7.3.3	Active Travel	50
7.4	Travel to Work	51
7.5	Air Quality	53
7.6	Zero Carbon Initiatives	55
8	Strategic Case- The Need for Intervention	57
8.1	Overview of Strategic Need	57
8.1.1	Helping resolve socio-economic challenges	57
8.1.2	Addressing a connectivity gap	57
8.1.3	Facilitating economic development	58
8.2	Why Headbolt Lane Station?	59
8.3	Implications of Doing Nothing	59
9	Strategic Case- Scheme Scope and Objectives	60
9.1	Objectives	60
9.1.1	Alignment with TCF Criteria and LCR Investment Strategy	61
9.2	Logic Mapping	62
10	Strategic Case- Option Development and Appraisal	64
10.1	Assumptions	64

10.2	Option Generation	65
10.2.1	Long List Development	65
10.3	Option Appraisal	66
10.3.1	Application of INSET	66
10.3.2	Results	68
10.4	Option Development (GRIP 1-2)	71
10.4.1	Scope	71
10.4.2	Station Options Development	71
10.5	Option Refinement (GRIP 3/3a)	83
10.5.1	Platform waiting rooms and shelters	83
10.5.2	Pedestrian access	83
10.5.3	Step free access structure	84
10.5.4	Platform layout preferred option	84
10.5.5	Station building	85
10.5.6	Cycle parking	85
10.5.7	Car park	85
10.6	Battery Electric Testing and Conversion	86
10.7	Summary	87
11	Strategic Case - Wider Strategic Benefits of Battery Operation	88
11.1	The Headbolt Lane Scheme	88
11.2	Wider Implications – Liverpool City Region Long Term Rail Strategy	88
12	Strategic Case- Stakeholders	91
12.1	Key Stakeholders	91
12.2	Stakeholder Classification	92
13	Strategic Case – Project Delivery	94
13.1	Constraints	94
13.1.1	Platform Design	94
13.1.2	Land Ownership	94
13.1.3	Environment	95
13.2	Interdependencies	96
13.3	Interfaces with Other Projects	96
13.4	Measures of Success	97
14	Economic Case	98
14.1	Introduction	98
14.2	Option Development Process	99
14.3	Scenarios	99
14.3.1	Do Minimum	99
14.3.2	Do Something	100
14.4	Demand Modelling	100
14.4.1	Approach	100

14.4.2	Changes in Rail Services	101
14.4.3	Changes in Land Use	102
14.4.4	DM and DS Demand Forecasts	102
14.4.5	DS versus DM Incremental Revenue	108
14.4.6	DS versus DM Changes in Passenger-kms	109
14.5	Impacts of the Investment	109
14.6	Costs	111
14.6.1	Capital Expenditure	111
14.6.2	Whole Life Costs	112
14.6.3	Land Costs	112
14.6.4	Construction Inflation	112
14.6.5	Contingency, Risk and Optimism Bias	113
14.6.6	Operating Expenditure	113
14.6.7	Revenue	114
14.7	Economic Appraisal	114
14.7.1	Assumptions	114
14.7.2	Shift Statement – Updates Applied from OBC to FBC	115
14.7.3	Preferred Option (DS1) – Present Value of Benefits	119
14.7.4	Preferred Option - Present Value of Costs	121
14.7.5	Preferred Option - Analysis of Monetised Costs and Benefits	121
14.8	Preferred Option - Appraisal Summary Table	122
14.9	Uncertainties, Sensitivities and Switching Value Analysis	124
14.9.1	Uncertainty Log	124
14.9.2	Sensitivity Testing and Switching Value Analysis	124
14.10	Value for Money Statement	126
15	Financial Case	127
15.1	Introduction	127
15.2	Approach	127
15.3	Modelled Scenarios	127
15.4	Costs	127
15.4.1	Capital Costs Estimates and Phasing	129
15.4.2	Whole Life Costs	131
15.4.3	Operating Costs	132
15.4.4	Farebox Revenue	133
15.5	Funding	134
15.5.1	Transforming Cities Funding	134
15.5.2	Alternative Non-Grant Options	135
15.6	Overall Affordability Assessment and Conclusions	135
15.7	Financial Risk Assessment	135
16	Commercial Case	137
16.1	Approach	137
16.2	Output Based Specification	137

16.3	Procurement Strategy	139
16.3.1	Preferred Method	139
16.3.2	Alternative Procurement Method	140
16.3.3	Pricing Framework and Charging Mechanisms	140
16.4	Contract Management	140
16.5	Risk Analysis and Transfer	141
16.6	Summary	141
17	Management Case	142
17.1	Approach	142
17.2	Evidence of Similar Projects	143
17.3	Project Dependencies	145
17.3.1	Land Acquisition	145
17.3.2	Kirkby Brook	146
17.3.3	Bus Operator Buy In	147
17.4	Project Governance	147
17.4.1	Liverpool City Region Strategic Governance	147
17.4.2	Merseytravel Governance	148
17.4.3	Rail Industry Governance	149
17.4.4	Integrated Working	150
17.5	Assurance and Approvals	152
17.5.1	Approvals	153
17.5.2	Operating New Stations	153
17.6	Delivery Programme	154
17.7	Risk Management Strategy	154
17.8	Communication and Stakeholder Management	155
17.9	Stakeholder Classification	155
17.9.1	Stakeholder Engagement to Date	157
17.9.2	Further Stakeholder Engagement	157
17.9.3	Monitoring of project delivery	158
17.9.4	Monitoring the achievement of scheme objectives	159
17.10	Benefits Realisation	162
17.11	Summary	165
A.	Operational Analysis	166
A.1	Introduction	166
A.2	Updated Timetable Proposal	168
A.3	Alternatives	168
B.	Demand Study	172
B.1	Comparator Station Trip Rates	174
B.2	Comparator Station Catchments	175
B.3	Local Stations – Retention and Abstraction	179
B.4	Passenger Demand Forecasting	181

B.5	Demand by Journey Purpose and Distance	184
B.6	Daily Demand Estimate	185
B.7	Estimated Access and Egress Mode Choices	185
B.8	Estimated Average Weekday Demand by Time Period	187
B.9	Demand by Ticket Type	187
B.10	Covid-19 Sensitivity Tests	189
C.	Sub-National Wider Economic Impacts	190
C.1	Introduction	190
C.2	Scheme background	190
C.3	Land use analysis	190
C.4	Economic impact assessment	198
C.5	Summary	201
D.	TAG Economic Appraisal Tables	202
D.1	DS2 (Preferred Option) Transport Economic Efficiency	202
D.2	DS1 (Preferred Option) Public Accounts	203
D.3	DS1 (Preferred Option) Analysis of Monetised Costs and Benefits	204

Executive summary

Introduction

The introduction of a new station at Headbolt Lane, east of the existing Kirkby Station has been a longstanding aspiration of the Liverpool City Region Combined Authority (LCR CA) and Merseytravel. It has previously been considered as the first phase of a wider proposition to ultimately provide the Skelmersdale Rail Link (SRL). The availability of Transforming Cities Fund (TCF) monies to the LCR means there is now the opportunity to advance the Headbolt Lane Station scheme as an initial, but standalone, phase of the SRL. This Full Business Case (FBC) considers the case for this following the standard HMT Green Book and Department for Transport (DfT) structure for appraising public investment.

The Strategic Case

Knowsley is the 2nd most deprived local authority in the UK, with 58% of its Lower Super Output Areas (LSOAs) in the 20% most deprived areas nationally¹. The LSOAs to the immediate south of the proposed station (Northwood) are in the 1% most deprived areas of the UK. Interrelated with this situation is the generally low level of connectivity to and from the area by non-car modes. Car availability is very low in many of the Output Areas (OAs) in both Northwood and Tower Hill, with over 60% of households not having access to a car. Bus services do not offer an attractive alternative proposition. Journey times are over an hour to Liverpool City Centre, compared to 20 minutes by rail from the existing Kirkby Station approximately 1 km to the west. The combined low levels of car availability and below average levels of public transport provision combine to disconnect this area of east Kirkby from the wider LCR, leading to multiple adverse outcomes and impacts and a proven 'need' to help level up the area within Knowsley, the LCR and nationally.

The Knowsley Local Plan and Strategy and LCR Strategic Investment Framework (SIF) aspirations aim to address structural challenges and issues such as those observed in east Kirkby, encapsulated in the former's strategic objectives.

- **Sustainable Economic and Employment Growth** seeks to raise skill levels and attainment in Knowsley, ensuring that Knowsley can play a key role in the wider LCR economy and employment opportunities are available for local people.
- **Sustainable Transport** aims to ensure transport is accessible to all living and working within Knowsley and vulnerable groups such as the elderly and disabled are taken into consideration.
- **Promoting Health and Wellbeing** in Knowsley encourages new developments to have a positive impact on the health and wellbeing of residents.

Local and LCR objectives, coupled with the UK's Government latest priorities for transport², have been combined to create a set of scheme objectives. These are to:

- Facilitate long term economic growth in Liverpool City Region by providing sufficient capacity to allow people to access opportunities;

¹ Exploring local income deprivation: Office for National Statistics, May 2021

² See: [DfT Outcome Delivery Plan: 2021 to 2022 - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/604442/dft-outcome-delivery-plan-2021-to-2022.pdf)

- Facilitate the regeneration of Kirkby by providing enhanced access to existing and new development;
- Reduce the impact of travel in the City Region by providing a high capacity alternative to the private car, resulting in improved wellbeing, health and environmental outcomes and contributing towards the LCR's climate emergency and Net Zero Carbon by 2040 target;
- Create better integration between rail and the rest of the transport network to encourage modal shift to more sustainable modes of transport;
- Improve safety and user experience on the transport network; and
- Maintain and, where possible, improve upon access to the rail network for all people regardless of the barriers they face.

These objectives and associated sub-criteria were used in an initial Stage 1 optional assessment exercise which identified the new station as the preferred alternative when compared with other connectivity options. This preferred option comprises:

- A new station with multi-modal interchange facilities at Headbolt Lane;
- Conversion of 6no Class 777 Merseyrail trains to battery-electric bi-mode operation to allow onward running to Headbolt Lane from Kirkby without extension of the existing 750V DC electrified network;
- Acquisition of one additional battery equipped Class 777 rolling train to support the delivery of the revised timetable without any adverse performance impacts, providing a total of 7no battery-equipped 777 trains;
- Four Merseyrail trains per hour (tph) between Headbolt Lane and Liverpool Central;
- Curtailment of the existing, approximately hourly, Kirkby to Wigan/Manchester Northern service at Headbolt Lane;
- Cycle Parking facilities – 100 spaces with passive provision for an additional 200 spaces;
- 300 space car park with potential to extend to 500 spaces in the future;
- Bus stop provision within the station;
- Drop off area within the station; and
- Active travel enhancements on routes to the station with design and delivery led by Knowsley Council.

The Economic Case

This preferred option has been further appraised against standard DfT Value for Money (VfM) criteria. At FBC stage, we have considered the 'Established', inclusive of 'Level 1' impacts associated with journey time savings and the social and environmental benefits of reduced car use, and 'Evolving' Wider Economic Impacts (WEIs) of transport investment in the monetised benefits. The analysis is a 'net UK' level assessment and cannot, within the Net Present Value (NPV) and Benefit Cost Ratio (BCR), directly count the significant sub-national impacts to the LCR, Knowsley and east Kirkby which would be expected from a transformational change in connectivity of the nature the scheme provides.

Considering these net UK impacts result in a 'central case' scenario BCR of 1.30, inclusive of 'established' net UK impacts only. The inclusion of WEIs increases this to 1.52, which is 'medium' VfM. This excludes additional non-monetised impacts including direct support for regeneration and the UK Government 'levelling up' priority for areas with high deprivation, low productivity, and/or lower healthy life expectancies. Considerate of these additional impacts, it is likely that the scheme offers greater VfM. It is anticipated the scheme will support:

- Place-making, helping to put the area 'on the map';
- Inward investment, particularly in housing and increased commercial activity and local opportunities for residents;
- Reductions in unemployment and deprivation, contributing to 'levelling up' within Knowsley, the LCR, and the UK; and
- Provision of green and active travel alternatives, contributing to wider sustainability, health, and wellbeing goals.

The Financial Case

The base cost estimate to complete the rail works, as of November 2021, is £44.12 million (2021 Q3 prices) from the latest GRIP Stage 5 estimates, exclusive of inflation, risk, and optimism bias. An additional £2.725 million contribution is being provided by the Liverpool City Region Combined Authority through the Transforming Cities Fund to enhance active travel routes in the vicinity of the new station. These estimates exclude 'sunk costs' which have already been incurred. A Quantified Risk Assessment (QRA) has been completed, with estimated risk adjustments of between £6.97 million (PMean) and £9.50 million (P90).

Total OpEx for the station and additional train-kms is estimated at £30.7 million (2019 prices) over the 30-year period from 2023 to 2052. Across the 30-year appraisal period, the total nominal OpEx estimate is £47.4 million. The discounted 2019 present value is £14.4 million.

Based on pre-Covid-19 forecasts, the station is expected to generate over 1 million trips by 2030, of which approximately 750,000 would be net additional once abstraction from Kirkby is considered. This level of demand would be sufficient to ensure that farebox revenue would be likely to exceed the incremental operating costs from extending the Merseyrail services, generating a small surplus for the concession to be accounted for under the No Net Gain No Net Loss (NNGNLL) arrangement. The (Pre-Covid-19) estimated farebox revenue is £109.6 million in nominal terms over the period 2023 to 2052, or £17.0 million in discounted 2019 present values. The divergence between revenue and OpEx is driven by the assumed fares policy of RPI+1% which is greater than the change in OpEx components.

Given the strategic fit with TCF objectives, and time limited nature of that money, it is assumed that the TCF allocation will be the sole grant funding source. Other opportunities may become available, but these are currently unknown and would inevitably lead to much later delivery dates.

The Commercial Case

Procurement

The scheme will be delivered by Network Rail under the management and coordination of Merseytravel. Network Rail is governed by a range of rules, which will govern the procurement of the scheme.

There are two possible roles for Network Rail to take. These are:

- Network Rail commissioned directly to deliver the scheme; and
- Promoter to deliver the scheme with Network Rail offering an Asset Protection (ASPRO) role.

Discussions have taken place between Network Rail and Merseytravel regarding the option of adopting a design and build approach which is the selected procurement method for the

scheme. This will provide optimum early engagement with the specialist contractors and mitigate the limited scheme delivery timeframe.

Under the design and build approach, two separate Development Services Agreement's with Network Rail have been identified and entered into in order to deliver the GRIP 4 and GRIP 5 design stages. It is envisaged that GRIP 6-8 will be procured through a Network Rail NR Implementation Agreement (Emerging Cost) contract. The entering into of any agreement is subject to the relevant Merseytravel and Network Rail Investment Panel approvals.

At this stage, it is envisaged Merseyrail will have no involvement in scheme delivery apart from towards the end of the contract where they will be responsible for carrying out the fit of the ticket office, ticket machines, and staff facilities. Network Rail will continue to deliver the elements inside the rail corridor.

Contract Management

For both the design and development phase of the work Merseytravel will enter into a Development Services Agreement (DSA) with Network Rail utilising the ORR approved template with scheme specific details (including services to be provided). GRIP Stage 4 and 5 are being delivered under two separate DSA's. Network Rail will identify and appoint, from their competitively procured framework, the appropriate design team.

For the implementation phase of the work Merseytravel will enter into an Implementation Agreement with Network Rail who will then identify and appoint the appropriate contractor from their competitively procured framework. To date, Contractors have been appointed up to the completion of GRIP 5.

Risk Analysis and Transfer

A robust risk management strategy has been identified for the scheme which identifies the key risks associated with the delivery of the scheme and how these can be mitigated. Management of these risks will be an ongoing task through to practical completion.

As part of this process, an owner has been allocated to each of the key risks. Where appropriate, the aim is to eliminate the identified risk, or prepare relevant mitigation measures to manage and reduce the impact of the risk.

Merseytravel will attribute all project risks to a nominated party that can best demonstrate value for money in managing the risk. Early engagement with Network Rail has enabled a greater degree of design and other construction risk to be mitigated by their appointed contractor and consultant, while under the management/supervision of Merseytravel.

The Management Case

Several similar projects have been successfully completed by Merseytravel in recent years. These include a new station within the Liverpool City Region at Maghull North, a new rail route with associated infrastructure via the Halton Curve, and significant station improvement works at Newton-le-Willows. This demonstrates an extensive record of delivering large-scale rail network enhancements including new stations, highlighting the ability of Merseytravel and Network Rail to manage deliver of a scheme of this nature.

The programme for Headbolt Lane Station aims for delivery by May 2023 years, conforming with the timescales of the TCF. Information provided in the management case evidence highlights that:

- Robust governance, assurance (through the GRIP stages) and risk management processes are in place to deliver the scheme;
- As part of the risk assessment process risks have been taken into account which will be updated continually as the scheme develops; and
- A list of key stakeholders relating to the project has been identified. Engagement has already been undertaken with key stakeholders and is planned to continue up to and beyond the submission of the FBC to ensure that effective engagement takes place through the different stages of scheme delivery;
- Monitoring and Evaluation, and Benefits Realisation frameworks have been developed to assess the success in meeting its objectives which will be further updated as the scheme develops.

1 Introduction

This document presents the Full Business Case (FBC) for a new rail station at Headbolt Lane in Kirkby (Knowsley district, Liverpool City Region), and has been prepared by Mott MacDonald on behalf of Merseytravel / Liverpool City Region Combined Authority (LCR CA) in support of their Transforming Cities Fund (TCF) application. The scheme seeks to address issues of lack of connectivity and social deprivation, delivering beneficial economic, social, and environmental impacts.

1.1 Project Background

Merseytravel first identified the need for a new station at Headbolt Lane in east Kirkby within the Local Transport Plan Rail Strategy, published in 2006. This sought to extend the coverage of passenger rail services in the Liverpool journey to work area. Since then, the development of the station has remained a long standing aspiration of Merseytravel, the LCR CA, and local partners to help deliver on the aspirations for the city region.

Merseytravel are now seeking TCF funding³ to deliver a new rail station to the north east of Kirkby on the existing line between Kirkby and Rainford⁴, extending the Merseyrail Electric Ltd (MEL) Northern Line to allow a frequent MEL service to access the new station. The scheme seeks to enhance public transport access in the north and east of Kirkby and a wider hinterland, including adjacent areas of West Lancashire. The proposed scheme is integrated with aspirations to reintroduce rail services to Skelmersdale in West Lancashire⁵.

The Headbolt Lane scheme was selected as eligible for the LCR's TCF business case application process due to its alignment with Mayoral priorities and the key themes of the LCR TCF. The scheme, and this FBC, have therefore been developed in consideration of:

- **Theme 1:** Improving and expanding the public transport network to meet new areas of demand
- **Theme 2:** Improving the appeal of public transport, and particularly bus, against private transport
- **Theme 3:** Intervening for health and wellbeing

1.2 The Scheme

The proposed scheme will see the delivery of a new station at Headbolt Lane, extending Merseyrail trains beyond the current terminus of Kirkby Station using new battery power technology. Headbolt Lane station will therefore succeed Kirkby Station as the terminus on both the MEL and Northern (to/from Wigan) networks and provide an interchange between the two, with all passengers boarding or alighting at the new station (there will be no through services). Headbolt Lane would be served by extensions of all the existing four MEL trains per hour (tph)

³ See: <https://www.gov.uk/government/publications/apply-for-the-transforming-cities-fund/knnj>; and https://www.liverpoolcityregion-ca.gov.uk/wp-content/uploads/TCF_second_call_Oct_19.pdf#:~:text=1.%20The%20Liverpool%20City%20Region%20Combined%20Authority%20%28LCRCA%29,in%20key%20commuter%20routes%20in%20major%20city%20regions.

⁴ Currently served by irregular Northern services between Kirkby and Wigan Wallgate and Manchester Victoria.

⁵ The proposed Skelmersdale Rail Link (SRL) has seen the development of a complementary Strategic Outline Business Case for Lancashire County Council (LCC) and Network Rail, plus integrated GRIP stages up to 2-3. The Headbolt Lane GRIP stages have since advanced as a separate workstream.

to Kirkby and by the irregular, approximately hourly, Northern service between Headbolt Lane and Wigan (with some trains extending beyond to Manchester, Rochdale, and Blackburn).

This project is intended as a catalyst for addressing current gaps in direct rail connectivity between key areas of the LCR, ultimately helping to deliver greater accessibility to opportunities and key services for residents and reduce the observed gaps in productivity, economic activity, deprivation, and healthy life expectancy between east Kirkby and other areas.

In parallel to the development of this FBC for the Headbolt Lane scheme, Network Rail has completed the GRIP Stage 4 ('single option development') and commenced 5 ('detailed design') studies. An updated timetable planning exercise has also been undertaken, by Mott MacDonald and being assured by Network Rail, to ensure the working timetable can be accommodated and the impacts on performance are positive or adverse effects successfully ameliorated. Preceding GRIP stages had re-appraised seventeen different layout options for the station which were subject to further assessment and development as part of the GRIP 3 stage of scheme development.

1.3 Purpose of this FBC Document

The purpose of this FBC is to update the processes and conclusions made in the Outline Business Case (OBC) from December 2020. The Value for Money (VfM) offered by the proposed investment is detailed within the Economic Case. The FBC also defines how the scheme will be funded, procured, and delivered.

Guidance on preparing the three stages of transport business cases is published by the Department for Transport⁶ (DfT) and is based on the HM Treasury Green Book guidance for public sector investment. Complementary rail-specific guidance, 'Rail Networks Enhancement Pipeline'⁷ (RNEP) recognises that rail schemes can enter business case cycle at different levels of maturity and therefore progression to OBC and 'Decision to Design' without developing an Strategic Outline Business Case (SOBC) may provide an opportunity for efficiencies and faster delivery. RNEP seeks to aid rail industry planning by identifying a, deliverable, rolling programme of enhancements. Although the proposed funding of Headbolt Lane via the TCF mayoral allocation for the LCR sits outside the RNEP, the principles and requirement to integrate with wider industry proposals are relevant as the interface and resource considerations are clearly the same. The closure of the GRIP 4 study and this FBC inform the RNEP 'Decision to Deliver' gateway in Figure 1.1.

Figure 1.1: Framework for Investment in National Rail Schemes



Source: DfT

Figure 1.2 sets out the Business Case Process and the weight which must be applied to each of the five cases within the DfT's 5 Case Business Case Model. Although no SOBC has been produced for the scheme, a number of detailed previous studies have been undertaken as part

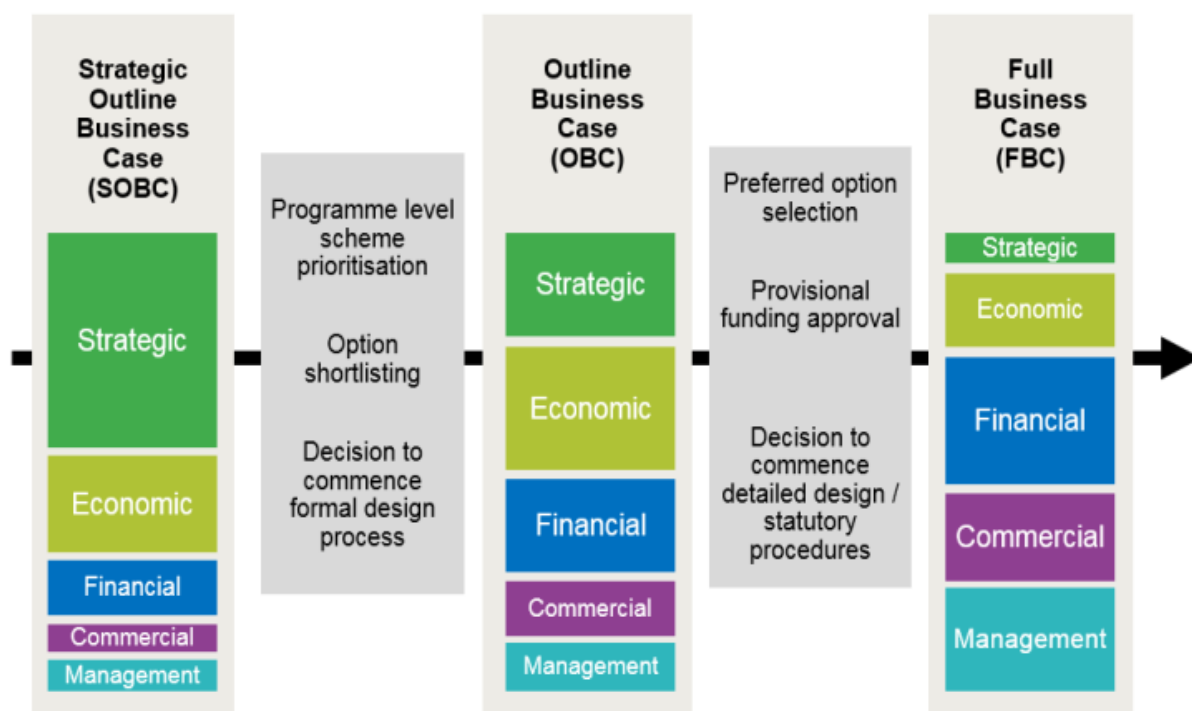
⁶ See: <https://www.gov.uk/government/publications/transport-business-case>

⁷ See: <https://www.gov.uk/government/publications/rail-network-enhancements-pipeline>

of the GRIP work to assess the feasibility of a range of options. Due to the detailed work undertaken to date and in accordance with RNEP guidance, the Headbolt Lane scheme proceeded directly to the OBC stage prior to commencement of the FBC. For the FBC it can be seen that updates to the:

- Strategic Case are typically small in nature;
- Economic Case take into account changes in costs, guidance, and/or the assessment of monetised impacts (potentially additional to those from the OBC);
- Financial Case confirms funding arrangements and any update to project costs;
- Commercial and Management Cases receive greater emphasis as delivery mechanisms are determined.

Figure 1.2: The Business Case Process- Weight applied to each of the 5 Cases



Source: Mott MacDonald

In line with Department for Transport (DfT) requirements, this FBC will:

- Define the scope of the proposed scheme;
- Present the evidence base- building on the work undertaken in previous studies;
- Confirm scheme objectives;
- Present the case for change (the Strategic Case), confirming how the scheme fits with national, regional and local strategy and policy;
- Develop shortlisted options and document the appraisal process to determine a preferred option;
- Document evidence on expected impacts, including Value for Money (VfM), Wider Economic Impacts (WEIs) and Environmental and Social impacts, and state the assumptions made (the Economic Case);

- Provide a breakdown of scheme costs, and funding requirements on a per annum basis. An overview of how costs have been derived will also be provided (Financial Case);
- Detail the procurement options considered and the basis for the selection of a preferred procurement option, as well as contractual arrangements for pricing and payment mechanisms and risk allocations (Commercial Case); and
- Set out clear proposals for governance, project planning, risk management, stakeholder management and evaluation (Management Case).

1.4 Structure

This FBC follows the structure of the DfT's Transport Business Case; in that it comprises the five component cases; strategic, commercial, financial, commercial and management which are detailed in the subsequent sections as follows:

- **Section 2-12** presents the Strategic Case and the process undertaken to identify and appraise scheme options.
- **Section 13** sets out the Economic Case for the identified preferred option only.
- **Section 14** presents the Financial Case
- **Section 15** contains details of the Commercial Case for procuring the scheme.
- **Section 16** sets out the management arrangements for the project delivery including the strategy to mitigate potential risks.

2 Strategic Case

The Strategic Case identifies and presents the evidence base on the need for intervention in the study area and sets out how this translates into scheme-specific aims and objectives. It then demonstrates how these were used to identify a preferred option through an initial sifting and appraisal process, including identification of the most significant and likely impacts.

2.1 Strategic Case Approach

The structure of the Strategic Case broadly aligns to the DfT's 'The Transport Business Case: Strategic Case' which outlines key areas that should be covered as part of the business case documentation and the level to which they should be undertaken at FBC stage. Table 2.1 shows where the relevant information, in accordance with DfT requirements, can be found in the subsequent sections that make up the Strategic Case for Headbolt Lane Station.

Table 2.1: DfT Requirements for the Strategic Case

Content	DfT Requirements	Section Number and Title(s)
Introduction	Outline the approach taken to assess the Strategic Case and the study area	2.1 Strategic Case Approach
Project definition	Provide an update on previous work	3 Scheme Definition and Context
Business strategy	Provide the context for the business case by describing the strategic aims and responsibilities of the organisation responsible for the proposal	4 Business Strategy and Objectives
Problem identified	Describe the problems including the evidence base underpinning this? Justification for intervention?	5 Socio-economic Context 6 Growth and Regeneration 7 Key Issues and Opportunities 8 The Need for Intervention
Impact of not changing	What is the impact of not changing?	8.3 Implications of doing nothing
Internal drivers for change	What does the driving need to change? e.g. improved technology, new business/ service development as a result of policy? (Non-compulsory)	N/A, Non-Compulsory
External drivers for change	What does the driving need to change? e.g. legislation, pressure from public/ other departments? (Non-compulsory)	N/A, Non-Compulsory
Objectives	Establish specific, measurable, achievable, realistic and time-bound objectives that will solve the problem identified. Ensure that they align with the organisation's strategic aims	9 Scheme Scope and Objectives
Measures for success	Set out what constitutes successful delivery of the objectives	13.4 Measures of Success
Scope	Explain what the project will deliver and, what is out of scope	10.4.1 Scope
Constraints	High level internal/external constraints e.g. technological environment, capability to deliver in-house major contracts with provider, etc.	13.1 Constraints
Interdependencies	Internal/external factors upon which the successful delivery of project is dependent	0 Interdependencies

Content	DfT Requirements	Section Number and Title(s)
Stakeholders	Outline the main stakeholder groups and their contribution to the project. Note any potential conflicts between different stakeholder groups and their demands	11 Stakeholders
Options	Set out all the options identified (including low cost alternative) and evaluate their impact on the proposal's objectives and wider public policy objectives. Risks associated with each option should be identified as should any risks common to all options	10 Option Development and Appraisal

Source: DfT

3 Strategic Case- Scheme Definition and Context

This section provides context on the location of the proposed station in relation to the wider area and rail network as well as an overview of the scheme's history, existing services, and the current level of demand in the area.

3.1 Scheme History

As part of its statutory remit, Merseytravel considers and assesses options for new stations across the LCR to better serve both established travel markets, support new developments, and provide new connectivity. The need for a new station at Headbolt Lane was first recognised within the Merseyside Local Transport Plan Rail Strategy in 2006. Within the strategy Merseytravel noted that they would identify the need for and assess Value for Money (VfM) of a new station at Headbolt Lane in Kirkby as part of the proposal to extend MEL services beyond Kirkby.

This need for a new station at Headbolt Lane was again recognised within the Liverpool City Region Long Term Rail Strategy⁸ (LTRS) in 2014 and again in the 2018 refresh as key to addressing identified gaps in rail network coverage across the region. The LTRS notes that the rail network does not always link places where people live to employment sites effectively and the development of a new station at this location in Kirkby would open up the railway to a population that currently does not have good access to the rail network.

Following the identification of this scheme in a number of policy documents over the years, Merseytravel began to undertake studies to assess the feasibility of the scheme and develop potential options for railway timetables and infrastructure.

Since 2020 the project has seen parallel development of the OBC and FBC alongside GRIP stage 2 to 4 deliverables. This has enabled a preferred option to be identified.

3.2 Existing Situation

3.2.1 Location and Context

Kirkby is a town within the borough of Knowsley, Merseyside, located approximately 10km north east of Liverpool and 19km south west of Wigan. Currently the town is served by trains to both Liverpool and Wigan at Kirkby Station, which is a terminus on both the MEL (electrified) network and the wider National Rail (non-electrified) network via the line between Kirkby and Wigan, with the latter served by the Northern franchise.

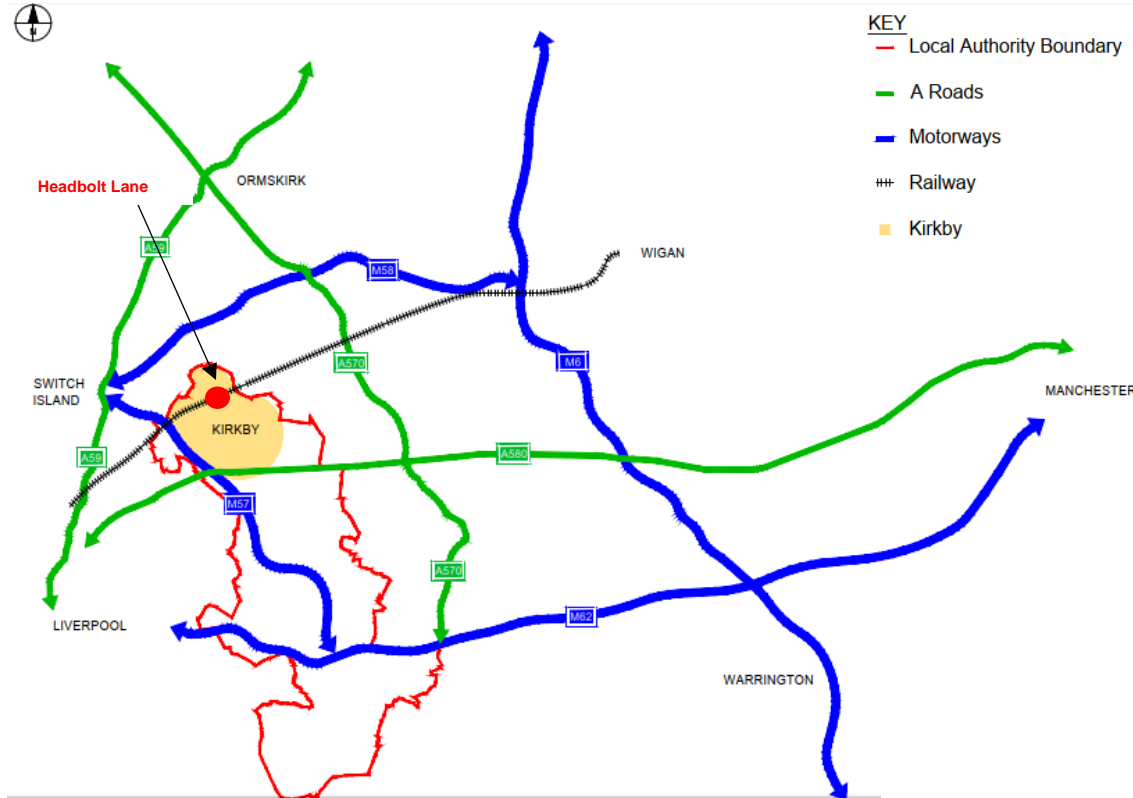
Kirkby was a relatively small town until the 1950s when the area began to house overspill population from Liverpool and alleviate housing shortfalls within the city following the Second World War. The town has experienced mixed economic fortunes and considerable regeneration efforts have been undertaken in the town centre to provide more employment and leisure opportunities for residents.

The proposed location for a new station at Headbolt Lane is approximately 1.3km northeast of the existing Kirkby station, and is located between the Tower Hill and Northwood

⁸ See: https://www.liverpoolcityregion-ca.gov.uk/wp-content/uploads/LCRCA_RAIL_STRATEGY_MAY18.pdf

neighbourhoods in the north of Kirkby. The location of the proposed station in the context of the wider area is shown in Figure 3.1 below.

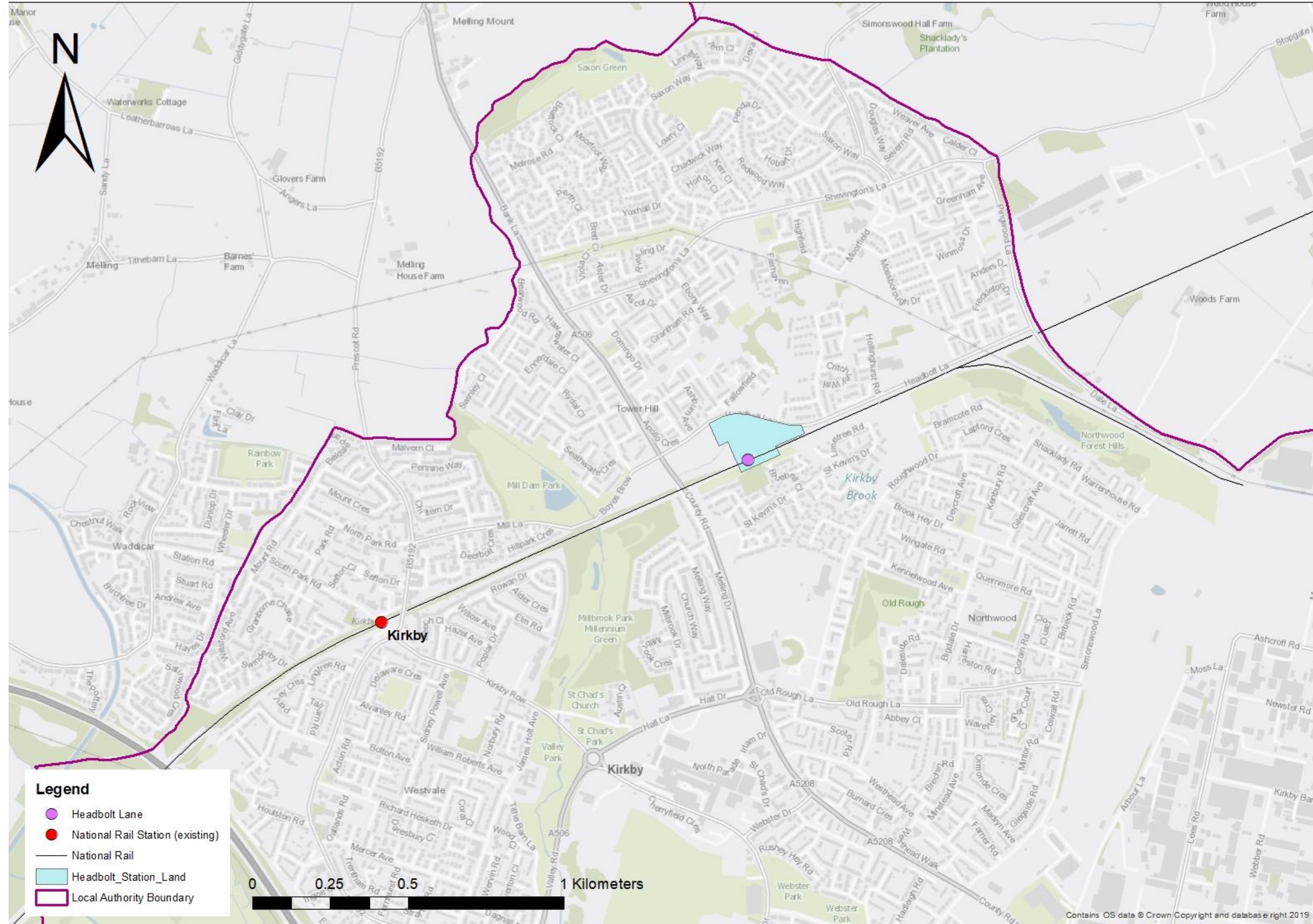
Figure 3.1: Site Location Context



Source: Mott MacDonald

Currently the proposed station site, shown in Figure 3.2 below, is unoccupied and grass covered, with the A506 Bank Lane / County Road to the west which provides access to Kirkby Town Centre southbound and to the M58 Motorway northbound. The Kirkby-Wigan railway is located towards the southern boundary of the site with Headbolt Lane forming the northern and eastern site boundary.

Figure 3.2: Headbolt Lane Station Local Context



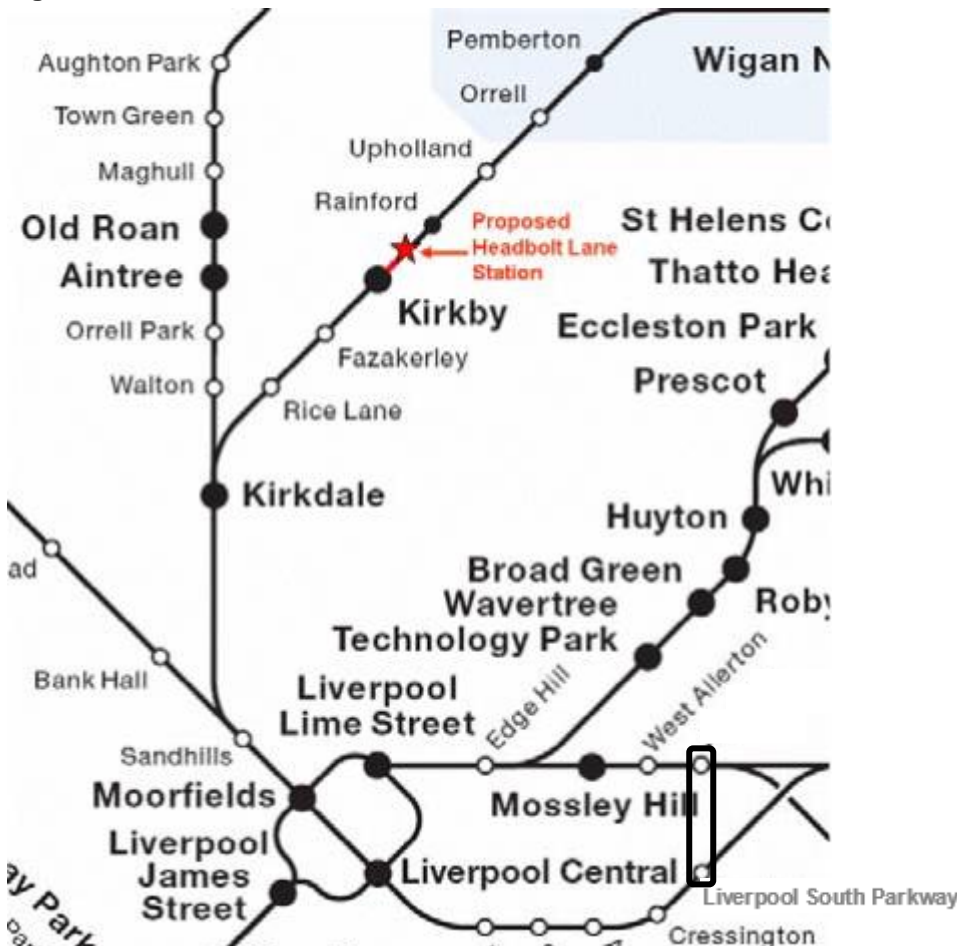
The surrounding area is primarily low-density residential housing with both Tower Hill and Northwood (to the north and south respectively) characterised by small two-up-two-down terraced houses although Northwood also features larger semi-detached and detached homes, as well as several tower blocks.

The centre of Kirkby is 1km south of the site where there are commercial and retail land uses. Pedestrians and cyclists can access this area from the site safely with a shared use foot/cycle path forming part of the route.

3.2.2 Rail services

The proposed station at Headbolt Lane would be located on an extension to the Kirkby branch of MEL's Northern Line⁹, which connects Kirkby to central Liverpool stations (Central and Moorfields). It would also become the new terminus for existing diesel services operated by Northern Rail to/from Wigan and Manchester, providing an interchange between these services and Merseyrail. The proposed location of the station in relation to the existing rail network is illustrated in Figure 3.3 below.

Figure 3.3: Headbolt Lane in the context of the wider rail network



Source: Network Rail

⁹ The Northern Line includes the branches to Southport, Ormskirk and Kirkby, and services through central Liverpool to Hunts Cross.

A summary of the pre-COVID rail services available from Kirkby Station is set out in the table below. As part of the scheme, these services would be extended (MEL) or curtailed (Northern) to instead terminate at Headbolt Lane.

Table 3.1: Summary of Rail Services from Kirkby Station

	Frequency (tph)			Journey Time	Example Cost (Anytime single)
	Daytime	Evening	Sunday		
Liverpool Central – Kirkby	4	4	2	19 mins	£4.00
Kirkby-Liverpool Central	4	4	2	18 mins	£4.00
Kirkby- Wigan Wallgate or Manchester Victoria	1	1	0	50 mins	£15.30
Wigan Wallgate or Manchester Victoria– Kirkby	1	1	0	56 mins	£15.30

Source: National Rail

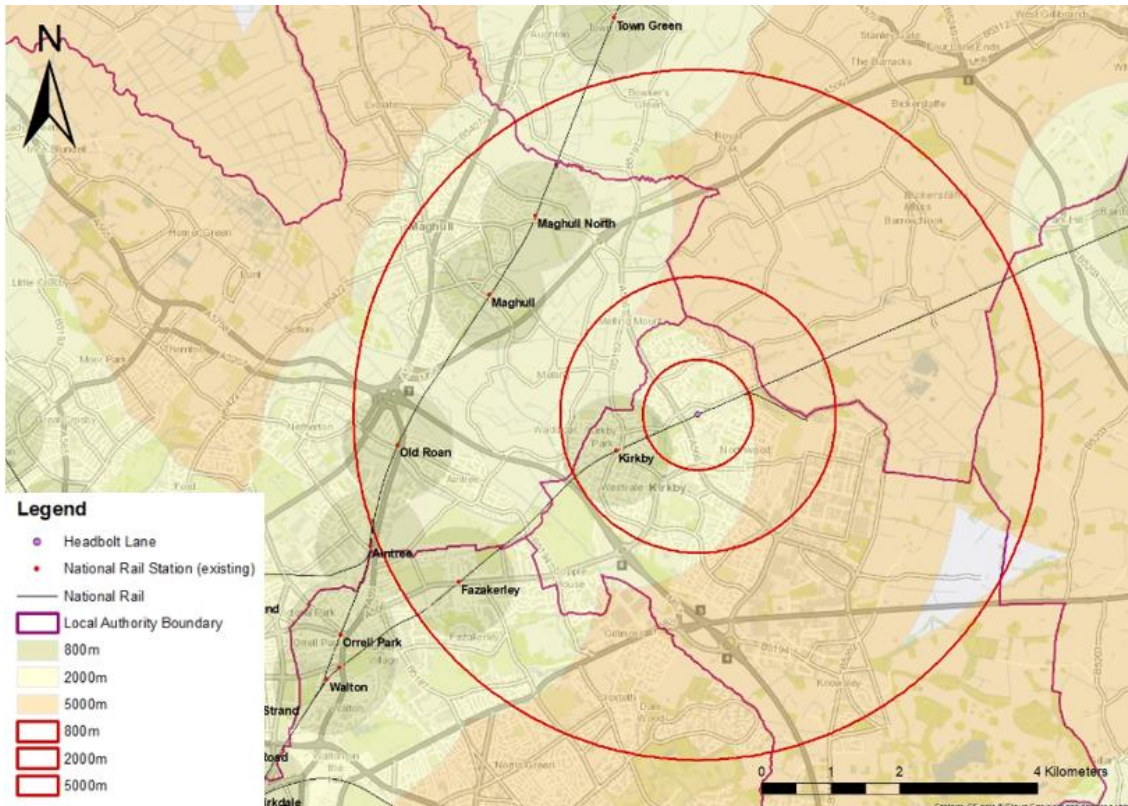
3.2.3 Indicative Station Catchment

It is envisaged that Headbolt Lane Station would predominantly serve the eastern neighbourhoods of Kirkby, including Tower Hill, Simonswood, and Northwood. The series of parks (Mill Dam and Millbrook) and/or the A506 and A5028, shown previously in Figure 3.2 form a natural western boundary to the likely catchment. To the west, places will continue to be best served by the existing Kirkby Station.

There is the strong potential Headbolt Lane would also draw in demand from a much wider catchment, depending on its relative competitiveness to other modes and existing stations. This would be dependent on accessibility, including Park & Ride (P&R) provision and the Level of Service (LoS) provided taking account of crowding. It should be noted that the station will be served exclusively by Merseyrail’s new Stadler Class 777 rolling stock which have significantly higher total capacities than the existing Class 507/508 rolling stock.

The figure below illustrates the indicative walking and cycling catchment areas with 800m and 2km buffer zones which are deemed reasonable walking and cycling distance respectively. The 5km boundary also illustrates the most immediate P&R catchment areas and further opportunities for cycling. While the Ormskirk line serves Maghull and other communities to the north and west, to the south are further areas of Kirkby where access to the rail network is currently limited.

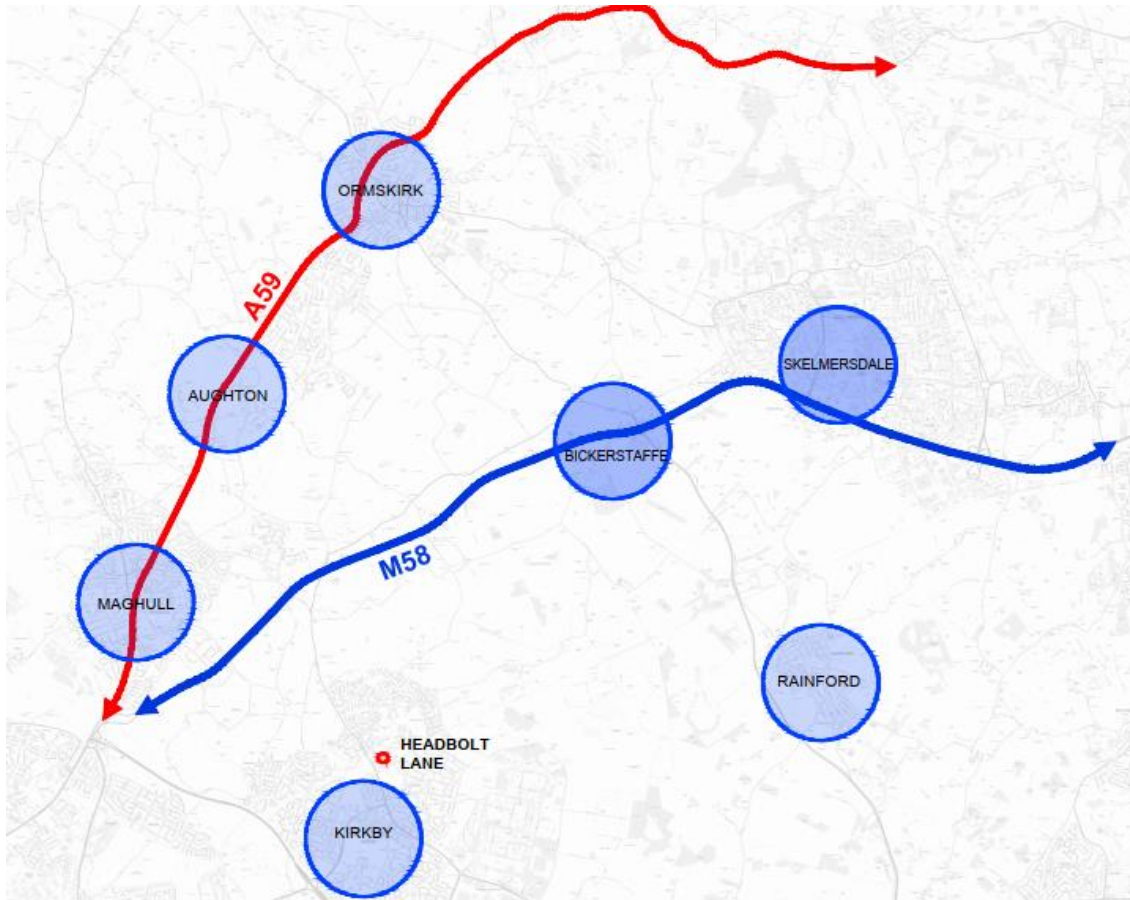
Figure 3.4: Headbolt Lane Station Indicative Catchment



Source: Mott MacDonald

Due to the proposed location of the station in proximity to key strategic routes such as the M58, M57 and A59, Headbolt Lane also offers opportunities for P&R within a wider catchment area. A new station would also prove useful within this part of the City Region as a number of other stations along the network are constrained in terms of parking provision with demand often exceeding capacity and therefore opportunities for P&R in these areas is limited. The wider surrounding areas with the potential to be served by Headbolt Lane are illustrated in the figure below. Considerations of competition between stations and potential abstraction from existing are covered within the demand modelling (see Economic Case, Section 14 and Appendix B).

Figure 3.5: Headbolt Lane Park and Ride Catchment Area



Source: Mott MacDonald

3.2.4 Existing Travel Options

In the absence of a rail station at Headbolt Lane serving large neighbourhoods such as Tower Hill, Northwood, and Simonswood, residents in these areas are heavily reliant on bus services and car travel to access services and opportunities across the borough, Liverpool City Centre, and across the wider LCR. This includes multi-modal travel using bus, walk or cycle to access Kirkby Station for onward travel on MEL services towards the City Centre and other major attractions.

However, there are a number of issues associated with bus and car travel for residents within these areas, particularly between north Kirkby and Liverpool.

Key routes along the highway network between Kirkby and Liverpool often suffer from a significant level of congestion therefore increasing journey times for both private car trips and bus services. The number 20 bus service which runs between Liverpool and Tower Hill has journey times significantly longer than either rail and car and therefore does not offer an attractive mode which could be used regularly for commuter or shopping trips or as an attractive alternative to the use of the private car. MEL rail and the X3 bus service provides faster journey times into Liverpool from Kirkby Town Centre, however these require a significant access/egress leg from neighbourhoods in eastern Kirkby, and the X3 journey time is still uncompetitive relative to car. Table 3.2 summarises existing options for travel between north

Kirkby and Liverpool City Centre. Full details of the local transport networks is given within Section 7.

Table 3.2: 2019/20 North Kirkby to Liverpool AM Peak Options and Journey Time Components

From	To	Option	Walk Time	Onboard Time (In-Vehicle) (minutes)	Service Interval (minutes)
Tower Hill	Liverpool	Bus Service 20	1 to 10 minutes (estimate)	56	10
Tower Hill	Liverpool	Walk to Kirkby Station and MEL to Moorfields	25	18	15
Tower Hill	Liverpool	Car	N/A	30	N/A
Northwood	Liverpool	Walk to Kirkby Station and MEL to Moorfields	24	18	15
Northwood	Liverpool	Car	N/A	27	N/A
Kirkby Bus Station	Liverpool	Bus service X3	1 to 30 minutes (estimate)	22	60

Source: National Rail, Traveline, and Google Journey Planner

Low levels of car ownership for residents within the areas of Tower Hill, Northwood, and Simonswood and parking constraints within the city centre further reduce travel opportunities to Liverpool from large residential areas across the LCR. Data from the 2011 Census (ONS) shows that 37% of Knowsley residents do not have access to a car or van for travel; this is 12% higher than the national figure of 25% (see Section 5.4). Furthermore, the Lower Super Output Areas (LSOAs) immediately around the proposed station site show even more pronounced low levels of access to a car, with around 64% of households without access to a car in some areas (see Section 5.4 for further details).

Rail is therefore often the most effective mode for many areas across the LCR to be able to access services and opportunities. This scheme will help ensure that residential areas are, where feasible, located within reasonable proximity to a rail station to maximise accessibility and connectivity.

4 Strategic Case- Policy Context and Alignment

This section considers relevant local, regional, and national policy documents and the strategic fit for the proposed station at Headbolt Lane within these. As highlighted in preceding sections, the longstanding nature of the proposal means there are multiple direct references within such documents.

4.1 Local Policy Context

4.1.1 Knowsley Local Plan

The Knowsley Local Plan¹⁰ was adopted on 6th January 2016, setting out the vision and policies which will guide local development until 2028. This local plan has several strategic objectives to aid the development and regeneration of the region that will be required to implement the spatial vision of Knowsley by 2028. Those relevant to the development of this scheme include:

- **Strategic Objective 1: Sustainable Economic and Employment Growth** seeks to raise skill levels and attainment in Knowsley with an aim of ensuring that Knowsley can play a key role in the wider LCR economy and employment opportunities are available for local people.
- **Strategic Objective 6: Sustainable Transport**- aims to ensure transport is accessible to all living and working within Knowsley and vulnerable groups such as the elderly and disabled are taken into consideration.
- **Strategic Objective 9: Promoting Health and Wellbeing** in Knowsley encourages new developments to have a positive impact on the health and wellbeing of Knowsley residents which is provided through the attainment of several other objectives, including the promotion of walking and cycling.

The Local Plan also outlines the core strategy policies which will aid the delivery of one or more of the strategic objectives. This includes Policy CS7: Transport Networks which states that, as a part of the overall transport strategy, *“planning powers and other interventions will be used to support a sustainable and integrated transport system”*.

As part of CS7: Strategic Transport Schemes and Programmes, the rail network should be upgraded, with improvements to stations, passenger interchanges and park and ride provisions, while walking and cycling routes should also be enhanced.

Policy CS12 specifically concerns Tower Hill as a dedicated policy is required for this region in order to meet the aims for Kirkby as a whole. Amongst the improvements which could aid the regeneration of this area are enhanced public transport and active travel infrastructure as well as ensuring that Tower Hill has the flexibility to successfully integrate a new transport interchange at Headbolt Lane.

¹⁰ See: <https://www.knowsley.gov.uk/residents/building-and-planning/local-plan/introduction-to-the-local>

So, what does this mean for the development of Headbolt Lane Station?

This scheme will directly contribute towards economic and employment growth within Knowsley, providing an efficient means of access to jobs and opportunities within Liverpool City Centre and across the LCR. The scheme will also promote the use of sustainable transport and contribute to improved health and wellbeing of residents through improved opportunities for walking and cycling to the site.

4.1.2 Strategy for Knowsley: The Borough of Choice

Adopted in 2013, the Strategy for Knowsley: The Borough of Choice¹¹ is a ten-year strategy with a vision for an improved Knowsley; a narrowed inequality gap; and a thriving, diverse economy to exist in the borough by 2023.

The strategy had short-term priorities for 2015 within the wider desired outcomes for 2023. By 2023, the strategy states that Knowsley wishes to have:

- *“Attractive, sustainable neighbourhoods”.*
- *“Vibrant and welcoming town centres”.*
- *“Residents and local communities who are able to make positive lifestyle choices”.*
- *“High quality employment areas”.*
- *“Narrowing the gap in deprivation levels both between different parts of the Borough and between Knowsley and elsewhere”.*
- *“Quality infrastructure and environment”.*
- *“The conditions to support sustainable business growth”.*

So, what does this mean for the development of Headbolt Lane Station?

The development of a new station at Headbolt Lane in Kirkby will provide high quality new infrastructure and significantly contribute towards the objectives outlined within the Strategy for Knowsley, increasing the attractiveness of the area and improving the opportunities available for residents. This scheme will also help narrow the gap in deprivation levels both between Kirkby and other parts of the Borough and between Knowsley and elsewhere, ensuring Kirkby is well connected to other large areas of the LCR and the wider North West region.

4.1.3 Tower Hill (Kirkby) Action Area Supplementary Planning Document (SPD)

The SPD for Tower Hill was adopted by Knowsley Metropolitan Borough Council in April 2007, forming part of the Knowsley Local Development Framework and guiding future development in the Tower Hill action area between Shevington’s, Pingwood, Headbolt and Bank Lanes.

The Tower Hill SPD has several objectives including:

- Community Cohesion to “create an attractive, safe, and well-designed series of neighbourhoods that are well connected to both the centre and to each other”.
- Sustainable Transport to “promote sustainable transport options by providing an integrated, well connected structure of roads, paths, cycleways, and public transport facilities that

¹¹ See: <http://www.knowsley.gov.uk/pdf/Borough-Strategy.pdf>

ensure a high degree of permeability and accessibility within the estate and to and from adjoining neighbourhoods”.

- Environmental Quality to “*retain, enhance, nurture and create distinctive elements of the physical and natural environment*”.

The document notes that Tower Hill is currently around 1km from the existing Kirkby Station, therefore further than the 800m walking radius for sustainable development. A station at Headbolt Lane would bring the whole area to within 800m of a station and remove the severance effect of the A506.

Some of the weakest aspects of the Tower Hill area are accessibility and connectivity; however, the SPD looks to improve this through several options for further development, with new bus routes through the Tower Hill residential area, a railway station at Headbolt Lane and enhanced pedestrian and cycle infrastructure to other areas amongst those listed.

The SPD also states that “*main pedestrian and cycle routes must be strengthened by providing high quality corridors on likely desire lines, as well as routing slow modes through interesting new high-quality areas. Innovative measures to prevent use of such facilities by vehicles or motorcycles shall form an integral part of the design.*”

So, what does this mean for the development of Headbolt Lane Station?

This scheme will directly support the aims set out within the Tower Hill (Kirkby) Action Area Supplementary Planning Document (SPD) by significantly improving connectivity that has been identified as one of the weakest aspects of the area. The document also specifically references the development of a station at Headbolt Lane to bring the Tower Hill area within the recommended 800m radius walking distance to a station and avoid severance between the neighbourhood and existing National Rail stations created by major local A roads. This will enhance opportunities for more sustainable travel and increase the number of residents within this area who are able to access the rail network.

4.2 Regional Policy Context

4.2.1 Transforming Cities Fund

In the Autumn of 2017, the Government created a £1.7 billion Transforming Cities Fund (TCF) which aimed to drive up productivity and spread prosperity through significant investment into public and sustainable transport, focusing on providing quicker and easier intra-city connectivity and enabling better access to jobs in key cities.

Half of this funding was allocated on a per capita basis to Mayoral Combined Authorities with an existing, directly-elected, Mayor. Through this process, the LCR CA secured time-limited grant funding of £172.5 million over five years. As a condition of funding, the allocation forms part of the CA's Strategic Investment Fund¹² (SIF) and will be managed in accordance with its underlying principles.

The Liverpool City Region SIF Strategy provides an investment strategy to manage public funding across key growth areas under the 2015 devolution agreement. The core objective of the strategy is to ensure the city region's investments are most effectively targeted at opportunities and interventions that will drive wide-scale socio-economic growth.

¹² See: <https://www.liverpoolcityregion-ca.gov.uk/growing-our-economy/strategic-investment-fund/>

The Combined Authority agreed a TCF commissioning framework and three related priority themes. These themes are specific to the LCR and comprise:

- **Theme 1:** Enhancing and expanding the public transport network to meet new areas of demand, with a focus upon transforming intra-city regional rail connectivity and maximise the attractiveness and uptake of the Merseyrail network from 2019/20 onwards;
- **Theme 2:** Improving the appeal of public transport, and particularly bus, against private transport; and
- **Theme 3:** Intervening for health and wellbeing, specifically on the development of high-quality, segregated and attractive cycleways linking key residential areas and employment areas and integrates with rail and bus networks to support a sustainable 'last-mile' strategy.

So, what does this mean for the development of Headbolt Lane Station?

The development of a new station at Headbolt Lane directly supports the key objectives of the LCR CA TCF through investing in public transport which will benefit people across the city region, particularly by enhancing connectivity between a deprived area with lower levels of economic activity and the main economic centre of the LCR, Liverpool City Centre. The points below demonstrate how the scheme will address each priority theme outlined above:

- **Theme 1:** This scheme will directly improve and expand the public transport network across the LCR to reach areas which currently do not have access to the rail network and serve new areas of demand arising from housing developments around the area of Tower Hill.
- **Theme 2:** This scheme will also significantly improve the appeal of public transport for residents within the areas of Northwood, Simonswood and Tower Hill which are currently not provided with direct access to the rail network and are only served by long bus journey times towards the city centre. Congestion along key routes and parking constraints within the city centre also mean rail will provide an attractive alternative to private car for trips between north Kirkby and Liverpool city centre. The scheme will also provide enhanced interchange to facilitate improved multi-modal journeys.
- **Theme 3:** As noted above, this scheme will offer significant opportunity to promote mode shift from the private car, indirectly reducing local air pollutants and noise and therefore improving the health and wellbeing of LCR residents. The accessibility of the station will promote the use of walking and cycling as access/egress modes. Providing commuters with alternative travel to the private car will also contribute towards reducing travel related stress experienced when travelling during peak periods, also contributing to improved health and wellbeing.

4.2.2 Liverpool City Region Combined Authority (LCR CA) Long Term Rail Strategy

The Liverpool City Region Long Term Rail Strategy (LCR LTRS) was first developed in 2014 and was refreshed by its originators Merseytravel and the LCR CA in April 2018¹³. It provides a 30 year strategy for the development of rail services in the city region and identifies, from a bottom-up evidence-based analysis, a preferred shortlist of schemes to improve connectivity, efficiency, attractiveness and environmental benefit of the rail system in and around the LCR and neighbouring areas.

¹³ See: https://www.liverpoolcityregion-ca.gov.uk/wp-content/uploads/LCRCA_RAIL_STRATEGY_MAY18.pdf

The schemes identified in the LCR LTRS range from service extensions and frequency improvements to new infrastructure, stations, and rolling stock. Several elements of the strategy have already been developed including the new station at Maghull North, the improved interchange facilities at Newton-le-Willows, the Halton Chord link and the new procurement of new rolling stock for the MEL franchise.

Several areas within the region have been noted as having weaker connectivity than required to maximise their potential and address challenges and issues, including communities on the two Merseyrail Northern Line branches to Ormskirk and Kirkby. The strategy states that areas with potential for growth which are experiencing weaker than required connectivity might be prioritised. Several network constraints were also identified in 2014 including:

- “The rail network does not always link places where people live to employment sites effectively”
- “A lack of electrification on key routes has led to inefficient operation of passenger services”
- “single track or otherwise constrained running...limits the number of services that can effectively run on each route.”

