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Capacity Strategy 2028



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CHAPTER 0 – INTRODUCTION

One of the main objectives of the railways in the coming years is to take a greater share of the transport market, and to achieve this, they have to apply competitive and agile planning and production processes. In this sense, and within the improvement of these processes, *RailNetEurope* (RNE), in collaboration with *Forum Train Europe* (FTE) is developing the *Timetabling and Capacity Redesign* (TTR) project.

The creation of this document called "**Capacity Strategy 2028**" is part of the TTR project of which ADIF and ADIF AV are members to, in general terms, carry out the redesign of the timetable process in a harmonized way. This project will surely become more relevant in the coming years in light of the proposal presented by the **European Commission COM (2023)443 in July 2023 on capacity management**. This proposal, whose main objective is to establish a new regulation for the railway capacity framework in the EU, is currently under review.

The Capacity Strategy should be seen as the basis for more accurate timetable planning. In this respect, it should provide from an early-stage, information about the intentions of Infrastructure Managers (IM) and capacity applicants (Applicants) for the coming years, such as future new traffic flows, new available infrastructure or even information about Temporary Capacity Restrictions (TCR), among others.

The elements that influence the Capacity Strategy must be communicated with the level of detail available, even if it is no high, since this information is considered necessary, both for the preparation of the Infrastructure Manager's plan, and for its communication at European level with the intention of creating a common strategy. However, the level of detail of the Capacity Strategy is in line with what is currently established with respect to the figure of the capacity strategy at the European level. Likewise, it is necessary to bear in mind that its nature is fundamentally informative and non-binding.

Throughout the document, different data (infrastructure, projects, capacity, traffic flows, ...) are reflected to put the reader in context, however, due to the changing nature of these data they should not be considered as a reference and it is necessary to consult the official documents published by the IM, mainly the Network Statement.

To this end, and following the standardized template proposed by RNE in its document "*Procedures for Capacity Strategy – Complementary document (handbook) to Description of the Timetabling and Capacity Redesign Process*" – *Version 3.0*, it is structured in the following chapters:

- 0- Introduction
- 1- Expected Infrastructure Capacity for 2028
- 2- Temporary Capacity Restrictions (TCRs)
- 3- Traffic Planning Principles and Traffic Flows



0.1.- Contact Details

For questions regarding the Capacity Strategy please write to the following address:
gestion.capacidad@adif.es

