

NetworkRail

*Delivering a better railway
for a better Britain
Network Specification 2019
North West & Central
(NW&C) Region*



Network Specification: North West & Central (NW&C) region

Incorporates Strategic Routes:

M: West Midlands and Chilterns

N: West Coast Main Line

O: Merseyside

*H: Cross-Pennine, Yorkshire and Humber
and North West (North West section)*

This Network Specification describes the geography of the North West & Central region, comprising two subsidiary routes North West and Central. This document outlines train service provision to meet current and future key passenger markets and traffic flows for the freight business. It identifies infrastructure choices for funders to meet future growth for the medium to long term over the next thirty years.

The Network Specification refers to Strategic Route Specifications (SRSs). SRSs cover specific sections and/or corridors of the route and are published as appendices to this document. They describe in greater detail, the current and future requirements of each SRS to inform both internal and external stakeholders of the strategy for NW&C Region.

Prior to Control Period 6 (CP6) the Long Term Planning Process produced a number of Market Studies which forecast future demand for each market. These studies informed the development of Route Studies, which set out choices for funders for ways to accommodate this level of demand.

In CP6 we are changing the way we undertake long-term planning in response to stakeholder feedback, moving away from producing 'route studies' (undertaken on a rolling basis in each Control Period) to a more flexible and 'modular' approach that develops options for funders.

This is called Continuous Modular Strategic Planning (CMSP), and is underpinned by the development of an annual plan of strategic questions which will:

- explicitly put passenger and freight users at the heart of the process;
- better address the Route's business needs;

- feed refranchising by considering strategic questions at the right time in the franchising cycle such that any choices presented can be considered before the invitation to tender stage of future franchises, capacity allocation, development and delivery, and Sale of Access Rights;
- take cognisance of and where appropriate influence industry policy in other areas such as Rolling Stock Strategy, Technology Strategy and environmental sustainability
- employ a more effective, focussed means of consultation;
- provide more granular, targeted market insight;
- develop a 'service change' pipeline for future configuration states; and
- demonstrably focus on incremental opportunities and service trade-offs.

The outputs of the process will provide options to funders which will inform the enhancement pipeline and upcoming franchise decisions.

Figure 1 - Continuous Modular Strategic Planning



Whilst CMSP has been designed to enable strategic planning activity to be undertaken without the constraint of boundaries, there are a number of planning activities where the network has to be considered as a whole. Further information is on page 13 and 14.

These range from the application of wider Government Policies and consideration of how to influence these, Environmental and Sustainability challenges, through changing population demographics to the introduction of new technologies both to the railway system itself and more widely.

The System Operator team is best placed to consider the impacts of these factors across the network both in the medium term and over the coming decades, and

accordingly we propose investing nationally in dedicated resources within the function to undertake network-wide planning activity such as:

- considering how traction policy should develop for the network given the pace of technological change and Government challenge in relation to diesel traction;
- considering wider climate change issues and network and system resilience;
- maintaining a rolling look-ahead to understand how the demographics of society, and travel markets (including those wider than the rail sector), might be affected by areas such as changing working practices, an ageing population and continued advancement in technology; and
- considering the impact of changes to other transport modes such as electronic cars and then potentially fully autonomous vehicles with the potential to provide Transport as a Service.

Strategic Route context

The North West & Central Region (NW&C) is the biggest single route within Network Rail and covers over 24 per cent of the national rail network.

The NW&C Route;

- Is 24 % of Britain's railway
- Runs around 6,700 train services each weekday
- Generates nearly 250m annual passenger journeys
- Maintains 7,100 bridges
- Operates 728 level crossings
- Controls services from 159 signal boxes
- Looks after 571 stations
- Covers 4,500 track miles
- Employs nearly 7,300 people

There are four Network Rail Managed Stations (London Euston, Birmingham New Street, Manchester Piccadilly and Liverpool Lime Street).

The NW&C Route accommodates the operations of over six freight operators and 14 passenger operators, and a small number of Charter operators.

The NW&C route follows the West Coast Main Line from London Euston to the Scottish borders, and incorporates a number of major commuter, intercity and local routes linking London with; Watford, Milton Keynes, Northampton, Coventry Birmingham, Manchester, Liverpool, Preston,

Carlisle and Scotland. The Route also covers the Chilterns area from London Marylebone to Birmingham Snow Hill and the whole of the West Midlands area. The WCML diverges at Crewe, where the line runs to Chester. Chester acts as a gateway to North Wales.

The Strategic Routes that make up the North West & Central Region are defined as Route O: Merseyside, Strategic Route H: North West, Strategic Route N: West Coast Main Line and Route M West Midlands and Chilterns.

Strategic Route O: Merseyside

The Merseyrail network is an entirely third rail Direct Current (DC) electrified network spread over the Wirral, Merseyside, North Cheshire and south west Lancashire. The network is split in two: the Northern Line and the Wirral Line. The Northern Line operates from Hunts Cross in the south to Liverpool Central and Moorfields, with northerly branches serving Southport, Kirkby and Ormskirk. There are four terminus stations on the Wirral Line: New Brighton, West Kirkby, Chester and Ellesmere Port. All stations on this route are connected to Hamilton Square in Birkenhead, and the central Liverpool stations. There is a one-way, clockwise loop line underneath Liverpool City Centre which serves the Central stations of James Street, Moorfields, Liverpool Lime Street and Liverpool Central. Liverpool Lime Street Low Level forms an important link to the mainline Liverpool Lime Street station, redeveloped in 2018, for interchange with services to a wide range of destinations such as London, Glasgow, Newcastle and Norwich. Due to an increase in demand at Liverpool Central, especially on the Northern Line, mitigation strategies are currently being developed to help serve the increased demand.

Strategic Route H: North West - Urban

The North West Urban rail area covers a wide geographical spread which has a large number of city conurbations offering opportunities for employment, leisure and education. The area includes routes into, stations in the principle locations, such as central Manchester, central Liverpool and Manchester Airport with various radial routes extending into Blackpool, Cheshire, Lancashire and Derbyshire. Transport for the North (TFN) is the voice for transport in the North and plays a key role in driving the strategic growth of the rail network supporting Local Authorities of Transport to ensure strategic transport decisions are informed by local requirements

Strategic Route H: North West – Rural

The North West Rural area broadly covers the railway north of the line between Preston and Burnley as far as Carlisle, with the exception of the West Coast Main Line, and the lines east of Skipton. It encompasses the rail routes within the county of Cumbria and a number in north Lancashire. The key routes run along the Cumbrian coast, between Settle and Carlisle, between Preston and Ormskirk and between Preston and Burnley via Blackburn.

Strategic Route N: West Coast Main Line

The West Coast Main Line (WCML) is nearly 600 km long and stretches from London Euston to Glasgow Central. For strategic planning purposes, the route to Carstairs South Junction (although in Scotland) is included in the North West & Central Region while the Carstairs to Glasgow Central section is included in the Scotland Route. The WCML connects London to Birmingham and the Midlands, Manchester and the North West, and Scotland.

The WCML is recognised as a strategic transport corridor linking Europe (through the Channel Tunnel) via London and South East England to the West Midlands, North West England and Scotland, and is the UK's busiest mixed traffic route. The WCML European and international importance is reflected in its designation as a priority Trans European Network (TEN) route.

The south end of the route is focussed on long distance and commuter services to and from London, together with key freight services and flows serving more northerly destinations. The North West section of the WCML provides vital connections between major cities and towns such as Manchester, Liverpool, Preston and further beyond.

Strategic Route M: West Midlands

The West Midlands rail network is located at the centre of the national rail network and consists of a number of radial routes into the three central stations in Birmingham (New Street, Snow Hill and Moor Street). The routes in the West Midlands are predominantly two-track, secondary routes, which support the busy local commuter markets into Birmingham and the Metropolitan centres of Wolverhampton, Walsall, Coventry, Sandwell, Dudley and Solihull. There is an increasingly wider spread of electrification but there are still a number of local routes not electrified. Local services into Coventry, Walsall, and Wolverhampton

are electrified, as are services on the Cross City lines, with recent extensions to Bromsgrove and Rugeley.

The West Midlands network incorporates some sections of primary route, including the West Coast Main Line between Rugby, Birmingham and Stafford, and the cross-country route between Wichnor Junction and Stoke Works Junction. Some of these routes are electrified and have higher line speeds of up to 125 mph, supporting high speed, long distance services to key locations throughout the UK. Birmingham New Street, Wolverhampton and Coventry stations are primary interchange stations for longer distance services on the West Coast Main Line and on the cross-country network, as well as being termini for local commuter services.

There is one line classified as rural - the Stratford-upon-Avon line, which includes the single-track branch line from Bearley Junction to Hatton Junctions.

Strategic Route M: Chiltern lines

The Chiltern Main Line runs from London Marylebone to Birmingham Snow Hill via High Wycombe, Princes Risborough, Bicester, Banbury, Leamington Spa and Solihull.

At Neasden South Junction the line diverges towards Aylesbury Vale Parkway so that services can run from London Marylebone via the London Underground (LUL) Metropolitan line between Harrow-on-the Hill and Amersham towards Aylesbury.

A single track branch line runs between Princes Risborough and Aylesbury. There are also two freight branches from Bicester Town to Claydon LNE Junction and Aylesbury to Claydon LNE Junction. The route between Claydon LNE Junction and Bletchley is currently out of use. This line is being developed as part of the plans known as East West Rail which will be described in more detail later in this document.

