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## Framework Capacity Statement 2021

# Including consultation on alternative approaches to presenting capacity information

**Network Rail** 

April 2021

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# 1. Purpose

#### 1.1 Purpose

This statement is published alongside Network Rail's Network Statement in order to meet the requirements of <u>European</u> <u>Commission Implementing Regulation (EU) 2016/545</u> of 7 April 2016 on procedures and criteria concerning framework agreements for the allocation of rail infrastructure capacity.

Although the United Kingdom has left the European Union, the regulation has been incorporated into UK legal requirements by way of the UK's own withdrawal arrangements and therefore remains a statutory requirement. The third 'recital' prefacing the regulation includes the following:

"Potential applicants need transparency concerning the allocated framework capacity and the remaining indicative capacity on a line. With a view to avoiding administrative burden related to framework agreements, potential applicants should get a first impression of how likely it is that their applications will be approved."

Framework capacity is any capacity contracted for sale for more than one (annual) timetable period. Therefore, any firm rights under a Track Access Contract fall within this definition, until towards the end of the term of the contract.

This Framework Capacity Statement has been produced to improve the clarity and transparency of those rights, and their implications for parties seeking new or additional capacity on Network Rail infrastructure. This fits well with Network Rail's current transformation programme, to make the company work better with train operators to serve passengers and freight users.

Due to the nature of framework capacity, which legally must not specify a train path, it is not possible to be precise about the quantity of capacity that is used by these rights, and consequently the capacity that remains available for use. That can only be identified once the rights are used to create train paths in a timetable. Potential applicants are urged to use the information sources described in this document as an initial guide, to read them in conjunction with the advice in our Network Statement, and to contact us directly at the earliest opportunity to discuss capacity requirements more specifically.



#### Consulting on how we present this information

The limitations of a Framework Capacity Statement were discussed fully in the initial edition we published in December 2016, much of which is re-presented as an annex to this edition.

Responses to the 2016 consultation document indicated a relatively low level of interest across the industry at the time on both the subject matter and the design of the Framework Capacity Statement.

We do however remain interested to hear readers' views on the form in which data may be presented and, after the publication of a number of statements, we recognise that these views may have evolved.

The contracts containing the access rights are publicly available elsewhere, and links are provided in section 2.2. However, the way in which the rights are described when combined on the geography of the railway network, and over time, to meet the requirements of the regulation, is open to some interpretation.

All the sources of information to do this are listed in section 3, but they will give the reader at best only an indication of the available capacity.

Hence, applicants or potential applicants for new or amended framework agreements are encouraged to contact Network Rail as early as possible, to enable us to help identify where capacity exists that could meet the applicant's requirements and to consider all potential users where capacity is scarce.



2. Framework capacity on Network Rail's network

## 2.1 Infrastructure covered by this statement

The national rail network in Great Britain operated by Network Rail is defined in our Network Statement which can be found at <u>https://www.networkrail.co.uk/industry-commercial-</u> <u>partners/information-operating-companies/network-statement/</u>.

We are customer focused. We run the company through devolved route businesses that understand how to meet customer needs. They operate, maintain and renew infrastructure to deliver a safe and reliable railway for passengers and freight customers.

The COVID-19 pandemic continues to have a significant and wide-reaching impact both on our country and our railway. As a result, we continue to identify opportunities for efficiencies and to improve how we work and what we deliver for passengers and freight users.

#### Regions

One of the biggest changes we've implemented in recent years is the formation of our new regions and routes in 2019. Our five regions encompass one or more routes and multiple transport hubs to better align operations with passengers' and communities' needs.

As part of the changes, some centralised services and functions have been devolved to regions or routes enabling us to be more responsive to customers and passengers.



A region plans and responds to what passengers want and need from the railway, where they are, so key decisions are no longer being made far away from the frontline. Less red tape, less bureaucracy – more improvements for passengers. Each region has its own Managing Director.

#### Routes

Within the regions are 14 routes which deliver local operations, maintenance and renewals. The routes are responsible for day to day delivery of train performance and work closely with local train operators.

Each route is a large, complex business in its own right, run by a director and a senior leadership team who are accountable for effectively and efficiently delivering for customers and key stakeholders. These outcomes are made visible through route and customer scorecards.

#### Other infrastructure

Infrastructure belonging to other Infrastructure Managers is excluded from this statement: adjacent networks include High Speed One, Nexus and the Cardiff Valley Lines.

Some railway infrastructure is outside the scope of the Regulation, for example light rail systems and the London Underground. A full list of adjacent infrastructure is given in section 2.2.2 of the Network Statement.

#### Specialised Infrastructure

Network Rail has declared some of its network as *specialised infrastructure* under Regulation 25 of the <u>2016 Railways</u> <u>Regulations</u>. Currently the two railway test tracks at High Marnham (Nottinghamshire) and Old Dalby (Leicestershire/ Nottinghamshire) fall into this category. These are subject to bespoke access arrangements as set out in section 2.4.1 of the Network Statement, which do not constitute framework capacity and the test tracks are therefore excluded from this statement. Further information is available at <u>https://www.networkrail.co.uk/industry-and-commercial/researchdevelopment-and-technology/rail-innovation-development-</u>

# Congested Infrastructure

centres/.