0.2.- Geographical Area

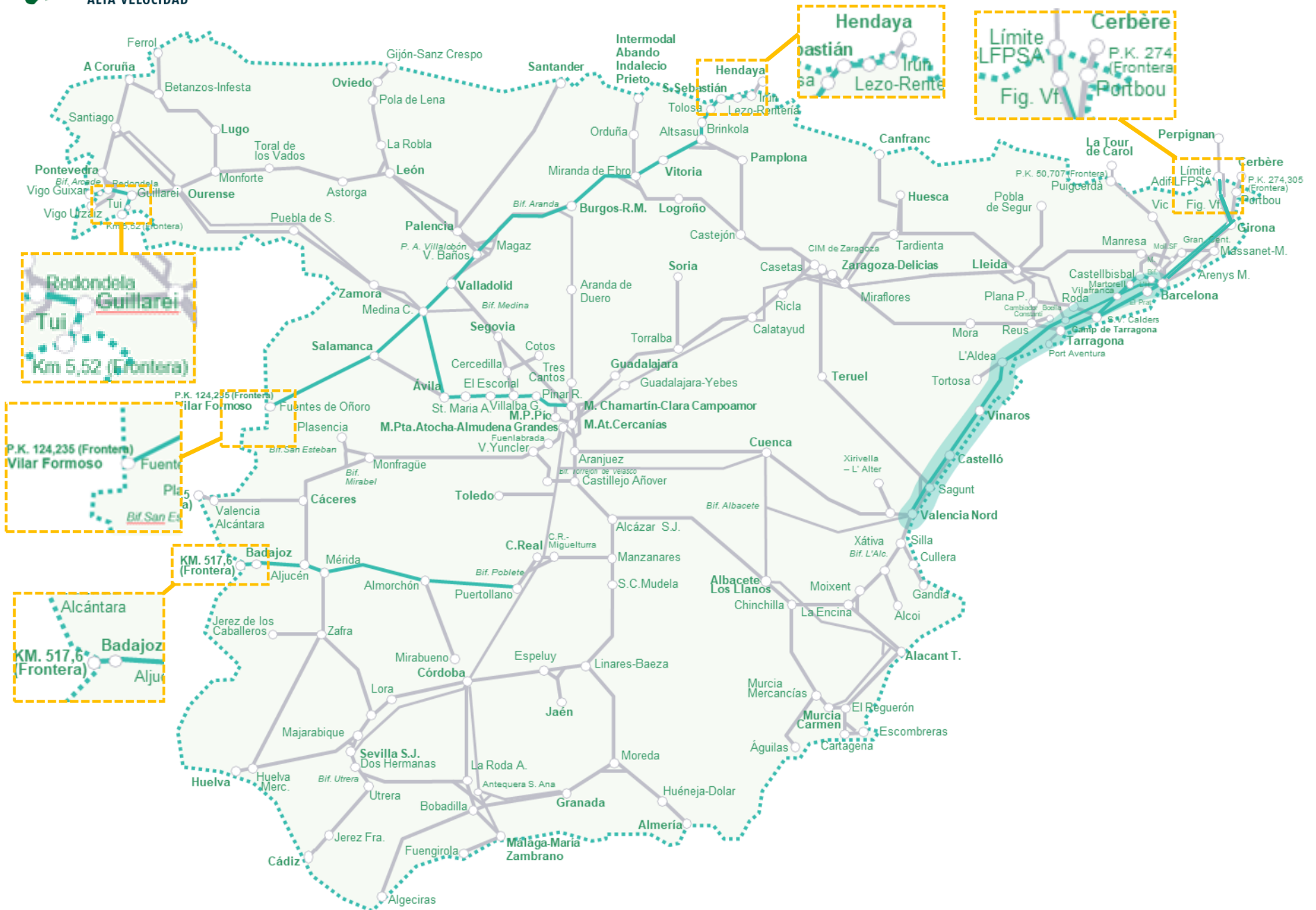
The Capacity Strategy 2028 continues to apply to the lines characterised by international traffic already indicated for the Capacity Strategy 2027:

- **Line 050 – SECTION TARRAGONA – BARCELONA – FRENCH BORDER**
- **Line 100 MADRID CHAMARTÍN CLARA CAMPOAMOR – IRÚN– FRENCH BORDER**
- **Line 120 MEDINA DEL CAMPO – PORTUGUESE BORDER**
- **PORTUGUESE BORDER – BADAJOZ – MÉRIDA – PUERTOLLANO**
- **PORTUGUESE BORDER – TUI – VIGO**
- **MEDITERRANEAN CORRIDOR (BARCELONA TO VALENCIA)**

The six lines under study in this Capacity Strategy belong to the European Atlantic Corridor, the Mediterranean Corridor (TEN-T) and the European Core Rail Transport Network.

These lines are shown in greenish blue on the following map of the ADIF and ADIF-AV Rail Network. The Mediterranean corridor is represented with shading to emphasize that it is not a single line, there are several converging lines, especially around Barcelona. Border sections are not included in the Capacity Strategy. The main characteristics of the lines, at the time of preparation of this document, are detailed in the table below the following map.