Key passenger markets and traffic flows

North West including Merseyside

There are a number of longer distance through routes linking the North West regional centres with those in Scotland, the North East, East Midlands and Anglia, together with interchange facilities with the West Coast Main Line serving London, the West Midlands and beyond.

The North West network is a mixed-use railway with a substantial and growing commuter market for rail services into the main centres of Manchester, Liverpool and to a lesser degree Preston. There are strong leisure and business flows between Manchester and Liverpool, and from the region to London, Birmingham, North Wales and Yorkshire. Both Manchester Airport and John Lennon Airport (near Liverpool) are significant destinations for both leisure and business rail passengers.

Northern Rail operates local commuter services on the routes, between Liverpool Lime Street and Blackpool North via Preston and between Manchester Victoria and Blackpool North. They also operate stopping services on the cross-Pennine routes to Leeds via the Calder Valley, via Huddersfield and via the Hope Valley routes

Services operated on the third-rail DC lines in Merseyside are operated by Merseyrail. These services serve commuter and leisure markets and link Liverpool and North Wales, Chester, Preston and Southport. Services on the Northern line operate on a number of branches, serving Hunts Cross, Kirkby, Ormskirk and Southport via Liverpool Central and Moorfields. On the Wirral lines there are branches to Chester, Ellesmere Port, West Kirkby and New Brighton via James Street, Moorfields, Liverpool Lime Street and Liverpool Central.

Interurban services are found across the North West linking cities such as Manchester and Liverpool with cities further afield towards Scotland, with connections to Edinburgh and Glasgow Central from Manchester as well as Liverpool to Glasgow service. There are further services from Manchester to key cities in Yorkshire such as Leeds, Sheffield and York as well as services towards Newcastle, Norwich via Nottingham and Chester/North Wales. Most services connect through Manchester on the way to Manchester Airport providing connectivity throughout the north of England.

East Midlands Trains operates services between Derby and Crewe and between Norwich, Nottingham, Sheffield and Liverpool Lime Street via Manchester Piccadilly.

Transport for Wales operates services from North Wales, which serve Manchester via Warrington Bank Quay and from South Wales to Manchester via Crewe. TfW also provides an hourly service on the Crewe to Chester line and services between Wrexham and Bidston, as well as over the recently reopened Halton Curve between Liverpool Lime Street and Chester via Runcorn. Whilst rural routes

don't see a spike in passenger numbers during peak hours in the way commuter services do, they play a vital role in connecting local communities throughout the day. It can also be vital for tourist traffic to the area, such as the Cumbrian Coast or Windermere branch line which sees tourist traffic for the Lake District National Park year-round. Other routes such as the Settle-Carlisle line provide alternative routes from the cities of Leeds to Carlisle via a rural route which is popular because of the scenic views from the railway making a valuable contribution to the visitor economy in the area. Although not considered commuter services in the way services into major cities are, they can still provide a key link for workers in an area to important industry sites such as Sellafield Power Plant, with Sellafield station on the Cumbrian Coast being busy at shift change times with workers choosing to travel by train from neighbouring towns.

West Coast Main Line

The West Coast Main Line (WCML) is the busiest mixed traffic route in the United Kingdom (UK). It is central to the business of many UK and international passenger and freight operators.

The main service flow on the WCML is long distance, high speed services operated by the Intercity West Coast Franchise. The key services are operated between London Euston and Glasgow Central, Manchester Piccadilly (two services via Stoke-on-Trent and one service via Crewe per hour), the West Midlands (Coventry, Birmingham New Street and Wolverhampton), Liverpool Lime Street and Chester (with some services extended to North Wales, to Holyhead and to Bangor). Some services have additional stops during peak times to serve intermediate stations on the route between Rugby and Stafford.

The Intercity West Coast Franchise also operates fast services between Birmingham New Street and Scotland, serving Glasgow Central and Edinburgh Waverley in alternate hours.

Overnight sleeper services (operated by Serco Caledonian Sleeper) run between London Euston and Glasgow, Edinburgh, Inverness, Aberdeen and Fort William.

Semi-fast services are operated on the WCML by West Midlands Trains (WMT) under the brands West Midlands Railway and London Northwestern Railway. The main services operated are between London Euston and Tring, Milton Keynes Central, Northampton, Coventry, Birmingham New Street, Stoke on Trent and Crewe. These service groups

combine to provide at least three trains an hour from London Euston to Northampton and at least four trains an hour from London Euston to Milton Keynes Central.

Two branches feed the southern end of the WCML, the St. Albans Abbey line which joins the WCML at Watford Junction and the Bedford to Bletchley line which joins the WCML at Bletchley. Both are designated as 'Community Rail' lines with train services operated by WMT.

GTR Southern operates an hourly service between East Croydon and Milton Keynes Central via Kensington Olympia although in certain hours the service begins at Clapham Junction, and only operates as far as Watford Junction.

Arriva Rail London (ARL) operates services on the slower DC electrified third rail lines between Watford Junction and London Euston via Queens Park and Harrow. London Underground Limited services also operate on the DC lines between Harrow and Wealdstone and Queens Park and then into Central London via the Bakerloo Line. This is shortly to increase to a 15 minute frequency

West Midlands and Chilterns

The rail network in the West Midlands and Chilterns area supports a range of markets including commuting into key employment and leisure destinations, interurban travel between major urban centres and long distance travel. Due to its central location, the West Midlands area acts as a hub for the national rail network with many long distance services passing through Birmingham New Street, which is a primary interchange station for many destinations across the network.

Local commuting in the West Midlands has grown substantially in recent years. The local rail network is extensive and busy with services on some corridors now operating at a ten minute frequency. The commuter network is operated primarily by the West Midlands franchise, and the majority of local services are supported by West Midlands Rail Executive. Services support commuter, shopping and leisure needs with key flows operating from across the West Midlands into Birmingham city centre and other key employment and urban centres such as Wolverhampton, Coventry, Solihull, Dudley and Walsall. Frequent services are also offered to Birmingham International to support passengers accessing Birmingham Airport and activities at the National Exhibition Centre and Genting Arena.

Chiltern Railways serves the long distance market between Birmingham Snow Hill and London Marylebone. This market has grown significantly over recent years and is an attractive high speed option to services on the WCML to London in the peak hours. Services operate on a half-hourly basis between London Marylebone and Birmingham Moor Street and Snow Hill, and six trains per day between London Marylebone and Stratford-upon-Avon. Chiltern Railways is proposing to run an enhanced service between Stratford upon Avon and Marylebone. There are significant interurban flows serving the business, wider commuting and leisure travel. The interurban market between London and the surrounding areas has grown considerably in recent decades, and Chiltern Railways offer services to Warwick, Banbury and Bicester, including the major retail centre, Bicester Village. Trains also serve smaller commuter markets into other towns on the route, such as High Wycombe and Aylesbury.

Chiltern Railways has been operating a service from London Marylebone to Oxford Parkway and Oxford since 2016 utilising the first stretch of the soon to be completed East West Route.

CrossCountry operates a network of long distance services which run through the West Midlands between cities outside London. These include services between Plymouth and Penzance and Edinburgh via Bristol Temple Meads, Leeds and York, Bournemouth and Bristol Temple Meads to Manchester Piccadilly, and between Reading and Newcastle. All CrossCountry services call at Birmingham New Street, offering interchange opportunities for passengers to link from local and interurban services. These regional links include to Derby, Nuneaton, Leicester, Nottingham, Stansted Airport, Cheltenham, and Cardiff.

WMT also supports interurban flows from the West Midlands including between Birmingham New Street and Liverpool Lime Street, and between Birmingham New Street and London Euston via Rugby and Northampton.

Transport for Wales offer interurban service opportunities between North Wales, mid Wales, Shropshire and the West Midlands. These services operate to Birmingham International station offering passengers connectivity with Birmingham Airport, which is one of the busiest airports outside London, and to the National Exhibition Centre.

Key freight markets and traffic flows

Rail freight plays a vital role in the UK economy and its growth is encouraged by the Government in the light of its significant economic and environmental benefits. The rail freight market is dependent on the general performance of the economy, and to varying levels on the type of rail flow. There are a number of major freight flows in the North West & Central Region operating to terminals within the route as well as to locations outside of the area.

There are a number of freight operators on the route including DB Cargo which is the largest freight operator in the UK and Freightliner Limited which is the largest rail haulier of containerised traffic on the route, predominantly for the deep sea market. Other operators running services on the route include GB Railfreight, Direct Rail Services Limited and Colas Rail.

The main freight markets on the North West & Central Region are:

Intermodal

There is a high demand for container and intermodal freight transport, and rail is increasing its modal share of this market. Intermodal traffic includes domestic intermodal (containerised goods moved within the UK), maritime intermodal (intermodal traffic moved to and from the ports) and Channel Tunnel intermodal (intermodal traffic from mainland Europe which is moved via the Channel Tunnel).

There are many intermodal terminals within the North West & Central Region, including Garston, Trafford Park, Ditton, Daventry (Daventry International Rail Freight Terminal), Lawley Street, Hams Hall, and Birch Coppice (Birmingham International Freight Terminal). Much of the traffic at these terminals originates from deep sea ports, especially the East Coast ports and Southampton, and from mainland Europe via the Channel Tunnel.