Parts of the network included in this statement are currently declared as *congested infrastructure* under Regulation 26 of the <u>2016 Railways Regulations</u>. These are detailed in section 4.6 of the Network Statement, and also under 'Management of Congested Infrastructure' at <u>https://www.networkrail.co.uk/industry-and-</u>commercial/information-for-operators/.

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## 2.2 Framework Agreements in Great Britain

Regulation 3 of the <u>2016 Railways Regulations</u> defines a framework agreement as:

"either (a) an access contract described in section 18(2)(a) of the [1993 Railways] Act [as amended] which satisfies one of the conditions in sub-section (1) of that section; or (b) a legally binding agreement made other than in pursuance of section 17 or 18 of the [1993 Railways] Act [as amended] setting out the rights and obligations of an applicant and the infrastructure manager or, as the case may be, allocation body in relation to the infrastructure capacity to be allocated and the charges to be levied over a period in excess of one working timetable period".

In respect of Network Rail's network, this means all track access contracts. However, some contracts include only contingent rights, i.e. for certain freight operators and for all passenger charter train operators. These do not constitute framework capacity, because the capacity is not allocated prior to the timetable planning processes; effectively these contracts provide only a right to request capacity rather than a right to receive capacity. These contracts are identified separately in the list on page 10.

Consolidated, redacted copies of the contracts in the list may be found on the Office of Rail & Road website at http://orr.gov.uk/what-and-how-we-regulate/trackaccess/applications-decisions-appeals-andagreements/consolidated-agreements, except where noted otherwise by footnote.



#### Passenger services (firm rights)

#### Freight services (firm rights)

Colas Rail	
DB Cargo	
Direct Rail Services	
Freightliner	
Freightliner Heavy Haul	
GB Railfreight	

#### Passenger charter services (contingent rights only)

Direct Rail Services
First Greater Western
GB Railfreight
Grand Central Railway Company
Locomotive Services (TOC)
Rail Express Systems, t/a DB Cargo
Rail Operations Group
Vintage Trains
West Coast Railway Company, t/a West Coast Railways

#### Freight or freight customer services (contingent rights only)

Associated British Ports
Devon and Cornwall Railways
Harsco Rail
Legge Infrastructure Services
Locomotive Services (TOC)
London Gateway Port
Loram UK
Rail Operations Group
SLC Operations
Tarmac Trading
Victa Railfreight
Victoria Harbour
Vintage Trains
West Coast Railway Company

<sup>&</sup>lt;sup>1</sup> Unregulated contract, not on ORR website.

Applicants or potential applicants for new or amended framework agreements are encouraged to contact Network Rail as early as possible, to enable us to help identify where capacity exists that could meet the applicant's requirements and to consider all potential users where capacity is scarce.

We will undertake consideration of access requests in accordance with our Access Rights Policy which can be found at <u>https://www.networkrail.co.uk/industry-and-</u> <u>commercial/information-for-operators/sale-of-access-rights/</u>.

Access rights are now expressed with more flexibility than has historically been the case in Great Britain. It is common for passenger rights to be expressed as a quantum for each 24-hour period, and for freight rights to be expressed in a time 'window' for departure and arrival times.

This approach is consistent with Network Rail's Access Rights Policy and ORR's guidance on track access contracts, which can be found at <u>http://orr.gov.uk/what-and-how-we-regulate/track-</u>

<u>access/guidance</u>.



## 2.3 Capacity allocation

Each Track Access Contract incorporates the Network Code, which is a common set of provisions relating to the functioning of the railway system. Part D of the Network Code relates to timetable change. It sets out the processes for the twice-yearly timetable revision and for variations subsequent to that revision. These are the means by which access rights are given effect as train paths in the timetable. The Network Code can be found at https://www.networkrail.co.uk/industry-andcommercial/information-for-operators/network-code/. 3. How to identify framework capacity

## 3.1 Capacity of the network

The capacity of the network available for use by train services is constrained by the features of the infrastructure, e.g. headways permitted by the signalling system, and other rules about when the railway is closed or access is limited by maintenance or renewal work.

In order to produce the twice-yearly timetable, these rules are brought together in the Timetable Planning Rules and the Engineering Access Statement, respectively. These may be found under 'Operational Rules' at

https://www.networkrail.co.uk/industry-commercialpartners/information-operating-companies/.

## 3.2 Capacity allocated in framework agreements

Where the framework agreements listed in section 2.2 contain firm access rights, these are listed in Schedule 5 of each contract. Passenger access rights are usually defined as a number of trains per day in each direction under each service code (the route served by a group of trains). Freight rights are shown in a separate rights table referenced in Schedule 5 of the freight contract; in the rights table each train is listed separately with an associated time 'window' at its origin and destination.

Care must be taken in interpreting this information as multiple service codes, and often multiple operators, co-exist on most sections of the railway network.



## 3.3 Capacity available for framework agreements

Whatever capacity is available after the existing firm rights have been satisfied is available for concluding further framework agreements. This can be estimated by comparing the characteristics of the network set out in the operational rules with the framework capacity already allocated, i.e. the firm access rights under Schedule 5 of the various track access contracts.

