

Parkside Strategic Rail Freight Interchange Capacity Study Final Report



Client: LCRCA
April 2021
Our ref: 23978401

steer

Parkside Strategic Rail Freight Interchange Capacity Study Final Report

Prepared by	Prepared for	Steer project ref	Client reference	Version	Issue Date
Steer 28-32 Upper Ground London SE1 9PD	Liverpool City Region Combined Authority / St Helens Council	23978401	n/a	Final	8 April 2021
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Contents

Section	Page	Section	Page
i. Executive Summary	4	Potential destinations	
ii. Glossary	6	11. Freight Market potential at specific locations	31
Introduction		12. Network capability and capacity	34
1. Scope and report structure	8	13. Summary of key infrastructure interventions to improve rail freight competitiveness	43
2. Parkside SRFI	9	Conclusion	
3. Previous studies	10	14. Conclusion and key findings	44
Parkside opportunities and assumptions		15. Further recommendations	45
4. Rail freight market opportunities	13	Appendix	
5. National connectivity	16	a. Detailed timing summary sheets	46
6. Local network connections	17	b. Alternative Timing Load Analysis	54
Pathing analysis		c. Future Scenario Analysis	59
7. Method	19		
8. Pathing analysis	24		
9. Future scenarios	26		
10. Mitigating measures	28		

Executive Summary

At least 4 return paths per day can be found in all scenarios without the need for additional infrastructure

Steer was commissioned by Liverpool City Region Combined Authority and St Helens Council to provide advice on the potential for rail paths into Parkside SRFI.

The scope of this study is focused on the potential rail network capacity available to serve Parkside. The following three locations for which capacity needs to be identified to support the case for Parkside are:

- Ribble Junction (for Preston and northern destinations)
- Ordsall Lane Junction (for Manchester and eastern destinations)
- Winsford South Junction (for Crewe and southern destinations)

The expectation is that there will be minimal or no traffic westwards towards Liverpool.

The study accounts for a series of incremental scenarios on the following basis:

- Baseline – train services operating as of December 2019 (prior to Covid-19 amendments)
- Baseline + - as per 'Baseline', also including known changes in May 2022.
- HS2 – as per 'Baseline +', also including the latest service assumptions for HS2 from 2035.
- NPR – as per HS2, also including the latest service assumptions for NPR from 2036.

Eight further locations beyond the immediate scope area have been identified to explore the high-level possibility for train paths to and from Parkside.

The Parkside facility is relatively centrally located within Great Britain, being 200 miles from the Scottish Central Belt, 225 miles from London Gateway and Southampton ports and 250 miles from Felixstowe. It therefore offers attractive daily 'out and back' journey opportunities to many important ports and terminals. The facility would be well suited for the major maritime intermodal flows.

Within Scenario a) (Dec 19 timetable) using the most challenging low speed (60mph) class 6 timings we have been able to identify between 19 and 23 single one way paths to each of the three local locations. This provides a high level of confidence that capacity for at least 4 return trains per day (tpd) to the site exists when considering other factors. This meets the minimum requirement for network capacity for a SRFI and there are opportunities to find further return tpd.

All three future scenarios have a significant impact on the three in-scope routes. Multiple individual passenger services change within each scenario, impacting on each route at a variety of locations. This includes both high speed (i.e. HS2 and/or NPR) and existing rail services. However, due to the large number of paths identified in the Baseline there is still significant confidence that the minimum 4tpd can still be found, with further opportunities for additional return paths also likely without the need for significant infrastructure intervention.

The adjoining Chat Moss line is closed on weekday nights every six weeks from 22:50 to 06:00. It is also closed every Sunday from 00:05 to 08:25 and every Monday from 00:05 to 03:50. Experience with other SRFIs gives confidence that this restriction can be worked around without affecting network capacity significantly.

The pathing and scenario analysis found that at least 4tpd can be found on all three routes in all the four scenarios. It is still expected that further return paths can be found on top of the minimum 4tpd without requiring significant infrastructure intervention on the rail network.

Opportunities for the growth of freight traffic volumes will be dependent on the availability of efficient train paths. There are a number of constraints across the network which impact on where additional freight paths can be found, however paths are expected to be found to most destinations to the north and south of Parkside. Freight growth is however constrained through Central Manchester and across the Pennines due to a lack of available paths and gauge restriction for high cube containers accessing the key ports of Hull, Immingham and Teesport. Paths for containers trains will be not be possible in the short term

In conclusion, there is expected to be suitable paths found to and from Parkside to meet the minimum requirements for an SRFI over the next 30 years, with clear opportunities to find additional paths to the north and south of Parkside.

Parkside Capacity Study: Key Findings

Ability to identify 4 trains per day:

- Few concerns
- Some adjustment required
- Major concerns

More than 4 return paths per day can be found, except to East Coast ports, where routing beyond Manchester is very difficult

Scenario a) December 2019 / Baseline, ability to get to local in-scope destination	Scenario b) May 2022 / Baseline +	Scenario c) HS2	Scenario d) NPR	Ability to path to further locations
1 Parkside SRFI to Ribble Junction (Preston)				
<ul style="list-style-type: none"> 19 to 20 single paths a day identified Paths during the day generally require some pathing allowances en-route. Six trains need to be held at Newton-le-Willows Junction, which will foul Lowton Junction. In some cases this causes a conflict with other services. 	<p>Timetable changes have both positive and negative impact on path availability</p>	<p>More difficult to find freight paths due to increased passenger services</p>	<p>More difficult to find freight paths due to increased passenger services</p>	<p>Suitable paths likely to be found to Mossend and Teesport</p>
2 Parkside SRFI to Ordsall Lane Junction (Manchester)				
<ul style="list-style-type: none"> 23 to 24 single paths a day identified Paths need very few pathing allowances en-route. Analysis indicates most paths unlikely to be found beyond the scope boundary in Manchester 	<p>Timetable changes have both positive and negative impact on path availability</p>	<p>No impact</p>	<p>More difficult to find freight paths due to increased passenger services</p>	<p>Difficulty in obtaining paths through Manchester and across the Pennines</p>
3 Parkside SRFI to Winsford South Junction (Crewe)				
<ul style="list-style-type: none"> 20 single paths a day identified Paths during the day generally require several pathing allowances en-route. Long 2 track section on WCML requires most paths to recess or need pathing time. 	<p>Timetable changes have both positive and negative impact on path availability</p>	<p>More difficult to find freight paths due to increased passenger services</p>	<p>More difficult to find freight paths due to increased passenger services</p>	<p>Some capacity available to the South ports but infrastructure interventions would improve access</p>

Glossary

Term	Refers to	Description
3PL	Third Party Logistics	In logistics and supply chain management is an organization's use of third-party businesses to outsource elements of its distribution, warehousing, and fulfilment services
CAGR	Compound Annual Growth Rate	The rate of return that would be required for an investment to grow from its beginning balance to its ending balance, assuming the profits were reinvested at the end of each year of the investment's lifespan.
Conflicting Move		Term used to describe train movements across a junction which conflict with each other and therefore can not take place at the same time.
EAS	Engineering Access Statement	Network Rail document stating when each route section is closed to traffic for engineering possessions.
Gauge	Loading Gauge	The height and width clearance provided on a particular route to enable rail vehicles and their loads to safely pass the structures on the route.
Headway		The time between two train services operating in the same direction at a given point. The minimum headway used for planning purposes is defined in the Timetable Planning Rules.
HS2	High Speed 2	A new planned high speed railway linking up London, the Midlands, the North and Scotland. Due to open in phases from 2029 to 2035.
Jn	Junction	A railway location at which two or more rail routes converge or diverge.
Junction Margins		The time between two train services which operate in different directions across a junction. The minimum junction margin used for planning purposes is defined in the Timetable Planning Rules.
ITSS	Indicative Train Service Specification	A high-level summary of the future level of train services on a route.
NDC/RDC	National / Regional Distribution Centre	A specialised hub that deals with the storage and shipping of goods at a national or regional level.
NLL	North London Line	A largely two track railway between Richmond and Stratford with services operated by London Overground (TfL). Multiple connections to other lines makes it a popular route for freight trains.
NPR	Northern Powerhouse Rail	A proposed major rail programme designed to improve transport connections between major northern English cities and transport hubs.

Term	Refers to	Description
NPSNN	National Policy Statement for National Networks	A DfT document which sets out the need for development of road, rail and strategic rail freight interchange projects on the national networks.
Out and Back		A term to define a round trip from a particular terminal to its destination and back to the original terminal.
Overlap	Signal Overlap	The distance beyond a signal which must be clear.
Path	Train Path	Identifies available space on the rail network to operate a train schedule.
Pathing allowance		Additional time added in to a train schedule in order to arrive at a specific location later in order to avoid a conflict with another service.
SRFI	Strategic Rail Freight Interchange	A large rail served distribution and warehouse park linked into both rail and the strategic highway network.
SRT	Sectional Running Times	The time taken for the train to traverse the gap between two timing locations
Timing Load	Train Schedule Timing Load	Each freight train schedule or path is specified to be operated by a particular type of rolling stock with a stated maximum speed and trailing load.
Tph / tpd	Trains per Hour/ Trains per Day	The number of trains that operate on a route in a single hour or over the course of a whole day.
TPR	Timetable Planning Rules	Rules defining minimum separation of trains to be used when planning a timetable. Document defined and published by Network Rail.
TRU	TransPennine Route Upgrade	A major upgrade to the existing transpennine rail route linking Manchester and York, via Leeds.
WCML	West Coast Main Line	An electrified, rail corridor between London Euston and Glasgow Central, with major branches to Birmingham, Manchester and Liverpool.
WTT	Working Timetable	The rail industry's version of the public national timetable. It shows all movements on the rail network including freight trains, empty trains and those coming in and out of depots.

Introduction



Scope and report structure

This capacity study determines how many train paths are potentially available to serve Parkside over the next 20-30 years

Scope

Steer has been commissioned by Liverpool City Region Combined Authority and St Helens Council to provide advice on the potential capacity available on the rail network to serve Parkside Strategic Rail Freight Interchange (SRFI).

We have been asked to evaluate in detail rail network capacity to the following three local key rail junctions (the 'in-scope area'):

- **Route 1: Ribble Junction** (for Preston and Northern destinations)
- **Route 2: Ordsall Lane Junction** (for Manchester and Eastern destinations)
- **Route 3: Winsford South Junction** (for Crewe and Southern destinations)

This evaluation should identify train paths in both directions between Parkside and the above locations, being suitable for a variety of train types, lengths and weight.

Beyond the in-scope area, we have been asked to define key locations from which trains may serve Parkside and to undertake a higher-level network and terminal capacity study around these locations.

The eight key locations that have been selected are:

- Mossend (for the Scottish Central belt)
- Teesport
- Humberside
- London Gateway
- Daventry
- Southampton
- Avonmouth
- Felixstowe

Due to a variety of potential interventions in the North of England over the next 20-30 years, the study accounts for a series of incremental scenarios based on the following basis:

- **Baseline** – train services operating as of December 2019 (prior to Covid-19 amendments)
- **Baseline +** - as per 'Baseline', also including known changes in May 2022.
- **HS2** – as per 'Baseline +', and also including the latest service assumptions for HS2 from 2035.
- **NPR** – as per HS2, also including the latest service assumptions for NPR from 2036

Report structure

The first section of this report looks at the geographical location of the SRFI, the key potential markets the terminal may serve and from this the key locations from which trains may run from to serve the terminal.

Having defined the key external terminal locations, the next stage of the report undertakes a detailed timetabling analysis to determine the availability of network capacity to get to the three key rail junctions and from there the wider rail network.

This analysis is initially undertaken using the 'worst case' scenario, a 'low-speed' Class 6 (max speed 60mph) train with a 1400t load. We then rework the analysis looking at faster Class 4 (75mph), Class 1 (100mph) trains and heavier (2000t) Class 6 trains. When undertaking this analysis, we initially look for opportunities for a 'clear path' (no stopping en-route or re-timing of other trains to create access). If sufficient access is not possible, we have then looked at the opportunities for making access using standard timetabling techniques. As part of this process, we have identified locations where additional physical infrastructure (e.g. passing loops) will be of value in ensuring sufficient capacity and/or providing resilience to train operations.

We finally discuss network and terminal capacity to the destination. We discuss the various key terminals and identify key network constraints on the routes to them.

Key Findings: Throughout the report, we identify several key findings from the study which are shown in a blue box like this one. These findings are discussed further in Section 14 of this report.

Parkside SRFI

Proposed to be allocated as a SRFI site of at least 60ha in size, with a site promoter on board

Background

The former Parkside Colliery has been identified as an important site, with the potential for providing a freight and logistics hub serving the north of the UK. The site is well situated to main rail and road networks and is split into an East and West sites, either side of the M6 motorway. The Parkside West site is not planned to be rail connected and is out of scope for this study. Note that any further references to Parkside in this study refer solely to the Parkside East site.

Liverpool City Region Combined Authority (LCRCA) recognise the importance of the site as an intermodal infrastructure project which supports a number of strategic priorities.

St Helens Borough Local Plan (SHPLP)

The St Helens Core Strategy (2012) identified Parkside as a strategic location for a SRFI, and the SHBLP 2020-2035 proposes the allocation of land for a SRFI at Parkside East (together with other industrial and logistics uses) with an operational area of at least 60ha (site 7EA). Parkside East is located within the St Helens Green Belt, which links with the Green Belts of Warrington and Wigan. From a rail freight perspective, proposals for the development must achieve direct rail access to and from the Liverpool / Manchester ('Chat Moss') and the West Coast Main Lines.

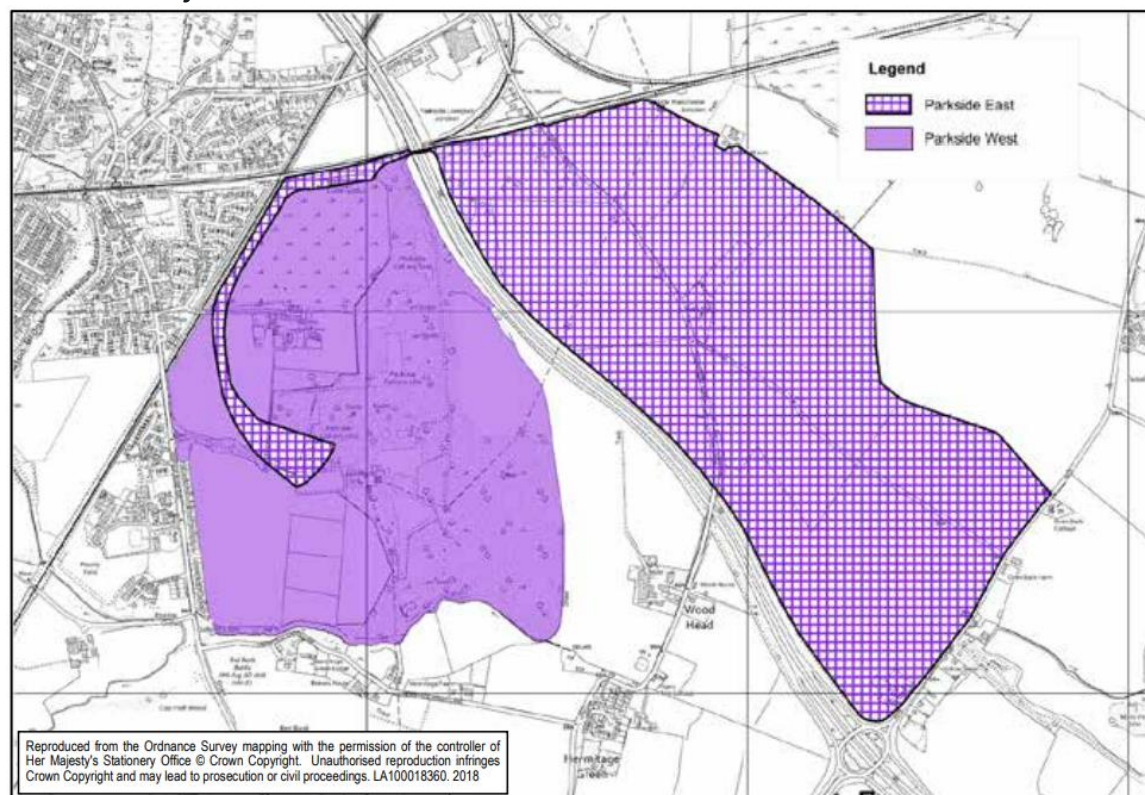
Site Promoter Proposal

Parkside East site is being promoted by iSec Group LLP to undertake the development and implementation of a proposed rail terminal. iSec are working with a rail freight business to operate the SRFI with potential capacity to provide for 20 trains per day.

The current plans for the SRFI also include 16 rail sidings and associated lorry park and container storage areas.

The SRFI proposals have been informed through discussions with Network Rail to implement connection to the main Chat Moss line and the required pathways.

An overview of the Parkside site

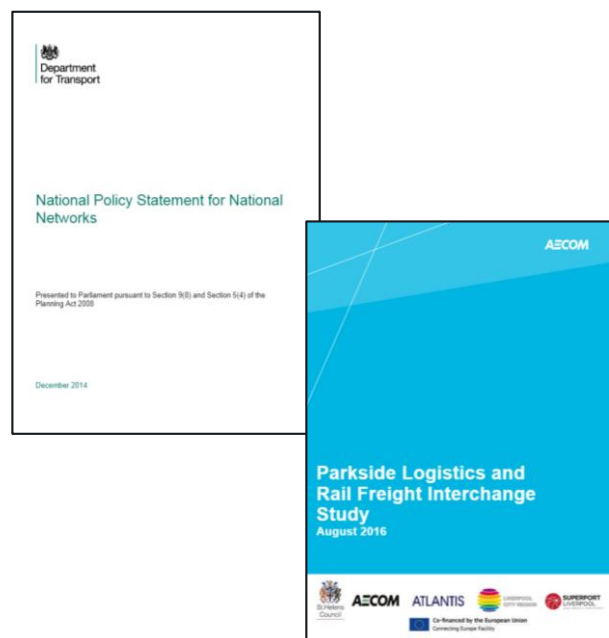


Previous studies

Previous studies have consistently found that more than the four return trains per day minimum requirement can be found

Introduction

The following policy document and studies referenced in this section provide relevant information to this study. The documents provide a wealth of useful information and context to the planning of train services to and from the Parkside site. We present here the key policies and findings from each previous document/study which have a direct link or impact with this capacity study.



National Policy Statement for National Networks (2015)

The NPSNN is a Department for Transport document that sets out the need for the development of nationally significant infrastructure projects on the national road and rail networks in England.

As a minimum, a SRFI should be **capable of handling four trains per day** and, where possible, be capable of increasing the number of trains handled. SRFIs should, where possible, have the capability to **handle 775 metre trains** with appropriately configured on-site infrastructure and layout. This should seek to minimise the need for on-site rail shunting and provide for a configuration which, ideally, will allow main line access for trains from either direction.

Rail access will vary between rail lines, both in the number of services that can be accommodated, and the physical characteristics such as the train length and, for intermodal services, the size of intermodal units that can be carried (the 'loading gauge'). As a minimum a SRFI should ideally be **located on a route with a gauge capability of W8 or more**, or capable of enhancement to a suitable gauge.

Parkside Logistics and Rail Freight Interchange Study, AECOM (2016)

It is believed that one "purpose-built" rail terminal could serve the three councils and the wider city regions and help to reduce the long distance road trunking movements on busy routes such as the M6 and M62. As well as reducing congestion and improving journey time reliability it would result in reductions in carbon dioxide and other pollutants as rail freight is 76% less polluting than road freight.

From industry consultation there is clearly more than enough demand to support a SRFI in the North West, with **Parkside regarded as the best placed site to satisfy this need.**

The **opportunities for rail access from the site are the best in the North West** and also strong nationally with access to the West Coast Main Line and Chat Moss line easily achievable. This allows train movements to/from the North, South, East and West to be catered for at the site provided the required internal rail layout is implemented.

Previous studies

Previous studies have consistently found that more than the four return trains per day minimum requirement can be found

Parkside SRFI Capability & Capacity Analysis, Network Rail (2018)

This analysis by the Network Rail System Operator provides a high-level view as to whether 12 paths into and 12 paths out of Parkside SRFI per day could be accommodated.

A 3 hour period 11:00 to 14:00 from the Dec 18 timetable was used for the analysis, this was repeated 4 times throughout the day to represent the off peak hours. Using this assumption, the analysis found that **there is enough capacity to allow for 12 paths a day** arriving and departing Parkside.