Maritime and Channel Tunnel intermodal

Maritime intermodal flows are container flows to and from ports. The main import locations into the UK are the Southampton and East Coast ports, especially Felixstowe. Since the completion of the loading gauge clearance to W10 project from Southampton to the West Midlands in March 2011,

further increases in freight traffic have been stimulated. Volumes of freight carried on through-trains via the Channel Tunnel has been low in recent years, driven partly by security concerns. Future demand remains uncertain and may depend on Britain's future relationship with the EU, however a scheme to clear W12 routes between the tunnel and Wembley in order to unlock demand is in the early stages of development.

The major flows on the West Coast Main Line from Southampton are to the Midlands terminals at Birch Coppice, Hams Hall, Lawley Street and Daventry; to the North West terminals at Garston, Trafford Park and Ditton; and to further destinations in the North East and Scotland. The flows from Felixstowe to the Midlands and North West terminals operate via the North London Line joining the West Coast Main Line at Willesden Junction or via Peterborough joining the West Coast Main Line at Nuneaton.

The Channel Tunnel intermodal market offers opportunities for traffic from Spain, Italy, France, Belgium, Germany and other EU countries. In 2011, freight started to use the High Speed One line, and this has brought the prospect of larger loading-gauge traffic into the UK for onward movement via the West Coast Main Line.

Domestic intermodal

Domestic intermodal traffic is the movement of containerised consumer goods within the UK. Daventry International Rail Freight Terminal (DIRFT) is the national hub of Anglo-Scottish intermodal traffic and a high proportion of traffic at DIRFT is domestic traffic. Key flows include the time sensitive supermarket traffic which operates between Daventry and Mossend and Grangemouth and Coatbridge. Expansion plans for DIRFT 3 are currently ongoing.

Automotive

Automotive flows transport time-sensitive high value products, for which the transit time forms part of the production process. Within the West Midlands automotive services that provide finished products operate from the Jaguar car plant at Castle Bromwich. There is an automobile terminal at Speke (Liverpool) which forms a key location for imported cars as well as those produced for export, via Washwood Heath and Southampton. There are also automotive flows originating in the North West from Halewood near Liverpool (3 trains a day) to

Southampton and a regular flow from Dagenham to Garston carrying Ford vehicles.

Metals

The West Midlands remains the principal UK centre for metal processing and consumption, and as a result there are significant flows of products both into and out of the region. Large volumes of semi-finished and finished steel products both from UK manufacturing sites and from a number of ports around the country are moved into terminals at Round Oak and Wolverhampton.

There are also flows of scrap metal within the North West & Central Region from Mossend (Glasgow) to Liverpool, and of metals for recycling which are despatched to a range of UK destinations from terminals at Handsworth, Saltley and Kingsbury. There are significant flows of steel from South Wales to the North East and to Corby, and from the North East, and into South Wales and Washwood Heath.

Coal

UK energy policy is for the cessation of coal fuelled power by 2025. The power station at Fiddlers Ferry remains open and had agreements to supply electricity at the time of writing.

There are flows between Liverpool Docks and Ellesmere Port Docks and Fiddlers Ferry, and Ratcliffe-on-Soar power stations.

Waste

Within the North West & Central Region, domestic and industrial waste traffic is transported to the waste processing site at Calvert from Cricklewood, Willesden, Bristol and Northolt. Traffic has now commenced for waste flows on the route to Folly Lane (Runcorn).

Aggregates

Aggregate flows are highly dependent on the health of the construction industry and demand tends to be project driven. Aggregate flows within the North West & Central Region operate to terminals at Northampton, Bletchley, Watford, Willesden, Walsall, Castle Bromwich, Bordesley and Banbury. There are also flows from Leicestershire to Neasden and from Peak Forest to the North East and South East. At the north end of the WCML aggregates are

conveyed from the Shap quarries to Teesside, Manchester and Sheffield.

New flows to serve the construction of HS2 are likely to start in 2019-20 and increase as construction accelerates.

Network Rail Route Services

Network Rail Route Services operates freight services to supply infrastructure materials throughout the country to meet the needs of railway engineering and construction projects. The Bescot Sleeper Factory will now move to Bescot as a result of Washwood Heath closing due to the development of HS2. There are locations at both Crewe Basford Hall and Carlisle Kingmoor which are key nodes for the traffic that services the many requirements Route Services. The operation at Bescot in the West Midlands provides services to and from the West Coast Main Line.

Other freight flows

Other flows within the NW&C Region include Royal Mail, china clay, oil and petroleum and other power station traffic. Royal Mail operate daily between Willesden and Shieldmuir in Scotland. China clay trains operate over the West Coast Main line, some of these originate in the South West, with destinations of Stoke-on-Trent and Irvine in Scotland. Within the West Midlands oil and petroleum is transported to the Kingsbury terminal near Tamworth and the Murco terminal at Bedworth. On the West Coast Main Line there are also flows of timber from Carlisle to Chirk.

There are regular flows of biomass from Portbury and Liverpool to Drax.

Performance

For CP6 the Public Performance Measure (PPM) Targets for NW&C Lead Operators are as follows:

	2019/20	2020/21	2021/22	2022/23	2023/24
Chiltern	93.8 %	93.9 %	93.9 %	94.2 %	94.3 %
Merseyrail	94.4 %	94.4 %	94.9 %	95.4 %	95.6 %
Virgin	86.4 %	86.8 %	86.5 %	85.9 %	86.1 %
TPE	82.4 %	84.5 %	84.9 %	85.5 %	86.2 %
West Midlands Trains	88.4 %	88.8 %	88.4 %	88.7 %	89.1 %

Proposed infrastructure investment in Control Period 6 (2019 - 2024)

The Final Determination for funding for Control Period 6 was announced by the Office of Rail and Road in October 2018.

In CP6 enhancement funding from the government will be funded in accordance with the RNEP (Rail Network Enhancement Pipeline). This means that enhancement projects being developed in CP6 will only be committed following a decision to deliver, which requires an approved business case.

Chiltern Main Line Train lengthening

Platform lengthening has been identified by operators on a number of routes in the West Midlands and Chilterns area, in order to deliver the HLOS metrics.

Train lengthening is proposed by Chiltern Railways, in order to support their operational plans in CP6. Plans involve train lengthening from 7-car to 9-car trains, resulting in the need to lengthen platforms at five stations. These are Bicester North, Haddenham and Thame Parkway, Beaconsfield, High Wycombe and Princes Risborough. Further development off these options is being undertaken.

East - West Rail

The HLOS confirmed Government commitment to fund the East West Rail project in CP6, identifying the routes as Oxford to Bedford, Aylesbury to Calvert and links. The primary objective of this initiative is to improve east-west connectivity, providing additional capacity to accommodate growth in freight and passenger numbers.

Service patterns and rolling stock strategy is still to be defined, however the enhanced scope of the project as announced in the HLOS, provide a significant opportunity for additional and extended services. The question of whether additional capacity will be required on the WCML to accommodate East West services to Milton Keynes Central will be examined during development of the project.

The project is split into two main packages of work: Phase 1: between Bicester and Oxford delivered both the infrastructure required for Chiltern's Evergreen services to London and the incremental works required for the later introduction of East West Rail services.

Phase 2: which is at a much earlier stage of development, will deliver the East West Rail works east of Bicester to Bletchley and Bedford (including the Aylesbury – Claydon Junction line).

West Coast Main Line Power supply upgrade - Phase 3b

This Project is to upgrade the WCML traction power supply to 12kA autotransformer (AT) system and deliver the power capacity enhancement required to support the North West Electrification Programme (NWEPP), the Stafford Area Improvement Project and provide increased power resilience.

To date, the project has delivered significant business benefits including: increasing electrical capacity which can enable an increase in electric trains; substantial volume of 25kv sub-station and switchgear renewals avoided; reduction in maintenance costs; increased reliability and reduction in electricity supply costs. The project has also delivered outputs to enable the delivery of Staffordshire Area Improvement Programme and NWEPP (Phases 1-4).

The final key remaining outputs include Catterall Feeder Station commissioning and of Crewe and Winsford sub-stations. Also, the commissioning of Weaver Substation design and commissioning.

In addition, the Bushey Traction Supply Resilience Project for which a Strategic Outline Business Case has been produced with the aim of improving traction supply resilience on the West Coast Mainline South and North London Line.

The Northern Hub

The conditional outputs of the Northern Hub have been designed to enhance the capability of the network across the North of England, specifically to provide:

- capacity for forecast passenger growth
- faster and more frequent inter-regional services, with increased direct links between Northern cities
- improved services on key commuter corridors to support sustainability of the cities
- direct journeys from a wider range of towns/cities to Manchester Airport
- freight capacity required to 2030.

The project was split into two phases of work based upon delivery of increased network capability

The Northern Hub interfaces with a number of other key projects in the North West area. In particular, the sponsor team are working closely with the electrification programme teams. It will also interface with the emerging rolling stock strategy to understand the implications of the deployment of EMUs (following the electrification programme in the north).

Coventry to Leamington Spa capacity upgrade

This scheme proposes to increase capacity on the line between Coventry and Leamington Spa. The industry recommendation to address the connectivity gap between Derbyshire, Yorkshire and the North East to Coventry and Birmingham International This increased capacity will also help to address crowding issues. Early analysis has indicated that to increase capacity on the line, the single line constraints must be addressed. This enhancement will also accommodate the new hourly local passenger train service between Coventry and Leamington Spa supporting a third party funded new passenger station at Kenilworth.