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Line	Electrification	Track Gauge	Type	Maximum Ramp	Control and Management Systems	Maximum Speed	Level crossings
Tarragona BCN- French Border (L050)	25kV AC	1435mm	Double Track	<ul style="list-style-type: none"> • passengers+freight: 18‰ between ADIF-LFPSA and Bif. Mollet • passengers 30‰ between Bif Mollet and Camp de Tarragona (viajeros) 	Main: BCA + ERTMS N1 Exceptions: -----	300km/h	NO
Madrid Chamartín- Irún (L100)	3kV DC	1668mm	Double track (single track sections in Valladolid, Burgos e Irún-French Border)	<ul style="list-style-type: none"> • passengers+freight: 18‰ both directions 	Main: BAB + CTC Exceptions: -Single track sections: BAU + CTC	160km/h	YES
Medina del Campo- Portuguese Border (L120)	- 3 kV DC between Medina del Campo and P.K. 4,5 (point 4.5km from Medina in the border direction) - 25 kV AC between P.K. 4,5 and Salamanca - Section P.K. 124,235 (BORDER)-Salamanca non electrified. (25kv AC planned for 2025)	1668mm	Single Track	<ul style="list-style-type: none"> • passengers+freight: 17 o 18‰ depending on the direction 	Main: BLAU + CTC Exceptions: - P.K. 124,235 (BORDER)- Fuentes de Oñoro: BAU + CTC without ASFA or radiotelephony. -Campillo-Bif Arroyo de la Golosa: BAU + CTC.	- Portuguese Border - Salamanca: 140 km/h -Salamanca- Medina del Campo 155km/h	YES
Portuguese Border - Badajoz - Mérida - Puertollano (L026y L520)	- Section Puertollano-Mérida non electrified - 25 kV AC between Mérida and and KM 517.6 (BORDER)	1668mm	Single Track	<ul style="list-style-type: none"> • passengers+freight: 16-17‰ depending on the direction 	Main: BAU and BLAU + CTC Exceptions: - Villanueva de la Serena and Brazatortas-Veredas: Telephone Blocking.	- Badajoz - KM 517.6 (Border): 120 km/h -Badajoz - Mérida: 200km/h -Mérida - Puertollano: 160km/h	YES (both lines)
Portuguese Border- Tui - Vigo (L814, L810 y L812)	- L814 Non electrified. - L810 and L812 3 kV DC	1668mm	Single track (double track section between Bif. Chapela and Redondela)	<ul style="list-style-type: none"> • passengers+freight: -15‰ direction Vigo -18‰ direction Border 	Main: BAU + CTC Exceptions : - Redondela - Bif. Chapela: BAB + CTC - Tui - Portuguese Border: BLAU + CTC	L810: 160 km/h L812: 80 km/h L814: 90 km/h	YES in L810
Mediterranean Corridor (L240, L200, L210, L600)	3 kV DC	L200: 1668mm L210: 1668mm L240: 1668mm L600: 1668mm + mixed Valencia N-Castelló	Double Track	<ul style="list-style-type: none"> • passengers+freight: -L240: 14‰ -L200: 27‰ -L210: 6-9‰ -L600: 15-20‰ 	Main: BAB + CTC Exceptions: - L240, Martorell Central - Castellbisbal: BAU + CTC	L200: 160 km/h. L210: 160 km/h. L240: 140 Km/h. L600: 200 km/h	YES in L240



- **Temporary speed limitations (TSL):** possible due to infrastructure (embankments and trenches), track superstructure (track, catenary and switches and crossings) as well as works and level crossing protection.
- **Operating incidents:** Those with the highest recurrence are those related to track diversions, service facilities and telecommunications.

0.3.- List of involved IMs.

Involved Infrastructure Managers
SNCF Réseau
Infraestruturas de Portugal, S.A. (IP)
Línea Figueres Perpignan, S.A. (LFP)

0.4.- List of service facilities

The PISERVI service facilities portal facilitates access to information on the technical characteristics and allows access to the DESCRIPTION SHEETS of the service facilities: freight terminals, passenger stations, maintenance facilities, private loading bays, gauge changers, etc., through selective searches based on criteria such as: geographical location, type of facility, type of service, etc., which facilitates the planning of rail services by railway companies and other logistics operators.

It also has an interactive map of the General Interest Railway Network (RFIG) with the possibility to combine different search criteria. In this case, the facilities resulting from the searches will be shown on the map viewer and their Descriptive Sheet can be selected and displayed.

On the other hand, Adif makes available to railway companies and other applicants, the SYACIS application, through which it is possible to request and allocate capacity at Adif Service Facilities. The regulated process for such capacity request and allocation is included in section 7 of the Adif and Adif AV Network Statement.

PISERVI service facilities portal can be accessed by clicking on the following link: [PISERVI](#)



CHAPTER 1 – EXPECTED INFRASTRUCTURE CAPACITY FOR 2028

1.1.- Additional available capacity:

Firstly, it should be noted that ADIF is working on the investment needs of the Madrid-Basque Country and Madrid-Cantabria Conventional Network Lines as well as for the connections with France and Portugal. Many of these investments have a positive impact on available capacity and are detailed in the table below.