This will necessarily be imprecise because there are multiple ways of satisfying all the firm access rights on the infrastructure. The current timetable represents one of these ways, so it could be used as a proxy as discussed in section 3.4.

Furthermore, whether there is capacity available for a new framework agreement (or additions to an existing agreement) may depend on the proposed use of that capacity. For example, if there is one remaining path available on a line where, and at a time when, the other trains all travel at a particular speed, then this additional capacity may not exist if the train proposed to use it is faster or slower than the others.





## 3.4 Using the timetable as a proxy

An indication of the effect of current access rights on capacity may be found in the current working timetable, available at <u>https://www.networkrail.co.uk/running-the-</u> <u>railway/timetabling/working-timetable/</u>.

It should be noted that:

- freight paths are in different documents from passenger paths
- almost all passenger paths represent framework capacity (i.e. a firm right for multiple timetable years)
- many freight paths represent contingent or 'Train Operator Variation' rights and so do not constitute framework capacity

## 3.5 Conclusion

The working timetable (properly interpreted with reference to the track access contracts and the operational rules) can give an indication of the capacity available for concluding framework agreements.

However, because of the complexity of understanding and interpreting the various data sources, we recommend that applicants or potential applicants for new or amended framework agreements should contact Network Rail as early as possible, to enable us to help identify where capacity exists that could meet the applicant's requirements and to consider all potential users where capacity is scarce.





## 4 Background to 2021 consultation

#### 4.1 Developments since 2016

In December 2016 we published an initial Framework Capacity Statement. That document included a number of questions for readers about how best to present the available data in order to be both practically useful and cost-efficient while complying with the requirements of the relevant regulations.

Over the following three years, the pressures of demand growth on our infrastructure continued, and two additional sections were declared as Congested Infrastructure.

Subsequent editions of our Framework Capacity Statement (in 2018 and 2020) took the approach set out in sections 1 to 3 of this document: that combining the available information about the potential capacity of the network with the available information on used capacity can give users and potential users of the railway an indication of what remains available to be used or contractualised for future use.

We remain aware that there are many uncertainties around interpretation of the available information, and that is why we encourage anyone who might want to use additional capacity to talk to us as soon as they feel able to.

Then, in March 2020, central and devolved governments introduced widespread restrictions on movement and economic activity in response to the COVID-19 virus. Emergency timetables were adopted with a greatly reduced number of services.

## 4.2 Timing and purpose

At the time of writing, freight traffic has substantially recovered but passenger traffic is still heavily depressed by the many public health restrictions that remain in place. It is currently uncertain how the different markets served by the railway will recover; whether each will reach or exceed its previous level of demand, and at what rate each type of traffic will return.

Nevertheless, amid this uncertainty the usual processes of applying for and allocating capacity on the railway carry on. It is necessary to maintain these processes, and it is good to review them and to try to improve and develop them. It is in this spirit that we present this annex to the Framework Capacity Statement.

The following sections revisit the questions raised as part of our original 2016 Framework Capacity Statement to invite stakeholder views on the production and presentation of information and data to support the aims of the statement.

In order to show these options this annex once again presents different methodologies for presenting data, highlights key observations and revisits questions from our previous consultation on this subject. Please note that the data in this section should therefore be treated as examples rather than current snapshots; each example states the date of the data used. In section 5 we present several of the possible ways of (dis)aggregating and presenting the data. Section 6 then provides a commentary on these and others, with questions to encourage stakeholder input.

We hope you will respond to help us develop this statement into a format that will be of increasing usefulness to existing and potential train operators.

We would be delighted to hear from you.



## 5 Granularity of analysis – examples and issues

## 5.1 Dividing the railway geographically

Sections 2 and 3 of this document describe the geography and organisation of the rail network in Great Britain, and indicate which operators have firm rights under framework agreements over that geography. However, in order to gain some understanding of how these rights use capacity, and therefore what capacity remains available for potential use, it is necessary to examine parts of the network separately.

Sections 5.2 and 5.3 below consider progressively smaller sections of infrastructure, and section 5.4 describes the smallest granularity.

For planning purposes Network Rail uses 17 Strategic Routes, identified by letters A to Q, as shown on the adjacent map. Each Strategic Route is further divided into Strategic Route Sections (SRSs), generating a total of 305 SRSs across the Network Rail network.

Strategic Routes and SRSs are not always contingent with the geographical boundaries of the regions and routes described in section 2.1.



#### 5.2 Analysis at Strategic Route level

An example follows of how the requirements of the regulation might be applied on one strategic route. The example used is Strategic Route J: London and West. An attempt has been made to show the quantum of trains slots to which firm rights were held on this infrastructure.

Where firm rights were not time-specific they are shown spread across their potential validity. This validity may be the peak period, the off-peak period (definitions of 'peak' vary in each contract and are usually direction specific, so footnotes are necessary), or the whole 24 hours.

Not all slots extend over the whole geography of the strategic route, so the table remains a very vague indication of the volume of capacity which the framework agreements represent. Weekends are excluded from the analysis.