West Midlands

New Stations

Grand Junction Stations

Two new stations are proposed on the line between Walsall and Wolverhampton at Willenhall and Darlaston. The route is currently used for freight traffic and diverted passenger services at times of perturbation. These plans are being developed by West Midlands Rail Executive.

Camp Hill Stations

West Midlands Rail Executive are also proposing three new stations on the Camp Hill Line connecting South Birmingham with the city centre. These stations would serve Kings Heath, Moseley, and Hazelwell. The route is currently used for freight traffic and CrossCountry services.

Coventry station upgrade

There are third party funded plans (Coventry City Council), to enhance the transport links between Nuneaton, Bedworth and Coventry. Proposals include the upgrade of the line between Coventry and Nuneaton, a new bay platform at Coventry station, and complete redevelopment of the station and surrounding area.

North Trans-Pennine Electrification: West

TransPennine Route Upgrade (TRU) is a programme of enhancements to increase capacity, improve performance and deliver journey time improvements on the core TransPennine Route between Manchester Victoria, Leeds and York (via Huddersfield and Micklefield). This includes proposals to remodel Stalybridge, Huddersfield and provide selective four tracking. The programme is being led by the LNE & EM route, however infrastructure investment on NW&C route will cover the route from Manchester Victoria – Stalybridge via Ashton and Stalybridge to Guide Bridge.

For further information about the TransPennine Route Upgrade, please view the following link <https://www.networkrail.co.uk/our-railway-upgrade-plan/key-projects/transpennine-route-upgrade>

Northern Powerhouse Rail (NPR) is a programme to deliver a transformed rail network in the North of

England and bring new opportunities to millions of people and businesses. Featuring a mix of new and significantly upgraded railway lines, it will increase the capacity, speed and resilience of the North's rail network. In doing so, passengers will experience faster and far more reliable journeys between the North's economies and its largest international airport. The Northern Powerhouse Rail proposals represent a coherent network that will transform rail services across the North, providing a world class investment and infrastructure for seamless rail travel across the North as part of the Long-Term Rail Strategy.

Depot and stabling enhancement for extra trains

Depot and Stabling – With future passenger demand expected to grow there will be a need to increase train operator fleet sizes which will in turn increase stabling demand there we expect additional depots to be built to fulfil this increased demand.

North West area re-signalling

During CP6 there are numerous projects to renew signalling infrastructure throughout the route. This includes work to renew and refurbish signal structures, and increase safety at level crossings.

Some of the projects include

- Crewe Main Line re-signalling (phased over CP6 and CP7)
- Macclesfield, Trafford Park, Basford Hall and Crewe Independent Lines re-signalling
- Signalling life extensions on the Cumbrian coast, the Settle – Carlisle Line, In the Liverpool area including Hunts Cross and Green Bank, Trafford Park and Hope Valley Line
- Edge Hill and Ditton recontrol to Manchester Rail Operations Centre
- Level Crossing renewals including Woodsmoor, Ince & Elton, Barthomley, Pool Hey, Wyke Cop, Shaws, Crabtree, Chapel Lane, Wraysholme, and Saltcoats
- Level Crossing improvements or life extensions at Bare Lane, Astley and Bromley Cross, Haverigg, Bush-on-Esk No2, Chaffers, Black Dyke, and Drigg

Freight terminal plans

There is a proposal for a new multi-modal freight terminal at Port Salford in the North West. The site is planned to be connected to the Manchester to Liverpool route (Chat Moss route), which joins the WCML at Newton-le-Willows, enabling freight services to access the terminal. It will be the only inland water served distribution park in the United Kingdom using the Manchester Ship Canal, as well as the major local motorway network in the North West.

There is planned to be a major expansion of Daventry International Rail Freight Terminal (DIRFT), in phases, to provide more storage and distribution facilities and rail infrastructure is proposed. In the same area two new terminals are being considered by the planning authorities in the South Northamptonshire; Rail Central and Northampton Gateway. New intermodal freight terminals are also planned at Four Ashes (between Wolverhampton and Stafford), and at Parkside (Newton-le-Willows) which could result in significantly increased traffic into the West Midlands area and along the West Coast Main Line.

In addition to the re-signalling scheme at Stafford, there are re-signalling works planned for several parts of the route including the Watford area.

West Midlands and Chilterns

Water Orton capacity enhancements and Midlands Rail Hub

This project plans to address capacity issues on the Derby to Birmingham corridor in order to support passenger and freight service growth on the route. New hourly local services between Tamworth / Nuneaton and Birmingham New Street, as well as improved access to Kingsbury Freight Terminal are being assessed. Midlands Rail Hub will be looking at 10 additional trains into and outside of Birmingham an hour, which include has plans to address capacity issues on the Derby to Birmingham corridor in order to support passenger and freight growth on the route. New hourly local services between Tamworth/Nuneaton and Birmingham New Street, as well as improved access to Kingsbury Freight Terminal are being assessed. The trains include two additional trains per hour from Birmingham to Leicester via Nuneaton, one additional train per hour Birmingham to Nottingham/Lincoln via Derby, one additional train per hour Birmingham to Bristol, one additional train per hour Birmingham to Cardiff, one additional train per hour Birmingham to Hereford via Worcester, two additional trains per hour Birmingham to Kings Norton via Camp Hill, and two

additional trains per hour Birmingham to Burton-on-Trent/Derby.

Line speed improvements

On the Coventry to Nuneaton line it is proposed to increase the line speed between Coventry and Nuneaton from the current 45mph to 60mph, which will provide journey time benefits. The scheme also supports the electric spine proposals and the Coventry to Nuneaton Upgrade project.

Depot and Stabling

With the expansion of the electrification network during CP5, there will be additional electric rolling stock vehicles that will need to be maintained both in the North West and Midlands areas. There has been no recent work undertaken in this area.

In the Midlands area, the current EMU maintenance depot at Soho is at maximum capacity and a further location will need to be identified. There will also need to be additional stabling facilities in the area. Development work to identify options is ongoing

Chiltern Trains have introduced a new maintenance and stabling facility at Banbury to cater for their expanding fleet of vehicles.

West Midlands re-signalling programme

Birmingham New Street Area - plans are being developed to renew the life-expired signalling equipment in the Birmingham New Street area and transfer control to the West Midlands Signalling Control Centre at Saltley. As part of the scheme development, potential enhancements to line speeds, junction layouts and improved performance are being investigated.

Operations Strategy

NW&C Region Operating Strategy is to progressively migrate signalling control to 3 locations: Manchester Rail Operating Centre (ROC), Rugby ROC and West Midlands Signalling Centre. Opportunities will be taken when network enhancements require significant changes to signalling, or when renewal is necessary. Consolidation solely to reduce operating costs will not be possible until the cost of such work reduces to levels that can support a business case to attract the required funding.

Traffic Management systems will be introduced to automate the execution of the required plan, taking into account disruption due to incidents on the network. Inputs from TOC stock and crew management systems will be used to update plans in real time. Outputs to onboard train systems will enable optimum running speeds to be implemented. Together, these systems will improve performance, increase capacity and reduce energy consumption.

In May 2018, the Department for Transport and Network Rail announced that future re-signalling schemes would use the digital European Train Control System, which transfers signalling functionality from the trackside to train cabs. Until sufficient rolling stock has been fitted with the in-cab equipment, new signalling will be implemented as “Digital Ready”. In some areas, it may be possible to justify the provision of overlay or underlay systems to provide dual functionality to support the transition

Route Operations Centres

Route Operations Centres (ROC) are a key component of the longer term operating strategy for Network Rail.

The buildings are designed to be a secure and resilient base for the vital systems contained inside. They also provide the opportunity to work more closely with train operating company (TOC) colleagues, providing a collaborative working environment for all staff.

Longer-term strategy (Control Period 7 and beyond)

Introduction

Government Policy has determined the strategy for creating additional capacity on the WCML is the delivery of a high speed line, which aligns with the recommendations of the West Coast Main Line Route Utilisation Strategy (RUS). Network Rail is working closely with HS2 Ltd, particularly where the high speed line interfaces with the existing network.

Network Rail must plan for the seamless integration of HS2 services and other franchised, freight and open access passenger services where HS2 services are running on the “classic” network.

High Speed Two

The first phase in implementation of a national High Speed Rail network will be construction of a new railway to alleviate capacity issues on the West Coast Main Line (WCML) between London and the West Midlands. This route, which is proposed to be in operation by 2026, is known as High Speed 2 (HS2). Following Phase 1 services running on HS2 will operate over the existing WCML to Manchester, Liverpool and Scotland.

Phase 2 will extend this initial route, with the creation of a ‘Y’ network to Manchester and Leeds by 2033.

Phase 2a (2027) will link HS2 to the WCML north of Crewe with services to Scotland continuing on the classic network.

Phase 2b (2033) will link HS2 with Manchester, Sheffield and Leeds with services continuing to Scotland on the classic network.

There are several significant work streams currently being undertaken on High Speed Rail development that affect the NW&C Route:

- Continued development following successful completion of the Hybrid Bill – which provide powers to construct the new route
- the London Euston Station re-construction and staging works
- two new HS2 stations at Birmingham Curzon Street and Birmingham Interchange
- a new HS2 maintenance depot at Washwood Heath in Birmingham

- HS2 compatible trains running onto the existing WCML (and joining near Lichfield at a new junction called Handsacre Junction),
- utilising the existing spare capacity released at the south end of the WCML
- aligning planned renewals with HS2 known interventions
- HS2 maintenance depot proposals for Calvert (near Aylesbury) and a service connection to East – West Rail
- Further development of the ‘Y’ network (including a new station at Manchester Piccadilly, and a connection to the existing WCML at Golborne Junction (near Wigan).)