When HS2 Phase 2a ITSS was considered, there was only capacity identified for 2 services out of Parkside SRFI and 1 service into Parkside SRFI for the three hours analysed. When this is repeated to provide an off peak representation, there would only be 8 paths departing from Parkside SRFI and 4 paths arriving to Parkside SRFI which does not meet the requirements of 12 paths per day in each direction. The exact infrastructure for Parkside SRFI isn't known at this time, so the junction margin at Parkside Junction was assumed to be 3 minutes to reflect similar junction moves in the area. This would need further analysis to understand the capability of the network for crossing moves entering and exiting the SRFI.

North of England Freight Study, Network Rail (2018)

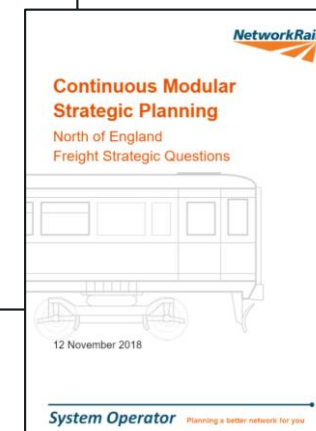
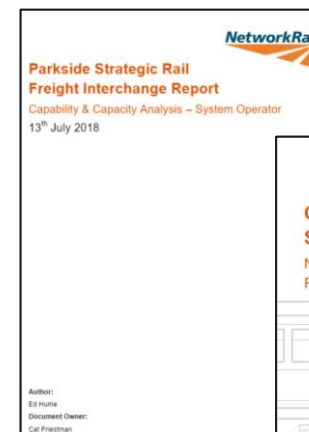
There is significant growth forecast on the route section between Earlestown West and East Jn to/from Winwick Jn. **Freight traffic on the route section is forecast to increase from 6tpd at present, to 50 tpd by 2043.** The growth originates from 3 sources: The Port of Liverpool, The proposed Parkside Intermodal Container Terminal and The proposed Port Salford Intermodal Container Terminal.

The main constraint relates to the proposed train movements into the two proposed Intermodal Container terminals. **As trains leave the WCML, they would then conflict with other services as they access the Chat Moss Line and then into their terminals.**

A new northbound loop could be provided on the WCML, just to the south of Winwick Jn. Winwick Jn also marks the point where the WCML goes from being a 4-track to 2-track railway. The new loop would therefore have two purposes:

- A regulating point for freight services awaiting their path towards the terminals at Parkside and Port Salford.
- A regulating point for freight services heading north over the 2-track section of the WCML towards Wigan.

The study also recommended key Infrastructure enhancements to accommodate freight traffic growth across the North of England including freight enhancements as part of the TransPennine Route Upgrade to enable one freight path per hour in each direction to support future east-west freight growth.



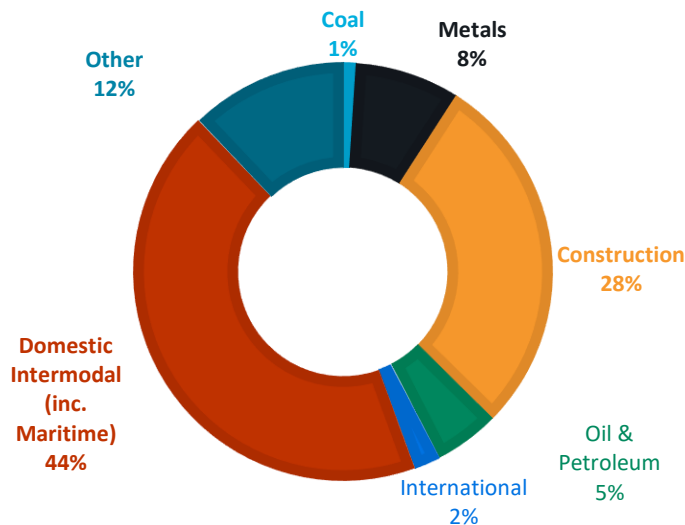
Parkside opportunities and assumptions

Parkside is designed as an intermodal terminal. There are three subsets of intermodal traffic, each creating different opportunities.

Introduction

The volume of intermodal freight traffic has remained largely constant since 2011/12, although it now represents a higher proportion of total freight because of the significant drop in coal traffic.

Latest data shows largest sector is 'domestic intermodal (including maritime) sector'. However, construction traffic has been affected by the Covid pandemic which has depressed the level of construction activity, which is normally almost as large as the intermodal traffic.



Proportion of freight moved by commodity in Great Britain (2020-21 Q2)

Source: ORR

The three intermodal sector subsets

'Maritime' movements

This is the largest of the subsets and involves the movement of 20ft and 40ft containers from the UK's ports to inland rail terminals. The key ports are Felixstowe and Southampton, but London Gateway, Teesport and Liverpool also have daily maritime rail services.

'Domestic' movements

These are the movement of 45ft containers on the core Midland – Scotland route for leading retailers such as Tesco, Asda and Sainsburys. Daventry International Rail Freight Terminal (DIRFT) is where most of these services run from and they run to terminals within the Scottish Central belt.

Linked feeder services have been established to London and south Wales in the South and Aberdeen in the north.

'International' movements

This is the smallest sub sector with usually less than five of these services a day. The flows tend to be import driven and key services include water from France and fresh produce from Spain which are carried in 45ft containers.

Sector growth

Network Rail's latest set of freight forecasts (August 2020 – see below) predicts that ports ('maritime') traffic could increase by between 2.9% CAGR and 4.4% CAGR between 2016/17 and 2043/44. Domestic intermodal traffic could increase by between 2.9% CAGR and 4.4% CAGR between 2016/17 and 2043/44. This is therefore a key growth sector for rail freight.

Thousand tonnes per year	Favouring rail, low growth	Favouring rail, high growth	Disfavouring rail, low growth	Disfavouring rail, high growth
Ports Intermodal				
2016/2017 (actual)	16,213			
2023/2024	24,252	27,133	15,320	17,077
2033/2034	38,505	42,549	25,920	28,759
2043/2044	51,844	56,596	35,099	39,321
Domestic Intermodal				
2016/2017 (actual)	2,481			
2023/2024	8,009	8,606	3,281	3,493
2033/2034	10,096	12,440	3,311	4,576
2043/2044	16,724	23,633	5,203	9,026

Rail freight growth forecasts and trends suggest three intermodal opportunities for Parkside

Maritime movements could access Parkside from the deep sea southern ports or from the 'short sea' (European feeder) traffic coming into the east coast ports such as Teeside, Hull or Tyne.

Parkside has particular advantages for longer distance traffic from, for example, Felixstowe, where it's closer proximity to the West Coast Main Line results in a shorter journey time. This is highly advantageous in situations where it is difficult to get appropriate pathing to get into the inner Manchester terminals within a 24hr journey time cycle.

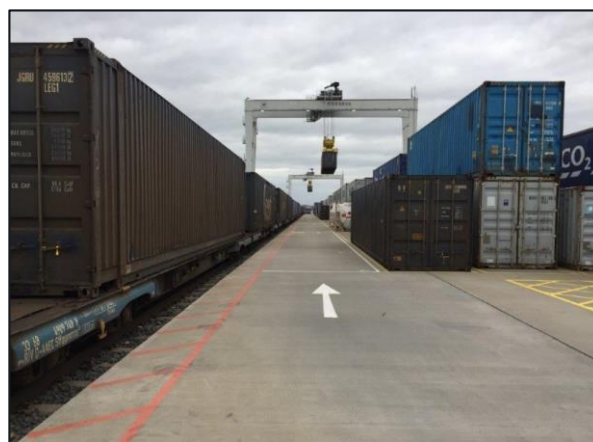
There is a great opportunity in this sector for the movement of existing flows from other NW terminals into Parkside as Operators avoid terminals either run by their competitors or wish to take advantage of Parkside's alternative location.



Domestic movements usually require close proximity to the large 'national' distribution centres for the major retailers, which tend to be within the East Midlands logistics 'golden triangle' bounded by Daventry, Tamworth and East Midlands Airport.

Parkside does not have this benefit but is close to significant centres of population and so rail traffic may develop serving the many smaller 'regional' distribution centers in the area, some of which may develop within the Parkside Campus.

There is a possibility that Parkside could develop as an intermediate stop on these trains, enabling the exchange of a less than full train of containers to service the North West market. This is a key feature of the current Royal mail train between London and Scotland, which stops at Warrington.



Most of the current international flows are 'import' based, i.e. bringing in produce and goods from the Continent to the British market. Therefore, their preferred terminal within the UK has been Daventry, so the same reasons as domestic intermodal is based there, i.e. immediate access to the Retailer's National DCs.

However, Parkside could provide an opportunity for export from the UK. Large local companies such as Unilever or Heinz may find a through service to north France or Germany provides a cost-effective solution avoiding UK road and port congestion



Different wagons in different intermodal sectors

Maritime movements move 40ft and 20ft long containers in varying heights from the original 8ft high container to a 9'6" 'hi cube' container.

The standard wagon for carrying these containers is a 60ft platform which can carry a 40ft and 20ft container, or three 20ft containers. These wagons are very spatially efficient as they enable a very dense packing of containers along the train length, maximizing the train's payload.

The photograph below shows such a 60ft platform. A standard 20ft container in blue is carried adjacent to a higher 40ft container in red.



Domestic and international movements usually involve the use of a 45ft container, this being the longest container which can be transferred to road haulage for the first and last portions of its journey.

These wagons do not use a standard 60ft maritime platform, as there would be a lot of wasted space on the train. They are usually carried on wagons which are around 50ft long, as shown below.

This photograph shows the 'Tesco' train which runs from Daventry to the Scottish central belt. It is one of the core 'domestic' intermodal flows.



Parkside is well located centrally within Great Britain, offering 'out and back' opportunities to many other ports and terminals

The Parkside facility is relatively centrally located within Great Britain, being 200 miles from the Scottish Central Belt, 225 miles from London Gateway and Southampton Ports and 250 miles from Felixstowe.

Felixstowe to Manchester is at the outer edges of the distance that a freight train can get 'out and back' in a day, allowing for train unloading and loading at either end. Similarly, the Parkside terminal is well located to offer a similar 'out and back' service to all the main terminals of interest across Britain.

The map to the right shows Parkside's location in a national context and in relation to the eight key locations defined in this study.

Looking **north**, trains on Route 1 (shown as red on the map) quickly access the West Coast Main Line (WCML) to take them towards Scotland and a route across to the north-east via Carlisle and Newcastle. It should be noted that large sections of this route are twin track.

Key Finding 1: Parkside is well located for 'out and back' journeys to a number of other ports and terminals.

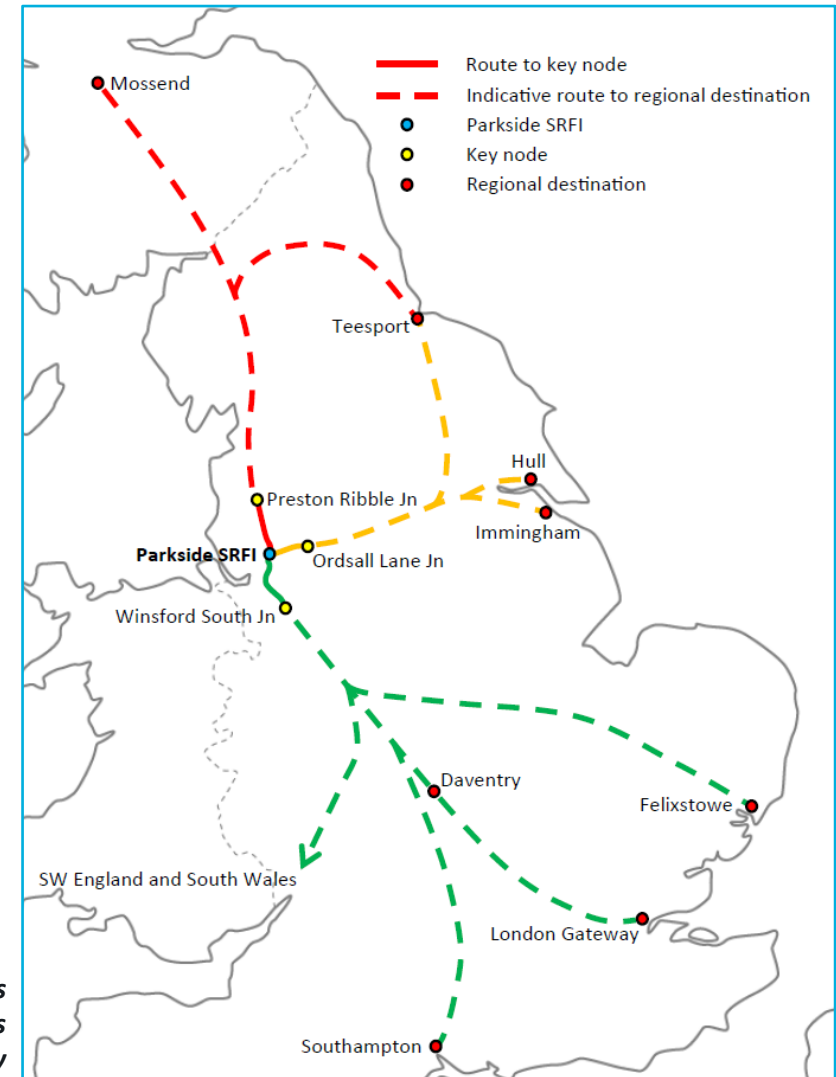
Trains heading **east**, on Route 2 (shown as yellow on the map) head through the busy Manchester area via the Chat Moss route to access the TransPennine route for the eastern ports.

Trains for the **south** (Route 3, shown as green on the map) quickly access the WCML down towards London. Felixstowe trains initially use the WCML and can either go across country via Leicester, Peterborough and Ely (as shown) or via London and up Great Eastern route through Chelmsford and Colchester.

Southampton trains go via Reading, sometimes going through London or more usually through Oxford.

Trains for the **west** are not in scope for this study but have an easy access to the Liverpool ports via the Chat Moss route.

Map of the routes to the key nodes and indicative further destinations as covered by the scope of this study



The terminal is at the ‘crossroad’ of the Chat Moss Line and West Coast Main Line, with immediate access in all directions.

Introduction

Parkside SRFI is located at the ‘crossroad’ of the Chat Moss Line between Liverpool and Manchester and the WCML, as shown schematically to the right.

The two fast lines (Up and Down) of the WCML pass under the Chat Moss line to the west of the proposed SRFI. To both the north and the south the WCML is four track and the two slow lines respectively terminate at Winwick Junction in the south and by Golborne Junction to the north.

Where the WCML connections meet the Chat Moss line there are two ‘triangles’ which enable trains to arrive and depart in both directions from the WCML on to the Chat Moss line.

Due to the number of sidings expected to be included in the development, there are opportunities for Parkside to act as a recessing or layover point for other freight trains heading to different destination, where spare terminal capacity permits.

How trains access the Parkside East terminal

Routing of the three in-scope routes

Route 1: Ribble Junction (for Preston and northern destinations)

Trains leave Parkside via the eastern end and quickly leave the Chat Moss Line at Newton-le-Willows Junction to head towards the WCML (heading north) at Golborne Junction.

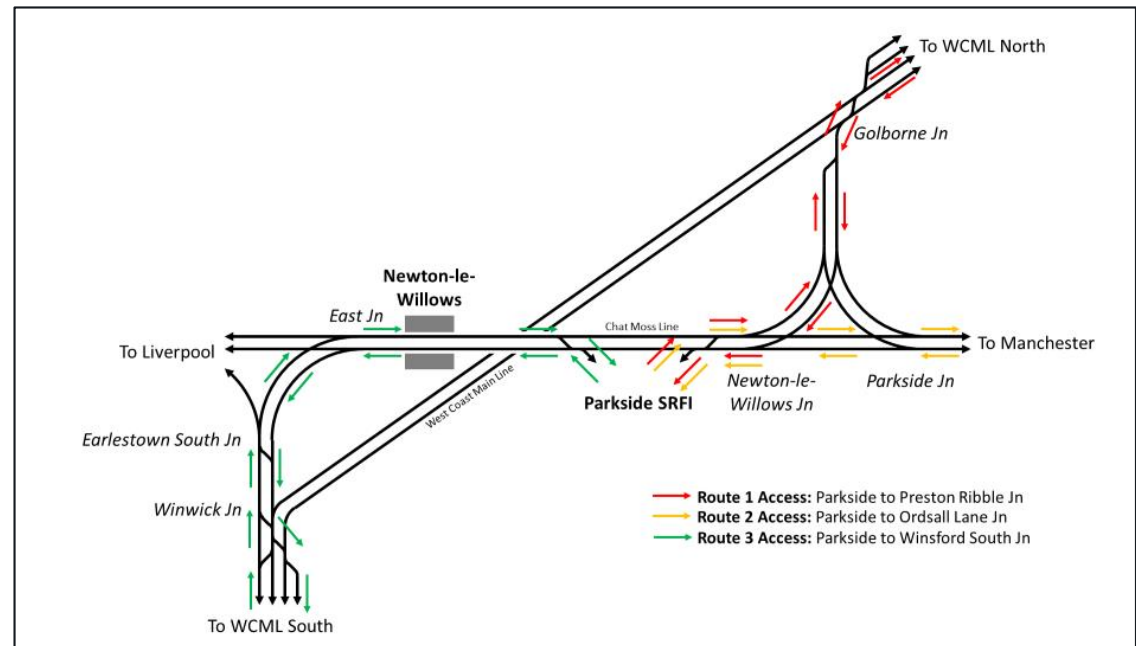
Route 2: Ordsall Lane Junction (for Manchester and eastern destinations)

Trains leave Parkside via the eastern end and

use the Chat Moss line direct to Orsall Lane Junction near Manchester.

Route 3: Winsford South Junction (for Crewe and southern destinations)

Trains leave Parkside via the western end and Leave the Chat Moss Line at Earlestown East Junction to head towards the WCML (heading south) at Winwick Junction.



Pathing Analysis



Industry recognised ATTOne train planning software has been used to conduct detailed path analysis to the three in-scope locations

Path Analysis

A full December 2019 PIF timetable was used within ATTOne train planning software. Trains were filtered to a single Wednesday (22 April 2020) to allow analysis of where paths might be available to and from Parkside on that day. Where ATTOne flags issues with the indicative paths on services on other adjacent weekdays, we noted this in our analysis.

Indicative train paths have been entered based on B-Plan Sectional Running Times (SRT) for a Class 66 with a trailing load of 1,400 tonnes at 60mph, this being the 'worst case' scenario (see page 25).

SRTs are not available into Parkside. We have therefore taken the pass to pass SRT to the next location past Parkside and added 2 minutes to represent a freight train stopping.

The indicative paths to Preston Ribble Junction, Ordsall Lane Junction and Winsford South Junction have standard Timetable Planning Rules Engineering allowances and SRT adjustments added.

Using ATTOne's conflict checking capability, the indicative paths were initially overlaid on the December 2019 timetable to determine in each hour whether 'white space' (available capacity) exists for the train path. The outputs from this analysis are provided in this document.

More detailed analysis of the paths has then been undertaken to determine whether adding pathing allowances to services might yield additional paths.

The indicative nature of the paths and the fact that the December 2019 timetable will not be in operation when the proposed Parkside SRFI opens means that we have not focused on providing a completely conflict free set of paths. The focus has instead been on whether a path is likely to be found in an hour, given that minor adjustments to the surrounding timetable might be necessary.

We have reviewed the plans for services on the WCML and Chat Moss Line at May 2022, with HS2 and NPR and have outlined how these changes might affect the indicative paths identified in December 2019.

Engineering Access Statement

Using the 5 February 2021 version of the 2022 Engineering Access Statement (v2), we have reviewed the Standard Possession Opportunities (Section 4) and Midweek Night Possession Plan Summary (Section 5) to determine how possessions might impact the paths on the three routes from Parkside SRFI. We have focused on the standard values in Sections 4 and 5, rather than the detailed register of possessions contained in Section 7.

Analysis of the Engineering Access Statement can be found in section 9 of this document.