So, what does this mean for the development of Headbolt Lane Station?

The development of a new station Headbolt Lane is directly referenced within this strategy as a key to enabling the objectives of the strategy and resolving identified network constraints such as a lack of geographical coverage provided by the rail network.

Development of a new station at Headbolt Lane would open the railway to communities such as Tower Hill and Northwood that do not currently have access to the rail network. This would improve connectivity to other key parts of the LCR for people living in these areas, and ensure they are able to effectively access jobs and opportunities.

The scheme must also be cognisant of its wider network effect, and the need to avoid generating performance issues due to short turnaround times at termini and excessive single track sections which limit recovery potential and maximise the potential for further disruption from late running of an individual train.

4.2.3 LCR CA Strategic Rail Study

This document was developed by Network Rail in November 2016 and is a key part of the rail industry’s long term planning process. It sets out proposals and choices for funders for the next 10 to 30 years which aim to:

- Make efficient use of the existing rail infrastructure
- Deliver the capacity to meet demand and sustain economic growth
- Minimise the cost and disruption of infrastructure investment
- Improve the service and safety for passengers

The study identifies options for additional connectivity and demand across the network to support economic growth in the region. The study found potentially feasible options for the extension of the Merseyrail network between:

- Kirkby and Skelmersdale (and/or Wigan);
- Ormskirk and Burscough (and/or Preston); and
- Bidston and Shotton (and/or Wrexham).

Whilst these were not identified as immediate priorities to meet demand by 2024, they remain strategic choices for funders to consider. The existing network and new MEL (Class 777) train specifications are expected to be able to support the assumed services that would operate over the extended routes.

So, what does this mean for the development of Headbolt Lane Station?

The development of a new station at Headbolt Lane would be the first stage of extending the MEL network to Skelmersdale and/or Wigan, as identified within this study, to help support economic growth across the region. The extension also provides an opportunity to trial the operation of The Independently Powered Electric Multiple-Unit (IPEMU) rolling stock as an alternative to extension of the third rail electrification. This should provide efficiencies and opportunities for other potential projects across the LCR and its wider

4.2.4 LCR CA Transport Plan

The LCR CA Transport Plan¹⁴ was adopted on 19th July 2019 and replaced the 2015/16 LCR CA Transport Plan for Growth, outlining the region's vision for transport in the short term by highlighting current plans and priorities as well as guiding the commission of activities and funding allocations.

The LCR CA Transport Plan states that transport can support the growth priorities of the city region in three key ways:

- Enhancing connectivity and accessibility to key growth sites and places of culture or learning.
- Ensuring the transport related growth priorities of the city region are supportive of those within the area whether individuals, communities or businesses.
- Ensuring the LCR CA inclusive economy agenda is supported and connectivity to jobs is improved alongside improvements in equality, health, and well-being.

The Transport Plan sees the Merseyrail network as a highly-regarded part of the city region; however, issues with capacity and under-performing or under-served parts of the network are highlighted, including parts of Kirkby and Knowsley.

Sustainable movement across the region and beyond are critically important, with high levels of car-dependency and low levels of walking and cycling leading to issues with congestion and pressure on the highway network which the LCR CA would like to address.

Priority Action 1.4 is related to *“using transforming cities funds to deliver inclusive growth”* with support for schemes that, amongst other things, tackle or aid:

- The accessibility of key rail stations that support growth and facilitate modal shift.
- Enhanced rail access to key growth sites including the Headbolt Lane area of Kirkby.
- The development of a core cycle network to promote cycling and improve connectivity to employment.

Priority Action 3.5 is *“testing options for investment in new rail stations”* and states that, in the short term, options testing and business case development should occur to justify local and external investment in new stations in order to improve connectivity.

¹⁴ See: <https://www.liverpoolcityregion-ca.gov.uk/wp-content/uploads/LCRCA-TRANSPORT-PLAN.pdf>

A shift away from car is important to tackle transport emissions, both global and local, and reducing the proportion of short trips which are currently undertaken by car, and concurrently increasing sustainable travel use, is seen as one of the key ways of achieving this by the LCR CA Transport Plan.

So, what does this mean for the development of Headbolt Lane Station?

The development of Headbolt Lane station is directly referenced within this strategy as a key to enabling Priority Action 1.4 which aims to utilise transforming cities funds to deliver inclusive growth.

A new station in this area of Kirkby would also significantly enhance connectivity and accessibility to key growth sites for people living in this area and ensure residents are able to move across the LCR sustainably.

4.2.5 LCR CA Local Journeys Strategy

The LCR CA Local Journeys Strategy guides the “*development of services and infrastructure that support sustainable short trips across the LCR*” which are noted as helping the area achieve overall objectives for sustainable economic growth.

The Local Journeys Strategy aims to complement the strategies in the wider LCR Transport Plan for Growth (superseded by the LCR CA Transport Plan 2019).

Local journeys are those which occur wholly within the LCR and less than 5km in length. The strategy does not focus solely on the needs of pedestrians and cyclists, instead aiming to “*facilitate the conditions to allow for all modes to work together*” while still promoting sustainability. Long-term objectives of the strategy include:

- Address barriers to walking and cycling including road safety concerns, crime, poor maintenance and unpleasant local environments;
- Adopt a ‘whole-journey’ approach and promote active travel choices for access to bus and rail hubs for longer journeys;
- Promote active travel for short journeys to improve health outcomes, including...encouraging the use of local stations; and
- Promote behaviour change as part of a targeted programme of actions to improve the attractiveness, safety and marketability of walking, cycling and public transport networks.

So, what does this mean for the development of Headbolt Lane Station?

Proposals for a new station at Headbolt Lane include plans for provision of at least 100 cycle parking spaces and passive provision for an additional 200 spaces. Current proposals also include provision of a pedestrian footbridge to support access from residential areas to the south of the station and pedestrian and cyclist crossing facilities at access junctions to support safe and efficient access to the site.

This will promote active travel for short journeys to and from the station and help adopt a ‘whole journey’ approach which reduces the need to travel by car for any part of the journey.

4.2.6 Liverpool City Region Climate Emergency

In recognition of the pressing threat of climate change and the urgent need to take action, the LCR CA declared a climate emergency in May 2019. The CA has a number of policies to support tackling climate change, including:

- A Zero Carbon target of 2040
- A £10m Green Investment Fund
- The Mersey Tidal Commission
- £460m investment in new, state-of-the-art trains for Merseyrail network - improving and future proofing green public transport
- The cleanest bus fleet outside of London - with 7/10 vehicles being low emission and potentially 20 zero emission hydrogen buses arriving next year
- Establishment of a Clean Air Taskforce
- A Brownfield First” approach to development
- Investment into the first phase of a £16 million 600km cycling and walking network.

So, what does this mean for the development of Headbolt Lane Station?

The development of a new station at Headbolt Lane will help achieve the net Zero Carbon target by 2040 by encouraging modal shift away private car and taxi use for regular journeys and therefore contribute towards a reduction in carbon emissions associated with car journeys. The scheme will extend the rail network to areas with poor public transport connectivity who often have little choice but to travel by car or taxi.

4.3 National Policy Context

4.3.1 Rail Network Enhancements Pipeline (RNEP): A New Approach for Rail Enhancements

Guidance on preparing an FBC is published by the DfT¹⁵. Supplementary rail-specific guidance on the Rail Network Enhancements Pipeline (RNEP), considers the interactions with the Governance for Railway Investment Projects (GRIP) processes, owned, and maintained by Network Rail (NR). This guidance recognises that schemes enter the RNEP at different levels of maturity and therefore the progression to an OBC and ‘Decision to Design’ without developing an SOBC may provide an opportunity for efficiencies and faster delivery.

The RNEP sets out four priorities for rail schemes which they must demonstrably address. These are:

- Keep people and goods moving smoothly and safely
- Delivering the benefits from committed programmes and projects already underway
- Offering more; new and better journeys and opportunities for the future
- Changing the way the rail sector works for the better

¹⁵ See: <https://www.gov.uk/government/publications/transport-business-case>

So, what does this mean for the development of Headbolt Lane Station?

The development of a new station at Headbolt Lane will address each of these objectives by:

- Improving connectivity to the rail network and therefore new access to opportunities for large residential areas, enhancing the overall economic efficiency of the LCR.
- Increasing the capacity of the rail network to keep people moving in and around the LCR smoothly, safely and efficiently.
- Supporting the development of other planned projects such as the Skelmersdale Rail Link.
- Support access to opportunities within the city centre and across the LCR for people in Kirkby through more seamless rail journeys.

4.3.2 National Planning Policy Framework (July 2018)

The National Planning Policy Framework sets out the Government's planning policies for England and how these should be applied. The purpose of the planning system is to contribute to the achievement of sustainable development. Achieving sustainable development means that the planning system has three overarching objectives:

- an economic objective - to help build a strong, responsive and competitive economy.
- a social objective- to support strong, vibrant and healthy communities.
- an environmental objective- to contribute to protecting and enhancing our natural, built and historic environment.

So, what does this mean for the development of Headbolt Lane Station?

These objectives are supported by the Headbolt Lane Station scheme as the scheme aims to improve sustainable access to the city centre and the LCR facilitating economic growth, reducing carbon emissions and protecting the natural environment. These impacts are explored further through the logic mapping and economic appraisal stages.

4.4 Summary

This section has identified multiple policies and strategies which outline plans for local and regional growth, and development of the local and regional rail network. These documents support the need for a new station at Headbolt Lane as a scheme that will address current connectivity constraints and facilitate growth across the LCR.

The development of Headbolt Lane is also specifically mentioned within a number of these policies, including the LCR's LTRS, highlighting the importance of the station to the local and regional rail network.

This scheme will support the aims and objectives noted within all of the above documents, facilitating economic growth across the LCR and providing attractive sustainable travel to communities with better access to opportunities both within the LCR and to neighbouring areas of Lancashire.

5 Strategic Case- Socio Economic Context

This section provides an overview of socio-economic conditions in Knowsley, focusing particularly on the wards containing Tower Hill and Northwood in northeast Kirkby, which Headbolt Lane Station would most directly serve. Primarily, it identifies problems and opportunities regarding population, employment levels and deprivation. In assessing pertinent socio-economic trends, this section of the report relies on data sources from the Office of National Statistics and NOMIS.

5.1 Population

Headbolt Lane is located within Kirkby in the north of the district of Knowsley. The most recent population count for the borough stood at 152,452 (2020)¹⁶ and is expected to increase to 166,247 by 2043, a significant percentage increase of 9% (ONS).

Table 5.1 illustrates the mid-year population estimates for Knowsley and the North West to demonstrate population growth across the borough compared to trends at the regional scale.

Table 5.1: Mid-year population estimates

Area	Population						% increase (2019- 2043)
	2019	2023	2028	2033	2038	2043	
Knowsley	152,452	153,321	156,731	159,895	163,084	166,247	9.0%
North West	7,367,456	7,453,803	7,581,231	7,694,049	7,801,681	7,912,587	7.4%

Source: ONS

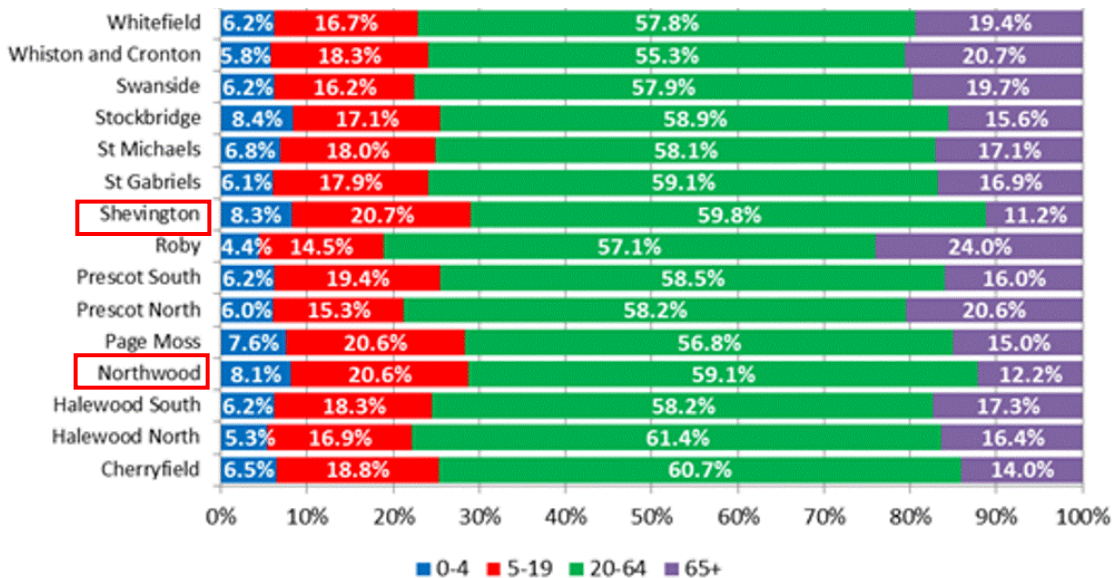
This shows that population across Knowsley is expected to grow at a significant rate, with higher growth expected to occur within Knowsley than across the North West as a whole. A reliable expanded public transport network will therefore be essential to ensuring that the population is able to grow sustainably and that the increasing number of residents have sufficient access to opportunities and services.

The age breakdown of the population within the various wards across Knowsley is shown in Figure 5.1. Headbolt Lane is located between the wards of Northwood and Shevington (highlighted in the figure below). This shows that the largest proportion of the population across these wards fall within the working age group between age 20 and 64. Northwood and Shevington are also proportionately the youngest wards in the district, with by far the lowest percentages aged 65 and over at 12.25 and 11.2% respectively. This places further emphasis for the borough to ensure residents are able to access jobs, training opportunities, and education facilities to serve the working age population.

¹⁶

<https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland>

Figure 5.1: Age breakdown of Wards within Knowsley, (2018)



Source: ONS

Issues

- The population of the Knowsley is growing at a significant rate, the transport network must evolve alongside growth to ensure demand continues to be accommodated.
- The wards of Northwood and Shevington have the greatest need for connection to employment and training opportunities due to their significantly younger population.

Opportunities

- Provision of an improved public transport access could encourage a greater proportion of the population undertaking journeys by sustainable modes.
- Headbolt Lane will ensure that the working age population evident across the borough is able to effectively access jobs, training opportunities and education facilities across the LCR.

So, what does this mean for the development of Headbolt Lane Station?

The Headbolt Lane Station scheme presents the opportunity to provide an improved public transport network for Knowsley’s existing population while also accommodating growing demand associated with predicted population growth.

Knowsley, and the immediate wards of Northwood and Shevington in particular, has a relatively young age profile and therefore ensuring residents are able to access jobs, training and education opportunities will be essential to ensure the population is able to grow sustainably and without increasing levels of deprivation.

5.2 Employment

This section contains a summary of employment in Knowsley, both in terms of its residents’ employment levels and its role as a source of employment.

Table 5.2 presents a summary of employment levels in Knowsley compared to regional levels across England and Wales based on 2011 Census data. The proposal for a new station at Headbolt Lane would primarily serve residents within the areas of Tower Hill and Northwood.

The employment rate of wards containing Tower Hill and Northwood are therefore also set out in the table below. These wards include:

- E36006457: Northwood
- E36006463: Shevington (containing Tower Hill)

Table 5.2: Employment and Unemployment-Tower Hill, Northwood and Knowsley, (2011)

	Northwood (%)	Shevington (%)	Knowsley (%)	England & Wales (%)
Economically active	65.4	79.2	72.7	76.8
In employment	54.7	72.5	64.4	71.0
Employees	50.6	65.5	57.9	60.6
Self-employed	4.1	7.0	6.5	10.4
Unemployed	16.4	8.5	11.5	7.6

Source: NOMIS- 2011 Census

This shows that both individual wards in proximity to Headbolt Lane, and the borough of Knowsley as a whole have a higher level of unemployment than national average levels. The rate of unemployment in the area of Northwood is more than double the national level and around 5% greater than the rate of unemployment across Knowsley.

It is therefore essential to ensure an efficient transport network within the borough which offers reliable access to jobs and opportunities to increase levels of employment, particularly around Northwood and Tower Hill. Provision of a rail station at Headbolt Lane will provide a new means of access for a large proportion of Knowsley residents to jobs within the city centre and more widely across the LCR.

Table 5.3 presents the most recent data available on employment and economic activity across Knowsley in comparison to the regional and national levels. This shows a significant reduction (8%) in unemployment from the levels present in 2011; however, this is likely to be due to changes in the classification of 'unemployment' over this period. There has also been a 5% increase in the number of people economically active in Knowsley between 2011 and 2019. This is presumably a reflection of major investment across Knowsley as a whole within this time period.

Table 5.3: Employment and Unemployment- Knowsley, North West and Great Britain (Jan 2019-Dec 2019)

	Knowsley Numbers	Knowsley (%)	North West (%)	Great Britain (%)
Economically active	74,200	77.9	77.7	78.9
In employment	72,000	75.6	74.5	75.8
Employees	63,900	67.5	64.4	64.6
Self-employed	8,100	8.1	9.8	10.9
Unemployed	2,900	3.8	4.1	3.9

Source: NOMIS

As 2019 data is only available at the borough level the exact change in the level of unemployment and economic activity for the wards of Northwood and Shevington is unknown. It can be assumed that growth in the number of people economically active and a reduction in the level of unemployment will have occurred to some degree across all areas of Knowsley,

however it is likely that there will still be a variation between wards. This is reflected in the varying levels of deprivation and development across the borough discussed later in Section 5.3 and Section 6 respectively.

5.2.1 Knowsley's Employment Sectors

Approximately 64,000 individuals were employed in jobs across Knowsley in 2018, indicating the borough's role as a source of employment within the wider region. The five largest employment sectors within the Knowsley are listed below, before further details of the growth of these sectors between 2015 and 2018 is provided in Table 5.4.

1. Human Health and Social Work Activities
2. Manufacturing
3. Wholesale and Retail Trade
4. Administrative and support service activities
5. Education

Table 5.4: Number of Employees in Knowsley's Top Employment Sectors

Employment Sector	2015	2016	2017	2018
Human Health and Social Work Activities	13, 000	14, 000	13, 000	13, 000
Manufacturing	12, 000	12, 000	12, 000	12, 000
Wholesale and Retail Trade	8, 000	9, 000	9, 000	10, 000
Administrative and support service activities	8, 000	6, 000	7, 000	5, 000
Education	4, 500	4, 500	4, 000	4, 000

Source: Business Register and Employment Survey

Manufacturing represented 18.8% of all jobs in Knowsley in 2018 whilst the Wholesale and Retail Trade sector provided 15.6%. Knowsley Industrial Park provides a significant number of jobs for the borough with the highest proportion of employees coming from local areas around Kirkby. Travel to work data (discussed later in Section 7.4) also suggests a significant number of people residing in the area around Headbolt Lane working within Liverpool City Centre. Therefore, it is important to ensure the borough is able to provide efficient transport links to these areas in order to remain attractive and support opportunities for residents.

Whilst Knowsley continues to employ a significant number of individuals it should also be noted that the number of jobs across the borough has remained fairly consistent since 2015. Data indicates that there has been a minimal increase in the number of jobs opportunities across the Knowsley.

Issues

- Northwood has a significantly higher rate of unemployment than the rest of the Borough.
- Knowsley has a higher rate of unemployment than England and Wales as a whole.
- There is little evidence of significant growth in the number of job opportunities across Knowsley.

Opportunities

- The Headbolt Lane scheme offers significant opportunities to improve connectivity to jobs and opportunities across the LCR, including more direct access to Liverpool City Centre for people living within the areas of Northwood and Tower Hill.

So, what does this mean for the development of Headbolt Lane Station?

The Headbolt Lane scheme will directly contribute to reducing the rates of unemployment around Northwood, Tower Hill and across the borough through increased access to areas across the LCR and a direct link to opportunities available within the city centre.

The number of available jobs around Kirkby is also likely to increase as a result of the scheme as investment and further development in this area of Knowsley is encouraged by enhanced connectivity.

This is in direct response to the requirements of the revised Green Book from HM Treasury which places heightened emphasis on 'Levelling Up' as a means of creating increased fairness and the reduction of regional inequality across the UK.

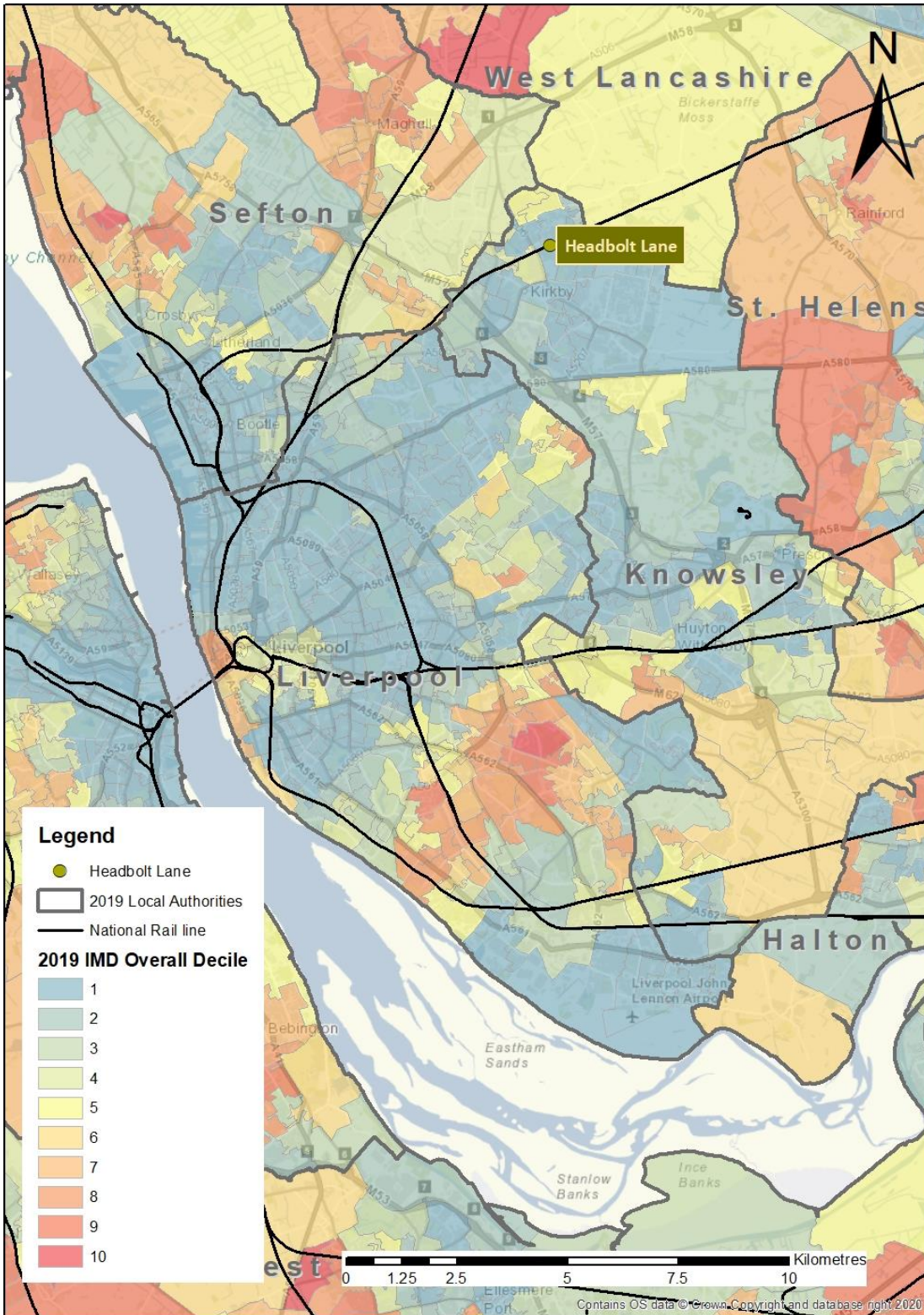
5.3 Deprivation

To aid understanding of deprivation and economic disadvantage within the study area, Indices of Multiple Deprivation (IMD) have been examined to acquire a spatial definition of the socio-economic problems in the study area and across the borough as a whole. The IMD is the official measure of deprivation and combines information from the following domains:

- Employment Deprivation;
- Education, Skills and Training Deprivation;
- Health Deprivation and Disability;
- Crime;
- Barriers to Housing and Services; and
- Living Environment Deprivation.

Figure 5.2 below illustrates deprivation by LSOA in Knowsley according to the data from the IMD in 2019. This shows that the areas around the proposed station at Headbolt Lane in Kirkby are within the top 10% of most deprived LSOAs across England and Wales. Not only are many of the LSOAs in the area around the proposed station in top decile but in the top 1% most deprived nationally. This further emphasizes the need to ensure these areas are well connected to key services, jobs, training, and education opportunities.

Figure 5.2: Knowsley according to the overall Index of Multiple Deprivation (IMD), 2019



Source: Ministry of Housing, Communities and Local Government

The latest data from the IMD in 2019 also states that Middlesbrough, Liverpool, Knowsley, Kingston upon Hull, and Manchester are the local authorities with the highest proportions of neighbourhoods among the most deprived in England, a finding which was largely unchanged from the IMD in 2015.

The 2021 Exploring Income Deprivation report¹⁷ from the ONS demonstrates that Knowsley was ranked the 2nd most deprived local authority across the UK, with 58% of its Lower Super Output Areas (LSOAs) in the 20% most deprived areas nationally. The above figure also demonstrates a significant variety across the borough in terms of the level of deprivation with areas such as Huyton and Halewood falling within the 40-60% least deprived areas suggesting a significant level of affluence in some parts of the borough.

As noted above, the IMD combines information from various domains including health, barriers to housing, living environment and access to employment and training opportunities all of which are rooted within the key objectives of the Headbolt Lane station scheme. This scheme will significantly increase the level of access to employment and training opportunities, increase the attractiveness of the area to the east of the borough, and improve wellbeing of residents through encouraging more sustainable modes of travel.

When seeking to reduce the levels of deprivation it is crucial that job opportunities are available for residents and that they are accessible for all.

Issues	Opportunities
<ul style="list-style-type: none"> Knowsley was ranked the 2nd most deprived local authority across the UK, with 45% of its Lower Super Output Areas (LSOAs) in the 10% most deprived areas nationally Deprivation is concentrated in the north of the borough around Kirkby and Headbolt Lane. 	<ul style="list-style-type: none"> Headbolt Lane offers significant opportunities to enhance the level of access to employment and training for people residing in deprived areas to the north of Knowsley. Increased provision of public transport will contribute towards improving the wellbeing of residents through improved air quality and reduced road travel related stress.

So, what does this mean for the development of Headbolt Lane Station?

The development of a new station at Headbolt Lane offers significant opportunities to improve access to existing jobs, training, and employment opportunities through provision of a direct link into the city centre for people living in the areas of Tower Hill and Northwood and improved connectivity to areas across the LCR and potentially West Lancashire.

The delivery of improved transport infrastructure will facilitate the wider regeneration of Kirkby bringing a wide range of opportunities for the area and seeking to reduce the existing levels of deprivation. This will further promote the Government's Levelling Up agenda as articulated in their recent revision of the Treasury's Green Book of guidance on appraisal and evaluation.

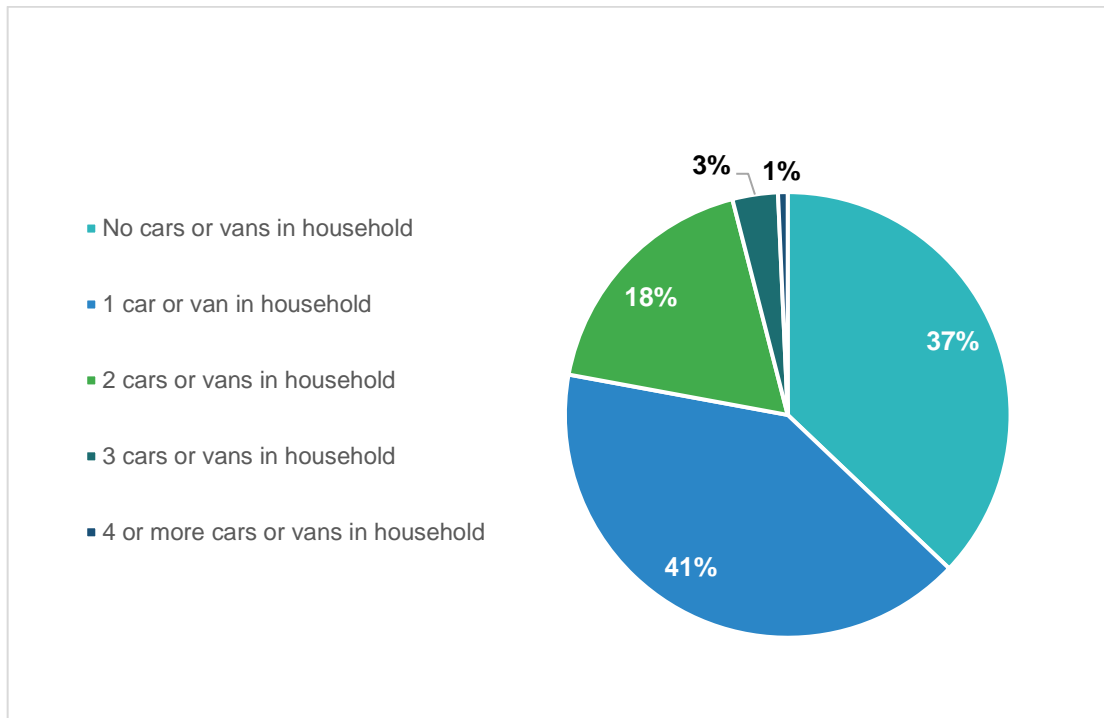
5.4 Car Ownership

Data from the 2011 Census (ONS) shows that 37% of Knowsley residents do not have access to a car or van for travel; this is 12% higher than the national figure of 25%. The figure below sets out the levels of car ownership across Knowsley. Car ownership is often associated with

¹⁷ See: <https://www.ons.gov.uk/visualisations/dvc1371/#/E07000223>

deprivation; national data shows that the car ownership in areas of high deprivation is usually lower than areas of higher employment.

Figure 5.3: Car Ownership in Knowsley, 2011



Source: Census 2011

When focusing on the areas immediately around the proposed station site (highlighted in Figure 5.4), these low levels of access to a car are even more pronounced. The majority of households within an 800m to 1km household did not have access to a car in 2011, with some Output Areas (OAs) in Tower Hill and Northwood having between 60% and 90% of households within this category.

The low levels of car ownership within these areas and across Knowsley is further demonstrated within Travel to Work data set out in Table 5. which shows that the use of taxis for commuting in the areas surrounding the station is more than 5 times the national level. This suggests that the current public transport network is not meeting employed residents' needs.

Table 5.5: Main mode of travel to work in LSOAs surrounding Headbolt Lane and across Knowsley

Main mode of travel to work	Selected LSOAs	Knowsley	Liverpool City Region	England
Train	6.6%	6.1%	5.9%	10.0%
Bus, minibus or coach	13.2%	11.4%	11.5%	7.9%
Taxi	4.6%	2.1%	1.2%	0.6%
Motorcycle, scooter or moped	0.3%	0.5%	0.6%	0.9%
Driving a car or van	51.7%	60.2%	60.8%	60.2%
Passenger in a car or van	10.1%	7.9%	6.6%	5.3%
Bicycle	1.9%	1.6%	2.0%	3.1%
On foot	10.9%	9.6%	10.6%	11.3%

Source: NOMIS

The high proportion of households without access to a car across Knowsley and immediately surrounding the proposed station site indicates the need to ensure the public transport network around the borough is efficient and provide reliable connectivity to ensure those who don't own a car are able to access jobs and opportunities.

Issues

- A high proportion of Knowsley population does not have access to a car which is often associated with higher levels of deprivation.
- Low car ownership in areas which are poorly served by public transport limits access to jobs and training opportunities.
- The use of taxis for commuting in the areas surrounding the station is more than 5 times the national level suggesting that the current public transport network is not meeting employed residents' needs.

Opportunities

- Low levels of car ownership around Knowsley implies that car travel is not embedded as a dominant mode offering opportunities to further promote the use of public transport and active travel.
- There is demand for public transport networks within Knowsley as a significant proportion of the population do not have access to a car.

So, what does this mean for the development of Headbolt Lane Station?

The development of a new rail station at Headbolt Lane will help address current gaps in rail connectivity. This will therefore support access to opportunities across the borough and wider area for those residents within Knowsley without access to a car.

Pedestrian and cycle facilities provided at the station such as cycle parking facilities and a pedestrian footbridge will ensure the station is accessible by all modes, further supporting those households which do not own a car.

5.5 Economy and Business

The borough's economy has some challenges, including having one of the lowest Gross Value Added (GVA) levels per head in the North West and a high concentration of economic inactivity. This section of the FBC provides a breakdown of the business performance and economy of Knowsley, primarily on the performance of businesses within the study area.

5.6 Business Counts

Table 5.6 illustrates the number and scale of enterprises and local business units in Knowsley compared to the North West as a whole.

Table 5.6: Business Counts 2019 for Knowsley and North West

	Knowsley (Numbers)	Knowsley (%)	North West (Numbers)	North West (%)
Enterprises				
Micro (0 To 9)	2, 860	86.9	236,975	88.8
Small (10 To 49)	335	10.2	24,390	9.1
Medium (50 To 249)	80	2.4	4,405	1.7
Large (250+)	20	0.6	1,040	0.4
Total	3, 290	-	266,810	-
Local Units				
Micro (0 To 9)	3, 285	80.1	262,955	83.3
Small (10 To 49)	620	15.1	42,140	13.4
Medium (50 To 249)	165	4	9,055	2.9
Large (250+)	30	0.7	1,375	0.4
Total	4, 100	-	315,525	-

Source: ONS

This shows that Knowsley has a slightly higher proportion of both small enterprises and large enterprises than the regional average.

Issues

- GVA per head in Knowsley is below that of nearby authorities
- Low levels of GVA reduce the attractiveness of the area to potential future investors.

Opportunities

- Knowsley has a slightly higher proportion of small and large enterprises than the regional average providing opportunities for enhanced productivity.
- The scheme will support opportunities to grow the business offer in Knowsley is well connected to other areas of the LCR and beyond.

So, what does this mean for the development of Headbolt Lane Station?

A new station to enhance the connectivity to and from key areas of the city region will enhance the attractiveness of the area to businesses and potential investors. The scheme will also improve access to areas of business growth outside of Knowsley such as Liverpool City Centre.

Growth and investment encouraged by the development of the scheme will likely encourage a greater number of people to seek employment within the north of Knowsley, changing the economic position of the area and kick-starting economic growth. This is in line with the Government's Levelling Up agenda to reduce regional inequality.

5.7 Health and Education

The majority of the major health and education institutions in the LCR are located within Liverpool City Centre and its immediate surrounds. This is home to a number of international institutions for health and education of growing importance and significance. These include the University of Liverpool, Liverpool John Moores University, and The Royal Liverpool University

Hospital. The city centre is also one of Europe's largest 'Health and Life Science' clusters and is home to centres of world leading research such as the Liverpool School of Tropical Medicine.

Liverpool City Region's Growth Strategy outlines ambitious plans to grow the health and life sciences sector with plans for the University of Liverpool to be among the top 100 in the world by 2026.

In terms of qualifications across the borough, the proportion of people with no qualifications in Knowsley (14.7%) is significantly higher than both the regional and national average at 8.7% and 7.7% respectively.

In 2016 to 2017, Knowsley reported a school readiness score lower than the England average (67.1%). In terms of the percentage of students attaining at least five GCSEs grade A* to C including English and Mathematics in 2014 to 2015, Liverpool and Knowsley reported lower percentages at 48.6% and 37.4% respectively compared with the England average (53.8%) and compared with the other areas in the Liverpool City Region CA¹⁸.

5.7.1 Personal Wellbeing Index

The Personal Wellbeing Index-Adult (PWI-A) is a seven-item, self-administered scale that measures satisfaction with the following life domains:

- Standard of living
- Health
- Life achievement
- Personal relationships
- Personal safety
- Community connectedness
- Future security

Each item is rated on a 0-to-10 scale (0 = No satisfaction at all; 10 = Very satisfied). Items can be scored individually to derive a score for the corresponding domain, or all the scores for all items can be summed and averaged to form the Personal Wellbeing Index (PWI).

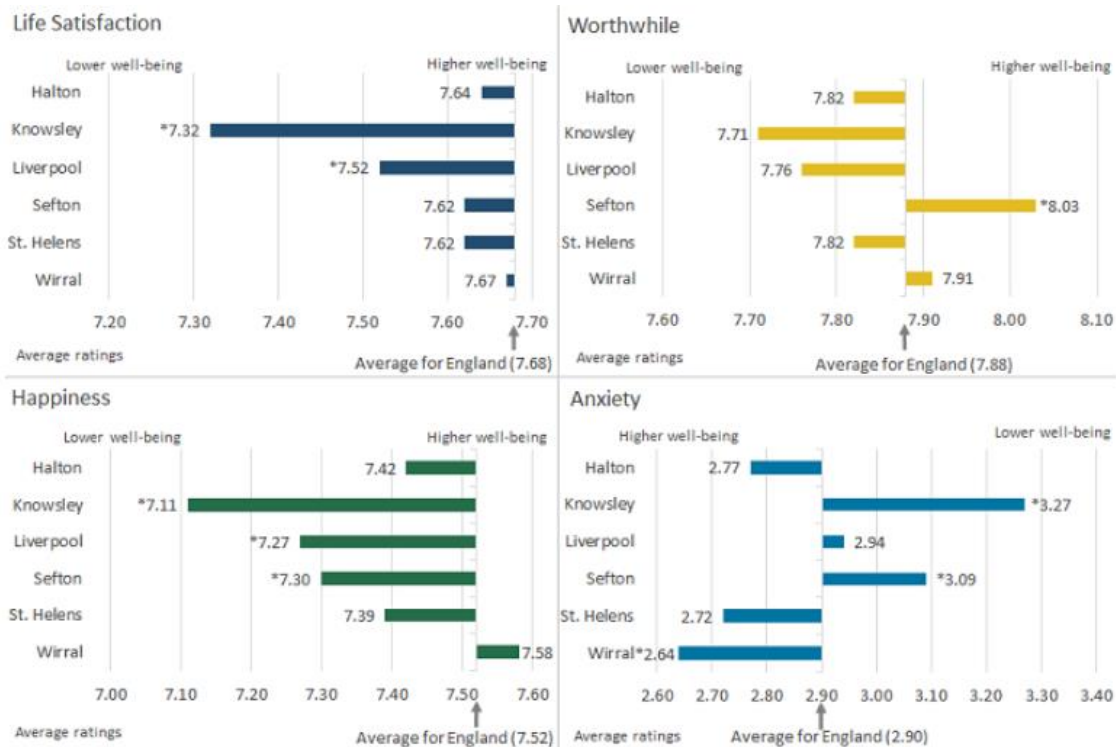
As shown in Figure 5.5, of the six local authorities (LAs) within the Liverpool City Region combined authority (CA), three reported no significant differences between their personal well-being scores and the England average for any measure.

However, Knowsley reported lower life satisfaction and happiness scores, and also higher anxiety levels when compared to the national average.

¹⁸

<https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/bulletins/measuringnationalwellbeing/april2017tomarch2018#liverpool-city-region>

Figure 5.5: Personal well-being ratings in Liverpool City Region compared with the England average, year ending March 2018



Source: Annual Population Survey, Office for National Statistics

Ensuring communities within Knowsley are well connected to services and opportunities will be key to addressing issues highlighted within the personal wellbeing index improving the satisfaction and reducing anxiety amongst residents.

Issues

- The proportion of people with no qualifications in Knowsley is significantly higher than both the regional and national averages.
- Poor connectivity to key education and health services provided within the city centre from residential areas to the north of Kirkby.
- Knowsley reported lower life satisfaction and happiness scores and also higher anxiety levels when compared to the national average on the personal wellbeing index.

Opportunities

- There is a wealth of high quality health and education institutions within Liverpool City Centre which will be much more accessible for people living in and around Kirkby as a result of the development of Headbolt Lane.

So, what does this mean for the development of Headbolt Lane Station?

This scheme will enable a greater number of people are able to access health and education institutions within Liverpool City Centre as well an improved connectivity to other parts of the LCR which provide health and education services.

6 Strategic Case- Growth and Regeneration

This section outlines regeneration proposals across Knowsley, including those already under development, coupled with wider proposals across the LCR which rail based enhancements are well placed to provide connectivity to.

6.1 Knowsley Growth and Regeneration

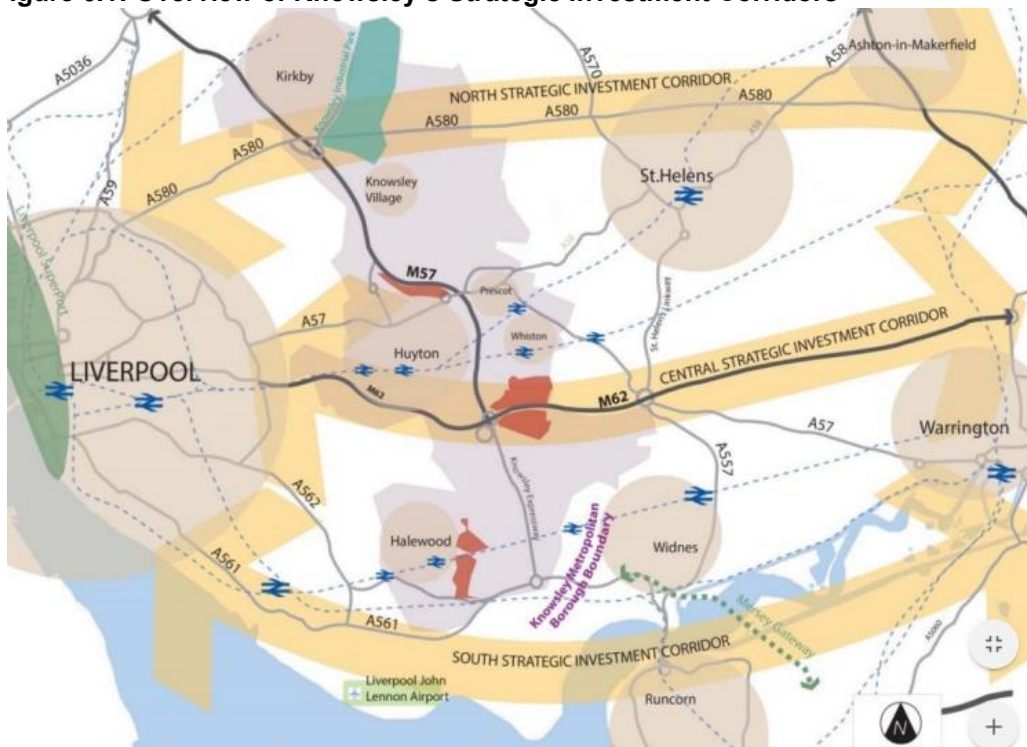
The following sub sections provide a high level overview of some of the key developments occurring in proximity to the station, within Kirkby and how development is shaped across the borough as a whole.

6.1.1 Development of Knowsley's Strategic Investment Corridors

Putting in place the right economic infrastructure to enable business and job growth within Knowsley's key growth sectors is essential. This means there is a clear emphasis on growth opportunities in Knowsley, reflected by how local opportunities interact within the wider market areas that cross Knowsley's boundaries.

The borough of Knowsley is naturally aligned to three distinct east-west transport arteries that reflect the natural flow of commuters and movements of freight and goods across the borough. Strategic Investment Corridors have been identified (north, central, and south) which reflect these major transport arteries and align with the infrastructural strengths that are common within each. These are outlined within the figure below.

Figure 6.1: Overview of Knowsley's Strategic Investment Corridors

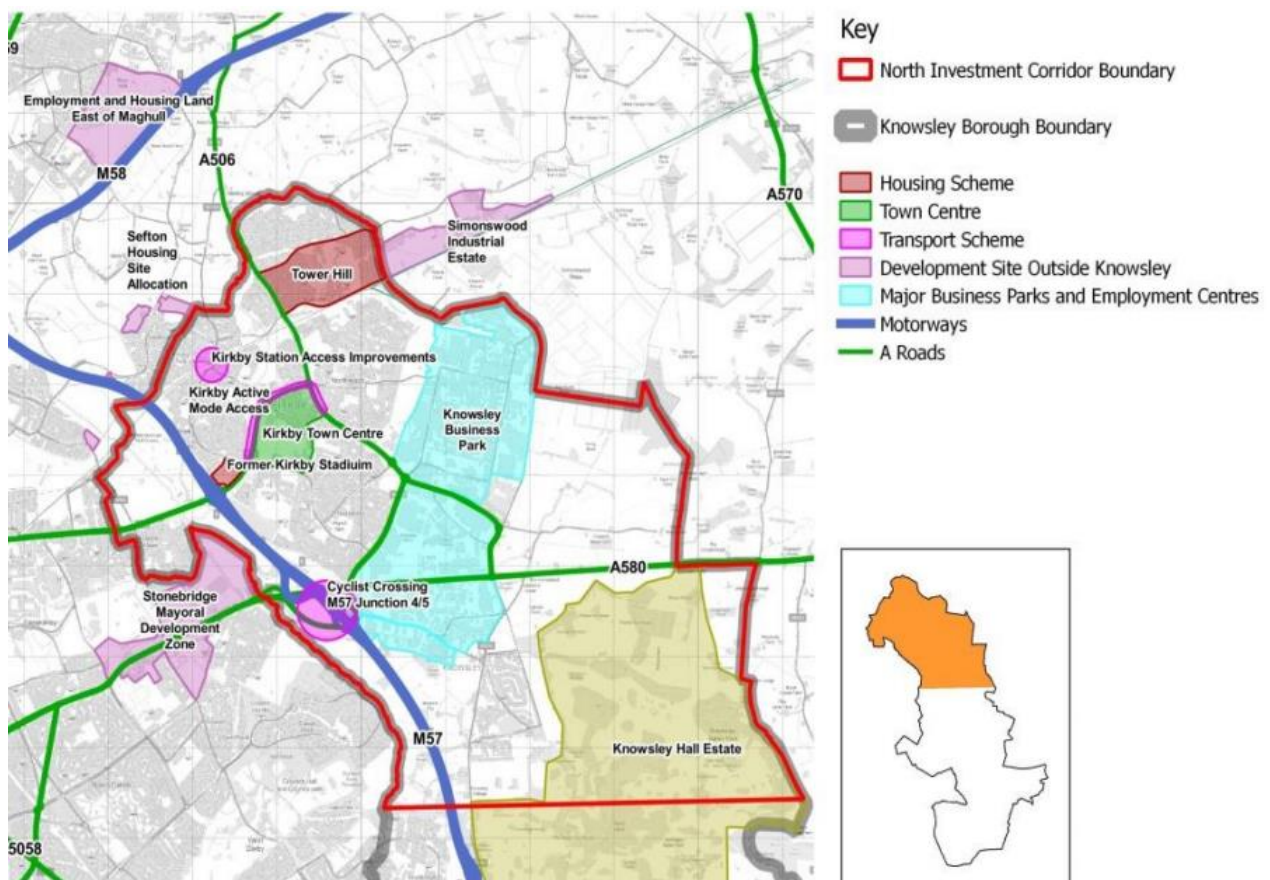


Source: <https://knowsleyknowledge.org.uk/wp-content/uploads/2020/01/7-Strategic-infrastructure-housing-and-transport.pdf>

Each corridor is reflective of the distinct locations of Knowsley’s urban centres, and the key road and rail infrastructure that runs across each corridor connecting, the main town centres, villages, and suburban settlements. This covers the A580 (East Lancashire Road) in the north investment corridor, the M62 and A58 in the central investment corridor, and A562 in the south investment corridor.

Headbolt Lane is situated in proximity to the North Investment Corridor, the details of which are shown in Figure 6.2 below.

Figure 6.2: North Investment Corridor Overview



Source: <https://knowsleyknowledge.org.uk/wp-content/uploads/2020/01/7-Strategic-infrastructure-housing-and-transport.pdf>

The North Investment Corridor has the potential to deliver over 2 million sq. ft. of new floor space for employment in the next five years, with Knowsley Business Park the key asset and a focus for development of new manufacturing and logistics sites for the borough. Three areas are designated as principal regeneration areas in Knowsley’s Local Plan Core Strategy, Kirkby Town Centre, Tower Hill, and Knowsley Business Park.

Regeneration within the north investment corridor will be primarily focussed on these areas to address weaknesses and deliver opportunities identified for housing, transport and highways, town centres, and employment growth.

This highlights a significant amount of development planned in the immediate surrounding area around Headbolt Lane and across the entire borough. Capacity enhancements to the transport

network across the borough will be essential in order to support this level of development and the associated transport demand. Access from the north of Kirkby to areas across the LCR and the city centre will be particularly important as a large and increasing number of residents within this area suffer from a lack of connectivity to the rail network and poor accessibility via alternative modes.

6.1.2 Housing Development Across Knowsley

The 2011 Census highlights that Knowsley currently has 62,967 dwellings with a high proportion (over 26.6%) being within affordable tenures, including social rented, with the highest concentrations occurring in Kirkby and North Huyton. The housing market in Knowsley is characterised by lower value housing and many residents in the social rented sector. Given that a large proportion of people who work in Knowsley do not live there, this suggests there is a mismatch between job opportunities and housing making it difficult to meet Knowsley's overall requirements.

Knowsley's Adopted Local Plan Core Strategy sets out that 8,100 homes will be provided in Knowsley between 2010 and 2028, which equates to 450 dwellings per annum.

The Spatial Strategy for Knowsley (Policy CS1) is the central policy of the Knowsley Local Plan, providing principles for Knowsley's spatial development, and highlighting development priorities and areas which will be of strategic importance over the plan period.

Kirkby Town Centre and Tower Hill are identified as 'Principal Regeneration Areas' within this policy where opportunities for regeneration and development will be maximised.

Access to the sustainable transport network will be central to supporting identified housing growth to ensure all new residents are able to access opportunities and that the impact of an increasing number of residents on the existing transport network is reduced. This will be particularly important for the area around Tower Hill where significant new housing development is proposed and connectivity to the public transport network is poor with long bus journey times and no direct rail access.

6.1.3 Kirkby Town Centre

Work is underway in the surrounding area of Headbolt Lane to develop the Kirkby Town Centre Masterplan, with a number of retail units already open and recently completed ground investigation works for the multi-screen cinema scheme included within the Masterplan. The planning application is for a 120,000 sq ft scheme that will be comprised of a supermarket, and around 80,000 sq ft of new shops, improved pedestrian links, car parking, new public realm, and landscaping. The redevelopment will complement, enhance, and integrate with the existing Town Centre shops and facilities. The principles of the scheme are to:

- Carry out improvements that will complement and enhance Kirkby Shopping Centre;
- Increase the choice and type of shops for local people;
- Provide accommodation that meets the needs and requirements of modern retailers, making Kirkby an attractive place to do business;
- Ensure that any new development is fully integrated into the existing Town Centre, with attractive linkages, so that the whole area benefits from any new development;
- Incorporate sustainable measures throughout the scheme;
- Create pockets of landscaping and green spaces, creating new and attractive street scenes including new areas of public realm; and

- Provide a temporary car park to the south of Cherryfield Drive to serve existing shops and local amenities, while the retail development is under construction.

Although large housing development sites are planned within Tower Hill in proximity to Headbolt Lane as noted within the previous sub section, the majority of development and major regeneration within Knowsley has been focused within the key centre such as Kirkby. Whilst this enhances opportunities for the borough and its residents it has led to a pattern of development where surrounding residential areas are often left neglected and lack investment which could increase the attractiveness of the area to live and work.

Issues

- Significant amount of housing development proposed across Knowsley, increasing the number of people requiring sufficient access to opportunities
- Significant amount of housing development proposed within Tower Hill which currently lacks access to the public transport network and therefore opportunities provided within the city centre and across the LCR.
- Development and regeneration has been focused around Kirkby Town Centre meaning the outskirt areas, such as that around Headbolt Lane, have been left neglected in terms of investment

Opportunities

- The development of a new station within the area of Tower Hill in Kirkby will significantly increase the attractiveness of the area to potential future investment.
- A new rail station in this area of the borough would allow access to the rail network for residents who are currently disconnected and ensure all future residents are able to access jobs and opportunities within the city centre, across the LCR and beyond.

So, what does this mean for the development of Headbolt Lane Station?

A new station at Headbolt Lane has significant potential to support several key developments across the borough. The sites identified in this section are recognised as crucial factors in future economic housing and employment growth across Knowsley. Improved connectivity to the rail network within this part of the borough will ensure an increasing number of residents are able to access opportunities across the LCR and ensure that the area becomes fully accessible in order to support growth and planned development.

New connectivity will ensure that the transport network remains resilient in response to future growth and is able to support continued growth in housing and economic development. This will be particularly important around the area of Tower Hill as an area that has suffered a relative lack of investment in comparison to key centres such as Kirkby Town Centre.

6.2 Wider Growth and Regeneration- Liverpool City Centre

Achieving growth in Knowsley is ultimately linked to the performance and competitiveness of the LCR as a whole. The LCR economy is forecast to continue on a trajectory of growth over the next 25 years. Research conducted by Oxford Economics has forecast that the City Region's current approach could see a doubling of the size of the economy to £50billion by 2040. This would see the creation of 100,000 jobs, a net increase of 20,000 businesses, and an additional 50,000 people coming to live in the City Region.

Headbolt Lane will provide a direct link to both Moorfields station in the commercial district of the city, and Liverpool Central station, one of the main gateways to the city centre providing the closest and most direct transport link to key regeneration areas such as Bold Street, the Knowledge Quarter, the Creative and Cultural Quarters and key retail areas around Church Street. Liverpool Central Station is currently the subject of its own major enhancement proposal at present which could significantly boost its capacity and attractiveness and actively support

schemes on the wider network such as Headbolt Lane station. Improved connectivity to the city centre would ensure residents within the north of Kirkby are able to make use of the opportunities presented by city centre developments including:

- **Liverpool Waters-** a 30 year vision set to comprehensively transform the city's northern docks. The scheme secured outline planning permission to develop 315,000 sq m. of business space and 53,000 sq m. of hotel and conference facilities.
- **Ten Streets-** Sitting immediately next to the Liverpool Waters development, The Ten Streets Strategic Regeneration Framework (SRF) seeks to build on the endorsed Atlantic Corridor Development Framework and transform over 125 acres of Liverpool's Northern City Fringe into a vibrant creative quarter located within the Liverpool City Enterprise Zone, delivering around 2, 500 jobs.
- **Knowledge Quarter-** The Knowledge Quarter (KQ) has been established as a Mayoral Development Zone, spanning over half of the city centre. KQ Liverpool has a vision that focuses on three main areas: Making the place, Improving connectivity and Attracting investment. Key to these plans will be the Paddington Village expansion site, set to attract a further £1bn to the city, which will house 1.8m sq ft of science, technology, education and health space.
- **Chinatown-** The 'New Chinatown' scheme would see around 800 residential units including apartments and town houses built on the Great George Street site, along with 200,000 square feet of commercial space.
- **Bold Street Redevelopment-** Bold Street – a restaurant filled secondary retail destination and considered to be one of the creative hubs of Liverpool City Centre - sits directly adjacent to Liverpool Central Station. A multi-million pound redevelopment project is set to transform the area by pedestrianising the full length of Bold Street to boost the emerging cafe culture and music scene in the historic Ropewalks area of the city centre.
- **Baltic Triangle Strategic Regeneration Framework (SRF)-** The Baltic Triangle area of Liverpool sits to the immediate south of Liverpool City Centre. The Baltic Triangle has attracted a significant amount of development in recent years due to its proximity to the city centre and its new popularity fuelled by a strong creative and digital sector. Liverpool City Council has recently appointed a team to develop a spatial regeneration framework for the Baltic Triangle, an area which has seen nearly £200m invested in new developments since 2012. The framework will be designed to guide future development in the Baltic Triangle and to protect its growing cluster of digital and tech businesses.

Issues

- A significant amount of growth is planned in and around Liverpool increasing the need to travel to the city centre from residential areas around the LCR.
- Residential areas around Headbolt Lane currently lack connectivity to the city centre with no direct rail access, limited provision of bus services and issues associated with car travel such as congestion and parking constraints within the city centre.

Opportunities

- A new station within the area of Headbolt Lane will significantly enhance connectivity between north Kirkby and Liverpool
 - Increased access to opportunities for residents within **the** area of Headbolt Lane provided by significant new development occurring in and around Liverpool city centre.
-

So, what does this mean for the development of Headbolt Lane Station?

The above highlights the significant amount of development which is planned and/or underway within the city centre, all of which will attract people to live, work, visit and invest in the City Region.

Access between north Kirkby and Liverpool is currently limited with long bus journey times and congestion, low car ownership and parking constraints reducing accessibility by car. A new station at Headbolt Lane will significantly enhance connectivity between these areas and ensure residents within North Kirkby are able to access all opportunities provided by major development planned and underway within the city centre.

7 Strategic Case- Key Issues and Opportunities

In addition to the issues and opportunities associated with the wider growth and socio-economic context surrounding the area of Headbolt Lane, there are multiple specific issues associated with connectivity to the wider transport network, how people travel and how current connectivity constraints impact on people's access to opportunity which are discussed within this section.

7.1 Rail Connectivity Constraints and Access to Opportunity

Connectivity constraints are a known issue across the LCR rail network and were identified within the LCR LTRS, which noted that the rail network does not always link places where people live to employment sites effectively, and does not always offer sufficient service frequencies to allow seamless commuting where it does.

Parking capacity at rail stations across the LCR is also a well-known issue which limits opportunities for P&R to serve residential areas without access to the rail network. Parking at stations is a particular issue on the Northern Line. The capacity of car parks on the Northern Line between Liverpool and Kirkby is set out in Table 7.1. This shows a lack of significant car park provision at all stations along the route with the exception of Kirkby. However, Merseytravel data suggests that car park occupancy at Kirkby is usually greater than 95%¹⁹ and many spaces are occupied by 09:30, suggesting high levels of use by commuters. This leaves little space for leisure users who wish to P&R at off peak periods.

Table 7.1: Car park capacity on the Northern Line

Station Car Park	No. of Spaces
Liverpool Central	0
Moorfields	0
Sandhills	0
Kirkdale	2 (disabled bays)
Rice Lane	0
Fazakerley	0
Kirkby	174

Source: Merseyrail.org

P&R opportunities are also provided on the Ormskirk branch of the Northern Line at:

- Maghull – 275 spaces; and
- Maghull North – 156 spaces.

In order to prevent overspill parking in the streets surrounding the stations, waiting restrictions are provided in close proximity to the majority of stations. Although occupancy counts were not available for this study, anecdotal evidence suggests demand often outstripping supply, resulting in the need for the local parking restrictions.

¹⁹ Data supplied by Merseytravel in May 2011

A lack of direct connectivity to the rail network for large areas across the LCR significantly reduces access to opportunity and is one of the key factors associated with the socio-economic issues identified in Knowsley outlined previously in Section 5.

Data presented in Section 5.2 illustrates that the levels of unemployment for areas towards the north of Kirkby and in proximity to Headbolt Lane are more than double the national average. Car ownership is also lower in these areas than the national average meaning public transport is vital for residents and communities to be able to access jobs, training opportunities and key services.

Data presented in Section 5.3 also demonstrates that the immediate areas around the proposed station at Headbolt Lane in Kirkby are within the top 10% most deprived areas when compared with LSOAs across England and Wales. Access to employment, education, training, and health services are key factors in determining levels of deprivation. Ensuring these communities have access to efficient and reliable transport networks is therefore essential to enable access to jobs training and education facilities available within Liverpool City Centre, across the LCR and beyond.

Issues

- The LCR rail network does not always link places where people live to employment sites effectively
- High levels of unemployment across northern parts of Kirkby in proximity to Headbolt Lane
- High levels of deprivation in the area around the proposed station at Headbolt Lane in Kirkby

Opportunities

- The development of a new station at Headbolt Lane in Kirkby would open up the railway to a population that currently does not have access to the rail network and significantly improve access to jobs, education and training facilities across the LCR for people to the north of Kirkby.

So, what does this mean for the development of Headbolt Lane Station?

This scheme aims to extend the rail network to increase the attractiveness and availability of rail services and address current gaps in connectivity which mean some residential areas, such as those in north Kirkby, are not linked effectively by rail to employment sites. The development of a new station at Headbolt Lane would directly address these connectivity constraints through opening up the railway to a population that currently does not have access to the rail network.

This would offer access to opportunities within the city centre and across the LCR in relation to jobs, training and education for people in areas of north Kirkby such as Tower Hill and Northwood.

7.2 Accessibility

A lack of connectivity to the rail network is a particular issue for people with mobility, sensory, cognitive, and other hidden impairments which may create further social exclusion and isolation.

Residents within large residential areas such as Simonswood, Northwood, and Tower Hill are required to walk for up to half an hour to reach the nearest rail station at Kirkby. This significantly reduces opportunities for people with mobility, sensory, cognitive and other hidden impairments who may not be able to drive or walk long distances, or are further restricted by the severance effects caused by manmade and natural features such as major highways and railway lines.

A new station at Headbolt Lane will significantly reduce the walking distance to the nearest rail station for residents within areas such as Simonswood, Northwood and Tower Hill, reducing walking journey times by at least a half.

The station will seek to enhance accessibility for all and improve passenger journeys ensuring the station is equipped with adequate step-free access and is easily navigable both from the surrounding area and within the station itself. The introduction of the new Stadler Class 777 rolling stock²⁰ will further enhance accessibility on the station through the provision of level boarding and intelligent sliding steps to close the gap between train and platform. Door sensors will detect obstructions, while coloured lights on the doors inform passengers when it is safe to board and alight.

The new rolling stock to be used on services through Headbolt Lane will also comprise wide-gangway units which are designed so that a wheelchair user will be able to pass through the length of a train, a level of accessibility that will also benefit elderly passengers, travellers with prams and buggies, and cyclists.

Issues

- Reduced accessibility to the rail network for people with mobility, sensory, cognitive, and other hidden impairments due to long walk times to the station and reduced ability to be able to drive to the station.

Opportunities

- A new station at Headbolt Lane would reduce approximately half the walking distance to the nearest rail station for residents within large residential areas such as Simonswood, Northwood and Tower Hill.
- The station seeks to enhance accessibility for all with step free access and provision of the new Stadler 777 rolling stock which will provide high quality facilities for people with mobility or other hidden impairments.

So, what does this mean for the development of Headbolt Lane Station?

Residents within large residential areas to the north of Kirkby face social isolation and exclusion, partly as a result of reduced accessibility to the rail network. This is particularly a problem for people with mobility or other hidden impairments who may not be able to drive or walk the long distance required to access the nearest rail station at present.

A new rail station at Headbolt Lane will increase accessibility for all people to the rail network due to a reduction in required walking time. Step free access facilities and new rolling stock which is fully equipped for wheelchair access will further enhance accessibility to the rail network and its associated opportunities for people with mobility, sensory, cognitive or other hidden impairments.

7.3 Connectivity and the Wider Transport Network

There are gaps in connectivity in the LCR Rail network (as identified in the LTRS), but the residential areas around Northwood and Tower Hill specifically suffer from a lack of connectivity towards the city centre and to the east towards Wigan and Manchester. These issues are discussed in this section in relation to each mode.