Modular Network Planning

The NW&C Route will continue to review and develop the recommendations set out in previous sets of geographical RUSs and take forward the conditional outputs being set by the Market and Route Studies, as part of the Long-term Planning Process.

Network Rail has updated its approach to Long Term Planning and is now targeting smaller pieces of work under the heading of Continuous Modular Strategic Network Planning. Such an approach aims to include stakeholder views and priorities both in deciding which areas to tackle and also in delivering the workstreams.

Areas currently under discussion include:

- The Manchester south-east corridor
- The Bolton to Manchester corridor
- The Manchester to Stockport corridor
- The Liverpool to Manchester corridor via Warrington Central
- Depot and stabling capacity in the north-west
- Released capacity on the WCML south following HS2
- WCML north requirements following HS2
- WCML traction power planning including HS2
- The Cumbrian Coast
- The Liverpool metropolitan area

In consultation with stakeholders, a study is underway to determine the extent to which traction power supplies will support forecast requirements on WCML. Where this identifies

anticipated shortfalls, this will lead to the identification of options for traction power supply improvements. As an example of the sort of work we will undertake we will look at Capacity requirements on the West Coast Main Line North of Preston. This work will need to assess capacity north of Preston on the West Coast Main Line. It will need to look at what options may be appropriate to cater for the forecast increase in freight and passenger traffic between Preston and Mossend, in the periods up to 2019, and between 2019 and 2030. Options will not be restricted to infrastructure enhancements but may include timetabling solutions and routeing options.

The industry continues to develop continuous modular network planning, over a 30 year time horizon.

Strategic Freight Network schemes

Southampton to West Coast Main Line – train lengthening: feasibility work is being undertaken to assess the options of allowing freight trains – up to 775m long – to run on this corridor. Assessments are being undertaken on the Leamington to Coventry line to increase speeds and of possible additional looping arrangements around the Bordesley Junction area (just outside Birmingham). Options include Fenny Compton Down Loop, Hatton Down loop, Dorridge Down Loop and Washwood Heath. Increasing the entry and exit speeds of these loops are also under consideration. Enhancements to enable 775 metre long intermodal trains between Southampton and the West Midlands have been completed in CP5, with the remaining works on Wessex route required to unlock these benefits planned for early CP6.

Accessing the network

The Network RUS: Stations recognised that each station may have its own issues and bespoke solutions; the NW&C stations specifically highlighted where interventions may be required in the medium to long-term are:

- Birmingham Snow Hill
- Liverpool Central
- Liverpool Lime Street
- Preston
- Manchester Piccadilly
- Manchester Victoria
- Manchester Oxford Road
- and Watford Junction.

Freight capacity to 2043

Freight demand forecasts have been developed nationally to 2043 to support the development of the Strategic Freight Network, which will enable rail freight to grow without having a detrimental impact on network capacity and reliability. The requirement to support rail's role in delivering a sustainable distribution system will continue to be a key planning objective, and longer term investment in the SFN will be necessary to deliver this. The forecasts in the Freight Market Study for freight growth up to 2043 are currently being refreshed and the updated versions will be established later in 2019. SFN schemes beyond CP5, will be developed as part of the network planning process and will focus on the need to support longer and heavier freight trains, improve efficient operating characteristics, increase network availability and on electrification of key freight routes. Where appropriate, W12 gauge will be implemented as the standard loading gauge for all strategic container routes including diversionary routes, as it caters for both short and deep sea container traffic.

Network Availability

Network Rail will continue to explore initiatives to best optimise network availability across the whole of the North West & Central Region for both passengers and freight operators. This will focus on shorter possessions, appropriately timed possessions, productivity and efficiency gains through changes to the technology and processes used to maintain, renew and enhance the network.

NW&C: Planning ahead

Improving local and regional journeys will form an important part of future strategy. Network Rail is ensuring future strategy will align national workstreams with local requirements, working collaboratively with partners, including ITAs/PTEs, LEPs and Local Authorities.

The NW&C Strategy is broken down into geographic sections as follows:

Merseyside Long Term Strategy

The Liverpool City Region Strategic Rail Study, published in 2019, sets out the direction of the future of the Merseyrail network towards 2043. The strategy recommends enhancements to rolling stock depots, power supply, the platform-train interface and stations

to accommodate longer trains as a priority to facilitate and support the introduction of the new rolling stock fleet from 2020. Other recommendations include progressing the development of a solution to increase capacity at Liverpool Central. The study also considered potential extension to the Merseyrail network to Wrexham, Preston and Wigan but further work is required before a business case can be assessed.

North West Long Term Strategy

During CP6, many of the busiest routes in the North West are intended to be provided with modern, reliable, efficient and more economic rolling stock. The intention is to continue to improve journey times, connectivity and travel opportunities within the wider North West area.

In Cumbria, Network Rail is developing proposals with the County Council to cater for increased freight traffic and passenger growth.

The completion of HS2 is expected to improve journey times for trains connecting major northern conurbations with the Midlands and London.

West Coast Main Line Long Term Strategy

The West Coast Partnership franchise is about to be let by the Department for Transport. This new West Coast franchise will work with the government, HS2 and industry parties to develop the detailed timetable proposition for HS2 and HS2 released capacity as well as running the existing services on the West Coast Main Line before and after HS2 opens.

Beyond committed interventions there is little scope to run additional or longer trains on the WCML, at the time they are most needed. Passenger growth forecasts on the route suggest that there will be unacceptable levels of crowding on an ever increasing number of trains, with high levels of freight growth forecast.

The WCML is expected to be at capacity and become increasingly constrained in its ability to support the economy (through commuter and business travel) and to generate revenue for the industry. The most effective and best value for money way to create additional capacity will be through building a new High Speed line, aligned with Government Policy and the recommendations of the West Coast Main Line RUS.

The provision of a high speed line will help to relieve both track and rolling stock capacity, which will enable additional services to operate on the existing network. An independent company, HS2 Ltd, is progressing the new high speed lines.

HS2 Ltd, in conjunction with Network Rail, is working with key industry stakeholders to explore options to make best use of the released capacity on the existing WCML. This work will help the rail industry shape the future of the WCML.

West Midlands Long Term Strategy

Network Rail is working closely with West Midlands Rail Executive and Midlands Connect, to better understand the link between transport and economic growth. This work will seek to produce an evidence base to inform a number of key outputs for the region. This work will feed into the Long Term Planning Process, as well as influencing the LEP economic strategies.

The Midlands Strategy has identified increasing extra seats to 3,300 on key commuter routes and 2,900 extra seats on long distance services by 2024. Midlands Rail Hub to better connect the region with an extra 10 trains per hour into and out of Birmingham. A look ahead to see freight growth from Felixstowe Ports to the West Midlands.

There is an aspiration to electrify the Snow Hill Lines and this could align with potential electrification to the Chiltern Main Line.

Chiltern Main Line Long Term Strategy

The strategy for the Chiltern main line is for electrification of the route from Birmingham to London. The electrification of the route is being considered as part of any future capacity enhancements of the Chiltern Main Line including potential connections to Old Oak Common. Working closely with England's Economic Heartland, who are a Sub-national Transport Body being the voice for their region to guide and support a Rail Strategy to benefit the ever growing growth of population and employment of the EEH region. By 2024 a view to have upgraded Marylebone station, with longer platforms at key stations with 1000 extra seats into London in peak hours. Towards 2043 there is a view to upgrade the route between Princes Risborough and Aylesbury which would increase journey times on that line.

Strategic Route Section Index

[] Indicates an SRS which interfaces with another route

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H.05	[North Transpennine: Leeds – Guide Bridge] <i>London North Eastern</i>
H.10	[Manchester Victoria – Mirfield via Rochdale/Stalybridge] <i>London North Eastern</i>
H.17	[South Transpennine: Dore – Hazel Grove] <i>London North Eastern</i>
H.22	Manchester Piccadilly – Crewe
H.23	Manchester Piccadilly – Deansgate
H.24	Deansgate – Liverpool South Parkway
H.25	Liverpool Lime Street – Liverpool South Parkway
H.26	North Transpennine: Manchester Piccadilly – Guide Bridge
H.27	Deansgate – Euxton junction
H.28	Ashburys/Hyde North – New Milles Central/Rose Hill
H.29	Guide Bridge – Glossop/Hadfield
H.30	Guide Bridge – Chester (via Stockport)
H.31	Manchester Airport – Wilmslow/Slade Lane Junction
H.32	Blackpool North Branch
H.33	Edge Hill – Manchester Victoria (via Earlestown) / Wigan
H.34	Southport / Kirkby – Wigan Wallgate
H.35	Wigan Wallgate – Manchester Victoria
H.36	Buxton Branch
H.37	Bolton – Blackburn
H.38	Hazel Grove – Edgeley Junction
H.39	Cumbrian Coast
H.40	Settle and Carlisle Line
H.41	Windermere Branch
H.42	Carnforth – Long Preston
H.43	Morecambe / Heysham Port Branch
H.44	Roses Line and Branches (including Preston – Ormskirk and Blackburn – Hellifield)