Method

Conflict checks need to be undertaken at multiple locations where the three in-scope routes interact with other trains

Route 1: Ribble Junction (Preston)

Trains leave Parkside and quickly access the WCML, which they use through to the scope area boundary at Ribble Junction south of Preston. The route conflicts with other trains and services at:

- **Newton-le-Willows Jn** with trains heading to Manchester on the Chat Moss Line
- **Lowton Jn** with trains heading to the WCML from Manchester via the Chat Moss Line
- **Golborne Jn** with trains heading south on the WCML
- **Springs Branch Jn** with trains heading towards St Helens Central
- **Wigan Station Jn** with trains heading from Wigan North Western station arriving from the Hindley direction
- **Balshaw Lane Jn** where the 4 tracks of the WCML reduce down to 2 tracks
- **Euxton Jn** with trains joining the WCML from the Bolton direction
- **Farrington Curve Jn** with trains joining the WCML from the Blackburn direction

Route 2: Ordsall Lane Junction (Manchester)

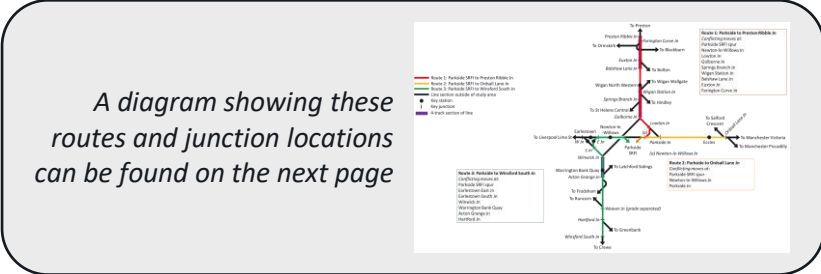
Trains leave Parkside and remain on the Chat Moss Line to the scope area boundary at Ordsall Lane Junction west of Manchester. The route conflicts with other trains and services at:

- **Newton-le-Willows Jn** with trains heading to the WCML via Lowton and Golborne Junctions
- **Parkside Jn** with trains heading to the WCML via Lowton and Golborne Junctions

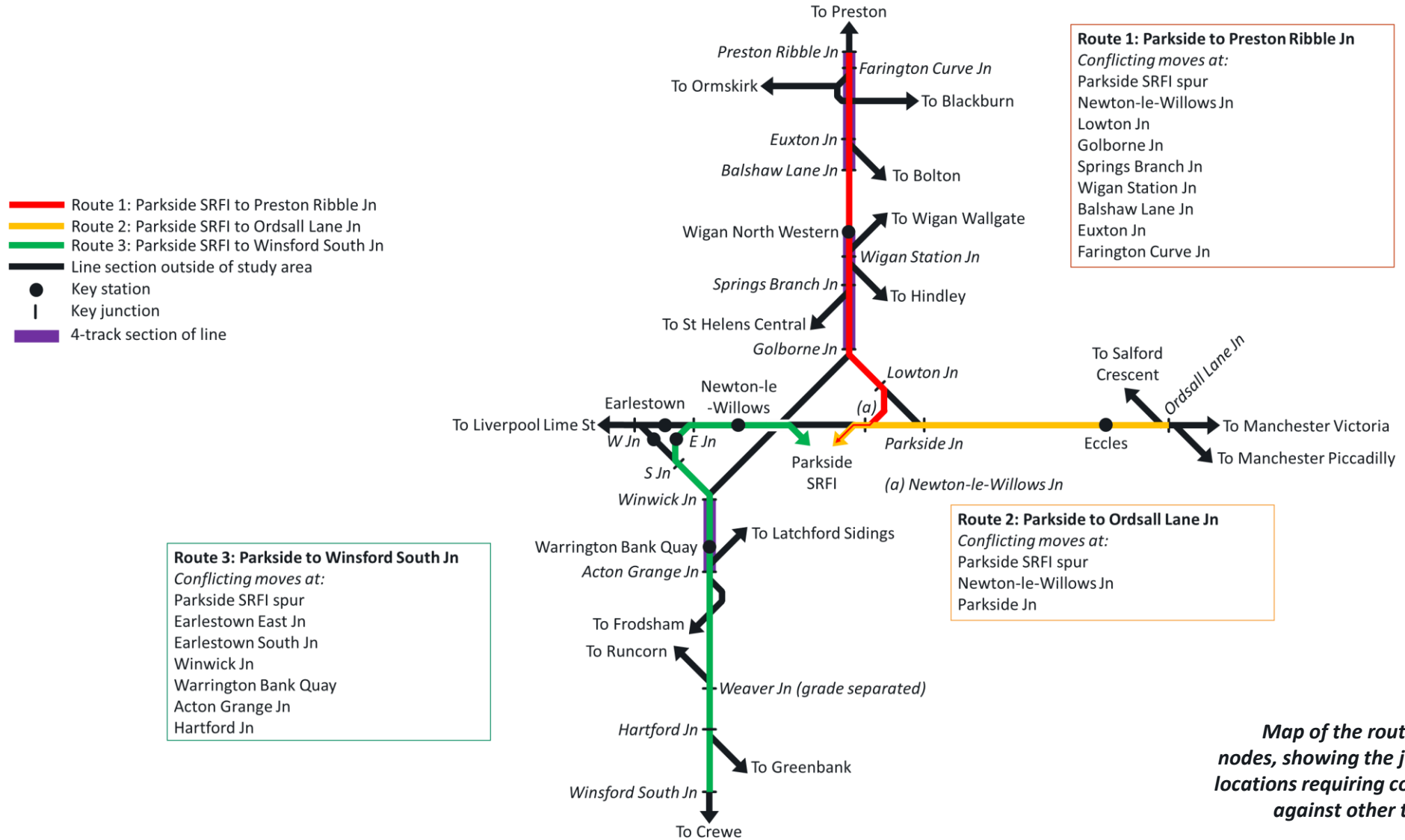
Route 3: Winsford South Junction (Crewe)

Trains leave Parkside and access to the WCML via Winwick Junction which they use through to the scope of the boundary area at Winsford South Junction. The route conflicts with other trains and services at:

- **Earlestown East Jn** with trains heading to Liverpool on the Chat Moss Line
- **Earlestown South Jn** with trains heading to the WCML from Liverpool via the Chat Moss Line
- **Winwick Jn** with trains heading north on the WCML
- **Warrington Bank Quay** with trains accessing the four platforms and multiple sidings in the area
- **Acton Grange Jn** where trains from the Frodsham direction join the WCML
- **Hartford Jn** where trains from the Greenbank / Northwich direction join the WCML



Conflict checks need to be undertaken at multiple locations where the three in-scope routes interact with other trains



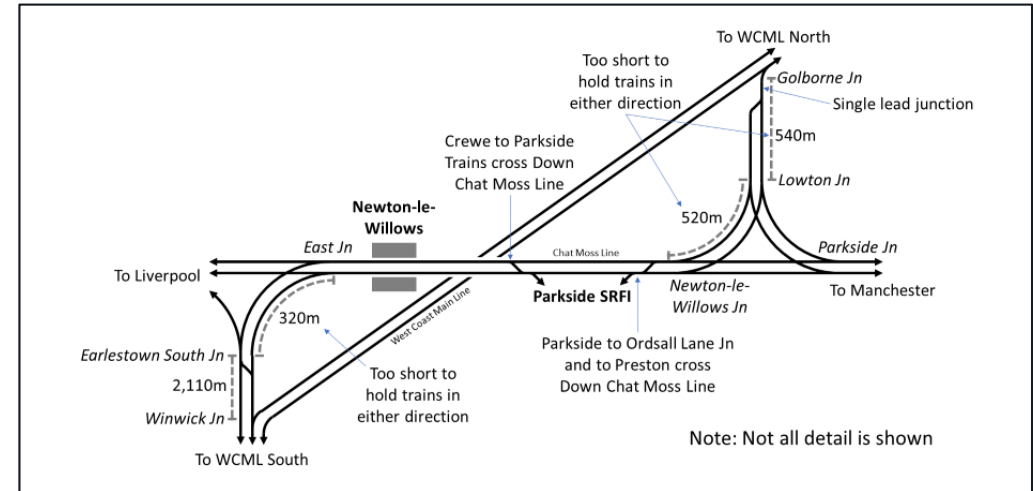
The complex track layouts and signalling arrangements in the Parkside area need to be considered when pathing trains

For modelling purposes, we have worked on a minimum train length of 450m, equating to around 20 wagons plus a locomotive. However, a train length of 650m equating to 30 wagons plus locomotive is likely to be expected and the terminal may need to accommodate 775m length trains.

The schematic shows the triangular nature of the junctions between the Chat Moss line and the connections to the WCML to the north and south. Due to the distances between the junctions, the following considerations must be taken into account when finding paths to/from Parkside:

- Services departing Parkside to the north are unable to stand before Lowton Jn without blocking the eastbound Chat Moss line at Newton-le-Willows Jn. Services may be able to stand before joining the WCML at Golborne Jn however noting the tail of the train would not have cleared Lowton Jn.
- Services arriving Parkside from the north are unable to stand before joining the Chat Moss route at Newton-le-Willows Jn without blocking Lowton Jn to services operating between Parkside Jn and Golborne Jn such as Manchester Airport – Barrow/Windermere services.

Detail of track infrastructure in the vicinity of Parkside SRFI



- Services departing Parkside to the south are unable to stand before Earlestown South Jn without blocking the Westbound Chat Moss line at Earlestown East Jn, however services can stand before Winwick Jn awaiting a path onto the WCML.
- Services arriving Parkside from the south are unable to stand before Earlestown East Jn without blocking Earlestown South Jn, however services can stand between Winwick Jn and Earlestown South Jn awaiting a path onto the Chat Moss line.

It is recommended that a further study is undertaken to review and fully understand the signal allowances and restrictions in the area to identify where trains can safely stand (or not) without blocking other routes (if deemed a problem for timetable resilience).

A lack of places to hold 450m freight trains in the vicinity of Parkside make it difficult to capitalise on all timetable white space

The standard North West and Central junction margin is 3 minutes, but 2 minutes when a second train makes a crossing move.

The headway on the Chat Moss Line at Parkside is 3 minutes, but 4 minutes when following a freight train.

There is no timing point at Parkside SRFI or Newton-le-Willows Jn. We have therefore used Newton-le-Willows as the timing point for the basis of analysis of headway and junction margin conflicts for trains arriving/departing the Parkside site.

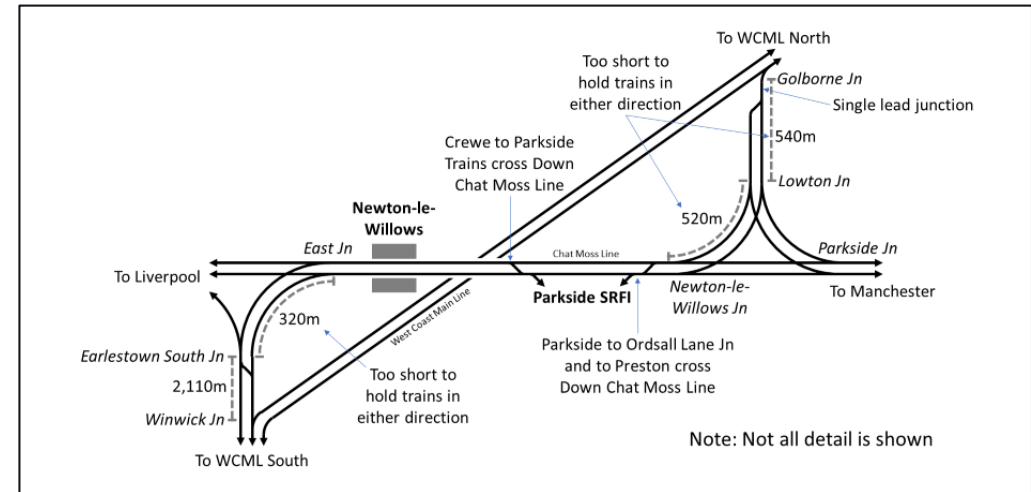
Due to the Parkside layout not being in ATTune there is no detailed modelling of junction margins at the site. With this uncertainty and the indicative nature of the paths we have limited conflict checking at Parkside to ensuring trains arrive or depart in gaps in service of around 5 to 7 minutes.

Holding trains to wait for paths onto the WCML north and south is complicated by the triangular junctions at both sides of the Parkside terminal.

The diagram shows our understanding of access issues into and out of Parkside SRFI.

If trains are unable to stand at Earlestown East Junction, and particularly Lowton and Newton-le-Willows Junctions, it means that in most cases clean paths into Parkside need to be found from the West Coast Main Line.

Detail of track infrastructure in the vicinity of Parkside SRFI



Engineering allowances have been entered based on the Timetable Planning Rules. These result in allowances being added to our freight paths in one direction only on each route:

- Parkside SRFI to Preston Ribble Junction: [1] before Golborne Jn; and [1] before Euxton Jn. No engineering allowances between Preston Ribble Junction and Parkside SRFI.
- Parkside SRFI to Ordsall Lane Junction: [2] before Ordsall Lane Jn. No engineering allowances between Ordsall Lane Junction and Parkside SRFI.
- Parkside SRFI to Winsford South Junction: [1] before Winwick Jn; [1] before Weaver Jn; and [1] before Crewe Coal Yard Jn. No engineering allowances between Winsford South Junction and Parkside SRFI.

SRT adjustments have been entered in line with the Timetable Planning Rules. ATTune indicates an additional 30s adjustment is needed between Golborne Junction and Newton-le-Willows (representing Parkside SRFI), however we cannot find this in the Timetable Planning Rules and it appears unnecessary as there is only one routing option between these locations and therefore nothing to adjust for. No adjustment has therefore been added on this section of route.

Our analysis has found more than 4 return trains per day for the three in-scope routes in the Baseline December 2019 scenario




Within the December 19 timetable, using the most challenging low speed (60mph) class 6 timings and noting the method and constraints already outlined in this document, we have been able to identify more than 4 return paths per day on both the northbound and southbound route with the Baseline timetable.

As shown in the table to the right, we can find between 19 and 24 single one way paths on each route either to or from Parkside. Other factors to consider are that:

- Appropriate return paths are required so that the trains can go 'out and back' in a day. An arriving train would need a return path around 4 hours after arrival, assuming a 4 hour period is required to unload and reload the train.
- Terminal capacity needs to be considered. For example, whether the terminal would have capacity to handle six consecutive arrivals between 00:14 and 05:00.
- No existing freight paths have been used to 'divert' to Parkside to create a path

The large number of paths found in the 24 hours across the three routes provides confidence that at least 4tpd exist to meet the minimum requirement for network capacity for a SRFI, with opportunities to provide more than 4tpd to/from Parkside.

Full supporting details of the available paths are included in the Appendix to this report.

	Confidence in finding 4tpd	No. of paths found from Parkside	No. of paths found to Parkside	Comments
1	Parkside SRFI to Ribble Junction (Preston)			
		19	20	<ul style="list-style-type: none"> • Paths during the day generally require some pathing allowances en-route. • Six trains need to be held at Newton-le-Willows Junction, which will foul Lowton Junction. In some cases this causes a conflict with other services.
2	Parkside SRFI to Ordsall Lane Junction (Manchester)			
		24	23	<ul style="list-style-type: none"> • Paths need very few pathing allowances en-route. • Analysis indicates most paths unlikely to be found beyond the scope boundary in Manchester
3	Parkside SRFI to Winsford South Junction (Crewe)			
		20	20	<ul style="list-style-type: none"> • Paths during the day generally require several pathing allowances en-route. • Long 2 track section on WCML requires most paths to recess or need pathing time.

Confidence in finding 4tpd:  Few concerns  Some adjustment required  Major concerns

Key Finding 2: At least 4tpd can be found to and from Parkside within the baseline December 2019 timetable with opportunities for further return paths

Key Finding 3: Route 2 paths unlikely to be found beyond scope boundary into Manchester due to lack of available network capacity

When applying weight and train length sensitivity tests to the Baseline paths, the minimum 4tpd can still be found

The detailed paths on the December 2019 base timetable have been identified using 60 mph Class 6 timings for a Class 66 with a 1400t trailing load. This was chosen as a conservative assumption. Depending on the type of freight being carried, a number of different timing loads could be used in reality.

Running with a lighter timing load at a higher speed is likely to be required for intermodal container services operating into and out of the Parkside terminal.

This report analyses the impact of operating each identified path with the following timing loads:

- **Express Class 1:** – e.g. Express parcels such as a Class 325 EMU.
- **Low Class 4:** Class 66 800t at 75 mph
- **Medium Class 4:** Class 66 1400t at 75 mph
- **High Class 4:** Class 66 2000t at 75 mph
- **Low Class 6:** Class 66 800t at 60 mph.
- **High Class 6:** Class 66 2000t at 60 mph

Each of the above timing loads assume diesel traction as many trains serving Parkside will be unlikely to be able to fully operate under electric traction. The impact of operating with electric traction (e.g. Class 90) with the same trailing loads will likely offer slight journey time improvements over the WCML.

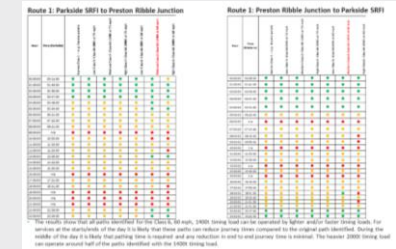
Results

The results from these sensitivity tests (see Appendix) against the Baseline timetable (December 2019) show that all paths identified for the Class 6, 60 mph, 1400t timing load can be operated by lighter and/or faster timing loads.

For services operating at the start/end of the day, when network utilisation is much lower, it is likely that these paths can actually reduce journey times compared to the original path identified. During the middle of the day it is likely that pathing time is still required and any reduction in end to end journey time is minimal.

Lighter and faster trains are unlikely to be able to release any additional paths beyond those found in the Baseline analysis, due to the limited white space available at key junctions.

The heavier 2000t timing load can operate around half of the paths already identified with the 1400t timing load. This is not considered to be a significant risk as Parkside is not proposed to be designed to accommodate this type of train.



Details of the sensitivity test with the alternative train lengths and weights can be found in the Appendix

Three further scenarios test the ability to find paths over 30 years, considering potential interventions in the North of England

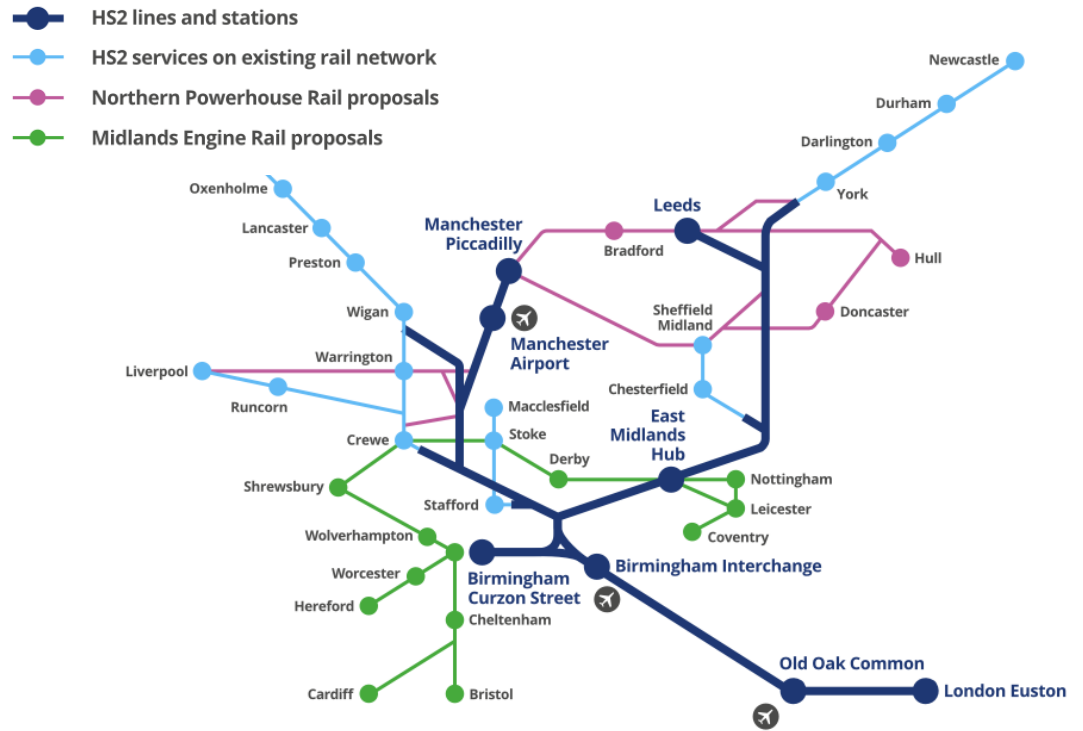
In order to test and understand whether train paths can still be found over the next 20 to 30 years, three further scenarios have been identified to build on the initial Baseline (December 2019) scenario, upon which the initial paths have been found. These scenarios will identify what impact the changes to other services have on the Baseline paths, as well as testing whether the minimum 4tpd can be maintained.