7.3.1 Highways

Headbolt Lane is well connected to the local and strategic highway network providing, for those with access to a car, a good level of connectivity to key destinations across the LCR for

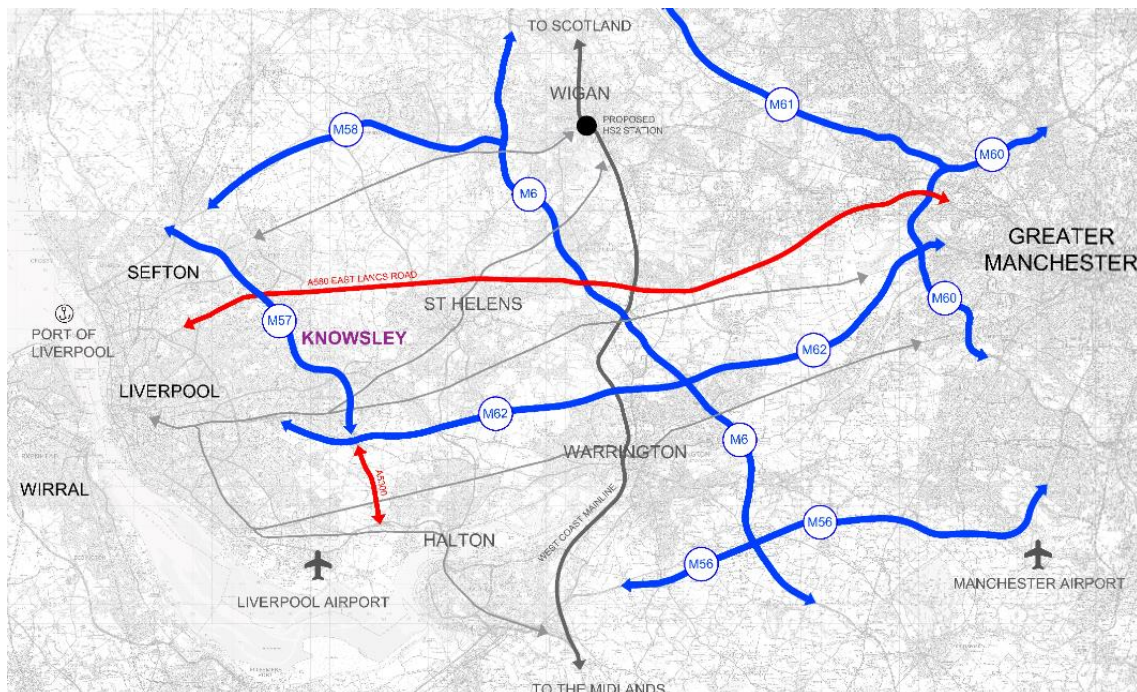
²⁰ See: [New Trains for the Merseyrail network | Merseytravel](#)

residents within the areas of Northwood and Tower Hill. To the east, Headbolt Lane connects to Pingwood Lane and Dale Lane which are both wide single-carriageway roads with the latter allowing traffic to bypass Kirkby itself and travel south to the A580 East Lancashire Road. The junction of the A506 and Headbolt Lane is already a large junction and is currently in the process of being upgraded which should improve vehicle access to the station site.

To the west, the A506 is very close to the proposed site and allows access to Kirkby and the M57 southbound as well as the M58 and Maghull northbound. These motorways allow easy access to the wider region with the M57 meeting with the M62 near Huyton and the M58 meeting the M6 near Wigan whilst also linking to the major arterial roads which lead into the centre of Liverpool.

The strategic context of the site including the key roads and rail stations in the wider area are shown in Figure 7.1.

Figure 7.1: Strategic Context



Source: Mott MacDonald

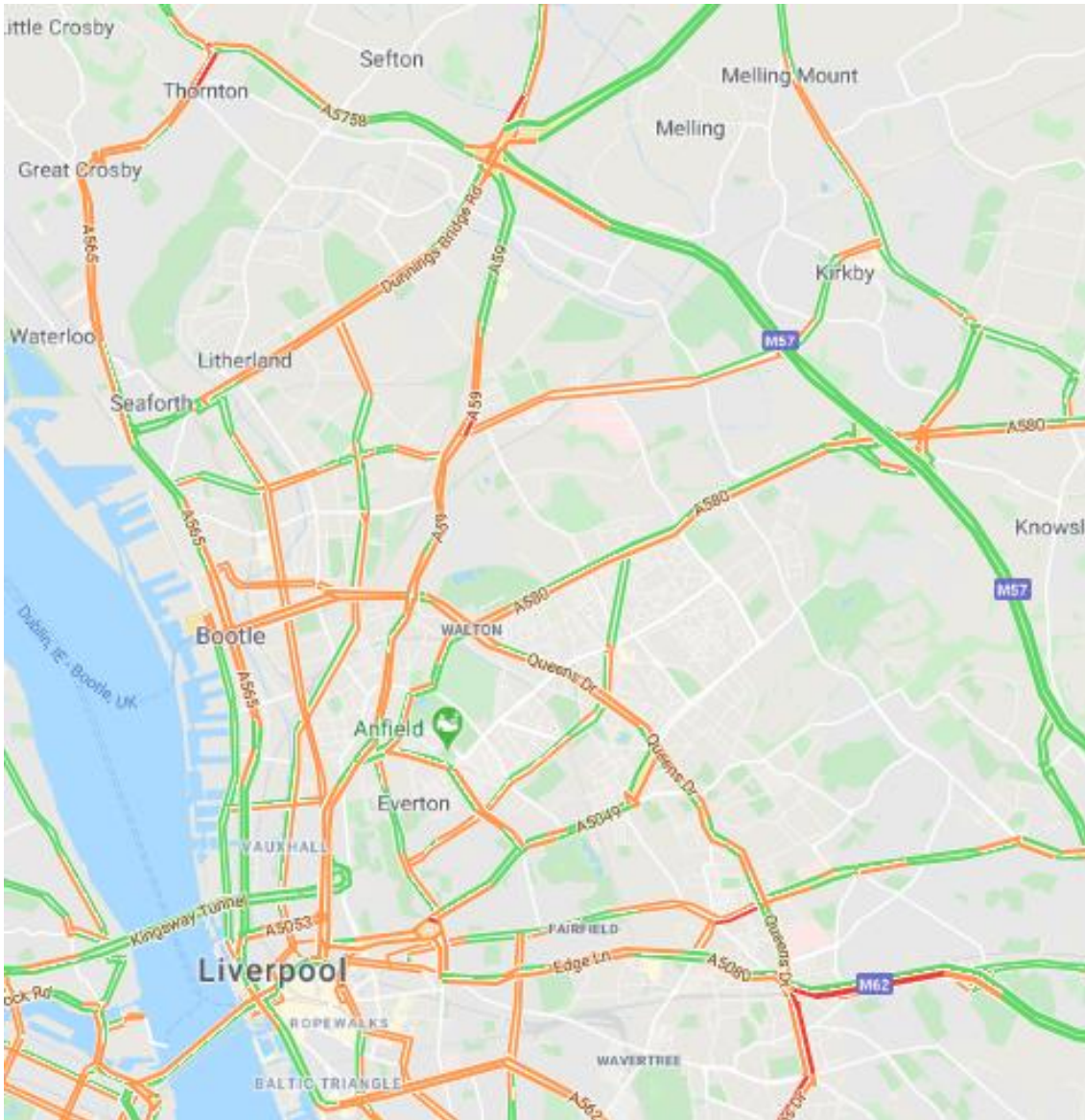
Despite being well located within the local and strategic highway network, low levels of car ownership are present within areas to the north of Kirkby and therefore driving is not an option for a significant proportion of residents within these areas.

Congestion is also a significant issue along key routes towards the city centre and to key locations across the LCR and beyond, with rail providing shorter (onboard) journey times between Kirkby and Liverpool City centre.

The A506 and A580 form the key routes between large residential areas of Kirkby and the city centre both of which experience significant levels of congestion within the AM and PM peak periods. This can be seen within Figure 7.2 below which demonstrates the typical traffic flows on a weekday in the AM peak period along key routes between Kirkby and Liverpool City Centre

(red indicates levels of congestion where journey times are significantly extended from 'free flow' conditions).

Figure 7.2: Typical Traffic along key routes between Kirkby and Liverpool on a weekday AM Peak



Source: Google Traffic

The development of a new rail station at Headbolt Lane in Kirkby will directly contribute towards a reduction in traffic flows and congestion along these routes as more people would have direct access to the rail network and be encouraged to take trips by more sustainable modes, leading to mode shift away from the private car.

Improved access to the rail network for a large number of residents will offer an attractive alternative to private car use removing road travel related stress and offering shorter more reliable journey times.

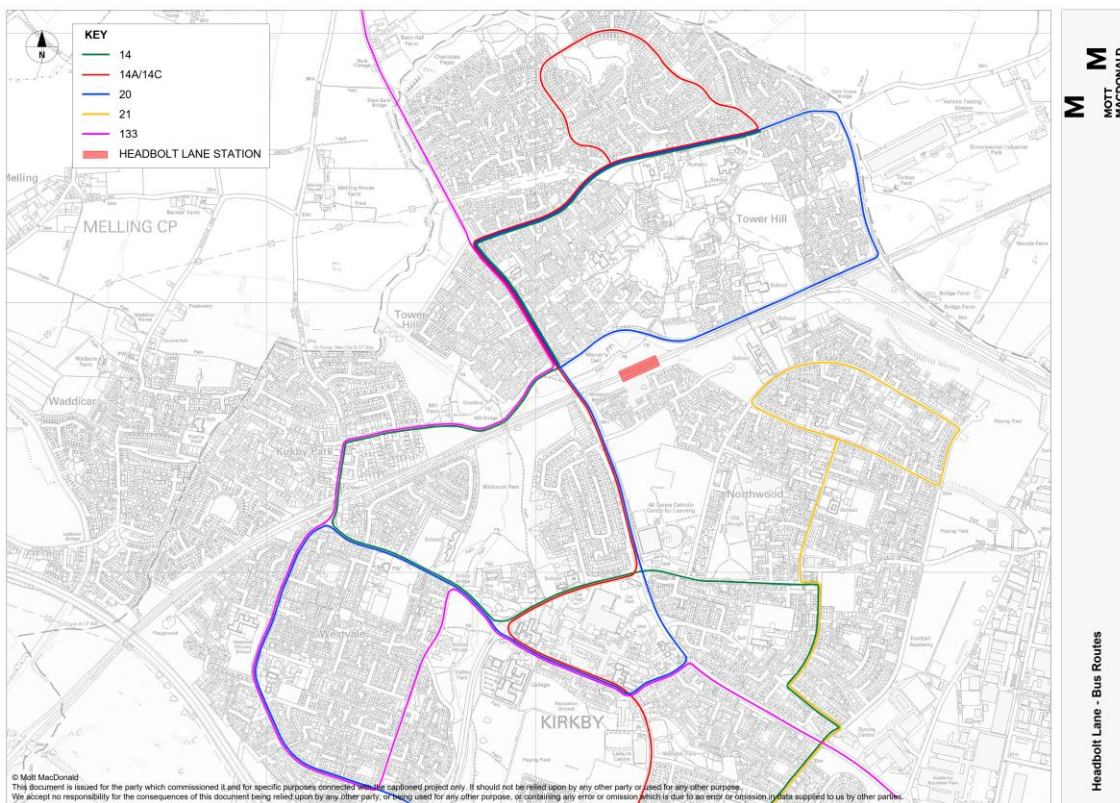
Parking constraints in city centre areas also restrict connectivity to the city centre with limited available parking and significant associated costs, further emphasising the need for alternative forms of travel between these areas.

7.3.2 Bus

Headbolt Lane is directly served only by the frequent number 20 bus service which connects Liverpool to Tower Hill. Only buses travelling in the direction of Tower Hill travel down Headbolt Lane, with the bus travelling along Pingwood Lane and Shevington's Lane before returning to Liverpool via the A506. No buses currently operate in a westbound direction along Headbolt Lane, and therefore Liverpool-bound trips require an approximately 15 min walk to access bus stops on either Shevington's Lane or A506 County Road,

A summary of bus services serving the area around Headbolt Lane and their frequencies are shown in Figure 7.3 and Table 7.2 respectively.

Figure 7.3: Bus Routes Servicing the Area Close to Headbolt Lane



Source: Mott MacDonald/Merseytravel

Table 7.2: Bus Services in the Vicinity of Headbolt Lane

Service	Route	Closest Stop	Daytime Buses per Hour ²¹
14	Liverpool – Tower Hill	Boyes Brow	0 ²²
14A/14C	Liverpool – Tower Hill	A506 Bank Lane	2
20	Liverpool – Tower Hill	Headbolt Lane (dir. Tower Hill) A506 Bank Lane (dir. Liverpool)	6
21	Liverpool – Northwood	Roughwood Drive	6
133	Waterloo – Kirkby Admin	Boyes Brow	1
X3	Liverpool- Kirkby Admin	Kirkby Bus Station	1

Source: Merseytravel

The #20 bus service, which runs between Liverpool and Tower Hill, has journey times significantly longer than either rail and car and therefore does not offer an attractive mode which could be used regularly for commuter or shopping trips. The X3 bus service provides faster journey times into Liverpool from Kirkby Town Centre, however this requires a significant access/egress leg from neighbourhoods in eastern Kirkby, and the X3 journey time is still uncompetitive relative to car.

Additional services can be accessed from Kirkby Bus Station which is located just over 1km away to the south of Headbolt Lane. The Headbolt Lane station scheme proposes a significant improvement in the interchange between bus and rail services and therefore it might be assumed that increased bus services would call at the station (although this is currently unconfirmed). The development of this scheme therefore offers the opportunity to enhance the provision of bus services within the area and ensure they are fully integrated with access to the rail network.

Although bus services such as the 14, 20, and 21 provide a good level of service in terms of frequency for residents in reasonably close proximity to Headbolt Lane, journey times into the city centre are significantly longer than other forms of transport. A comparison of bus journey times and expected rail journey times from Headbolt Lane to Liverpool City Centre is set out in the table below.

Table 7.3: Comparison of bus journey times and expected rail journey times from Headbolt Lane to Liverpool City Centre

Mode	Origin	Destination	Approximate Journey Time
Bus	Tower Hill, Conway Close	Liverpool, North John Street	56 mins
	Kirkby Rail Station	Liverpool, North John Street	47 mins
Rail	Kirkby	Liverpool Central	18 mins
	Headbolt Lane	Liverpool Central	21 ²³ mins

Source: Mott MacDonald

²¹ Buses per hour in one direction. Weekday daytime.

²² Service 14 only runs to/from Tower Hill prior to 6am.

²³ This estimated journey time is based on the journey time between Kirkby and Headbolt Lane being 3 minutes.

This shows that bus journey times between Kirkby and Liverpool are around double that of rail. This length of journey makes bus travel comparatively unattractive, and potentially unfeasible, for regular journeys such as commuting.

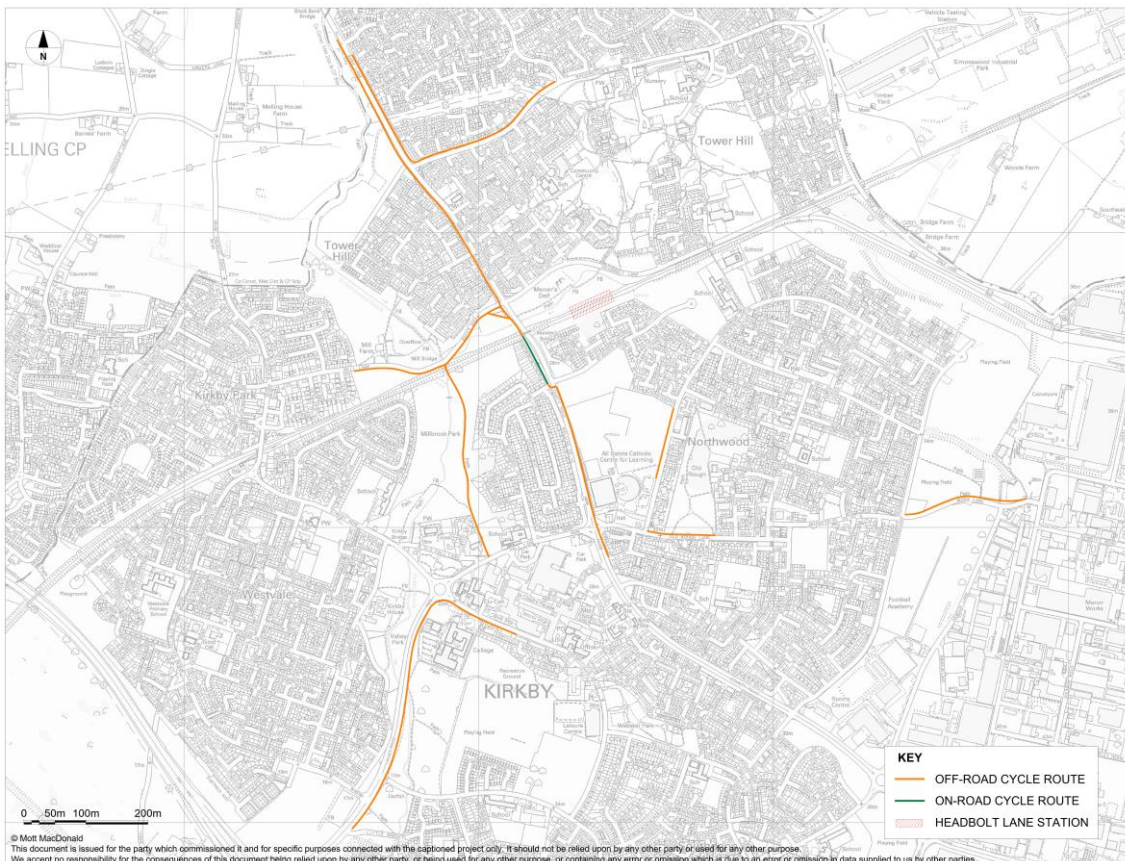
Low levels of car ownership across the borough and within this area of Kirkby mean a significant proportion of the population within these areas depend on bus services for connectivity to the city centre and other areas across the LCR, further increasing the importance of more direct access to rail services.

7.3.3 Active Travel

Figure 7.4 below sets out the existing cycle infrastructure around Headbolt Lane in terms of on and off-road cycle routes. Although cycle routes adjacent to the A506 offer good strategic connectivity, there is a lack of cycle infrastructure between and within residential areas around Headbolt Lane.

The rail line and the brook adjacent to Headbolt Lane also severs pedestrian and cycle connectivity between the areas of Tower Hill and Northwood reducing opportunities for active travel. Figure 7.4 also illustrates a lack of dedicated pedestrian and cycle infrastructure between the large residential areas of Tower Hill and Northwood and Kirkby Town Centre.

Figure 7.4: Existing Cycle Infrastructure



Source: Mott MacDonald

A new station at Headbolt Lane would offer a short and direct journey to Kirkby enhancing connectivity between these areas in the absence of direct cycle routes and infrastructure.

Proposals for the station also include a footbridge to the south of Headbolt Lane which would not only enhance access to the station for pedestrians but would also remove the severance currently created by the rail line between north and south residential areas in this part of Kirkby. There is also scope for a wider package of enhancements to the active mode network, integrating with proposals for Knowsley being advanced through the Local Walking & Cycling Infrastructure Plan (LCWIP).

Ensuring the station is accessible for pedestrians and cyclists, offering safe and attractive routes will be essential to enabling more sustainable journeys and ensuring the rail network is easily accessible from surrounding residential areas.

Issues

- Congestion on key routes between Kirkby and Liverpool City Centre
- Low levels of car ownership mean driving is not an option for a significant proportion of residents to the north of Kirkby.
- Limited availability of parking in the city centre reduce highway connectivity between Liverpool and residential areas to the north of Kirkby
- Significant bus journey times from Headbolt Lane to Liverpool City Centre reducing levels of connectivity by this mode.
- Severance caused by the rail line for pedestrian and cyclist activity

Opportunities

- Bus facilities at the station provide opportunities to enhance the provision of services in this area of Kirkby, and increase interchange levels between bus and rail.
- Opportunity to significantly reduce public transport journey times between Headbolt Lane and the city centre.
- Proposals associated with the development of a new station at Headbolt Lane include a new pedestrian footbridge from the south. This would reduce the existing north south severance experienced in the area by pedestrians and cyclists caused by the current position of the rail line
- Potential to expand catchment and increase the mode share for walking and cycling to and from the new station by integrating with complementary LCWIP proposals

So, what does this mean for the development of Headbolt Lane Station?

Residents within large areas around Headbolt Lane such as Tower Hill, Northwood and Simonswood suffer from a lack of connectivity to the wider transport network reducing accessibility to key areas such as Liverpool.

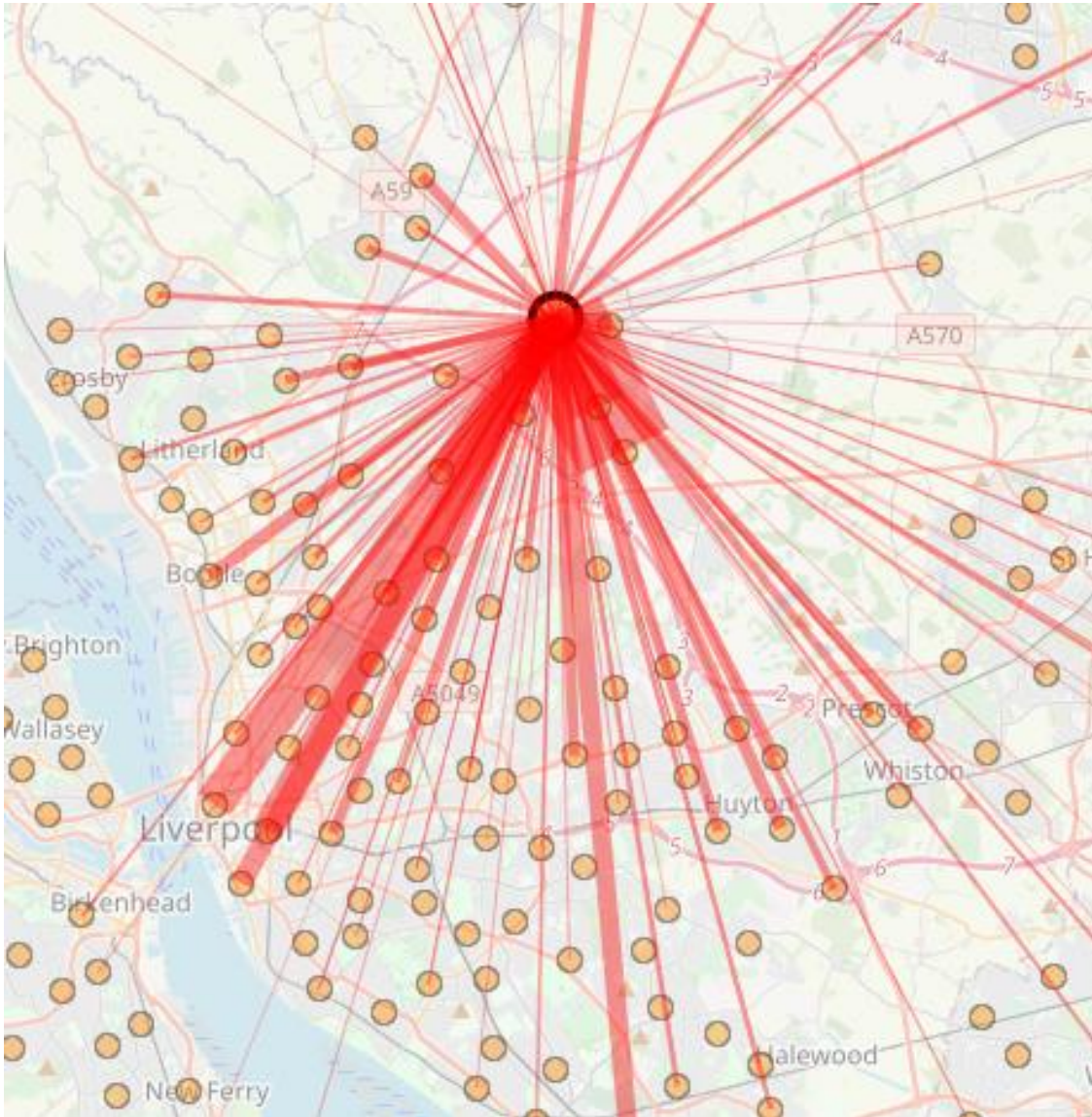
Key routes along the highway network between Kirkby and Liverpool often suffer from a significant level of congestion thereby increasing journey times for both private car trips and bus services. The 20 bus service which runs between Liverpool and Tower Hill has journey times significantly longer than rail and car and therefore does not offer an attractive mode which could be used regularly for commuter or shopping trips or as an attractive alternative to the use of the private car.

A new station at Headbolt Lane also offers the opportunity to increase levels of walking and cycling and remove the current severance created by the rail line through the provision of a new pedestrian footbridge, further increasing connectivity to the wider transport network for residents within these areas.

7.4 Travel to Work

Figure 7.5 below illustrates where people living in the area around Headbolt Lane (Tower Hill) are travelling to work.

Figure 7.5: Home to Work



Source: Datashine Commute

This shows the largest proportion of residents in this area travelling towards Knowsley Industrial Park for work. However, a significant proportion of this population are also travelling towards the city centre and to areas south and south west of Kirkby.

This therefore demonstrates the need to ensure residents within the area of Headbolt Lane have efficient access to the city centre and areas to the south and south west of Kirkby to support access to jobs and opportunities and increase the number of journeys undertaken by sustainable modes.

Issues

- The largest proportion of people living in proximity to Headbolt Lane in Tower Hill travel to work in areas around the city centre and Knowsley Industrial Park.

Opportunities

- This scheme will directly improve access to the city centre for people in the north of Kirkby through opening up access to the rail network.
- The development of a new station at Headbolt Lane provides the opportunity to increase the number of travel to work trips between residential areas to the north of Kirkby and Liverpool City Centre undertaken by sustainable modes.

So, what does this mean for the development of Headbolt Lane Station?

The development of a new station at Headbolt Lane to the north of Kirkby would enhance links between residential areas and key employment sites by opening the railway up to a population that currently does not have access to the rail network.

This scheme would also ensure that a significant proportion of commuter trips between areas to the north of Kirkby and Liverpool City Centre are undertaken by sustainable modes with efficient access to the rail network providing an attractive alternative to the private car and congestion experienced along key routes into the city centre.

7.5 Air Quality

There are no Air Quality Management Areas (AQMA) identified within the study area or wider area of the borough and it is important to ensure that this remains the case. However, while the area around Kirkby does not include any AQMAs, the whole local authority area of the city of Liverpool is designated as an AQMA as shown in the figure below.

Figure 7.6: Liverpool AQMA



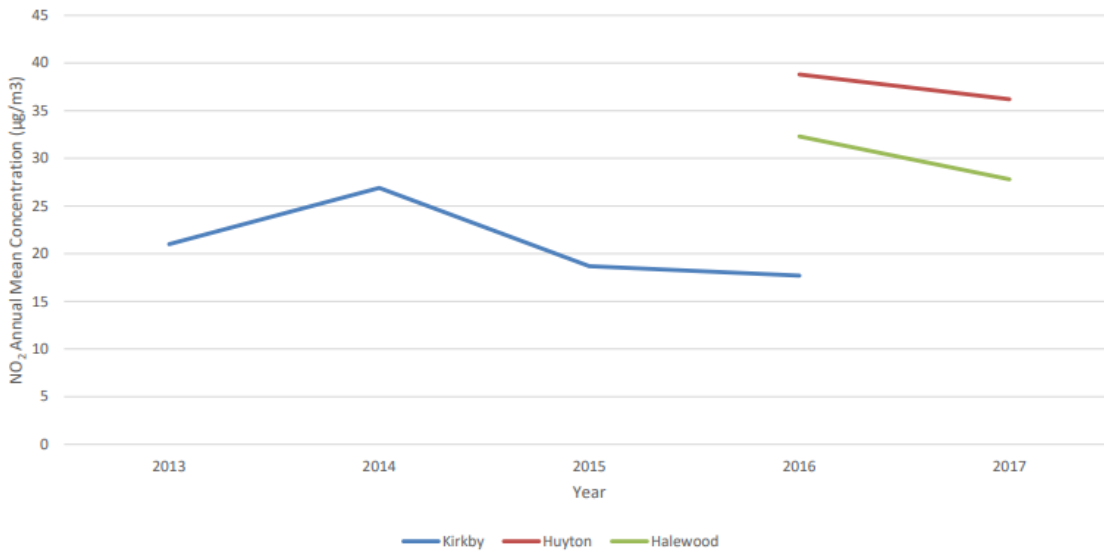
Source: DEFRA

This scheme has the potential to offer improved park and ride opportunities to Liverpool city centre from North Kirkby. Therefore, this may create a reduction in the number of car trips accessing the city centre, contributing to improved air quality and a reduction in NO₂ emissions.

One of the key contributors to poor air quality and focus of the majority of monitoring undertaken in Knowsley, is Nitrogen Dioxide (NO₂).

A summary of NO₂ levels for the key town within Knowsley between 2013 and 2017 is outlined in the figure below. Automatic air quality monitoring takes place at 3 sites within Knowsley; Kirkby, Huyton and Halewood. As can be seen from the figure below, data collection at the Huyton and Halewood monitoring stations only commenced in April 2016 and has not been recorded in Kirkby since 2016.

Figure 7.7: Trends in Annual Mean NO₂ Concentrations Across Knowsley (2013-2017)



Source: Knowsley MBC

This type of pollution is primarily associated with road traffic and congestion. Therefore, it is important that travel by public transport and active modes is promoted across the borough, reducing the number of vehicles on the network as a result.

This scheme offers significant opportunities for public transport across the borough through provision on enhanced rail connectivity to surrounding areas. Improved direct access to the rail network with enhanced facilities for pedestrians and cyclists at the station will also contribute towards increasing active travel around the borough further reducing the need to travel by private car and benefiting local air quality.

7.6 Zero Carbon Initiatives

In recognition of the pressing threat of climate change and the urgent need to take action, the Liverpool City Region Combined Authority declared a climate emergency in May 2019²⁴ with a Net Zero carbon target for 2040. There is therefore now a commitment to ensure that all infrastructure plans, programmes, and investments are in line with curbing climate breakdown and consistent with the region’s carbon budget.

Carbon emissions associated with car travel is one of the key concerns across all areas of the City Region. Reducing car travel across the region will therefore be essential to ensuring Net Zero Carbon targets are achieved. In order for this to be achieved, the public transport network will need to reach all residential areas across the area and provide efficient and reliable services which offer an attractive alternative to the use of the private car.

²⁴ See: [Climate emergency declared for Liverpool City Region | Liverpool City Region Combined Authority - News \(liverpoolcityregion-ca.gov.uk\)](https://www.liverpoolcityregion-ca.gov.uk/news/climate-emergency-declared-for-liverpool-city-region/)

Issues

- Poor air quality is often associated with road traffic and congestion
- Lack of rail connectivity in large residential areas across the LCR causes a reliance on the use of the private car therefore contributing to worsening congestion and air quality.
- LCR has declared a Climate Emergency and has set a target to achieve Net Zero Carbon by 2040

Opportunities

- There are no Air Quality Management Areas (AQMA) identified within the study area.
- Improved opportunities for Park and Ride to Liverpool from North Kirkby reducing the number of car trips to the city centre.
- Improved provision of public transport and active travel will be central to ensuring that this remains the case.
- Efficient public transport will be key to helping reduce car travel across the region and contributing to a reduction in emissions .

So, what does this mean for the development of Headbolt Lane Station?

This scheme will positively contribute towards reducing greenhouse gas emissions and local air pollution by reducing car-kms. Provision of walking and cycling facilities at the station will also reduce the need to drive to the station, further reducing the impact of car travel on local air quality.

8 Strategic Case- The Need for Intervention

Enhancement of rail services to/from Headbolt Lane has been identified as a potential solution to the challenges and issues currently facing this part of Kirkby, while also facilitating growth across the LCR. This section further demonstrates why intervention at Headbolt Lane is necessary presenting the implications of not undertaking the scheme, combined with alternatives to the development of the scheme which have been considered and discounted on the basis that they do not offer appropriate solutions to address the scheme objectives.

8.1 Overview of Strategic Need

The need for a new station at Headbolt Lane has been suggested within a number of policies and strategies, including the LCR LTRS (2014 and 2018) and the Merseyside Local Transport Plan Rail Strategy (2006), as key to addressing connectivity constraints identified across the LCR rail network.

A number of key issues and opportunities have been identified in the previous sections which could be resolved as a result of the development of a new station at Headbolt Lane. It is a known issue across the LCR that the public transport network does not always link places where people live to employment sites effectively and does not always offer sufficient service frequencies to allow seamless commuting where it does. One of the main aims of this scheme is to increase the attractiveness and availability of the rail network to improve accessibility to employment. A new station at Headbolt Lane would open up the railway to a population that currently does not have access to the rail network.

8.1.1 Helping resolve socio-economic challenges

A lack of connectivity to the rail network significantly reduces access to opportunity and is a key contributor to the high levels of social deprivation facing large residential areas across the LCR, such as Northwood and Tower Hill. The latest data from the Indices of Multiple Deprivation (IMD) shows that the entire area around Headbolt Lane in Kirkby is within the top 10% most deprived when compared with LSOAs across England and Wales, and many are within the most deprived 1%. The development of a new station at Headbolt Lane offers significant opportunities to improve access to existing jobs, training, and employment opportunities through provision of a direct rail link into the city centre for people living in the areas of Tower Hill and Northwood around Headbolt Lane. By connecting better with key interchange locations such as the city centre, the scheme also offers improved connectivity to areas across the LCR, contributing towards a reduction in the level of social isolation, exclusion, and deprivation.

8.1.2 Addressing a connectivity gap

In addition to a lack of connectivity to the rail network for people living within the large residential areas around Headbolt Lane, there are a number of other connectivity constraints which reduce access to opportunities provided within the city centre, across the LCR and beyond. These include:

- **Low levels of car ownership-** Data from the 2011 Census (ONS) shows that 37% of Knowsley residents do not have access to a car or van for travel; this is 12% higher than the national figure of 25%. Connectivity to Liverpool, areas across the LCR and beyond to areas across West Lancashire is therefore reduced for a significant proportion of the population in Knowsley who do not have access to a car.

- **Long bus journey times-** low levels of car ownership across the borough and no direct access to the rail network for people living in large residential areas such as Northwood, Simonswood and Tower Hill, mean a significant proportion of residents in this area are likely to be reliant on bus travel to access jobs, education, and training opportunities. Although the areas around Tower Hill and Northwood are well served by the 14A, 20, and 21 services in terms of frequency, these services have journey times significantly longer than those offered by private car or rail trips between similar locations. Journeys between Tower Hill and Liverpool by bus take around 1 hour compared to an estimated 20 minute journey time by train based on the existing service to Kirkby. This therefore does not provide an attractive alternative to the use of the private car and does not offer a viable mode of travel for regular trips such as commuting.
- **Congestion on key routes between Knowsley and Liverpool-** congestion is a key issue for key strategic routes around Headbolt Lane which offer connectivity from Kirkby to the wider area. Routes into the city centre such as the A506 and A580 experience significant levels of congestion within the AM and PM peak periods creating a detrimental impact on local air quality, road travel related stress, and unattractive journey times.
- **Parking constraints within the city centre-** car travel between Kirkby and Liverpool is further restricted by parking constraints within the city centre particularly for potential commuters. Where parking in the city centre is available, it is often expensive and therefore does not offer a viable option for regular trips.
- **Parking constraints along the Northern Line-** although it has been identified that a significant proportion of the population in Knowsley do not have access to a car, for those that do driving to a nearby rail station may help close the gap in rail connectivity for residents who do not currently have direct access to a rail station. However, opportunities for this as a means of access between north Kirkby and Liverpool are limited due to car parking constraints at a number of rail stations along the Northern Line. There are few stations along the Northern Line between Liverpool Central and Kirkby which offer provision for car parking and restrictions are often in place on surrounding residential streets. The exception of this is Kirkby station which has capacity for 174 spaces. However, this car park is often at 95% capacity from around 09:30 in the morning and therefore offers little opportunity to provide effective P&R.

This demonstrates that rail could be considered a highly efficient form of travel to provide access from the area around Headbolt Lane to Liverpool City Centre and the wider LCR. Addressing this gap in current connectivity will be essential to address the current issues associated with social deprivation by ensuring all residents are able to access opportunity, and will actively encourage future investment within this part of the borough. Improved transport will narrow inequalities and ensure that a dynamic and more inclusive economy can be developed to ensure that all residents have a stake in the region's future.

8.1.3 Facilitating economic development

In addition to connectivity constraints identified across the LCR, and specifically between Kirkby and Liverpool, current proposals indicate a significant amount of development planned in the immediate surrounding area around Headbolt Lane and across the entire borough.

Improvements to the transport network will therefore be essential in order to support this level of development. Access from the north of Kirkby to the city centre and areas across the LCR will be particularly important as a large and increasing number of residents within this area suffer from a lack of connectivity to the rail network and poor accessibility via alternative modes.

The development of a new station at Headbolt Lane will not only address current constraints, support growth and improve access to opportunity but will active encourage inward investment

in areas of Knowsley that have seen less investment over recent years due to the focus on key centres such as Kirkby. A well connected rail station will present new opportunities for business growth and employment development within north Kirkby ensuing increasing opportunities are available for the increasing number of residents expected within the borough and across the LCR.

8.2 Why Headbolt Lane Station?

The MEL network offers an attractive and competitive alternative for the communities it serves, helping to deliver significant positive economic, social, and environmental impacts. As the existing Kirkby-Wigan line passes through the Northwood and Tower Hill neighbourhoods, adjacent to Headbolt Lane, the potential for an enhanced rail service to help address some of the challenges and issues facing the areas has been identified. The development of a new station at Headbolt Lane has been identified as the primary potential option to address the highlighted issues and opportunities and provides a realistic and attractive connectivity solution to residents of north Kirkby within appropriate timescales. Potential alternatives are considered in Section 10.2.

8.3 Implications of Doing Nothing

Without intervention at Headbolt Lane, the ability to address any of the key issues is severely limited. Therefore, without investment, the key issues identified will remain unresolved having a significant negative impact on growth across the LCR. The implications of doing nothing in relation to the key scheme objectives are set out in the following points:

- **Growth**- Economic growth and ability to access jobs and opportunities across LCR for residents within areas to the north of Kirkby is stifled, as the rail network fails to link large residential areas to areas of economic opportunity effectively.
- **Regeneration**- Large housing developments proposed around Tower Hill and across the borough are scaled back or undeliverable as a result of transport network connectivity constraints.
- **Sustainability**– Worsening air quality as a result of more car journeys to areas within and beyond the LCR.
- **Integration** –There is limited opportunity for public transport journeys and fewer journeys are made by this mode as a result. This leads to an increase in highway usage and other issues associated with this as identified above. Accessibility for pedestrian and cyclists such as severance between north and south Kirkby remains as per the present day.
- **Safety** – The number of accidents occurring on the highway network across Knowsley would increase due to more people having to drive in the absence of effective rail connectivity.
- **Access for all** – People with mobility, sensory, cognitive, and other hidden impairments will continue to find it difficult to access opportunities due to a lack of realistic transport alternatives, creating a sense of isolation and exclusion.

9 Strategic Case- Scheme Scope and Objectives

This section sets out the full list of objectives which have been derived from the identification of the key issues and opportunities noted in the previous sections. The objectives will guide the development of the scheme and ensure the outcomes will address current issues and align with policy documents.

9.1 Objectives

A number of key issues and opportunities have been identified in the previous sections which could be resolved as a result of the development of a new station at Headbolt Lane.

High levels of social deprivation is one of the key issues facing large residential areas across the LCR, such as Northwood and Tower Hill which currently do not have direct access to the rail network. Connectivity to Liverpool is particularly an issue for residents in this area due to low levels of car ownership, long bus journey times, congestion on key routes, and parking constraints within the city centre.

The development of a new station at Headbolt Lane offers opportunities to close this gap in connectivity and significantly increase access to opportunity thereby reducing levels of social deprivation.

As noted above, objectives were developed at a high level in relation to the key issues identified to ensure the scheme was developed in a way that would improve existing conditions. This meant ensuring that the objectives covered current issues around lack of growth and investment, connectivity constraints, high levels of deprivation and the integration with the wider transport network. They are nested within the national, regional, and local priorities described previously in Section 4.

Discussions were held with Merseytravel, acting on behalf of the LCR CA, to confirm and add to the objectives to ensure all key issues in the area were considered in the development of the scheme.

The high level objectives were then broken down into a number of more scheme specific sub-objectives which were designed to be Specific, Measurable, Achievable, Relevant, and Time-bound (SMART).

The final set of agreed objectives and sub-objectives for the Headbolt Lane are shown in the following table:

Table 9.1: Headbolt Lane Scheme Objectives

Theme	Objective	Sub objective
Inclusive Growth	Facilitate long term economic growth in Liverpool City Region by providing sufficient capacity to allow people to access opportunities	<ul style="list-style-type: none"> • Provide sufficient capacity for new rail demand to access the rail network for employment, education, retail and leisure without hinderance • Increase car parking capacity on the Kirkby branch reducing parking pressure at other Merseyrail stations and facilitating new demand • Improve connectivity to the rail network for currently poorly served areas within the Liverpool City Region and wider Hinterland improving journey times and accessibility.
Regeneration	Facilitate the regeneration of Kirkby by providing enhanced access to existing and new development	<ul style="list-style-type: none"> • Support new development in Kirkby and across the City Region by an integrated approach to development and connectivity providing direct access opportunities from the rail network • Support the regeneration of Kirkby by providing a new rail gateway and associated connectivity • Support other regeneration aspirations in Liverpool City Region by maximising the use of public transport and ensuring the area is accessible and therefore attractive to investors.
Sustainability	Reduce the impact of travel in the City Region by providing a high capacity alternative to the private car, resulting in improved wellbeing, health and environmental outcomes and contributing towards the LCR Net Zero Carbon by 2040 target	<ul style="list-style-type: none"> • Improve air quality in the City Region by improving sustainable travel options • Reduce road congestion, carbon emissions and longer-distance commuting by car into Liverpool • Improve health by encouraging more sustainable modes of travel, better providing for existing active travel desire lines • Improve wellbeing by reducing road travel related stress during journeys
Integration	Create better integration between rail and the rest of the transport network to encourage modal shift to more sustainable modes of transport	<ul style="list-style-type: none"> • Better facilitate existing and future travel patterns by creating enhanced integration between rail and bus, walking and cycling modes • Create improved Park and Ride opportunities at Liverpool City Region rail stations
Safety	Improve safety on the transport network	<ul style="list-style-type: none"> • Provide infrastructure to allow anyone that wishes to access the rail network the ability to do this safely and securely • Reduce road-based accidents by encouraging mode shift to rail-based modes
Access for All	Maintain and, where possible, improve upon access to the rail network for all people regardless of disability	<ul style="list-style-type: none"> • Provide step-free access to all rail platforms within Liverpool City Region, ensuring that all new provisions and routes are step-free including those from interface with surrounding highways and interchange locations • Provide safe and secure access to all rail platforms in Liverpool City Region for people with non-mobility-related disabilities including sensory, cognitive and other hidden impairments.

Source: Mott MacDonald

9.1.1 Alignment with TCF Criteria and LCR Investment Strategy

This FBC is being submitted to LCR CA for funding through the Transforming Cities Fund (TCF) allocation provided to the LCR CA for devolved expenditure across the city region.

Table 9.2 provides a synopsis of how the development of a new station at Headbolt Lane aligns with the DfT's appraisal criteria for TCF. Although these are not mandatory for mayoral authorities with devolved funding, alignment is clearly beneficial for long term monitoring, evaluation, benefits realisation and demonstration of value for money in public investment.

Table 9.2: Scheme Alignment to TCF Criteria

Criteria	Alignment
Essential	
Improve capacity on commuting trips, and increase access to employment and development centres	<ul style="list-style-type: none"> Increased access to employment and development centres across the LCR and within Liverpool city centre from the north of Kirkby as a result of new rail access for large residential areas Increased capacity along the Northern Line for commuters
Reduce carbon emissions	<ul style="list-style-type: none"> Offers significant opportunity to promote mode shift from private car to public transport, indirectly reducing carbon emissions
Value for Money	<ul style="list-style-type: none"> NPV of £12.7 million and BCR of 1.30, increasing to £21.9 million and 1.52 inclusive of wider economic impacts (see Section 14)
Deliverable by 2023	<ul style="list-style-type: none"> The station is expected to open in 2023 subject to a final funding package being agreed during 2021
Financially sustainable	<ul style="list-style-type: none"> Pre-Covid-19, the incremental farebox revenue was forecast to exceed the corresponding operating expenditure over a 30-year period, thus generating a surplus for the MEL concession. This is naturally more uncertain following the 2020 Covid-19 pandemic
Match Funding Opportunities	<ul style="list-style-type: none"> Full package is funded by the TCF with contributions from Knowsley Council (£2.75 million) and Merseyrail (£100,000)
Desirable	
Social Value	<ul style="list-style-type: none"> The neighbourhoods of Simonswood, Northwood, and Tower Hill are some of the most deprived in England. A new rail station which will serve these areas will allow residents to access opportunities within the city centre, across the LCR and beyond in order to reduce levels of unemployment and social deprivation
Improve accessibility	<ul style="list-style-type: none"> Addressing current gaps in rail connectivity to allow large residential areas access to the rail network which are currently disconnected Improved accessibility to Liverpool city centre for jobs and training opportunities and to the wider areas of West Lancashire Increased network coverage of MEL services Improved overall journey times and direct access into the city centre for residents of Simonswood, Northwood, and Tower Hill
Supporting housing delivery	<ul style="list-style-type: none"> There is no directly dependent development; however, large scale housing development are proposed around the area of Tower Hill and across the borough as outlined within the latest Local Plan. A new station at Headbolt Lane will therefore support this development and ensure a growing number of residents are able to access opportunities sustainably without increasing pressure on the local transport network.
Improve air quality	<ul style="list-style-type: none"> Offers significant opportunity to promote mode shift from private car to public transport, indirectly reducing carbon emissions

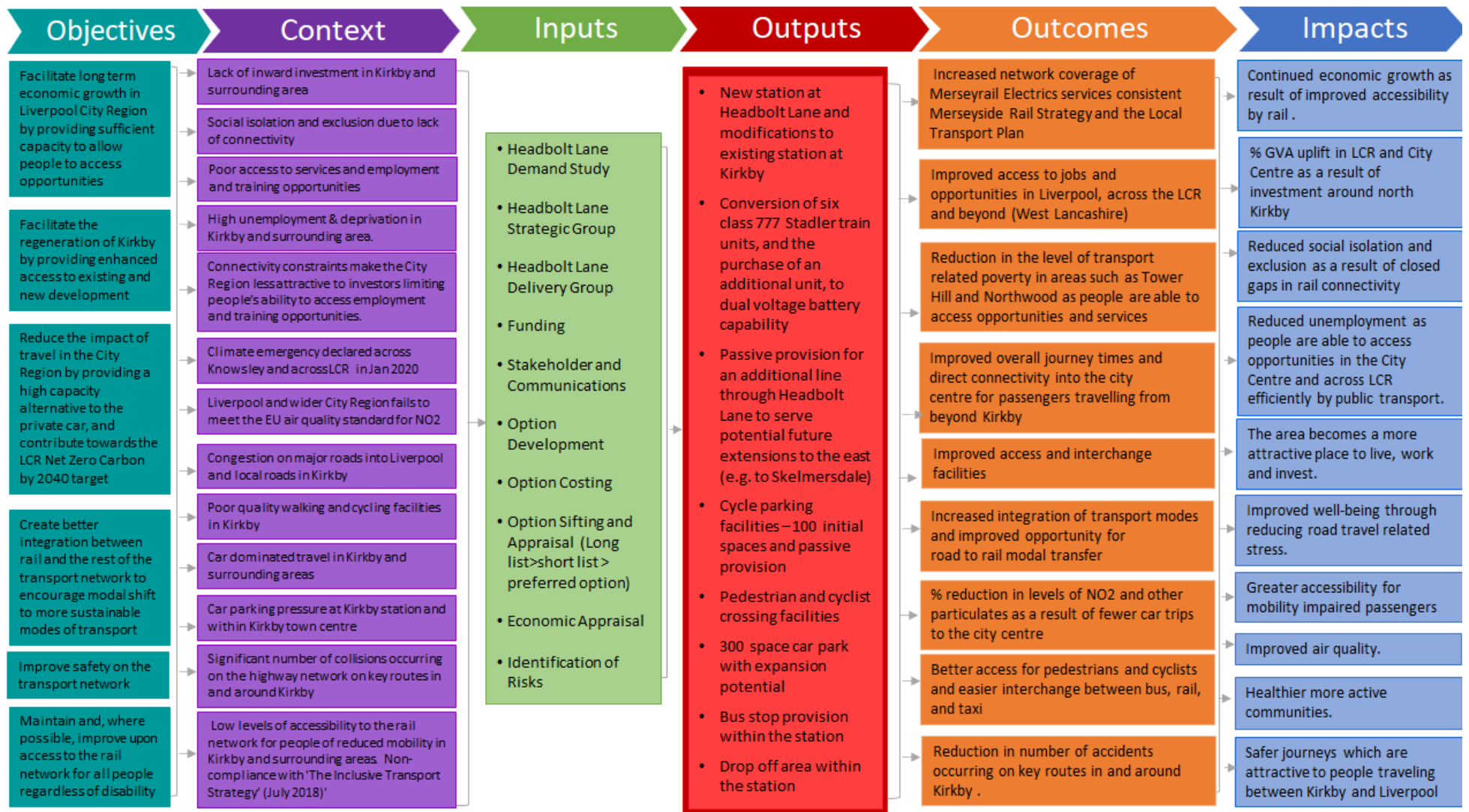
Source: Mott MacDonald

9.2 Logic Mapping

The logic map set out in Figure 9.1 illustrates how the high level objectives for the scheme are expected, via scheme outputs, to translate into the desired outcomes and impacts.

The outcomes and impacts noted within Figure 9.1 may be compared with the monetisable impacts measured specifically within the Economic Case noted within Section 14.5. In addition, the primary benefits around reduced Generalised Journey Time are a direct reflection of the improved accessibility of the rail network and will contribute to making rail a more attractive mode to the benefit of all.

Figure 9.1: Headbolt Lane Outline Business Case Logic Map



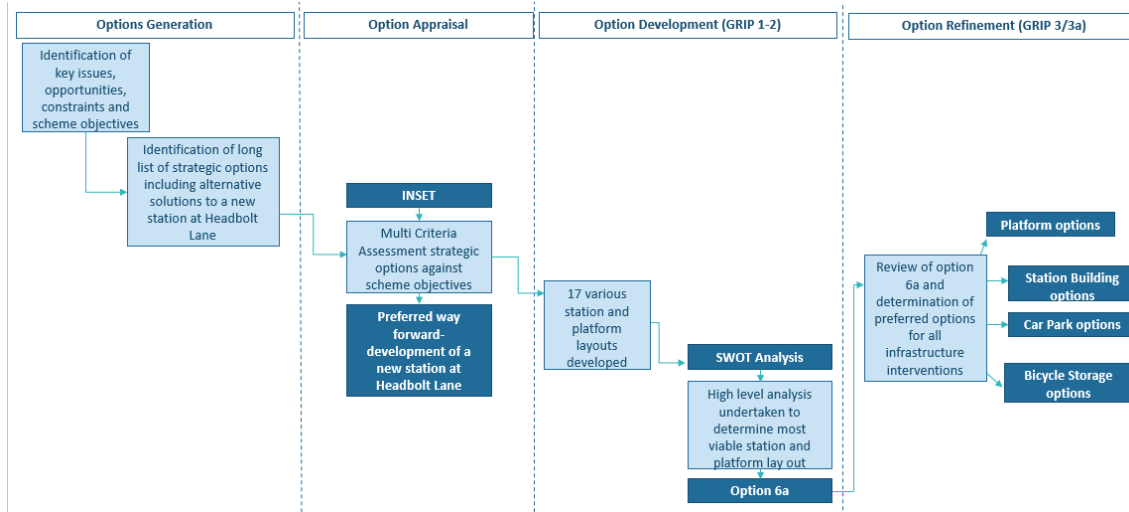
Source: Mott MacDonald

10 Strategic Case- Option Development and Appraisal

An option selection study has been undertaken formed of several gateways and leading to the identification of a preferred option for development. Firstly, a high level INSET appraisal has been undertaken to assess the prospect of constructing a new rail station at Headbolt Lane against a number of strategic alternatives. Following this, Network Rail’s ‘Guide to Railway Investment Projects’ process (GRIP) has been followed in order to assess the possible options in delivering the extension from Kirkby to Headbolt Lane, plus a new station at Headbolt Lane. This study has developed a number of rail options which are listed within this section. These options were subject to various forms of appraisal to in order to identify the most appropriate solution. The processes followed to develop a long list of options and appraise these options to identify a preferred solution are set out within this section.

As part of the options assessment process, options passed through several stages of appraisal and refinement. An overview of the robust process undertaken to identify the preferred option is set out in the figure below.

Figure 10.1: Options Appraisal Strategy



Source: Mott MacDonald

10.1 Assumptions

The following assumptions have been made which have been used to guide the process of option development and appraisal for the rail based alternatives. These assumptions have also been used in the development of the strategic case and to inform the economic modelling assessments.

- The year of the station opening would be 2023
- The location of the proposed station is to be in the vicinity of Langton Road opposite Headbolt Lane, as agreed with Merseytravel

- The existing 15 minute timetable is to be maintained, although specific options may result in recasting the timetable
- A robust service is required, allowing for a level of perturbation – this should be ‘no worse’ than current performance
- Routing into Liverpool is to remain unchanged
- Platforms will be designed to accommodate eight-car class 777 electric/battery bi-mode units for Merseyrail services.
- Diesel services platforms (i.e. to Wigan) will accommodate 4 car units as a minimum
- Cognisance has been taken to account of the aspiration to potentially extend the Merseyrail network through to Rainford and Skelmersdale / Wigan in the future
- Knowsley Council will, via Merseytravel, make the land required to accommodate the options considered in the vicinity of Headbolt Lane available to Network Rail.

10.2 Option Generation

The option generation process was built around addressing the key issues and opportunities summarised in Section 7 and achieving the scheme objectives. This section outlines the work and processes undertaken by key parties to develop options for the development of a new station at Headbolt Lane.

10.2.1 Long List Development

Multi-modal ‘Strategic Alternative Options’ were developed following a review of baseline information. The long list of options considered at this stage is set out in the table below. Shortlisted options were then subject to further development.

Table 10.1: Long List of Strategic Alternative Options

Option	Description
Do Nothing	Retain network and station at Kirkby as at present - no increase in connectivity to the rail network for residents in north Kirkby.
Increase Highway Capacity	Increase capacity of highway network between north Kirkby and Liverpool City Centre through provision of a new urban motorway or other strategic route to address current congestion issues and support movement to key opportunities in the city centre.
Increased Bus Capacity	Strengthen the existing bus network between Kirkby and Liverpool City Centre by creating new express routes to the key housing areas, and by increasing frequencies, quality, and vehicle capacities.
Rapid Transit Network	Invest in the creation of a new mode of transport such as an LRT or BRT network connecting the borough of Knowsley to Liverpool. The network would serve the key residential areas with high frequencies and high quality transit vehicles.
Dedicated bus links to stations	Explore opportunities with bus operators to provide dedicated bus links to rail stations to support use of the rail network between Kirkby and Liverpool and mitigate existing constraints associated with parking at rail stations.
Headbolt Lane Station	Development of a new rail station at Headbolt Lane between Kirkby and Rainford to serve key residential areas of Simonswood, Northwood and Tower Hill which do not currently have direct access to the rail network. Extend MEL services from Kirkby to Headbolt Lane and curtail the Northern service from Wigan/Manchester at the latter.

Source: Mott MacDonald

10.3 Option Appraisal

This section outlines the processes involved to identify the preferred strategic option which is best aligned to scheme objectives before more detailed options could be developed.

This exercise, as noted above, was predominantly aligned to the scheme objectives in order to ensure the selected preferred option sufficiently addressed the key issues and opportunities identified. A multi-criteria assessment was therefore used to assess the performance of each 'Strategic Alternative Option' against each objective.

This sift was undertaken using Mott MacDonald's in-house Investment Sifting and Evaluation Tool (INSET). INSET is designed to be simple, flexible, replicable, and transparent. It is based on Green Book compliant Multi-Criteria Decision Analysis (MCDA). INSET draws upon standard tools for comparing scheme options, primarily DfT's EAST (Early Assessment and Sifting Tool) and adds additional functionality.

INSET applies weighted scoring to each option based on how well an option meets identified criteria. Criteria is used to establish how well each option aligned with objectives and how easily they could be delivered; this facilitated a comparison and ranking of all design options on the long list.

10.3.1 Application of INSET

INSET utilises overarching themes and assessment criteria under these themes to systematically test and appraise options appropriate for the required level of sifting or assessment. As noted above, themes and criteria for this INSET appraisal were informed by the scheme objectives – see Section 9. An additional theme was added to cover 'Deliverability' as although the ability to meet objectives is essential, only schemes which are deliverable in terms of acceptability, constructability, cost, and timescales should be considered. Therefore, 7 themes were identified as follows:

- Growth
- Regeneration
- Sustainability
- Integration
- Safety
- Access for All
- Deliverability

These themes were weighted equally by agreement with LCR CA.

These themes were broken down into in a number of sub-criteria following the format of the scheme objectives upon which the scoring was applied. The appraisal framework for use within this sift is therefore set out within the table below.

Table 10.2: Appraisal Themes and Criteria

Theme	Description/main Criteria	Sub criteria	Weighting
Inclusive Growth	Facilitate long term economic growth in Liverpool City Region by providing sufficient capacity to allow people to access opportunities	• Provide sufficient capacity for new rail demand to access the rail network for employment, education, retail and leisure without hinderance	1
		• Increase car parking capacity on the Kirkby branch reducing parking pressure at other Merseyrail stations and facilitating new demand	1
		• Improve connectivity to the rail network for currently poorly served areas within the Liverpool City Region and wider Hinterland improving journey times and accessibility.	1
Regeneration	Facilitate the regeneration of Kirkby by providing enhanced access to existing and new development	• Support new development in Kirkby and across the City Region by an integrated approach to development and connectivity providing direct access opportunities from the rail network	1
		• Support the regeneration of Kirkby by providing a new rail gateway and associated connectivity	1
		• Support other regeneration aspirations in Liverpool City Region by maximising the use of public transport and ensuring the area is accessible and therefore attractive to investors.	1
Sustainability	Reduce the impact of travel in the City Region by providing a high capacity alternative to the private car, resulting in improved wellbeing, health and environmental outcomes and contributing towards the LCR Net Zero Carbon by 2040 target	• Improve air quality in the City Region by improving sustainable travel options	1
		• Reduce road congestion, carbon emissions and longer-distance commuting by car into Liverpool	1
		• Improve health by encouraging more sustainable modes of travel, better providing for existing active travel desire lines	1
		• Improve wellbeing by reducing road travel related stress during journeys	1
Integration	Create better integration between rail and the rest of the transport network to encourage modal shift to more sustainable modes of transport	• Better facilitate existing and future travel patterns by creating enhanced integration between rail and bus, walking and cycling modes	1
		• Create improved Park and Ride opportunities at Liverpool City Region rail stations	1
Safety	Improve safety on the transport network	• Provide infrastructure to allow anyone that wishes to access the rail network the ability to do this safely and securely	1
		• Reduce road-based accidents by encouraging mode shift to rail-based modes	1
Access for All	Maintain and, where possible, improve upon access to the rail network for all people regardless of disability	• Provide step-free access to all rail platforms within Liverpool City Region, ensuring that all new provisions and routes are step-free including those from interface with surrounding highways and interchange locations	1
		• Provide safe and secure access to all rail platforms in Liverpool City Region for people with non-mobility-related disabilities including sensory, cognitive and other hidden impairments	1
Deliverability	-	• Public acceptability	1
		• Stakeholder acceptability	1
		• Affordability	1
		• Constructability	1

Source: Mott MacDonald

A 5-point scoring system was used to score how well each option was likely to deliver benefits against each of the sub-criteria. Scores ranged from -2 to +2, with -2 being highly negative or detrimental to meeting the criteria and +2 being highly positive or being able to meet the criteria very well. The scale was developed in order to effectively differentiate between the closely related options developed within the long list. A weighted average score was then calculated for each option based on weightings assigned to the main assessment criteria, resulting in a score being attributed to each option.

As the information available for each of the options at this stage was only at a very high level, scoring was undertaken in a qualitative manner by a multidisciplinary panel of experts from Mott MacDonald.

10.3.2 Results

Table 10.3 below summarises the scores from INSET demonstrating the highest ranking option was the development of a new station at Headbolt Lane which would therefore be taken forward for further option development.

Table 10.3: INSET Results

Rank	Scheme	Inclusive Growth	Safety	Access for All	Regeneration	Sustainability	Integration	Deliverability	Total Score (average)
1	Headbolt Lane Station	1.67	1.50	1.00	2.00	2.00	2.00	0.50	1.52
2	Dedicated bus links to stations	0.67	1.00	0.50	1.00	1.00	2.00	0.00	0.88
3	Rapid Transit Network	0.33	1.50	0.00	1.00	1.75	1.50	-1.00	0.73
4	Increased Bus Capacity	0.33	1.00	0.00	1.00	1.00	1.50	0.00	0.69
5	Do Nothing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Increase Highway Capacity	0.33	-1.50	0.00	-0.33	-2.00	0.50	-1.25	-0.61

Source: Mott MacDonald

An overview of the rationale as to why strategic alternatives to a new station at Headbolt lane were rejected is set out in Table 10.4 below.

Table 10.4: Rationale for option selection/rejection

Option	Type	Description	Initial Sift Decision and Rationale
Do Nothing	Do Nothing	Retain network and station at Kirkby as at present - no increase in connectivity to the rail network for residents in north Kirkby.	Reject - existing connectivity constraints unaddressed and no ability to offer large residential areas direct access to the rail network required to access opportunity and facilitate economic growth within the city region.
Increase Highway Capacity	Non-Rail Alternative	Increase highway network between north Kirkby and Liverpool City Centre through provision of a new motorway to address current congestion issues and support movement to key opportunities in the city centre.	Reject - undesirable as it would increase car trips to the city centre further reducing local air quality levels and increasing car parking pressures in the city centre. This option would also require removing priority for other modes e.g. removing pedestrianised streets and was therefore considered unsustainable. Fails to meet a number of strategic objectives. Low car ownership has also been identified as a key issue within this area of Knowsley and therefore this option would not be appropriate to support access to opportunity for residents within this area.
Dedicated Bus Links to station	Non-Rail Alternative	Explore opportunities with bus operators to provide dedicated bus links to rail stations to support use of the rail network between Kirkby and Liverpool and mitigate existing constraints associated with parking at rail stations.	Reject – undesirable due to the existing issues with the bus network between Kirkby and Liverpool in relation to long and unreliable journey times. Bus speeds between Kirkby and Liverpool are generally uncompetitive with rail and therefore unlikely to generate the same mode shift and corresponding economic and environmental benefit as trains.
Increased Bus Capacity	Non-Rail Alternative	Strengthen the existing bus network between Kirkby and Liverpool City Centre by creating new routes to the key housing areas, and by increasing frequencies and vehicle capacities.	Reject - opportunities for increasing the numbers of buses on the network and the capacity on the buses themselves are somewhat limited, particularly when originating or terminating within the city centre. The Queen Square Bus Station is already operating at capacity with no space for additional stops or services. The Liverpool City Centre Bus Routeing Strategy seeks to rebalance the network by transferring some services from Queen Square to Liverpool One Bus Station, but this facility would also require additional stops to take significantly more passengers following completion of the strategy. It is also noted that bus speeds between Kirkby and Liverpool are generally uncompetitive with rail and therefore unlikely to generate the same mode shift and corresponding economic and environmental benefit as trains.
Rapid Transit Network	Non-Rail Alternative	Invest in the creation of a new mode of transport such as an LRT or BRT network connecting the borough of Knowsley to Liverpool. The network would serve the key residential areas with high frequencies and high quality transit vehicles.	Reject - although there is potential for this option to form part of a longer term package of investments, the issue at Headbolt Lane and the surrounding residential areas is current and requires immediate action. Such new networks would be highly unlikely to address the connectivity constraints generated existing rail network across the LCR. Therefore, an option of this nature that requires years of planning and a high cost is deemed an inappropriate solution.
Headbolt Lane Station	Rail Intervention	Development of a new rail station at Headbolt Lane between Kirkby and Rainford to serve key residential areas of Simonswood, Northwood and Tower Hill which do not currently have direct access to the rail network.	Include

Source: Mott MacDonald

10.4 Option Development (GRIP 1-2)

After establishing that a rail-based alternative with a new station at Headbolt Lane was the only way to meet the scheme objectives, and address current connectivity constraints, more detailed alternatives were developed and appraised through the GRIP process.

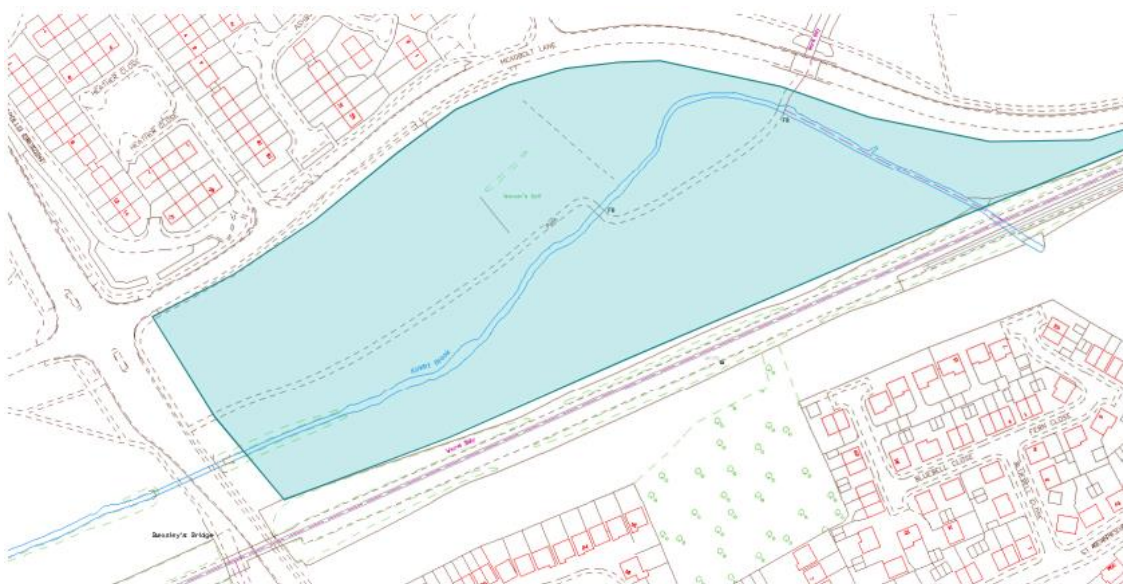
Before working to develop options for a new station at Headbolt Lane, the scope and extents of the scheme were agreed. This is outlined within the subsequent sub section.