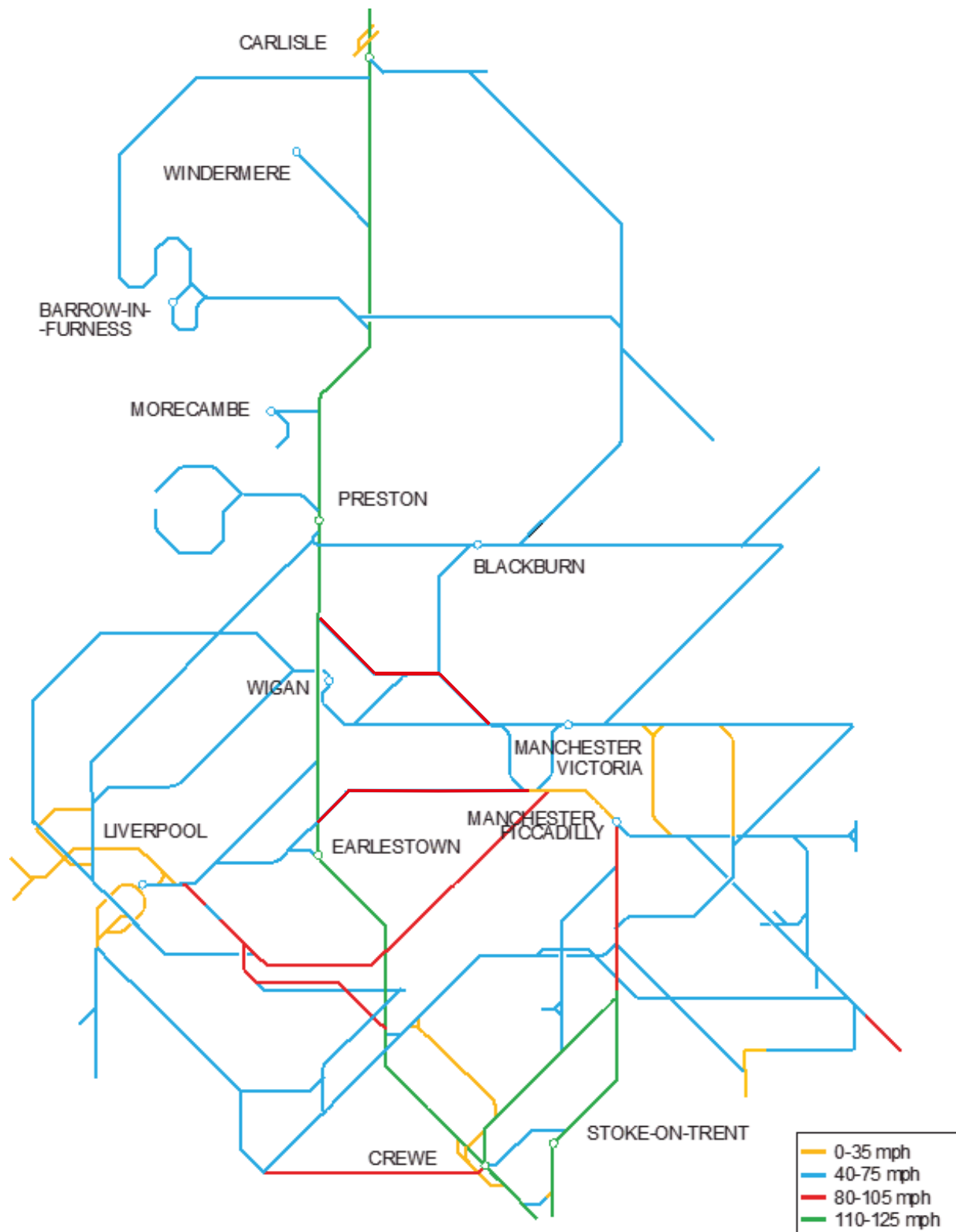
H.45	Chester / Ellesmere Port – Warrington Bank Quay
H.46	Blackpool South Branch
H.91	[Freight through routes] <i>London North Eastern</i>
H.98	[Freight trunk routes] <i>London North Eastern</i>
H.99	[Other freight lines] <i>London North Eastern</i>
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M2	Neasden South Jn – Harrow-on-the-Hill
M3	Amersham – Aylesbury Vale
M4	Aylesbury – Princes Risborough
M5	Rugby – Birmingham New Street
M6	Birmingham New Street – Wolverhampton
M7	Wolverhampton – Stafford
M8	Birmingham New Street – Barnt Green
M9	[Barnt Green – Stoke Works Jn] <i>Western</i>
M10	[Birmingham – Wichnor Jn] <i>East Midlands</i>
M11	[Oxford – Coventry South] <i>Western</i>
M12	Leamington Spa – Birmingham Snow Hill
M13	Stechford – Wolverhampton via Aston
M14	Birmingham Snow Hill – Stourbridge Jn
M15	[Stourbridge Jn – Hereford] <i>Western</i>
M16	Stratford-upon-Avon lines
M17	Cross City North
M18	Rugeley – Bescot
M19	Redditch – Barnt Green
M20	[Wolverhampton – Shrewsbury] <i>Wales</i>
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M22	Water Orton – Nuneaton
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<i>Strategic Route N - West Coast Main Line</i>	
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N.02	Rugby – Stafford
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N.04	Crewe – Preston
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N.06	Border (nr Gretna Junction) – Carlisle
N.07	Weaver Junction – Liverpool South Parkway
N.08	Norton Bridge/ Colwich Junction – Cheadle Hume
N.09	Crewe – Kidsgrove
N.10	Watford Junction St. Albans Abbey
N.11	Euston – Watford Junction (DC Lines)
N.12	Bletchley – Bedford
N13	Crewe – Chester
N.99	Other freight lines
<i>Route O – Merseyrail</i>	
O.01	Merseyrail