Scenario b) May 2022 / Baseline +

This scenario builds on the Baseline and considers the proposed changes for the May 2022 timetable identified by the Manchester Task Force. This changes the routing of various passenger trains in the North-West region to improve performance on the Castlefield Corridor and Victoria lines. These changes impact all three routes at various locations.

Scenario c) HS2

This scenario includes both Phases 2a and 2b, meaning that new HS2 services will access the existing rail network to the south of Crewe (2a) and to the south of Wigan (2b). Within the scope area, this means there is likely to be the same level of service with HS2 taking over some existing services. Further south of the scope area beyond Crewe, there may be opportunities for further paths if existing long distance high speed services switch to the HS2 line.



Scenario d) Northern Powerhouse Rail (NPR)

Plans for NPR are at an early stage; however, we expect a new line to be created between Liverpool and Manchester, independent of the existing rail network. This should remove services from the Chat Moss Line. However, it is expected that they are replaced with new services offering new journey connectivity options.

Map showing the proposed HS2 and NPR routes
Source: HS2

The future scenarios provide further challenges in finding paths, but the minimum 4tpd are still expected to be found

All three future scenarios have a significant impact on the three in-scope routes. Multiple individual passenger services change within each scenario, impacting on each route at a variety of locations. This includes both high speed (i.e. HS2 and/or NPR) and existing rail services.

In scenario b), both positive (i.e. fewer conflicting moves) and negative (i.e. more conflicting moves) impacts can be found on each route.










In scenarios c) and d), the impact of service changes on the existing rail network are likely to introduce more conflicts with the Baseline paths, making it more challenging to find paths.

However due to the large number of paths identified in the Baseline, there is confidence that the minimum 4tpd can still be found to and from Parkside, with further opportunities for additional return paths still likely.

Key Finding 4: Future scenarios are expected to make finding paths more difficult, however 4tpd are still likely to be found with opportunities for further return paths



Full supporting details of the scenario analysis are included in the Appendix to this report.

	Scenario b) May 2022 / Baseline +	Scenario c) HS2	Scenario d) NPR
1	Parkside SRFI to Ribble Junction (Preston)		
	 Timetable changes have both positive and negative impact on path availability	 More difficult to find freight paths due to increased passenger services	 More difficult to find freight paths due to increased passenger services
2	Parkside SRFI to Ordsall Lane Junction (Manchester)		
	 Timetable changes have both positive and negative impact on path availability	 No impact	 More difficult to find freight paths due to increased passenger services
3	Parkside SRFI to Winsford South Junction (Crewe)		
	 Timetable changes have both positive and negative impact on path availability	 More difficult to find freight paths due to increased passenger services	 More difficult to find freight paths due to increased passenger services

Confidence in finding 4tpd:  Few concerns  Some adjustment required  Major concerns

The adjoining Chat Moss Line is critical to Parkside. It is closed on weekday nights every six weeks from 22:50 to 06:00. It is closed every Sunday from 00:05 to 08:25 and every Monday from 00:05 to 03:50.

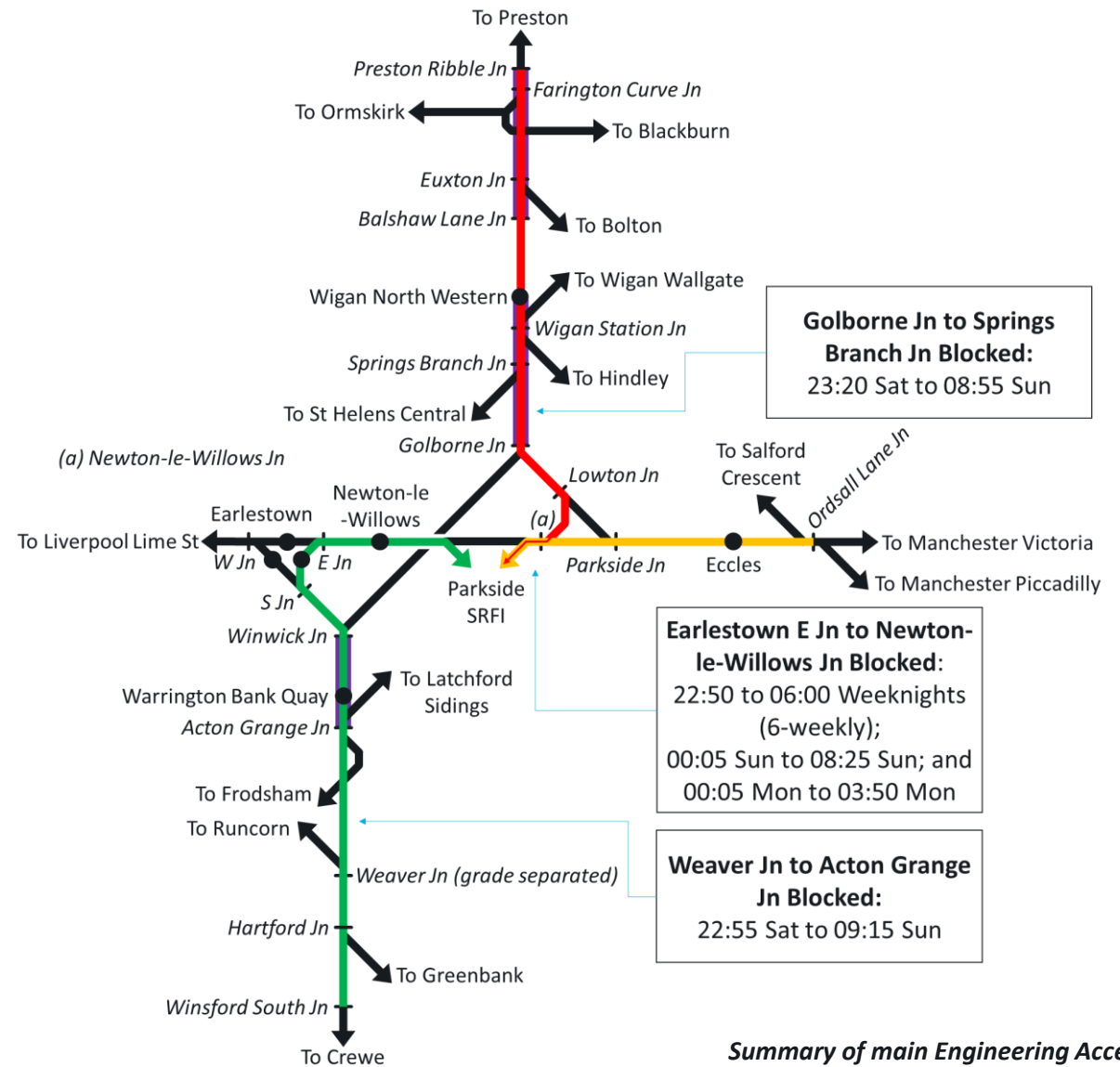
Route 1 has several 4-track sections, where closures usually only affect one pair of tracks. The Chat Moss possession opportunities are generally the critical factor on this route, although on Weekends all tracks between Golborne Jn and Springs Branch Jn are closed from 23:20 on Saturdays to 08:55 on Sundays. Allowances for short 30 minute weekday possessions should not cause issues.

Route 2 uses the Chat Moss Line which has similar possession requirements to the Parkside section of route.

Route 3 has more 2-track sections than Route 1. Restrictions are generally better or the same as the critical Chat Moss section outlined above. The exception to this is between Weaver Jn and Acton Grange Jn which is closed from 22:55 on Saturdays to 09:15 on Sundays.

It should be noted that the loss of access for Network Rail's track inspection and maintenance is something every SRFI has to accommodate, and it is not uncommon for a 1 (week) in 6 nighttime possession regime to be place. The constraints on train movements are usually managed at the FOC/NR level to enable trains to run as required with minimal disruption.

Key Finding 5: Chat Moss Line adjacent to Parkside has a midweek overnight restriction every 6 weeks. Not expected to be a significant issue.



Summary of main Engineering Access Statement restrictions impact access to Parkside SRFI

No new infrastructure schemes are required to operate at least 4tpd throughout the four scenarios within the in-scope area

The pathing and scenario analysis found that at least 4tpd can be found on each of the three routes, throughout the four scenarios. It is still expected that further return paths can be found on top of the minimum 4tpd. These are new paths and have not relied on using existing freight paths.

No changes to the rail network infrastructure are therefore required to enable at least the minimum 4tpd to operate.

To accommodate future potential demand beyond the minimum 4tpd, and where a need is identified for it, consideration has been given to potential infrastructure improvements. Four potential infrastructure schemes have been identified and recommended to the right to help:

- Increase the opportunity for finding additional return paths in all four scenarios
- Provide further resilience to the network and increase the opportunity to regulate freight services for both Parkside and other nearby freight locations

Key Finding 6: No new infrastructure schemes are required to operate at least 4tpd throughout the four scenarios within the in-scope area

Location	Intervention
Golborne Junction	Provision of an additional loop on the WCML for trains heading towards Parkside. This provides an additional regulation point to allow trains to wait clear of the WCML, for a path through Lowton and Newton-le-Willows Junctions into Parkside.
Earlestown South Junction	Provision of an additional loop between Earlestown South Junction and Winwick Junction. This will provide an additional regulation point for: <ul style="list-style-type: none"> • Trains towards Parkside to wait clear of trains accessing the Chat Moss Line from the WCML, for a path through Earlestown East Junction into Parkside • Trains from Parkside to wait clear of trains accessing the WCML from the Chat Moss Line, for a path through Winwick Junction onto the WCML
Winwick Junction <i>(alternative intervention to Earlestown South Junction above)</i>	Provision of an additional loop on the WCML at Winwick Junction. This provides an additional regulation point to allow trains to wait clear of the WCML, for a path through Earlestown South and East Junctions into Parkside. This intervention was recommended in the Network Rail North of England Freight Study (2018).
WCML between Wigan and Crewe	Provision of Goods Loops on the long 2 track section on the WCML both to the north of Golborne Junction and to the south of Winwick Junction. This would allow freight trains to be looped and overtaken by faster passenger services, increasing the ability to find paths.

Potential destinations

Felixstowe



Felixstowe is steadily increasing the proportion of containers it sends by rail to a growing number of inland distribution centres. Although about 30% of traffic currently goes by rail, this represents around 50% of container miles as rail favours longer distances. The port’s ambition is to double this volume, as traffic sent by rail is already three times more fuel-efficient than road and, with electrification, could be up to ten times more so.

This becomes ever more significant in the light of the climate emergency as up to one million tonnes of CO2 could be removed from the UK road network if we switched this traffic to rail.

The Port is owned by the Hutchinson conglomerate and they have three loading rail terminals within the port as they have incrementally added loading capacity as rail volumes have increased. The Port is accessed by a single-track branch line which is shared with the

local hourly passenger services. This has recently had its capacity increased through the provision by Network Rail of passing loops in various locations.

Rail network capacity has always been thought to limit rail modal share and new trains started immediately when the investment in the local branch was complete. Now growth is beginning to be constrained by limits on the wider network, as discussed below.

Routing into inner Manchester from Felixstowe is on the limits of what can be achieved within a 24 hour cycle. Parkside’s location offers significant benefits here as its ‘outer urban’ location and immediate proximity to the WCML will reduce journey times to all Ports, and this is a significant advantage for Felixstowe which has the longest journey time to the area of all the primary deep sea ports.

The container traffic here, as elsewhere, is supported by the Government’s Modal Shift Revenue Support scheme (MSRS). This recognises the value of modal shift from road to rail by paying a subsidy for each container moved by rail on certain key routes supported by the scheme.

London Gateway



London Gateway terminal is strategic investment in the UK by the world’s largest ports group, DP World. There is significant growth planned for the port as the group seek additional deep sea container ships stopping at the Port.

The Port has significant spare capacity, both in its craning and in its container park, whereas both Felixstowe and Southampton are beginning to operate at capacity, with Felixstowe in particular having issues in the recent Brexit/Covid consolidation of container movement.

The Port also doesn’t have a range of existing network paths and this creates an opportunity as each new service which comes to the market will be looking for a new inland terminal. As stated previously, Parkside’s simple access to the WCML offer journey time savings to the North West which will be attractive to new flows.

Daventry



Parkside could also possibly become an alternative terminal for some of the International traffic stopping at Daventry if it became a terminal with HMRC approval to be an international terminal. Large local manufacturers such as Unilever could be very interested in a direct connection to Europe on their doorstep at Parkside. In the medium term Parkside may become connected to Daventry for high speed logistics. The existing Royal Mail trains run from London to Warrington as the core part of their routing up to Scotland and other logistics companies could develop flows along this line from Daventry (or other similar locations) to Parkside.

Direct return services between Daventry and Parkside are probably not an immediate opportunity as the locations are close together. However Parkside may present an opportunity for Anglo-Scottish traffic to stopover to collect and discharge goods for the NW market, connecting Parkside to both Scotland and Daventry.

Mossend



From Parkside to the Scottish central belt is around 200 miles, again a distance at which rail competes well with road for the movements of goods. Parkside could develop into a new North West hub for the movement of domestic intermodal goods as local manufacturers and retailers connect to their Scottish markets.

Similarly, Scottish exporters of commodities such as whisky and water could find Parkside a useful location to access the significant North West market.

As stated previously in the Daventry section this routing could work well with Parkside as an intermediate stop on a Midlands or London train to Scotland, thereby connecting three significant markets. This solution could work not only for containers but also for high speed logistics.

East Coast Ports (TeesPort, Hull, Immingham)



These East Coast locations have been very successful in developing their short haul European feeder container network as goods have moved from Ro-Ro (Ride on, Ride off, with tractor unit and trailer) through the Straits of Dover to Lo-Lo (Load on, Load off with container only movement and local road movement either side) through the east coast ports. PD Ports at Teeside in particular have been very successful in building a supporting network of rail freight movements. Road provides the main means of freight transport; rail access is highlighted as important for some cargos (notably bulk fuels).

As an example of the growing importance of Teesport over the last three years Teesport has successfully launched new rail services primarily to the iPort development in Doncaster. Parkside could be attractive opportunity for both the import and export of goods through the east coast ports from the North West avoiding the Straits of Dover and the M25 congestion by using rail.

Southampton



There are two key opportunities for Parkside for container movements from Southampton.

The first is the organic growth of volume from the Port. New services will need a terminal capacity in the North west and Parkside is well placed to provide this.

The second opportunity is the movement of existing flows from their current terminals to Parkside. There are several reasons why this may occur:

- Parkside offers faster running times and is therefore a cheaper haulage offer,
- Parkside is able to offer cheaper lift charges and container storage rates as they either have a lower cost base or choose to be price competitive,
- Hauliers or their 3PL clients move trains from terminals either controlled by their competitors or where they feel they do not receive an adequate level of service.

South west England and South Wales



The south west of England and south Wales is around 170 miles away from Parkside, a distance at which rail can compete well with road for the movement of containers. The key alternative M5/M6 road corridor is direct but does suffer from congestion at certain times.

The key issue will be aggregating sufficient volume to support the train service. There are a number of large logistics warehouses in the location (Amazon in particular) and possibly north west manufacturers will find delivery of raw materials by rail attractive.

In the medium term high speed rail logistics could feature on this route due to the relatively high population densities at either end or the route distance, which may enable multiple services each day from the same set of vehicles.

Opportunities for growth of freight traffic volumes will be dependent on the availability of efficient train paths. Potential to create additional freight train paths means dealing with the conflicting characteristics of high speed, intensive passenger train services and relatively slow, long freight services. Available freight paths for new contracts can be sub-optimal, requiring multiple stops and starts for each stage of the journey, significantly reducing the average speed and reducing the efficiency of resource utilisation.

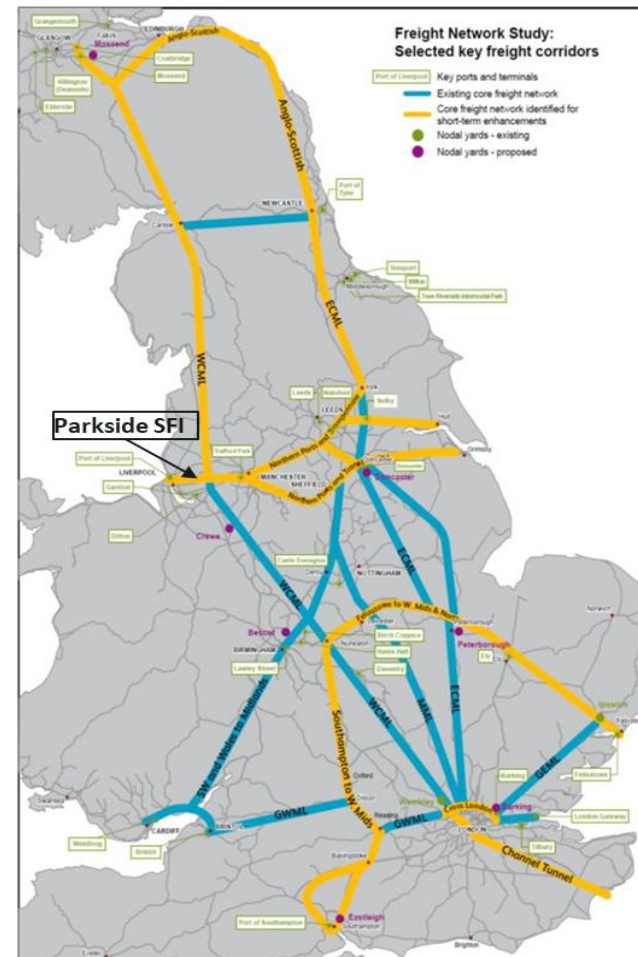
A number of operating issues act as constraints to efficient rail freight operations on the national rail network and/or make freight less competitive compared to road freight.

- **Route journey times:** In order to ensure rail is an attractive mode of transport for the movement of freight, it needs to be able to compete effectively with road transport with suitable end-to-end journey times. However, many existing freight train paths are sub-optimal, requiring multiple stops and starts for each stage of the journey due to the competition with passenger services, reducing the average speed.
- **Train length limits:** The maximum length of trains is affected by the length of freight loops, suitable loading and unloading terminal facilities, spacing between signals and junctions and the location of critical items of infrastructure such as level crossings. The industry is seeking a 775m

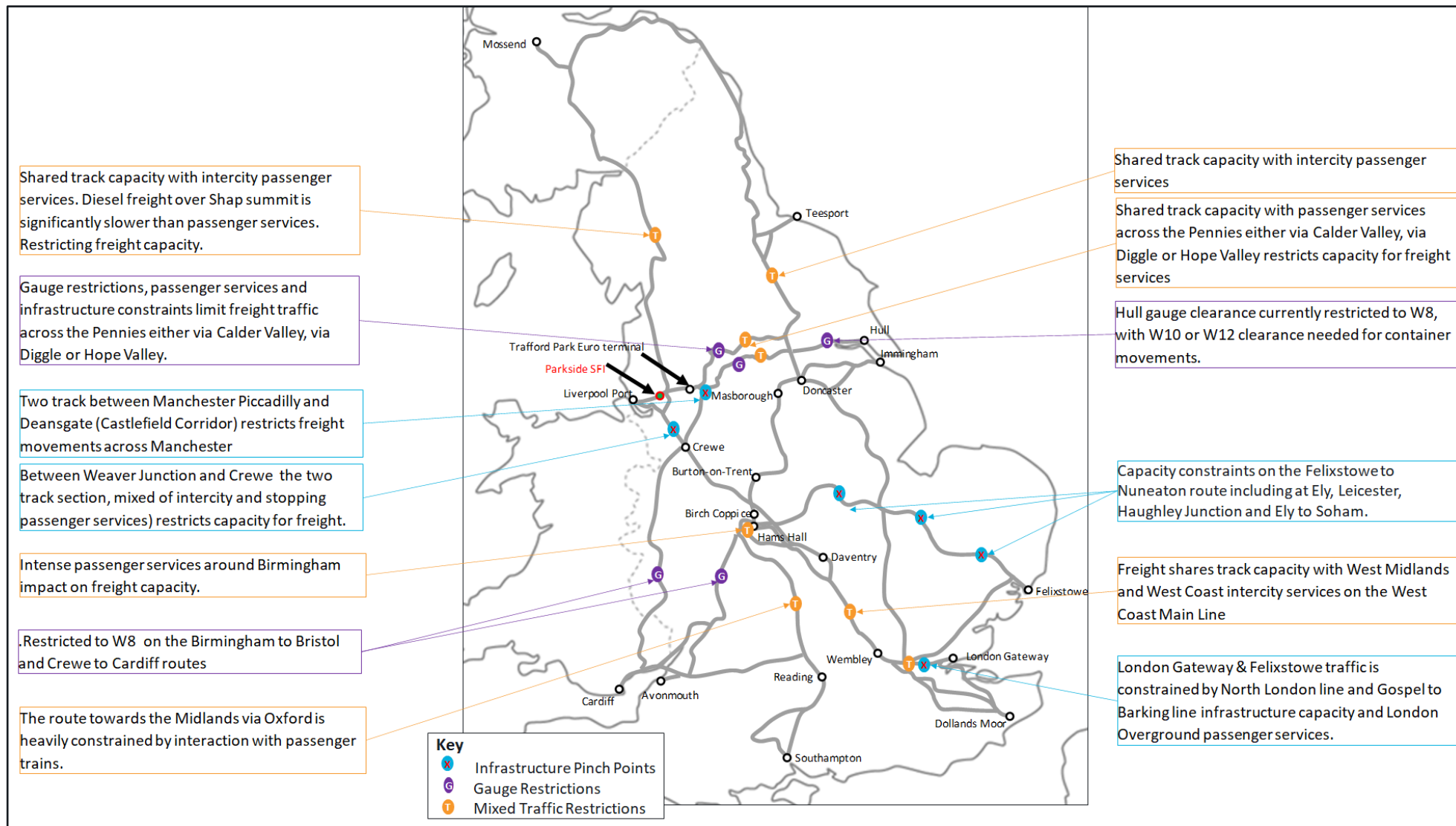
minimum baseline for intermodal trains across the core network.