10.4.1 Scope

The geographic scope of this work and options considered is limited to the line of route between Kirkby Station and Wigan Wallgate Station (NW6015). As discussed previously in Section 10.2.1, only options for a new station at Headbolt Lane were to be considered to address the key issues and opportunities as the only viable option to effectively meet the scheme objectives.

The proposed extents of the site and its location adjacent to Headbolt Lane is demonstrated in Figure 10.2 below.

Figure 10.2: Headbolt Lane Site



Source: Mott MacDonald

10.4.2 Station Options Development

Numerous options have been considered for a new station at Headbolt Lane with regard to track layout, station platform/building type, and location. The options detailed seek to develop a suitable solution for the client/stakeholders, whilst considering operations and maintenance and delivering value for money. Additionally, the solution should not preclude passive provision to further extension of the network to Skelmersdale in the future.

The long list of options considered for a new station at Headbolt Lane are set out within the table below.

Table 10.5: New station options Long List

Option	Description
0	Do Nothing
1	Locate new station West side of Overbridge 53a. Move buffer stop from Kirkby to Headbolt Lane.
1a	As option 1 but locate new station East side of Overbridge 53a.
2	Extend the existing double track at Fazakerley to West side of Underbridge 57B. Move buffer stop from Kirkby to Headbolt Lane.
2a	As option 2 but locate station on East side for Overbridge 53A.
3	Double track through Kirkby Station and open a second platform. Move buffer stop from Kirkby to Headbolt Lane.
3a	As option 3 but locate station on East side for Overbridge 53A
3b	Combine options 2 and 3
3c	As option 3b but locate station on East side for Overbridge 53A
4	Double track to a location East of Overbridge 57. Open a second platform at Kirkby. Move buffer stop from Kirkby to Headbolt Lane
4a	As option 4 but locate station on East side for Overbridge 53A
5	Double track from Fazakerley to Headbolt Lane. Move buffer stop from Kirkby to Headbolt Lane
5a	As option 5 but locate station on East side for Overbridge 53A
6	Create an Island platform (6+6) at Headbolt Lane with two tracks. Access to platform through buffer stops. Move buffer stop from Kirkby to Headbolt Lane. Double track to Kirkby station (~400m short of Kirkby), and reinstate second span of underbridge 55
6a	Create two platforms (6+10 includes diesel end) at Headbolt Lane with two tracks. Access to platform through buffer stops. Move buffer stop from Kirkby to Headbolt Lane. Double track ~400m short of Kirkby station. Reinstate second span of underbridge 55
6b	Create two platforms. Access to platform through buffer stops. Move buffer stop from Kirkby to Headbolt Lane. Create a loop between Overbridge 57 and underbridge 55.
6c	Create an island platform. Access to platform through buffer stops. Move buffer stop from Kirkby to Headbolt Lane
6d	Create two platforms. Access to platform through buffer stops. Move buffer stop from Kirkby to Headbolt Lane.

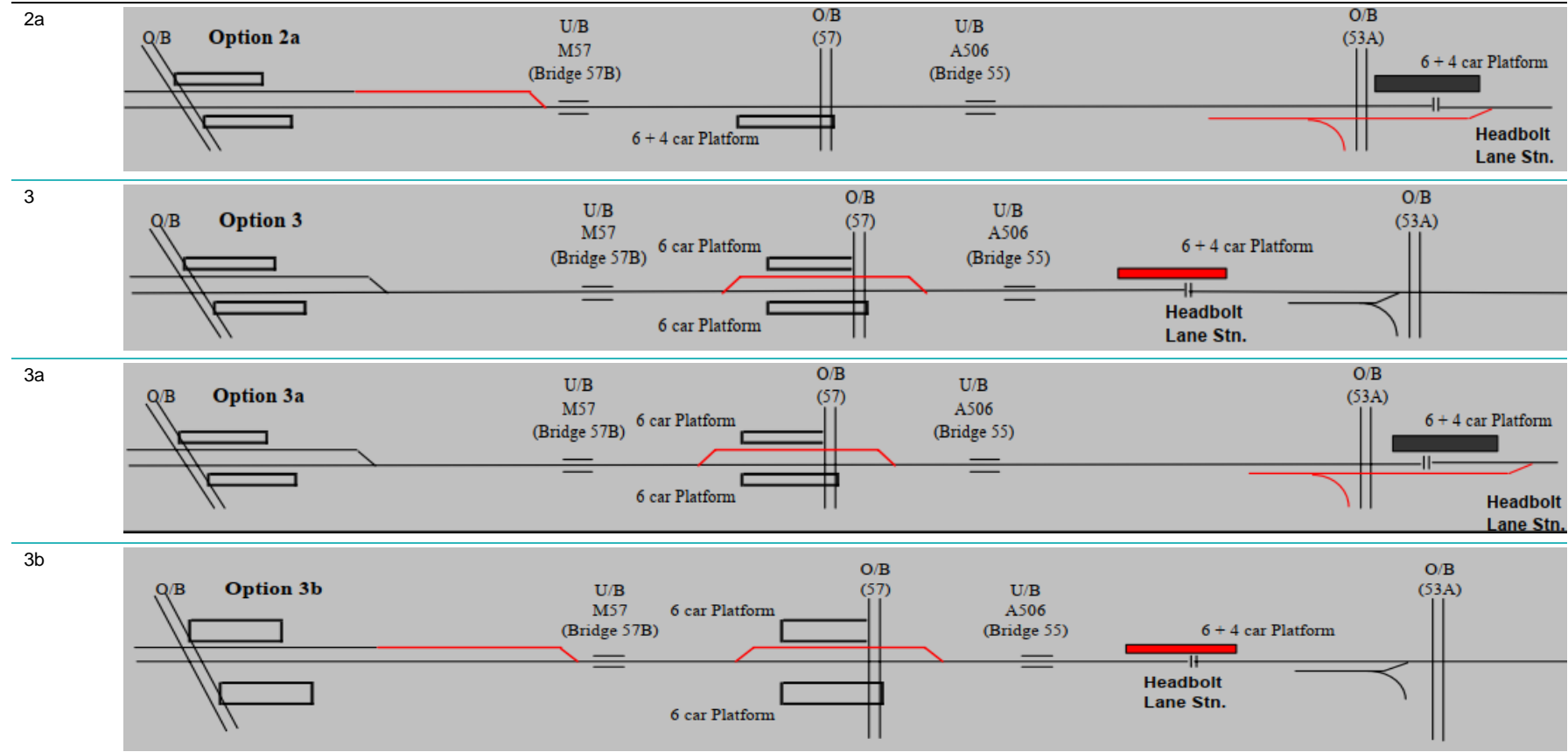
Source: Network Rail Options Report Headbolt Lane to Kirkby 3rd Rail electrification extension plus new Headbolt Lane Station (2007)

These options are illustrated as straight line diagrams in the table below. It should be noted that the 6 car platforms referred to in these diagrams are 6-car 507/508 and are equivalent to 8-car 777.

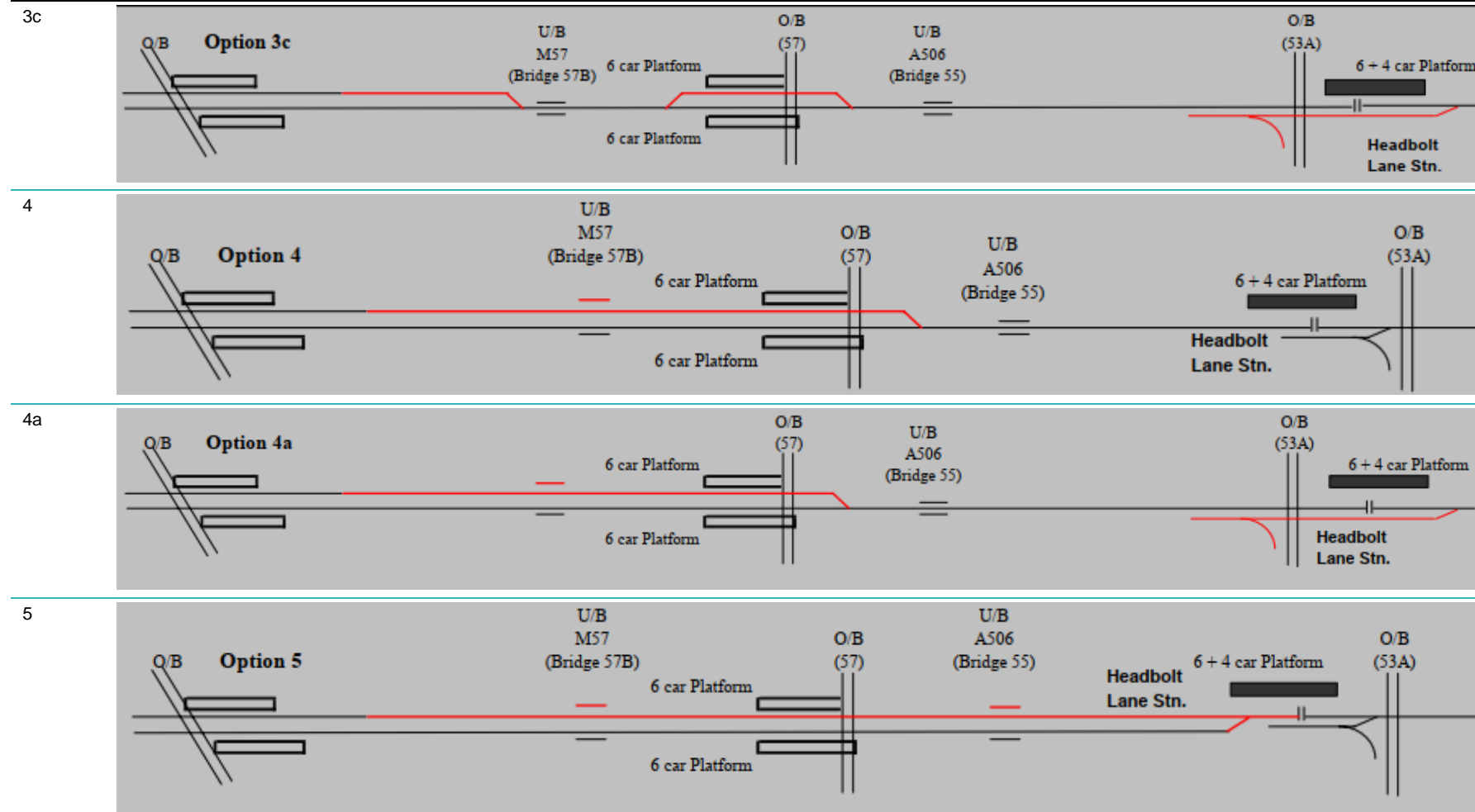
Table 10.6: Long List- Straight Line Diagrams

Option	Layout
Existing Layout	<p>Existing Layout</p> <p>O/B (57A)</p> <p>U/B M57 (Bridge 57B)</p> <p>O/B (57)</p> <p>U/B A506 (Bridge 55)</p> <p>O/B (53A)</p> <p>Fazakerley</p> <p>Kirkby</p> <p>Knowsley Freight Depot</p> <p>WJK ← → WKL2</p>
1	<p>Option 1</p> <p>O/B (57A)</p> <p>U/B M57 (Bridge 57B)</p> <p>O/B (57)</p> <p>U/B A506 (Bridge 55)</p> <p>O/B (53A)</p> <p>6 + 4 car Platform</p> <p>6 + 4 car Platform</p> <p>Headbolt Lane Stn.</p>
1a	<p>Option 1a</p> <p>O/B (57A)</p> <p>U/B M57 (Bridge 57B)</p> <p>O/B (57)</p> <p>U/B A506 (Bridge 55)</p> <p>O/B (53A)</p> <p>6 + 4 car Platform</p> <p>6 + 4 car Platform</p> <p>Headbolt Lane Stn.</p>
2	<p>Option 2</p> <p>O/B (57A)</p> <p>U/B M57 (Bridge 57B)</p> <p>O/B (57)</p> <p>U/B A506 (Bridge 55)</p> <p>O/B (53A)</p> <p>6 + 4 car Platform</p> <p>6 + 4 car Platform</p> <p>Headbolt Lane Stn.</p>

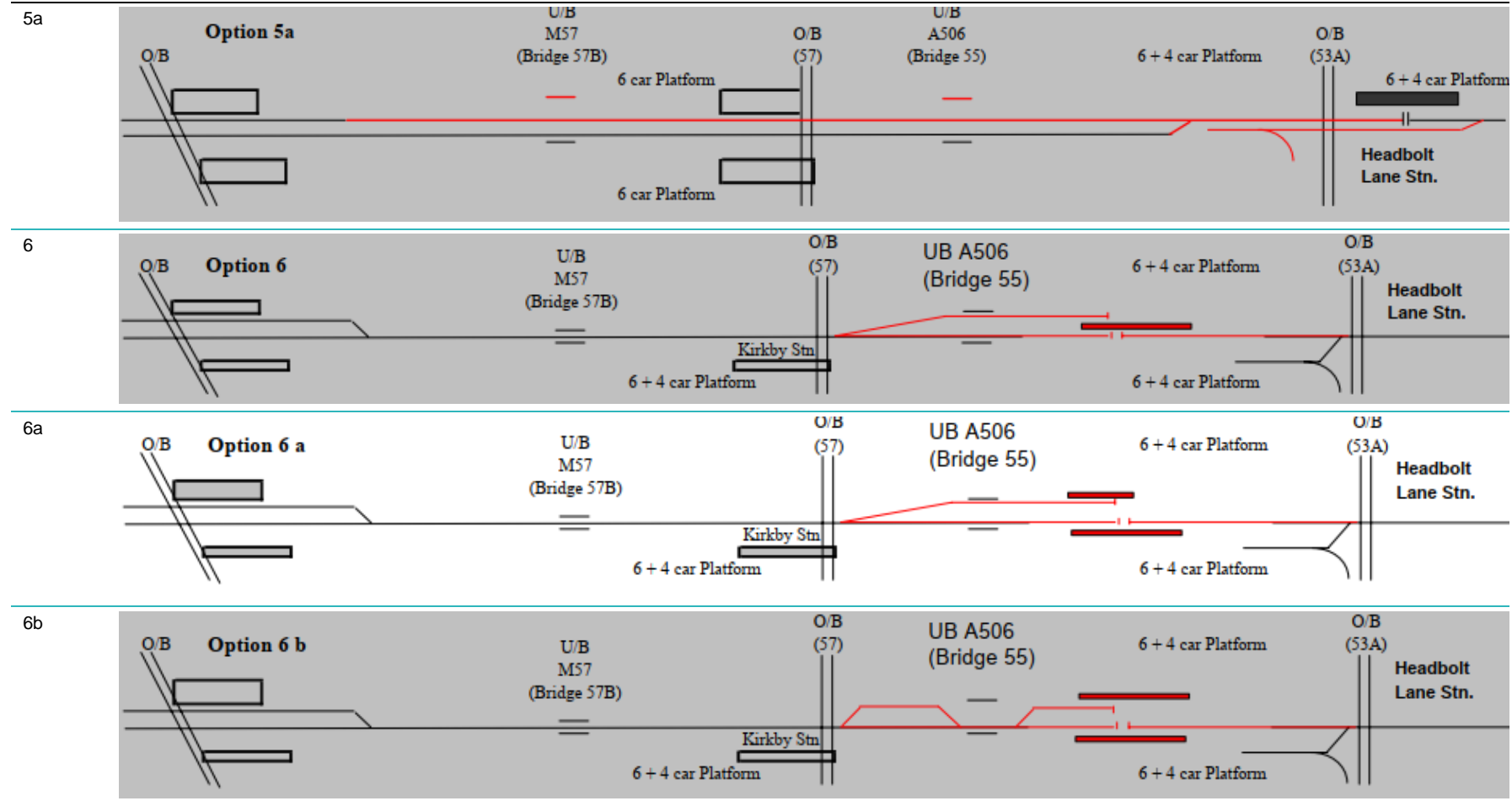
Option Layout



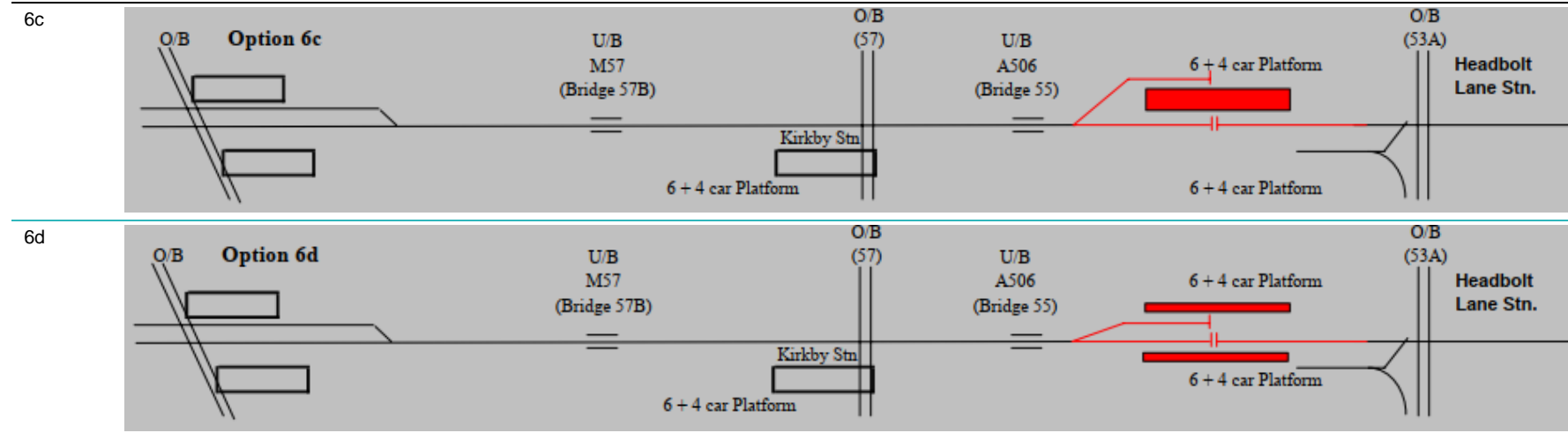
Option Layout



Option Layout



Option Layout



Source: Network Rail Options Report Headbolt Lane to Kirby 3rd Rail electrification extension plus new Headbolt Lane Station (2007)

The option development process therefore led to the production of 17 options with various platform layouts. These 17 options were subject to more detailed appraisal through the GRIP 2 study.

Initially, a Strength, Weaknesses, Opportunities, and Threats (SWOT) analysis was undertaken for each option to indicate whether the scheme was viable or not. A summary of the SWOT analysis for each option is set out in the table below.

Table 10.7: SWOT Analysis

Ref	Description	Strengths & Opportunities	Weaknesses & Threats	Viable?
0	Do Nothing	<ul style="list-style-type: none"> No capital cost 	<ul style="list-style-type: none"> Does not deliver any of the client's aspirations. 	Not Viable
1	Locate new station West side of Overbridge 53a. Move buffer stop from Kirkby to Headbolt Lane.	<ul style="list-style-type: none"> Low cost option Utilises NR land Very small change to P-Way No increase in signalling IECC Operations staff has stated they can easily accommodate the change E&P no significant change – i.e. use spare breaker No major civil work to accommodate alignment 	<ul style="list-style-type: none"> Does not deliver a robust 15min service. 	Not Viable
2	Extend the existing double track at Fazakerley to West side of Underbridge 57B. Move buffer stop from Kirkby to Headbolt Lane.	<ul style="list-style-type: none"> Utilises NR land No increase in signalling IECC Operations staff has stated they can easily accommodate the change, E&P no significant change – i.e. use spare breaker No major civil work to accommodate alignment 	<ul style="list-style-type: none"> Medium cost option Change to P-Way Does not deliver a robust 15 minute service 	Not Viable
3	Double track through Kirkby Station and open a second platform. Move buffer stop from Kirkby to Headbolt Lane.	<ul style="list-style-type: none"> Utilises NR land IECC Operations staff has stated they can easily accommodate the change E&P no significant change – i.e. use spare breaker. 	<ul style="list-style-type: none"> High cost option Change to P-Way Increased signalling Track lowering to clear O/B 57 at Kirkby Additional platform required at Kirkby Increases journey time (4mins to Headbolt, 2.5mins to Liverpool) Does not deliver a robust 15 minute service. 	Not Viable
3b	Combine options 2 and 3	<ul style="list-style-type: none"> Utilises NR land IECC Operations staff has stated they can easily accommodate the change 	<ul style="list-style-type: none"> Very high cost option Change to P-Way Increased signalling Track lowering to clear O/B 57 at Kirkby Additional Platform Required at Kirkby Increases journey time (4mins to Headbolt, 2.5mins to Liverpool) Does not deliver a robust 15 minute service 	Not Viable

Ref	Description	Strengths & Opportunities	Weaknesses & Threats	Viable?
4	Double track to a location East of Overbridge 57. Open a second platform at Kirkby. Move buffer stop from Kirkby to Headbolt Lane.	<ul style="list-style-type: none"> Utilises NR land IECC Operations staff has stated they can easily accommodate the change. 	<ul style="list-style-type: none"> Presents no significant benefit over option 2, 3 or 3b Very high cost option Change to P-Way Increased signalling Doubling of overbridge 57B required (M57) Probable requirement for new E&P sub station Track lowering to clear O/B 57 at Kirkby Additional Platform Required at Kirkby Increases journey time 	Not Viable
5	Double track from Fazakerley to Headbolt Lane. Move buffer stop from Kirkby to Headbolt Lane.	<ul style="list-style-type: none"> Utilises NR land, IECC Operations staff has stated they can easily accommodate the change Delivers a robust 15min service 	<ul style="list-style-type: none"> Presents no significant benefit over option 2, 3, 3b and 4 Very high cost option Significant E&P upgrade required Change to P-Way Increased signalling Doubling of overbridge 57B required (M57) Doubling of overbridge 55 required (A506) Probable requirement for new E&P sub station Track lowering to clear O/B 57 at Kirkby Additional Platform Required at Kirkby 	Not Viable
6	Create an Island platform (6+4) at Headbolt lane with two tracks. Access to platform through buffer stops. Move buffer stop from Kirkby to Headbolt Lane. Double track to Kirkby station (~400m short of Kirkby), and reinstate second span of underbridge 55.	<ul style="list-style-type: none"> Utilises NR and Council land IECC Operations staff has stated they can easily accommodate the change Delivers a robust 15min service High cost option Small change to P-Way Agreement MA 17735 (signed 1970), details the condition of reinstatement of the second span – i.e. liability of the Council. 	<ul style="list-style-type: none"> Increase in signalling, Increase cost and risk related to creating a new track bed and significant cost of modifying the landing of underbridge 55; length and width, New E&P sub station, Significant cost in implementing an Island Platform - modification s to Underbridge 55, New E&P substation required. 	Not Viable

Ref	Description	Strengths & Opportunities	Weaknesses & Threats	Viability?
6a	Create two platforms (6+10 includes diesel end) at Headbolt lane with two tracks. Access to platform through buffer stops. Move buffer stop from Kirkby to Headbolt Lane. Double track to Kirkby station (~500m short of Kirkby), and reinstate second span of underbridge 55.	<ul style="list-style-type: none"> Utilises NR and Council land IECC Operations staff has stated they can easily accommodate the change Delivers a robust 15min service Medium cost option Retains existing track bed, thereby reducing risk and cost of an Island platform Agreement MA 17735 (signed 1970), details the condition of reinstatement of the second span – i.e. liability of the Council. 	<ul style="list-style-type: none"> Increase in signalling Increase cost and risk related to creating a new track bed New E&P substation required Small change to P-Way 	Viable
6b	Create two platforms. Access to platform through buffer stops. Move buffer stop from Kirkby to Headbolt Lane. Create a loop between Overbridge 57 and underbridge 55.	<ul style="list-style-type: none"> Utilises NR and Council land, IECC Operations staff has stated they can easily accommodate the change High cost option Small change to P-Way Retains existing track bed, thereby reducing risk and cost of an Island platform 	<ul style="list-style-type: none"> Increase in signalling – six signalling units; probably just as expensive as re-instating the second span on underbridge 55, Does not deliver a robust 15min service, New E&P substation required. 	Not Viable
6c	Create an island platform. Access to platform through buffer stops. Move buffer stop from Kirkby to Headbolt Lane.	<ul style="list-style-type: none"> Utilises NR and Council land IECC Operations staff has stated they can easily accommodate the change Delivers a robust 15min service? Low cost option Small change to P-Way Retains existing track bed, thereby reducing risk and cost of an Island platform. 	<ul style="list-style-type: none"> Increase in signalling Does not comply with Rules of the Plan Does not deliver a robust 15min service Significant cost in implementing an Island Platform - modifications to Underbridge 55. 	Not Viable

Ref	Description	Strengths & Opportunities	Weaknesses & Threats	Viable?
6d	Create two platforms. Access to platform through buffer stops. Move buffer stop from Kirkby to Headbolt Lane.	<ul style="list-style-type: none"> Utilises NR and Council land IECC Operations staff has stated they can easily accommodate the change Medium cost option, Retains existing track bed, thereby reducing risk and cost of an Island platform 	<ul style="list-style-type: none"> Increase in signalling Change to P-Way, Does not comply with Rules of the Plan 2007, Does not deliver a robust 15min service, Other timetabling impacts; The journey time from Liverpool to Southport is increased by 1 minute, The 1 minute performance allowance approaching Ormskirk would be reduced to a ½ minute, Non-compliant as the Liverpool turnaround will be reduced from 4 minutes (ROTP Min) to 3 minutes. All the timetable rules are adhered to but the flighting of services may not be as robust if performance and perturbed timings are considered. 	Not Viable

Source: Options Report Headbolt Lane to Kirkby 3rd Rail electrification extension plus new Headbolt Lane Station (2007)

This analysis demonstrated that option 6a was the most viable solution which should be considered for further design refinement.

10.5 Option Refinement (GRIP 3/3a)

Following the option development process undertaken as part of the GRIP 1-2 study, as set out in the previous section above, Network Rail commissioned Mott MacDonald to produce a GRIP 3A option selection study. The purpose of this study was to determine the preferred options for all infrastructure interventions including:

- **Platforms** – the platform requirements have been reviewed before identifying the preferred platform layout and front wall structural solution.
- **Station building** - the preferred construction option and structural solution has been identified.
- **Car park** - a number of car park layouts have been compared before presenting a preferred car park layout and future expansion methodology.
- **Cycle parking** - different storage solutions have been reviewed and the preferred storage option has been presented.

Full details of the various options for these infrastructure interventions and how these were considered and appraised can be found within the Skelmersdale Rail Link GRIP 3A: Headbolt Lane Station Civils Options Report- 139606-MMD-REP-ECV-000004. A summary of the preferred option for each intervention is set out below.

10.5.1 Platform waiting rooms and shelters

The proprietary modular waiting shelter products were found to be the most suitable and cost-efficient design option. The waiting shelter may be specified as a proprietary approved Merseytravel product, therefore minimising bespoke design requirements, whilst also providing simple installation.

Figure 10.3: Example proprietary product waiting shelters



Source: Merseytravel

10.5.2 Pedestrian access

The preferred option for pedestrian access is through provision of a new pedestrian footbridge.

The proposed option allows for a more efficient design programme, steel fabrication and improved understanding during construction, resulting in significant cost savings to the project.

In addition, the familiar construction methods will allow for improved site safety. At this stage it is assumed that the site conditions and station requirements do not require a bespoke footbridge design solution

10.5.3 Step free access structure

An at-grade crossing in-between the buffer stops has been identified as the preferred option for step free access to the station. This will be fully compliant with the latest guidance for accessible stations.

Figure 10.4: At-grade step-free crossing



Source: Merseytravel

10.5.4 Platform layout preferred option

Platform layout Option A was selected out of 3 options (A, B and C). This option will allow the most efficient overall platform design due to the reduced platform length and allows for efficiency in platform width design. Furthermore, the reduction in overall platform area allows for construction material cost savings.

Option A would see the platform access structures located on the operation platform, set back from the platform edge. Consequently, the overall platform length is 135m.

To locate larger structures such as waiting shelters or the lift shaft, the platform width is increased over a short length, to maintain the correct clearances.

A 3D visualisation of the platform arrangement is set out in the figure below.

Figure 10.5: 3D visual of platform arrangement



Source: Merseytravel

10.5.5 Station building

It is proposed that Headbolt Lane station utilises a steel frame with modular design and construction solution. A modular design offers significant safety benefit when considering simplified design and construction. In addition, the modular method may maintain an attractive station building design, whilst remaining practical for passenger use. When considering Merseytravel flagship station building designs, steel structures with glass facades remains a prominent feature, therefore the modular design will utilise a steel structure rather than timber.

10.5.6 Cycle parking

A two tier storage facility with a shelter is recommended for construction at the station. This option is the preferred cycle parking option as it allows for the most efficient storage to space solution. The area required is minimised, allowing a shelter design to be incorporated at a lower cost, when compared to traditional cycle storage facilities.

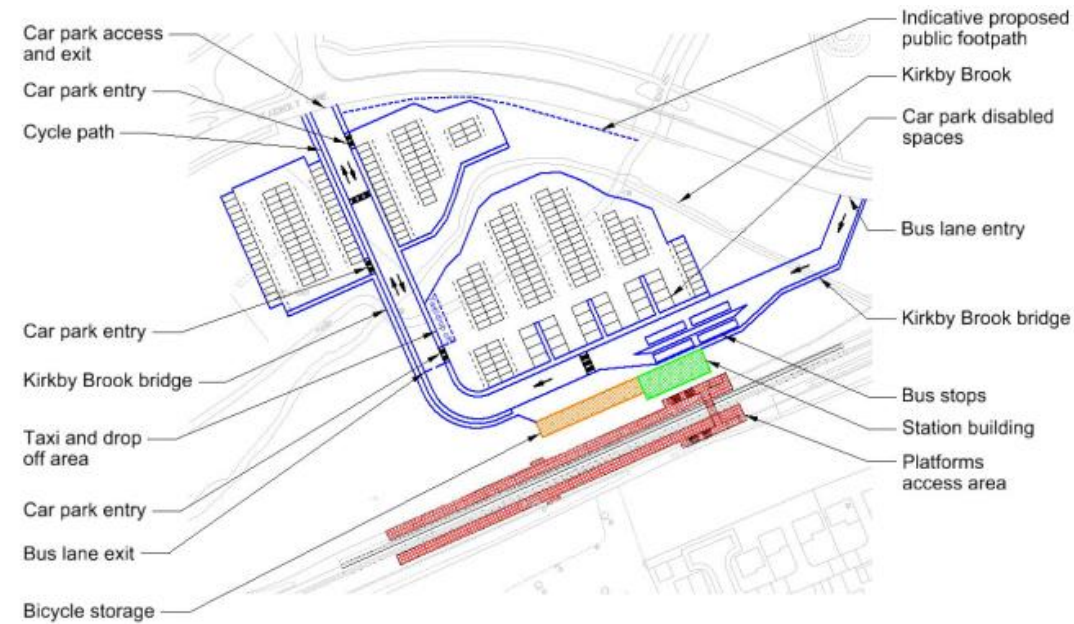
It is proposed that the initial 100 capacity storage facility is located in an area close to the station building entrance. In addition, through locating the cycle storage away from the car park, it will allow for the passive expansion to be located in the same place (up to 200 additional spaces). The car park layout in Figure 10.6 shows the location of the cycle parking.

A cycle shelter is preferable as it encourages passengers to travel to the station using bicycles and leave them safely stored and out of potentially inclement weather. Consequently, a storage area should be provided that will ensure bicycles can be securely locked and be protected from weather conditions.

10.5.7 Car park

The recommended car park option would see the car park separated into three sections to utilise the maximum available space throughout the Headbolt Lane site and to minimise risks, disruption, or changes to Kirkby Brook. The proposed general arrangement is illustrated in the figure below.

Figure 10.6: Car park general arrangement



Source: Merseytravel

This option removes the requirement for any intervention at Kirkby Brook, whilst allowing all car parking spaces to be within 200m of the station.

Recommended expansion option: multi-storey. The multi-storey expansion option allows for minimal disruption to the rest of the Headbolt Lane site. This design is preferable due to the complex topography found at Headbolt Lane, through minimising requirement for further expansion, this will reduce the complexities associated with cut and fill constructions. In addition, the design will remove the cost of bringing additional areas of the site up to the required level.

10.6 Battery Electric Testing and Conversion

Following the identification of the preferred scheme and the submission of the previous (Outline) Business Case stage, Liverpool City Region Combined Authority in partnership with Merseytravel and Merseyrail Electrics commissioned the testing of a converted Class 777 bi-mode electric and battery train for potential use on the Kirkby / Headbolt Lane route. The tests, undertaken during spring and early summer 2021, included comprehensive experimentation with range, battery life, acceleration / deceleration / speed, and performance under load. In each of these areas the unit performed as well as, or better than, expected, and the trial was therefore considered a success. Specifically for this project, the testing confirmed that a class 777 unit under battery power could easily run between Kirkby and Headbolt Lane and back again, meeting timetable requirements, without requiring a recharge.

As result, the preferred option for a new station at Headbolt Lane has been modified to remove the need to provide an extension of third rail electrification between Kirkby and Headbolt Lane, and instead the scheme now includes the modification of 6no class 777 units to battery-electric capability, and the purchase of an additional unit with this capability.

10.7 Summary

This section has demonstrated how a range of options to address the current gaps in connectivity in this area of Kirkby were considered and how the development of a new station at Headbolt Lane was the most appropriate solution to achieve the scheme objectives successfully. The later process undertaken to develop a range of various layout options for a new station and determine the preferred option have also been summarised within this section which has led to the following key outputs which make up the preferred Headbolt Lane station scheme:

- A new station with multi-modal interchange facilities at Headbolt Lane;
- The conversion of 6no class 777 train units to battery-electric bi mode operation, and the purchase of an additional unit with this capability, providing a total of 7 battery capable trains;
- Cycle parking facilities – an initial 100 spaces with passive provision for an additional 200 spaces;
- 300 space car park with potential to extend to 500 spaces in the future;
- Bus stop provision within the station;
- Drop off area within the station; and
- Active travel enhancements on routes to/from the station, including:
 - A new signalised crossing at the junction of Headbolt Lane and County Road;
 - Traffic calming measures on Headbolt Lane between Fallowfield and Hollinghurst Road (0.6km);
 - A 4m segregated cycleway and footway on the southern side of Headbolt Lane between County Road and Fallowfield (0.24km);
 - A 4m cycleway and footway on the north side of Headbolt Lane between Fallowfield and Southcroft Drive (0.17km);
 - A new toucan crossing of Headbolt Lane adjacent to the main entrance/exit; and
 - A 4m wide segregated cycleway and footway between Limetree Road and County Road to the south of the rail line (0.38km).

11 Strategic Case - Wider Strategic Benefits of Battery Operation

11.1 The Headbolt Lane Scheme

As noted in the previous section, the Headbolt Lane Station preferred scheme option includes the conversion of 6no class 777 Merseyrail trains to battery-electric bi-mode operation and the procurement of an additional unit with this same capability. This will provide a total of seven class 777 units with the capability to extend beyond the current extents of the electrified third rail DC network in Liverpool City Region (and neighbouring areas), without costly electrification of the railway.

While the units earmarked for this mode of operation will initially be few in number (seven out of the fifty three class 777 units procured from Stadler) it is hoped, and considered highly likely, that the conversion of units to bi-mode operation will continue beyond this project to allow a greater proportion of these units to be so equipped. Indeed, the class 777 rolling stock were specified with passive provision for dual voltage AC / DC operation to allow them to extend beyond the confines of the DC network onto the (at the time) newly electrified Chat Moss and St Helens routes, and the West Coast Mainline between Liverpool, Liverpool South Parkway and beyond. Modification of the units to provide battery provision in addition to this further increases the flexibility and range of these trains.

11.2 Wider Implications – Liverpool City Region Long Term Rail Strategy

The Liverpool City Region LTRS, published in 2014 and revised in 2018, contains significant reference to extensions of the current Merseyrail network beyond the current extents to serve new markets, destinations and attractors, creating the opportunity for new journey opportunities and increasing the accessibility of the residents of Liverpool City Region. As battery-electric bi-mode operation was in its infancy when this strategy was published, it was initially envisaged that these extensions would be facilitated by costly electrification of lines adjacent to the Merseyrail network, and the equipping of the new Merseyrail trains with dual voltage AC and DC capability.

The opportunities provided by the rapid development of battery technology cannot be overstated in this regard since this provides the potential to facilitate a proportion of the network extensions without further electrification (either AC or DC). This in turn will allow Merseyrail services to run, without interruption, on to destinations beyond the current extents of the Wirral and Northern Lines, and onto sections of the current City Line helping to realise the original vision of Merseyrail as a 360 degree network.

In particular, the equipping of additional class 777 units for battery-electric bi-mode operation has the potential to allow Merseyrail services from central Liverpool to be extended in the following ways (shown in Figure 11.1):

- The onward running of Northern Line services beyond Headbolt Lane to Skelmersdale and Wigan Wallgate via the line through Rainford;
- The onward running of Northern Line services beyond Ormskirk to Burscough and Preston via Rufford and Croston;
- The onward running of Northern Line services beyond Hunts Cross to Warrington via the Cheshire Lines Committee route;

- The onward running of Wirral Line services beyond Bidston to Heswall, Shotton and Wrexham via the Borderlands line;
- The onward running of Wirral Line services beyond Chester to Crewe; and
- The onward running of Wirral Line services beyond Ellesmere Port to Helsby, Frodsham and Runcorn East.

Figure 11.1: Potential Future Merseyrail Map Following Battery-Facilitated Extensions



Source: Liverpool City Region Combined Authority

In addition, the ability to run on-battery could provide a significant solution for connecting the Northern and City Lines via the Wapping Tunnel, allowing dual voltage AC / DC services to run cross-city between Northern Line and City Line destinations.

These extensions do not simply provide connectivity to new destinations in their own right, but provide additional connectivity into new strategic services envisaged under the Government's High Speed North Integrated Rail Plan²⁵ (incorporating HS2 Phase 2B and Northern Powerhouse Rail). Preston, Wigan, Warrington, and Crewe are, in particular, earmarked to become new major interchanges for high speed and classic rail services, providing connectivity to London, Scotland, Birmingham, Manchester and across the Pennines to Yorkshire and the North East. As such, the investment of equipping further Merseyrail trains with battery connectivity could have very significant benefits in terms of two-way connectivity for people within Liverpool City Region, and could substantially increase the rail mode share of journeys made into and out of Liverpool City Region to strategic destinations.

²⁵ See: [Integrated Rail Plan: biggest ever public investment in Britain's rail network will deliver faster, more frequent and more reliable journeys across North and Midlands - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/news/integrated-rail-plan-biggest-ever-public-investment-in-britain-s-rail-network-will-deliver-faster-more-frequent-and-more-reliable-journeys-across-north-and-midlands)

12 Strategic Case- Stakeholders

Stakeholder opinion and feedback are valuable in helping to guide scheme development and refinement, and it is important that stakeholders consent, and agree as far as practically possible, with the ultimate preferred solution to remove any risk of objection. As such, a summary of the key stakeholders for Headbolt Lane is set out below as well as an indication of their interest and influence in the scheme and how they should be managed.

12.1 Key Stakeholders

A number of key stakeholders have been identified who will need to be engaged with throughout the development of the scheme. The key stakeholders and their role on the project/contribution to the scheme is outlined in the following table.

Table 12.1: Key Stakeholders

Stakeholder Group	Role
Knowsley Council	The local Planning and Highway Authority.
Merseyrail Electrics	Operators of the network and future role as SFO (Station Facilities Owner) for the station. They will be responsible for managing and operating the station.
Network Rail	Network Rail have entered into a contract with Merseytravel to deliver GRIP Stages 5 to 8. Network Rail and Merseytravel will enter into a Services Agreement setting out the remit, deliverables, and cost estimate.
Transport for North	Responsible for the development and management of the wider network in the North of England including a number of routes that will have a direct impact on Headbolt Lane Station.
Department for Transport	Provide the guidance for the scheme's development and business case process.
Liverpool City Region Combined Authority	Approvers and majority-funders of the scheme.
Northern Rail	Responsible for running services from Kirkby station towards Wigan and Manchester Victoria. These services will be curtailed at Headbolt Lane.
Knowsley Freight Terminal	Operators of freight services running to Knowsley Freight Terminal at Kirkby although these services reverse to the east of Headbolt Lane station and do not directly interact with the scheme.
Environment Agency	Approvals required from the Environment Agency in relation to Kirkby Brook and parts of the site classified as Flood Zone 3.
Stadler	Manufacturer of rolling stock which will be operating on the route and infrastructure between Headbolt Lane and Kirkby.
British Transport Police	Will be responsible for enforcing law and order and managing safety in and around the station.
Public Transport Operators (Arriva/ Stagecoach) and Taxi Operators	Will be required for discussion around the potential for improving connectivity to the wider transport network and the potential for new stops adjacent to the station.

Source: Mott MacDonald

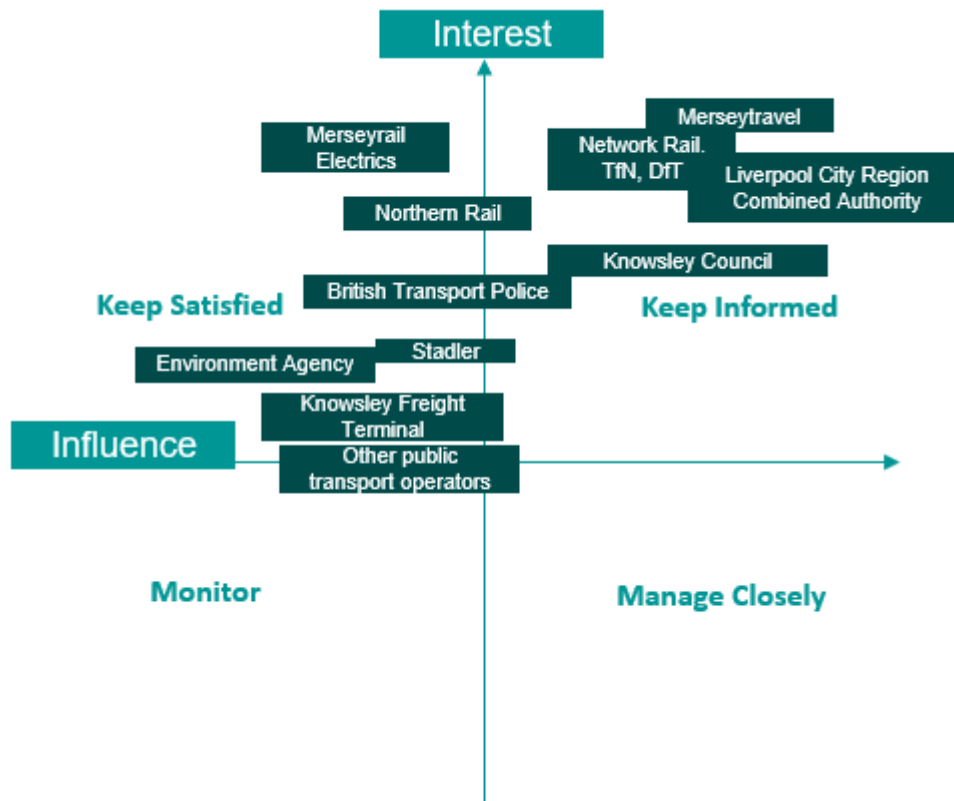
12.2 Stakeholder Classification

An exercise has been undertaken to establish the principal stakeholders with any interest in the project and their expected level of interest and influence which will largely dictate the method of engagement. Stakeholder interest can be broadly classified as follows:

- **Manage Closely-** Key stakeholders need to be actively and closely managed through frequent communications to keep this group fully engaged with the project. Methods of engagement will include regular face-to-face meetings and activities to allow for active discussion and consultation, supported by tailored communications that maintain an open dialogue between those closely involved with the project.
- **Keep Satisfied-** Relationships with higher profile stakeholders who may not have a direct interest in the project should be focussed on keeping the stakeholders satisfied. Methods of engagement will include regular, tailored communications that provide an appropriate level of information without excessive detail. Proactive communications on specific areas of interest may be appropriate and can increase these stakeholders' interest and support for the project.
- **Keep Informed-** Stakeholders in this group will be kept informed of developments through regular communications providing general updates and relevant information. Information will be accessible and general, with opportunities for stakeholders to share views on specific areas of interest as required. Methods of engagement will include project specific emails and updates, newsletters and briefings on items of specific interest.
- **Monitor-** Stakeholders in this group are unlikely to be actively seeking information about the project but may require general, accessible communications of the key messages.

Figure 12.1 Illustrates the influence and interest of the Headbolt Lane Scheme and how this informs the approach to communication.

Figure 12.1: Stakeholder Map



Source: Mott MacDonald

Conflicts between stakeholders are expected to be minimal as the scheme is likely to benefit the majority of key stakeholders identified. However, to mitigate any potential risks from stakeholder throughout the development of the scheme engagement will be carried out at all stages of the process.

Further details of how stakeholders have been engaged so far within the project development and what is planned in terms of future engagement is set out within Section 17.8 of the Management Case.

13 Strategic Case – Project Delivery

This section outlines the potential risks, constraints, and interdependencies which will affect the successful delivery of the scheme. These are identified at a high level within this FBC and will be further assessed in the subsequent stages of the scheme's development through GRIP stages 5 to 8.

13.1 Constraints

This section reviews the potential constraints identified at Headbolt Lane which may impact on the cost and delivery timescales of the scheme.

13.1.1 Platform Design

A number of constraints have been identified at Headbolt Lane relating to the platform design. Identification of these constraints will be used to assist the option selection process and is therefore considered in terms of how it will affect the overall platform design and construction considerations. These constraints include:

- **Site topography**- the site topography varies significantly and the ground is found to be lower towards the brook than the road and railway embankment. Due to the low levels across the site and high level of the embankment, an additional access structure may be required to provide access from the car park to the platform level. This may result in additional design considerations.
- **Railway embankment – earthworks**- the existing track is located on a raised embankment, which may cause constraints to design and construction due to earthwork requirements. A topographical survey is not available at this stage and therefore it is unknown the extent of earthworks and geotechnical design required. However, it is likely that this will be required as part of the detailed design element of the project.
- **Crane Access**- due to the proximity of existing housing, the construction access to the south side of the railway embankment may be reduced. It is anticipated that access to the south may be possible for a compound and haul road, and to this end an agreement for temporary land access may be considered during the construction process. If site constraints do not allow for lifting, possessions will be acquired to allow rail-mounted plant lifting. This may also significantly affect the construction programme or costing.

It should be noted that although these constraints will impact the design and options selection process they have been identified early within the development of the scheme and can therefore be appropriately mitigated without causing significant disruption to delivery in terms of cost and timescales.

13.1.2 Land Ownership

Many of the on-track components of the scheme are currently within the ownership of KMBC. This land will be transferred into the ownership of Merseytravel requiring an Environmental Impact Assessment (EIA) as part of the planning application. There are also a number of elements of the station design which may require land acquisition. This includes construction of the station building, access road, substation and access compound which are proposed to be built on what is understood to be council-owned land adjacent to the railway at Headbolt Lane.

13.1.3 Environment

As part of the planning application for the scheme, an Environmental Impact Assessment (EIA) has been undertaken and is presented in full within the Environmental Statement (ES) which can be accessed from the suite of planning application documents²⁶.

This ES has been prepared in accordance with the Town and Country Planning (EIA) Regulations 2017 in response to an EIA Screening and Scoping Opinion Request for the proposed Scheme which was submitted to Knowsley Metropolitan Borough Council (KMBC) in February 2021.

The identified significant residual effects on the environment, alongside appropriate mitigation measures are summarised in the following table.

Table 13.1: Summary of potential residual significant environmental effects

Impact type	Development stage	Potential impact	Impact avoidance measures / embedded mitigation
Traffic and Transport	Operation	Pedestrian delay– increase in operational vehicle movements and increase in number of pedestrians crossing on Headbolt Lane.	<ul style="list-style-type: none"> Improvement to local pedestrian network and crossing facilities, which will cumulatively reduce pedestrian delay. Framework Travel Plan
	Construction	Evening and weekend construction noise	<ul style="list-style-type: none"> Use BPM and adherence to the CEMP including public liaison Section 61 management
Noise and Vibration	Construction	Night construction noise	<ul style="list-style-type: none"> Use BPM and adherence to the CEMP including public liaison Section 61 management
	Operation	Operational combined road and passenger rail noise	Na
Ecology	Construction	Habitat loss – Grassland – other neutral grassland	Creation of 1.6 ha of neutral grassland
	Construction	Loss of key landscape characteristics, including openness and rolling valley landform.	Implementation of the landscape plan
Landscape and Visual Impact	Operation	Viewpoint 01: Junction of Bassenthwaite Avenue with Boyes Brow.	Implementation of the landscape plan
	Operation	Viewpoint 02: Junction of Heathfield Drive with Headbolt Lane.	Implementation of the landscape plan
	Operation	Viewpoint 03: Junction of Fallowfield Lane with Headbolt Lane.	Implementation of the landscape plan

Source: Environmental Statement Volume I: Main Report, Network Rail

No significant residual environmental effects were determined for air quality, flood risk or ground conditions.

²⁶

https://epa.knowsley.gov.uk/PublicAccess_LIVE/SearchResult/RunThirdPartySearch?FileSystemId=DC&FOLDER1_REF=21/00563/FUL

13.2 Interdependencies

There are a number of internal and external factors upon which the successful delivery of the scheme is dependent. These include:

- Introduction of the new MEL Class 777 rolling stock, including the incorporation of battery technology on seven IPEMUs. The Covid-19 pandemic has delayed the introduction of the new fleet, but phased introduction is still planned so that the entire new fleet of 53 new vehicles is in operation by, at the latest, December 2023. Clearly the seven IPEMUs will need to be prioritised within this for the target opening date of May 2023 to be met.
- The knock-on effect that the new station will have on pre-existing stations (e.g. Upholland and Rainford) is to be considered. In practice this is likely to be minimal although it should be noted that the interchange point for through-journeys from these stations into central Liverpool will move to Headbolt Lane from Kirkby.
- Land required to deliver the scheme that is not currently owned by Merseytravel or Network Rail will need to be acquired before any "spades in ground" work can commence.
- There is likely to be an interdependency with plans to transfer the control of existing lines (including the Kirkby – Wigan line) to the regional Rail Operating Centre (ROC) at Ashburys.
- Associated highway works- the development of a new station at Headbolt Lane will require a number of modifications to the local highway network to ensure its access for vehicles is safe and efficient. Details of these works and the implications on the local highway have been agreed and will be funded through the S278 for Fallowfield Junction plus a £2.725m contribution from the LCR CA to deliver the highway and active mode access/egress components.

13.3 Interfaces with Other Projects

There are a number of other projects planned and currently being undertaken on the local and regional rail network which will need to be considered throughout the development of this scheme. The projects listed below have been identified as having an interface with this scheme in terms of informing the scope of the project.

- **Liverpool Central Development Scheme**- the development of a new station at Headbolt Lane will create additional demand on the network and for services running through Liverpool Central station. Prior to the Covid-19 pandemic, Liverpool Central station was operating significantly over capacity particularly during peak times. The Liverpool Central Development scheme is currently being developed to address capacity constraints at the station and is well advanced through the various GRIP and business case stages. The Headbolt Lane scheme further increases the need for the Liverpool Central Development scheme to ensure the new station does not place additional strain on an already constrained network.
- **Maghull North Station**- the recently completed new station at Maghull North provided additional Park & Ride capacity along the Northern Line. However, within a year of station opening the car park became over capacity. Headbolt Lane is therefore required to further increase opportunities for Park & Ride along the Northern Line.
- **Skelmersdale Rail Link**- Plans are currently underway for creation of a new heavy rail spur from the current line connecting Wigan and Kirkby to serve the town of Skelmersdale in West Lancashire. This line will connect to the new station proposed at Headbolt Lane and a new station proposed within Skelmersdale itself. The proposition is that two out of the four MEL services planned to terminate at Headbolt Lane would instead extend to Skelmersdale, with

the Northern services between Headbolt Lane and Wigan/Manchester also diverted to instead terminate at Skelmersdale.

- **Knowsley Rail Freight Terminal** – A key interface with the Headbolt Lane scheme is the ongoing freight operations on the Kirkby – Wigan Line providing direct freight services between Knowsley Industrial Park and Teesside Waste Processing Centre 6 times per week in each direction. These services diverge from the line to the east of Headbolt Lane station but remain an important factor in the retiming of passenger services between the station and Manchester / Wigan. Importantly, there are significant aspirations to increase the freight service beyond the existing waste processing service to include various other types of freight. This would significantly increase the frequency of services on this line, thereby increasing the interface between the Headbolt Lane project and freight, although it should be noted that the schemes do not, as proposed, generate any conflicting movements. The extension to Headbolt Lane itself has been designed to ensure that existing freight services are not adversely impacted. Future expansion of freight services therefore becomes dependent on the design of the Skelmersdale Rail Link (SRL). The current proposition is that this would be dual track throughout, potentially offering additional paths for freight services into the terminal.

13.4 Measures of Success

The following factors have been identified as measures that determine what will constitute successful delivery of the objectives:

- Increased network coverage of Merseyrail Electrics services consistent with the LCR LTRS Strategy and the Local Transport Plan
- % GVA uplift in LCR and City Centre as a result of investment around north Kirkby
- Improved access to jobs and opportunities in Liverpool, across the LCR and beyond (West Lancashire)
- Reduction in the level of deprivation in areas such as Tower Hill and Northwood as people are able to access opportunities and services
- Improved overall journey times and direct connectivity into the city centre for passengers travelling from beyond Kirkby
- Improved access and interchange facilities
- Increased integration of transport modes and improved opportunity for road to rail modal transfer
- % reduction in levels of NO₂ and other particulates as a result of fewer car trips to the city centre
- Better access for pedestrians and cyclists and easier interchange between bus, rail, and taxi
- Reduction in number of accidents occurring on key routes in and around Kirkby.

14 Economic Case

The Economic Case of the proposed new station at Headbolt Lane, northeast Kirkby, summarises the demand modelling, estimated costs, and associated Value for Money of the scheme, inclusive of the most significant non-quantified impacts. Sensitivity testing is documented around key risks and assumptions to help demonstrate the robustness of the core VfM assessment.

14.1 Introduction

The Economic Case assessment aims to identify, and quantify where applicable, all the principal impacts of an intervention, fulfilling HM Treasury requirements²⁷ regarding demonstrating Value for Money (VfM) in public sector expenditure.

Table 14.1 sets out Department for Transport (DfT) expectations²⁸ for the development of the Economic Case through the business case stages. The FBC stage expects the focus to be on updating the various inputs and assumptions, rather than wholesale changes to approach.

Table 14.1: DfT Economic Case Expectations by Business Case Stage

Issue	Description	Strategic Outline Business Case	Outline Business Case	Full Business Case
Introduction	Outline approach to assessing value for money	Complete	Updated	Updated
Options appraised	A list of the options (set out in the strategic case) that have been appraised	Complete	Updated	Updated
Assumptions	TAG sets out assumptions that should be used in the conduct of transport studies. List any further assumptions supporting the analysis	Complete	Updated	Updated
Sensitivity and Risk Profile	Set out how changes in different variables affect the Net Present Value/Net Present Cost. The risk profile should show how likely it is that these changes will happen		Complete	Updated
Appraisal Summary Table	See TAG for detailed guidance on producing the Appraisal Summary Table	Outlined	Complete	Updated
Value for Money Statement	See Value for Money guidance on producing the VfM statement	Outlined	Complete	Updated

Source: DfT Transport Business Case Guidance²⁹

²⁷ See: <https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-government>

²⁸ See: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/85930/dft-transport-business-case.pdf

²⁹ See: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/85930/dft-transport-business-case.pdf

14.2 Option Development Process

The options identified from Section 10 and subject to more detailed economic appraisal are shown in Table 14.2. At this stage the alternative options are:

- Delivery of Headbolt Lane Station and extension of the 4tph MEL service between Kirkby and Liverpool Central. The approximately hourly Kirkby to Wigan and/or Manchester would be terminate at Headbolt Lane; and
- The provision of enhanced ‘feeder’ bus services to/from Kirkby station. This is the ‘low cost alternative’.

At the OBC stage there were outstanding determinations as to whether the existing DC ‘third rail’ MEL network could be extended to Headbolt Lane from Kirkby. Since the conclusion of the OBC (December 2020), the LCR CA in partnership with Merseytravel and Merseyrail Electrics commissioned the testing of a converted Class 777 bi-mode electric and battery train, which confirmed that a class 777 unit under battery power could easily run between Kirkby and Headbolt Lane and back again, meeting timetable requirements, without requiring a recharge. However, following testing, the preferred option for a new station at Headbolt Lane has been modified slightly to remove the need to provide an extension of third rail electrification between Kirkby and Headbolt Lane, instead including the modification of 6no class 777 units to battery-electric capability and the purchase of an additional battery unit. The battery analysis comes with the significant caveat that cost assumptions carry, at this stage due to the continuing evolution of battery technology, consider uncertainty.

Table 14.2: Headbolt Lane Station Economic Appraisal Options

ID	New Station(s)	Service Specification	Power
DS1	Headbolt Lane	<ul style="list-style-type: none"> • 4tph: Headbolt Lane – Liverpool Central • 1tph: Headbolt Lane – Wigan Wallgate/Manchester Victoria 	Battery
DS2	None	<ul style="list-style-type: none"> • 4tph: Kirkby – Liverpool Central • 1tph: Kirkby – Wigan Wallgate/Manchester Victoria • 4 buses per hour: Northwood-Tower Hill-Kirkby Station 	N/A

Sensitivity testing and switching value analysis, to reflect additional risks and uncertainties, is provided within Section 14.9.

14.3 Scenarios

Appraisal of options needs to be made against a ‘without Scheme’ scenario so that the incremental impacts can be correctly isolated. That ‘without Scheme’ is the most likely future scenario given the current situation and existing commitments with their levels of certainty assessed. These commitments include consideration of both exogenous influences, such as land use change, and changes in transport supply – both for the preferred rail mode and other competing or complementary modes. These combine to form a Do Minimum (DM) scenario for transport supply and demand against which changes in Do Something (DS) options can be appraised.

14.3.1 Do Minimum

As noted in Section 10.2, the DM scenario entails a continued reliance on the private car and local bus services for the majority of non-local movements both within and to/from the corridor. In the current commercial environment for passenger bus services, principal routes to the

neighbourhoods of Northwood and Tower Hill already operate at high frequencies and it is assumed that the operators have aligned supply with demand and are unlikely to offer a material change in provision in the future.

The most significant change in transport supply for the DM scenario is the planned introduction of the new Class 777 rolling stock for the MEL franchise, originally due to commence in 2020/21 but delayed due to the Covid-19 pandemic to 2022-23. This is expected to lead to material changes in:

- Journey times – due to improved train specification (acceleration/deceleration), In-Vehicle Time (IVT) will be reduced;
- Capacity – 3-car units will be replaced by 4-car units with a concurrent increase in total passenger (standing) capacity); and
- Journey quality – the new stock offers a series of enhancements relative to existing.

The business case for the new rolling stock completed in 2015. Since then, a number of the inputs to the expected impacts have altered. To reflect these, new inputs were derived for the CA during 2019 and these were once more refreshed as part of the OBC submitted in December 2020. This ensured that the expected impact on passengers is aligned with the current Class 777 specification.

Land use change within the DM combines LCR wide rates of population and employment growth from the DfT's National Trip End Model (NTEM) planning data (v7.2) and local planning inputs from Knowsley. The latter are assessed for their 'level of certainty' in line with TAG Unit M4³¹.

14.3.2 Do Something

The Do Something (DS) scenario(s) overlay the change in transport supply from the scheme (times and costs of travel) on the DM situation. There are no other changes in transport supply or land use.

14.4 Demand Modelling

14.4.1 Approach

Figure 14.1 provides an overview of the demand modelling approach, for which there are four main stages:

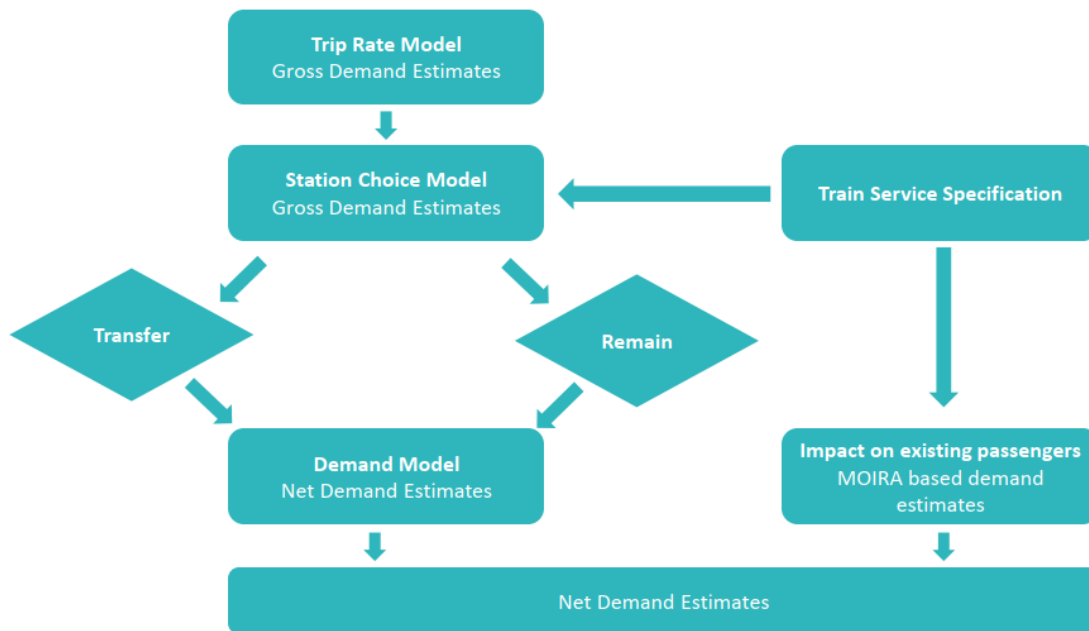
1. Trip rate based estimates for Headbolt Lane based on local comparator stations and residential and commercial catchments. These provide an initial 'gross' estimate without competition with existing stations.
2. A station choice model reflecting Level of Service (LoS) differentials between competing stations. LoS reflects both the Generalised Journey Time³² (GJT) of rail travel (resulting from the Train Service Specification (TSS)) and access/egress times and costs from the station. This uses a Multinomial logit (MNL) model which forecasts the probability of choosing each station, and therefore the absolute number from the gross estimate who would remain at an existing station or transfer to Headbolt Lane.

³¹ See: <https://www.gov.uk/government/publications/tag-unit-m4-forecasting-and-uncertainty>

³² GJT combines the In-Vehicle (onboard Time, service interval penalty (a combination of headway, expected distribution of departures and arrivals and the inconvenience of wait time), time spent interchanging (if applicable), and a 'pure' interchange penalty (if applicable) which reflects the inconvenience of having to change trains over and above the time spent doing so. It therefore aims to capture the total station-to-station generalised time with individual components weighted.

3. Separately, the TSS is also used to estimate the demand change arising from the changes to the existing network, i.e. the termination of Northern services at Headbolt Lane meaning passengers travelling from Kirkby to the east must interchange at Headbolt Lane if they don't travel directly to Headbolt Lane instead (transfer). This is captured through changes in GJT.
4. Cumulative impacts are brought together to provide the net change in rail demand across all the changes.

Figure 14.1: Headbolt Lane Station – Demand Modelling Approach



This approach provides an initial set of base year (2019) demand estimates. These are then used to forecast future year demand with application of:

- UK rail industry's Passenger Demand Forecasting Handbook (PDFH) v6 guidance on the impacts of changes in the 'External Environment', e.g. population, employment, competing modes etc.;
- An assumed change in rail fares. It is assumed that a policy of RPI+1% is applied from 2021 to 2040 (when fare changes are capped in line with TAG); and
- Demand ramp-up, reflecting the lag between changes in transport supply and the associated changes in travel behaviour.