Capability maps

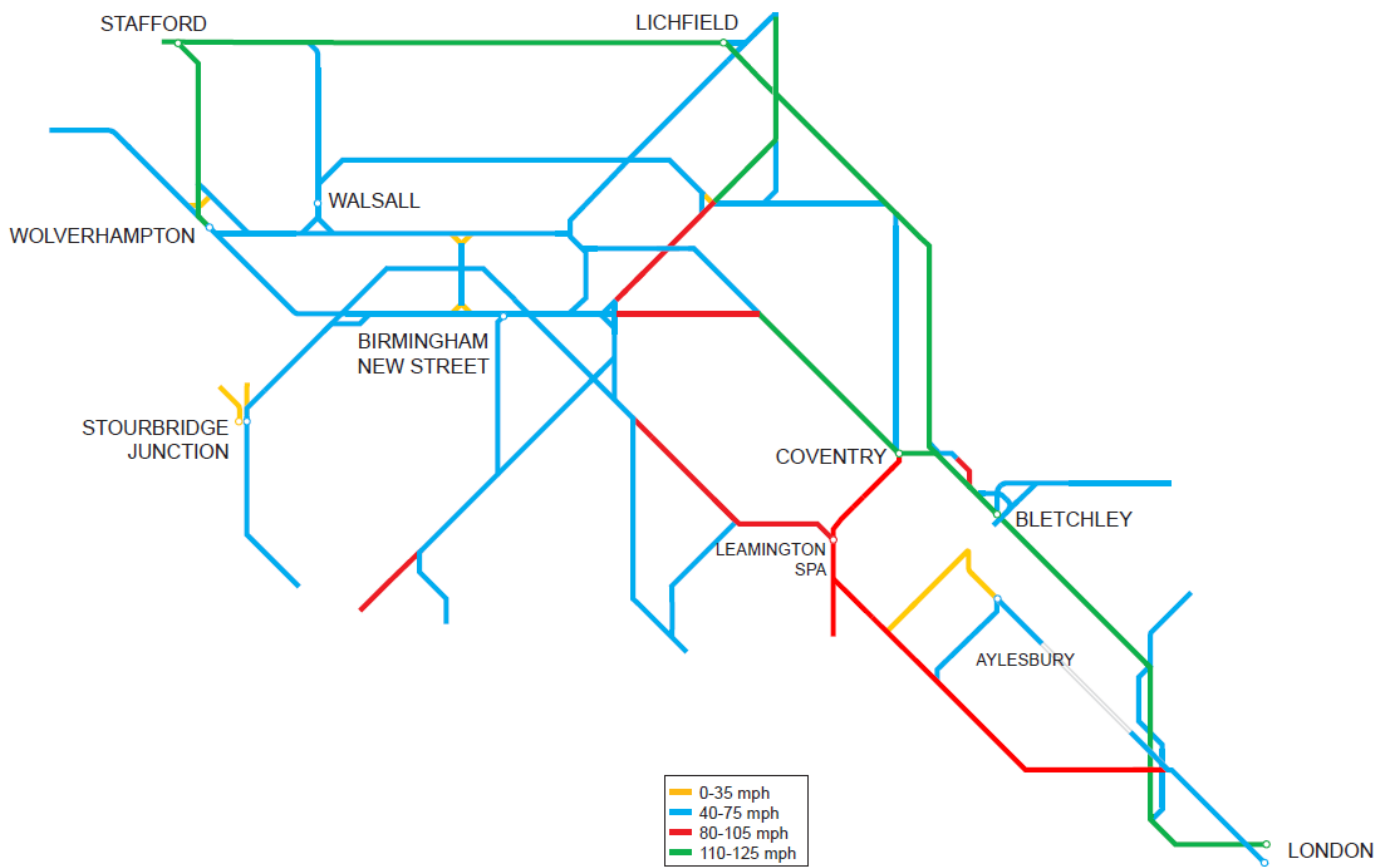
Linespeed

NW&C North



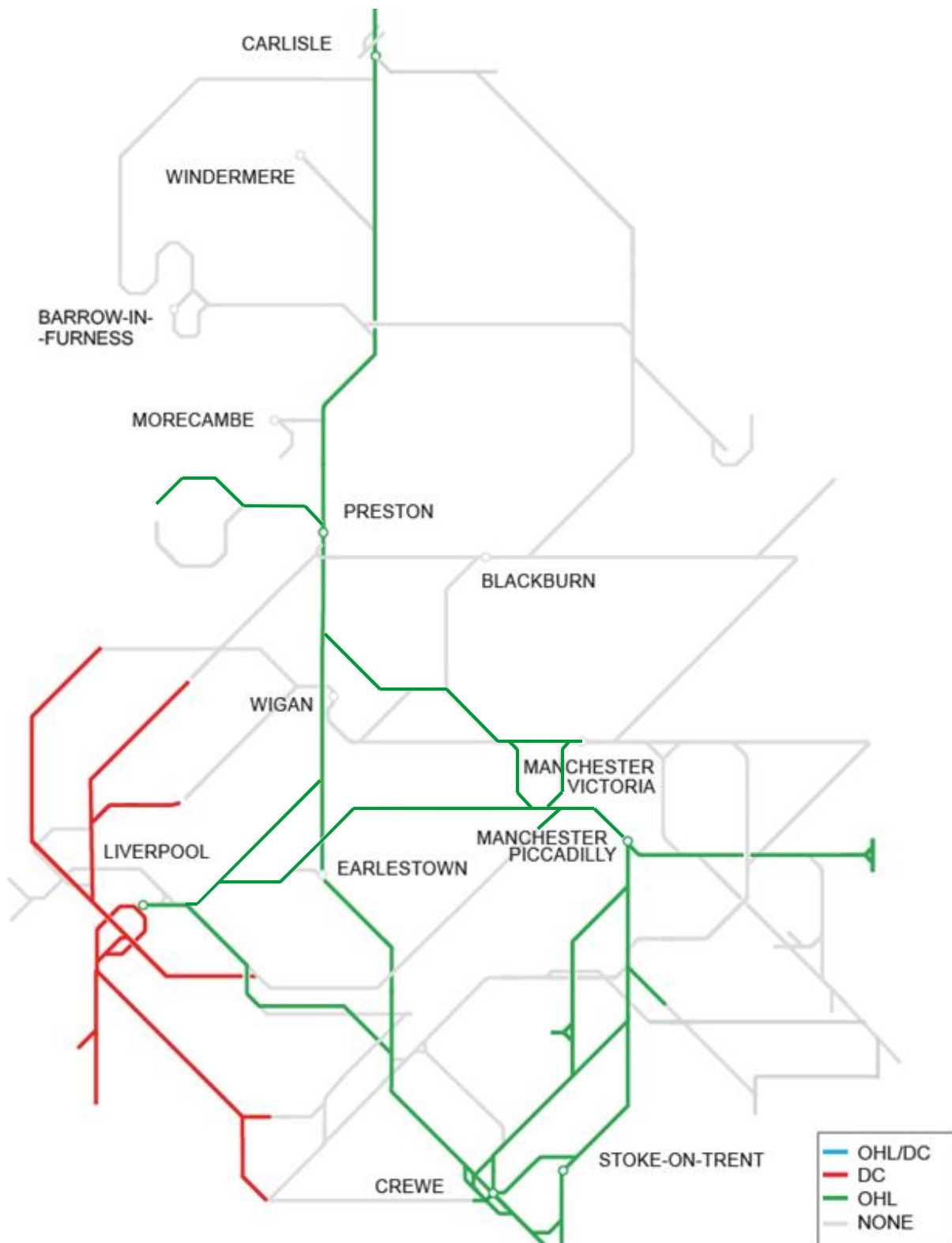
Linespeed

NW&C South



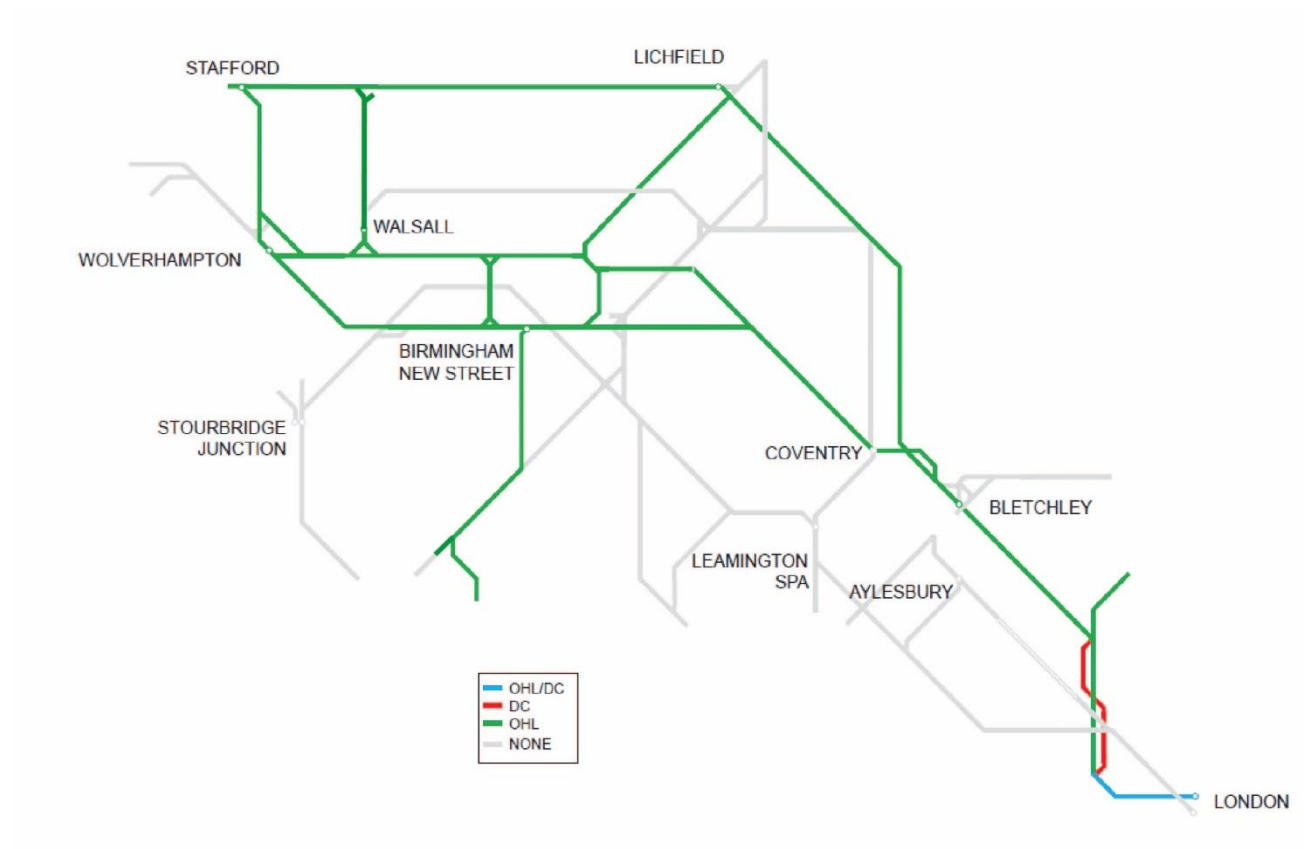
Electrification

NW&C North