#### SR J: London and West - DOWN direction SX - data current in December 2016

Operator	0000-0200	0200-0400	0400-0600	0600-0800	0800-1000	1000-1200	1200-1400	1400-1600	1600-1800	1800-2000	2000-2200	2200-0000
Chiltern Railways				6	1				24 <sup>2</sup>			
CrossCountry	63											
Great Western Railway		524 <sup>3</sup>										
Heathrow Connect	324								6	5		
Heathrow Express	74											
South West Trains						1	1					
DB Cargo						7:	1 <sup>6</sup>					
Freightliner						22	2 <sup>6</sup>					
Freightliner Heavy Haul		1	6				1	L6				
GB Railfreight						1:	1 <sup>6</sup>					
Direct Rail Services			1	6								
Colas Rail								16	2	6		

<sup>1</sup> Quantum across 3-hour peak (0700-1000 arrivals at Marylebone). Subject to interval protection.

<sup>2</sup> Quantum across offpeak (approximately the shaded periods). Subject to interval protection. Also 1 slot per day offpeak (before 1600 or after 1900) departing Paddington.

<sup>3</sup> Includes 53 slots in the 3-hour peak (1600-1900 departures from Paddington) and 212 slots offpeak. Excludes services branded Heathrow Connect. Subject to route opening hours.

<sup>4</sup> Quantum across offpeak (approximately the shaded periods). Subject to interval protection west of Hayes & Harlington.

<sup>5</sup> Quantum across 3-hour peak (1600-1900 departures from Paddington). Subject to interval protection west of Hayes & Harlington.

<sup>6</sup> Counts slots valid on at least 3 days SX. Some slots are subject to windows as short as 1 hour, others are 24 hours, and windows vary over geography. Subject to route opening hours.

#### SR J: London and West - UP direction SX – data current in December 2016

Operator	0000-0200	0200-0400	0400-0600	0600-0800	0800-1000	1000-1200	1200-1400	1400-1600	1600-1800	1800-2000	2000-2200	2200-0000
Chiltern Railways		241								<sup>2</sup>		
CrossCountry		62										
Great Western Railway						52	2 <sup>3</sup>					
Heathrow Connect		6 <sup>4</sup> 32 <sup>5</sup>										
Heathrow Express		74										
South West Trains		3										
DB Cargo						73	36					
Freightliner		226										
Freightliner Heavy Haul	16 16							6				
GB Railfreight	136											
Direct Rail Services	16											
Colas Rail							1	6			2 <sup>6</sup>	

<sup>1</sup> Quantum across offpeak (approximately the shaded periods). Subject to interval protection. Also 1 slot per day offpeak (before 0700 or after 1000) arriving Paddington.

<sup>2</sup> Quantum across 3-hour peak (1600-1900 departures from Marylebone). Subject to interval protection.

<sup>3</sup> Includes 58 slots in the 3-hour peak (0700-1000 arrivals at Paddington) and 209 slots offpeak. Excludes services branded Heathrow Connect. Subject to route opening ho urs.

<sup>4</sup> Quantum across 3-hour peak (0700-1000 arrivals at Paddington). Subject to interval protection west of Hayes & Harlington.

<sup>5</sup> Quantum across offpeak (approximately the shaded periods). Subject to interval protection west of Hayes & Harlington.

<sup>6</sup> Counts slots valid on at least 3 days SX. Some slots are subject to windows as short as 1 hour, others are 24 hours, and windows vary over geography. Subject to route opening hours.

A further table is given below, aggregating these slots to combine the directions. On the face of it, this is less useful than the directional tables above, but it avoids one complexity which is potentially misleading in the directional analysis. Because of the complex nature of railway geography, there are places on the network where peak train slots run in the contra-peak direction.

One such case is captured on Strategic Route J in this example: Chiltern Railways had firm rights for one train per day each way to/from Paddington (entering SR J at South Ruislip) in the offpeak. Chiltern also had a larger number of train slots between Marylebone and Oxford, entering SR J at Oxford North Junction. These slots were specified by the Marylebone peak, so Up direction peak slots from Oxford to Marylebone were actually applicable in the Down direction, contra-peak, on SR J.

#### SR J: London and West - BOTH directions SX – data current in December 2016

Operator	0000-0200	0200-0400	0400-0600	0600-0800	0800-1000	1000-1200	1200-1400	1400-1600	1600-1800	1800-2000	2000-2200	2200-0000
Chiltern Railways		62 <sup>1</sup>										
CrossCountry		125										
Great Western Railway		1046 <sup>2</sup>										
Heathrow Connect		76 <sup>3</sup>										
Heathrow Express	148											
South West Trains	4											
DB Cargo						14	44					
Freightliner	446											
Freightliner Heavy Haul	1 <sup>6</sup> 2 <sup>6</sup> 1 <sup>6</sup>							6				
GB Railfreight	246											
Direct Rail Services	16 16											
Colas Rail	2 <sup>6</sup> 4 <sup>6</sup>											

<sup>1</sup> Includes 6 slots in each 3-hour peak period between Oxford and Marylebone (peak defined at Marylebone so contrapeak at Oxford). Includes 24 offpeak slots each way. Also includes 1 offpeak slot each way between Paddington and Ruislip (peak defined at Paddington).