14.4.2 Changes in Rail Services

DS1 comprises the following changes in rail services:

- Extension of all existing MEL services which terminate at Kirkby to Headbolt Lane:
 - 4tph (in each direction) on weekdays and Saturdays
 - 2tph on Sundays
- A three minute journey time between Kirkby and Headbolt Lane;
- Simultaneous arrivals and departures at Headbolt Lane, meaning each train has a turnaround time of 15 minutes – this should increase network performance as it provides

additional recovery time compared to the DM (at the partial expense of the additional train);
and

- Curtailment of the Northern services at Headbolt Lane instead of Kirkby.

Based on the latest DM timetable with the new Class 777 rolling stock, the extension of MEL services to Headbolt Lane is estimated to require one additional four-car IPEMU train.

It is assumed that the corresponding reduction in journey time for the existing Kirkby-Wigan (Northern) services does not result in a change in the number of trains required to operate the service. Instead, the change permits additional turnaround or 'recovery' timetable to be incorporated into the timetable, potentially providing wider operational benefits beyond the immediate vicinity of the scheme. This potential performance impact has not, as yet, been quantified. Additional timetable modelling to confirm these assumptions has been undertaken in parallel to the FBC and is contained within Appendix A alongside preceding GRIP analysis.

14.4.3 Changes in Land Use

Planning data to provide changes in population, employment and (economic) participation is sourced directly from the DfT's TEMPro software and the National trip End Model (NTEM) dataset (v7.2) within it. Data for the North West is extracted at the finest level of spatial detail, Census Middle Super Output Area (MSOA) and mapped to production and attraction stations. Beyond the North West, regional data inputs. Within Knowsley district, local planning data (see Appendix C) has been collated and analysed. Developments with a sufficient degree of certainty (see TAG Unit M4: 'near certain' or 'more than likely') have been incorporated within the Headbolt Lane future trip rates and the wider Knowsley totals adjusted accordingly.

14.4.4 DM and DS Demand Forecasts

Comparator Station Demand Estimates

Table 14.3 summarises the base year (2019) passenger demand estimates for the ten nearest stations to Headbolt Lane. These matrices have been developed from an extensive passenger survey and ticket sales analysis study in 2015, and updated to 2019 using aggregate count and sales data to capture demand change between 2015 and 2019. The split is presented for:

- Productions, i.e. those return trips where the outbound portion starts in the vicinity of the station; and
- Attractions, i.e. those return trips where the outbound portion ends in the vicinity of the station.

As expected, for what are primarily suburban 'commuter' stations, the stations are skewed towards trip productions.

Table 14.3: 2019 Passenger Demand Estimates for Comparator Stations

ID	Station	Productions	Attractions	TOTAL
1	Kirkby (Merseyside)	1,593,699	506,370	2,100,068
2	Maghull	1,223,492	421,875	1,645,366
3	Maghull North	415,890	143,318	559,208
4	Ormskirk	871,414	1,003,802	1,875,216
5	Rainford	7,400	29,939	37,338
6	Town Green	196,868	104,615	301,483
7	Aughton Park	131,917	25,549	157,467
8	Old Roan	536,606	458,317	994,923
9	Aintree	572,046	543,349	1,115,395
10	Fazakerley	703,736	493,414	1,197,150

Demand matrices are segmented by ticket type, and ultimately converted into journey purposes: commute, employer’s business and other.

Comparator Station Trip Rates

Total passenger demand estimates, split by trip productions and attractions, are then combined with:

- National Rail Traveller Survey (NRTS) data, showing how demand distributes by distance (band) from the station; and
- OS AddressBase data showing the number of residential, for trip productions, and commercial, for trip attractions, points within each distance band.

Across all the selected comparators, excluding Rainford as it is only served by the Kirkby-Wigan Northern service, average trip rates are then calibrated for each distance band. Figure 14.2 and Figure 14.3 show the average trip production and attraction rate per unit respectively. These catchments reflect, in part, accessibility from Park & Ride (P&R) provision. The inclusion of stations with P&R in the trip rate estimates ensures that the P&R potential of Headbolt Lane (N = 300 spaces) is incorporated within the demand modelling.

Figure 14.2: Comparator Stations – 2019 average trip production rate per dwelling by distance band

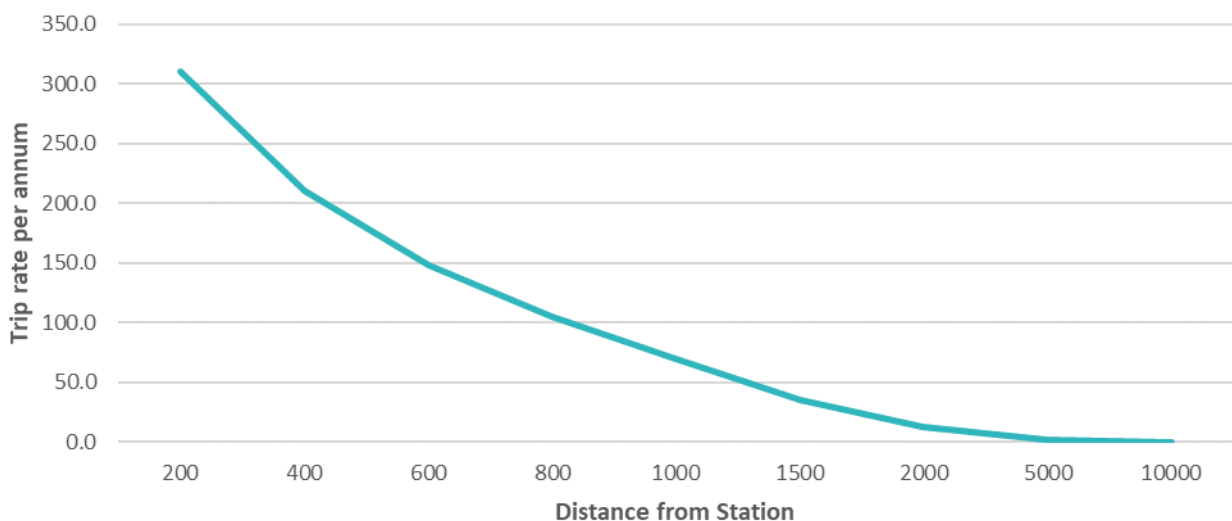
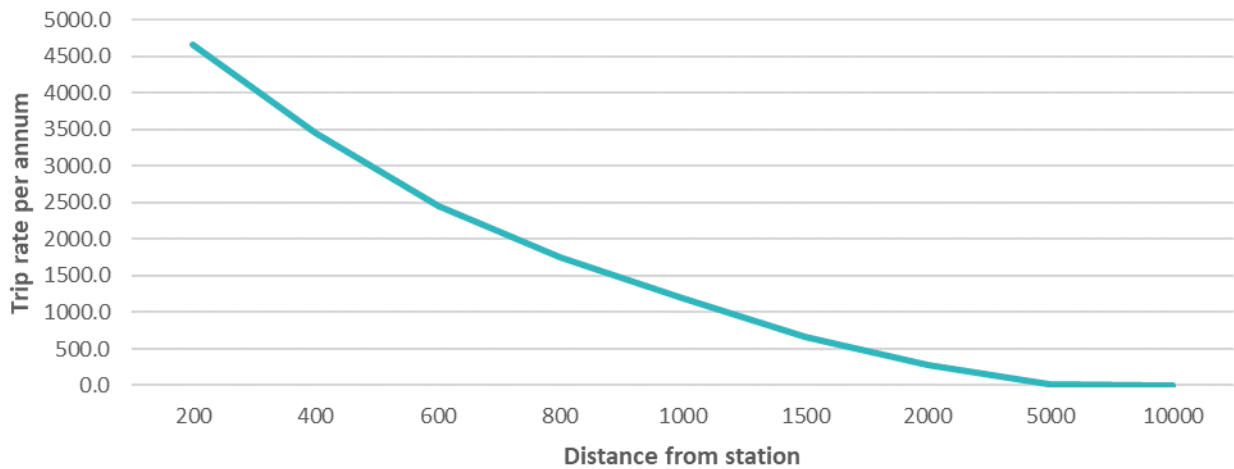


Figure 14.3: Comparator Stations – 2019 average trip attraction rate per commercial unit by distance band



Headbolt Lane 2019 Gross Demand Estimate

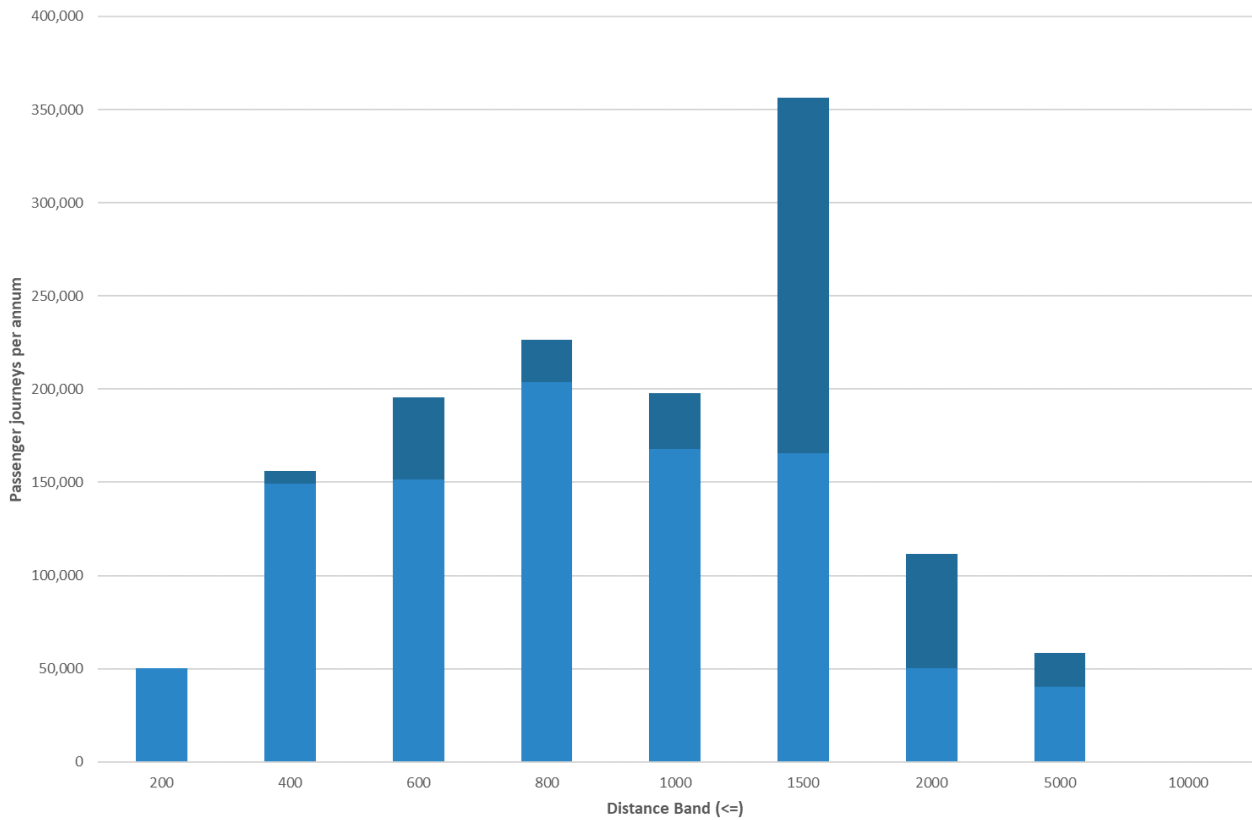
Trip rates from the comparator stations are then combined with the 2019/20 catchment data for Headbolt Lane shown in Table 14.4.

Table 14.4: Headbolt Lane 2019/20 Catchment Data

Distance Band (<=, metres)	Residential Units	Commercial Units
200	162	0
400	711	2
600	1,021	18
800	1,940	13
1000	2,396	25
1500	4,777	283
2000	4,198	218
5000	24,525	1,105
10000	28,973	1,068

Combination of the trip rates with the catchment data, results in the initial gross demand estimate shown in Figure 14.4, prior to the application of the station choice model. This amounts to approximately 1.35 million trips per annum.

Figure 14.4: 2019 Headbolt Lane Gross Demand Estimate by Distance Band

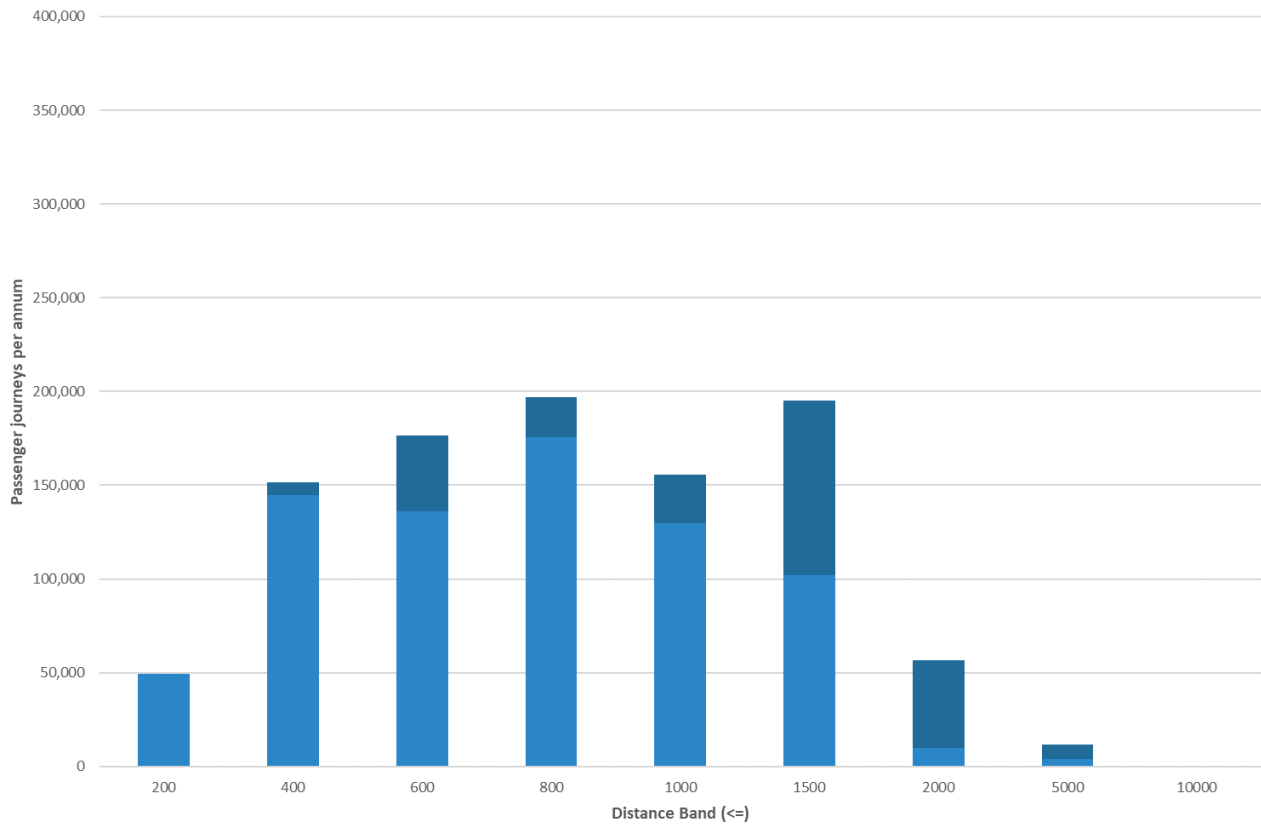


Headbolt Lane 2019 Net Demand Estimate

The impacts of the station choice modelling on Headbolt Lane is shown in Figure 14.5. It can be seen that the lower distance bands are unaffected (<=400m), and competition effects progressively reduce the gross demand estimate as distance to Headbolt Lane Station increases beyond that threshold. This estimate therefore removes those for whom an existing station continues to represent a better alternative for rail travel than Headbolt Lane. This estimate of approximately 990,000 is inclusive of subtraction effects from existing stations and is not therefore the net change in rail demand.

Further details on the estimation of retention and abstraction impacts are contained within Appendix B.

Figure 14.5: 2019 Headbolt Lane Net Demand Estimate by Distance Band



Transfer from Existing Stations

The station choice model also predicts the proportion of demand at Headbolt Lane which has transferred (been abstracted) from existing stations. This is estimated to be approximately 28% of the total, 280,000 out of the 990,000 estimate. Over 99% of this abstraction is from Kirkby, which sees a 10% and 24% reduction in trip productions and attractions respectively (13% demand reduction overall).

In totality, if Headbolt Lane had been open in 2019/20, it would have been forecast to generate approximately 710,000 additional rail trips per annum. This estimate is exclusive of the change in Northern services.

Interchange at Headbolt Lane

Based on 2019/20 MOIRA demand data, it is estimated that there are approximately 50,000 trips between Kirkby and stations to the east of Headbolt Lane. This demand would either have to transfer to Headbolt Lane or continue to use Kirkby and change between MEL and Northern services at Headbolt Lane. It is estimated that approximately 30% of this existing demand could be lost (14,000 trips per annum) due to the addition of the interchange.

Cumulative Demand Forecasts

Demand and revenue are forecast from the 2019 base year matrices under an elasticity-based framework, drawing on the principles and guidance from TAG and the PDFH.

Modelled Years

Three future years have been modelled:

- 2024;
- 2030; and
- 2040 – 20 years after the appraisal year where TAG specifies the imposition of the cap on demand, revenue etc. in the economic appraisal.

External Environment Indices

The PDFH v6 formulation is used to provide the sensitivity of demand to the factors shown in Table 14.5.

Table 14.5: External Environment Factors and Data Sources

ID	Factor	Forecasting Data Source
1	Population	NTEM v7.2 planning data
2	Employment	NTEM v7.2 planning data
3	GDP per Capita	TAG Databook September 2021
4	Participation	NTEM v7.2 planning data
5	Car Costs	TAG Databook September 2021
6	Car Time	TAG Databook September 2021
7	Bus Time	TAG Databook September 2021
8	Bus Cost	DfT Bus Statistics – extrapolation of trend
9	Bus Headway	Assumed constant

Source: Mott MacDonald

In line with the recommendation in TAG Unit M4, a GJT trend equivalent to a 1% per annum reduction is applied up to 2030/31.

As part of updates made to the economic case in transitioning from OBC to FBC, TAG inputs (as displayed in Table 14.5) have been updated from the May 2020 Databook to the latest (at the time of modelling) September 2021 Databook – see Section 14.7.2.

Demand Elasticities and Parameters

Demand elasticities vary according to distance and by ticket type. Sources for the elasticities are shown in Table 14.6.

Table 14.6: Headbolt Lane Station Demand Elasticities and Parameters

ID	Factor	Elasticity/Parameter
1	Population	PDFH Table B2.4a (for commute relative to LCR wide population change)
2	Employment	PDFH Table B2.4a
3	GDP per Capita	PDFH Table B2.4a
4	Participation	PDFH Table B2.4a
5	Car Costs	PDFH Table B2.4a
6	Car Time	PDFH Table B2.4a
7	Bus Time	PDFH Table B2.4a
8	Bus Cost	PDFH Table B2.4a
9	Bus Headway	PDFH Table B2.4a
10	Generalised Journey Time (GJT)	PDFH Table B4.5

Source: PDFH v6.0

Ramp-Up of Demand

To reflect the typical lags between significant changes in transport supply and individuals' travel behaviour, ramp-up rates are applied to demand forecasts and subsequent estimates of revenue and economic impacts. These rates are based on recommendations from PDFH v6:

- 60% of forecast demand is realised during year one;
- 78% of forecast demand is realised during year two;
- 90% of forecast demand is realised during year three;
- 98% of forecast demand is realised during year four; and
- 100% of forecast demand is realised during year five and thereafter.

Table 14.7 summarises the total impact of the scheme on forecast rail passenger demand.

Table 14.7: Do Something versus Do Minimum Passenger Demand Changes

Flow	Year	Do Minimum	Do Something	DS - DM	Percentage Change
Headbolt Lane Station	2024	0	1,058,319	1,058,319	N/A
	2030	0	1,056,507	1,056,507	N/A
	2040	0	951,323	951,323	N/A
MEL – existing stations	2024	10,043,419	9,749,222	-294,197	-3%
	2030	10,036,036	9,743,910	-292,126	-3%
	2040	8,926,542	8,668,236	-258,306	-3%
Kirkby – Wigan et al	2024	46,943	32,961	-13,982	-30%
	2030	47,492	33,301	-14,191	-30%
	2040	43,062	30,132	-12,930	-30%
TOTAL	2024	10,090,362	10,840,502	750,140	7%
	2030	10,083,528	10,833,718	750,191	7%
	2040	8,969,604	9,649,691	680,087	8%

14.4.5 DS versus DM Incremental Revenue

Corresponding changes in rail passenger revenue between the DM and DS are shown in Table 14.8. These estimates are prior to the application of demand ramp-up. In the subsequent economic appraisal (see Section 14.7) these are included as a 'negative cost' which helps to offset initial capital and ongoing revenue expenditure.

Fares have been assumed to change at RPI+1% from 2021 through to the demand cap year of 2040, with the relative demand and revenue impacts relative to the GDP Deflator captured within the economic appraisal.

Table 14.8: Do Something versus Do Minimum Passenger Revenue Changes (undiscounted 2019 prices)

Year	Do Minimum	Do Something	DS - DM
2024	16,175,983	17,576,597	1,400,614
2030	18,072,333	19,638,262	1,565,929
2040	19,238,647	20,936,631	1,697,984

14.4.6 DS versus DM Changes in Passenger-kms

Net changes in rail passenger-kms, as a result of the change in demand, are shown in Table 14.9. These volumes are subsequently converted into the equivalent change in car-kms using the TAG diversion factors approach and monetised using Marginal External Costs of Car (MECC) values from the September 2021 TAG Databook. The average trip length per additional rail trip is therefore approximately 15km.

Table 14.9: Do Something versus Do Minimum Net Rail Passenger-km Changes

Year	Do Minimum	Do Something	DS - DM
2024	158,578,443	170,147,072	11,568,629
2030	159,147,570	170,729,747	11,582,177
2040	142,418,803	152,926,885	10,508,083

14.5 Impacts of the Investment

The logic map in Section 9.2 (Figure 9.1) shows how investment in the potential scheme could, through its primary and secondary outcomes, impact on the economy, society, and the environment in a beneficial manner. Table 14.10 highlights the expected impacts from the logic mapping to the recognised impacts of transport investment from the DfT's VfM guidance³³. Induced investment impacts are considered separately in the next sub-section.

³³ See: <https://www.gov.uk/government/publications/dft-value-for-money-framework>

Table 14.10: Headbolt Lane Station Preferred Option – Expected Impacts adapting DfT framework

Established Monetised Impacts	Evolving Monetised Impacts	Indicative Monetised Impacts	Non-monetised Impacts
<i>Included in initial and adjusted metrics</i>	<i>Included in adjusted metric</i>	<i>Considered after metric using switching values approach</i>	
Journey time savings Vehicle operating costs Accidents Physical activity Journey quality Noise Air quality Greenhouse gases Indirect tax	Reliability Static clustering Output in imperfectly competitive markets Labour supply	Moves to more/less productive jobs Dynamic clustering Induced investment Supplementary Economy Modelling*	Security Severance Accessibility Townscape Historic environment Landscape** Biodiversity Water environment Affordability Access to services Option and non-use values

**These are a class of models rather than a specific economic impact*

*** A widely-used methodology for monetisation exists, but this is not included in WebTAG guidance because of concerns about its robustness. Detailed guidance is found in the Supplementary Guidance on Landscape.*

Source: Department for Transport, Value for Money Framework, 2015, Box 4.4: Typical impacts of a transport scheme.

The principal expected impacts therefore occur through:

- Journey time savings to existing and new travellers from the new station and associated rail services, with new users subject to the ‘rule of a half’ as per TAG Unit A1-3, plus time savings from mode shift and associated decongestion of the highway network;
- Additional ‘established’ monetised impacts generated by changes in mode choice and the diversion of car-kms to rail passenger-kms, e.g. greenhouse gas emissions, road traffic accidents etc.;
- Wider Economic Impacts (WEIs) – static clustering, labour supply, and move to more/less productive jobs created by reductions in the GC of travel between zones; and
- Non-monetised impacts from the construction of the new infrastructure itself and the additional services provided. These are assessed qualitatively and combined with monetised impacts in the Appraisal Summary table (AST).

14.6 Costs

14.6.1 Capital Expenditure

Capital Expenditure (CapEx) estimates have been updated as part of the concurrent GRIP studies, which have now reached Stage 4. The 2021 Q1 point estimates are summarised by broad cost item, using the Rail Method of Measurement (RMM) in Table 14.11 with the direct construction costs detailed within Table 14.12.

These values are exclusive of spend to date, i.e. 'sunk costs', and prior to consideration of real terms construction inflation, contingency, risk or Optimism Bias (OB), covered in Section 14.7.

Table 14.11: Headbolt Lane Station – GRIP 4 Cost Estimate (2021 Q1 prices) – Battery Operation

RMM Vol 1 Ref.	Group Element	Total Cost (£s)
1	Direct Construction Works	17,710,000
2	Indirect Construction Works	8,100,000
3	Project Management, Design and Other Project Costs	17,020,000
4	Risk	QRA
5	Inflation	Excluded
6	Taxation and grants	Excluded
TOTAL		44,120,000

Source: Network Rail

Table 14.12: Headbolt Lane Station – GRIP 4 Direct Construction Cost Estimate (2021 Q1 prices) – Battery Operation

RMM Vol 1 Ref.	Group Element	Total Cost (£s)
1.01	Railway Control Systems	2,310,000
1.02	Train Power Systems	0
1.03	Electric Power and Plant	440,000
1.04	Permanent Way	2,310,000
1.05	Operational Telecommunication Systems	370,000
1.06	Buildings and Property	1,220,000
1.07	Civil Engineering	10,890,000
1.08	Enabling Works	180,000
TOTAL		17,710,000

Source: Network Rail

The costs are phased over the period 2020 to 2022 as follows:

- 2021: 8.6%
- 2022: 65.8%
- 2023: 25.1%
- 2024: 0.5%

The GRIP study excludes the cost of rolling stock. As noted in Section 14.4.2, extension of MEL services requires the acquisition of one additional four-car Class 777 Electric Multiple Unit (EMU), plus the adaptation of six EMUs for battery operation – four are required to operate the timetable at any one moment in time. Seven therefore provides contingency coupled with scope to trial battery operation on other parts of the MEL network and potential extensions thereto.

The additional train can be added to the existing order between Merseytravel and the manufacturers (Stadler). The latest estimate is an additional capital cost of approximately £6.0 million per train (2021 prices), inclusive of mobilisation. Part of the cost is dependent on exchange rates, with Merseytravel holding that risk. The cost of adapting all seven Class 777s to battery operation, the batteries themselves, and additional maintenance and renewal equipment at the MEL Kirkdale equipment is estimated to be £14.4 million (2021 prices). These investment costs are all included with the scheme costs.

The active travel package on routes to and from the new stations (see Section 10.7) is estimated to cost £2.75 million (2021 Q3 prices).

Total scheme costs are shown in Table 14.13, exclusive of any risk optimism bias adjustment, real terms construction inflation, or market price adjustment.

Table 14.13: Headbolt Lane Station – GRIP 4 Investment Cost Estimate (2021 Q1 prices) – Battery Operation

Ref.	Item	Total Cost (£s)
A	GRIP 4 rail infrastructure	44,120,000
B	Additional Class 777 IPEMU	6,000,000
C	Adaptation of 7 Class 777 EMUs to battery operation, battery technology, plus other infrastructure work	14,400,000
D	Active travel mode enhancement package	2,750,000
TOTAL		67,720,000

Source: Network Rail, LCR CA and Knowsley Council

14.6.2 Whole Life Costs

Whole Life Cost (WLC) estimates have not, as yet, been produced. To include an initial estimate within the economic appraisal, 30% of the initial AFC has been taken and assumed to occur 30 years after opening. This would cover any major renewals, but is exclusive of day-to-day maintenance and ad hoc renewals which are covered within the Operating Expenditure (OpEx) estimate.

This assumption will be updated during any subsequent stages of business case development as the concurrent GRIP stages advance.

14.6.3 Land Costs

The land required for the scheme is currently under the ownership of Network Rail and Knowsley Council. For the station site itself, inclusive of buildings, car park, surface access etc, the land (approximately 31,000m²) carries an approximate value of £70,000 in its current undeveloped state. The land is being granted for free on condition it is used for the station and the cost is included as part of the CapEx (as it could otherwise be sold for that value).

14.6.4 Construction Inflation

Construction inflation forecasts are, to 2030, taken from the latest Building Cost information Service (BCIS) estimates. A real terms adjustment to the CapEx estimate is then made, compared to the GDP Deflator inflation forecasts from the September 2021 TAG Databook. These figures are applied to the base cost estimate, exclusive of any risk adjustment.

14.6.5 Contingency, Risk and Optimism Bias

Network Rail has regularly updated a Quantified Risk Assessment (QRA) for the project. The November 2021 update has been used within this FBC, with the following estimates in Table 14.14.

Table 14.14: GRIP 4 Quantified Risk Assessment Values (2021 prices)

Level	Value	Percentage
P20	5,355,119	12.1%
P50	6,909,948	15.7%
P80	8,589,384	19.5%
P90	9,495,106	21.5%
Pmean	6,974,020	15.8%

Source: Network Rail

DfT recommendations in TAG Unit A1-2³⁴ relate to multipliers on the base cost estimate, and focus solely on the application of a single optimism bias value. 30% is recommended for rail projects at 'Stage 3' i.e. FBC and GRIP 4; however, depending on the maturity of the design and QRA estimate, there is scope for using an alternative value. This is especially true given the relatively short lead in times to delivery. The P(mean) has therefore been used within this Economic Case.

14.6.6 Operating Expenditure

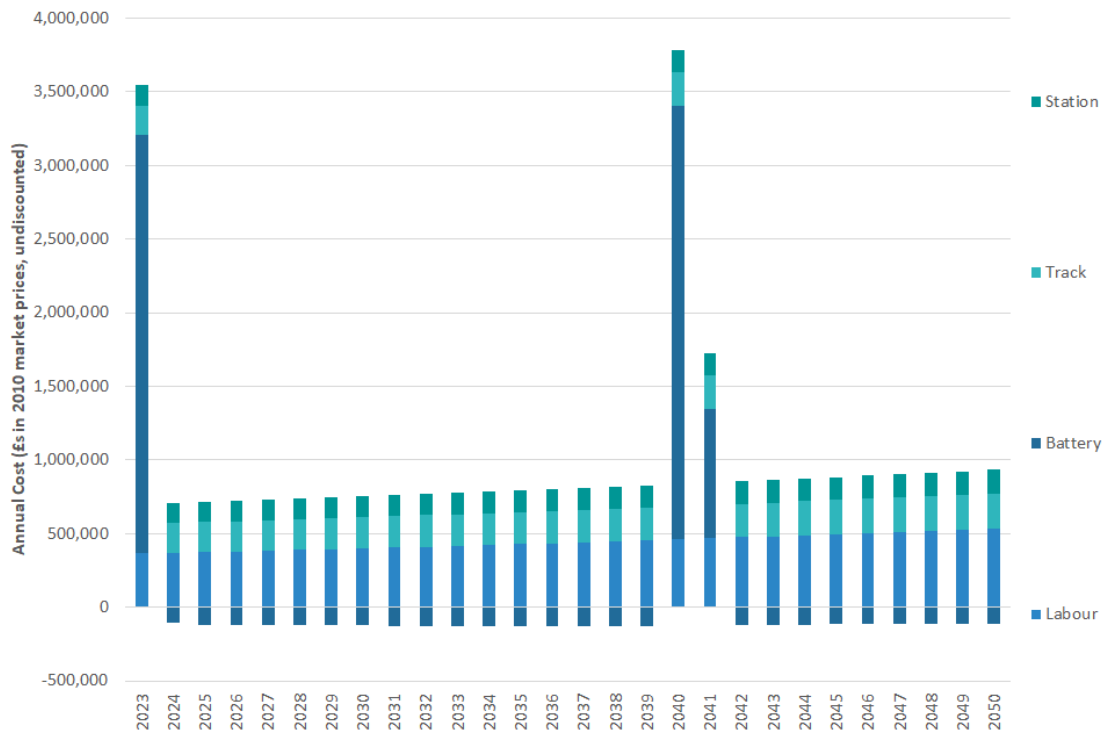
Ongoing OpEx consists of:

- Labour – the scheme is estimated to require an additional nine members of staff at MEL, including onboard and station staff;
- Track usage estimates for the new Class 777 stock, and additional train-km estimates, inclusive of:
 - Train Availability and Reliability Agreement (TARA)
 - EC4T – the battery operation should generate a small surplus
 - Variable Usage Charge (VUC)
 - Battery renewals, estimated to occur after 18 years
- Station operating costs, e.g. facilities management and Network Rail's long-term charge.

There may be a marginal saving for Northern services which is not quantified. Figure 14.6 pertains solely to MEL operations.

³⁴ See: [TAG unit A1-2 scheme costs - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/104482/tag-unit-a1-2-scheme-costs.pdf)

Figure 14.6: Headbolt Lane Station – Operating Expenditure Estimate to 2050



14.6.7 Revenue

The extent to which forecast passenger revenue is expected to offset incremental OpEx is considered further within the Financial Case (see Section 15). Under the ‘Not Net Gain No Net Loss’ (NNGNNL) arrangement of the current MEL franchise, it is assumed that any revenue gain or loss compared to the OpEx is accrued by Merseytravel. Revenue gains are subtracted from scheme costs in the relevant year, and, conversely, losses are added as scheme costs.

14.7 Economic Appraisal

14.7.1 Assumptions

The methodology used in the economic appraisal follows that set out in the Government’s Transport Appraisal Guidance (TAG) for rail business cases. This is primarily contained in TAG Units A1.1³⁵, A5.3³⁶ and M4³⁷. There are a number of high level assumptions made, including:

- Base year (e.g. for demand): 2019
- Scheme opening year: 2023
- Demand growth cap: 2040 (20 years from current year)
- Appraisal period: 60 years after scheme opening (to 2082)

³⁵ See: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/712699/tag-unit-a1.1-cost-benefit-analysis-may-18.pdf

³⁶ See: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/715482/tag-unit-a5-3-rail-appraisal-may-2018.pdf

³⁷ See: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/805256/tag-unit-m4-forecasting-and-uncertainty.pdf

- Price base: 2010 market prices, with both costs and revenue line converted using the GDP Deflator
- Discounting: 3.5% for 30 years (to 2050), then 3.0% thereafter

For this FBC, all values have, where appropriate, been updated from the May 2020 TAG Databook to the September 2021 Databook.

14.7.2 Shift Statement – Updates Applied from OBC to FBC

A number of updates have been applied to the original demand forecasting and economic appraisal work that underpinned the OBC submitted in December 2020, in order to migrate to the FBC submitted in December 2021. This shift in economics included the following material updates:

- Changes to Department for Transport (DfT) recommendations for transport business cases, included in their Transport Analysis Guidance (TAG) suite and the accompanying ‘Databook’ (from May 2020 to September 2021);
- An updated GRIP Cost Plan, as provided by Network Rail, incorporating removal of the 3rd rail electrification and addition of battery technology adaptations to their infrastructure, (including increases in capital costs since the OBC and corresponding updates to risk and Optimism Bias adjustments to reflect both the status of cost estimates and changes in DfT guidance). Other investment costs related to rolling stock, traction power, and active travel route enhancements;
- An updated set of operating expenditure costs, incorporating addition of battery units and changes in traction power;
- The addition of benefits from enhanced walking and cycling connectivity produced as a result of the proposed station project, formed from a combination of health and reduced absenteeism benefits, using the DfT’s Active Mode Appraisal Toolkit (AMAT); and
- The inclusion of Wider Economic Impacts (WEIs) quantified to produce an ‘evolving’ set of Economic Case metrics.

The updates have been implemented into the original OBC stage economic appraisal as a series of step change tests, as listed in Table 14.15

Table 14.15: Headbolt Lane Station – FBC Update Tests

Scenario	Based on	Step Change
DS1	DS1 (at OBC stage)	None
DS1a	DS1	TAG updates (May 2020 to September 2021)
DS1b	DS1a	Battery capital cost plan and active mode investment costs
DS1c	DS1b	Battery operating expenditure and rolling stock investment costs
DS1d	DS1c	Walking/cycling benefits (AMAT)
DS1e	DS1d	Wider economic impacts (WEIs)
DS1f	DS1e	Determination of final OB value

Source: Mott MacDonald

DS1a – TAG updates

The first step change involved the update of TAG databook inputs from May 2020 to September 2021 guidance. The following values were changed as a result:

- GDP per capita trends over time ('Annual Parameters' tab from TAG Databook) – lower growth over time than previous guidance, particularly from 2030-40, reflected in reasonable impact upon exogenous growth multipliers;
- Fuel cost trends over time ('A4.2.2' tab from TAG Databook) – slightly higher growth in short term up to 2030 and slightly lower growth from 2030 onwards, with minor but not significant impact upon exogenous growth multipliers;
- Real fare growth – no change in fares policy but slightly lower growth over time due to GDP deflator capping (see above), with minor but not significant impact upon composite growth (combined exogenous, fares and GJT) multipliers;
- Values of Time (VoT) trends ('A1.3.2' tab from TAG Databook) – slightly lower values (£/hr) across all journey purposes, reflected in minor but not significant reduction of monetised user benefits (as converted from time); and
- Marginal External Cost (MECCs) trends ('A5.4.2' tab from TAG Databook) – higher values (£/km), theoretically reflected in higher monetised non-user benefits (as converted from passenger km shift between car and rail).

The combined impact of the above changes would be expected to result in lower rail demand generation and therefore lower benefits, due to the overriding and fairly significant impact of reduced GDP growth over time, which exceeds any other variations. Most other trend changes would also contribute to a decline in rail demand, while any gain in non-user benefits from higher MECC values would likely be counteracted by general rail demand reduction (contributing to less passenger km shift from car to rail).

DS1b – Updated Investment Costs

The second step change involved updating the various investment costs items to the latest estimates including:

- Rail infrastructure, including the wholesale change in traction power; and
- Active mode infrastructure investment on routes to/from the new station.

DS1c – Operational Expenditure and Rolling Stock Investment Costs

The third step change involved updating the operating costs involved in running battery units. The details of the updated operating expenditure and rolling stock assumptions are summarised in Section 14.6.1.

Estimates for the following investment are also updated at this stage:

- Additional Class 777 multiple unit; and
- Batteries, associated adaptations to seven Class 777 EMUS, plus other infrastructure works to enable maintenance and renewals.

DS1d – Active mode (AMAT) impacts

The third step change involved adding walk/cycle benefits through the DfT's Active Mode Appraisal Toolkit (AMAT) in order to reflect active travel enhancements proposed adjacent to Headbolt Lane station.

With rail demand generated at Headbolt Lane there would be increased walk and cycle trips to/from the station. In addition to the indirect effects from increased rail demand, the active travel enhancements proposed for the scheme would be expected to increase the access/egress mode share for walkers and cyclist. The number of additional walk and cycle

trips generated to/from Headbolt Lane (~400-450k walkers and ~7-8k cyclists per annum) has been calculated based on:

- Total demand generated at Headbolt Lane per year (split between production and attraction demand);
- The access/egress mode distribution (specifically for walk and cycle modes) assumed for Headbolt Lane, calculated using the National Rail Transport Survey (NRTS) access/egress mode profiles per distance band for a range of comparator stations nearby to Headbolt Lane; and
- National average diversion factors from the National Transport Model (NTM), showing the change in walk and cycle trips as a percentage of a change in rail trips (-13% and -4% respectively), sourced from Table C2 of WebTAG Unit A5.4 'Marginal External Costs'.

Based on the number of walk and cycle trips generated by the scheme, two physical activity impacts have been monetised using the Active Mode Appraisal Toolkit (AMAT):

- Increased economic output from reduced absenteeism per new walker/cyclist; and
- Reduced risk of premature death per new walker/cyclist (calculated using metrics such as average years of life lost per death and the statistical value of a life-year, sourced from health inputs to the latest WebTAG guidance).

DS1e – Wider Economic Impacts (WEIs)

The final step change involved adding quantified WEIs³⁸ to the economic appraisal as part of an 'evolving' set of metrics. As WEIs rely on multi-modal impacts, the project was coded into the Liverpool City Region Transport Model (LCRTM) and results passed through the DfT's standard Wider Impacts of Transport Appraisal (WITA) software. This ensured consistency between the LCRTM WEIs and existing 'established' economic impacts, considering both demand and the marginal impacts on journey time. The monetised WEIs relate solely to agglomeration which captures changes in productivity.

Summary of Step Change Results

The combined economic appraisal metrics for the step change tests are shown in Table 14.16, in order to highlight the impact of each individual change made to the preferred option at OBC level (DS1).

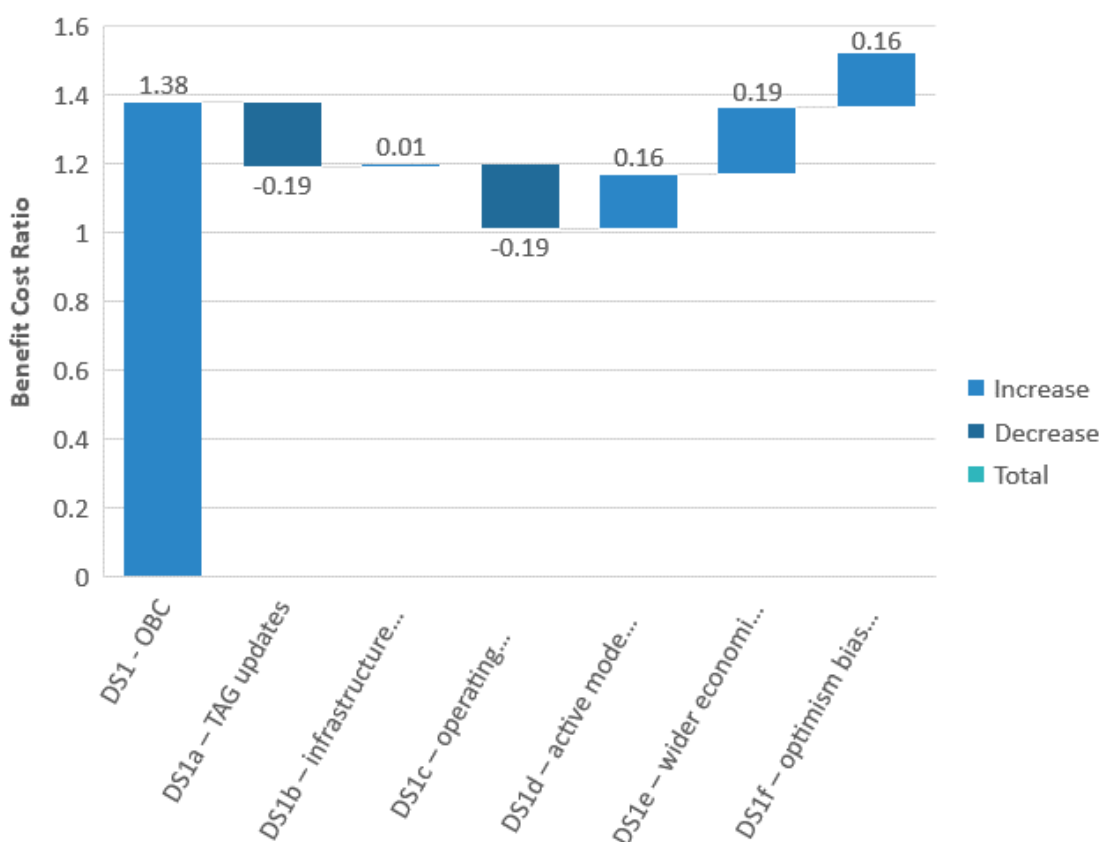
³⁸ See: [TAG unit A2-4 productivity impacts - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/publications/tag-unit-a2-4-productivity-impacts)

Table 14.16: Summary of Step Change Tests - Analysis of Monetised Costs and Benefits – Summary (£000s in 2010 values and market prices, discounted to 2010)

Item	DS1 - OBC	DS1a – TAG updates	DS1b – infrastructure investment costs	DS1c – operating expenditure and rolling stock investment	DS1d – active mode impacts	DS1e – wider economic impacts	DS1f – optimism bias value (16%)
PVB	54,977	47,899	47,899	47,899	55,162	64,351	64,351
PVC	39,837	40,377	39,821	47,310	47,310	47,310	42,459
Net Present Value (NPV: PVB - PVC)	15,140	7,521	8,078	589	7,853	17,041	21,892
Benefit Cost Ratio (BCR: PVB / PVC)	1.38	1.19	1.20	1.01	1.17	1.36	1.52

The combination of changes made, including dampening of growth rates within the latest TAG Databook version (September 2021), the additional expenditure of new battery rolling stock and the addition of both physical activity benefits for walkers/cyclists and wider economic impacts, results in a similar BCR as stated in the OBC, with both a higher PVC and higher PVB cancelling each other out.

Figure 14.7: Headbolt Lane Station Benefit Cost Ratio FBC Shift Statement



14.7.3 Preferred Option (DS1) – Present Value of Benefits

Established Impacts

Table 14.17 shows the estimated savings in travel time across all rail passengers arising from the scheme, with new users subject to the 'rule of half' in line with TAG. These are monetised using the latest Value of Time (VoT) estimates from the September 2021 TAG Databook.

Table 14.17: Do Something versus Do Minimum Net User Impacts (generalised minutes)

Year	Commute	Business	Other
2024	-5,077,665	-343,969	-7,853,138
2030	-5,019,460	-347,506	-7,883,254
2040	-4,455,723	-318,557	-7,157,717

The core, or 'established', impacts of the preferred option are shown in Table 14.18, presented in 2010 values and market prices and discounted to 2010 present values. In line with the TAG Analysis of Monetised Costs and Benefits (AMCB) table, the total PVB is inclusive of the reduction in indirect taxation receipts to HM Treasury due to:

- Reduction in fuel duty and VAT; and
- Purchase of rail fares which are zero rated.

Employer's business impacts are inclusive of the reduction in bus revenue to private sector operators.

The Marginal External Costs of Car (MECC) impacts, which include the change in highway decongestion due to mode shift (economic efficiency for non-users) and indirect taxation, are taken from the September 2021 TAG Databook. Individual flows are mapped to TAG diversion factor categories to estimate the car-km reductions by road and area type – the vast majority being short distance trips within a former PTE area. The diversion factors reflect both the direct mode shift and the greater average trip length for rail versus car travel (as car travel is used for a wider variety of trip purposes than rail travel).

Table 14.18: Preferred Option Present Value of Benefits Estimate (£000s in 2010 values and market prices, discounted to 2010)

Impact	Present Value of Benefits (£000s)
Noise	133
Local Air Quality	271
Greenhouse Gases	1,590
Physical Activity	7,263
Accidents	1,984
Economic Efficiency – Commuters	24,111
Economic Efficiency – Other Users	21,296
Economic Efficiency – Employer's Business	4,441
Indirect Taxation	-5,926
Present Value of Benefits (Established / Level 1)	55,162
Wider Economic Impacts	9,189
Present Value of Benefits (Evolving / Level 2)	64,351

Wider Economic Impacts

At this FBC stage, the potential WEIs have been monetarily quantified, as summarised in Section 14.7.2. The initial local assessment of WEIs, through development, is contained within Appendix C and summarised in the Appraisal Summary Table (AST) within Section 14.8.

Non-Monetised Impacts

A screening of non-monetised impacts was undertaken using TAG Units A3³⁹, A4-1⁴⁰ and A4-2⁴¹, drawing on the evidence assembled for the Strategic Case, and analysis from the GRIP 2 study. Table 14.19 summarises the principal considerations and provides initial consideration of whether these are likely to be a net disbenefit, neutral, or a benefit.

Table 14.19: Preferred Option Non-Monetised Impacts – Assessment

Impact	Scheme Considerations	Assessment
Severance	<ul style="list-style-type: none"> Localised severance due to existing rail line Wider community severance between west and east Kirkby 	Slight benefit (+1) – connectivity between Northwood and Tower Hill would be enhanced through the station stairs and lifts and active mode enhancements
Journey Quality	<ul style="list-style-type: none"> MEL services likely to provide a journey quality increment compared to the existing bus service 	Moderate beneficial (+2) –
Reliability	<ul style="list-style-type: none"> Curtailing Northern services at Headbolt Lane instead of Kirkby may offer increased recovery time and/or an opportunity to reschedule units The operational modelling has confirmed there should be no adverse impact to MEL services from the extension 	Slight benefit (+1) – may be opportunity for both MEL and Northern services to enhance performance through increased turnaround times at Headbolt Lane
Accessibility to Services	<ul style="list-style-type: none"> Addition of new mode for non-car available travellers, and much enhanced connectivity to jobs, services, and other opportunities across the CA area A significant number of further and higher education opportunities, and key medical services are located in the major centres, e.g. Liverpool City Centre 	Moderate Beneficial (+2) – the addition of new public transport services to/from North Kirkby will significantly enhance accessibility to a range of services and opportunities. This is particularly true for selected groups at risk of social exclusion without access to a car
Townscape	<ul style="list-style-type: none"> The station is located in a primarily residential area There are limited buildings of cultural value within the immediate vicinity 	Neutral (Zero) – the preferred option does not have a significant impact on the townscape of North Kirkby
Landscape	<ul style="list-style-type: none"> Loss of existing undeveloped land of an agricultural nature 	Slight adverse (negative) effect (-1). The scheme is not very visually intrusive, but new infrastructure will impact on selected views given the flat rural terrain in the area
Biodiversity	<ul style="list-style-type: none"> Potential adverse impacts on Kirkby Brook 	Slight adverse (-1) – construction of both rail and highway infrastructure is likely to have a minor negative effect on biodiversity. Mitigation measures will be included in scheme design

³⁹ See: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/825064/tag-unit-a3-environmental-impact-appraisal.pdf

⁴⁰ See: <https://www.gov.uk/government/publications/tag-unit-a4-1-social-impact-appraisal>

⁴¹ See: <https://www.gov.uk/government/publications/webtag-tag-unit-a4-2-distributional-impact-appraisal-december-2015>

Impact	Scheme Considerations	Assessment
Water Environment	<ul style="list-style-type: none"> Potential adverse impacts on Kirkby Brook 	Slight adverse (-1) – construction of the new station could have a negative impact on the water environment and mitigation measures are required
Option & Non-Use Values	<ul style="list-style-type: none"> The scheme will introduce a new mode for residents of North Kirkby and its hinterland, with connectivity to several destinations that cannot currently be conveniently reached, particularly for those without access to a car. This will provide impact over and above those current to use it through option and non-use values 	Strong beneficial (+3) – new mode and connections for significant proportion of North Kirkby (>1,000 households now likely to have a 'new mode' available)

14.7.4 Preferred Option - Present Value of Costs

Cost Plan Estimate

The CapEx estimate for the infrastructure works from Table 14.11 has been converted to the Present Value of Costs (PVC) estimate for the economic appraisal. Table 14.20 shows the incremental impacts from the base cost estimates for rail and active mode infrastructure, including the change in traction power.

Table 14.20: Infrastructure Investment – Present Value of Costs Estimate

Input	CapEx estimate
Cost plan estimate (exclusive of risk)	46,873,000
With construction inflation	50,573,000
Converted to 2010 prices	40,221,000
Converted to market prices using the indirect taxation multiplier of 1.19	47,863,000
Including OB @16%	55,426,000
Discounted to 2010: PVC	35,906,000

The Cost Plan estimate is combined with the WLCs, rolling stock costs, OpEx, and revenue estimates in Table 14.21.

Table 14.21: Preferred Option Present Value of Costs Estimate (£000s in 2010 values and market prices, discounted to 2010)

Cost	Present Value of Costs (£000s)
Investment Costs (including WLCs)	39,555
Rail Operating Expenditure (including rolling stock investment)	29,636
Rail Revenue (negative cost)	-26,667
Highway Operating Expenditure	-65
Broad Transport Budget	42,459

14.7.5 Preferred Option - Analysis of Monetised Costs and Benefits

The combined economic appraisal metrics from preceding sections are shown in Table 14.22. The full set of TAG economic tables are contained in Appendix D.

Table 14.22: DS2 Preferred Option Analysis of Monetised Costs and Benefits – Summary (£000s in 2010 values and market prices, discounted to 2010)

Item	
Established Impacts, inclusive of Level 1 economic impacts only	
PVB	55,162
PVC	42,459
Net Present Value (NPV: PVB - PVC)	12,703
Benefit Cost Ratio (BCR: PVB / PVC)	1.30
Evolving Impacts, inclusive of Level 2 economic impacts	
PVB	64,351
PVC	42,459
Net Present Value (NPV: PVB - PVC)	21,892
Benefit Cost Ratio (BCR: PVB / PVC)	1.52

14.8 Preferred Option - Appraisal Summary Table

The full Appraisal Summary Table (AST), combining quantified and qualitative impacts, for the preferred option is provided in Table 14.23 below.

Table 14.23: DS1 Preferred Option Appraisal Summary Table

Appraisal Summary Table		Date produced:	30 Novem 2021		Contact:		
Name of scheme:	Headbolt Lane Station Outline Business Case				Name	Jon Crockett	
Description of scheme:	Construction of a new station at Headbolt Lane, North Kirkby, serving the communities of Northwood, Simonswood, and Tower Hill. Merseyrail Electrics Ltd (MEL) services would be extended from their existing terminus at Kirkby, and Northern services to/from Wigan Wallgate curtailed at the new station.				Organisation	Mott MacDonald	
				Role	Scheme Consultant		
Impacts	Summary of key impacts	Assessment					
		Quantitative			Qualitative	Monetary £(NPV)	Distributional 7-pt scale/ vulnerable grp
Economy	Business users & transport providers	Enhancements in efficiency through reduced time and cost of travel, particularly for Knowsley businesses connecting to Liverpool City Centre and other significant regional destinations. Contribution to decongestion through mode shift, particularly for travel into the LCR urban area.			Value of journey time changes(£)		
					Net journey time changes (£)		
			0 to 2min	2 to 5min	> 5min		£ 4,440,681
	Reliability impact on Business users	Enhancements due to new alternative which avoids highway congestion. Timetable optimisation undertaken to minimise disruption to existing rail services.				Slight beneficial	
	Regeneration	The scheme is expected to generate significant regeneration impacts for Knowsley, focussed around the communities of Northwood and Tower Hill. The new connection will help stimulate local economic activity and the attractiveness and productivity of the area for businesses.				Moderate beneficial	
	Wider impacts	The scheme aims to remove the disconnect North Kirkby and the LCR economy, addressing productivity and employment issues, plus access to labour supply for Liverpool. The reductions in travel times and costs is forecast to lead to agglomeration economies and labour supply impacts. The former have been monetised.				Moderate beneficial	£ 9,188,595
Environmental	Noise	Reduction of road traffic noise from mode shift, partially offset by increased noise from additional rail operations.				Slight beneficial	£ 132,711
	Air Quality	Reduction in road traffic emissions, particularly in sensitive areas such as routes into and out of Liverpool. Zero at source emissions from rail operations.				Slight beneficial	£ 271,379
	Greenhouse gases	Reduction in emissions from road traffic due to mode shift.			Change in non-traded carbon over 60y (CO2e)		£ 1,590,216
					Change in traded carbon over 60y (CO2e)		
	Landscape	The scheme is not very visually intrusive, but new infrastructure will impact on selected views given the flat rural terrain in the area				Slight adverse	
	Townscape	The preferred option does not have a significant impact on the townscape of North Kirkby, and environmental measures are included within the design to assist integration with the surrounding landscape.				Neutral	
	Historic Environment	Preferred option not visible from historic assets and has no appreciable impacts				Neutral	
	Biodiversity	Construction of both rail and highway infrastructure is likely to have a minor negative effect on biodiversity, including local designated sites. Mitigation measures will be included in scheme design				Slight adverse	
Water Environment	Potential for adverse impacts from station construction and rail operations.				Slight adverse		
Social	Commuting and Other users	Enhancements in efficiency through reduced time and cost of travel, particularly for Knowsley residents connecting to Liverpool and other city region destinations. Contribution to decongestion through mode shift, particularly for travel into the Liverpool urban area.			Value of journey time changes(£)		
					Net journey time changes (£)		
			0 to 2min	2 to 5min	> 5min		£ 45,406,410
	Reliability impact on Commuting and Other users	Enhancements due to new alternative which avoids highway congestion. Timetable optimisation undertaken to minimise disruption to existing rail services.					
	Physical activity	Negligible, although active mode travel will be encouraged for station access and egress.					£ 7,263,271
	Journey quality	Enhancement in end-to-end journey quality linked to the services available from the new station				Moderate beneficial	
	Accidents	Reduction in road traffic accidents due to mode shift from road to rail					£ 1,984,256
	Security	N/A					
	Access to services	The addition of new public transport services to/from North Kirkby will significantly enhance accessibility to a range of services and opportunities. This is particularly true for selected groups at risk of social exclusion without access to a car				Moderate beneficial	
Affordability	N/A						
Severance	Design proposals create the opportunity for a new link which would remove some of the existing severance effect from the Kirkby-Wigan rail line.				Slight beneficial		
Option and non-use values	New mode and connections for significant proportion of North Kirkby (>1,000 households now likely to have a 'new mode' available)				Large beneficial		
Public Accounts	Cost to Broad Transport Budget						£ 42,459,325
	Indirect Tax Revenues						-£ 5,926,447

14.9 Uncertainties, Sensitivities and Switching Value Analysis

14.9.1 Uncertainty Log

Table 14.24 summarises the critical assumptions within the uncertainty log, and these items were subject to Sensitivity Tests (STs) and/or switching value analysis

Table 14.24: Headbolt Lane Station – Uncertainty Log

ID	Input	Forecast Year(s)	Central Assumption	Uncertainty Assumption(s)	Tests
Scheme Parameters					
1	Trip rates	2024, 2030 and 2040	Mean values across all comparators	<ul style="list-style-type: none"> • Upper bound • Lower bound 	<ul style="list-style-type: none"> • STs 1 and 2
National Uncertainty					
2	GJT Trend	2024, 2030 and 2040	-1% per annum to 2030	<ul style="list-style-type: none"> • No GJT trend • GJT trend to 2040 	<ul style="list-style-type: none"> • STs 3 and 4
3	Higher carbon valuation	2024, 2030 and 2040	TAG Databook – 'Central' value	<ul style="list-style-type: none"> • TAG Databook – 'high' value 	<ul style="list-style-type: none"> • ST12
Local Uncertainty					
4	Local Development	2024, 2030 and 2040	Excluded	<ul style="list-style-type: none"> • High and low growth scenarios to generate change in VfM category 	<ul style="list-style-type: none"> • Switching values (STs 5 and 6)
Scheme Costs					
5	Capital expenditure estimates	2021 to 2023	GRIP 4 Cost Plan	<ul style="list-style-type: none"> • Change in costs to generate change in VfM category 	<ul style="list-style-type: none"> • Switching values (STs 7 and 8) • STs (9 and 10)
P&R Constraints					
6	300 space facility	2024, 2030 and 2040	Assume sufficient P&R capacity to accommodate expected P&R (and rail) demand	<ul style="list-style-type: none"> • Apply constraint (if applicable) 	<ul style="list-style-type: none"> • P&R constraint on rail demand (ST11)

Source: Mott MacDonald

14.9.2 Sensitivity Testing and Switching Value Analysis

The corresponding Economic Case metrics for each test are shown in Table 14.25. At the time of developing the FBC, the Covid-19 pandemic had resulted in a prolonged UK lockdown and the suppression of travel demand, particularly for public transport modes. Any longer term travel demand impacts of the pandemic naturally have a high degree of uncertainty attached to them, with multiple factors at play including economic performance and effects on individuals' attitudes to travel and their resultant behavioural choices. Initial sensitivity testing has been undertaken based on the latest DfT recommended sensitivities for the long-term impact of the pandemic on rail demand. These are contained within Appendix B.

Table 14.25: Sensitivity Testing and Switching Value Analysis – Economic Metrics

Test ID	Description	PVB	PVC	NPV	BCR
Central Case – Level 1 economic impacts only		55,162	44,284	12,703	1.30
1	High trip rates	66,349	34,209	32,141	1.94
2	Low trip rates	44,194	50,550	-6,357	0.87
3	No GJT Trend	49,123	45,350	3,773	1.08
4	GJT Trend extended to 2040	59,779	40,410	19,369	1.48
5	BCR of 1.0: Background demand reduced by 16% compared to DM	46,606	46,606	0	1.00
6	BCR of 2.0: Background demand increased by % compared to DM				2.00
7	BCR of 1.0; CapEx 32% higher	55,162	55,162	0	1.00
8	BCR of 2.0; CapEx 38% lower	55,162	27,581	27,581	2.00
9	Stage 3 TAG OB estimate (30%)	55,162	47,310	7,853	1.17
10	P20 QRA estimate used as OB (12%)	55,162	41,195	13,967	1.34
11	P&R constrained to 300 spaces (see Appendix B – under the core scenario this is sufficient capacity)	55,162	44,284	12,703	1.30
12	Carbon value – high	56,710	42,459	14,250	1.34

14.10 Value for Money Statement

This section has considered the Value for Money (VfM) offered by the proposed construction of a new rail station at Headbolt Lane in North Kirkby to serve the communities of Northwood, Simonswood, and Tower Hill. This is the preferred connectivity option for addressing a set of challenges and issues identified as affecting the area. The station would enable the extension of the existing four trains per hour between Kirkby and Liverpool Central, providing a high frequency level of service with a journey time to Liverpool City Centre which is highly competitive compared to other alternatives.

The assessment of the preferred option's costs and benefits has been undertaken in line with DfT's TAG suite, referencing both modelling and appraisal units. Cost inputs are principally taken from the parallel GRIP 4 workstream, coupled with a full consideration of additional capital and operating expenditure (including battery operated units). Appropriate risk and optimism bias adjustments have been applied. Taken together, these benefits and costs result in a core scenario BCR of 1.30, considerate of 'established' impacts only (including only both direct and wider economic impacts). The Scheme is therefore 'Low' VfM, falling below the 1.50 threshold; however, this is exclusive of wider economic, non-monetised, and place-based (local) impacts. The Net Present Value (NPV) is £12.7 million over the 60-year appraisal period.

Including net UK Wider Economic Impacts (WEIs), in accordance with TAG, increases the BCR to 1.52, 'Medium' VfM, with the NPV increasing to £21.9 million. These arise from increased productivity through agglomeration. As noted in the Strategic Case, the scheme offers substantial sub-national WEIs across North Kirkby, an area with significant unemployment issues, and the potential for significant regeneration opportunities. This includes the ability to support and/or stimulate additional housing development. In an area of high deprivation, limited connectivity, higher than average economic activity, and low levels of car availability, there are clear significant strategic gains which are not necessarily reflected in the standard net UK Economic Case which align closely with the principles of 'levelling up'.

A series of sensitivity tests have been undertaken around the core assumptions and inputs, recognising critical uncertainties and risks. These demonstrate that the VfM assessment noted previously is likely to remain consistent, and potentially be higher, under multiple future scenarios.

15 Financial Case

This section sets out the findings of financial analysis assessing overall affordability of the project, including both initial Capital Expenditure (CapEx) for construction and ongoing financing of the operation of the extended rail services.

15.1 Introduction

The DfT's expectations for the Financial Case at the FBC stage of business case development are set out in Table 15.1.

Table 15.1: DfT Financial Case Requirements at FBC Stage

Content	DfT requirements	Section number and title
Introduction	Outline the approach taken to assess affordability	15.2 - Approach
Costs	Provide details of: <ul style="list-style-type: none"> • The expected whole life costs • When they will occur • Breakdown and profile of costs by those parties on whom they fall • Risk allowances 	15.4 - Costs
Budgets / Funding Cover	Provide analysis of the budget/funding cover for the project	15.5 - Funding
Accounting Implications	Describe expected impact on each organisation's balance sheet	15.6 - Overall Affordability Assessment and Conclusions

Source: DfT

15.2 Approach

Based on the estimated costs (described in Section 14.6) and passenger (farebox) revenue (see Section 14.4.5), Mot MacDonald has developed a cash flow financial model to assess the overall affordability of the preferred option. In addition to the construction phase, the model covers a 30-year operational period to 2052.

15.3 Modelled Scenarios

The incremental differences between the Do Minimum (DM) and Do Something (DS) have been modelled only for the preferred option (DS1). The inputs to the financial modelling are based on the same inputs and assumptions as the 'core scenario' described in the preceding Economic Case.