- **Gauge clearance:** Network Rail has made substantial progress in clearing core intermodal routes on the strategic freight network to W10 gauge to allow the passage of 9' 6" ISO containers on standard deck height wagons. There are plans to enhance this in the long term to W12 standard, which permits the passage of a greater range of wagon and swap body combinations. However, many lines in the North of England, including key Transpennine routes, are yet to be cleared. Where the gauge is W8 'Hi-Cube' 9'6" high containers need to be carried on low-deck wagons.
- In 2007 the Government White Paper on the Railways set out a long-term ambition to create a Strategic Freight Network (SFN) of core network of routes to be enhanced to cater for 775m length trains operating within W10 loading gauge, linking together a network of inland interchanges, ports and the Channel Tunnel. The Parkside SRFI is well situated in close proximity to the W10-gauge WCML (which is also identified as a priority route for W12 clearance) and the future W10/12 clearance of the Transpennine Routes. Close proximity to the WCML and subsequently to the wider envisaged SFN will enable the Parkside site to link with key freight interchanges (e.g. Mossend), ports (e.g. London Gateway, Felixstowe, Southampton) and the Channel Tunnel.

However, progress in developing the SFN has been considerably slower than originally planned, with the result that ambitions have been scaled back.



There are multiple infrastructure pinch points and restrictions that will impact on potential flows to Parkside

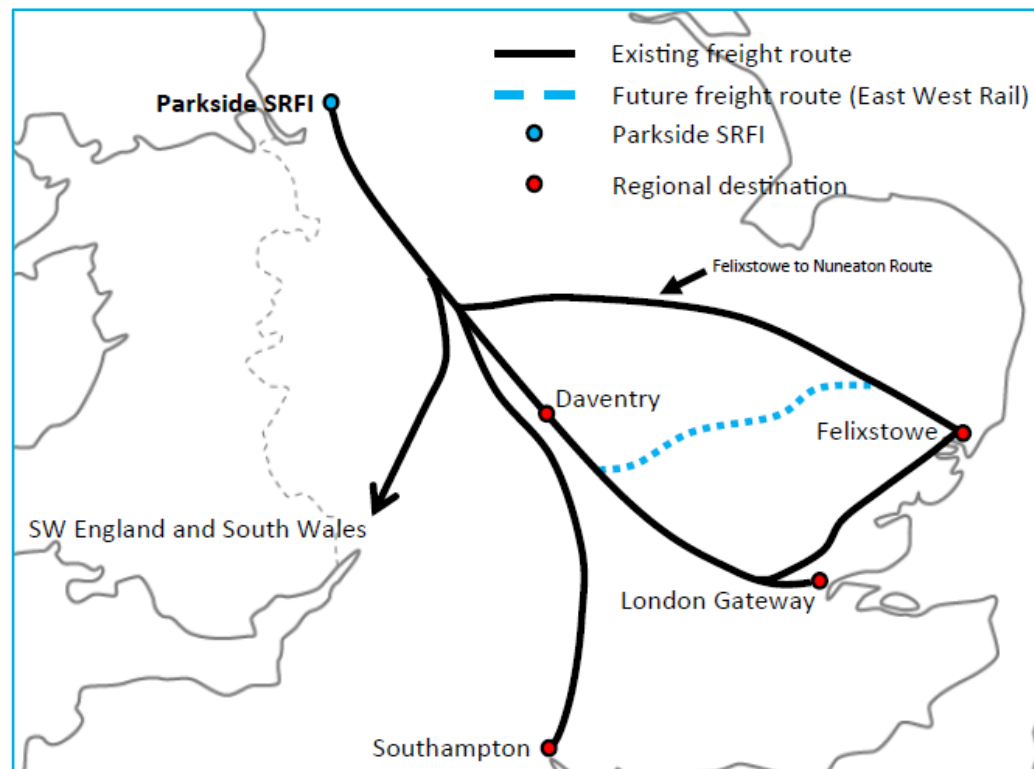


Parkside to Southern Destinations

Freight services from Parkside to the southern locations of Felixstowe, London Gateway, Daventry, Southampton, South west England and South Wales would all operate via the WCML as far as Stafford before diverging onto different routes.

- **Services to Felixstowe** would operate either via the Midlands (Felixstowe to Nuneaton Route) or along the WCML, Northern London Line (NNL) and Great Eastern Main Line. In the future services to Felixstowe may also operate via East West Rail between Bletchley and Cambridge.
- **Services to London Gateway** would operate via the WCML to London, then via NNL to Gospel Oak and then via Gospel Oak to Barking line and onto the Tilbury Loop to London Gateway.
- **Service to Daventry** would operate via the WCML to Daventry terminal on the Northampton loop
- **Services to Southampton** primarily diverging from the WCML at Nuneaton and operating via Coventry, Oxford, Reading and Basingstoke to Southampton.
- **Services to South West England and South Wales** operating through Wolverhampton, Birmingham and along the Birmingham to Bristol line.

There is sufficient short to medium term capacity for freight services heading to southern locations from Parkside. However, it is likely that investment will be required to support long term freight capacity and growth.



WCML Capacity

The critical section for capacity on the WCML for freight services heading from Parkside is between Weaver Junction and Crewe. This section is highly constrained by the two-track infrastructure and existing mix of intercity, regional, local passenger services and existing freight services. The previous path identification section has highlighted the potential availability of freight paths on this critical section.

On the southern half of the WCML there is some existing capacity. However, available capacity is limited by existing mix of passenger and freight services operating at different speeds as well as capacity on adjoining routes such as the North London Line. HS2 will provide the opportunity to create extra freight paths on the southern half of the WCML. Phase One of HS2 has the potential to release three freight paths per hour:

- 1 additional freight path per hour each way north of Camden Junction off-peak.
- 1 additional freight path per hour each way north of Bletchley off-peak.
- 1 additional freight path per hour each way north of Nuneaton.

Depending on the timetable design, Phase One could provide opportunities for freight to/from Parkside. The completion of HS2 Phase 2a (in 2029-31) will provide additional freight benefits up to Crewe.

However, capacity on the critical section between Crewe and Weaver Junction will continue to be constrained until the completion of the link from Crewe from Golborne Junction under HS2 Phase 2b which will provide capacity relief between Crewe and Weaver Junction as Anglo-Scottish services are removed from that section, potentially allowing for more freight paths from the Liverpool region to southern freight locations.

Cross London Capacity

Cross London freight flows on the NLL and on the Gospel Oak to Barking line are constrained by the infrastructure and the overall existing mix of passenger and freight services. A number of schemes have been identified to improve capacity for cross London freight flows including enhancements to signaling on the Gospel Oak to Barking line and Hampstead Heath Tunnel, freight loops, and grade separation at Forest Gate. The potential schemes have been identified as for development in Control Period 7 (2024-2029) and for delivery in Control Period 8 (2029-2034).

Network Rail's recent study (July 2020) on the Essex Thameside corridor (this covers the section of the route between Barking and London Gateway) stated that no specific infrastructure would be required to accommodate the forecasted freight demand up to 2043 with the key constraining factor to accommodating freight growth being the North

London orbital routes (North London Line and Gospel Oak to Barking).

Cross London freight capacity constraints will limit expansion of new freight services into London Gateway and on the route to Felixstowe in the future unless investment is made in expanding capacity.

Parkside to Southampton

The route from the Port of Southampton to terminals and markets in the West Midlands and further north is a key freight route. Its principal commodities are intermodal and automotive flows, both to and from the port. Whilst the route has seen investment in the previous and current funding (control) periods on gauge clearance, diversionary routes and train lengthening schemes, gaps have been identified which will constrain further freight growth.

The key challenge for freight services operating from Parkside to Southampton is the restriction of freight capacity because of the number of passenger services and utilised infrastructure. This is particularly a challenge between Birmingham and Leamington Spa. The combination of intense passenger services around Birmingham and limits of the infrastructure (notably the single line section Coventry and Leamington Spa) presents the challenge for freight services operating from the North West to the Solent ports.

Felixstowe to Nuneaton Capacity

The opening of the Ipswich freight chord in 2014 permitted trains to access the Midlands and north via Ely without reversal at Ipswich thus increasing the number of freight trains from around 20 per day to 34. The recent provision of a loop at Trimley on the single-track line to Felixstowe has increased the number of paths per day to 45. Many of these extra train paths are currently unused because of infrastructure pinch points on the Felixstowe to Nuneaton route at Ely, Leicester, Haughley Junction and Ely to Soham.

Haughley Junction – capacity improvement for both freight and passenger services requires a doubling of the junction. Doubling of the junction had previously been identified as a candidate scheme for delivery in Control Period 6 by Network Rail, however, at present there is no delivery timeframe and funding for the intervention.

Ely to Soham single line – planned doubling of the line between Ely and Soham was put on hold by Network Rail in 2015. There is currently no funding or scheduled timeline for delivery of the doubling of the line.

Ely Junction is at capacity and there is growing demand on this junction. The Ely area capacity enhancement (EACE) programme is a proposal to upgrade the railway to allow more trains to run through Ely. The scheme is proceeding to final design, and authorisation will be subject to future funding decisions by the DfT through the Rail Networks Enhancements Pipeline (RNEP) process. Likely to delivered in late 2020s.

Existing track layouts around Leicester constrain freight flows across the Midlands. Network Rail have completed (in July 2020) a strategic assessment of interventions around Leicester to improve future capacity for passenger and freight including four-tracking south of Leicester and additional freight infrastructure. There is no delivery timeframe and funding for these interventions.

Without investment to relieve these capacity constraints, there are limits to the level of freight demand growth that the cross-country route between Felixstowe and Nuneaton can accommodate.

East West Rail

East West Rail (EWR) has the potential to provide an alternative for long-distance rail freight currently using London's network as it offers another route between the Haven ports (including Felixstowe) and inland freight locations in the Northwest including Parkside.

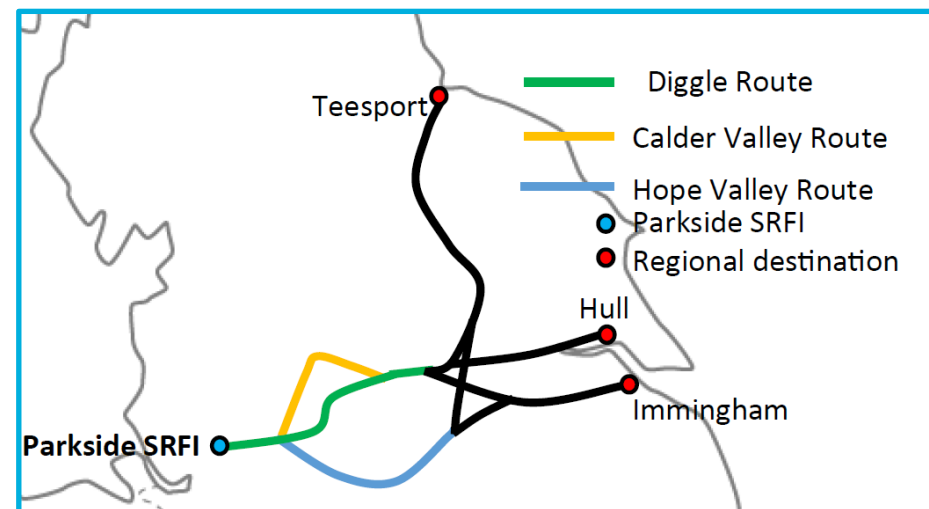
Network Rail's report into routing of rail freight forecasts highlights that potentially up to 50 freight paths per day could be available by 2043. However this assumes electrification of the line (initial EWR design does not include electrification) and would also require upgrading of the connection to the WCML at Bletchley and the single line between Cambridge to Newmarket to realise 50 trains per day capacity.

It is unlikely that the full forecasted 50 trains per day will be achievable because of the limitations of daytime freight paths because of the proposed passenger services. But if one or two freight paths are provided each hour on EWR, then EWR will provide a viable routing alternative for services between Parkside and Felixstowe that is capable of catering for long term growth of freight services.

Parkside to East Coast Ports

Freight growth is constrained across the Pennines due to a lack of available paths and gauge restriction for high cube containers accessing the key ports of Hull, Immingham and Teesport. The Northern ports play a significant role in the movement of freight across the country; however, this is almost entirely by road. Significant growth and investment is taking place at Liverpool, Immingham and Teesport increasing container and other movements from these ports. Traditionally the TransPennine freight routes have been dominated by coal, biomass and aggregate traffic over recent years. However, intermodal traffic is expected to grow significantly, but at present is restricted by level of passenger services, infrastructure capacity, gauge clearance and lack of electrification. There are three main issues restricting east-west intermodal growth across the north: insufficient capacity for freight services through Central Manchester; lack of gauge clearance on the TransPennine routes; and insufficient capacity for freight services on TransPennine Routes.

Previously Manchester did have rail routes that avoided the main city centre stations, but these were closed in the 1970s and 1980s. While there is regular freight traffic through both Manchester Piccadilly and Manchester Victoria stations, the volume of passenger traffic significantly restricts freight path flexibility and capacity. The Manchester Recovery Task Force is currently considering short-, medium- and long-term solutions to the challenges around Manchester.



There are several routes over the Pennines from Liverpool region to the East Coast ports of which the main route being through Liverpool – Manchester – Huddersfield – Wakefield – Milford Junction (‘the Diggle route’). At Milford Junction the route diverges into a series of routes towards either Immingham, Hull or the North East. The other two routes are via Calder Valley to the north of the Diggle Route and via Hope Valley to the south.

The Calder Valley route includes the route section from Thorpes Bridge Junction in Manchester, via Rochdale to Heaton Lodge Junction, near Dewsbury, where it joins the Diggle Route.

The Hope Valley route between Manchester and Sheffield travels via Chinley and Edale connecting at Sheffield with other routes to the rest of Yorkshire, the Northeast or Immingham/Hull.

The three TransPennine routes are currently a mix of W7/W8 gauge clearance, which is insufficient for intermodal traffic where W10/12 is required. There is a W12 route further to south via the East Midlands to reach to the East Coast ports from Parkside. However, this is not the most direct route from Parkside to the East Coast ports. The time taken to reach the East Coast ports via the East Midlands is long and maybe not commercially viable for rail freight traffic compared to road freight.

The combination of gauge restriction and the frequency of passenger services on TransPennines routes and in Central Manchester limits the flexibility to path freight services that severely restricts east-west freight traffic.

Mainly as a response to improved passenger services between York, Leeds, Manchester and Liverpool, the Diggle Route is the chosen route by government for significant upgrade under the TransPennine Route Upgrade (TRU) project. TRU is a proposed programme to upgrade the existing infrastructure to improve capacity, journey times and implement electrification of the route. It is hoped that the upgrade will also provide W10/12 gauge clearance for intermodal traffic and provide at least one freight path per hour in each direction.

£589 million has been provided to advance TRU to detailed design/full business case stage where the provision of gauge clearance and freight capacity is being considered as options for the upgrade. Initial work to electrify the line is scheduled to begin around Manchester in April 2021 with full delivery of the schemes expected in the early 2030s. Once complete TRU could deliver significant east-west freight capacity by providing at least one train path per hour in each direction linking Liverpool / Manchester with the East Coast ports.

The Calder Valley Route is a longer and slower route than the Diggle Route and has similar gauge clearance issues. Costs of gauge clearance for intermodal trains estimated by Network Rail are higher than the Diggle route. There are likely capacity limits due to passenger train service aspirations that would require additional investment in passing loops to provide additional freight capacity. At present there are no investment plans to improve capacity or

gauge clearance to W10/12 for intermodal traffic.

The Hope Valley route offers West-East connectivity for freight but tends not to function in this manner at present and is mainly utilised by aggregate services from the Peak District Quarries. The route is not sufficiently gauge cleared to be used as an intermodal route and capacity is restricted by the infrastructure on the route. The Department for Transport has confirmed that £137m is to be spent to increase passenger and freight capacity on the Hope Valley line between Sheffield and Manchester.

This covers work around Dore & Totley station, including provision of a second platform and double tracking between West View Lane and Dore South Junction, as well as the construction of a 1 km passing loop to the east of Bamford station so that passenger services can overtake freight trains. Work is expected to be completed in 2023. However, there is no current plan to enhance the gauge to W10 or W12 to allow for intermodal freight traffic and the route is too far south to enable competitive journey times for rail freight compared to road freight.

The DfT are currently considering the business case for the reopening of the Skipton to Colne route. While not as direct as the other TransPennine routes, it has some advantages as alternative route such as lesser gradients and less intensively used by passenger services. But the route has several key challenges such as the cost of reinstatement of the old line and capacity challenges around Leeds and connecting to the WCML.

The key consideration to improving freight capacity across all the west-east TransPennine Routes is the provision of a 24/7 route that allows flexibility for freight services. To enable this flexibility, more than one route across the TransPennine route should have sufficient capacity and gauge clearance to W12 to provide an adequate diversionary route when required. While it is increasingly looking likely that TRU will provide W10/12 gauge clearance and electrification on the Diggle Route, the absence of sufficient alternative routes may impact on the commercial viability of rail freight services across the Pennines.

It is possible that the current W12 route via the East Midlands is seen as an alternative W12 route between the North West and Yorkshire, the North East, and the North's East Coast Ports. However, the journey times via Midlands route will be longer (particular to Teesport and Hull) and this impacts on the commercial viability of route because of the longer journey times. Another route between Parkside and Tessaort further to the north via Carlisle-Hexham-Newcastle is potentially available in the longer term, however, at present the route is not gauge cleared for intermodal traffic. Until sufficient gauge clearance and capacity is provided across more than one of the TransPennine Routes, intermodal traffic from Parkside to the East Coast ports will be severely restricted.

Key Finding 7: Direct access to East Coast ports unlikely before 2030 due to gauge restrictions and network capacity for freight.

Parkside to Scotland

There is a high level of freight growth opportunity between the North West and Scotland but the need to accommodate the existing fast West Coast intercity passenger services to Scotland from London/Birmingham, TransPennine Express services from Liverpool/Manchester to Scotland on the WCML limits freight path opportunity between Preston and Scotland.

The combination of additional HS2 passenger services (from the completion of HS2 Phase One) and the expected freight growth from 19 tpd to 67 tpd by 2043 between Winwick Junction to Carlisle will mean rail capacity may be at a premium without investment in capacity north of Preston.

The remodelling of Carstairs Junction (scheduled for delivery in CP6) will help to improve capacity for freight services in the short to medium term by creating more flexibility and providing a 775m regulating point for freight services. In the longer-term further investment will be required to handle the expected increase in freight and passenger services.