<sup>2</sup> Includes 58 slots in the 3-hour morning peak to Paddington and 209 offpeak; 53 slots in the 3-hour evening peak from Paddington and 212 offpeak. Excludes services branded Heathrow Connect. Subject to route opening hours. <sup>3</sup> Includes 6 slots in each 3-hour peak period to/from Paddington and 32 each way offpeak. Subject to interval protection west of Hayes & Harlington.

<sup>4</sup> Counts slots valid on at least 3 days SX. Some slots are subject to windows as short as 1 hour, others are 24 hours, and windows vary over geography. Subject to route opening hours.

## 5.3 Analysis at SRS level

In most cases it would be possible to avoid the type of misleading issue identified in the section 5.2 if the network geography is disaggregated to a smaller unit.

An example follows of how the requirements of the regulation might be applied on one Strategic Route Section. The example used is SRS N.01: London Euston – Rugby (excluding the Watford DC lines). It should be noted that there are 305 SRSs across the whole of Network Rail's infrastructure.

At this level of disaggregation, it becomes possible to discuss the rights held in framework agreements against the infrastructure capacity within the SRS. However, although qualitative commentary is possible, the numbers alone are still of little use in ascertaining the likelihood of spare capacity being available should an operator wish to use it.

#### SRS N.01 London Euston – Rugby (excludes Watford DC lines) [data current in December 2016]

The ruling planning headway on the fast lines was 3 minutes, and on the slow lines 4 minutes. This gives a potential maximum quantum of 20 tph each way on the fast lines and 15 tph each way on the slow lines, before any of the following are taken into account: rolling stock characteristics, especially differences in capability regarding acceleration, deceleration and maximum speed; calling patterns; platforming and conflicting movements including junction reoccupation constraints; differential applicability of engineering or performance allowances. The routes in this SRS were open continuously except as specified in the relevant Engineering Access Statement. It was normal practice to assume that only two lines are available between Camden and Rugby on weeknights between approximately 2330 and 0630: these could be fast lines, slow lines or a mix of both. This could generate a daily theoretical maximum quantum of 700 in each direction, before any other constraints are considered.

The highest weekday quantum of slots with firm contractual rights in one direction was 296 for passenger services and 52 for freight. A number of assumptions have been made to generate these figures, particularly for the freight slots where rights applicable on fewer than 3 days during the week have not been counted.

Thus around half of the theoretical maximum was contracted in framework agreements. The widely varying nature of the services contracted, and the many requirements for crossing movements, mean that in practice there was very little spare capacity on this SRS.

#### Passenger services

*West Coast Trains* (t/a Virgin Trains) had "quantum only" firm rights to 147 slots per weekday in each direction throughout this SRS. One up slot was specified to be routed via Northampton; the remainder would normally be on the fast lines. Calling patterns, intervals and journey times were not specified, but some trains called at one of Watford Junction, Milton Keynes Central and Rugby.

*London & Birmingham Railway* (t/aLondon Midland) had firm rights to total quanta as follows:

Geography	Down peak	Down offpeak	Up peak	Up offpeak
Euston – Watford Junction	29	96	26	96
Watford Junction - Tring	28	96	24	96
Tring - Bletchley	21	73	18	71
Bletchley – Milton Keynes Central	20	72	15	70

Geography	Down peak	Down offpeak	Up peak	Up offpeak	
Milton Keynes Central – Hanslope Junction	15	56	10	55	
Hanslope Junction – Rugby fast lines	2	9	1	11	
Hanslope Junction - Northampton	13	47	9	44	
Northampton - Rugby	54		52		

Peak was defined as (Down) departing Euston between 1600 and 1859 inclusive; (Up) arriving Euston between 0700 and 0959 inclusive

Intervals and journey times were not specified, but calling patterns were; and the mixture of stopping, semi-fast and fast services required regular weaving movements between fast and slow lines. These movements use a large amount of capacity because the lines are paired by speed rather than direction and there is no gradeseparation for these movements anywhere between Camden and Rugby.

*GoVia Thameslink Railway* (t/a Southern) had firm rights between Willesden (to/from the West London Line) and Milton Keynes as follows:

Geography	Down peak	Down offpeak	Up peak	Up offpeak	
Willesden – Watford Junction	3	19	4	18	
Watford Junction – Milton Keynes Central	3	13	2	14	

Peak was defined as (Down) departing Kensington Olympia between 1600 and 1859 inclusive; (Up) arriving Kensington Olympia between 0700 and 0959 inclusive.

Intervals, calling patterns and journey times were not specified.

*Serco Caledonian Sleepers* (t/a Caledonian Sleeper) had firm rights to 2 slots per weekday in each direction throughout this SRS, each calling at Watford Junction. There were time constraints as follows:

Service to/from	Down constraints	Up constraints	
Glasgow & Edinburgh	Not to depart Euston before 2330	Not to arrive Euston after 0730	
Inverness, Aberdeen & Fort William	Not to depart Euston before 2100	Not to arrive Euston after 0800	

#### Freight services

The freight slots for which rights are counted below mostly had specified "windows" for their departure time from origin and arrival time at destination. The origin and/or destination may of course be far away from this SRS. The windows varied in length between 30 minutes and 24 hours, according to commercial requirements.