15.4 Costs

The estimated capital cost of the scheme is £67.72 million (2021 Q1 prices) estimated from:

- Latest GRIP Stage 4 estimates of 'costs to complete' for rail infrastructure;
- LCR CA estimates for the additional Class 777 train required to operate the MEL extension to Headbolt Lane;
- Costs for adapting 7 no. Class 777 trains (including the additional train) to battery operation, including infrastructure works at the Kirkdale MEL depot; and

- Costs provided by Knowsley Council for the delivery of the active travel route enhancement package.

These costs are exclusive of any allowance for risk or inflation. A Quantified Risk Assessment (QRA) has been completed, and has been regularly updated, by Network Rail. Further detail on the composition of this estimate is provided in Section 15.4.1.

The latest Network Rail estimates of costs to complete, as of November 2021, are £44.12 million, inclusive of GRIP Stages 5 to 8.

This estimate is exclusive of the cost of one additional four-car train to enable operation of the extended MEL services to Headbolt Lane. The estimated cost, inclusive of mobilisation for a single additional train is £6.0 million (2021 Q3 prices). This is exclusive of ongoing Operational Expenditure (OpEx) and the adaptation to battery operation.

The estimated cost of adapting 7 no. Class 777 units and works at Kirkdale depot for ongoing battery renewal and maintenance is estimated to be £14.4 million.

The active travel package is estimated to cost £2.75 million.

Total OpEx for the station and additional train-kms is estimated at £34.7 million (2019 prices) over the 30-year period from 2023 to 2052. Further detail on the OpEx is contained within Section 15.4.2. This excludes a potential saving for Northern services terminating at Headbolt Lane instead of Kirkby, which has not yet been quantified.

The delivery and operation of the scheme entails a four-stage cost lifecycle, as follows:

1. Preparation costs
 - a. Design
 - b. Enabling Works
2. Construction costs
 - a. Railway Control Systems
 - b. Train Power Systems
 - c. Electric Power and Plant
 - d. Permanent Way
 - e. Operational Telecommunication Systems
 - f. Buildings and Property
 - g. Civil Engineering
 - h. Main Contractor Preliminaries
 - i. Main Contractor Overheads and Profit
 - j. Project Management
 - k. Other Project Costs
 - l. Risk
3. Operational costs
 - a. Staff
 - b. Network Rail charges: TARA, EC4T and VUC
 - c. Station operating costs
 - d. Long-Term Charge (stations)

4. Long term asset renewal (whole life) costs (assumed incurred in the late 2050s, outside of financial model period)

The balance between incremental farebox revenue and OpEx would be governed, at least until the end of the current MEL concession agreement in 2028, by the 'No Net Gain No Net Loss' (NNGNNL) principle, where Merseytravel would carry the risk associated with any shortfall in revenue versus OpEx, or vice versa, any surplus of revenue compared to OpEx.

15.4.1 Capital Costs Estimates and Phasing

In parallel to the FBC, the capital cost estimate(s) have been refined to a GRIP 4 level of detail. As rail projects progress through the GRIP stages, the level of knowledge and understanding increases, so the scope of works becomes more clearly understood and will therefore be more accurately quantified. Similarly, knowledge of risks and areas of cost uncertainty are better understood and will be defined (with provision for risk exposure duly included) so the accuracy of the cost estimates increases (and a higher level of confidence is seen)⁴². The latest estimates are provided in conjunction with a QRA (November 2021).

'Risk Allowance' needs to account for (to varying degrees over the course of the project's life) the cost consequences of⁴³:

- The development and refinement of the design;
- The greater understanding of the solution's interfaces with its physical environment;
- Legitimate changes in requirement scope;
- A reducing provision for other areas of uncertainty which are not addressed by the above 3 bullets; and
- Specific risks such as changes in key personnel during the project, pending legislative changes which would impact on the project.

Risk allowance aims to cover all known areas of uncertainty. It is separate to Optimism Bias (OB), which is typically applied in the Economic Case only, which seeks to account for 'unknown unknowns' and a historic tendency to underestimate outturn scheme costs. While the two need to be considered in conjunction, they need not align.

The capital cost excludes land acquisition costs which are currently estimated to be c.£0.07 million in 2019 prices. However, the land is under the ownership of Knowsley Council and this would simply be a transfer between two public sector bodies.

Mott MacDonald has used the cash profile from the latest Network Rail cost estimates for the purposes of the cash flow modelling, based on scheme opening during early 2023, in line with the expected expenditure and delivery timescales of the Transforming Cities Fund (TCF) mayoral allocations from which the scheme is expected to be funded.

This assumes the scheme will be developed over the three-year period from 2021 to 2023, with construction focused in 2022. The scheme is assumed to be fully operational from 2023 with direct services running from Headbolt Lane to Liverpool Central and Wigan Wallgate/Manchester Victoria, in line with the preferred option set out in the Economic Case.

As is normal practice for developing a financial case, base costs are then converted to nominal prices which gives the cost estimates based on the year they are anticipated to be incurred, accounting for inflation. This is done by:

⁴² Adapted from – Network Rail (2019), 'Cost Planning Procedure, Issue 3.3'

⁴³ Ibid

- Profiling the construction spend per annum as per the Economic Case; and
- Applying the Building Cost Information Service (BCIS) All-In Tender Index to convert 2019 price base estimates to nominal figures.

The cost estimate of the scheme in nominal prices is set out in Table 15.2 for each year of the development programme. These costs include both rail and active mode infrastructure. This is inclusive of construction inflation, but excludes:

- The latest QRA estimates;
- WLCs; and
- Rolling stock and battery traction power costs.

Table 15.2: GRIP 4 Cost Plan, allowing for BCIS construction inflation (nominal prices)

Year	1 - Direct Construction Works	2 - Indirect Construction Works	3 - Project Management, Design and Other Project Costs	TOTAL
2021	1,069,998	491,142	2,461,316	4,022,456
2022	15,254,948	7,002,210	10,379,138	32,636,297
2023	5,585,828	2,563,965	5,083,406	13,233,199
2024	0	0	266,630	266,630
TOTAL	21,190,774	10,057,317	18,190,491	50,158,582

This stream of costs in nominal terms is then discounted to 2019 values applying a nominal discount rate of 5.8% (which represents the cost of capital)⁴⁴ to give a present value estimate. Present values are the value of a future cash flow in the present and are used to provide comparable present value figures in today's values. It is the present value figures that are used for comparing scheme costs and revenues to identify the residual gap funding requirement.

The total estimated cost of the scheme infrastructure works in nominal terms (i.e. taking account of escalation) is £50.2m. The present value of the estimated cost of the scheme is £41.5 million⁴⁵ (2019 present values).

The latest QRA estimates for the rail infrastructure components are shown in Table 15.3. These exclude any allowance for inflation. The percentages are used to apply risk adjustments to the inflation-adjusted and discounted values in a given year. The same percentages are used for the active mode infrastructure works.

Table 15.3: Rail Infrastructure Quantified Risk Assessment Values (2021 prices)

Level	Value	Percentage
P20	5,355,119	12.1%
P50	6,909,948	15.7%
P80	8,589,384	19.5%
P90	9,495,106	21.5%
PMean	6,974,020	15.8%

Source: Network Rail

⁴⁴ To convert to present value, nominal costs are discounted by a nominal discount rate: a real discount rate of 3.5% + Retail Price Index i.e. 5.8% nominal to represent the cost of capital.

⁴⁵ Assuming nominal discount rate of 5.8% per annum.

Table 15.4 summarises all investment costs in undiscounted nominal prices, with the risk values relative to the rail and active mode infrastructure only. Table 15.5 presents the corresponding values discounted to 2019 using a rate of 5.8% per annum.

Table 15.4: Investment Cost Summary (nominal prices)

Year	Rail & Active Mode Infrastructure	Rolling Stock Investment	Risk at P50 (15.7%)	Risk at PMean (15.8%)	Risk at P80 (19.5%)	Risk at P90
2021	4,022,456	7,000,000	631,526	635,548	784,379	864,828
2022	32,636,297	7,980,123	5,123,899	5,156,535	6,364,078	7,016,804
2023	13,233,199	4,365,320	2,077,612	2,090,845	2,580,474	2,845,138
2024	266,630	1,052,168	41,861	42,128	51,993	57,325
TOTAL	50,158,582	20,397,610	7,874,897	7,925,056	9,870,924	10,784,095

Table 15.5: Investment Cost Summary (nominal prices, discounted to 2019)

Year	Rail & Active Mode Infrastructure	Rolling Stock Investment	Risk at P50 (15.7%)	Risk at PMean (15.8%)	Risk at P80 (19.5%)	Risk at P90
2021	3,569,383	6,211,548	560,393	563,962	696,030	767,417
2022	27,280,579	6,670,560	4,283,051	4,310,331	5,319,713	5,865,325
2023	10,420,018	3,437,318	1,635,943	1,646,363	2,031,903	2,240,304
2024	197,771	780,440	31,050	31,248	38,565	42,521
TOTAL	41,467,751	17,099,865	6,510,437	6,551,905	8,086,211	8,915,566

15.4.2 Whole Life Costs

The capital works set out above will incur ongoing costs, including:

- Incremental operating costs for the additional infrastructure;
- Maintenance costs for new infrastructure; and
- Periodic renewals for the above infrastructure.

These costs are included in the analysis. It has been assumed that smaller scale maintenance, repair and renewal (MRR) costs and operating costs are met via access charges paid by the rail service provider (see Section 15.4.3).

Network Rail would derive an income from the charges associated with the scheme to contribute towards maintenance costs. The commercial structure assumes Network Rail operation and MRR of the asset, and Network Rail is able to balance any under or over recovery across its entire asset base (of which this line would represent a very small amount).

It has been assumed that there is no requirement for periodic renewal expenditure on the scheme during the model forecast period, noting the expected asset life for comparable schemes. Major renewals are forecast to fall in the late 2050s (assuming new permanent way as per the latest GRIP 4 estimates), which falls outside of the 30-year financial appraisal period.

15.4.3 Operating Costs

Under the existing regulatory regime operated by the Office for Rail and Road (ORR), these asset charges primarily comprise:

- Station Long Term Charge (LTC) (regulated) covers MRR costs at stations.
- Qualifying Expenditure Charge (part-regulated) covers day-to-day running costs of stations.
- Track Access Charge (regulated), a majority fixed charge, with small variable component based on usage, designed to cover track MRR costs.

For the MEL network, the relevant charges are:

- Train Availability and Reliability Agreement (TARA): £2.11 per train mile, comprising a fixed and variable rate for MRR
- Electric Current for Traction (EC4T): 52 pence per mile
- Variable Usage Charge (VUC): 8.8 pence per mile

These rates are based on the latest information available for the new Class 777 rolling stock as provided by the CA. These three rates are assumed to rise in line with the Retail price Index (RPI) forecasts from the Office for Budget responsibility (OBR).

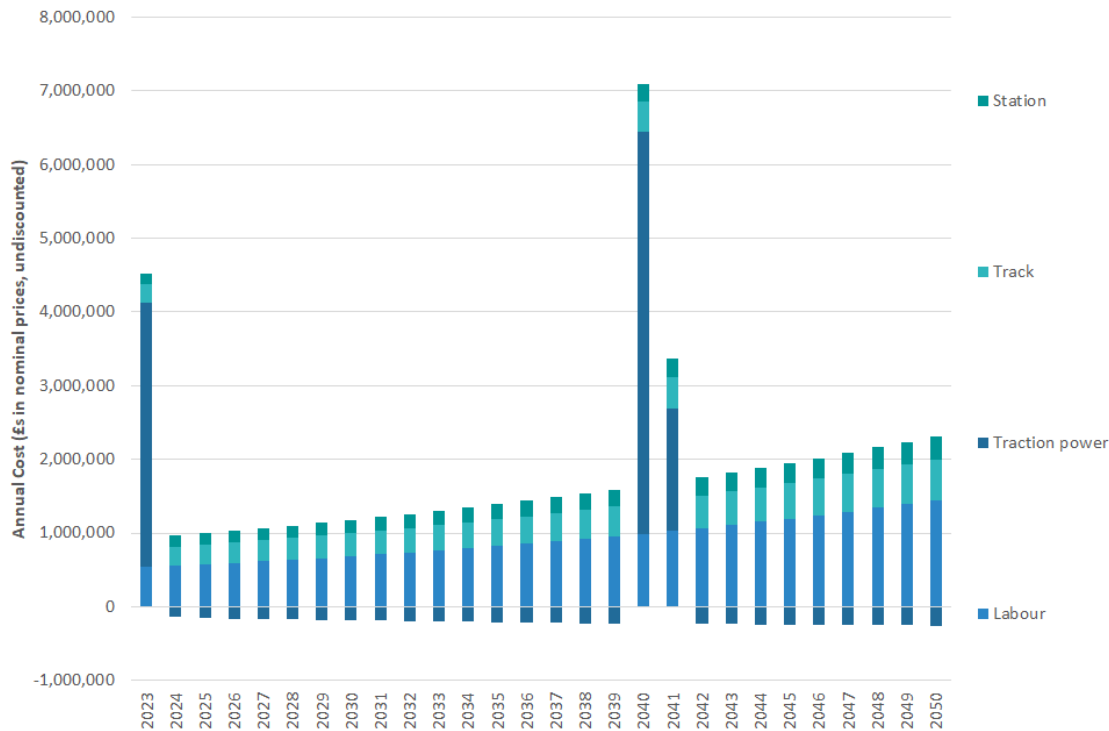
At this stage we have not estimated an OpEx change for the Northern service which would be curtailed at Headbolt Lane instead of Kirkby, e.g. reduction in track access charges. In practice, this is likely to be small (as is the expected impact on revenue from the introduction of interchange between Kirkby and stations to the east).

Labour costs for the nine additional station and on-train staff who are estimated to be required have been built up from local labour rate estimates and validated using inputs from MEL. Labour costs are assumed to rise in line with the 'real earnings index' from the September 2021 TAG Databook.

Station costs have been provided directly by MEL, and inclusive of direct costs to MEL plus Network Rail LTC access charges amount to circa £150,000 per annum.

The cumulative OpEx estimates in nominal prices, by broad item, are shown in Figure 15.1. Annual savings occur for traction power under the EC4T arrangement, when batteries don't need to be renewed, as the battery operation enables power to be returned to the Grid. Across the 30-year appraisal period, the total nominal OpEx estimate is £52.3 million. The discounted 2019 present value is £18.3 million (using the same 5.8% per annum discount rate as for investment costs).

Figure 15.1: Headbolt Lane Station and MEL Rail Services Nominal Operating Expenditure Estimate to 2050



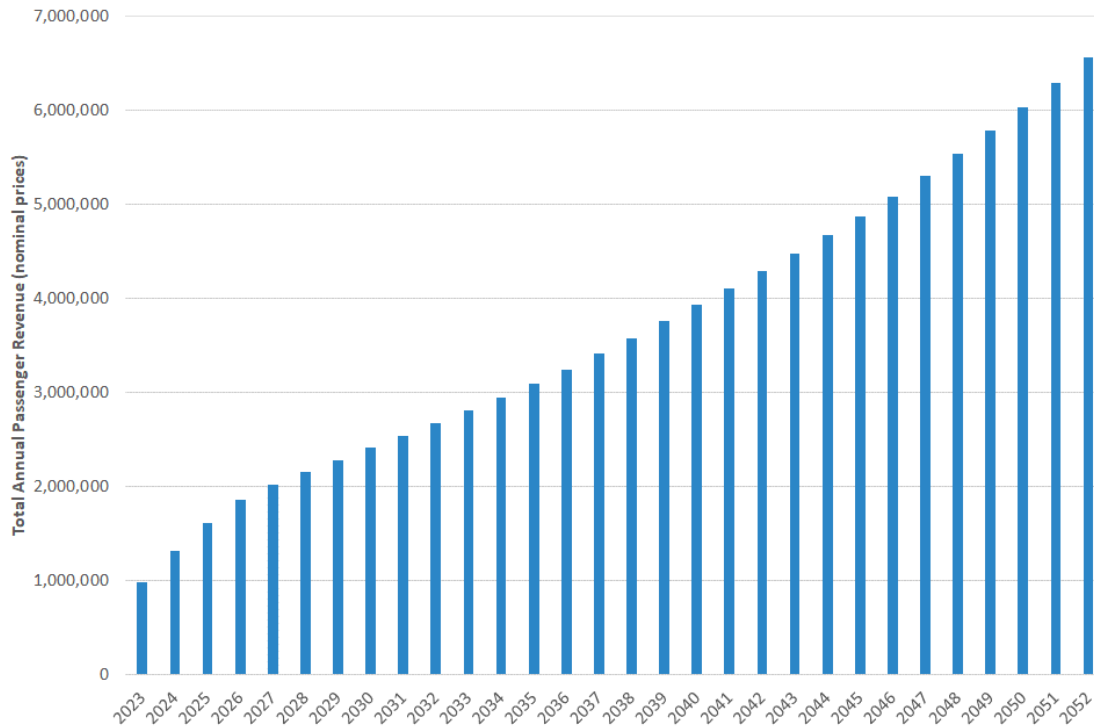
15.4.4 Farebox Revenue

Incremental changes in passenger farebox revenue are derived from the demand forecasting (described in Section 14.4). This is inclusive of an assumption that fares will rise at an average rate of RPI+1% from 2021 to 2040, with a corresponding impact on demand. With background rates of RPI included, this leads to significant year-on-year growth in revenue even as demand is relatively static following the initial ramp-up period after opening. Figure 15.2 shows the nominal farebox revenue change under the same assumptions as the Economic Case, with demand ramp-up impacting on the scheme’s early years. Within the Economic Case, demand and revenue changes are capped at 2040, 20 years after the appraisal year.

The estimated farebox revenue is £109.6 million in nominal terms over the period 2023 to 2052, or £33.0 million in discounted 2019 present values. Under this scenario farebox revenue therefore, in the majority of years where battery replacement is not required, exceeds annual operating expenditure due to:

- Fares rising at RPI+1% - while this suppresses demand it naturally increases farebox revenue. This rate is greater
- Traction power cost efficiencies, as surpluses are generated over the stretch of route to Headbolt Lane which can be returned to the Grid via the EC4T arrangement.

Figure 15.2: Headbolt Lane Station Nominal Farebox Revenue Estimate to 2050



15.5 Funding

Viable funding options for major rail schemes include:

- Grant funding;
- Railway-related funding sources; and
- Property-related funding sources.

Most rail capital schemes are predominantly grant funded, as they do not generate sufficient operating surplus to cover the costs of funding the infrastructure works – at least in the short to medium term.

In the immediate term, the principal grant funding opportunity is via the LCR’s TCF mayoral allocation. Complementary investment of £2.725 million has been secured from LCRCA through TCF to deliver (via KMBC) the highway works associated with the active travel route enhancements.

15.5.1 Transforming Cities Funding

As part of its devolution deal, the LCR has received a time-limited allocation of £173 million from the DfT’s TCF. The aim of TCF is to help deliver projects which will transform sustainable transport connectivity on key commuter routes in major cities. A ‘long list’ of schemes has been proposed for TCF, not all of which will be fundable within the allocation.

In November 2021 the LCR CA SIF agreed provisional funding of £80 million from the TCF to cover all investment cost components: rail, rolling stock (including traction power), and active mode enhancements. This is inclusive of costs already incurred (i.e. ‘sunk’) during earlier GRIP and business case stages.

15.5.2 Alternative Non-Grant Options

Farebox revenue provides a long-term opportunity to help recoup scheme costs; however, there could be significant lags between the capital expenditure and the generation of any surplus, especially in light of the Covid-19 pandemic.

15.6 Overall Affordability Assessment and Conclusions

It is assumed that the scheme will only progress via grant funding. The TCF allocation provides an immediate opportunity to advance the scheme without a timing mismatch between when the capital costs are incurred and when funding sources (revenues) arise⁴⁶.

Table 15.6 summarises the nominal costs and revenue, in both undiscounted and discounted (present value) terms for the period 2020 to 2053 (30 years after opening) inclusive.

Table 15.6: Affordability Assessment – Nominal Scheme Costs, 2020 to 2053 (£ millions)

Item	Nominal costs	Nominal cost (discounted 2019 present values)
Station and track infrastructure	50.2	41.5
Additional four-car Class 777 train and adaptation to battery	20.4	17.1
Operating Expenditure	52.3	18.3
Passenger Farebox revenue	-109.6	-33.0
TOTAL	13.3	43.9

The impacts of discounting on longer term OpEx and farebox revenue is apparent when comparing the two totals. Under the modelled assumptions around passenger demand, including a return to pre-2020 pandemic demand levels, the scheme is affordable in the longer term with incremental farebox revenue more than offsetting ongoing OpEx.

15.7 Financial Risk Assessment

There are a number of financial risks inherent in delivering a scheme of this nature both in terms of funding and infrastructure delivery. For example:

- **Infrastructure delivery costs** - If scheme costs were higher than expected, additional funding would need to be secured to deliver the infrastructure assets. If this involved prudential borrowing this would make the debt principle higher and repayment of the loans harder.

A number of factors beyond the control of the scheme sponsors could lead to higher costs such as:

- higher than forecast construction sector inflation (capital and/or labour);
 - unexpected delays obtaining permits/consents/approvals during the planning application and public inquiry process; and
 - adverse weather conditions during the construction period.
- **Operational revenues/costs** - If operational revenues from the line were lower than forecast or operational costs higher, this would diminish the farebox surplus, potentially putting the scheme into deficit. Examples include slower than expected demand ramp-up

⁴⁶ The amount of borrowing undertaken by the LCR CA / Merseytravel needs to be within its overall debt cap, an amount agreed with HM Treasury under the 2033 Local Government Act.

and a significant long-term impact on rail demand from the Covid-19 pandemic. Under the risk sharing agreement within the MEL concession, this could lead to a need for additional public sector subsidy.

For the former, careful consideration will be required to determine how best to manage these financial risks, drawing on the widespread experience described in Section 17.2.

16 Commercial Case

The Commercial Case provides evidence on the commercial viability of the proposal and the procurement strategy that will be used to engage the market. This section provides a high-level indication of the proposed procurement methods and expected outputs which will be further developed once a preferred option is selected.

16.1 Approach

The DfT's guidance document sets out the issues that should be covered as part of the Commercial Case. This has been used as a basis for the approach to development of the Commercial Case for Headbolt Lane Station FBC. Table 16.1 shows how this section aligns with DfT's requirements.

Table 16.1: DfT Commercial Case Requirements at FBC Stage

Content	DfT requirements	Section number and title
Introduction	Outline the approach taken to assess commercial viability.	16.1 Approach
Output based specification	Summarise the requirement in terms of outcomes and outputs, supplemented by full specification as appendix.	16.2 Output Based Specification
Procurement strategy	Detail procurement/purchasing options including how they will secure the economic, social and environmental factors outlined in the economic case	16.3 Procurement strategy
Sourcing options	Explain the options for sources of provision of services to meet the business need e.g. partnerships, framework, existing supplier arrangements, with rationale for selecting preferred sourcing option.	16.3 Procurement strategy
Payment mechanisms	Set out the proposed payment mechanisms that will be negotiated with the providers e.g. linked to performance and availability, providing incentives for alternative revenue streams	16.3.3 Pricing Framework and Charging Mechanisms
Pricing framework and charging mechanisms	To include incentives, deductions, and performance targets.	16.3.3 Pricing Framework and Charging Mechanisms
Risk allocation and transfer	Present an assessment of how the types of risk might be apportioned or shared, with risks allocated to the party best placed to manage them subject to achieving value for money.	16.5 Risk Analysis and Transfer
Contract length	Set out scenarios for contract length (with rationale) and proposed key contractual clauses.	16.4 Contract management
Contract management	Provide a high level view of implementation timescales. Detail additional support for in service management during rollout / closure. Set out arrangements for managing contract through project / service delivery.	16.4 Contract management

Source: DfT

16.2 Output Based Specification

The principal aim of this scheme is to develop a new rail station at Headbolt Lane to serve the neighbourhoods of Northwood, Simonswood and Tower Hill in order to address the current connectivity constraints identified across the network and better connect residential areas to employment opportunities in Liverpool City Centre and across the LCR.

At this stage of the project development the preferred scheme has been selected. As part of the GRIP and business case stages, a number of options have been proposed and sifted to produce a preferred option which has been developed and refined as part of the ongoing GRIP work. The key outputs of the preferred option include:

- A new station at Headbolt Lane, comprising a main station building with ticket office and waiting room and 3 no. platforms (2 x MEL and 1 x Northern). The platforms will be provided with:
 -
- Purchase of 1 no. Class 777 train as an addition to the current order placed
- Conversion of 7 no. Class 777 train units to battery-electric bi-mode operation, inclusive of the additional unit, including:
 - 42 battery modules (6 per train)
 - Acceptance testing
 - Tools and equipment for the maintenance and renewal of the battery technology
- Cycle parking facilities – 100 spaces with passive provision for an additional 200 spaces
- 300 space car park with potential to extend to 500 spaces in the future.
- Bus stop provision within the station
- Drop off area within the station
- Active travel on routes to and from the station, including:
 - A new signalised crossing at the junction of Headbolt Lane and County Road;
 - Traffic calming measures on Headbolt Lane between Fallowfield and Hollinghurst Road (0.6km);
 - A 4m segregated cycleway and footway on the southern side of Headbolt Lane between County Road and Fallowfield (0.24km);
 - A 4m cycleway and footway on the north side of Headbolt Lane between Fallowfield and Southcroft Drive (0.17km);
 - A new toucan crossing of Headbolt Lane adjacent to the main entrance/exit; and
 - A 4m wide segregated cycleway and footway between Limetree Road and County Road to the south of the rail line (0.38km).

The key expected outcomes of the scheme include:

- Increased network coverage of Merseyrail Electrics services consistent with the LCR LTRS
- % GVA uplift in Liverpool City Region as a result of investment around north Kirkby
- Improved access to jobs and opportunities in Liverpool, across the LCR and beyond (West Lancashire)
- Reduction in the level of deprivation in areas such as Tower Hill and Northwood as people are able to access opportunities and services
- Improved overall journey times and direct connectivity into the city centre for passengers travelling from beyond Kirkby
- Improved access and interchange facilities
- Increased integration of transport modes and improved opportunity for road to rail modal transfer
- % reduction in levels of NO₂ and other particulates as a result of fewer car trips to the city centre.

16.3 Procurement Strategy

All design and infrastructure works associated with the scheme will be delivered by Network Rail under the management and coordination of Merseytravel. Battery powered trains and the additional train required will be provided by Stadler. Network Rail is governed by a range of rules, which will govern the procurement of the scheme.

16.3.1 Preferred Method

Network Rail is accountable for the operation, maintenance and renewal of railway assets. It has a significant interest in any improvements to the network. There are certain services that only Network Rail can supply – so called non-contestable services. These include protecting the railway network and its operations, information provision, safety management, consents and access to the network. There are two possible roles for Network Rail to take. These are:

- Network Rail commissioned directly to deliver the scheme; and
- Promoter to deliver the scheme with Network Rail offering an Asset Protection (ASPRO) role.

The delivery of the Headbolt Lane scheme will be procured under the first scenario. Within this scenario Network Rail will work to develop a deliverable and standards-compliant design in collaboration with the promoter. They then oversee construction prior to handing over the asset to the selected operator. The Office of Rail Regulation (ORR) identifies that Network Rail will in many cases act as the delivery agent, and it will take on risks that it is best placed to manage. These include the design and construction risks.

Network Rail have developed, and ORR have approved, four template contracts which are suitable for project values of below £50 million. These are designed to “offer a fair balance of risk” between the promoter (in this case Merseytravel) and Network Rail. The four types of contract are defined by the ORR as:

- Basic Services Agreement: simple agreements to cover pre-feasibility works to scope the scheme and develop a business case;
- Development Services Agreement: for development and design work undertaken by Network Rail on behalf of the promoter;
- Implementation Agreement: with Network Rail acting as construction manager, this is an agreement for enhancement works on or about the controlled railway infrastructure to provide detailed design and implementation of the promoter’s scheme with the contracting strategy agreed between Network Rail and the promoter; and
- Asset Protection Agreement: an agreement for promoter led works on the controlled railway infrastructure, where Network Rail facilitates the promoter’s enhancement scheme interface with the operations, maintenance and renewals business.

The latter three contracts are relevant to the Headbolt Lane project.

ORR identify that the templates only set out the terms for engaging with Network Rail. Subsequent issues which may need to be covered in the contract include leases, station charges and asset purchase agreements.

Discussions have taken place between Network Rail and Merseytravel regarding the option of adopting a design and build approach which is the selected procurement method for the scheme. This will provide optimum early engagement with the specialist contractors and mitigate the limited scheme delivery timeframe.

Under the design and build approach, two separate Development Services Agreement's with Network Rail have been identified and entered into in order to deliver the GRIP 4 and GRIP 5 design stages. It is envisaged that GRIP 6-8 will be procured through a Network Rail NR Implementation Agreement (Emerging Cost) contract. The entering into of any agreement is subject to the relevant Merseytravel and Network Rail Investment Panel approvals.

At this stage, it is envisaged Merseyrail will have no involvement in scheme delivery apart from towards the end of the contract where they will be responsible for carrying out the fit of the ticket office, ticket machines, and staff facilities. Network Rail will continue to deliver the elements inside the rail corridor.

16.3.2 Alternative Procurement Method

As a rail scheme, the works relating to the new station are governed by Network Rail and their procurement rules. For this scheme there are no possibilities to use alternative procurement rules.

16.3.3 Pricing Framework and Charging Mechanisms

This section outlines how Merseytravel intend to make payment for key services and outputs over the expected lifespan of the contract (s).

Prices within the contract will be defined as either:

- a. A lump sum- i.e. a fixed price for the delivery of agreed outputs within a fixed timetable, with appropriate remedies in place for delays and cost over-runs; or
- b. A target cost- i.e. linking payments to specified performance targets.

The charging mechanism is the formula against which payment for the contracted services will be made. The underlying aim of the payment mechanism and pricing structure is to reflect the optimum balance between risk and return in the contract.

Details of the agreed payment mechanism will be confirmed once full details of the contract have been formed. However, it is likely that Interim Payments will be made throughout the timeframe of the contract as this is the most common mechanism utilised by Network Rail.

Therefore, it is likely that throughout the contract(s) assessment intervals will be set out whereby the project manager will determine the amount due based on the price of works completed to date.

16.4 Contract Management

For both the design and development phase of the work Merseytravel will enter into a Development Services Agreement (DSA) with Network Rail utilising the ORR approved template with scheme specific details (including services to be provided). GRIP Stage 4 and 5 will be delivered under two separate DSA's. Network Rail will identify and appoint, from their competitively procured framework, the appropriate design team.

For the implementation phase of the work Merseytravel will enter into an Implementation Agreement with Network Rail who will then identify and appoint the appropriate contractor from their competitively procured framework. To date, Contractors have been appointed up to the completion of GRIP 5.

Anticipated contract timescales are shown in Table 16.2 below.

Table 16.2: Contract timescales and lengths

Element	End Date
GRIP 3 Design	Complete July 2021
Funding approval for design works	Funding for detailed design and advanced works will be agreed upon submission of the OBC and GRIP 3 designs works, enabling the RNEP 'Decision to Design'
GRIP 4 Detailed Design	Complete January 2022 in parallel with FBC, enabling the RNEP 'Decision to Deliver'
Funding Approval for GRIP 5-8	Funding for the construction will be agreed upon submission of FBC and GRIP 4 deliverables in January 2022
GRIP 5-8 Construction	Complete May 2023

Source: Merseytravel

16.5 Risk Analysis and Transfer

A robust risk management strategy has been identified for the scheme and is set out in Section 17.7 which identifies the key risks associated with the delivery of the scheme and these can be mitigated. Management of these risks will be an ongoing task through to practical completion.

As part of this process, an owner has been allocated to each of the key risks identified in Table 17.7. Where appropriate, the aim is to eliminate the identified risk, or prepare relevant mitigation measures to manage and reduce the impact of the risk.

Merseytravel will attribute all project risks to a nominated party that can best demonstrate value for money in managing the risk. Early engagement with Network Rail has enabled a greater degree of design and other construction risk to be mitigated by their appointed contractor and consultant, while under the management/supervision of Merseytravel.

16.6 Summary

The scheme will use Network Rail procurement methods, and Merseytravel are already in discussions with Network Rail over adopting a design and build approach to the scheme. This will initially use a Development Services Agreement between Merseytravel and Network Rail, leading on to an Implementation Agreement in order to construct the scheme. Early discussions should help to mitigate risk relating to the relatively tight programme.

17 Management Case

The purpose of the Management Case is to demonstrate whether a proposal is deliverable. It tests the project planning, governance structure, risk management, communications and stakeholder management which are outlined within this section. There should be a clear and agreed understanding of what needs to be done, why, when and how, with measures in place to identify and manage any risks.

17.1 Approach

The DfT guidance document, 'The Transport Business Case: Management Case', outlines the areas that should be covered in the Management Case. These have been used to structure the development of the Management Case for the Headbolt Lane FBC. The DfT requirements are set out below together with the relevant sections of this report in which they can be found.

The DfT guidance document, 'The Transport Business Case: Management Case', outlines the areas that should be covered in the Management Case. These have been used to structure the development of the Management Case for the Headbolt Lane FBC. The DfT requirements are set out below together with the relevant sections of this report in which they can be found.

Table 17.1: DfT requirements for the Management Case at FBC Stage

Content	DfT requirements	Section number and title
Introduction	Outline the approach taken to assess if the proposal is deliverable.	17.1 Approach
Evidence of similar projects	If possible, provide evidence of similar projects that have been successful, to support the recommended project approach. If no similar projects are available for comparison, outline the basis of assumptions for delivery of this project e.g. comparison with industry averages for this kind of work.	17.2 Evidence of similar projects
Project dependencies	Set out deliverables and decisions that are provided/received from other projects.	17.3 Project dependencies
Governance, Organisational structures & roles	Describe key roles, lines of accountability and how they are resourced.	17.3 Project Governance
Project reporting	Describe reporting arrangements.	17.4.4 Integrated Working
Project plan	Plan with key milestones and progress, including critical plan.	17.6 Delivery Programme
Assurance & approvals plan	Plan with key assurance and approval milestones.	17.5 Assurance and approvals
Communications and Stakeholder management	Development communications strategy for the project.	17.8 Communications and Stakeholder Management
Benefits Realisation Plan	Set out approach to managing realisation of benefits	17.11 Benefits Realisation
Monitoring and Evaluation	Summarise outline arrangements for monitoring and evaluating the intervention	● Outline Monitoring and Evaluation
Risk management strategy	Arrangements for risk management and its effectiveness so far.	17.7 Risk Management Strategy
Conclusion	Summarise overall approach for project management at this stage of project.	17.11 Summary

Source: DfT

17.2 Evidence of Similar Projects


A number of projects which have been successfully completed by Merseytravel in recent years are set out within Table 17.2. These include new stations within the Liverpool City Region and significant station improvement works. This demonstrates an extensive record of delivering large-scale rail network enhancements and new station developments, highlighting the ability of Merseytravel to deliver this scheme.

Table 17.2: Evidence of Similar Projects

Project	Description	Cost	Timescale
Maghull North	Maghull North is a new station which has been developed by Merseytravel and constructed between September 2017 and June 2018. Similarly to the proposed delivery of this project, Network Rail undertook the development of the station on behalf of Merseytravel.	£13m	Sep 2017-Jun 2018



As the station was still within the first two years of opening when the COVID-19 pandemic affected services and patronage, the benefits of the scheme have not yet been realised and it is expected that patronage will continue to increase in the wake of the pandemic. However, this scheme was successfully delivered by Merseytravel and Network Rail. Key to the success of the project was the time taken to agree on an acceptable workshare that allowed the project to be delivered to time and cost.

Project	Description	Cost	Timescale
Halton Curve	<p>Merseytravel recently oversaw the successful completion of the Halton Curve, a rail infrastructure scheme to re-signal and re-instate the appropriate track work to enable bi-directional movements between the West Coast Main Line (WCML) at Runcorn with the Warrington Bank Quay to Chester line at Frodsham.</p> 	£18.75m	Construction between Summer 2017 and Summer 2018. New services introduced in May 2019
<p>The final phase of upgrades on the 1.5 miles of track known were completed as planned with the scheme finishing on schedule and within budget. The £18.75m was funded through the Government's Local Growth Fund and the Liverpool City Region Combined Authority, and in partnership with Welsh Government. The works were delivered by Network Rail.</p>			

Project	Description	Cost	Timescale
Newton-le-Willows Interchange	<p>This scheme aimed to provide access improvements and public transport interchange improvements at the railway station in Newton-le-Willows. This station previously suffered from a poor environment and poor integration with the wider transport network.</p> <p>Works to improve the station included a new entrance to the south, lifts and staircases to the platforms, a bus interchange, pick up and drop facilities and enhanced cycle parking provision.</p>	£18.95m	Nov 2016 - Jan 2019



Although a number of challenges occurred during construction, these were managed by the project team and the facilities were delivered whilst keeping the station open and services running on the busy Manchester to Liverpool line. The opening of these improved facilities has been well received by the public and is a good example of collaborative working across the rail industry to improve the customers journey experience.

Source: Mott MacDonald

17.3 Project Dependencies

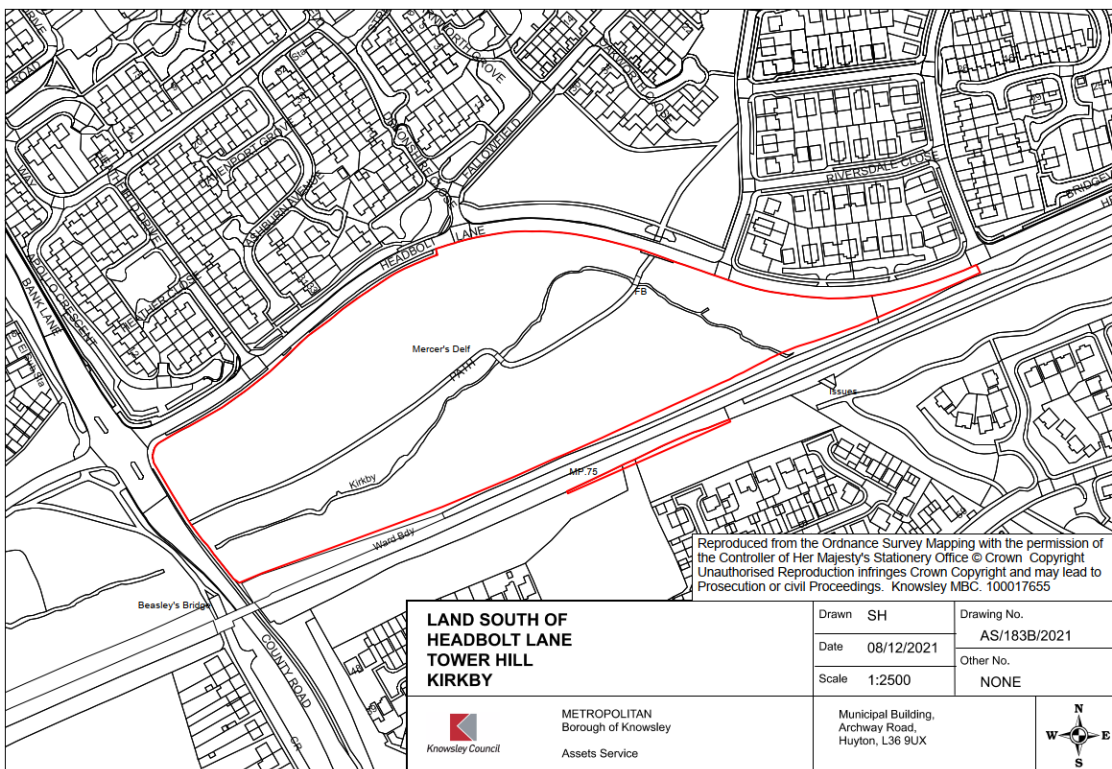
17.3.1 Land Acquisition

As discussed within the Strategic Case, many of the on-track components of the scheme could potentially be undertaken within permitted development rights as the Environmental Impact Assessment (EIA) has found no significant issues with the scheme in relation to land acquisition. The off-track works including the station building, car park and highway interventions will require planning permission from the local authority (KMBC).

There are also a number of elements of the station design which may require land acquisition. This includes construction of the station building, access road, substation and access

compound which are proposed to be built on what is understood to be council-owned land adjacent to the railway at Headbolt Lane. The development of Headbolt Lane station will therefore be dependent on the successful acquisition of land, should this be required to enable delivery of some scheme elements. It is understood, following conversations with Knowsley MBC, that all land for acquisition is currently owned by the Council and as such subject to agreement of terms, land acquisition is not expected to form a significant barrier to the delivery of the scheme. The extents of the land around the area of the proposed station owned by KMBC are illustrated in Figure 17.1.

Figure 17.1: Land at Headbolt Lane under the ownership of KMBC



Source: KMBC

17.3.2 Kirkby Brook

Kirkby Brook, a tributary of the Simonswood Brook, is located next to the site of the proposed Headbolt Lane station. It is a small stream that passes through the site, entering at Country Road and running parallel to the track before running perpendicularly underneath the track towards the east of the site. The current design of the station car park shows an 8m clear area on both sides of the channel to reduce the impact on the brook; however, a number of new structures are required to span the brook for access to the station and car park.

A Flood Risk Assessment (FRA) has been undertaken by Network Rail as part of the planning application⁴⁷. This concluded that fluvial flood risk associated with Kirkby Brook is constrained within the immediate vicinity of the watercourse and is unlikely to pose a risk to the development

⁴⁷ FRA can be accessed here:
https://epa.knowsley.gov.uk/PublicAccess_LIVE/SearchResult/RunThirdPartySearch?FileSystemId=DC&FOLDER1_REF=21/00563/FUL#

based on the proposed elevations. All other sources of flood risk are considered to be negligible. However, bridges over Kirkby Brook should be designed in accordance with EA requirements to ensure flood risk is not increased and maintenance operations are not adversely impacted.

17.3.3 Bus Operator Buy In

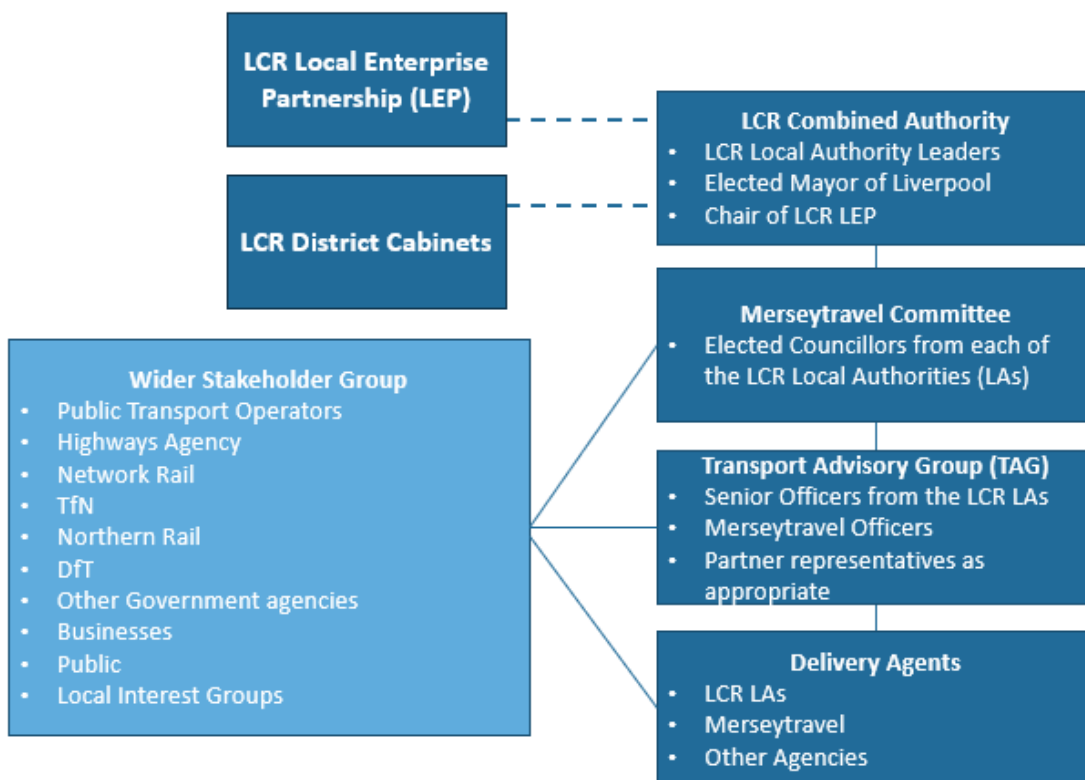
The bus/ rail interchange facilities proposed at the station is a key element of the development. This element of the development is however dependent on the bus network being able to adapt and provide the high level of service envisaged. This is particularly important for the high frequency service between central Kirkby and other areas of the LCR not served by rail. Bus operators may have concerns around the scheme in relation to revenue abstraction and therefore this will need to be considered carefully as the business case develops.

17.4 Project Governance

17.4.1 Liverpool City Region Strategic Governance

An overview of the Liverpool City Region (LCR) strategic transport governance, including membership, roles and responsibilities, is presented in Figure 17.2 and Table 17.3 below.

Figure 17.2: Liverpool City Region – Strategic Transport Governance



Source: Mott MacDonald

Table 17.3: Roles and Responsibilities in the Liverpool City Region

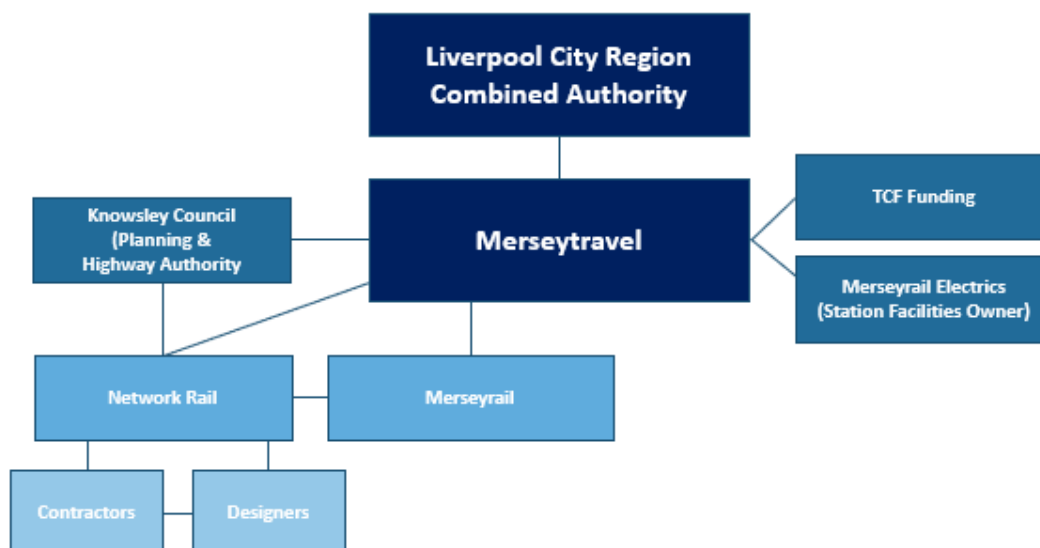
Body	Role	Responsibility
Liverpool City Region Combined Authority (LCR CA)	Combined Authority for Liverpool, Halton, Knowsley, St Helens, Sefton and Wirral.	Strategic decision making for economic development, transport, strategic housing and employment and skills functions for the LCR.
Merseytravel Committee	CA Committee leading on transport for the LCR. Six meetings held per year. Membership formed of elected Councillors.	Provide democratic leadership on strategic transport issues and advise the CA.
Transport Advisory Group (TAG)	Transport Advisory Group meets monthly, supporting the transport agenda at a senior office level. Members include the LEP.	Provide technical advice and recommendations to the Merseytravel Committee.
Wider Stakeholder Group	The wider stakeholder group are a virtual group of key LCR transport stakeholders that LCR Officers and Councillors engage as appropriate.	Provide feedback to Merseytravel Committee, TAG and LCR Delivery Groups on transport policy and projects as appropriate.
LCR Delivery Groups	Various delivery groups are formed of representatives from Merseytravel and each LCR LA as well as partner organisations as appropriate.	Oversee the delivery of transport schemes and provide advice to delivery agents.
Delivery agents	LCR LAs and other Delivery Partners delivering transport schemes across the LCR.	Responsible for the delivery of any agreed transport schemes.

Source: Mott MacDonald

17.4.2 Merseytravel Governance

Figure 17.3 illustrates the proposed arrangements for how the Headbolt Lane scheme will be governed/delivered by the relevant bodies and how these will be communicated with Merseytravel and potential funding agents.

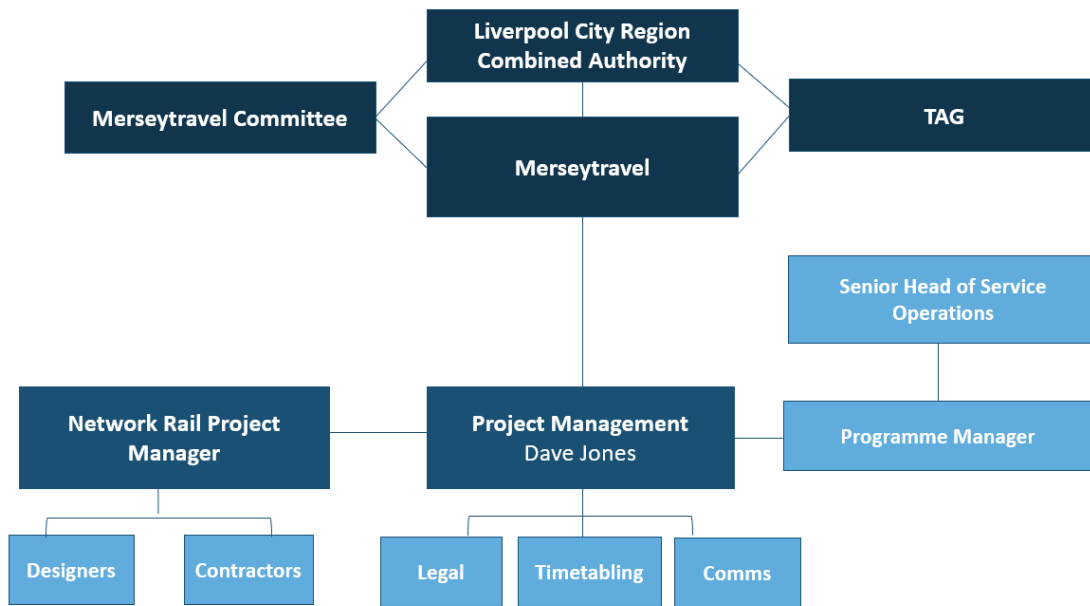
Figure 17.3: Headbolt Lane – Project Delivery



Source: Mott MacDonald

The coordination and management of the scheme and sits with designated Merseytravel Project Manager for the scheme, David Jones, Rail Development Manager at the Liverpool City Region Combined Authority. Design and development will be coordinated by Merseytravel. The proposed project governance arrangements are shown in Figure 17.4.

Figure 17.4: Headbolt Lane – Project Governance



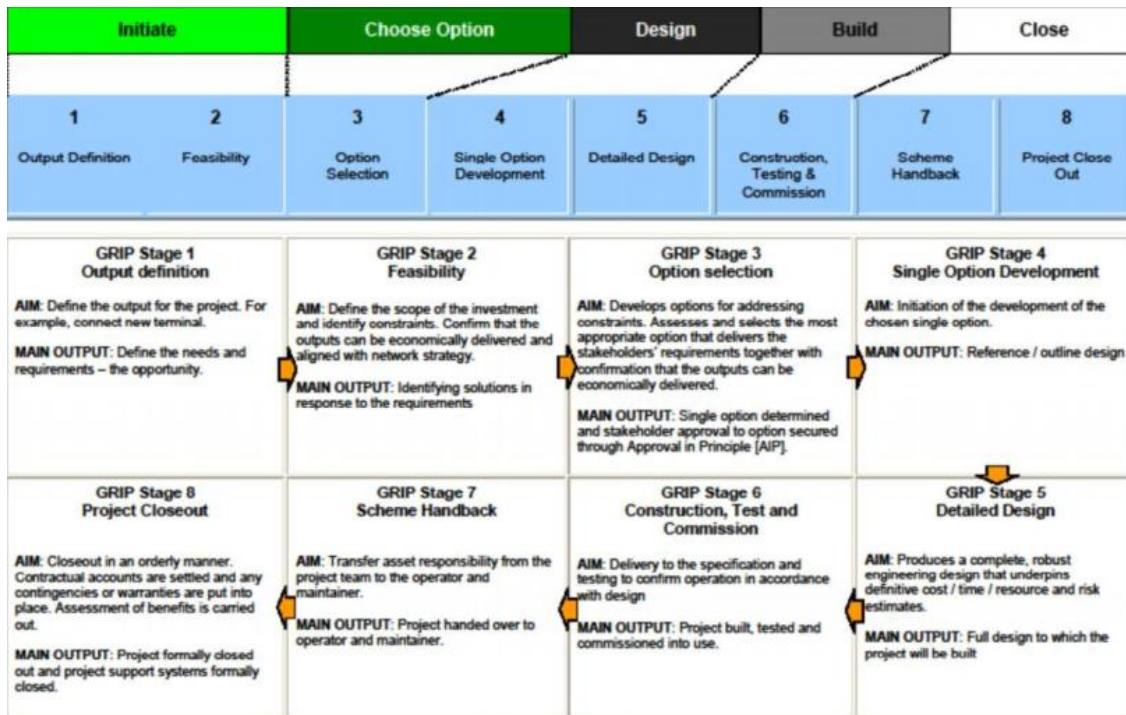
Source: Mott MacDonald

As part of the development phase for the scheme a number of initial meetings have been held between Merseytravel and Network Rail to structure the scheme and to establish the key requirements and objectives.

17.4.3 Rail Industry Governance

Investment in the rail industry is governed by Governance in Rail Investment Process (GRIP). This is summarised as an eight-stage process as shown in Figure 17.5 below.

Figure 17.5: Governance in Rail Investment Process (GRIP)



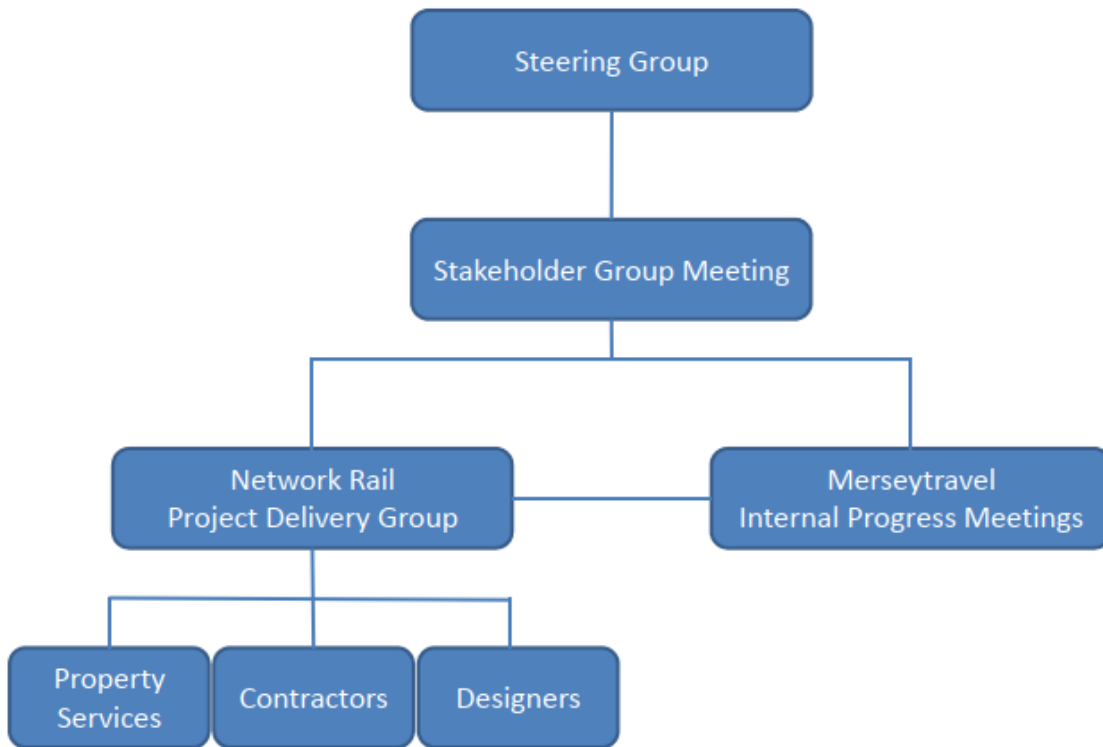
Source: Network Rail

GRIP also requires stage gate reviews at the various stages in the process. As outlined in Network Rail's GRIP guidelines, the project will be subject to at least four mandatory stage gate reviews during its' lifecycle. This FBC is being developed following completion of GRIP 3 in July 2021. Therefore, a number of key reviews have already taken place during the development phase, which produced an agreed single option for the scheme and agreed the project scope ahead of the award of a detailed design and construction contract. The project will be subject to two other reviews at scheme hand-back and project close out.

17.4.4 Integrated Working

In order to manage the scheme four 'working groups' have been established at various levels to allow effective management of and knowledge sharing within the scheme. The structure is illustrated in Figure 17.6.

Figure 17.6: Working group structure for Headbolt Lane



Source: Network Rail

The various attendees and remits for the working groups are shown in Table 17.4.

Table 17.4: Working Groups – roles and responsibilities

Milestone	Remit	Attendees
Steering Group	<ul style="list-style-type: none"> ● Liaise with DfT ● Advise City Region TAG ● Receive relevant reports from Project Working Group ● Monitor scheme progress ● Ultimate owners of scheme budget and risk ● High level stakeholder engagement ● Stakeholder management 	Merseytravel Network Rail Merseyrail Knowsley Council Contractors
Stakeholder Group Meeting	<ul style="list-style-type: none"> ● Review and agree programme and monitor progress ● Review progress and risks with key stakeholders so as to identify issues in advance of the programme for early resolution ● Co-ordination of key interface issues between stakeholders to resolve any cross-stakeholder issues. ● Identify collective and individual inputs from and by stakeholders to help maintain progress against programme. ● Review on-going individual stakeholder participation and include invitation to additional relevant parties and agree changes and reductions of other stakeholders as appropriate. 	Merseytravel Network Rail Knowsley Council Consultants
Project Delivery Group	<ul style="list-style-type: none"> ● Review and agree programme ● Monitor progress on delivery of the scheme ● Co-ordination with any service delivery issues included. 	Merseytravel Network Rail Merseyrail
Merseytravel Internal Progress Meetings	<ul style="list-style-type: none"> ● Internal co-ordination on progress against individual and collective tasks ● Identify evolving risks to programme and determine resolution of risk items ● Plan key individual and collective tasks ● Agree any key communications internally and externally 	Merseytravel

Source: Merseytravel

A project specific Project Delivery Group has been established. Chaired by Merseytravel this is attended by Network Rail, and Merseyrail. This provides stakeholder level project management of the scheme and helps to provide the required liaison between the main stakeholders in a formal forum. This Project Working Group will be supported by the delivery groups of the scheme elements and will itself report up to a higher level Project Steering Group attended by senior level stakeholder representatives. Network Rail and Merseytravel have both established internal working groups to discuss technical aspects of the scheme.

17.5 Assurance and Approvals

This scheme will be required to pass through a number of assurance and approval milestones including the various business case stages and gateway reviews as part of GRIP, as set out earlier in Section 1.3. The table below summarises the key assurance and approval milestones.

Table 17.5: Assurance- Key Milestones for Headbolt Lane Station

Milestone	Projected Completion Date
Outline Business Case (Draft)	October 2020
Outline Business Case (Final)	December 2020
Pre planning application	December 2020
Full Business Case	November 2021
Planning application approval	9 th December 2021
Completion of GRIP3 option selection	July 2021
Completion of GRIP4 outline design	January 2022
Completion of GRIP5 (detailed design) – GRIP 8 (project closeout)	September 2022
Station opening	May 2023

Source: Merseytravel

17.5.1 Approvals

A range of different approvals will be required in relation to the scheme in addition to the stage gate reviews and business case approvals outlined above, these include the following:

- All activities undertaken by Merseytravel are governed by the Constitution under which it operates. For financial activity, the Delegated Decision approvals process will be required for entering into the requisite agreements with Network Rail approval or to undertake activity less than £100,000;
- The proposed revision to the timetable will, for commencement of services in May 2023, need to commence in earnest some time in advance. The proposed timetable is known, albeit there are still uncertainties regarding the performance of the new Class 777 rolling stock and how this will impact on travel and dwell times. Separate modelling work is being undertaken concurrently to check that the proposed timetable will function efficiently and this will need approval from Network Rail.
- Network Rail will be required to apply for their own internal approvals to allow the third party investment to take place and the necessary Agreements to be drawn up and entered into;
- Planning Approval from Knowsley Council will be required for the scheme. It is unknown at this stage whether an EIA will be required. If it is, this will effect planning approval timescales by around 3-5 weeks.
- Approval from Knowsley Council will be required for bus infrastructure to be in place;
- Traffic Regulation Orders may be required for certain highway elements of the scheme (i.e. on the approach roads); and
- Relevant licences from utilities (e.g. discharge licence from United Utilities).

17.5.2 Operating New Stations

Network Rail's Investment in Stations document sets out a number of issues which need to be addressed when considering new stations. These are:

- Commitment from the train operator to call at the station and provide access to revenue and ticketing arrangements;
- Incorporation into the safety regime provided by the Railways and Other Guided Transport Systems (Safety) Regulations 2006;
- Inclusion of the station within regulated access arrangements, permitting its use by other train operators;

- Provision of a licensed Station Facility Owner (SFO) to operate the station;
- The creation of a property interest in the station, giving the operator the right to manage the station and deal with station access arrangements; and
- The position regarding responsibilities of ownership.

17.6 Delivery Programme

Design and delivery of the scheme is to be through Network Rail and appropriate consultants/contractors identified and appointed by them. Development and delivery of the scheme will accord with the requirements of the appropriate stages of GRIP (Guide to Railway Investment Process).

A detailed work programme is currently being developed by Network Rail which shows that the scheme will be delivered within a 3 year period to align with the timescales of the Transforming Cities Fund. However, the key project milestones are set out within the table below.

Table 17.6: Key Delivery Milestones for Headbolt Lane Station

Milestone	Projected Completion Date
Outline Business Case (Final)	December 2020
Full Business Case	November 2021
Completion of GRIP3 option selection	July 2021
Completion of GRIP4 outline design	January 2022
Completion of GRIP5 (detailed design) – GRIP 8 (project closeout)	September 2022
Station Opening	May 2023

Source: Merseytravel

17.7 Risk Management Strategy

The production of a risk register forms an integral task associated with standard project management procedures that are conducted by either Merseytravel or Network Rail. The risk register for the scheme will be reviewed regularly throughout the detailed design, procurement, construction and also post-construction phases of the scheme as a standard item to be addressed by the Project Delivery Group. Any unresolved or significant issues or problems which are identified or that occur will be escalated through the appropriate governance procedures that are put in place.

Table 17.7 below outlines the key high level risks and potential mitigation measures which have been identified during the early stages of project development.

Table 17.7: Key Risks and Potential Mitigation Measures

Risk Event	Consequence	Mitigation	Likelihood	Impact	Owner
Poor coordination between designers / deliverers of the various elements of the scheme.	Programme Delay Additional Costs Design / construction conflicts	<ul style="list-style-type: none"> • Identify and appoint overall Project Manager / co-ordinator. • Develop appropriate governance and project co-ordination strategy. • Develop co-ordinated programme showing activities related to all of the scheme's elements. • Undertake Inter- disciplinary Checks at appropriate stages of design development. 	Medium	High	Merseytravel

Risk Event	Consequence	Mitigation	Likelihood	Impact	Owner
		<ul style="list-style-type: none"> Have an agreed construction phasing plan 			
Physical / structural issues at the site where the scheme is to be delivered, Especially level differences.	Time delays with a potential increase in scheme costs	Detailed site survey works to be undertaken to identify and scope out any issues.	Low	High	Network Rail
Failure to incorporate calls at Headbolt Lane into existing timetable.	Station is built but no train services call at station	Early engagement with relevant Merseyrail and Network Rail approvers and dialogue with them throughout design phase. Approval related activity to be reflected in programme.	Low	High	Merseytravel
Procurement of services may not be successful or may be delayed or challenged	Delays overall delivery of the scheme	Engagement with experienced procurement and legal services teams together with due diligence during appointment process	Low	High	Merseytravel
Failure to produce a business case which is acceptable by the funding body	Insufficient funding available for the scheme	Develop a robust business case which aligns with local, national and regional policy and demonstrates strong evidence to support the selection of the preferred scheme. Business case developed in line with priorities of the funding body.	Low	High	Merseytravel
The construction of the physical assets is not completed on time and to specification	Potential loss of funding and additional costs	Due diligence during procurement process. Ongoing monitoring of progress against delivery milestones and stringent project management during delivery with clear reporting procedures	Medium	Medium	Network Rail
Scheme lacks support from the key stakeholders who were not consulted during scheme development	Unfavourable public criticism of elected members	Establish a positive communications strategy with key stakeholders	Low	Medium	Merseytravel
Actual inflation differs from assumed inflation rates	Increase in the costs required to deliver completed scheme	Keep forecasts under review and adjust to account for any predicted rate of change and reflect change in the scheme delivery programme.	Medium	High	Network Rail
Inaccurate scheme cost estimate	Delays procurement and funding approvals	Progress scheme in sufficient detail to enable robust cost to be produced. Apply suitable risk allowances and contingencies to option development stage cost estimate.	Low	High	Network Rail
Unforeseen structural constraints	Delays and potential increase in costs	Request asset information and recommend structural surveying / investigation works to be undertaken in support of the detailed design	Medium	Medium	Network Rail

Source: Mott MacDonald

17.8 Communication and Stakeholder Management

A number of key stakeholders have been identified for the scheme and are listed in Section 12.1 of the Strategic Case. This section outlines how the various stakeholders have been engaged to date and plans for further engagement and consultation as the scheme develops.