It will be essential that long term capacity is provided north of Preston to enable the operation of anticipated HS2 extra services and allow for freight growth. The ideal approach to expanding capacity is to 4 track the WCML where possible to create dynamic loops, both south and north of Carlisle to provide additional capacity.

Passing loops for the north end of the WCML have previously identified by Network Rail as critical to improving capacity to Scotland. This have included a dynamic down loop from Tebay to Shap Summit, a dynamic up loop between Carlisle and Plumpton (near Penrith) and a dynamic up loop between the Eden Valley (near Penrith) and Shap Summit.

None of these schemes currently have allocated funding or a scheduled delivery timeline. However, they are being considered in more detail by 'North of HS2 Working Group' as part of the process of accommodating increased passenger services north of Preston under the HS2 Phase 2b scenario.

There is sufficient short term capacity for freight services heading to Scotland from Parkside. Industry has recognised that investment will be required to provide capacity to support long term passenger and freight growth north of Preston on WCML.

Summary of key infrastructure interventions to improve rail freight competitiveness

Potential destinations

There are a number of potential enhancements being considered across the UK rail network to enable more freight traffic and make rail freight more competitive with other modes by increasing its efficiency. Many of these enhancements are part of the long term Strategic Freight Network. In the table opposite are some specific enhancements that would that would be beneficial to freight services operating to/from Parkside.

Market	Intervention
Parkside to East Coast Ports	<p>TRU needs to provide to capacity for at least one freight path per hour in each direction and provide gauge clearance to W12 to provide the necessary freight capacity across the North of England.</p> <p>In addition to TRU it is important that a diversionary W12 route is also considered in the North of England to provide 24/7 east-west availability. This could be delivered by upgrading the Calder Valley, reopening of Skipton-Colne or possibly via the current W12 route via the East Midlands (if considered commercially viable).</p>
Parkside to Felixstowe	<p>Future investment is required to unlock capacity constraints on the Felixstowe to Nuneaton route at Ely, Leicester, Haughley Junction and Ely to Soham to provide capacity for long term freight growth between Northwest England and Felixstowe. Electrification of the route would also improve long term freight viability.</p> <p>It is essential that East West Rail has the capacity to accommodate rail freight.</p> <p>Between HS2 Phase 1 opening and the completion of Phase 2b sufficient network capacity needs to be retained for freight services between Crewe and Weaver Junction.</p>
Parkside to London Gateway	<p>Future investment is required on the NLL and/or Gospel Oak to Barking route to provide additional freight capacity for long term freight growth to/from London Gateway.</p> <p>Between HS2 Phase 1 opening and the completion of Phase 2b sufficient capacity needs to be retained for freight services between Crewe and Weaver Junction.</p>
Parkside to Scotland	<p>Future investment is required to provide long term capacity is provided north of Preston to enable the operation of anticipated HS2 extra services and allow for freight growth. This can be achieved through either four tracking parts of the WCML or the provision of dynamic passing loops.</p>

Conclusion



This study has concluded that 4 return paths per day can be found in all scenarios without the need for additional infrastructure

The Parkside facility is relatively centrally located within Great Britain, being 200 miles from the Scottish Central Belt, 225 miles from London and Southampton and 250 miles from Felixstowe. It offers attractive 'out and back' journey opportunities to many important ports and terminals **(KF1)**. The facility would be well suited for several intermodal flows and customers.

Within Scenario a) (Dec 19 timetable), using the most challenging low speed (60mph) class 6 timings, we have been able to identify between 19 and 23 single one way paths on each route. This provides significant confidence that at least return 4tpd exist when considering other factors, to meet the minimum requirement for network capacity for a SRFI, with opportunities to find further return tpd **(KF2)**. However, Route 2 (East) paths are unlikely to exist beyond the scope boundary through Manchester **(KF3)**.

All three future scenarios have a significant impact on the three in-scope routes. Multiple individual passenger services change within each scenario, impacting on each route at a variety of locations. This includes both high speed (i.e. HS2 and/or NPR) and existing rail services. Due to the large number of paths identified in the Baseline, there is significant confidence that the minimum 4tpd can still be found, with further opportunities for additional return paths still likely **(KF4)**.

The adjoining Chat Moss Line is critical to Parkside. It is closed on weekday nights every six weeks from 22:50 to 06:00. It is closed every Sunday from 00:05 to 08:25 and every Monday from 00:05 to 03:50 **(KF5)**.

The pathing and scenario analysis found that at least four tpd can be found on all three routes, throughout the four scenarios. It is still expected that further return paths can be found on top of the minimum 4tpd. No changes to the rail network infrastructure are therefore required to enable at least the minimum 4tpd to operate **(KF6)**.

Opportunities for growth of freight traffic volumes will be dependent on the availability of efficient train paths. There are a number of constraints across the network which impact on where additional freight paths can be found, however paths are expected to be found to most destinations to the north and south of Parkside.

Freight growth is however constrained across the Pennines due to a lack of available paths and gauge restriction for high cube containers accessing the key ports of Hull, Immingham and Teesport **(KF7)**.

In conclusion, we expect suitable paths to and from Parkside to be found to meet the minimum requirement of 4tpd for an SRFI over the next 30 years, with clear opportunities to find additional paths to the north and south of Parkside.

Key Finding 1: Parkside is well located for 'out and back' journeys to a number of other ports and terminals.

Key Finding 2: At least 4tpd can be found to and from Parkside within the baseline December 2019 timetable with opportunities for further return paths

Key Finding 3: Route 2 paths unlikely to be found beyond scope boundary into Manchester due to lack of available network capacity

Key Finding 4: Future scenarios are expected to make finding paths more difficult, however 4tpd are still likely to be found with opportunities for further return paths

Key Finding 5: Chat Moss Line adjacent to Parkside has a midweek overnight restriction every 6 weeks. Not expected to be a significant issue.

Key Finding 6: No new infrastructure schemes are required to operate at least 4tpd throughout the four scenarios within the in-scope area

Key Finding 7: Direct access to East Coast ports unlikely before 2030 due to gauge restrictions and network capacity for freight.

A summary of the additional recommendations made by this study beyond the main conclusion and key findings

Location	Description
Earlestown – Parkside – Newton-le-Willows area <i>(Page 7)</i>	It is recommended that a further study is undertaken to review and fully understand the signal allowances and restrictions in the area to identify where trains can safely stand (or not) without blocking other routes.
Chat Moss Route <i>(Page 28)</i>	Closed on weekday nights every six weeks from 22:50 to 06:00. Constraints on train movements should be managed at the FOC/NR level to enable trains to run as required with minimal disruption.
Golborne Junction <i>(Page 29)</i>	Provision of an additional loop on the WCML for trains heading towards Parkside. This provides an additional regulation point to allow trains to wait clear of the WCML, for a path through Lowton and Newton-le-Willows Junctions into Parkside.
Earlestown South Junction <i>(Page 29)</i>	Provision of an additional loop between Earlestown South Junction and Winwick Junction. This will provide an additional regulation point for trains to wait clear for paths into Parkside or on to the WCML.
Winwick Junction <i>(Page 29)</i>	Provision of an additional loop on the WCML at Winwick Junction. This provides an additional regulation point to allow trains to wait clear of the WCML, for a path through Earlestown South and East Junctions into Parkside.
WCML between Wigan and Crewe <i>(Page 29)</i>	Provision of Goods Loops on the long 2 track section on the WCML both to the north of Golborne Junction and to the south of Winwick Junction. This would allow freight trains to be looped and overtaken by faster passenger services, increasing the ability to find paths.

Location	Description
Parkside to East Coast Ports <i>(Page 43)</i>	TRU needs to provide to capacity for at least one freight path per hour in each direction and provide gauge clearance to W12 to provide the necessary freight capacity across the North of England. It is important that a diversionary W12 route is also considered in the North of England to provide 24/7 east-west availability. This could be delivered by upgrading the Calder Valley, reopening of Skipton-Colne or possibly via the current W12 route via the East Midlands.
Parkside to Felixstowe <i>(Page 43)</i>	Future investment is required to unlock capacity constraints on the Felixstowe to Nuneaton route at Ely, Leicester, Haughley Junction and Ely to Soham to provide capacity for long term freight growth between Northwest England and Felixstowe. Electrification of the route would also improve long term freight viability. It is essential that East West Rail has the capacity to accommodate rail freight. Between HS2 Phase 1 opening and the completion of Phase 2b sufficient network capacity needs to be retained for freight between Crewe and Weaver Junction.
Parkside to London Gateway <i>(Page 43)</i>	Future investment is required on the NLL and/or Gospel Oak to Barking route to provide additional freight capacity for long term freight growth to/from London Gateway. Between HS2 Phase 1 opening and the completion of Phase 2b sufficient capacity needs to be retained for freight services between Crewe and Weaver Junction.
Parkside to Scotland <i>(Page 43)</i>	Future investment is required to provide long term capacity is provided north of Preston to enable the operation of anticipated HS2 extra services and allow for freight growth. This can be achieved through either four tracking parts of the WCML or the provision of dynamic passing loops.




Appendix a – Detailed timing summary sheets

We use a three-stage RAG rating to indicate where we can or cannot identify paths around the clockface

In the following tables we present our initial findings on paths between Parkside SRFI and Preston Ribble Junction, Winsford South Junction and Ordsall Lane Junction.

We provide a summary for each hour identifying the best path we have found (if it has been possible) and given it a RAG rating (see right) depending on issues with the path that are set out in the comments.

RAG Rating Key

-  A Green RAG indicates that based on the work undertaken to date, a relatively clean path has been found without significant amounts of pathing allowance.
-  An Amber RAG indicates that based on the work undertaken to date, it should be possible to achieve a path, however it is expected to require significant amounts of pathing allowance to achieve this.
-  A Red RAG indicates that based on the work undertaken to date, no path has been found or a path has been found that requires trains to stand at Newton-le-Willows Junction (Up) or Golborne Junction (Down).

Route 1: Parkside SRFI to Preston Ribble Junction

Train ID	Hour	Time (Parkside)	RAG	Comments
6Z50NH	00:00:00	00:14:30	●	Path appears possible on Wednesdays. It may conflict with 6V16DA on Mondays.
6Z51NH	01:00:00	01:53:00	●	Path appears possible.
6Z52NH	02:00:00	02:39:00	●	Path appears possible.
6Z53NH	03:00:00	03:57:00	●	Path appears possible.
6Z54NH	04:00:00	04:48:00	●	Path appears possible.
6Z55NH	05:00:00	05:34:00	●	Path appears possible.
6Z56NH	06:00:00	06:51:00	●	Path available, but requires train to be held for 5.5 mins at Farington Curve Junction, with allowances added elsewhere.
6Z57NH	07:00:00	07:32:00	●	Path available, but requires train to be held for 2 mins at Ribble Junction. It would conflict with 4S53LA on Thursdays.
6Z58NH	08:00:00	08:51:50	●	Path available, but requires train to be held for 2.5 mins at Ribble Junction, with allowances added elsewhere.
6Z59NH	09:00:00	n/a	●	No path found in this hour. 6M90FC takes the standard path used.
6Z60NH	10:00:00	10:35:00	●	Path available, but requires train to be held for 4 mins at Golborne Jn.
6Z61NH	11:00:00	11:53:00	●	Path available, but requires train to be held 1.5 mins before Golborne Jn and 11 mins before Farington Curve Junction.
6Z62NH	12:00:00	12:53:00	●	Path available, but requires train to be held for 3 mins at Ribble Junction, with allowances added elsewhere.
6Z63NH	13:00:00	13:36:00	●	Path appears possible.
6Z64NH	14:00:00	14:53:00	●	Path available, but requires train to be held for 3 mins at Ribble Junction.
6Z65NH	15:00:00	15:35:00	●	Path available, but requires train to be held for 4.5 mins at Golborne Jn.
6Z66NH	16:00:00	n/a	●	No path found in this hour. There are difficulties pathing trains through Wigan, with 1N80FB and 1S02NH causing issues with the path.
6Z67NH	17:00:00	17:31:00	●	Path available, but requires train to be held for 3 minutes before Ribble Junction, with allowances added elsewhere.
6Z68NH	18:00:00	18:51:30	●	Path available, but requires pathing allowances at three locations. It may conflict with 6F29PD on Mondays.
6Z69NH	19:00:00	n/a	●	No path found in this hour. There are difficulties finding a path out of Parkside SRFI, but otherwise no issues.
6Z70NH	20:00:00	n/a	●	No path found in this hour. Most likely option is constrained by 4M80FQ and 1N84FB at Golborne Junction and on the 2-track section.
6Z71NH	21:00:00	n/a	●	No path found in this hour. 5H94FW causes issues between Golborne Junction and Lowton Junction in the best path available.
6Z72NH	22:00:00	22:59:00	●	Path appears possible.
6Z73NH	23:00:00	23:59:30	●	Path appears possible.

- Early morning and late evening paths appear feasible but need to consider EAS requirements.
- Paths in the rest of the day, where found, generally require some pathing allowances en-route.
- One train (6Z61NH) requires being held before Golborne Junction which is expected to foul Lowton Junction.
- Issues north of Preston Ribble Junction are not considered in this analysis.

Route 1: Preston Ribble Junction to Parkside SRFI

Train ID	Hour	Time (Ribble Jn)	RAG	Comments
6Y51NH	00:00:00	00:39:00	●	Path appears possible.
6Y52NH	01:00:00	01:41:00	●	Path appears possible.
6Y53NH	02:00:00	02:43:00	●	Path appears possible.
6Y54NH	03:00:00	03:41:00	●	Path appears possible.
6Y55NH	04:00:00	04:41:00	●	Path appears possible.
6Y56NH	05:00:00	05:43:30	●	Path available, but requires to be held before Wigan NW for 2.5 mins and before Parkside SRFI for 0.5 mins.
6Y57NH	06:00:00	n/a	●	No path found in this hour. 5F17FB and 2F17FA conflict with standard path. Difficult to get into Parkside SRFI.
6Y58NH	07:00:00	07:12:30	●	Path available, but requires to be held before Balshaw Lane Junction for 5 mins and before Parkside SRFI for 0.5 mins.
6Y59NH	08:00:00	08:16:30	●	Path available on Wednesdays, but requires to be held before Parkside SRFI for 0.5 mins. It may conflict with 4M35FA other days.
6Y60NH	09:00:00	09:55:00	●	Path available, but requires to be held before Balshaw Lane Junction for 5 mins, with allowances at other locations.
6Y61NH	10:00:00	n/a	●	No path found in this hour. Possible path needs to be held before Parkside SRFI for 4.5 mins. Likely to be possible in May 22 if Manchester
6Y62NH	11:00:00	11:55:00	●	Path available, but requires to be held before Balshaw Lane Junction for 4 mins. Also may conflict with 1U95FA.
6Y63NH	12:00:00	12:39:00	●	Path available, but requires to be held before Golborne Junction for 6 mins.
6Y64NH	13:00:00	n/a	●	No path found in this hour. 4M44EA conflicts with the standard path.
6Y65NH	14:00:00	14:16:00	●	Path available, but requires to be held before Balshaw Lane Junction for 2 mins. Also may conflict with 2N88FA.
6Y66NH	15:00:00	n/a	●	No path found in this hour. Possible path needs to be held before Parkside SRFI for 1.5 mins. Likely to be possible in May 22 if Barrow/Win
6Y67NH	16:00:00	16:16:00	●	Path available. May conflict with 2N80FB.
6Y68NH	17:00:00	17:55:00	●	Path available, but requires to be held before Balshaw Lane Junction for 4 mins.
6Y69NH	18:00:00	18:31:30	●	Path appears possible on Wednesdays. It may conflict with 6F29PD on Mondays.
6Y70NH	19:00:00	19:16:30	●	Path available, but requires to be held before Balshaw Lane Junction for 3 mins. Also may conflict with 2N83FB.
6Y71NH	20:00:00	21:01:30	●	Path available, but requires to be held before Balshaw Lane Junction for 1.5 mins.
6Y72NH	21:00:00	21:41:30	●	Path available, but requires to be held before Wigan NW for 4 mins (this could be at Wigan or held elsewhere).
6Y73NH	22:00:00	22:17:30	●	Path appears possible on Wednesdays. It may conflict with 6S89NH on Mondays.
6Y74NH	23:00:00	23:42:30	●	Path appears possible.

- Early morning and late evening paths appear feasible but need to consider EAS requirements.
- Path in the rest of the day, where found, generally require some pathing allowances en-route.
- Six trains need to be held at Newton-le-Willows Junction, which will foul Lowton Junction. In some cases this causes a conflict with other services.
- Issues north of Preston Ribble Junction are not considered in this analysis.

Route 2: Parkside SRFI to Ordsall Lane Junction

Train ID	Hour	Time (Parkside)	RAG	Comments
6Z39DB	00:00:00	00:34:00	●	Path appears possible.
6Z41DB	01:00:00	01:25:00	●	Path appears possible.
6Z43DB	02:00:00	02:25:00	●	Path appears possible.
6Z45DB	03:00:00	03:19:00	●	Path appears possible.
6Z47DB	04:00:00	04:25:00	●	Path appears possible.
6Z00DB	05:00:00	05:25:00	●	Path appears possible.
6Z02DB	06:00:00	06:22:00	●	Path appears possible.
6Z04DB	07:00:00	07:26:00	●	Path appears possible.
6Z06DB	08:00:00	08:50:00	●	Path appears possible.
6Z08DB	09:00:00	09:21:30	●	Path appears possible.
6Z10DB	10:00:00	10:22:00	●	Path appears possible.
6Z12DB	11:00:00	11:21:00	●	Path appears possible.
6Z14DB	12:00:00	12:49:00	●	Path appears possible.
6Z16DB	13:00:00	13:21:00	●	Path appears possible.
6Z18DB	14:00:00	14:21:30	●	Path appears possible.
6Z20DB	15:00:00	15:21:30	●	Path appears possible.
6Z22DB	16:00:00	16:21:00	●	Path appears possible.
6Z24DB	17:00:00	17:21:00	●	Path appears possible.
6Z26DB	18:00:00	18:21:30	●	Path appears possible.
6Z28DB	19:00:00	19:21:00	●	Path appears possible.
6Z30DB	20:00:00	20:21:30	●	Path appears possible.
6Z32DB	21:00:00	21:16:00	●	Path appears possible.
6Z35DB	22:00:00	22:38:00	●	Path appears possible.
6Z37DB	23:00:00	23:21:00	●	Path appears possible.

- The indicative path analysis indicates that it does appear possible to find clean paths to Ordsall Lane Junction from Parkside SRFI, although in some hours there are conflicting trains that take up the standard path.
- EAS possessions will mean that some paths will not be available every six weeks.
- Our scope boundary ends at Ordsall Lane Junction and beyond that it is expected to be more difficult to find paths through Manchester. Issues beyond Ordsall Lane Junction are not considered in this analysis.

Route 2: Ordsall Lane Junction to Parkside SRFI

Train ID	Hour	Time (Ordsall Lane Jn)	RAG	Comments
6Z15DD	00:00:00	00:37:00	●	Path appears possible.
6Z17DD	01:00:00	01:23:00	●	Path appears possible.
6Z19DC	02:00:00	02:10:00	●	Path appears possible.
6Z21DC	03:00:00	03:22:00	●	Path appears possible.
6Z23DC	04:00:00	04:00:00	●	Path appears possible.
6Z01DB	05:00:00	05:07:00	●	Path appears possible.
6Z03DB	06:00:00	06:40:00	●	Path appears possible.
6Z05DB	07:00:00	07:42:00	●	Path appears possible.
6Z07DB	08:00:00	08:42:00	●	Path appears possible.
6Z09DB	09:00:00	09:42:00	●	Path appears possible.
6Z11DB	10:00:00	10:42:00	●	Path appears possible.
6Z13DB	11:00:00	11:42:00	●	Path appears possible.
6Z15DB	12:00:00	N/A	●	No path found in this hour. 6M36 takes up the standard path used.
6Z17DB	13:00:00	13:42:00	●	Path appears possible.
6Z19DB	14:00:00	14:42:00	●	Path appears possible.
6Z21DB	15:00:00	15:42:00	●	Path appears possible.
6Z23DB	16:00:00	16:42:00	●	Path appears possible.
6Z25DB	17:00:00	17:42:00	●	Path appears possible.
6Z27DB	18:00:00	18:43:30	●	Path appears possible.
6Z29DB	19:00:00	19:42:00	●	Path appears possible.
6Z31DB	20:00:00	20:42:00	●	Path appears possible.
6Z33DB	21:00:00	21:42:00	●	Path appears possible.
6Z15DC	22:00:00	22:41:00	●	Path appears possible.
6Z17DC	23:00:00	23:39:00	●	Path appears possible.