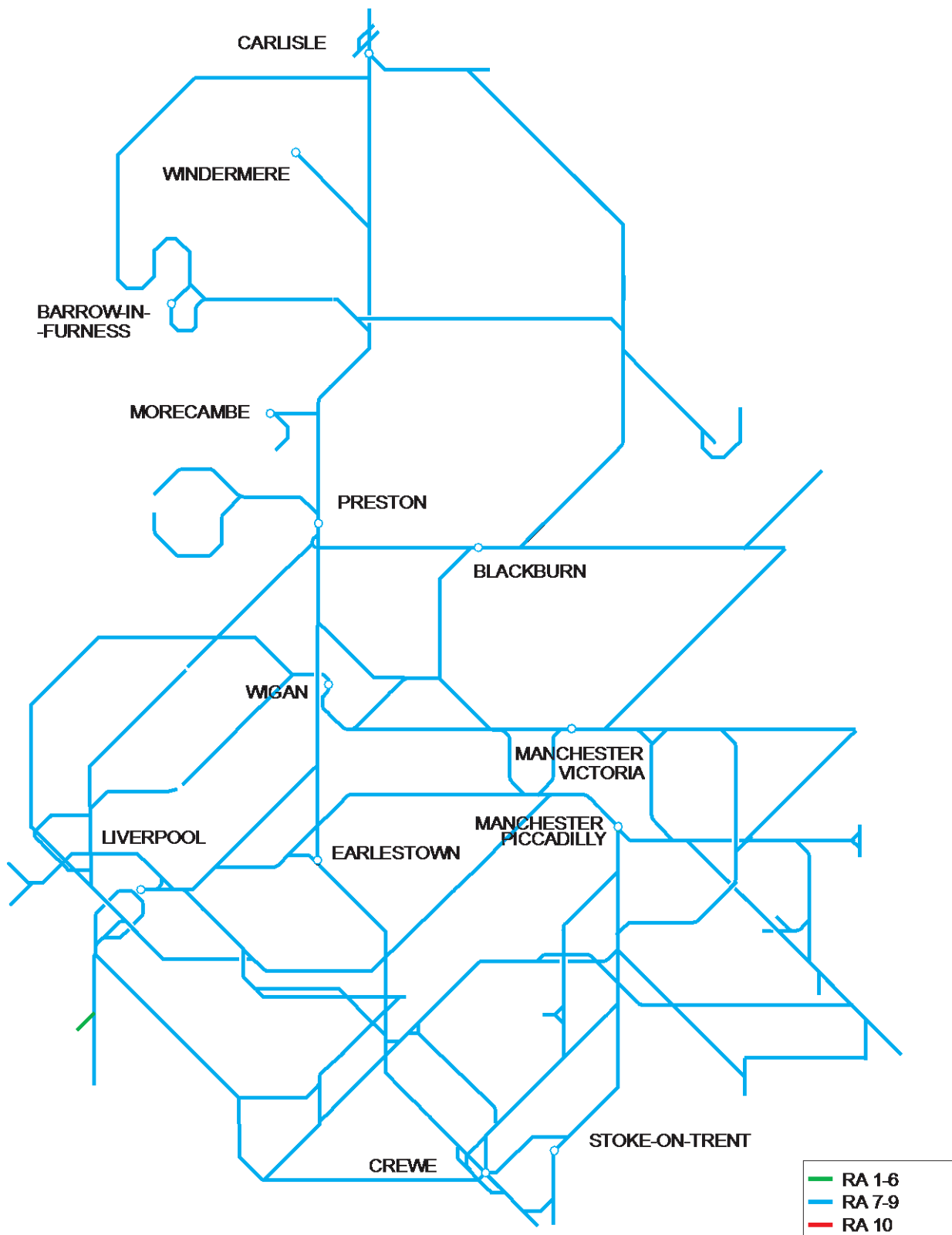
Electrification

NW&C South



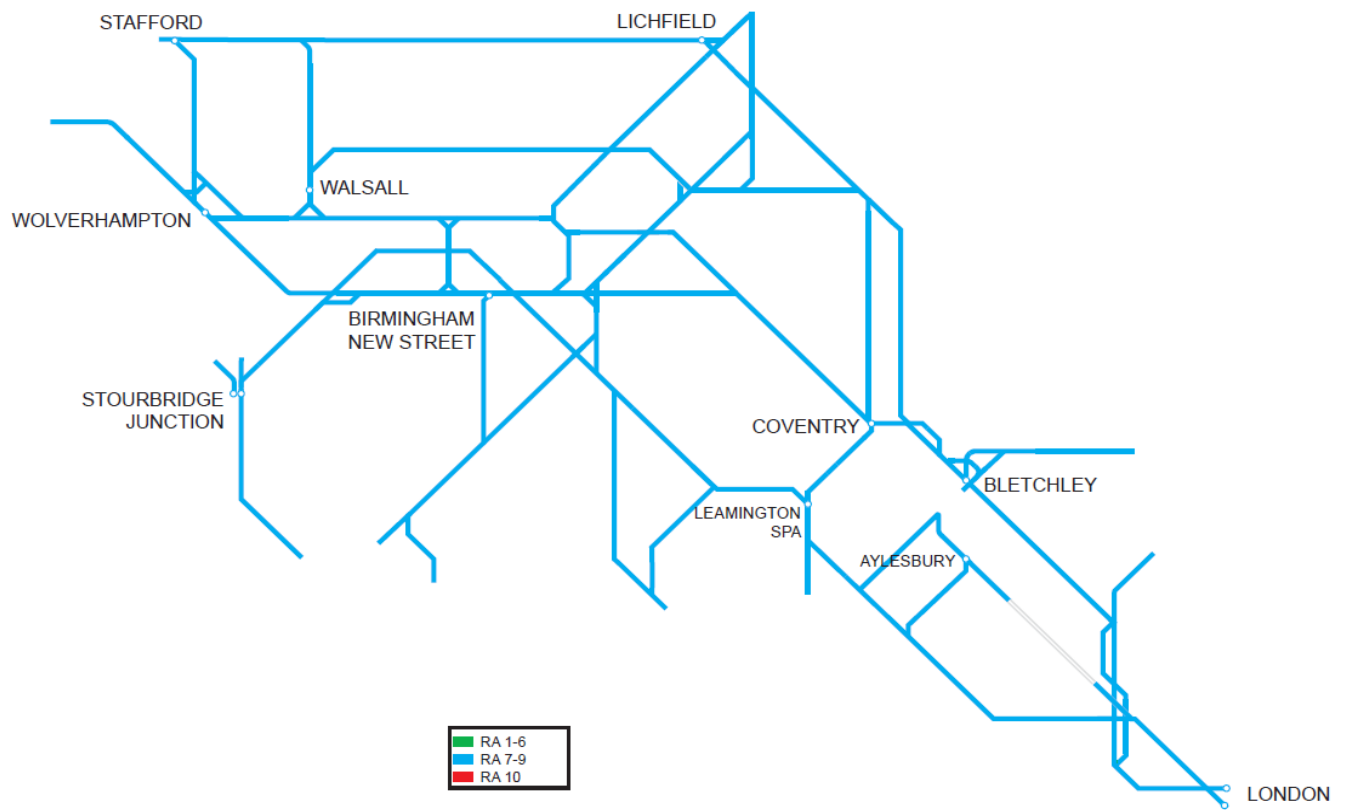
Route availability

NW&C North



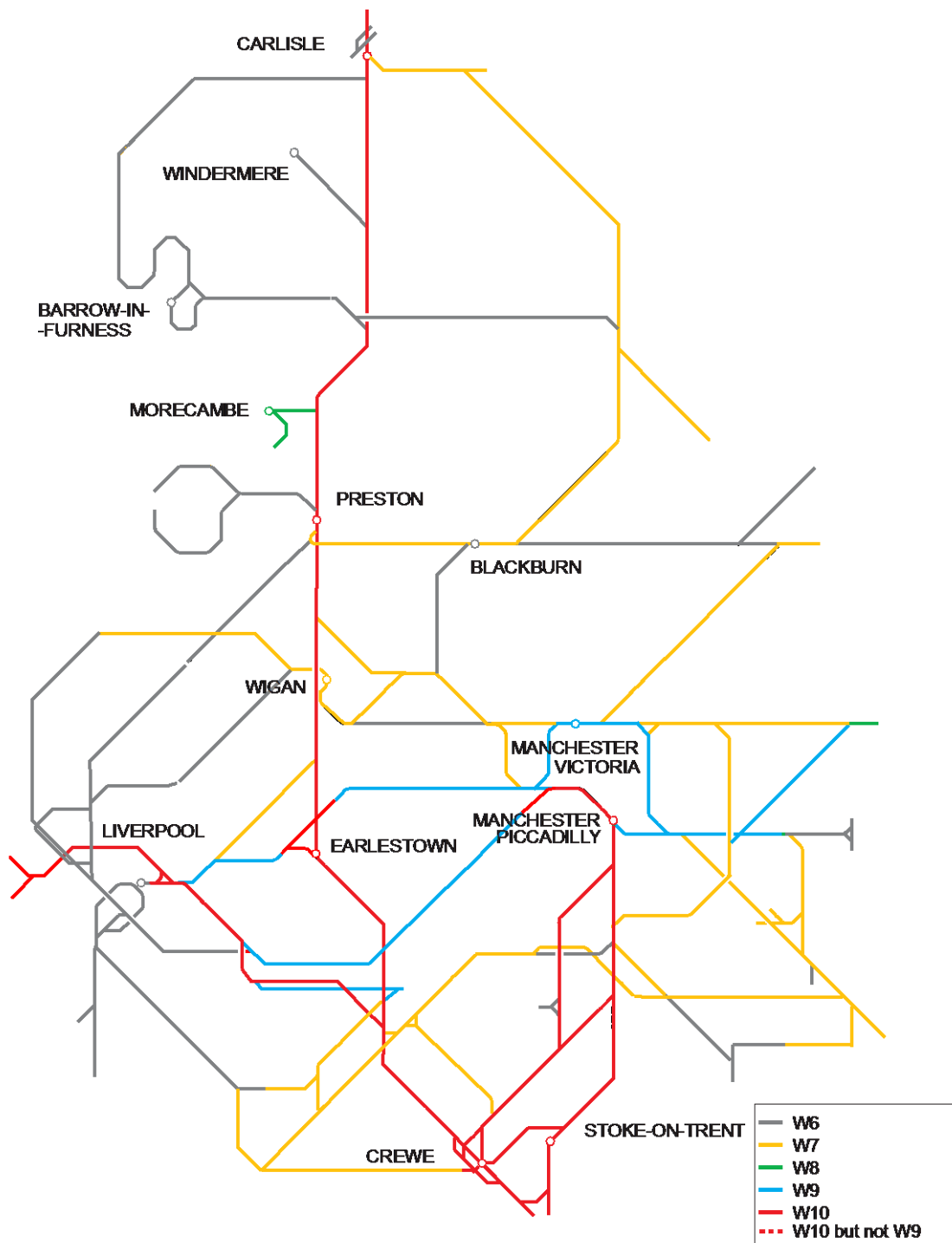
Route availability

NW&C South



Gauge

NW&C North



Gauge

NW&C South