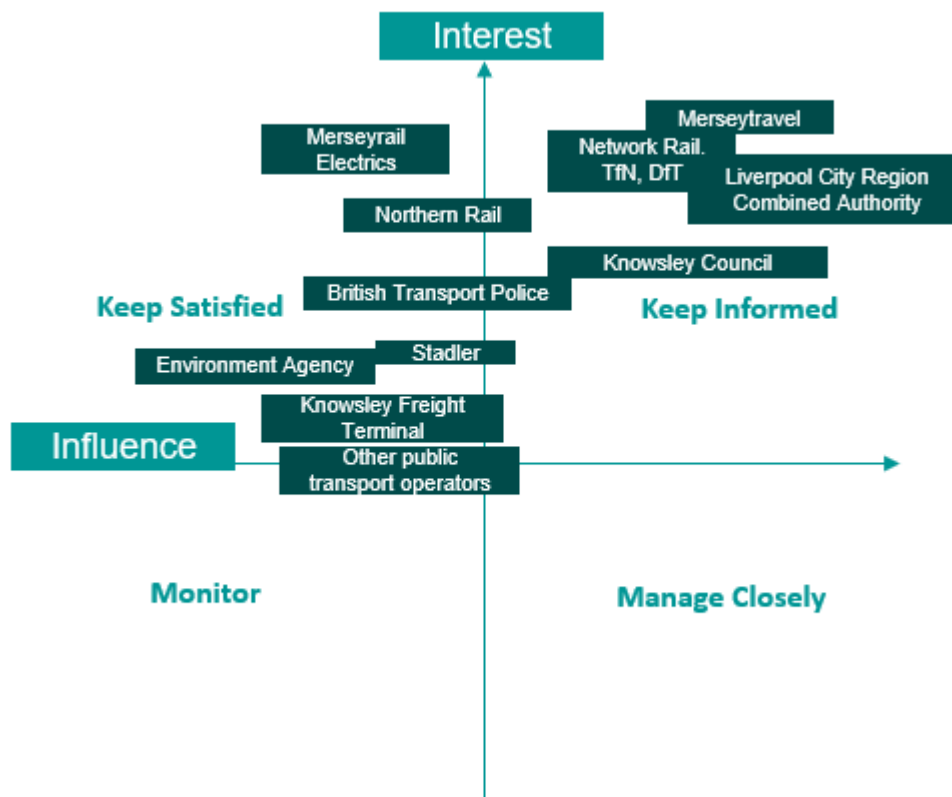
17.9 Stakeholder Classification

An exercise has been undertaken to establish the principal stakeholders with any interest in the project and their expected level of interest and influence which will largely dictate the method of engagement. Stakeholder interest can be broadly classified as follows:

- **Manage Closely**- Key stakeholders need to be actively and closely managed through frequent communications to keep this group fully engaged with the project. Methods of engagement will include regular face-to-face meetings and activities to allow for active discussion and consultation, supported by tailored communications that maintain an open dialogue between those closely involved with the project.
- **Keep Satisfied**- Relationships with higher profile stakeholders who may not have a direct interest in the project should be focussed on keeping the stakeholders satisfied. Methods of engagement will include regular, tailored communications that provide an appropriate level of information without excessive detail. Proactive communications on specific areas of interest may be appropriate and can increase these stakeholders' interest and support for the project.
- **Keep Informed**- Stakeholders in this group will be kept informed of developments through regular communications providing general updates and relevant information. Information will be accessible and general, with opportunities for stakeholders to share views on specific areas of interest as required. Methods of engagement will include project specific emails and updates, newsletters and briefings on items of specific interest.
- **Monitor**- Stakeholders in this group are unlikely to be actively seeking information about the project but may require general, accessible communications of the key messages.

Figure 17.7 illustrates the influence and interest of the Headbolt Lane Scheme and how this informs the approach to communication.

Figure 17.7: Stakeholder Map



Source: Mott MacDonald

Conflicts between stakeholders are expected to be minimal as the scheme is likely to benefit the majority of key stakeholders identified. However, to mitigate any potential risks from stakeholder throughout the development of the scheme engagement will be carried out at all stages of the process.

Further details of how stakeholders have been engaged so far within the project development and what is planned in terms of future engagement is set out within Section 17.8 of the Management Case.

17.9.1 Stakeholder Engagement to Date

Table 17.8 below summarises the key stakeholder engagement activities which have taken place up to and during the development of this FBC. This includes detail of the attendees, purpose and key outcomes.

Table 17.8: Stakeholder Engagement to Date

Stakeholders	Date	Purpose and Key Outcomes
Knowsley Council	16/10/2019	<ul style="list-style-type: none"> ● Purpose: scope the Transport Assessment for the station and discuss key elements associated with the highways and surrounding access ● A footbridge over the railway line to provide access between the proposed rail station and the residential areas to the south is considered essential for the scheme. ● A fully segregated cycle route is considered necessary along Headbolt Lane between the station and the existing A506 Bank Lane cycle route to the west of the site. ● Car parking provision will require 5% of spaces with EV charging points. ● Existing pedestrian route through site from Bank Lane to the west of the site requires consideration.
Network Rail	Ongoing	<ul style="list-style-type: none"> ● Ongoing and regular meetings are held with Network Rail as the owner of the infrastructure on the network relevant to each GRIP Stage ● Engagement to date has guided the development and appraisal of options as set out within Section 10.
Merseyrail	Ongoing	<ul style="list-style-type: none"> ● Ongoing and regular meetings are also held with Mersey Rail as the operator of the station ● Engagement to date has focused on timetabling required to facilitate the new station and proposed services ● Merseyrail are now producing an up to date timetable on the basis of engagement.

Source: Mott MacDonald

17.9.2 Further Stakeholder Engagement

This Full Business Case sets out the plan for management of stakeholders up to the submission of the FBC and the engagement undertaken to date. Should the business case be successfully approved, further engagement will take place as throughout the scheme delivery including a detailed public consultation period with local communities and residents around the area of Headbolt Lane to raise awareness of the scheme and present details.

Communications relating to the Headbolt Lane scheme will be delivered through a variety of methods. The target audience for the communications and engagement to be undertaken at the later stages of the schemes development is the list of stakeholders outlined within Section 12.1.

Timescales for further stakeholder engagement activities undertaken as part of the FBC and GRIP 4 stages will be confirmed once the delivery programme for the scheme is fully

developed. At this stage, a more detailed Stakeholder Engagement plan will be produced. The communication methods employed will be appropriate to the stakeholders they are aimed at and may include:

- Emails- Information will be emailed to relevant stakeholders where possible;
- Printed materials- showing the proposals will be made available in poster format and on-screen for viewing at face to face meetings;
- Face to Face meetings (in person or via remote access platforms)- Face to face meetings or virtual face to face meetings will be held as required with stakeholders throughout the scheme development to address specific aspects of the scheme development. The format of the meeting i.e. in person or via remote access platforms will be dependent on COVID-19 restrictions in place at the time;
- Website- The Merseytravel/LCR-CA website will host all relevant public facing materials in appropriate formats for stakeholders and the public; and
- Social Media- Merseytravel has a presence across the most popular social media platforms, including Facebook and Twitter and reactively responds through these platforms to comments made thereby. Outline Monitoring and Evaluation

Monitoring and evaluation is an essential part of any rail infrastructure project. It provides an opportunity to improve performance by reviewing past and current activities, with the aim of replicating good practice in the future. The Magenta Book⁴⁸ provides Central Government guidance on evaluation and details best practice that should be followed. This identifies that evaluation should be “proportionate to the risks, scale and profile of the policy”. It also identifies the types of evaluation, namely:

- Process evaluation – how the policy was delivered; and
- Impact evaluation – what difference the policy made.

To this extent monitoring and evaluation has been split into 2 categories:

1. Monitoring of project delivery; and
2. Monitoring the achievement of scheme objectives.

17.9.3 Monitoring of project delivery

The monitoring and evaluation of the project’s construction and delivery is set out in Table 17.9 (overleaf).

⁴⁸ http://pa.sefton.gov.uk/online-applications/files/03F8074DDC1F50D7A3D1FBC0E9D5FF02/pdf/DC_2014_00980_CONSULTATION_STATEMENT_V1.0_PART1-722712.pdf

Table 17.9: Monitoring of project delivery

Aspect of project delivery	Method of monitoring	Timeframe	Responsibility
Delivery of the Headbolt Lane station scheme to timeframe	<ul style="list-style-type: none"> • Programme/project plan assessment • Review of risk register and assessment of impacts • Project review during scheme design and build • Site inspections 	Ongoing throughout delivery and construction	Merseytravel
Delivery of the Headbolt Lane station scheme to budget	<ul style="list-style-type: none"> • Programme/project plan assessment • Identification of any changes to assumptions • Analysis of risk in the elements of costs • Project review during scheme design and build • Site inspections 	Ongoing throughout delivery and construction	Merseytravel
Delivery of the Headbolt Lane station scheme to specification	<ul style="list-style-type: none"> • Programme/project plan assessment • Review of risk register and assessment of impacts • Project review during scheme design and build • Site inspections 	Ongoing throughout delivery and construction	Merseytravel

Source: Mott MacDonald

17.9.4 Monitoring the achievement of scheme objectives

Table 17.10 notes the approach to monitoring and evaluating progress towards realisation of outcomes and impacts and achievement of objectives.

Table 17.10: Monitoring and Evaluation Plan

Outcome	Performance Indicator	Data source/Method	Impacts	Timing	Responsibility
Increased network coverage of Merseyrail Electrics services consistent with Merseyside Rail Strategy and the Local Transport Plan	<ul style="list-style-type: none"> Successful delivery of schemes such as Headbolt Lane station as identified within the Merseyside Rail Strategy and the Local Transport Plan 	<ul style="list-style-type: none"> Lennon/MOIRA ticketing database to monitor long term changes in travel demand – we assume access to this data source will be available Local surveys of usage 	<ul style="list-style-type: none"> Continued economic growth as result of improved accessibility by rail Reduced social isolation and exclusion as a result of closed gaps in rail connectivity 	Prior to or during delivery to assess baseline data and 1 and 4 years post completion	Programme Management Office (PMO) at the LCR CA
GVA uplift in LCR and City Centre as a result of investment around north Kirkby	<ul style="list-style-type: none"> % GVA uplift in LCR and City Centre 	<ul style="list-style-type: none"> Business surveys & economic evaluation surveys Market Analysis study 	<ul style="list-style-type: none"> Reduced unemployment as people are able to access opportunities in the City Centre and across the LCR efficiently by public transport The area becomes a more attractive place to live, work and invest. 	Prior to or during delivery to assess baseline data and 1 and 4 years post completion	Programme Management Office (PMO) at the LCR CA
Improved access to jobs and opportunities in Liverpool, across the LCR and beyond (West Lancashire)	<ul style="list-style-type: none"> %reduction in unemployment rates for residents within Tower Hill, Simonswood and Northwood. GVA 	<ul style="list-style-type: none"> Business surveys & economic evaluation surveys Market Analysis study 	<ul style="list-style-type: none"> Reduced unemployment as people are able to access opportunities in the City Centre and across the LCR efficiently by public transport The area becomes a more attractive place to live, work and invest. 	Prior to or during delivery to assess baseline data and 1 and 4 years post completion	Programme Management Office (PMO) at the LCR CA
Reduction in the level of deprivation in areas such as Tower Hill and Northwood as people are able to access opportunities and services	<ul style="list-style-type: none"> % reduction in the number of LSOA's in Knowsley which fall within the top 10% most deprived across the UK 	<ul style="list-style-type: none"> Comparison of IMD data between 2019, 2024 and 2028 post scheme completion 	<ul style="list-style-type: none"> The area becomes a more attractive place to live, work and invest Improved quality of life for residents 	Prior to or during delivery to assess baseline data and 1 and 4 years post completion	Programme Management Office (PMO) at the LCR CA
Improved overall journey times and direct connectivity into the city centre for passengers travelling from beyond Kirkby	<ul style="list-style-type: none"> A percentage reduction in travel times when travelling between Tower Hill, Simonswood and Northwood and the city centre 	<ul style="list-style-type: none"> Traffic Master Data Automatic Traffic Counter (ATC) 	<ul style="list-style-type: none"> Improved wellbeing through reducing road travel related stress Continued economic growth as result of improved accessibility by rail 	Prior to or during delivery to assess baseline data and 1 and 4 years post completion	Programme Management Office (PMO) at the LCR CA

Outcome	Performance Indicator	Data source/Method	Impacts	Timing	Responsibility
Improved access and interchange facilities	<ul style="list-style-type: none"> % of demand travelling to station by bike, bus, car (dropped off/as passenger), car as driver, taxi, on foot 	<ul style="list-style-type: none"> Calculate actual demand by mode (link to overall demand) and monitor over time 	<ul style="list-style-type: none"> Continued economic growth as result of improved accessibility by rail The area becomes a more attractive place to live, work and invest 	Prior to or during delivery to assess baseline data and 1 and 4 years post completion	Programme Management Office (PMO) at the LCR CA
Increased integration of transport modes and improved opportunity for road to rail modal transfer	<ul style="list-style-type: none"> % of demand travelling to station by car and parking at station car park % occupancy of car park % of demand travelling to station by bike, bus, car (dropped off/as passenger), car as driver, taxi, on foot 	<ul style="list-style-type: none"> Data collection exercise Bespoke travel surveys 	<ul style="list-style-type: none"> Continued economic growth as result of improved accessibility by rail The area becomes a more attractive place to live, work and invest 	Prior to or during delivery to assess baseline data and 1 and 4 years post completion	Programme Management Office (PMO) at the LCR CA
Reduction in levels of NO ₂ , CO ₂ and other particulates as a result of fewer car trips to the city centre.	<ul style="list-style-type: none"> % reduction in NO₂, CO₂ and other particulates on key routes towards the city centre from areas to the north of Kirkby 	<ul style="list-style-type: none"> Results from roadside Passive Diffusion Tubes before and after scheme completion- we assume that relevant data will be collected by Liverpool Coty Council and Knowsley Council through the monitoring period and will make representation to ensure that this is the case 	<ul style="list-style-type: none"> Improved air quality. Improved health and wellbeing of residents 	Prior to or during delivery to assess baseline data and 1 and 4 years post completion	Programme Management Office (PMO) at the LCR CA

Source: Mott MacDonald

As noted in the table above, the Programme Management Office (PMO) at the LCR CA will be responsible for carrying out monitoring and evaluation activities. The PMO will report back to LCR Delivery Groups on progress and outcomes of Monitoring and Evaluation activities. Monitoring and evaluation activities will continue for a minimum of 5 years post scheme delivery.

All findings from Monitoring and Evaluation activities will be disseminated in a report to key stakeholders following data collection, scheme funders and can also be made available on a public platform such as the Merseytravel website.

17.10 Benefits Realisation

A Benefits Realisation Plan has been developed to define what the benefits of the scheme are and the enabling activities that will be undertaken to ensure the expected level of benefit is realised. The plan relates the benefits to scheme outcomes and objectives so a clear link is established between what the scheme intends to address, what the expected results are and who will benefit.

The scheme objectives are summarised in Section 9.1 as they are the driver of scheme development and scheme outcomes that ultimately give rise to wider benefits. The scheme objectives were developed to address the key problems identified around the area of Headbolt Lane which are discussed in Sections 5-9.

Successful achievement of the outlined objectives will deliver a number of important benefits not only for this area of Knowsley but the entire LCR. Details of the benefits which the scheme seeks to deliver are set out in Table 17.11

Table 17.11: Benefits Realisation Plan

Objective Mapping to benefits	Scheme Outcome	Benefits experienced	Who Will Benefit	Benefit Ownership	Enablers required to realise the benefit
Facilitate long term economic growth in Liverpool City Region by providing sufficient capacity to allow people to access opportunities	<ul style="list-style-type: none"> Improved overall journey times and direct connectivity into the city centre for passengers travelling from beyond Kirkby Reduction in the level of deprivation in areas such as Tower Hill and Northwood as people are able to access opportunities and services Improved access to jobs and opportunities in Liverpool, across the LCR and beyond (West Lancashire) Increased network coverage of Merseyrail Electrics services consistent Merseyside Rail Strategy and the Local Transport Plan 	<ul style="list-style-type: none"> Increased prosperity for The Liverpool City Region as capacity within the rail network is able to support the growth of key employment sectors and specialist commercial activities. 	LCR Residents, businesses, developers and investors	Merseytravel	<ul style="list-style-type: none"> Completion of the Headbolt Lane Station Scheme Aligned business marketing programme to promote development of scheme and economic benefits Marketing for future investment and development opportunities
Facilitate the regeneration of Kirkby by providing enhanced access to existing and new development	<ul style="list-style-type: none"> Improved overall journey times and direct connectivity into the city centre for passengers travelling from beyond Kirkby GVA uplift in LCR and City Centre as a result of investment around north Kirkby 	<ul style="list-style-type: none"> Increase in number of jobs available for residents of the Liverpool City Region 	LCR Residents, businesses, future, investors	Merseytravel	<ul style="list-style-type: none"> Completion of the Headbolt Lane Station Scheme Marketing for future investment and development opportunities Aligned business marketing programme to promote development of scheme and economic benefits
Reduce the impact of travel in the City Region by providing a high capacity alternative to the private car, resulting in improved wellbeing, health and environmental outcomes	<ul style="list-style-type: none"> Reduction in levels of NO2 and CO2 emissions and other particulates as a result of fewer car trips to the city centre. 	<ul style="list-style-type: none"> Improved wellbeing and quality of life for people living and working in Knowsley as a result of improved air quality and reduced road travel related stress. 	LCR residents, commuters, businesses, future investors	Merseytravel	<ul style="list-style-type: none"> Completion of the Headbolt Lane Station Scheme

Objective Mapping to benefits	Scheme Outcome	Benefits experienced	Who Will Benefit	Benefit Ownership	Enablers required to realise the benefit
Create better integration between rail and the rest of the transport network to encourage modal shift to more sustainable modes of transport	<ul style="list-style-type: none"> Increased integration of transport modes and improved opportunity for road to rail modal transfer Reduction in levels of NO2 and other particulates as a result of fewer car trips to the city centre. Improved access and interchange facilities 	<ul style="list-style-type: none"> More seamless journeys for LCR residents, commuters, visitors and shoppers Improved walking and cycling facilities Easier access to the bus network for rail passengers to facilitate onward connectivity 	LCR residents, commuters, visitors, shoppers	Merseytravel	<ul style="list-style-type: none"> Completion of the Headbolt Lane Station Scheme
Improve safety on the transport network	<ul style="list-style-type: none"> Reduction in the number of accidents occurring on the highway network within Knowsley as a result of more people travelling by public transport 	<ul style="list-style-type: none"> More pleasant and safer journeys for all people using the highway network around Knowsley 	Commuters, visitors, shoppers, residents, car drivers	Merseytravel	<ul style="list-style-type: none"> Completion of the Headbolt Lane Station Scheme
Maintain and, where possible, improve upon access to the rail network for all people regardless of disability	<ul style="list-style-type: none"> Improved access and interchange facilities 	<ul style="list-style-type: none"> Enhanced access to the rail network for all persons Enhanced journey quality for rail journeys starting, ending or interchanging at Headbolt Lane 	LCR residents, commuters, visitors, shoppers, Rail network users with mobility or other hidden impairments	Merseytravel	<ul style="list-style-type: none"> Completion of the Headbolt Lane Station Scheme Highway and active mode access/egress works

Source: Mott MacDonald

17.11 Summary

The new station at Headbolt Lane will be delivered over a period of the next 2 years to conform with the timescales of the TCF programme. Information provided in the management case evidence highlights that:

- Robust governance, assurance (through the GRIP stages) and risk management processes are in place to deliver the scheme;
- As part of the risk assessment process risks have been taken into account which will be updated continually as the scheme develops;
- A list of key stakeholders relating to the project has been identified. Engagement has already been undertaken with key stakeholders and is planned to continue up to and beyond the submission of the FBC to ensure that effective engagement takes place through the different stages of scheme delivery; and
- A monitoring and evaluation and benefits realisation framework have been developed to assess the success in meeting its objectives which will be further updated as the scheme develops.

A. Operational Analysis

The GRIP design work for the Skelmersdale Rail Link (SRL), of which the Headbolt Lane Station proposal has previously been a constituent part, has included operational modelling and analysis of the proposed timetable changes – to both Merseyrail Electrics Ltd (MEL) and Northern. To supplement the OBC for Headbolt Lane Station, this analysis was reviewed and updated as a standalone piece of work. This included re-engaging with MEL for their latest timetabling analysis for the new Class 777 rolling stock.

A.1 Introduction

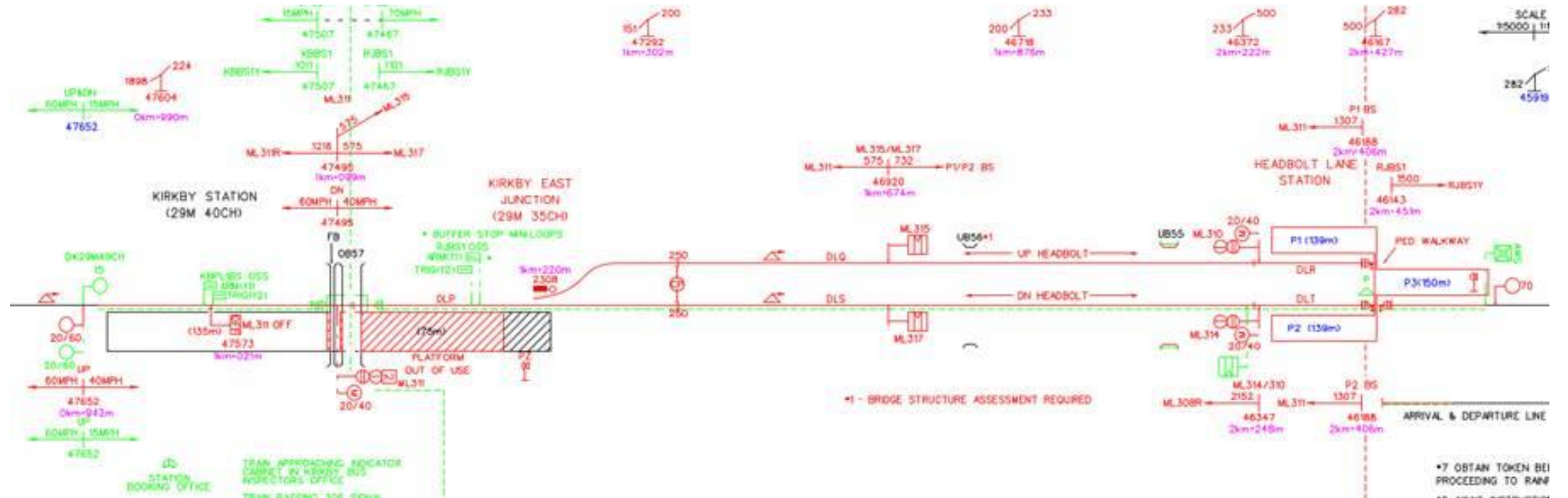
The starting point for the analysis were the timetable, and associated infrastructure proposals contained within the SRL GRIP 3 study. This entails the signalling infrastructure shown in Figure A.1 and was based on the following assumptions:

- Initial analysis was based on the December 2019 timetables;
- Arrival and departure times at Kirkby were fixed as per the December 2019 timetable;
- The junction at Kirkby, for re-occupation of the single line, needed to meet the minimum Timetable Planning Rule (TPR) of three minutes;
- Timings for Northern services to/from Wigan Wallgate and freight services to/from Knowsley Freight Terminal are fixed at Rainford Station;
- Journey times would be extended to/from Headbolt Lane in comparison to a ‘through’ service to Skelmersdale; and
- Sectional Running Times (SRTs) to be estimated based on the latest available information for the new Class 777 MEL rolling stock and existing Class 15X Northern stock.

Findings included:

- Merseyrail services would require at least two platform faces to be constructed at Headbolt Lane for the service to operate as it is not possible, based on the December 2019 timetable, to run the service beyond Kirkby without requiring a longer Turnaround Allowance than the minimum required within the TPRs;
- Bringing the junction at Kirkby as close to the east end of the station as possible, to enable trains heading to Headbolt Lane to clear the safety overlap associated with the single line, junction and signalling, would help maintain performance. The ability for a train to depart from Headbolt Lane as soon as this overlap was cleared by the train exiting the single line when running from Fazakerley would enable small amount of late running of the northbound service not to impact on the southbound service;
- Connections between Northern and Merseyrail services, particularly in the westbound/southbound direction, may not be ideal. The standard connectional allowance contained within the Great Britain Timetable is 5 minutes and this would result in the 17-minute connection unless Northern/Merseyrail choose to advertise the tighter connection;
- Operation of token section from Rainford to Headbolt Lane brings little change to operation of Northern services, or major impact on Dale Lane GF/Knowsley Freight Terminal working. The token section is shortened from Kirkby back to Headbolt Lane; and
- Northern services have a slightly longer turnaround at Headbolt Lane instead of Kirkby as journey time is marginally shorter.

Figure A.1: Skelmersdale Rail Link – GRIP 3 Signalling Proposal for Headbolt Lane Station Extension



A.2 Updated Timetable Proposal

The existing timetable proposals were reviewed and updated for the OBC. A key constraint on the proposals is the signalling to the east of Kirkby. The most effective solution which minimises journey times and any adverse performance impacts is the use of simultaneous departures and arrivals at Headbolt Lane. To reflect uncertainty around the operational performance of the new Class 777 rolling stock, current SRTs have been retained. Table A.1 summarises the assumed standard hour operation.

Table A.1: Assumed Standard Hour Service Pattern

Departing	Train A	Train B	Train C	Train D
Liverpool Central	xx20	xx35	xx50	xx05
.....				
Kirkby	xx38	xx53	xx08	xx23
Headbolt Lane	xx41	xx56	xx11	xx26
.....				
Headbolt Lane	xx56	xx11	xx26	xx41
Kirkby	xx58	xx13	xx28	xx43
.....				
Liverpool Central	xx16	xx31	xx46	xx01

It can be seen that the:

- End-to-end journey times are assumed to be 21 and 20 minutes in the outbound and inbound directions respectively;
- 15 minutes turnaround is provided at Headbolt Lane (versus 7 currently at Kirkby);
- 4 minutes turnaround is provided at Liverpool Central (versus 5 currently); and
- Four trains are required to operate a self-contained Headbolt Lane-Liverpool Central service pattern, i.e. with no inter-workings with other MEL lines. This is a net increase of one additional train in comparison to the existing Kirkby-Liverpool Central service.

A.3 Alternatives

As part of the OBC, the analysis considered potential alternatives which could reduce the infrastructure, and associated CapEx estimate, between Kirkby and Headbolt Lane. To reduce the amount of double tracking would require:

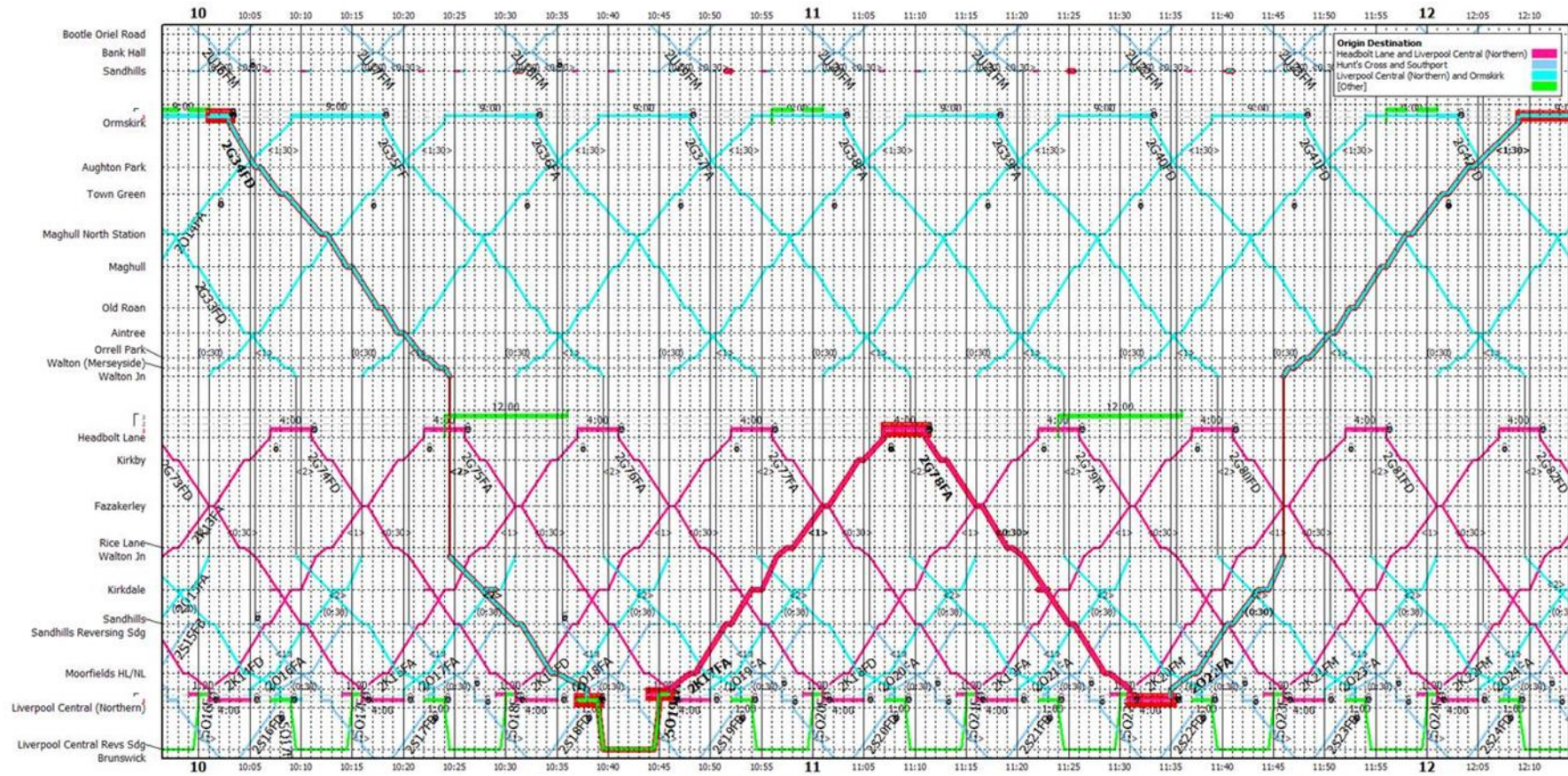
- Services to depart and arrive at Fazakerley at the same time;
- With the single line constraint east of Fazakerley (at Fazakerley Junction), the outbound train (towards Headbolt Lane) must await the clearance of the corresponding inbound train (towards Liverpool Central); and
- With simultaneous inbound and outbound departures, the outbound train would, if trains are operating on time, receive clearance when in Fazakerley Station or on its approach thereto. Analysis confirmed that this arrangement would not introduce a Signal Passed At Danger (SPAD) risk at Fazakerley as:
 - Signal ML305 would always be view of the driver at the station
 - This signal has Train Protection Warning System (TPWS) fitted

- The driver would have to activate the Driver's Reminder Appliance (DRA) having passed the previous signal (ML303) at 'Yellow' before arriving/stopping at Fazakerley – a system designed to explicitly prevent SPADs
- Additional mitigation could be introduced, e.g. driver training

From a performance perspective, this introduces considerable risk. Turnaround times at Headbolt Lane are reduced to 4 minutes (from the 15 within the double tracked option with simultaneous arrivals and departures at Headbolt Lane). It should be noted though that this is the same as the existing time at Kirkby within the current MEL timetable and meets Timetable Planning Rules (TPRs).

Services between Headbolt Lane and Liverpool Central are then linked with the outbound workings to Ormskirk, as shown in Figure A.2..

Figure A.2: Alternative Solution – Headbolt Lane and Ormskirk Inter-Workings



The proposed inter-working of the two lines requires:

- Turnaround times at Ormskirk to be reduced from their current 10 minutes to 9 minutes;
- A reduction in the performance allowance for trains approaching Ormskirk of one minute; and
- An extension of the journey time for the Hunts Cross to Southport service of two minutes. This maintains a TPR compliant junction margin at Sandhills. As turnaround times are currently 19 minutes at Southport, the extended journey time should not have an adverse impact.

While the proposed solution generates a TPR compliant headway through the core section of the MEL network between Walton Junction, Sandhills and Liverpool Central, which is not the case with the current MEL timetable, there are clearly significant potential adverse impacts from the proposed solution:

- Extension of journey times would generate a significant disbenefit to existing passengers. In VfM terms, the disbenefit of an additional two minutes on all journeys between stations north of Sandhills towards Southport, and south of Sandhills towards Hunts Cross is likely to easily outweigh the gains from the infrastructure cost savings. This disbenefit comprises both direct reductions in economic efficiency and a mode shift away from rail; and
- The reductions in train service performance which the (alternative) proposals would be highly likely to generate would generate significant additional disbenefits.

In addition to the above, any future extension to Skelmersdale would require the double tracking of the Kirkby to Headbolt Lane section, meaning cost efficiencies at this stage would ultimately be borne by the SRL proposal at a later date (assuming both schemes proceed to implementation).

IPEMU operation of the Headbolt Lane service would also require additional trains with the inter-working of Ormskirk and Headbolt Lane services. Indicatively, this would be a doubling of the six trains estimated previously.

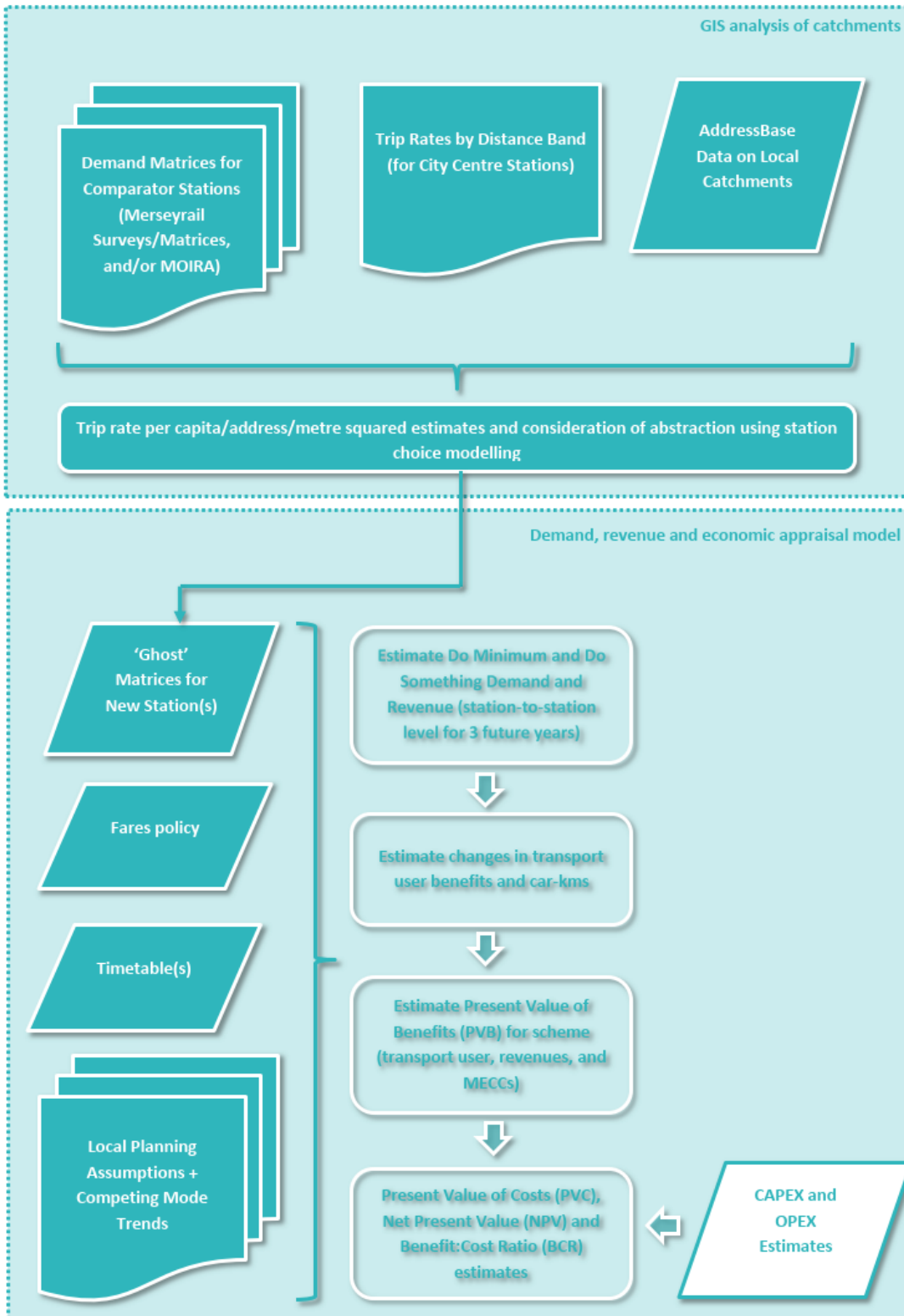
On the basis of the above findings, the updated timetable proposal, and associated GRIP 2 infrastructure and Cost Plan proposals, were used as the basis for assessing the preferred option in Section 14.

B. Demand Study

This appendix to the FBC should be read in conjunction with the overview of the demand modelling approach and outputs described in Section 14.4.

An overview of the demand modelling approach is shown in Figure B.3.

Figure B.3: Passenger Demand Modelling – Overview of Approach



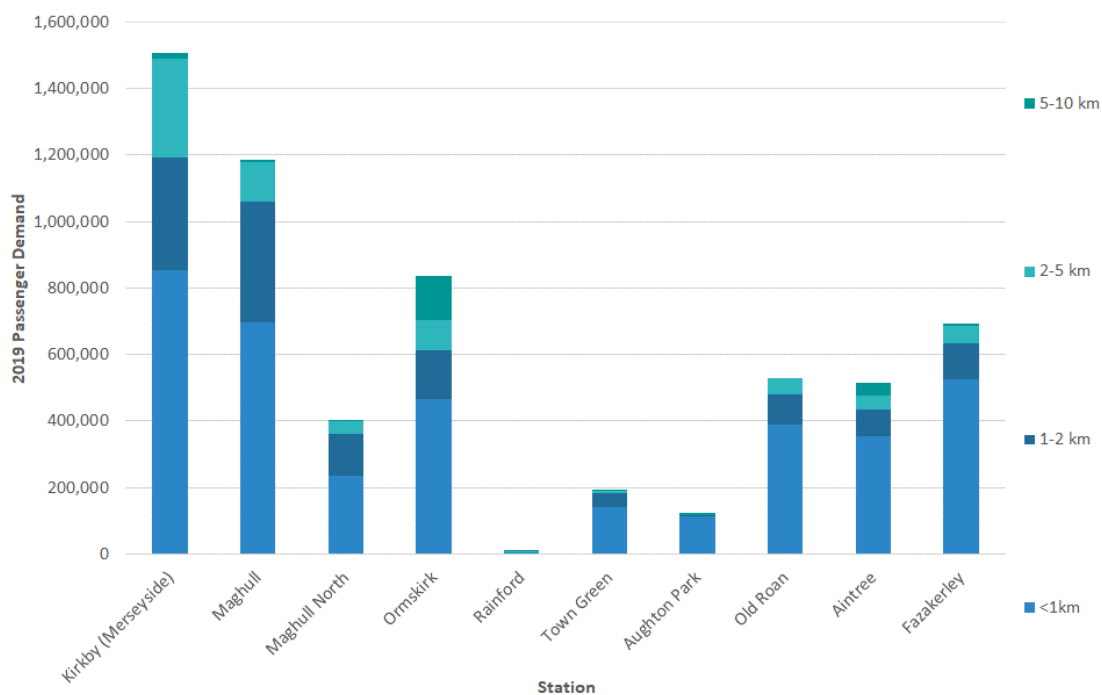
B.1 Comparator Station Trip Rates

The initial stage of the analysis considers demand at existing stations in the vicinity of Headbolt Lane and how this is estimated to distribute with distance from the station. The two inputs are:

- Demand matrices in a Production⁴⁹-Attraction (P-A) format, taken from recent work for MEL to derive such matrices for their network⁵⁰ and MOIRA for demand on Northern services east of Kirkby. Both sets of inputs are 2019 estimates; and
- National Rail Traveller Survey (NRTS) data on 'crow-fly' demand distribution by distance band from the station, verified by more recent MEL survey data.

Demand estimates (total annual journeys) for the ten closest stations are shown separately for trip productions and attractions in Figure B.4 and Figure B.5 respectively.

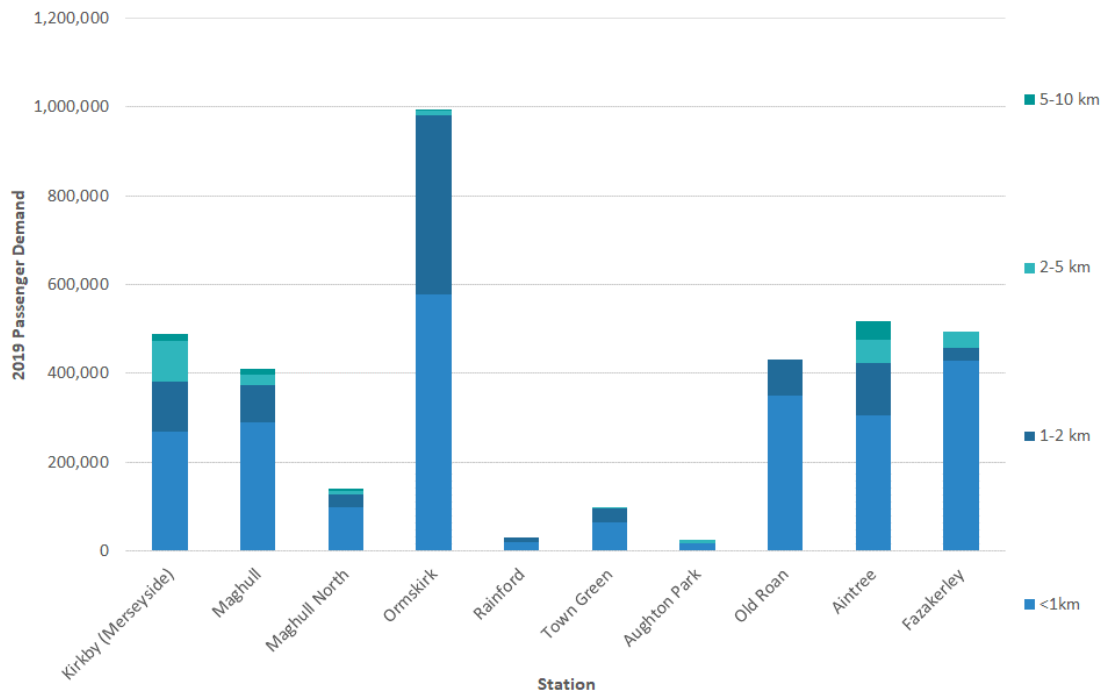
Figure B.4: 2019 Passenger Demand Estimate – Trip Productions



⁴⁹ Considering a full return 'tour' with an outbound and inbound trip, then productions are where that tour commences, and the attraction is where the main activity for the (or reason) for the journeys are undertaken. For example, a commute to work trip would have the place of residence as the production and the place of work as the attraction.

⁵⁰ It is necessary to use alternatives to standard industry sources on the MEL network due to the prevalence of zonal and/or area based ticketing products where the stations used are not recorded in conventional GB rail industry sources.

Figure B.5: 2019 Passenger Demand Estimate – Trip Attractions



It can be seen that:

- Trip productions are highest at Kirkby, Maghull and Ormskirk;
- Trip attractions are highest at Ormskirk, Aintree and Fazakerley;
- The majority of the stations are net producers, reflecting their suburban nature and use for travel to Liverpool City Centre and other major attractors. The principal exceptions are Ormskirk (where attractions exceed productions), Aintree and Fazakerley, reflecting their roles as a sub-regional centre, and presences of Aintree racecourse and Aintree University Hospital respectively; and
- Trip productions are distributed over a wider catchment than trip attractions. The majority of both produced and attracted demand is within 1km for all stations, with trip productions extending further than attractions.

B.2 Comparator Station Catchments

Passenger demand at the stations is then compared to catchment data. This draws on OS AddressBase data containing individual records for each postal delivery point in the Royal Mail records.

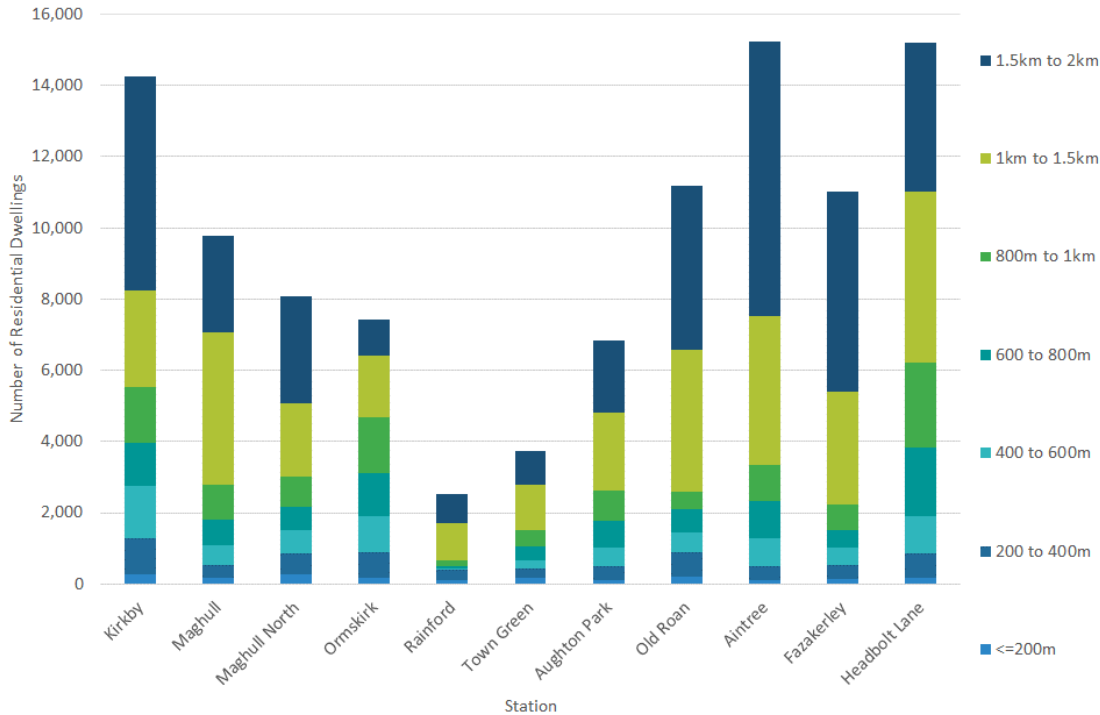
B.2.1 Residential Catchments

Figure B.6 shows the number of residential dwellings within distance bands from each station and also for Headbolt Lane. These are related to the number of trip productions. Points above 2km are excluded for clarity (as they become a disproportionately large percentage of the total). The chart shows the significant differentials in population density between the stations:

- Rainford and Town Green have the smallest catchments;
- Up to 2km, Kirkby, Headbolt Lane and Aintree have the largest catchments; and

- Up to 1km, Headbolt Lane has the largest immediate catchment, followed by Kirkby, with which it would ultimately compete, and Ormskirk.

Figure B.6: Number of Residential Dwellings by Station and Distance Band



B.2.2 Commercial Catchments

The comparable estimates for commercial premises was undertaken. These are naturally sparser than residential properties in suburban areas, and there is less certainty around the use of these for estimating trip attractions as:

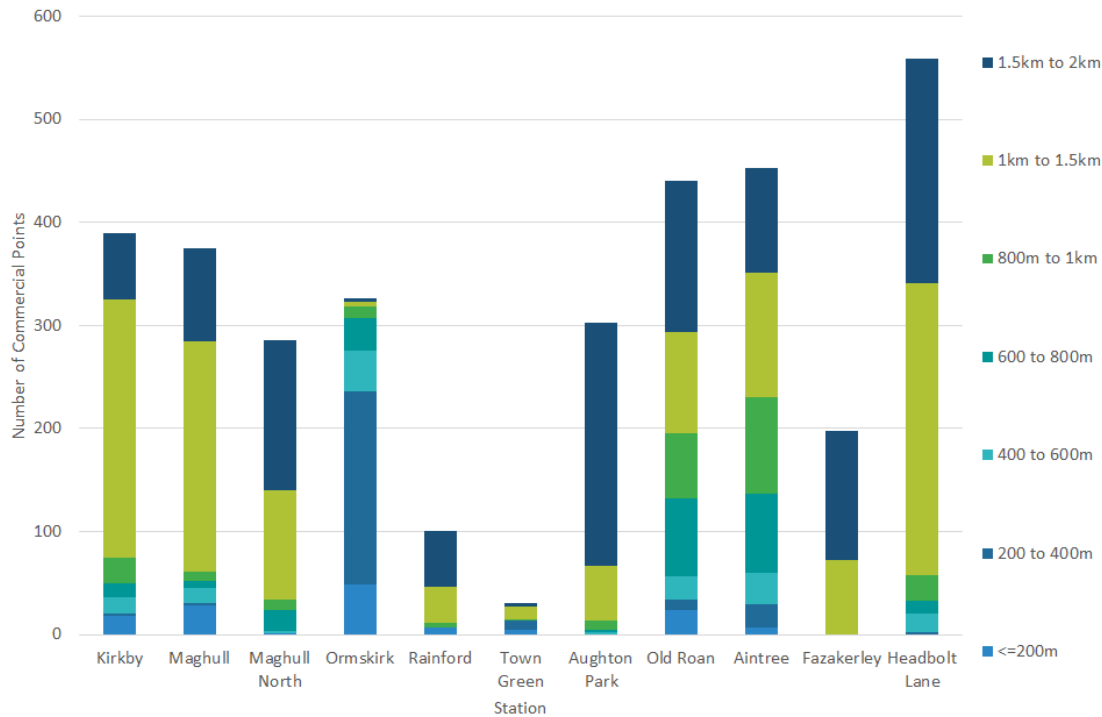
- The totals are purely delivery points and don't reflect the number of jobs or other measure of relative attractiveness across the points; and
- Only selected commercial points are used – trip attractions are driven by other types of land use.

Within major centres, further revisions are warranted as they tend to be net attractors, i.e. trip attractions are a greater proportion of demand than trip productions. In suburban areas, such as Headbolt Lane and the comparator stations, trip productions are dominant and the greater veracity of the relationship between residential data and production demand means we can have greater confidence in the totals without such additional effort.

Figure B.7 shows the corresponding commercial catchments for the comparator stations and Headbolt Lane. The differences between stations are starker (than for the residential catchments). Ormskirk has a noticeably dense immediate catchment, but few commercial points between 1km and 2km. This can be compared against Figure B.5, where it also has the most trip attractions (which outnumber its trip productions). Old Roan and Aintree also have comparatively dense local commercial catchments. Headbolt Lane is comparable to Kirkby and Maghull, but it is noticeable that much of the catchment is more than 1km from the station, e.g. Knowsley Business Park and Kirkby town centre. Comparing this against the proportion of

attracted trips from more than 1km, again in Figure B.5, shows that these longer access/egress distances will reduce the estimated attracted demand in comparison to stations such as Aintree (which has its own unique circumstances), Old Roan, and Ormskirk.

Figure B.7: Number of Commercial Points by Station and Distance Band



B.2.3 Estimated Trip Rates

Current demand and catchments are then brought together to produce a set of estimated average trip rates for the comparator stations, split by:

- Productions and attractions;
- Distance band – this uses the detailed banding from the catchments and requires the more aggregate data for the existing demand to be disaggregated.

This requires the calibration of trip rates across the finer grain distance bands, ensuring that the ‘modelled’ and ‘observed’ totals, by distance band, match for all the comparator stations while differences across each individual station are minimised. Outliers are excluded at this stage to aid calibration. As Rainford has a significantly lower Level of Service (LoS) than the MEL stations, and an associated lower trip rate it was excluded.

The resulting calibrated trip rate curves are shown in Figure B.8 and Figure B.9 for trip productions and attractions respectively. They show, for example, that each residential dwelling within 200m of a station is expected to produce 310 rail trips per annum, diminishing to 70 at 800m to 1km from the station.

Figure B.8: Estimated Average Trip Production Rate by Distance from Station (per point)

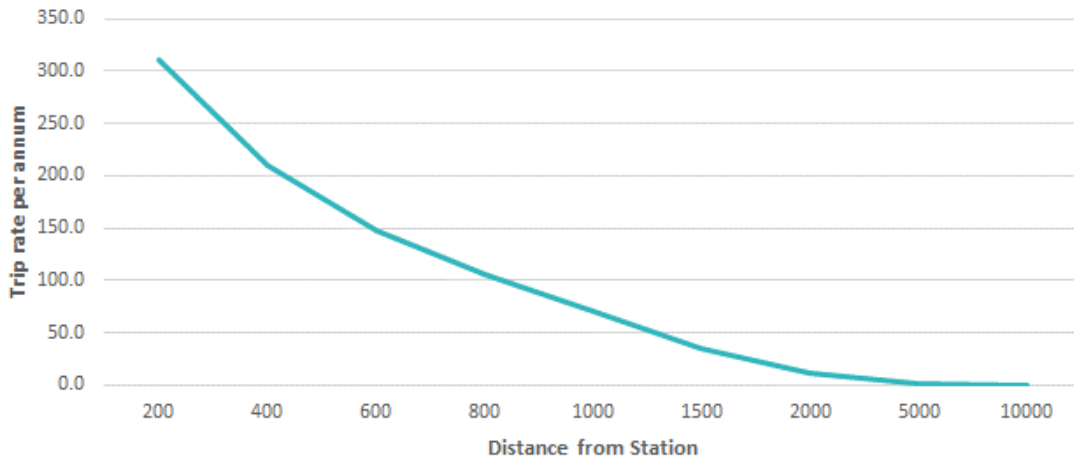
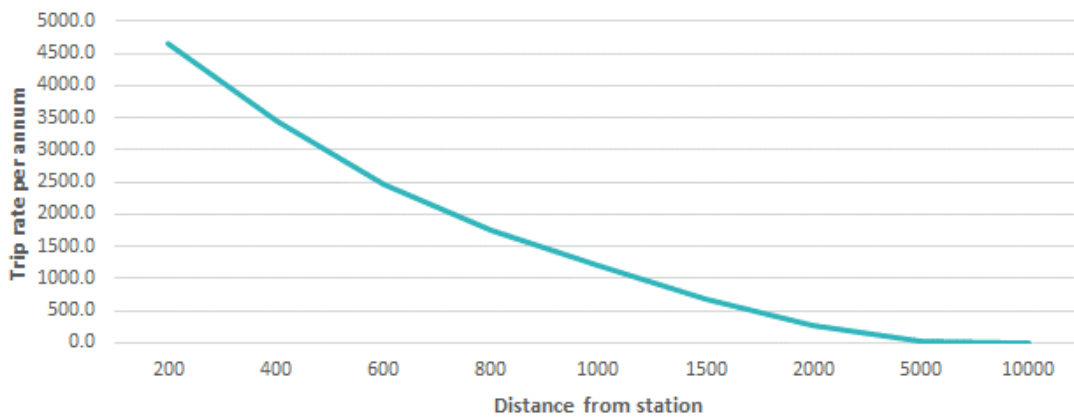


Figure B.9: Estimated Average Trip Attraction Rate by Distance from Station (per point)

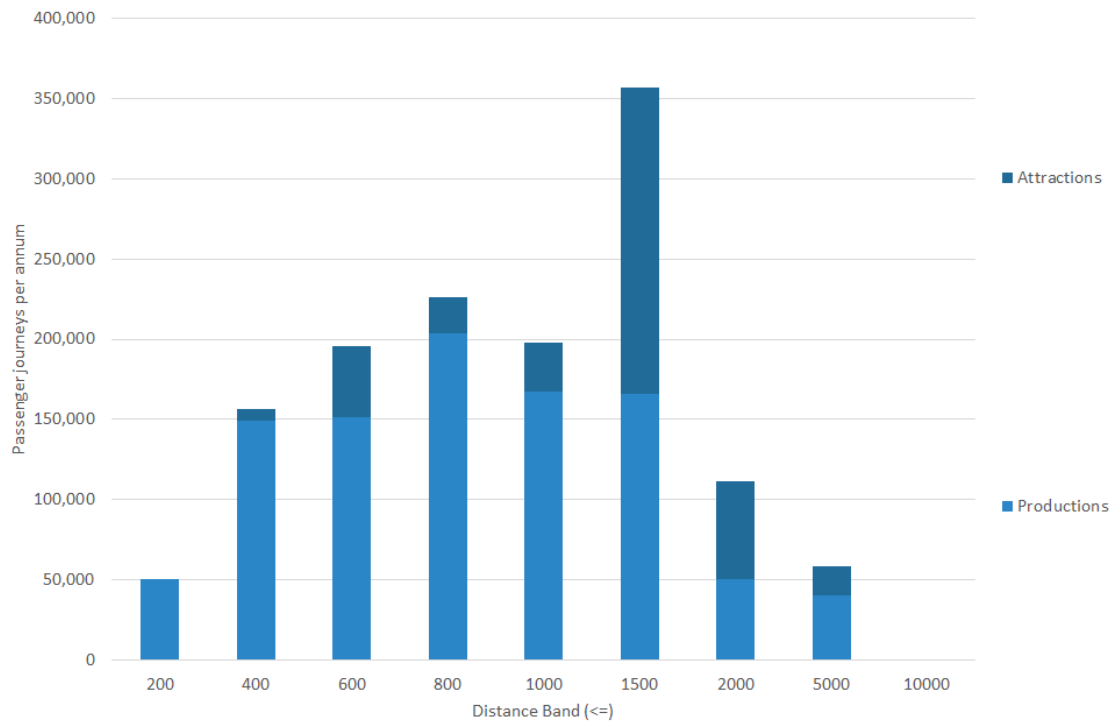


Combination of the Headbolt Lane catchments with these trip rates produces the initial demand estimate in Figure B.10 (note bands increase in size with distance from the station). This shows an estimated an estimated 1.34 million journeys per annum. This initial estimate is the equivalent of a demand level expected as if the station had been open for a significant period of time, i.e. all demand ramp-up impacts are complete and there was no demand which is already better served by an existing station.

At this stage, trip rate estimates do not therefore account for:

- Overlapping catchments, i.e. some of the initial gross demand estimate will either (i) remain at an existing station, or (ii) be abstracted from an existing station; and
- Variations in Level of Service (LoS), i.e. the Generalised Journey Time (GJT) of rail time, plus access and egress, and/or fare differentials between the stations. This effects the propensity to remain or be abstracted from existing stations and also the level of wholly new demand we might expect at Headbolt Lane.

Figure B.10: Headbolt Lane Station – Initial Gross Estimate



Subsequent stages of the Headbolt Lane demand estimation introduce:

- Station choice modelling, to forecast where points are better served by an existing station (both access/egress and LoS); and
- Elasticity-based adjustments to demand estimates which reflect differences in LoS, measured through the GJT.

GJT combines In-Vehicle Time (IVT), wait time as a 'service interval' penalty, and interchange, including both the time involved and the 'pure' inconvenience penalty over and above the time element.

B.3 Local Stations – Retention and Abstraction

A station choice model is used to determine whether existing demand is likely to:

- Remain at an existing station; or
- Be abstracted to Headbolt Lane.

Having understood these two adjustments, it is then possible to estimate the net additional (new to rail) demand which Headbolt Lane is expected to generate.

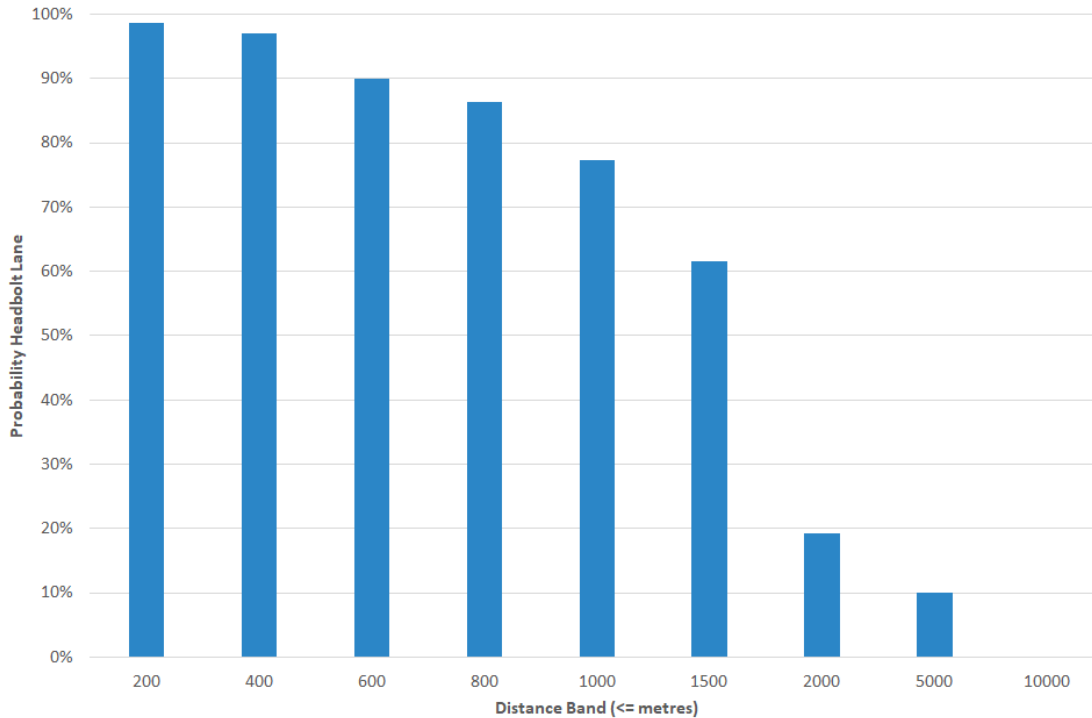
The station choice model uses a standard multinomial logit model (MNL) to estimate the probability of choosing Headbolt Lane or the nearest existing station, based on:

- Access and egress times, with assumptions about mode choice by distance; and
- Demand weighted average GJT to/from the stations.

Figure B.11 shows the probability of choosing Headbolt Lane for produced demand (only) based on these inputs. Within 600m, 90% to 100% of the initial forecast demand is expected to

choose Headbolt Lane, and this diminished to 77% for 1km and more rapidly beyond that as other stations become more attractive.