- The indicative path analysis indicates that it does appear possible to find clean paths to Parkside SRFI from Ordsall Lane Junction in almost all hours.
- EAS possessions will mean that some paths will not be available every six weeks.
- Our scope boundary ends at Ordsall Lane Junction and beyond that it is expected to be more difficult to find paths through Manchester. Issues beyond Ordsall Lane Junction are not considered in this analysis.

Route 3: Parkside SRFI to Winsford South Junction

Train ID	Hour	Time (Parkside)	RAG	Comments
6Z78DC	00:00:00	00:17:00	●	Path appears possible.
6Z80DD	01:00:00	01:32:00	●	Path appears possible.
6Z82DC	02:00:00	02:58:00	●	Path appears possible.
6Z84DC	03:00:00	03:10:00	●	Path appears possible.
6Z86DC	04:00:00	04:50:00	●	Path appears possible.
6Z60DB	05:00:00	05:00:00	●	Path appears possible.
6Z62DB	06:00:00	06:40:00	●	Path appears possible with 6 minutes pathing time following OK40 to Winsford
6Z64DB	07:00:00	07:56:00	●	Path appears possible.
6Z66DB	08:00:00	08:49:00	●	Path appears possible 8.5 mins pathing time overall and a slight edit to 6M34 that does not affect end to end journey time.
6Z68DB	09:00:00	n/a	●	No path found in this hour due to other freight paths.
6Z70DB	10:00:00	10:00:00	●	Path appears possible with a 12 minute pathing stop at Acton Bridge.
6Z72DB	11:00:00	n/a	●	No path found in this hour due to other freight paths.
6Z74DB	12:00:00	12:48:00	●	Path appears possible with a minor change required to 6E10GB that does not affect end to end journey time.
6Z76DB	13:00:00	13:15:30	●	Path appears possible however a conflict appears on Fridays with 6K32EB FO at Acton Grange Jn.
6Z78DB	14:00:00	14:48:00	●	Path appears possible.
6Z80DC	15:00:00	n/a	●	No path found in this hour 9M56EX takes the standard path used.
6Z82DB	16:00:00	16:17:00	●	Path appears possible with a 9 minute pathing stop at Acton Bridge.
6Z84DB	17:00:00	17:50:00	●	Path appears possible
6Z86DB	18:00:00	18:47:00	●	Path appears possible however the path is taken on Fridays by 6E99 FO.
6Z88DB	19:00:00	n/a	●	No path found in this hour due to other freight paths.
6Z90DB	20:00:00	20:29:00	●	Path appears possible however the path is taken on Fridays by OK80 FO.
6Z92DB	21:00:00	21:41:00	●	Path appears possible with 3 minutes pathing at Acton Grange Junction and 1.5 minutes pathing time at Weaver Junction.
6Z94DB	22:00:00	22:27:00	●	Path appears possible however the path is taken on Fridays by 6O46 FO.
6Z96DB	23:00:00	23:00:00	●	Path appears possible with 4 minutes pathing time.

- A number of paths appear feasible throughout the day.
- Parkside to Winsford South Jn is mostly 2-track with a number of conflict points, making it difficult to find clean paths.
- EAS possessions will mean that some paths will not be available every six weeks.

Route 3: Winsford South Junction to Parkside SRFI

Train ID	Hour	Time (Winsford)	RAG	Comments
6Z79DD	00:00:00	00:29:30	●	Path appears possible.
6Z81DD	01:00:00	01:38:30	●	Path appears possible.
6Z83DC	02:00:00	02:58:30	●	Path appears possible.
6Z85DC	03:00:00	03:49:30	●	Path appears possible.
6Z87DC	04:00:00	04:30:30	●	Path appears possible.
6Z61DB	05:00:00	05:33:30	●	Path appears possible.
6Z63DB	06:00:00	06:51:30	●	Path appears possible. Requires pathing time in 4S50LA to be moved but no impact on end to end journey times.
6Z65DB	07:00:00	07:33:00	●	Path appears possible. Path not available on Tuesdays and Thursdays due to 6M14 TThO
6Z67DB	08:00:00	08:37:00	●	Path appears possible. Would conflict with 5P76 FO on Fridays
6Z69DB	09:00:00	n/a	●	No path found in this hour due to volume of other freight services.
6Z99DB	10:00:00	n/a	●	No path found in this hour due to volume of other freight services.
6Z71DB	11:00:00	11:07:30	●	Path appears possible. Requires 3 minutes pathing time. Path not available on Tuesdays when 1Q47 operates.
6Z73DB	12:00:00	12:08:00	●	Path appears possible. Requires 11 minutes pathing time. Pathing time in 6M44 to be moved but no impact on end to end journey times.
6Z75DB	13:00:00	13:08:00	●	Path appears possible. Requires 5.5 minutes pathing time.
6Z77DB	14:00:00	14:07:30	●	Path appears possible with 0.5 mins pathing at Winwick Jn
6Z79DC	15:00:00	15:07:00	●	Path appears possible with 0.5 mins pathing at Winwick Jn
6Z81DB	16:00:00	n/a	●	No path found in this hour. Close to a pathway but unable to find a pathway from Newton-le-Willows to Parkside Jn
6Z83DB	17:00:00	17:08:30	●	Path appears possible. Requires 9 minute dwell at Warrington Bank Quay.
6Z85DB	18:00:00	18:08:30	●	Path appears possible with 5 mins pathing time.
6Z87DB	19:00:00	n/a	●	No path found in this hour. 1F23FW conflicts with the standard path.
6Z89DB	20:00:00	20:24:30	●	No path found in this hour due to volume of other services.
6Z91DB	21:00:00	21:19:30	●	Path appears possible. Requires minor change to 4S45 and 3H04 with no change to overall journey time in either. Can not run on Fridays due to 1P05 Euston - Blackpool North
6Z40ZZ	22:00:00	22:00:30	●	Path appears possible.
6Z42ZZ	23:00:00	23:58:30	●	Path appears possible.

- A number of paths appear feasible throughout the day.
- Winsford South Jn to Parkside is mostly 2-track with a number of conflict points, making it difficult to find clean paths.
- EAS possessions will mean that some paths will not be available every six weeks.

Appendix b – Alternative Timing Load Analysis

Alternative Timing Load Analysis

The alternative timing load analysis has been undertaken using a RAG Rating:



A Green RAG indicates that a particular timing load can run to its allocated SRTs and therefore have a shorter end to end journey time than the Class 6, 60 mph, 1400t timing load.



A Yellow/Amber RAG indicates that the path identified using the Class 6, 60 mph, 1400t timing load can operate with the timing load stated, but there is unlikely to be an reduction in end to end journey times due to the need for pathing time in the schedule.



A Red RAG indicates that there is unlikely to be a path in this hour for the timing load being analysed.

The results show that all paths identified for the Class 6, 60 mph, 1400t timing load can be operated by lighter and/or faster timing loads. For services at the starts/ends of the day it is likely that these paths can reduce journey times compared to the original path identified. During the middle of the day it is likely that pathing time is required and any reduction in end to end journey time is minimal. The heavier 2000t timing load can operate around half of the paths identified with the 1400t timing load.

Route 1: Parkside SRFI to Preston Ribble Junction

Hour	Time (Parkside)	Express Class 1: -- e.g. Express parcels	Low Class 4: Class 66 800t at 75 mph	Medium Class 4: Class 66 1400t at 75 mph	High Class 4: Class 66 2000t at 75 mph	Low Class 6: Class 66 800t at 60 mph	Medium Class 6: Class 66 1400t at 60 mph	High Class 6: Class 66 2000t at 60 mph
00:00:00	00:14:30	●	●	●	●	●	●	●
01:00:00	01:53:00	●	●	●	●	●	●	●
02:00:00	02:39:00	●	●	●	●	●	●	●
03:00:00	03:57:00	●	●	●	●	●	●	●
04:00:00	04:48:00	●	●	●	●	●	●	●
05:00:00	05:34:00	●	●	●	●	●	●	●
06:00:00	06:51:00	●	●	●	●	●	●	●
07:00:00	07:32:00	●	●	●	●	●	●	●
08:00:00	08:51:50	●	●	●	●	●	●	●
09:00:00	n/a	●	●	●	●	●	●	●
10:00:00	10:35:00	●	●	●	●	●	●	●
11:00:00	11:53:00	●	●	●	●	●	●	●
12:00:00	12:53:00	●	●	●	●	●	●	●
13:00:00	13:36:00	●	●	●	●	●	●	●
14:00:00	14:53:00	●	●	●	●	●	●	●
15:00:00	15:35:00	●	●	●	●	●	●	●
16:00:00	n/a	●	●	●	●	●	●	●
17:00:00	17:31:00	●	●	●	●	●	●	●
18:00:00	18:51:30	●	●	●	●	●	●	●
19:00:00	n/a	●	●	●	●	●	●	●
20:00:00	n/a	●	●	●	●	●	●	●
21:00:00	n/a	●	●	●	●	●	●	●
22:00:00	22:59:00	●	●	●	●	●	●	●
23:00:00	23:59:30	●	●	●	●	●	●	●

Route 1: Preston Ribble Junction to Parkside SRFI

Hour	Time (Ribble Jn)	Express Class 1: -- e.g. Express parcels	Low Class 4: Class 66 800t at 75 mph	Medium Class 4: Class 66 1400t at 75 mph	High Class 4: Class 66 2000t at 75 mph	Low Class 6: Class 66 800t at 60 mph	Medium Class 6: Class 66 1400t at 60 mph	High Class 6: Class 66 2000t at 60 mph
00:00:00	00:39:00	●	●	●	●	●	●	●
01:00:00	01:41:00	●	●	●	●	●	●	●
02:00:00	02:43:00	●	●	●	●	●	●	●
03:00:00	03:41:00	●	●	●	●	●	●	●
04:00:00	04:41:00	●	●	●	●	●	●	●
05:00:00	05:43:30	●	●	●	●	●	●	●
06:00:00	n/a	●	●	●	●	●	●	●
07:00:00	07:14:30	●	●	●	●	●	●	●
08:00:00	08:16:30	●	●	●	●	●	●	●
09:00:00	09:55:00	●	●	●	●	●	●	●
10:00:00	n/a	●	●	●	●	●	●	●
11:00:00	11:55:00	●	●	●	●	●	●	●
12:00:00	12:39:00	●	●	●	●	●	●	●
13:00:00	n/a	●	●	●	●	●	●	●
14:00:00	14:16:00	●	●	●	●	●	●	●
15:00:00	n/a	●	●	●	●	●	●	●
16:00:00	16:16:00	●	●	●	●	●	●	●
17:00:00	17:55:00	●	●	●	●	●	●	●
18:00:00	18:31:30	●	●	●	●	●	●	●
19:00:00	19:16:30	●	●	●	●	●	●	●
20:00:00	21:01:30	●	●	●	●	●	●	●
21:00:00	21:41:30	●	●	●	●	●	●	●
22:00:00	22:17:30	●	●	●	●	●	●	●
23:00:00	23:42:30	●	●	●	●	●	●	●

- The results show that all paths identified for the Class 6, 60 mph, 1400t timing load can be operated by lighter and/or faster timing loads. For services at the starts/ends of the day it is likely that these paths can reduce journey times compared to the original path identified. During the middle of the day it is likely that pathing time is required and any reduction in end to end journey time is minimal. The heavier 2000t timing load can operate around half of the paths identified with the 1400t timing load.

Route 2: Parkside SRFI to Ordsall Lane Junction

Hour	Time (Parkside)	Express Class 1: – e.g. Express parcels	Low Class 4: Class 66 800t at 75 mph	Medium Class 4: Class 66 1400t at 75 mph	High Class 4: Class 66 2000t at 75 mph	Low Class 6: Class 66 800t at 60 mph	Medium Class 6 Class 66 1400t at 60 mph	High Class 6: Class 66 2000t at 60 mph
00:00:00	00:34:00	●	●	●	●	●	●	●
01:00:00	01:25:00	●	●	●	●	●	●	●
02:00:00	02:29:30	●	●	●	●	●	●	●
03:00:00	03:20:00	●	●	●	●	●	●	●
04:00:00	04:25:00	●	●	●	●	●	●	●
05:00:00	05:25:00	●	●	●	●	●	●	●
06:00:00	06:22:00	●	●	●	●	●	●	●
07:00:00	07:26:00	●	●	●	●	●	●	●
08:00:00	08:50:00	●	●	●	●	●	●	●
09:00:00	09:21:30	●	●	●	●	●	●	●
10:00:00	10:22:00	●	●	●	●	●	●	●
11:00:00	11:21:00	●	●	●	●	●	●	●
12:00:00	12:49:00	●	●	●	●	●	●	●
13:00:00	13:21:00	●	●	●	●	●	●	●
14:00:00	14:21:30	●	●	●	●	●	●	●
15:00:00	15:21:30	●	●	●	●	●	●	●
16:00:00	16:21:00	●	●	●	●	●	●	●
17:00:00	17:21:00	●	●	●	●	●	●	●
18:00:00	18:21:30	●	●	●	●	●	●	●
19:00:00	19:21:00	●	●	●	●	●	●	●
20:00:00	20:21:30	●	●	●	●	●	●	●
21:00:00	21:16:30	●	●	●	●	●	●	●
22:00:00	22:38:30	●	●	●	●	●	●	●
23:00:00	23:21:00	●	●	●	●	●	●	●

Route 2: Ordsall Lane Junction to Parkside SRFI

Hour	Time (Ordsall Lane Jn)	Express Class 1: – e.g. Express parcels	Low Class 4: Class 66 800t at 75 mph	Medium Class 4: Class 66 1400t at 75 mph	High Class 4: Class 66 2000t at 75 mph	Low Class 6: Class 66 800t at 60 mph	Medium Class 6 Class 66 1400t at 60 mph	High Class 6: Class 66 2000t at 60 mph
00:00:00	00:37:00	●	●	●	●	●	●	●
01:00:00	01:23:00	●	●	●	●	●	●	●
02:00:00	02:10:00	●	●	●	●	●	●	●
03:00:00	03:22:30	●	●	●	●	●	●	●
04:00:00	04:00:00	●	●	●	●	●	●	●
05:00:00	05:07:00	●	●	●	●	●	●	●
06:00:00	06:40:00	●	●	●	●	●	●	●
07:00:00	07:42:00	●	●	●	●	●	●	●
08:00:00	08:42:00	●	●	●	●	●	●	●
09:00:00	09:42:00	●	●	●	●	●	●	●
10:00:00	10:42:00	●	●	●	●	●	●	●
11:00:00	11:42:00	●	●	●	●	●	●	●
12:00:00	N/A	●	●	●	●	●	●	●
13:00:00	13:42:00	●	●	●	●	●	●	●
14:00:00	14:42:00	●	●	●	●	●	●	●
15:00:00	15:42:00	●	●	●	●	●	●	●
16:00:00	16:42:00	●	●	●	●	●	●	●
17:00:00	17:42:00	●	●	●	●	●	●	●
18:00:00	18:43:30	●	●	●	●	●	●	●
19:00:00	19:42:00	●	●	●	●	●	●	●
20:00:00	20:42:00	●	●	●	●	●	●	●
21:00:00	21:42:00	●	●	●	●	●	●	●
22:00:00	22:41:30	●	●	●	●	●	●	●
23:00:00	23:39:00	●	●	●	●	●	●	●

- The results show that all paths identified for the Class 6, 60 mph, 1400t timing load can be operated by lighter and/or faster timing loads. For services at the starts/ends of the day it is likely that these paths can reduce journey times compared to the original path identified. During the middle of the day it is likely that pathing time is required and any reduction in end to end journey time is minimal. The heavier 2000t timing load can operate around half of the paths identified with the 1400t timing load.

Route 3: Parkside SRFI to Winsford South Junction

Hour	Time (Parkside)	Express Class 1: - e.g. Express parcels	Low Class 4: Class 66 800t at 75 mph	Medium Class 4: Class 66 1400t at 75 mph	High Class 4: Class 66 2000t at 75 mph	Low Class 6: Class 66 800t at 60 mph	Medium Class 6 Class 66 1400t at 60 mph	High Class 6: Class 66 2000t at 60 mph
00:00:00	00:17:00	●	●	●	●	●	●	●
01:00:00	01:32:00	●	●	●	●	●	●	●
02:00:00	02:58:00	●	●	●	●	●	●	●
03:00:00	03:10:00	●	●	●	●	●	●	●
04:00:00	04:50:00	●	●	●	●	●	●	●
05:00:00	05:00:00	●	●	●	●	●	●	●
06:00:00	06:40:00	●	●	●	●	●	●	●
07:00:00	07:56:00	●	●	●	●	●	●	●
08:00:00	08:49:00	●	●	●	●	●	●	●
09:00:00	n/a	●	●	●	●	●	●	●
10:00:00	10:00:00	●	●	●	●	●	●	●
11:00:00	n/a	●	●	●	●	●	●	●
12:00:00	12:48:00	●	●	●	●	●	●	●
13:00:00	13:15:30	●	●	●	●	●	●	●
14:00:00	14:48:00	●	●	●	●	●	●	●
15:00:00	n/a	●	●	●	●	●	●	●
16:00:00	16:17:00	●	●	●	●	●	●	●
17:00:00	17:50:00	●	●	●	●	●	●	●
18:00:00	18:47:00	●	●	●	●	●	●	●
19:00:00	n/a	●	●	●	●	●	●	●
20:00:00	20:29:00	●	●	●	●	●	●	●
21:00:00	21:41:00	●	●	●	●	●	●	●
22:00:00	22:27:00	●	●	●	●	●	●	●
23:00:00	23:00:00	●	●	●	●	●	●	●

Route 3: Winsford South Junction to Parkside SRFI

Hour	Time (Parkside)	Express Class 1: - e.g. Express parcels	Low Class 4: Class 66 800t at 75 mph	Medium Class 4: Class 66 1400t at 75 mph	High Class 4: Class 66 2000t at 75 mph	Low Class 6: Class 66 800t at 60 mph	Medium Class 6 Class 66 1400t at 60 mph	High Class 6: Class 66 2000t at 60 mph
00:00:00	00:29:30	●	●	●	●	●	●	●
01:00:00	01:38:30	●	●	●	●	●	●	●
02:00:00	02:58:30	●	●	●	●	●	●	●
03:00:00	03:49:30	●	●	●	●	●	●	●
04:00:00	04:30:30	●	●	●	●	●	●	●
05:00:00	05:33:30	●	●	●	●	●	●	●
06:00:00	06:51:30	●	●	●	●	●	●	●
07:00:00	07:33:00	●	●	●	●	●	●	●
08:00:00	08:37:00	●	●	●	●	●	●	●
09:00:00	n/a	●	●	●	●	●	●	●
10:00:00	n/a	●	●	●	●	●	●	●
11:00:00	11:07:30	●	●	●	●	●	●	●
12:00:00	12:08:00	●	●	●	●	●	●	●
13:00:00	13:08:00	●	●	●	●	●	●	●
14:00:00	14:07:30	●	●	●	●	●	●	●
15:00:00	15:07:00	●	●	●	●	●	●	●
16:00:00	n/a	●	●	●	●	●	●	●
17:00:00	17:08:30	●	●	●	●	●	●	●
18:00:00	18:08:30	●	●	●	●	●	●	●
19:00:00	n/a	●	●	●	●	●	●	●
20:00:00	20:24:30	●	●	●	●	●	●	●
21:00:00	21:19:30	●	●	●	●	●	●	●
22:00:00	22:00:30	●	●	●	●	●	●	●
23:00:00	23:58:30	●	●	●	●	●	●	●

- The results show that all paths identified for the Class 6, 60 mph, 1400t timing load can be operated by lighter and/or faster timing loads. For services at the starts/ends of the day it is likely that these paths can reduce journey times compared to the original path identified. During the middle of the day it is likely that pathing time is required and any reduction in end to end journey time is minimal. The heavier 2000t timing load can operate around half of the paths identified with the 1400t timing load.

Appendix c – Future Scenario Analysis

Description of changes to the train services

Limited differences between December 2019 and May 2022 timetables.

Diversion of NT Barrow – Airport service to run via Bolton and withdrawal of Preston – Manchester service are the biggest changes.