**DB Cargo** had firm rights north of Wembley for 13 Down slots and 8 Up, and 1 further slot in each direction north of Northampton. This counts rights that exist for at least 3 weekdays per week; there were assorted other firm rights for slots on 1 or 2 days a week.

There were also many firm rights for slots south of Wembley as far as Willesden, to/from either the West or North London Lines, but these are usually segregated from the main WCML fast and slow lines.

*Freightliner* had firm rights north of Willesden for 27 Down slots and 20 Up. This counts rights that exist for at least 3 weekdays per week; there were assorted other firm rights for slots on 1 or 2 days a week.

*Freightliner Heavy Haul* had no firm rights on this SRS, counting rights that exist for at least 3 weekdays per week; there were however firm rights for 1 slot each way on 1 day a week.

**GB Railfreight** had firm rights north of Willesden for 4 Down slots and 5 Up, and 1 further slot in each direction north of Daventry. This counts rights that exist for at least 3 weekdays per week; there were assorted other firm rights for slots on 1 or 2 days a week.

There were also a number of firm rights for slots between Wembley or Willesden and the West or North London Lines, but these are usually segregated from the main WCML fast and slow lines.

**Direct Rail Services** had firm rights north of Willesden for 2 Down slots and 4 Up, and a further 4 slots in each direction north of Daventry. This counts rights that exist for at least 3 weekdays per week; there were assorted other firm rights for slots on 1 or 2 days a week.

## 5.4 Constant Traffic Sections

To be accurate about the quantum of slots sold on a part of the network, the maximum granulation should be 'constant traffic section' (CTS), of which there are more than 6,800 (direction-specific) on the Network Rail network. Obviously, it would not be practical – even with a significant workforce – to produce a framework capacity statement at this level without automation. But automation would require contractual access rights to be expressed in a way that could be automated (i.e., with the quantum of slots for which there are firm rights mapped to the infrastructure geography). This is not the case. A proxy is available, in the form of the timetable, but this generates two problems:

- Train paths, in the timetable, and train slots, for which rights are specified in framework agreements, must not be the same by law: "a framework agreement must not specify any train path in detail"<sup>2</sup>.
- The timetable is different every day. A representative day would have to be chosen, and then 'cleansed' so that decisions are made on which versions of multiple paths to retain for the analysis. This is especially an issue for freight services which often have multiple paths to a variety of destinations.

Even if these issues are overcome, there is the cost of overcoming them and generating and running the software. This exercise (on timetable paths, not access rights) has been done in the past, to calculate the Capacity Utilisation Index (CUI). The map on this page shows CUI on every CTS in the busiest hour in the busier direction, reduced to four percentage bands, across the whole network on a sample timetable day in 2006.



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<sup>&</sup>lt;sup>2</sup> Regulation 21(3), The Railways (Access, Management and Licensing of Railway Undertakings) Regulations 2016

Producing such a map is expensive, and a network-wide map has not been produced since 2006. However, the calculation has been done twice for the whole network, to help calibrate the capacity charge during ORR's periodic review of Network Rail access charges, in 2008 and 2012. A sample extract of the 2012 data is given below, to demonstrate the format and extent of the data.

The adjacent table presents an extract of CTS-level data used for a CUI calculation in 2012<sup>3</sup>, based on a sample timetable day. The CTS shown here is between Digswell and Welwyn North, part of a two-track constraining section of the East Coast Main Line in Hertfordshire. CTS 947 is the Down (northbound) direction and CTS 948 is the Up (southbound). SRS 75 is a numeric code to map this section to SRS G.01 London Kings Cross - Peterborough.