Figure B.11: Produced Demand – Choose Headbolt Lane



Across the initial 1.34 million journeys per annum demand estimate, 350,000 are predicted to remain at an existing station, leaving:

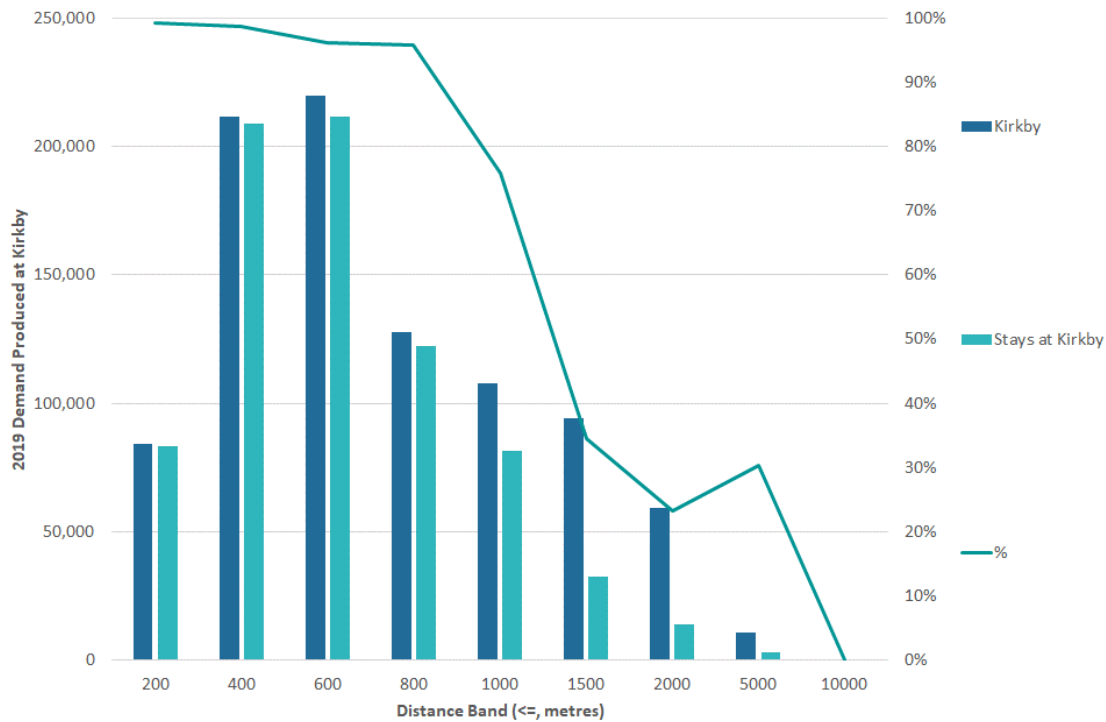
- 750,000 trips produced at Headbolt Lane (78% of the initial estimate); and
- 240,000 trips attracted to Headbolt Lane (65% of the initial estimate).

These are the net demand estimates for Headbolt Lane, i.e. the demand which would be expected at Headbolt Lane had it been open in 2020 for a significant period of time (to account for demand ramp-up).

The station choice model also shows the proportion of that net demand at Headbolt Lane which is abstracted from existing stations. This provides the net change in rail demand. This showed that the principal interaction is with existing demand at Kirkby – there is a small interaction with Rainford, but with the small current demand this makes little impact on the absolute estimates.

Figure B.12 shows the impact on the 2019 produced at Kirkby, with over 95% of the demand within 800m remaining at the station. Abstraction becomes higher above 1km, but on smaller absolutes, which, in part, reflect the diminished catchment to other directions compared to towards Headbolt Lane and the interaction with other MEL stations.

Figure B.12: 2019 Demand Produced at Kirkby



In total, an estimated 280,000 trips are forecast to be abstracted from Kirkby to Headbolt Lane – 10% of the existing demand at Kirkby. In totality, this means that an estimated 715,000 of the trips at Headbolt Lane are forecast to be entirely new to rail (990,000 – 280,000).

B.4 Passenger Demand Forecasting

B.4.1 Modelled Years

Three future years have been modelled:

- 2024;
- 2030; and
- 2040 – 20 years after the appraisal year where TAG specifies the imposition of the cap on demand, revenue etc. in the economic appraisal.

B.4.2 Forecasting Framework

Preceding sections detailed the estimation of ‘ghost demand’ at Headbolt Lane, as if it had been open in 2019 for a significant period of time, i.e. demand ramp-up effects had completed.

Forecasting of future demand then follows recommendations in TAG Unit M4⁵¹ and the UK rail industry’s PDFH. This passenger demand forecasting framework is applied for all flows, including to/from Headbolt Lane and other flows impacted by the changes in the DS scheme, e.g. changes between Kirkby and Wigan, due to curtailment of Northern services at Headbolt Lane, and also the background trends across the MEL network where abstraction may occur.

⁵¹ <https://www.gov.uk/government/publications/tag-unit-m4-forecasting-and-uncertainty>

The framework includes:

- External factors, e.g. the population, economic variables and trends for competing modes;
- Fares impacts, using an assumed change of RPI+1% from 2021 to 2040 where revenue changes are capped (assumed to change in line with the GDP deflator). The demand effect is relative to the GDP Deflator; and
- The GJT trend, which is a -1% reduction per annum up to 2030. This is contained within the PDFH v6, with recommendations on its use in TAG Unit M4.

The external factors framework from PDFH predominantly uses an elasticity based approach (participation uses a straight parameter with an exponential function). The framework has separate elasticities and parameters for different ticket types: season, full and reduced:

$$I_E = \left(\frac{GVA\ per.\ cap.\ new}{GVA\ per.\ cap.\ base}\right)^g \cdot GJT_{Trend}^j \cdot \left(\frac{POP_{index\ new}}{POP_{index\ base}}\right)^p \cdot \left(\frac{EMP_{index\ new}}{EMP_{index\ base}}\right)^e \cdot Exp[u(Particpn)] \cdot \left(\frac{Car\ Cost_{new}}{Car\ Cost_{base}}\right)^f \cdot \left(\frac{Car\ Time_{new}}{Car\ Time_{base}}\right)^c \cdot \left(\frac{Bus\ Cost_{new}}{Bus\ Cost_{base}}\right)^b \cdot \left(\frac{Bus\ Time_{new}}{Bus\ Time_{base}}\right)^t \cdot \left(\frac{Bus\ Head_{new}}{Bus\ Head_{base}}\right)^t$$

Table B.2: External Environment Factors and Data Sources

ID	Factor	Forecasting Data Source
1	Population	NTEM v7.2 planning data
2	Employment	NTEM v7.2 planning data
3	GDP per Capita	TAG Databook May 2020
4	Participation	NTEM v7.2 planning data
5	Car Costs	TAG Databook May 2020
6	Car Time	TAG Databook May 2020
7	Bus Time	TAG Databook May 2020
8	Bus Cost	DfT Bus Statistics – extrapolation of trend
9	Bus Headway	Assumed constant

Source: Mott MacDonald

Separate to the above is consideration of GJT changes. Within the forecasting this includes the impact of the new Class 777 rolling stock on journey quality, as this is modelled as a multiple on In-Vehicle Time (IVT). GJT changes occur to:

- MEL flows in the DM due to the new Class 777 rolling stock; and
- Flows to/from Kirkby and stations to the east due to the curtailment of Northern services at Headbolt Lane and the introduction of an interchange (at Headbolt Lane) for demand remaining at Kirkby.

These GJT changes are captured using the same approach as for external factors, fares and the GJT trend, with a demand elasticity applied to the proportionate change between the DM and DS.

Demand Elasticities and Parameters

Demand elasticities vary according to distance and by ticket type. Sources for the elasticities are shown in Table B.3.

Table B.3: Headbolt Lane Station Demand Elasticities and Parameters

ID	Factor	Elasticity/Parameter
1	Population	PDFH Table B2.4a (for commute relative to LCR wide population change)
2	Employment	PDFH Table B2.4a
3	GDP per Capita	PDFH Table B2.4a
4	Participation	PDFH Table B2.4a
5	Car Costs	PDFH Table B2.4a
6	Car Time	PDFH Table B2.4a
7	Bus Time	PDFH Table B2.4a
8	Bus Cost	PDFH Table B2.4a
9	Bus Headway	PDFH Table B2.4a
10	Generalised Journey Time (GJT)	PDFH Table B4.5

Source: PDFH v6.0

B.4.3 Ramp-Up of Demand

To reflect the typical lags between significant changes in transport supply and individuals' travel behaviour, ramp-up rates are applied to demand forecasts and subsequent estimates of revenue and economic impacts. These rates are based on recommendations from PDFH v6:

- 60% of forecast demand is realised during year one;
- 78% of forecast demand is realised during year two;
- 90% of forecast demand is realised during year three;
- 98% of forecast demand is realised during year four; and
- 100% of forecast demand is realised during year five and thereafter.

B.4.4 Future Year Demand Forecasts

Table B.4 summarises the total impact of the scheme on forecast rail passenger demand:

- Headbolt Lane Station numbers show the total passengers forecast to use Headbolt Lane Station in the DS;
- 'MEL – existing stations' show the impacts of abstraction (principally from Kirkby); and
- 'Kirkby – Wigan et al' show the impacts for passengers previously using Northern services to/from Kirkby.

The cumulative rail impact is then shown.

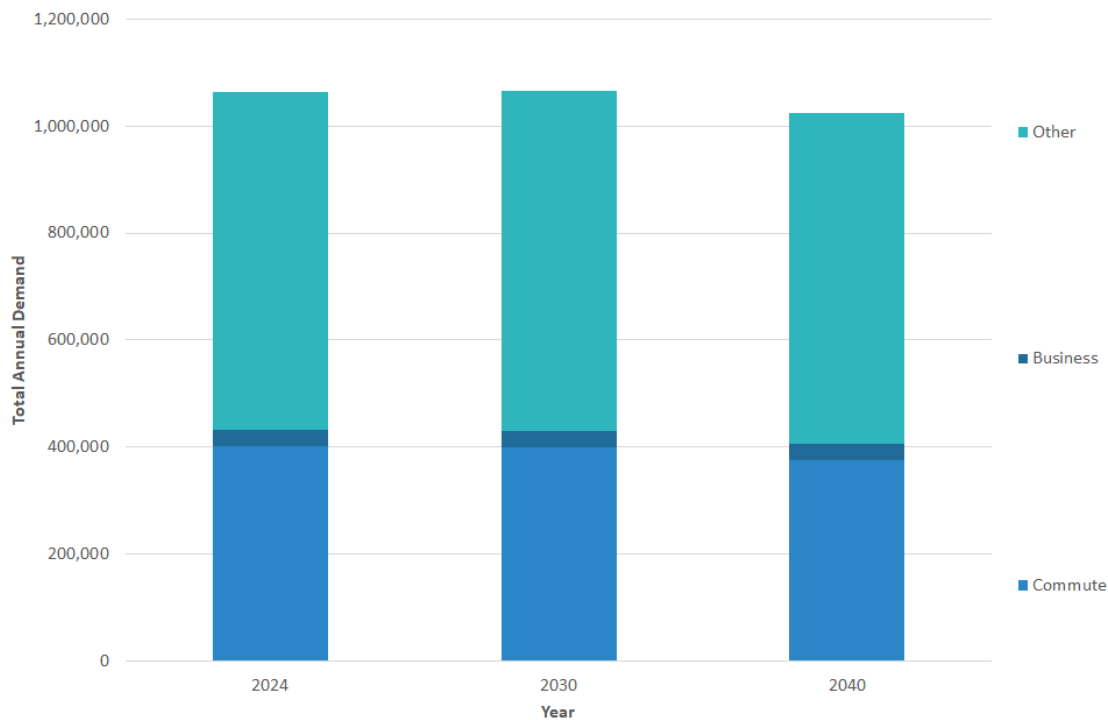
Table B.4: Do Something versus Do Minimum Passenger Demand Changes

Flow	Year	Do Minimum	Do Something	DS - DM	Percentage Change
Headbolt Lane Station	2024	0	1,063,660	1,063,660	N/A
	2030	0	1,065,494	1,065,494	N/A
	2040	0	1,023,649	1,023,649	N/A
MEL – existing stations	2024	10,039,829	9,745,826	-294,003	-3%
	2030	10,077,367	9,784,115	-293,253	-3%
	2040	9,654,273	9,374,984	-279,289	-3%
Kirkby – Wigan et al	2024	47,060	33,030	-14,029	-30%
	2030	47,795	33,502	-14,293	-30%
	2040	46,501	32,504	-13,997	-30%
TOTAL	2024	10,086,889	10,842,517	755,628	7%
	2030	10,125,163	10,883,111	757,948	7%
	2040	9,700,774	10,431,137	730,363	8%

B.5 Demand by Journey Purpose and Distance

Demand split by journey purpose is shown in Figure B.13, taken directly from that observed at the comparator stations used in the initial trip rate estimate.

Figure B.13: Headbolt Lane Station Estimated Demand by Journey Purpose

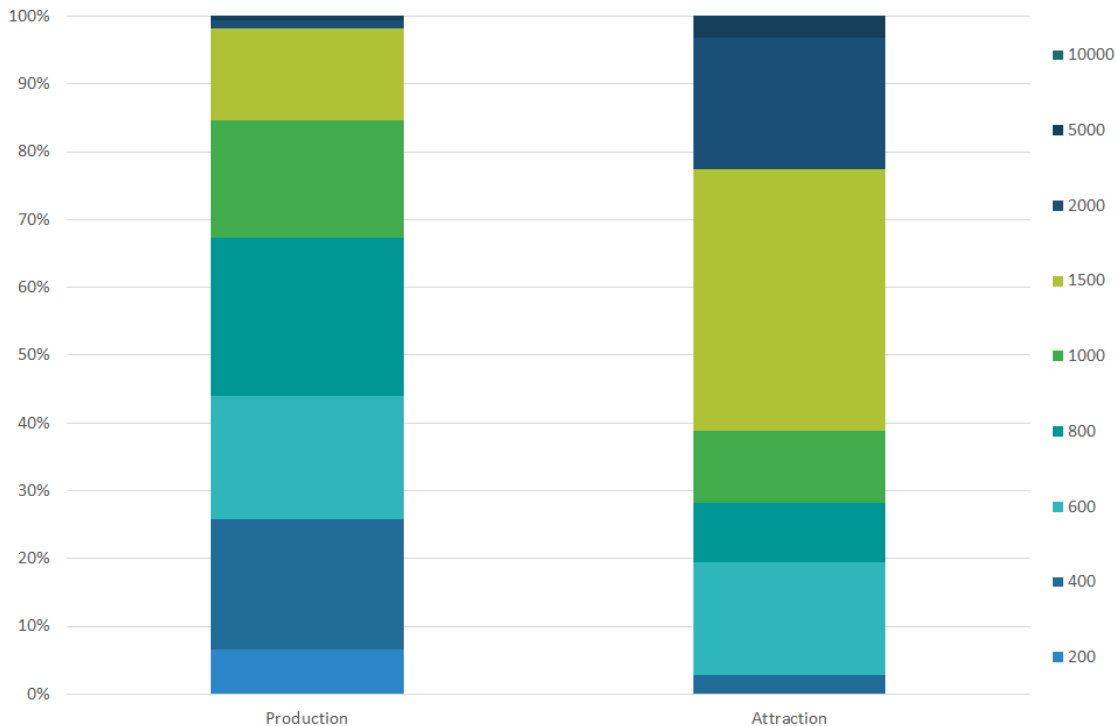


The split of Headbolt Lane demand by distance band is shown in Figure B.14, which is impacted by:

- Trip rates per unit (dwellings for productions and commercial units for attractions); and

- The number of units within each distance band, i.e. land use densities which show, for example, no commercial addresses within 200m of Headbolt Lane.

Figure B.14: Headbolt Lane Station Estimated Demand by Distance from Station



B.6 Daily Demand Estimate

Daily demand estimates have been produced using the latest annualisation factors by journey purpose from Transport for the North's (TFN's) Northern Rail Modelling System (NoRMS). For 2030 demand, these produce average weekday estimates of approximately:

- 2,550 trips produced at the station, inclusive of both the outbound (from home) and inbound (to home) journeys – 1,275 individuals assuming everybody makes a return 'tour' from home to work etc. and back again; and
- 670 trips attracted to the station, inclusive of both the outbound (from home) and inbound (to home) journeys – 335 individuals assuming everybody makes a return 'tour' from home to work etc. and back again.

B.7 Estimated Access and Egress Mode Choices

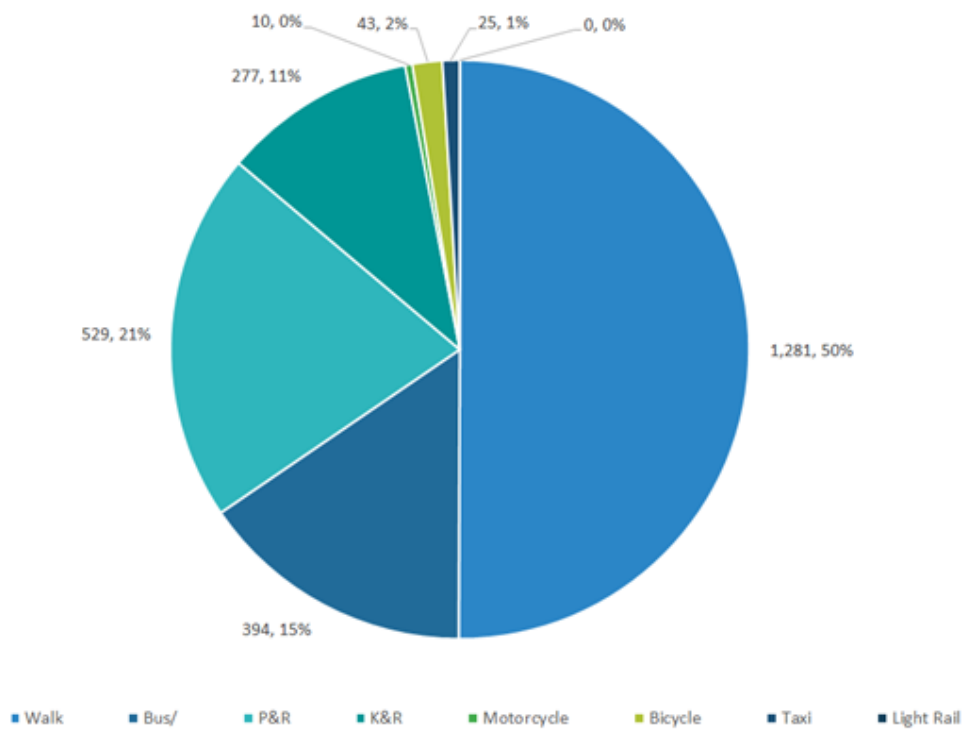
Figure B.15 shows the estimated mode split for the 2030 demand produced at Headbolt Lane Station, i.e. those making their outbound trip of a return tour by starting there (see Section 14.4.4). This is estimated to be approximately 800,000 annual trips per annum (outbound and inbound), or 2,550 on an average weekday. The access and egress mode split estimate is based on:

- The distribution of demand by distance from the station from the trip rate and catchment analysis;
- Estimates of how this demand by distance band then splits by journey purpose; and

- National Rail Traveller Survey (NRTS) analysis of access/egress mode choices by journey purpose and distance band from the comparator station selected for the trip rate analysis.

An underlying assumption is that similar levels of attractiveness will be provided for each potential access/egress mode at Headbolt Lane as observed for the comparators.

Figure B.15: Estimated Mode Split for 2030 Average Weekday Demand Produced at Headbolt Lane Station



It can be seen that:

- Walk is the dominant mode due to the concentration of demand within less than 1km;
- Park & Ride (P&R) is used by 21% of all trips produced at the station; and
- Cycling is the estimated mode for 2% of all trips produced at the station.

Naturally these access/egress mode shares are relative to the attractiveness, or otherwise, of each mode at the comparator stations when NRTS was undertaken (2004). Wider measures, beyond the scheme itself, to encourage the use of different modes will lead to different mode share outcomes.

To convert rail trips into the required number of spaces for design purposes, demand must be divided by two, resulting in approximately:

- 275 P&R vehicles; and
- 25 bicycles.

The preceding outputs are for the 'core scenario' as consistent with the DfT's TAG. Alternative demand growth scenarios would result in higher (or lower) requirements.

Given uncertainties in the demand numbers, particularly that, prior to the Covid-19 pandemic, rail demand growth had regularly been greater than the PDFH predicted, it is recommended that

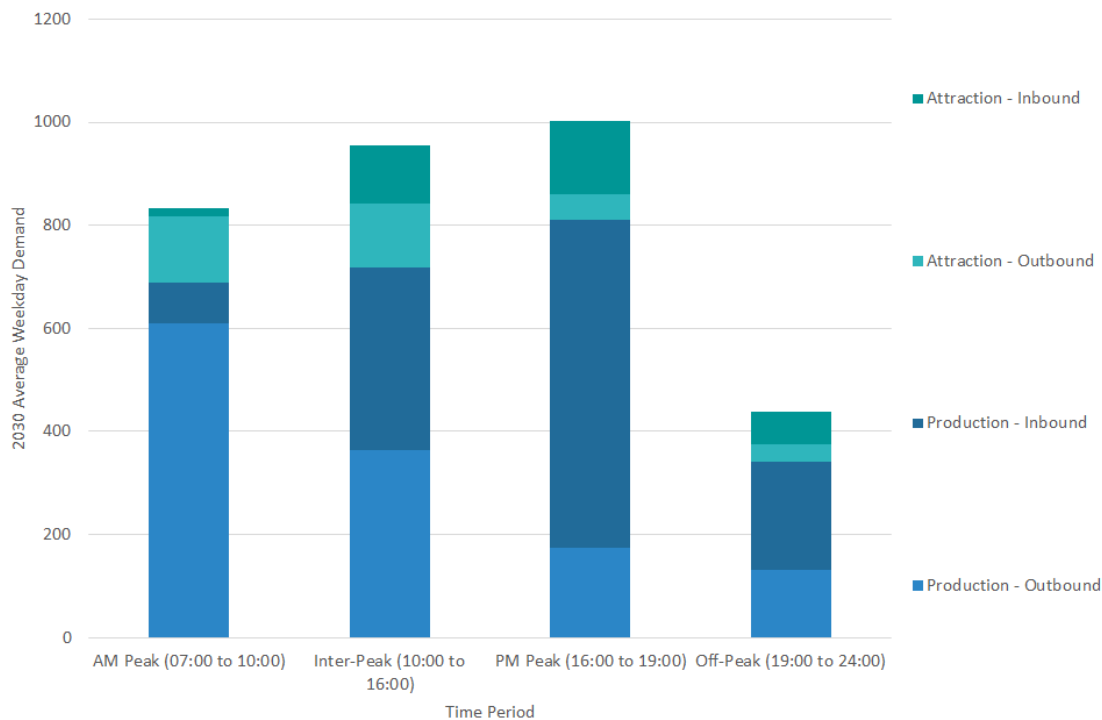
the opportunity is taken to initially build circa 300 P&R spaces with passive provision for future extension to a maximum of 500 spaces.

B.8 Estimated Average Weekday Demand by Time Period

To estimate the distribution of departures from and arrivals at Headbolt Lane (by train), demand profiles are taken from the UK rail industry’s MOIRA software, applied by flow type and journey purpose. Figure B.16 shows the estimated split by time period for an average weekday by:

- Production – Outbound, i.e. the first journey of a full return ‘tour’ travelling from Headbolt Lane;
- Production – Inbound, i.e. the corresponding return journey (e.g. to home);
- Attraction – Outbound, i.e. the first journey of a full return ‘tour’ travelling to Headbolt Lane; and
- Attraction – Inbound, i.e. the corresponding return journey (e.g. to home).

Figure B.16: Headbolt Lane Station – 2030 Average Weekday Demand Profile by Time Period



B.9 Demand by Ticket Type

Estimates of ticket type choices are taken from Kirkby, split by production or attraction and by ticket type. The demand matrices used to derive the splits are from 2015 and there is liable to have been change between products, e.g. due to differences in fares changes, which mean that the estimated split for 2019 is already likely to differ. There are also likely to be further changes in the split over the next decade, meaning the indicative ticket type splits for 2030, shown Figure B.17 and Figure B.18 for production and attraction demand respectively, are liable to further change.

Figure B.17: 2030 Headbolt Lane Production Demand - Indicative Split by Ticket Type

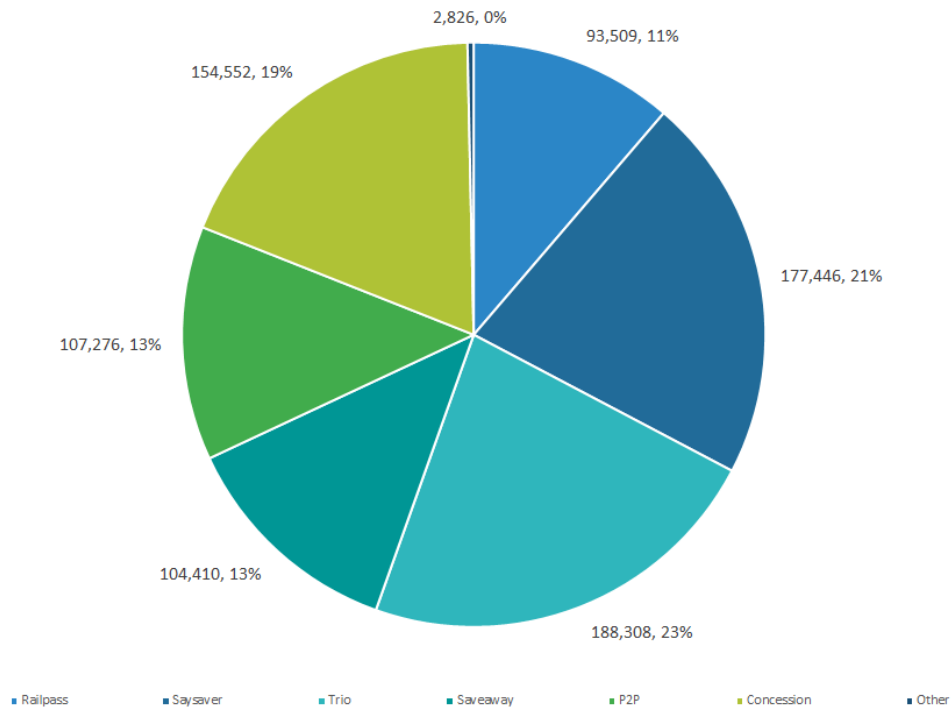
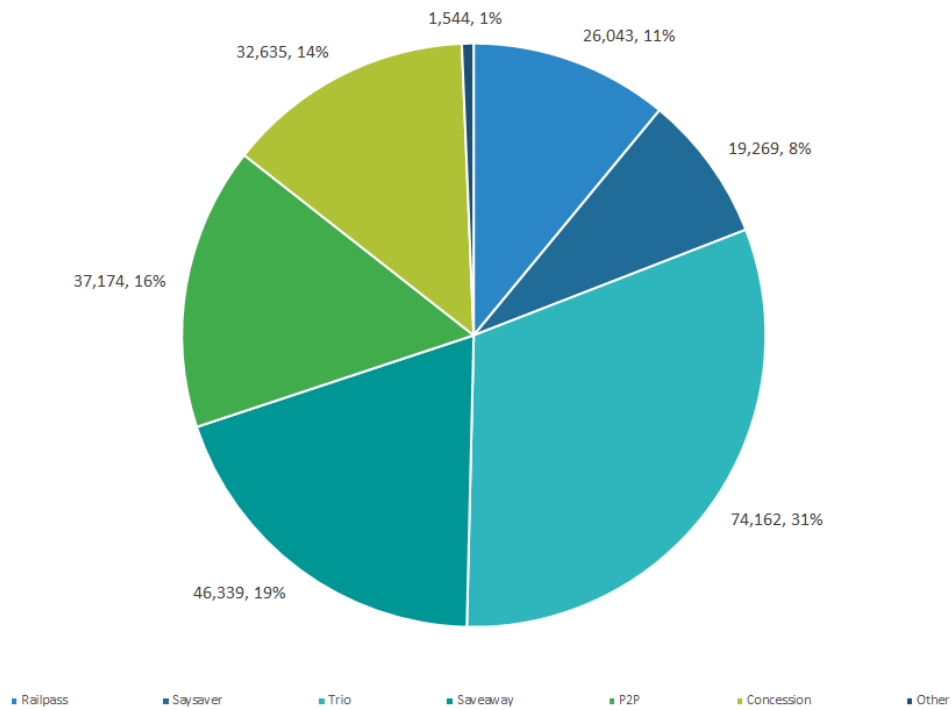


Figure B.18: 2030 Headbolt Lane Attraction Demand - Indicative Split by Ticket Type



B.10 Covid-19 Sensitivity Tests

The Department for Transport (DfT) has supplied “Covid and Rail Demand Forecasting-Uncertainty and its consequences” (supplied on 19.06.2020). This presentation and accompanying dataset (“Covid Forecasting Tool v09”) provide an initial estimate of the potential downturn in rail demand which could occur due to the current (2020) COVID 19 pandemic. The estimates cover the period from 2020 to 2029 and includes ‘low’, ‘medium’ and ‘high’ impacts. The demand impact at that point is then assumed to be permanent, i.e. any recovery is complete. Table B.5 shows the impacts of the three scenarios, which range between a -2% (high growth scenario) to -22% (low growth scenario) long-term impact on demand

Table B.5: Headbolt Lane and Net Rail Demand – Covid-19 Sensitivity Tests

	Headbolt Lane Demand				Net Rail Demand			
	Commute	Employer's Business	Other	TOTAL	Commute	Employer's Business	Other	TOTAL
Core Scenario								
2024	402,176	29,613	631,871	1,063,660	284,160	20,881	450,587	755,628
2030	399,188	30,037	636,268	1,065,494	282,107	21,227	454,614	757,948
2040	376,293	29,564	617,793	1,023,649	266,547	20,961	442,855	730,363
Low Growth Scenario								
2024	311,031	22,901	488,670	822,603	219,761	16,149	348,470	584,380
2030	311,151	23,413	495,945	830,509	219,891	16,546	354,353	590,790
2040	294,572	23,143	483,624	801,339	208,660	16,409	346,678	571,747
Medium Growth Scenario								
2024	357,000	26,286	560,894	944,180	252,240	18,536	399,973	670,748
2030	355,713	26,766	566,974	949,453	251,383	18,915	405,103	675,402
2040	336,003	26,398	551,646	914,047	238,008	18,717	395,439	652,163
High Growth Scenario								
2024	392,186	28,877	616,176	1,037,239	277,101	20,362	439,394	736,858
2030	390,015	29,347	621,647	1,041,010	275,624	20,739	444,167	740,531
2040	368,017	28,914	604,205	1,001,135	260,685	20,500	433,115	714,300

The impact on the Economic Case metrics (see Section 14.7) is shown in Table B.6.

Table B.6: Headbolt Lane Analysis of Monetised Costs and Benefits – Covid-19 Sensitivity Tests

Scenario	PVB (£'000s)	PVC (£'000s)	NPV (£'000s)	BCR
Core	54,977	39,837	15,140	1.38
Low Growth Scenario	42,863	45,289	-2,425	0.95
Medium growth Scenario	48,936	42,191	6,746	1.16
High Growth Scenario	53,622	39,801	13,821	1.35

C. Sub-National Wider Economic Impacts

C.1 Introduction

This Wider Economic Impacts (WEIs) assessment has been produced to support the submission of the Headbolt Lane FBC and seeks to demonstrate the value of the scheme in terms of benefits it could provide, or support the creation of, should the scheme be constructed. This is demonstrated by conducting a high-level assessment of the potential quantitative WEIs associated with this scheme and its ability to both influence and impact on development of commercial and residential sites within the study area.

C.2 Scheme background

Merseytravel first identified the need for a new station at Headbolt Lane in Kirkby within the Local Transport Plan Rail Strategy published in 2006 which sought to extend the coverage of passenger rail services in the Liverpool journey to work area. Since then, the development of the station has remained a long-standing aspiration of Merseytravel and the LCRCA to address identified network constraints and improve the socio-economic status of the Liverpool City Region (LCR). Merseytravel now seeks Transforming Cities Fund (TCF) monies to deliver a new station to the north of Kirkby on the current line between Kirkby and Rainford, extending the Merseyrail Northern Line to allow a frequent Merseyrail service to access the new station. The scheme seeks to enhance public transport access in the northern and eastern areas of Kirkby, across the LCR and wider hinterland including adjacent areas of West Lancashire.

This scheme was selected as eligible for the TCF business case application process due to its alignment with Mayoral priorities and the key themes of the LCR TCF. This scheme has therefore been developed in consideration of the following themes:

- **Theme 1:** Improving and expanding the public transport network to meet new areas of demand.
- **Theme 2:** Improving the appeal of public transport, and particularly bus, against private transport.
- **Theme 3:** Intervening for health and wellbeing.

The proposed scheme will see the delivery of a new station at Headbolt Lane, as well the expansion of the electrified Merseyrail network beyond the current existing boundary of Kirkby Station. Headbolt Lane station will succeed Kirkby Station as the terminus on both the Merseyrail and national rail networks and provide an interchange between the two, with all passengers alighting at the new station.

This project is intended as a catalyst for addressing current gaps in direct rail connectivity between key areas of the LCR, helping to reduce deprivation and ensure a high level of accessibility to opportunities and key services for residents.

C.3 Land use analysis

This section introduces the key sites for potential growth and development within the Headbolt Lane study area including details of proposed employment and residential land uses.

C.3.1 Local planning policy

The vision for 2028 in Knowsley's Local Plan: Core Strategy (2016) is that Knowsley's economy will be stronger and more diverse, providing employment choices for local people, helping to drive economic growth in the wider LCR, and delivering a wide choice of housing to meet needs.

The key strategic objectives relevant to the delivery of a new station at Headbolt Lane include:

1. **Sustainable economic and employment growth** - to encourage and maintain sustainable economic and employment growth in Knowsley, complementary to that within the wider LCR, by accommodating employment related development, improving skills within the workforce, and promoting enterprise, entrepreneurship and innovation.
2. **Well-balanced housing market** - to promote a well-balanced housing market throughout Knowsley by providing a sufficient quantity and mix of high-quality sustainable housing in appropriate locations to meet needs and demand (including for market, affordable and supported housing).
3. **Sustainable Transport** - To ensure new development in Knowsley encourages a reduction in the overall need to travel, and prioritises sustainable transport such as walking, cycling and public transport. This will help to ensure accessibility and linkage between housing areas and employment locations, shopping, leisure, culture, health care, education, community and sporting facilities, green spaces and other services.

Between 2010 and 2028 Knowsley's Local Plan: Core Strategy (2016) states that provision will be made for the delivery of 8,100 new dwellings across Knowsley at an annual average of 450 dwellings per annum. The distribution of this new housing is outlined in the table below.

Table C.7: Distribution of planned new housing in Knowsley

Area	% of new housing to be delivered	Actual number of new dwellings to be delivered
Huyton and Stockbridge Village	36%	2,916
Kirkby	16%	1,296
Prescot, Whiston, Cronton and Knowsley Village	32%	2,592
Halewood	16%	1,296
Total	100%	8,100

Source: Knowsley's Local Plan: Core Strategy (2016)

Knowsley's Local Plan: Core Strategy (2016) also makes provision for at least 164 hectares of land to be developed for employment uses to be located primarily within the following locations:

- Knowsley Industrial Park (including Knowsley Business Park);
- Huyton Business Park;
- Kings Business Park;
- South Prescot; and
- Jaguar Land Rover (Halewood).

In addition, one of the key spatial development priorities for Knowsley is the need to regenerate and enhance existing residential neighbourhoods, particularly in areas with higher levels of deprivation, through neighbourhood management initiatives, improvements to public realm, and appropriate investment in service provision and in the existing housing stock. Several opportunities for regeneration and development have been identified within the borough which have been identified as Principal Regeneration Areas that include:

- North Huyton and Stockbridge Village;
- Kirkby Town Centre;
- Tower Hill, Kirkby;
- Knowsley Industrial and Business Parks;
- Prescott Town Centre; and
- South Prescott.

C.3.2 Knowsley Industrial and Business Parks

Knowsley Industrial and Business Parks comprise the largest mainly industrial area within the Liverpool City Region, and the second largest in the North West region. A strategic framework for the regeneration of the area⁵² was completed on behalf of the Council and North West Development Agency in 2011 and concluded that collectively Knowsley Industrial and Business Parks provide approximately 27% of total jobs in the Borough and contribute £214 million per annum in Gross Value Added (GVA) to the economy.

Knowsley Industrial and Business Parks have been designated a Principal Regeneration Area in Knowsley's Local Plan: Core Strategy (2016) to encourage a mix of high-quality employment development with focus on:

- Class B1 'business' uses within 'gateway' locations at: A580 West/Moorgate Road; A5208 County Road/South Boundary Road/Moorgate Road/Arbour Lane/Lees Road; and at A580 East/Coopers Lane;
- Class B2 'General Industrial' and B8 'Storage and Distribution' uses north of South Boundary Road;
- Class B1 and B8 uses south of South Boundary Road; and,
- A local service centre (or 'Services Hub') at South Boundary Road to provide small scale shopping and services to serve the needs of the workforce within the Park.

Knowsley Industrial Park is also identified as a 'Priority Zone' to promote the production of renewable, low carbon and decentralised energy.

The Knowsley Local Plan: Core Strategy (2016) states that in terms of accessibility, improvement to sustainable transport facilities at Knowsley Industrial and Business Parks will be supported, including improved public transport interchange facilities as well as facilities which will enhance the role and/or enable the potential growth of the Knowsley Rail Freight Terminal to maximise access to the national network.

C.3.3 Kirkby Town Centre

Knowsley's Local Plan: Core Strategy (2016) identified Kirkby town centre as one of its Principal Regeneration Areas and states that the town centre needs significant intervention and investment if it is to serve its local catchment and compete effectively with neighbouring centres. Comprehensive regeneration will be supported to enhance the viability and vitality of Kirkby Town Centre by:

- Encouraging a wider mix of town centre uses, services and facilities, including new comparison and convenience retail floorspace, key services, residential, employment uses, cultural and leisure facilities, and enhancements to the evening economy and existing market;

⁵² Delivering a New Future for Knowsley Industrial Park: Strategic Framework (DTZ, Arup and Taylor Young, 2011)

- Directing new retail development and other town centre uses toward the existing town centre, particularly in the primary shopping area comprising St. Chad's Parade and its immediate surroundings; and,
- If necessary, to create sufficient capacity for retail-led regeneration, designation of land to the south of Cherryfield Drive to permit expansion of the town centre and primary shopping area.

Work is currently underway to develop the Kirkby Town Centre Masterplan. The planning application is for a 11,148m² scheme that will comprise of a supermarket, and around 7,432m² of new shops, improved pedestrian links, car parking, new public realm and landscaping. The redevelopment will complement, enhance and integrate with the existing Town Centre shops and facilities. The principles of the scheme are to:

- Carry out improvements that will complement and enhance Kirkby Shopping Centre;
- Increase the choice and type of shops for local people;
- Provide accommodation that meets the needs and requirements of modern retailers, making Kirkby an attractive place to do business;
- Ensure that any new development is fully integrated into the existing Town Centre, with attractive linkages, so that the whole area benefits from any new development;
- Incorporate sustainable measures throughout the scheme;
- Create pockets of landscaping and green spaces, creating new and attractive street scenes including new areas of public realm; and,
- Provide a temporary car park to the south of Cherryfield Drive to serve existing shops and local amenities, while the retail development is under construction.

C.3.4 Deprivation in Knowsley

In 2019 the borough of Knowsley was ranked the 3rd most deprived local authority in the UK with 45% of its Lower Super Output Areas (LSOAs) in the 10% most deprived areas nationally⁵³. The Index of Multiple Deprivation is the official measure of deprivation and combines information from the following domains:

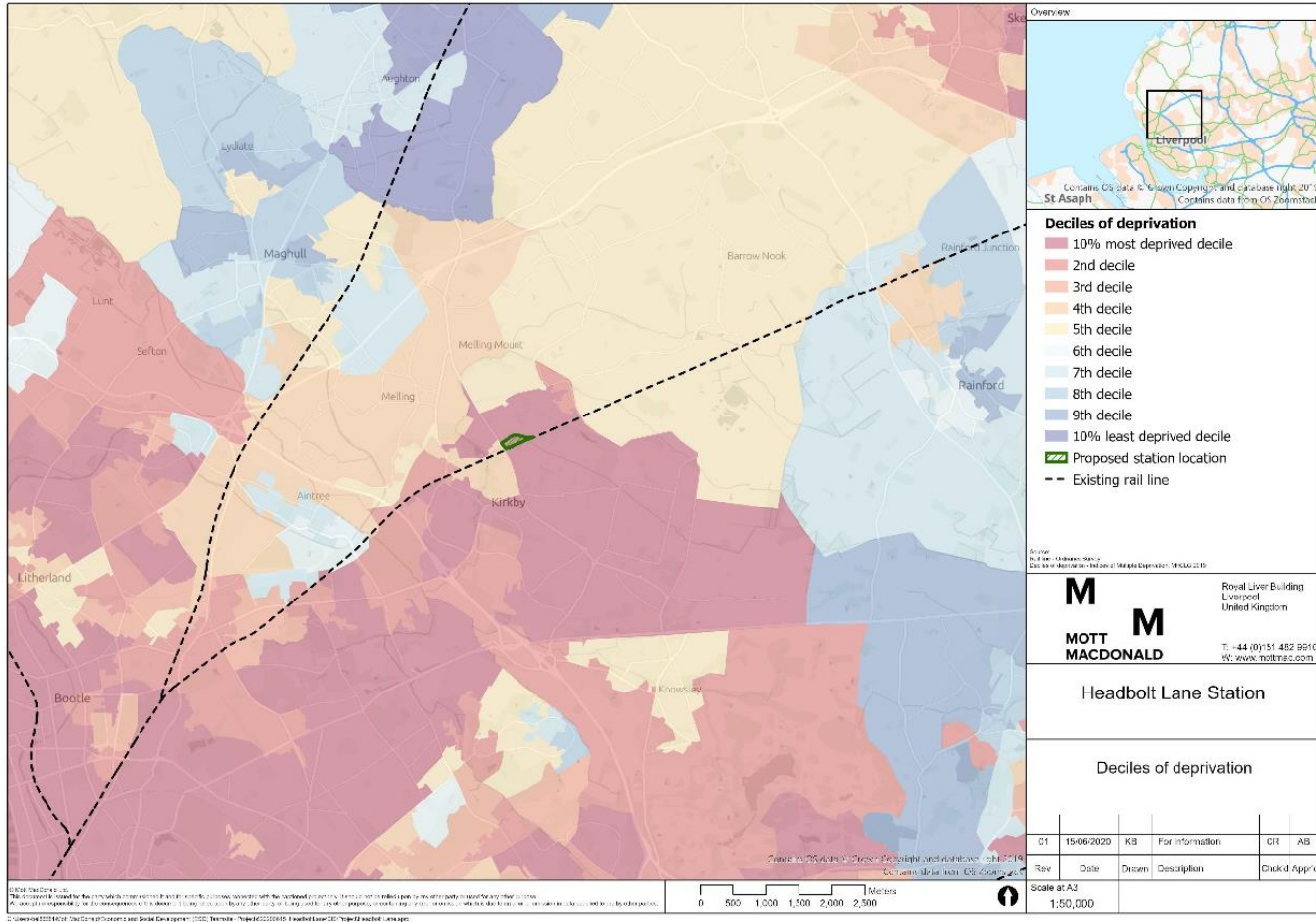
- Employment Deprivation;
- Education, Skills and Training Deprivation;
- Health Deprivation and Disability;
- Crime;
- Barriers to Housing and Services; and,
- Living Environment Deprivation.

As shown in Figure C.19 the immediate surrounding area of the proposed locations for Headbolt Lane station are classified as being in the 10% most deprived decile in the IMD ranking scale which include the major residential estates on either side of the existing railway line. The majority of the northern area of Knowsley is also classified as being in the 10% most deprived decile thus highlighting the concentration of deprivation across the borough which has also persisted for several decades.

⁵³

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/835115/loD2019_Statistical_Release.pdf

Figure C.19: Deprivation in Knowsley, 2019



Source: Ministry of Housing, Communities and Local Government, 2019 Index of Multiple Deprivation

Given the high levels of deprivation in the surrounding area of the proposed Headbolt Lane station the potential economic impacts associated with the improved public transport in this area could be larger than average. A degree of Non-Transport Complementary Intervention (NTCI) is likely to be required to maximise these impacts.

C.3.5 Headbolt Lane station study area

The Headbolt Lane study area used in this WEIs assessment has been established as a 2km boundary around the proposed location of the new Headbolt Lane station. This reflects the catchments observed in rail passenger surveys for other stations in this area with comparable Levels of Service (LoS).

The majority of the land within the 2km boundary of the proposed Headbolt Lane station is within the boundaries of Knowsley Council. However, there are small areas to the north of the study area falling within the boundaries of both Sefton Council and West Lancashire Council.

For the purpose of this assessment the collection of small development sites identified within the existing boundary of the Knowsley Business Park are combined together into a collective 'Knowsley Business Park' site. It should also be noted that a single planning application has also been used to determine the amount of development within Kirkby Town Centre.

The details of the proposed employment and residential development for these sites and within these key existing areas are outlined in the table below.

Table C.8: Proposed development sites within Headbolt Lane study area

Site name	Total site area (ha)	Proposed housing units	Proposed employment use	Source
Knowsley Council				
Kirkby Town Centre	N/A	N/A	<ul style="list-style-type: none"> ● 11,148m² Foodstore ● 7,432m² High Street Retail 	Planning Application for Kirkby Town Centre
Bank Lane, Kirkby	8.52	207	N/A	Knowsley Local Plan Core Strategy (January 2016)
Knowsley Village	58.29	1,093	N/A	Knowsley Local Plan Core Strategy (January 2016)
Former Kirkby Stadium, Valley Road*	Unknown	146	N/A	Knowsley Strategic Housing Land Availability Assessment - 2016 update Appendix One to Three
Trecastle Road	0.56	N/A	N/A	Knowsley Local Plan Interactive Policy Map
Quarryside Drive	0.46	N/A	N/A	Knowsley Local Plan Interactive Policy Map
<i>Knowsley Business Park</i>				
Randles Road 2	0.77	N/A	Permitted for B1/B2/B8 land use	Knowsley Local Plan Interactive Policy Map
Gellings Farm	0.92	N/A	Permitted for B1/B2/B8 land use	Knowsley Local Plan Interactive Policy Map
Gellings Road	0.92	N/A	Permitted for B1/B2/B8 land use	Knowsley Local Plan Interactive Policy Map
Randles Road 1	0.51	N/A	Permitted for B1/B2/B8 land use	Knowsley Local Plan Interactive Policy Map
Schools Lane	1.31	N/A	Permitted for B1/B2/B8 land use	Knowsley Local Plan Interactive Policy Map
Nunthorpe Road	0.57	N/A	Permitted for B1/B2/B8 land use	Knowsley Local Plan Interactive Policy Map
Overbrook Lane	0.47	N/A	Permitted for B1/B2/B8 land use	Knowsley Local Plan Interactive Policy Map
Penrhyn Road 2	0.56	N/A	Permitted for B1/B2/B8 land use	Knowsley Local Plan Interactive Policy Map
Villiers Road	2.15	N/A	Permitted for B1/B2/B8 land use	Knowsley Local Plan Interactive Policy Map
Penrhyn Road 1	2.9	N/A	Permitted for B1/B2/B8 land use	Knowsley Local Plan Interactive Policy Map
Ainsworth Lane	2.19	N/A	Permitted for B1/B2/B8 land use	Knowsley Local Plan Interactive Policy Map
Moorgate Road	3.27	N/A	Permitted for B1/B2/B8 land use	Knowsley Local Plan Interactive Policy Map
East Lancs Road	3.97	N/A	Permitted for B1/B2/B8 land use	Knowsley Local Plan Interactive Policy Map
Faraday Road	5.74	N/A	Permitted for B1/B2/B8 land use	Knowsley Local Plan Interactive Policy Map
Coopers Lane	1.68	N/A	Permitted for B1/B2/B8 land use	Knowsley Local Plan Interactive Policy Map
Hornhouse Lane	2.97	N/A	Permitted for B1/B2/B8 land use	Knowsley Local Plan Interactive Policy Map

Site name	Total site area (ha)	Proposed housing units	Proposed employment use	Source
South Boundary Road	1.9	N/A	Permitted for B1/B2/B8 land use	Knowsley Local Plan Interactive Policy Map
Lees Road	1.49	N/A	Permitted for B1/B2/B8 land use	Knowsley Local Plan Interactive Policy Map
Gores Road	0.75	N/A	Permitted for B1/B2/B8 land use	Knowsley Local Plan Interactive Policy Map
Arbour Lane	1.24	N/A	Permitted for B1/B2/B8 land use	Knowsley Local Plan Interactive Policy Map
Webber Road 1	0.49	N/A	Permitted for B1/B2/B8 land use	Knowsley Local Plan Interactive Policy Map
Webber Road 2	1.15	N/A	Permitted for B1/B2/B8 land use	Knowsley Local Plan Interactive Policy Map
Charley Wood	18.6	N/A	Permitted for B1/B2/B8 land use	Knowsley Local Plan Interactive Policy Map
Acornfield Road	3.4	N/A	Permitted for B1/B2/B8 land use	Knowsley Local Plan Interactive Policy Map
Moss End Way	2.1	N/A	Permitted for B1/B2/B8 land use	Knowsley Local Plan Interactive Policy Map
Marl Road	0.47	N/A	Permitted for B1/B2/B8 land use	Knowsley Local Plan Interactive Policy Map
Acorn Venture Urban Farm	4.14	N/A	Permitted for B1/B2/B8 land use	Knowsley Local Plan Interactive Policy Map
Depot Road	1.1	N/A	Permitted for B1/B2/B8 land use	Knowsley Local Plan Interactive Policy Map
North Perimeter Road 2	5.3	N/A	Permitted for B1/B2/B8 land use	Knowsley Local Plan Interactive Policy Map
Sefton Council				
Land east of Waddicar Lane, Melling	6	149	N/A	A Local Plan for Sefton Adopted April 2017 Annual Monitoring Report 2019
Wadacre Farm, Chapel Lane, Melling	5.5	135	N/A	A Local Plan for Sefton Adopted April 2017 Annual Monitoring Report 2019
West Lancashire Council				
Simonswood Industrial Estate	7	N/A	Permitted for B1/B2/B8 land use	West Lancashire Local Plan 2012-2027
Land to the South of Stopgate Lane	13.3	N/A	Permitted for B2/B8 land use	Outline Planning Permission Documents - 2018/0835/OUT

Source: See 'Source' column * Currently under construction

C.3.6 Summary

Following the identification of proposed commercial and residential development sites within the Headbolt Lane study area it is anticipated that overall, this new development could support the delivery of up to **93.33ha of employment land and 18,580m² of employment floorspace** as well as **approximately 1,730 new homes** to support local growth.

The table below outlines a summary of the estimated totals of commercial and residential development anticipated on each of the identified sites once they are developed. The quantum of housing units is comparable to that for Kirkby and Knowsley Village (a proportion of the

Prescot, Whiston, Cronton and Knowsley Village) totals in Table C.7. That horizon is to 2028, an estimated five years after opening of Headbolt Lane Station. It is likely that further new homes will be required after 2028. As is typical for longer term planning, areas for growth beyond 2028 have not yet been identified and correspondingly there are no current planning data on the likely location and status of such development. Given the emphasis on sustainable alternatives to help deliver on clean air and net zero carbon objectives, there is the potential that Transit Orientated Development (TOD) is likely to be emphasised and schemes such as Headbolt Lane offers an opportunity to support such growth.

Table C.9: Summary of development of identified sites in Headbolt Lane study area

Site name	Total site area (ha)	Proposed housing units	Proposed employment use
Kirkby Town Centre	N/A	N/A	<ul style="list-style-type: none"> • 11,148m² Foodstore • 7,432m² High Street Retail
Bank Lane, Kirkby	8.52	207	N/A
Knowsley Village	58.29	1,093	N/A
Former Kirkby Stadium, Valley Road	Unknown	146	N/A
Trecastle Road	0.56	N/A	N/A
Quarryside Drive	0.46	N/A	N/A
Knowsley Business Park	73.03	N/A	Permitted for B1/B2/B8 land use
Land east of Waddicar Lane, Melling	6	149	N/A
Wadacre Farm, Chapel Lane, Melling	5.5	135	N/A
Simonswood Industrial Estate	7	N/A	Permitted for B1/B2/B8 land use
Land to the South of Stopgate Lane	13.3	N/A	Permitted for B2/B8 land use
Total	172.66	1,730	-

Source: See Sources column in Table 2.1

C.4 Economic impact assessment

This section provides a high-level assessment of the potential economic impact for the identified development sites within the Headbolt Lane study area. An in-depth policy document review determined the development sites which could be dependent on the delivery of the scheme. As the sites cannot be considered directly dependent, with other interventions and market factors determining the likelihood of them being brought forward, potential economic impacts from these sites have been calculated at a gross level only.

C.4.1 TEAM

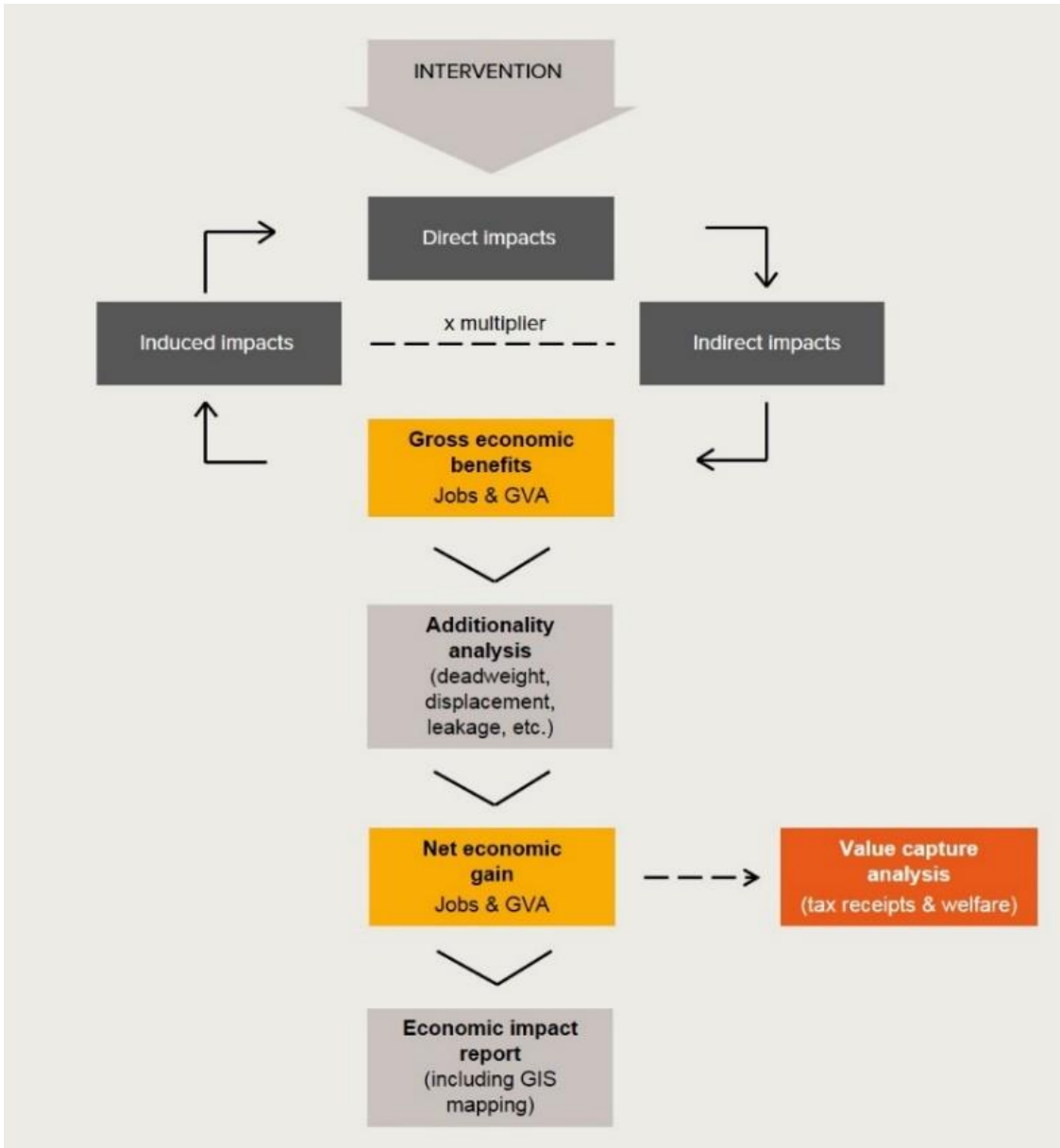
To demonstrate the potential value of these sites to the local economy, the gross number of jobs and associated Gross Value Added (GVA) that can be accommodated at these sites has been assessed using Mott MacDonald's Transparent Economic Assessment Model (TEAM). TEAM assesses the economic benefits arising from land-use change calculated in line with HM Treasury Green Book principles of additionality and Supplementary Economic Modelling (SEM) techniques (see TAG Unit M5.3⁵⁴).

⁵⁴ See: <https://www.gov.uk/government/publications/webtag-tag-unit-m5-3-supplementary-economic-modelling-may-2018>

C.4.2 Methodology

The model assesses the core economic impacts of the associated land-use changes relating to jobs and GVA. TEAM operates as follows:

Figure C.20: TEAM model



Source: Mott MacDonald

The potential economic impacts of the development sites likely to be influenced by the scheme are calculated through the following steps:

- Inputting of key site details into TEAM including the development footprints and land uses.
- Calculation of economic impacts through feeding the proposed employment uses by size through TEAM to calculate:

- Gross direct effects of the development site in terms of employment and economic output (measured by GVA) once fully developed. These are calculated using the land use assumptions below relating to development footprints, land uses, occupancy rates and employment densities to convert land use to jobs. The GVA is then calculated using GVA per worker aligned to the jobs created.

The economic impacts have been presented at a gross level only throughout the analysis given the purpose is to understand the level of growth anticipated in the surrounding area and likely to benefit, in part, from the station being in place.

C.4.3 Assumptions

The assumptions used for this assessment are set out in the tables below.

Table C.10: List of TEAM assumptions

Effect	Level	Justification
GVA per worker - £51,244	Knowsley Council and West Lancashire Council	Local authority level (2017).
Employment density	Various	Based on the HCA Employment Land Density Guide (2015) the following densities were used: <ul style="list-style-type: none"> • A1: 18m²/FTE - This is the standard employment density for A1 floorspace, based on A1 high street retail. • A1: 18m²/FTE - This is the standard employment density for A1 floorspace, based on A1 foodstore. • B1: 20m²/Full Time Equivalent (FTE) –the mean of all B1 employment densities set out in the Employment Density Guide This mean figure was selected as it accounts for the variety in employment densities across B1 uses which range from 8m²/FTE for call centres to 47m²/FTE for light industrial spaces, as the exact use of the B1 elements of these sites are not yet know. This employment density assumption is also applied for B1a land uses. • B2: 36m²/FTE – This is the standard employment density for B2 floorspace • B8: 77m²/FTE – This is the standard employment density for B8 floorspace, based on a regional distribution centre,

Source: Mott MacDonald, adapted from HCA (Now MHCLG) Employment Densities Guide, 2015

C.4.4 Results

The results of the TEAM analysis for the non-dependent employment sites in the Headbolt Lane study area are presented in the table below.

Table C.11: TEAM results

Site	Gross Jobs	Gross GVA (£m) pa
Knowsley Business Park	5,979	£306.4
Kirkby Town Centre	796	£40.8
Land to the South of Stopgate Lane	786	£40.3
Simonswood Industrial Estate	573	329.4
Total	8,134	£716.9

Source: Mott MacDonald

C.5 Summary

Overall, this WEIs assessment has shown that the delivery of Headbolt Lane Station could support the delivery of several key residential and employment development sites in the surrounding area. The delivery of these sites is estimated to accommodate approximately 93.33ha of employment land and 18,580m² of employment floorspace as well as approximately 1,730 new homes. The delivery of these identified employment sites will generate approximately 8,000 gross jobs and over £700m in Gross GVA.

The delivery of Headbolt Lane Station and the support it will provide for employment and housing growth in the surrounding area will generate additional demand for the station through associated increases in local population and commuters. The increased connectivity provided by the new station at Headbolt Lane will also make the area more attractive to developers and workers/ residents in future which is increasingly important given the relative deprivation shown across the borough of Knowsley. There is the added value opportunity to focus more, as yet unquantified, Transit Orientated Development (TOD) around the station (and other existing stations in the area where land use permits) to further maximise the economic, social, and environmental impacts of the scheme.

The housing growth that has been witnessed around Maghull North Station, the first new station on the Merseyrail network over the last two decades, illustrates how new stations can support such TOD housing and economic growth in the conurbation.

D. TAG Economic Appraisal Tables

D.1 DS2 (Preferred Option) Transport Economic Efficiency

Economic Efficiency of the Transport System (TEE)						
Non-business: Commuting						
User benefits	ALL MODES	ROAD	BUS and COACH		RAIL	OTHER
	TOTAL	Private Cars and LGVs	Passengers	Passengers		
Travel time	£24,110,597	£4,209,647		£19,900,951		
Vehicle operating costs	£0					
User charges	£0					
During Construction & Maintenance	£0					
	£24,110,597					
		(1a)				
Non-business: Other						
User benefits	ALL MODES	ROAD	BUS and COACH		RAIL	OTHER
	TOTAL	Private Cars and LGVs	Passengers	Passengers		
Travel time	£21,295,813	£6,828,925		£14,466,888		
Vehicle operating costs	£0					
User charges	£0					
During Construction & Maintenance	£0					
	£21,295,813					
		(1b)				
NET NON-BUSINESS BENEFITS: OTHER						
Business						
User benefits		Goods Vehicles	Business Cars & LGVs	Passengers	Freight	Passengers
Travel time	£4,440,681		£320,091			£4,120,590
Vehicle operating costs	£0					
User charges	£0					
During Construction & Maintenance	£0					
Subtotal	£4,440,681					
		(2)				
Private sector provider impacts				Freight	Passengers	
Revenue	£26,666,547				£26,666,547	
Operating costs	£0					
Investment costs	£0					
Grant/subsidy	-£26,666,547					
Subtotal	£0					
		(3)				
Other business impacts						
Developer contributions	£0					
		(4)				
NET BUSINESS IMPACT	£4,440,681					
		(5) = (2) + (3) + (4)				
TOTAL						
Present Value of Transport Economic Efficiency Benefits (TEE)	£49,847,091					
		(6) = (1a) + (1b) + (5)				

Notes: Benefits appear as positive numbers, while costs appear as negative numbers.
All entries are discounted present values, in 2010 prices and values

D.2 DS1 (Preferred Option) Public Accounts

Public Accounts (PA) Table					
	ALL MODES	ROAD	BUS and COACH	RAIL	OTHER
Local Government Funding	TOTAL	INFRASTRUCTURE			
Revenue	£0				
Operating Costs	£28,906,534	£28,971,487		-£64,953	
Investment Costs	£0	£0			
Developer and Other Contributions	£0				
Grant/Subsidy Payments	£0				
NET IMPACT	£28,906,534 (7)				
Central Government Funding: Transport					
Revenue	£0				
Operating costs	£0			£0	
Investment Costs	£44,874,528			£44,874,528	
Developer and Other Contributions	£0				
Grant/Subsidy Payments	-£26,666,547			-£26,666,547	
NET IMPACT	£18,207,981 (8)				
Central Government Funding: Non-Transport					
Indirect Tax Revenues	£5,926,447 (9)			£5,926,447	
TOTALS					
Broad Transport Budget	£47,114,515 (10) = (7) + (8)				
Wider Public Finances	£5,926,447 (11) = (9)				
Notes: Costs appear as positive numbers, while revenues and 'Developer and Other Contributions' appear as negative numbers. All entries are discounted present values in 2010 prices and values.					

D.3 DS1 (Preferred Option) Analysis of Monetised Costs and Benefits

Analysis of Monetised Costs and Benefits		
Noise	£132,711	(12)
Local Air Quality	£271,379	(13)
Greenhouse Gases	£1,590,216	(14)
Journey Quality		(15)
Physical Activity	£7,263,271	(16)
Accidents	£1,984,256	(17)
Economic Efficiency: Consumer Users (Commuting)	£24,110,597	(1a)
Economic Efficiency: Consumer Users (Other)	£21,295,813	(1b)
Economic Efficiency: Business Users and Providers	£4,440,681	(5)
Wider Public Finances (Indirect Taxation Revenues)	£5,926,447	- (11) - sign changed from PA table, as PA table represents costs, not benefits
Wider Economic Impacts (WEIs)	£9,188,595	
Present Value of Benefits (see notes) (PVB)	£55,162,477	(PVB) = (12) + (13) + (14) + (15) + (16) + (17) + (1a) + (1b) + (5) - (11)
Present Value of Benefits (see notes) (PVB) + WEIs	£64,351,072	(PVB) = (12) + (13) + (14) + (15) + (16) + (17) + (1a) + (1b) + (5) - (11)
Broad Transport Budget	£47,114,515	(10)
Present Value of Costs (see notes) (PVC)	£47,114,515	(PVC) = (10)
ESTABLISHED IMPACTS		
Net Present Value (NPV)	£8,047,963	NPV=PVB-PVC
Benefit to Cost Ratio (BCR)	1.17	BCR=PVB/PVC
EVOLVING IMPACTS		
Net Present Value (NPV)	£17,236,558	NPV=PVB-PVC
Benefit to Cost Ratio (BCR)	1.37	BCR=PVB/PVC

Note : This table includes costs and benefits which are regularly or occasionally presented in monetised form in transport appraisals, together with some where monetisation is in prospect. There may also be other significant costs and benefits, some of which cannot be presented in monetised form. Where this is the case, the analysis presented above does NOT provide a good measure of value for money and should not be used as the sole basis for decisions.