TfW North Wales – Manchester/Airport service diverted via Altrincham and Stockport. Replaced by 2nd Chester – Leeds service at 30 minute interval, which also replaces peak TfW Chester – Manchester services.

The limited southbound Liverpool – Glasgow (via WCML) service is diverted via St Helens Central.

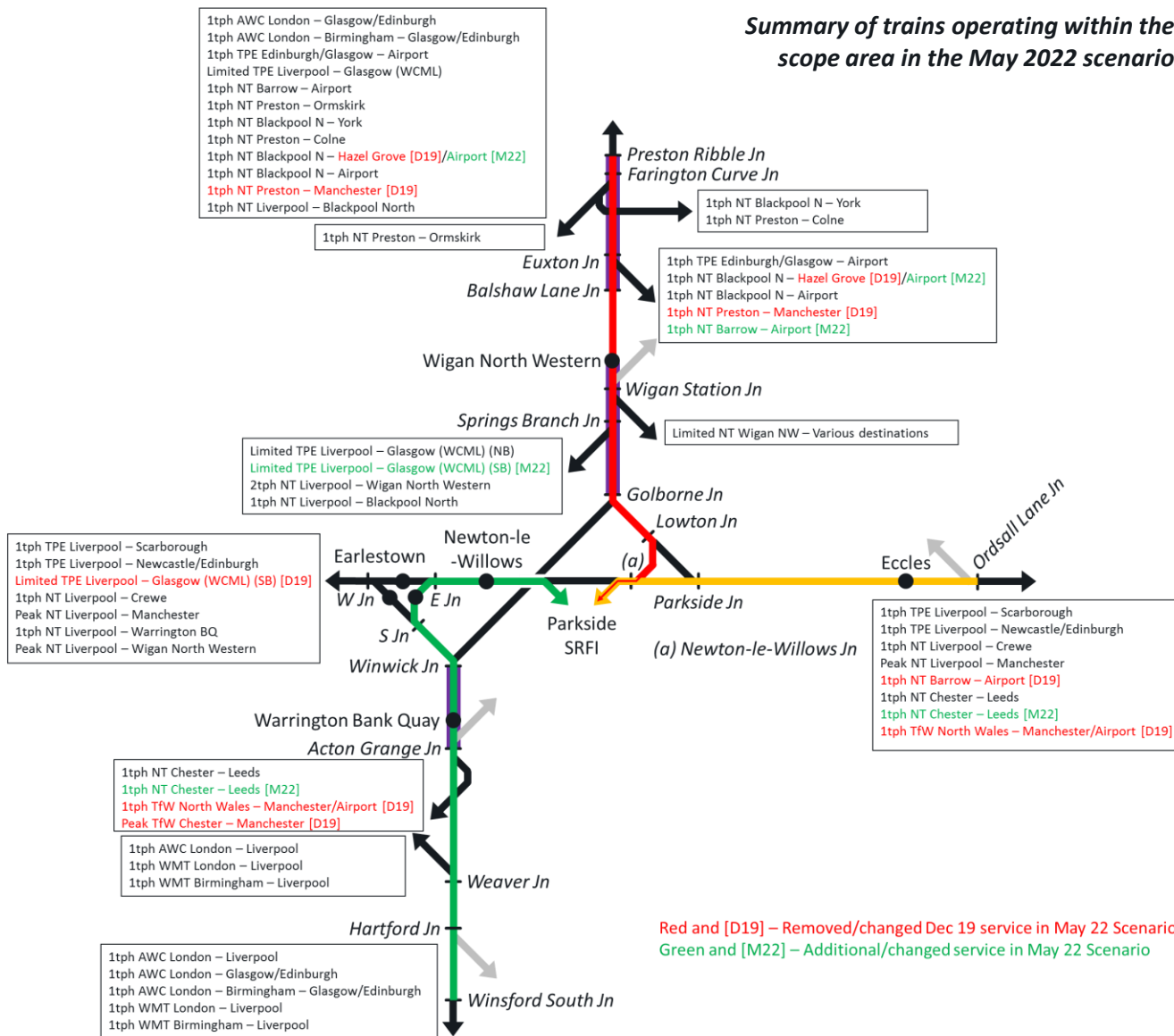
Impact

The changes in this scenario should have a limited impact on the ability to find paths. The biggest change is the re-routing of the NT Barrow – Airport service away from the Chat Moss Line, which should make it easier to find paths to the north from Parkside.

The diversion of the limited TPE Liverpool – Glasgow service via St. Helens Central may introduce new conflicts at Wigan, however as this is only a limited service it should have a relatively small impact on the ability to find paths.

Further detail is provided on the next page.

Summary of trains operating within the scope area in the May 2022 scenario



Scenario b) May 2022 Timetable (Baseline+)

The table below shows the potential impact of the changes to the May 2022 timetable structure on our Dec 19 indicative paths.

Service Change	Impact on Indicative Paths
Diversion of Barrow – Windermere via Bolton and removal of Preston – Manchester	<p>Route 1: The change should have a positive impact on finding paths.</p> <ul style="list-style-type: none"> North of Euxton Junction there is 1tph fewer, releasing paths (Down direction Preston – Manchester service mainly uses Slow Lines). The Barrow – Windermere uses the Fast Lines, therefore additional crossing moves at Euxton Junction should have limited impact. The reduction of 1tph between Euxton Junction and Golborne Junction provides additional paths on this section of route (containing a 7 mile double track section). The line between Lowton Junction and Golborne Junction (with the single lead connection) is a constraint, therefore removing the main passenger service on this section makes finding paths easier. <p>Route 2: The change has potential for positive impact on finding paths, but new crossing moves need considering.</p> <ul style="list-style-type: none"> The reduction of 1tph between Ordsall Lane Junction and Parkside Junction should help in finding paths. Additional crossing moves at Ordsall Lane Junction might impact on finding paths.
Diversion of North Wales – Manchester/Airport via Altrincham and Stockport and doubling of Leeds – Chester frequency	<p>Routes 1, 2 and 3: The change should have limited impact on finding paths.</p> <ul style="list-style-type: none"> Acton Grange Junction – Earlestown – Ordsall Lane Junction has the same quantum of trains. The move to a 30 minute interval service between these locations could impact the paths in a positive or negative way.
Diversion of southbound Liverpool – Glasgow via St. Helens Central	<p>Route 1: The change will make it more difficult to find freight paths (limited impact).</p> <ul style="list-style-type: none"> Up services will need to cross Down paths south of Wigan which could impact the indicative paths. <p>Routes 1, 2 and 3: The change should have a positive impact on finding paths (limited impact).</p> <ul style="list-style-type: none"> Reduction in paths from Springs Branch Junction – Golborne Junction – Earlestown and fewer crossing moves at Newton-le-Willows Junction and Earlestown East Junction should help in finding paths.

Scenario c) HS2 Timetable (ITSS Do Min)

The arrival of HS2 Phase 2b results in significant changes on the WCML and other routes.

London/Birmingham – Glasgow/Edinburgh services transfer to HS2 but are replaced by new HS2 and AWC services on the WCML.

From the junction with HS2 near Wigan to Preston, 3 additional paths are needed for HS2 and new AWC services.

From Weaver Junction to Winsford South Junction, 1 additional path is needed for HS2 and new AWC services.

We have assumed that the May 2022 changes to the Barrow – Airport, Preston – Manchester, Chester – Leeds and North Wales – Manchester/Airport services are retained (these changes are not in the ITSS Do Minimum).

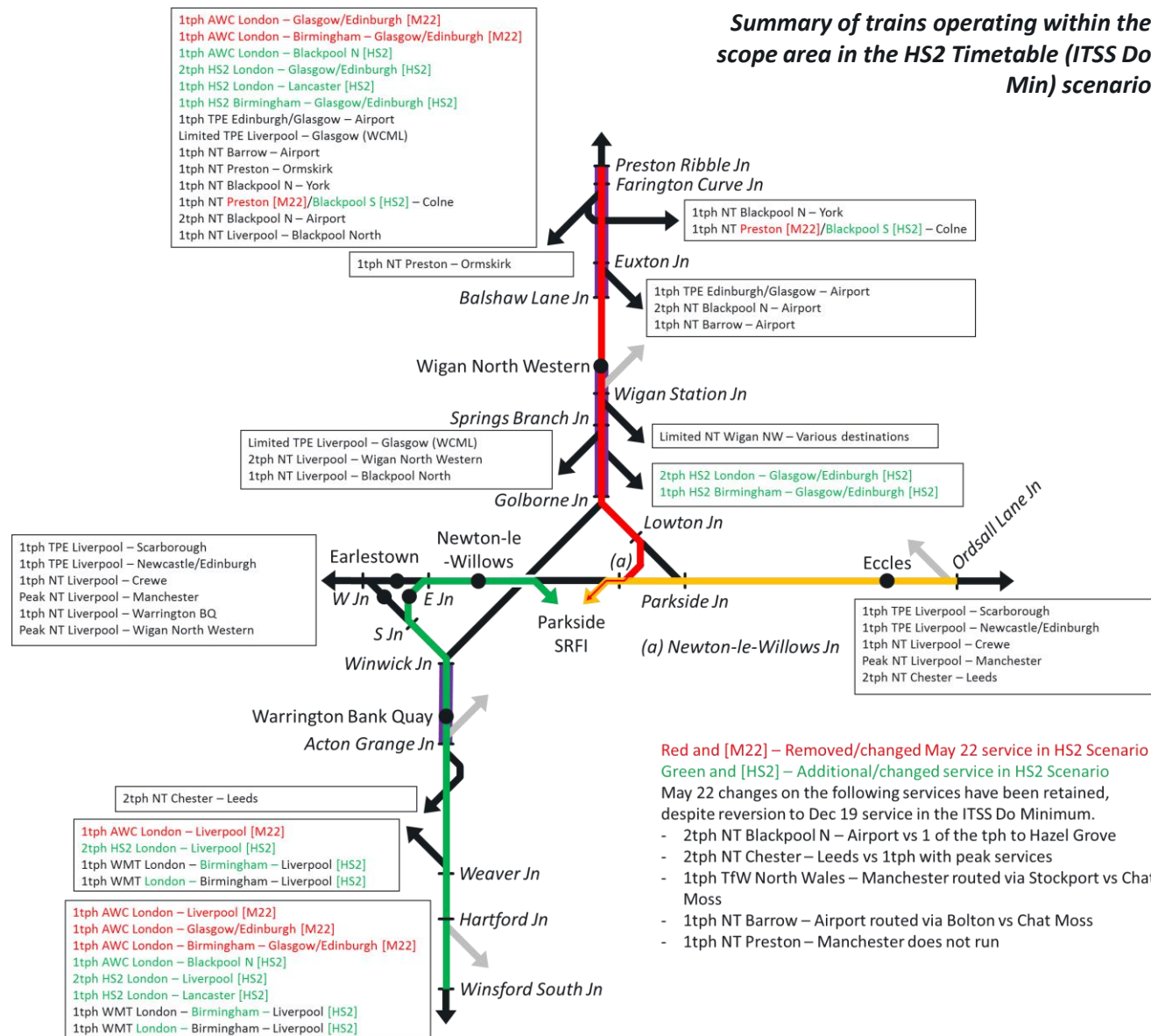
Impact

This scenario has more of an impact than Scenario b. North of the junction with HS2 south of Wigan there will be three additional passenger paths per hour which will make finding freight paths more difficult.

On the southern section, an additional 1tph to Liverpool will make the highly utilised section of route south of Weaver Junction even busier, which will make it more difficult to find paths.

Infrastructure interventions may need considering.

Summary of trains operating within the scope area in the HS2 Timetable (ITSS Do Min) scenario



Scenario c) HS2 Timetable (ITSS Do Min)

The table below shows the potential impact of the changes to the HS2 timetable structure on our indicative Dec 19 paths.

Timetable Change	Impact on Indicative Paths
<p>3tph HS2 services to Scotland operate between junction with HS2 near Wigan and Preston Ribble Jn, replacing 2tph AWC services to Scotland 1tph AWC London – Blackpool and 1tph HS2 service via Crewe to Lancaster added. (+3tph total)</p>	<p>Route 1: The change will make it more difficult to find freight paths.</p> <ul style="list-style-type: none"> Between the HS2 junction south of Wigan and Preston Ribble Junction there will be 3 more passenger trains per hour, around which freight paths will need to be found. If not grade separated, new junction conflicts at the HS2 junction will need to be considered. South of the new HS2 junction there are the same number of train paths to find freight paths around. <p>Route 3: The change should have limited impact on finding paths.</p> <ul style="list-style-type: none"> 2tph continue to operate between the HS2 junction south of Wigan and Winsford South Junction, therefore the changes to Scottish services and the Blackpool/Lancaster services should have a limited impact on finding freight paths.
<p>2tph HS2 services to Liverpool operate between Winsford South Jn and Weaver Jn instead of 1tph AWC service to Liverpool. (+1tph total)</p>	<p>Route 3: The change will make it more difficult to find freight paths.</p> <ul style="list-style-type: none"> Between Winsford South Junction and Weaver Junction there will be an additional passenger train per hour, around which freight paths will need to be found. The grade separated nature of Weaver Junction means that there should be no additional crossing moves at this junction.

Scenario d) NPR Timetable (ITSS NPR 17E v2)

The arrival of NPR results in TPE and some NT services on the Chat Moss Line transferring to NPR.

The removed services on Chat Moss are replaced by Liverpool – Lincoln and Liverpool – Stalybridge services, plus an additional Liverpool – Warrington Bank Quay service.

In addition, the 2tph HS2 service from Liverpool to London is moved to run via NPR.

We have assumed that with released capacity the Barrow – Airport service can be transferred back to run via Golborne Jn.

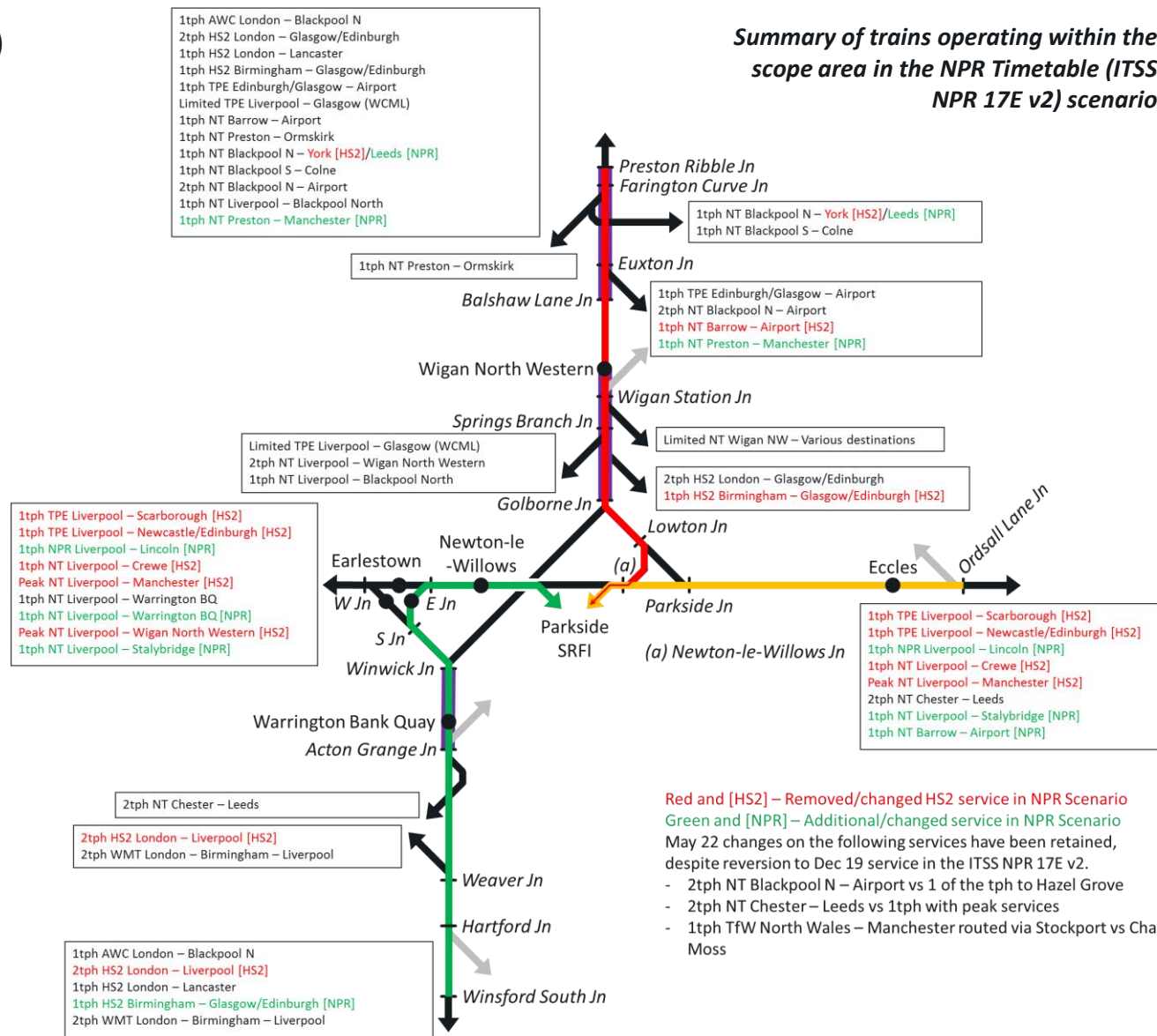
Released capacity could allow the TfW North Wales – Airport service is transferred back to the Earlestown route. The 2tph Chester – Leeds could therefore revert to 1tph with peak additional services.

Impact

Compared with Scenario c, the release of capacity due to the diversion of the Liverpool – London service may provide opportunities when finding freight paths on Route 3.

On route 1, the transfer of the Birmingham – Scotland service onto the WCML north of Crewe, although this is expected to have a limited impact on this route. If the Barrow – Airport service transfers back to the Chat Moss Line, that would have a bigger impact in finding paths.

Summary of trains operating within the scope area in the NPR Timetable (ITSS NPR 17E v2) scenario



Red and [HS2] – Removed/changed HS2 service in NPR Scenario
 Green and [NPR] – Additional/changed service in NPR Scenario
 May 22 changes on the following services have been retained, despite reversion to Dec 19 service in the ITSS NPR 17E v2.

- 2tph NT Blackpool N – Airport vs 1 of the tph to Hazel Grove
- 2tph NT Chester – Leeds vs 1tph with peak services
- 1tph TfW North Wales – Manchester routed via Stockport vs Chat Moss

Scenario d) NPR Timetable (ITSS NPR 17E v2)

The table below shows the potential impact of the changes to the to the NPR timetable structure on our indicative Dec 19 paths.

Timetable Change	Impact on Indicative Paths
2tph TPE Liverpool services transfer to NPR and 1tph Liverpool – Crewe replaced by 1tph NPR service to Lincoln and 1tph service to Stalybridge.	Routes 1, 2 and 3: The change should have limited impact on finding paths. <ul style="list-style-type: none"> This change results in the same quantum of trains between Earlestown East Junction and Ordsall Lane Junction, therefore should have a limited impact on the ability to find paths.
Liverpool – Warrington Bank Quay moves from 1tph to 2tph. (+1tph total)	Route 3: The change will make it more difficult to find freight paths. <ul style="list-style-type: none"> There are three more passenger trains per hour between Earlestown South Junction and Warrington Bank Quay/Weaver Junction around which freight paths will need to be found.
2tph HS2 service from Liverpool to London transferred to NPR. (-2tph total)	Route 3: The change should have a positive impact on finding paths. <ul style="list-style-type: none"> The diversion of London – Liverpool services away from the double track section of route between Crewe and Weaver Junction increases capacity which should help in finding paths.
1tph HS2 service between Birmingham and Scotland transfers to operate via Crewe and the WCML. (+1tph total)	Routes 1 and 3: The change will make it more difficult to find freight paths. <ul style="list-style-type: none"> This increases the number of passenger trains between Winsford South Junction and the HS2 junction south of Wigan by 1tph. Freight paths will need to be found around this service.
Reversion to Dec 19 paths for the 1tph Barrow – Airport and 1tph Preston – Manchester service. (+1tph total)	Routes 1 and 2: The change will make it more difficult to find freight paths. <ul style="list-style-type: none"> Freight paths will need to be found around an additional passenger service between Euxton Junction and Lowton Junction (Route 1) and between Parkside Junction and Ordsall Lane Junction (Route 2). An additional passenger path is provided between Preston Ribble Junction and Euxton Junction around which freight paths will need to be found.

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