Un	ique ID	CTS From	То	SR
DIGSWELWLWYNN1	947 DIGSWEL	WLWYNN	75	2.1
DIGSWELWLWYNN2	947 DIGSWEL	WLWYNN	75	14.3
DIGSWELWLWYNN3	947 DIGSWEL	WLWYNN	75	60.3
DIGSWELWLWYNN4	947 DIGSWEL	WLWYNN	75	65
DIGSWELWLWYNN5	947 DIGSWEL	WLWYNN	75	61.7
DIGSWELWLWYNN6	947 DIGSWEL	WLWYNN	75	78.4
DIGSWELWLWYNN7	947 DIGSWEL	WLWYNN	75	58.7
DIGSWELWLWYNN8	947 DIGSWEL	WLWYNN	75	18.3
DIGSWELWLWYNN9	947 DIGSWEL	WLWYNN	75	3.9
DIGSWELWLWYNN10	947 DIGSWEL	WLWYNN	75	11
DIGSWELWLWYNN11	947 DIGSWEL	WLWYNN	75	48.2
DIGSWELWLWYNN12	947 DIGSWEL	WLWYNN	75	55
DIGSWELWLWYNN13	947 DIGSWEL	WLWYNN	75	49.7
DIGSWELWLWYNN14	947 DIGSWEL	WLWYNN	75	59.7
DIGSWELWLWYNN15	947 DIGSWEL	WLWYNN	75	48.4
DIGSWELWLWYNN16	947 DIGSWEL	WLWYNN	75	26
DIGSWELWLWYNN17	947 DIGSWEL	WLWYNN	75	2.2
DIGSWELWLWYNN18	947 DIGSWEL	WLWYNN	75	0
DIGSWELWLWYNN19	947 DIGSWEL	WLWYNN	75	21.2
DIGSWELWLWYNN20	947 DIGSWEL	WLWYNN	75	43.1
DIGSWELWLWYNN21	947 DIGSWEL	WLWYNN	75	39.7
DIGSWELWLWYNN22	947 DIGSWEL	WLWYNN	75	49.8
DIGSWELWLWYNN23	947 DIGSWEL	WLWYNN	75	36.5
DIGSWELWLWYNN24	947 DIGSWEL	WLWYNN	75	22.7
WLWYNNDIGSWEL1	948 WLWYNN	DIGSWEL	75	0
WLWYNNDIGSWEL2	948 WLWYNN	DIGSWEL	75	18
WLWYNNDIGSWEL3	948 WLWYNN	DIGSWEL	75	82.1
WLWYNNDIGSWEL4	948 WLWYNN	DIGSWEL	75	59.8
WLWYNNDIGSWEL5	948 WLWYNN	DIGSWEL	75	61.7
WLWYNNDIGSWEL6	948 WLWYNN	DIGSWEL	75	63.2
WLWYNNDIGSWEL7	948 WLWYNN	DIGSWEL	75	56.7
WLWYNNDIGSWEL8	948 WLWYNN	DIGSWEL	75	23.9
WLWYNNDIGSWEL9	948 WLWYNN	DIGSWEL	75	2
WLWYNNDIGSWEL10	948 WLWYNN	DIGSWEL	75	11
WLWYNNDIGSWEL11	948 WLWYNN	DIGSWEL	75	51.5
WLWYNNDIGSWEL12	948 WLWYNN	DIGSWEL	75	61.7
WLWYNNDIGSWEL13	948 WLWYNN	DIGSWEL	75	52.8
WLWYNNDIGSWEL14	948 WLWYNN	DIGSWEL	75	51.3
WLWYNNDIGSWEL15	948 WLWYNN	DIGSWEL	75	48.2
WLWYNNDIGSWEL16	948 WLWYNN	DIGSWEL	75	19.8
WLWYNNDIGSWEL17	948 WLWYNN	DIGSWEL	75	0
WLWYNNDIGSWEL18	948 WLWYNN	DIGSWEL	75	0
WLWYNNDIGSWEL19	948 WLWYNN	DIGSWEL	75	11.3
WLWYNNDIGSWEL20	948 WLWYNN	DIGSWEL	75	37.9
WLWYNNDIGSWEL21	948 WLWYNN	DIGSWEL	75	39.8
WLWYNNDIGSWEL22	948 WLWYNN	DIGSWEL	75	45
WLWYNNDIGSWEL23	948 WLWYNN	DIGSWEL	75	47.3
WLWYNNDIGSWEL24	948 WLWYNN	DIGSWEL	75	17.8

CUI

<sup>&</sup>lt;sup>3</sup> Calculated by Ove Arup & Partners for Network Rail.

The unique identifier splits each directional CTS into 24 3-hour time periods as shown in the index tabulated below. The CUI is then calculated by compressing the train paths planned over this section on the minimum headway, but without changing their order, and expressing the time taken for the compressed timetable as a percentage of the time period.

This was done automatically by software algorithm, but first significant manual data cleansing and preparation were required so that the trains in the timetable used were representative and not double-counted for (e.g.) multiple daysets, alternative destinations or alternative timing loads.

Unique ID suffix	Time period	Unique ID suffix	Time period
1	0100-0400 weekday	13	1300-1600 Saturday
2	0400-0700 weekday	14	1600-1900 Saturday
3	0700-1000 weekday	15	1900-2200 Saturday
4	1000-1300 weekday	16	2200-0100 Saturday
5	1300-1600 weekday	17	0100-0400 Sunday
6	1600-1900 weekday	18	0400-0700 Sunday
7	1900-2200 weekday	19	0700-1000 Sunday
8	2200-0100 weekday	20	1000-1300 Sunday
9	0100-0400 Saturday	21	1300-1600 Sunday
10	0400-0700 Saturday	22	1600-1900 Sunday
11	0700-1000 Saturday	23	1900-2200 Sunday
12	1000-1300 Saturday	24	2200-0100 Sunday

It can be seen that the maximum CUI here was 82.1 % southbound between 0700 and 1000 on a weekday.

The CUI over the whole two-track section between Digswell and Woolmer Green would be higher because a longer section increases the effect of speed differentials.



## 6 The requirement

## 6.1 Areas open for interpretation in application

The drafting of the regulation leaves questions to be resolved by infrastructure managers.