Likewise, according to the ERTMS National Implementation Plan 2017, ERTMS N1 is scheduled to be implemented in the following sections by 2030:

- L100 and L120, in almost all the area covered by this study.
- Portuguese Border – Badajoz – Mérida – Puertollano, the Plan includes the section between Portuguese Border – Aljucén. The rest of the section is not included.
- Portuguese Border – Tui – Vigo, the Plan includes the section Vigo-Guillarei. The Guillarei-Tui section is not included.
- Mediterranean Corridor, (Barcelona to Valencia), included in the Plan in its entirety.
- The L050 section already has ERTMS.

In addition, there is another set of actions which, although is not included in the prioritisation, must be taken into account to ensure the adequate functionality of the Conventional Network lines Madrid-Basque Country, Madrid-Cantabria and connections with France and Portugal. These actions consist mainly of the implementation of sidings for trains of 750 m in length. This measure will facilitate the management of longer freight trains, which will increase the modal share of freight traffic on the network.

These actions will result in TCRs during the execution of the works and, therefore, in changes in capacity during their development. At the end they will however result in an improvement in performance in one way or another depending on the purpose of each action:

- Actions in rail terminals or logistics services: they will result in a better service offered for freight and, consequently, in a greater demand for them by railway undertakings.
- Actions to renovate and improve facilities: these will lead to higher reliability indices for the facilities and, therefore, to greater service availability.
- Actions to extend the network or number of tracks: these will have a direct impact on increasing capacity, as in the case of the Valladolid by-pass.



LINE	NETWORK SEGMENT	DESCRIPTION	PROJECT APPROVED BY ADIF's MANAGEMENT	FINANCING SECURED
100	MIRANDA-MAGAZ	REMOVAL OF 4 LEVEL CROSSINGS: 1 IN MAGAZ DE PISUERGA P.K. 294/510, 2 in SANTA MARÍA DEL INVIERNO P.K. 399/365 AND P.K. 399/964, 1 IN MIRANDA DE EBRO P.K. 456/727	YES	YES
100	MEDINA DEL CAMPO - ÁVILA	REMOVAL OF 2 LEVEL CROSSINGS: 1 IN LA DEHESA DEL PERDROSILLO P.K. 127/617, 1 IN BRIVIESCA P.K. 414/012	YES	YES
100	MANZANOS	REMOVAL OF A LEVEL CROSSING IN P.K. 468/571)	YES	YES
100	PUERTO DE PASAJES (LEZO)	RAIL ACCESS TO THE PORT	YES	YES
100	ESTACIÓN DE IRÚN	IMPLEMENTATION OF UIC GAUGE AT THE STATION	YES	YES
100	ASTIGARRAGA - IRÚN	IMPLEMENTATION OF UIC GAUGE BETWEEN ASTIGARRAGA AND IRÚN	YES	YES
100	LEGORRETA	NEW STATION	YES	YES
100	ASTIGARRAGA	NEW STATION	YES	YES
100	TOLOSA	ACCESSES ELECTRIFICATION	YES	YES
100	ORDIZIA - BEASAÍN	CONSTRUCTION OF A BYPASS TO AVOID PASSING THROUGH BEASAIN	YES	YES
120	CARPIO	REMOVAL OF A LEVEL CROSSING IN P.K. 21/297	YES	YES
120	CANILLAS DE ABAJO	INSTALLATION OF AUTOMATIC PROTECTION AT THE LEVEL CROSSING OF THE P.K. 31/712	YES	YES
520	PUERTOLLANO - MÉRIDA	REMOVAL OF LEVEL CROSSINGS	YES	YES
810	REDONDELA	REDONDELA BYPASS	YES	YES
240	CASTELLBISBAL-MARTORELL	3RD LANE FOR UIC GAUGE IMPLEMENTATION	YES	YES
240	MARTORELL-SAN VICENÇ	3RD LANE FOR UIC GAUGE IMPLEMENTATION	YES	YES
600	CASTELLÓN-VINARÓZ	IMPLEMENTATION OF UIC GAUGE - SUBSTITUTION OF IBERIAN GAUGE FOR UIC GAUGE	YES	YES
600	VINARÓZ-VANDELLÓS	IMPLEMENTATION OF UIC GAUGE - SUBSTITUTION OF IBERIAN GAUGE FOR UIC GAUGE	YES	YES