- A. **Firmness of rights.** The FCS should indicate "the framework capacity already allocated and the number of train paths" and the "indicative capacity still available for concluding framework agreements". Firm rights are clearly "allocated", but the treatment of contingent rights and ancillary moves, etc, has still to be decided.
- B. **Time.** The FCS must indicate capacity in "control periods" of no more than 2 hours each.
  - These could be the same 2 hours across the whole network, or a rolling two hours on each line of route.
    Rolling periods will generate anomalies as routes intersect, but general periods will require trains to be captured in different periods in different locations. This is challenging with timetabled train paths, but worse with non-specific slot rights.
  - ii. The regulation recognises that contracts do not always allocate quanta within 2-hour periods. In this case the infrastructure manager is required to "assign the framework capacity as close as possible to a two-hours control period." However, this clause is in the section about contract structure, not about production of the FCS.
- iii. Each day is different and each week is different. We could publish up to 4,380 FCSs each year if every 2-hour period

was treated separately. The obvious solution of a representative day (or week) would make the output more indicative and less useful.

- C. **Geographical disaggregation.** The FCS must "indicate" capacity "for every section of line per control period".
  - i. The most accurate way of presenting the data would be by constant traffic section, of which there are approximately 7,000. Unless the process can be automated, this is not practical.
  - ii. Larger route sections require interpretation and judgment: again this makes the output more indicative and less useful.
- iii. Diverging and converging routes cause a number of problems leading to under- or over-counting of allocated capacity. If the sections become too large, it is possible to 'miss' the opportunity to run a potentially useful train between two points inside the section. Equally, with smaller infrastructure sections capacity appears to be available when it is of no practical use to any operator. Generally, the larger the section of infrastructure described, the higher the proportion of capacity that appears to be allocated.
- iv. Conflicting moves at flat junctions are generally not included so allocated capacity is under-counted.
- D. **Types of service.** The indication of capacity allocated and available should be "if applicable by type of service". It could be argued that this wording makes the service type optional,

but a counter-argument is that some contracts are only for one type of service (freight, long distance high speed, or suburban) and that therefore the service type is "applicable".

- E. Uses of capacity. The regulation recognises that total capacity comprises capacity allocated in contracts, capacity available to be allocated in contracts, and capacity used for other purposes. However, given the approximations that are necessary in describing capacity, each of these elements is likely to be merely a factor for consideration rather than an input to a mechanistic calculation.
  - i. Capacity used for other purposes should include planned restrictions of use, network services, and any other capacity that Network Rail does not wish to sell for a valid reason, e.g. to preserve the performance integrity of the timetable.
  - ii. Capacity available should include Strategic Capacity because this may be sold.

#### 6.2 Potential solutions

The scale of a comprehensive interpretation of the requirements (potentially c.7,000 constant traffic sections multiplied by 4,380 2-hour control periods) would require automation. Automation would require significant changes to model access contracts and to the planning rules (Timetable Planning Rules and the Engineering Access Statement) so that all Schedule 5 access rights and the rules could be expressed in a compatible format. Even if all this were possible, the difficulties identified in section 6.1 (C.iii and iv) would constrain the accuracy and value of the resulting data. This approach would incur significant cost across the industry, and arguably would not be desirable anyway: the regulation accepts that access rights need not be expressed in control periods and that the Framework Capacity Statement will be only an indication of the capacity allocated and available.

Alternative concepts give varying degrees of accuracy and hence usefulness, at varying levels of cost. These include:

- Present information at Strategic Route level, as demonstrated in section 5.2 of this document. This is necessarily a manual exercise and so involves some cost – compiling information of each operator's firm access rights from Schedule 5 of their Track Access Agreements takes an individual with good geographical and contractual knowledge about a week for each table. This approach is probably of limited use to potential users because of the relatively high level of geographical aggregation.
- Present information by Strategic Route Section, as demonstrated in section 5.3 of this document. The greater geographical granularity permits a more meaningful comparison of firm access rights with infrastructure capability. However, the limited quantification must still leave a large degree of uncertainty for the potential user. The resource cost is similar to the larger elements of geography, per element. However, while there are 17 Strategic Routes, there are 305 SRSs, each of which could take an experienced individual about a week to compile.
- Electronically publish the Working Timetable (WTT), in timetable or graph form, alongside the planning rules

(TPRs and EAS) on the basis that WTT passenger and freight services are generally those with contractual rights. There is no marginal cost to this approach as all these elements are already published on Network Rail's website. Any prospective user of capacity may combine the information from these sources to identify whether their desired slot could fit in the timetable; however this does not address the issue of whether Network Rail wishes to sell that capacity (section 6.1 point E.i).

 Develop a network map or table which can be colourcoded according to Network Rail's judgment of the available remaining capacity on each section in each time period, with an agreed approach to evidencing the judgment. This has the advantage of being explicitly indicative, and could be accompanied by commentary pointing the potential user to the processes for, and factors considered in, decisions on the sale of capacity. There would be a cost to creating and regularly reviewing such a document.



#### 6.3 Questions for stakeholders

- Q1 What is your interest in the Framework Capacity Statement?
- Q2 What would you like to see in the Framework Capacity Statement?
- Q3 How would you use this information?
- Q4 What is your view on the costs and benefits of the various ways of analysing and presenting data?

Please respond to networkstatement@networkrail.co.uk.

Consultation responses will be reviewed after 31 July 2021, and the review conclusions published in the autumn, so if you would like your response to be considered within this review please submit it before the end of July.

We remain interested to hear readers' views on these issues at any time.