LINE	NETWORK SEGMENT	DESCRIPTION	PROJECT APPROVED BY ADIF's MANAGEMENT	FINANCING SECURED
600	VANDELLÓS - CAMBIADOR DE LA BOELLA	IMPLEMENTATION OF UIC GAUGE - SUBSTITUTION OF IBERIAN GAUGE FOR UIC GAUGE	YES	YES
600	VANDELLÓS - CAMP DE TARRAGONA	TRAIN PROTECTION SYSTEMS AND CENTRALIZED FIXED TRAFFIC TELECOMMUNICATION SYSTEMS	YES	YES
600	CASTELLÓ - VANDELLÓS	ERTMS SYSTEM IMPLEMENTATION	YES	YES
600	VALENCIA-CASTELLÓ	ERTMS SYSTEM IMPLEMENTATION	YES	YES
600	VALENCIA JOAQUÍN SOROLLA-VALENCIA ESTACIÓ DEL NORD	3RD LANE TO ALLOW UIC GAUGE TRAFFIC BETWEEN THE TWO STATIONS	YES	YES
600	VALENCIA - VANDELLÓS	ERTMS SYSTEM IMPLEMENTATION	YES	YES
600	CASTELLÓ - L'AMETLLA DE MAR	WORKS FOR SIGNALING INSTALLATIONS	YES	YES
600	L'AMETLLA DE MAR - TARRAGONA	WORKS FOR SIGNALING INSTALLATIONS	YES	YES
200	HOSPITALET DE LLOBREGAT - PORT AVENTURA	WORKS FOR INSTALLATION OF SIGNALING, FIXED TELECOMMUNICATIONS AND ERTMS N2	YES	YES
200	HOSPITALET DE LLOBREGAT - PORT AVENTURA	GSM-R DUAL-LAYER INSTALLATION	YES	YES
200	MANRESA - SANT VICENÇ DE CALDERS	GSM-R DUAL-LAYER INSTALLATION	YES	YES
050	FIGUERES-BARCELONA	ERTMS SYSTEM IMPLEMENTATION	YES	YES
050	FIGUERES	IBERIAN GAUGE RAILWAY BYPASS AND REMODELING OF FIGUERES VILAFANT STATION	YES	YES



1.2.- Reduced available capacity:

There are no capacity reductions other than those considered in the TCRs chapter 2.

CHAPTER 2- TEMPORARY CAPACITY RESTRICTIONS (TCRs)

2.1.- Principles for TCR planning.

The continuous conservation and investment work that ADIF is entrusted with on all its managed lines, either through maintenance works on the infrastructures in service, or by carrying out improvement and expansion works on its network, may inevitably lead to capacity restrictions.

Additionally, in accordance with the provisions of Delegated Decision 2017/2075 replacing Annex VII of Directive 2012/34/EU, and following the "*Guidelines for Coordination/Publication of Planned Temporary Capacity Restrictions for the European Railway Network*" published by RailNet Europe, ADIF makes the following classification of TCRs:

- **Minimal impact:** unspecified days - less than 10 % of traffic affected.
- **Minor impact:** 7 consecutive days or less - more than 10% of traffic affected.
- **Medium impact:** 7 consecutive days or less - more than 50% of traffic affected.
- **High Impact:** more than 7 consecutive days - more than 30% of traffic affected.
- **Major Impact:** more than 30 consecutive days - more than 50% of traffic affected.

In order to calculate the percentage of affected traffic that allows a homogeneous classification of the TCRs, the unit of reference measurement shall be a full day, as a general rule, a Thursday, which is representative, that is, with a high volume of traffic only on the entire section of the line on which the respective TCR is located, without taking into account the collateral effects of the TCR on other sections of the line.

For such purposes, the formula to be applied shall be the following:

$$\text{Impact of TCR on the traffic} = \frac{\text{Number of paths affected by TCR}}{\text{Number of paths on the representative day}} * 100$$

Likewise, in "intermediate" cases where a TCR does not meet both the criteria of number of consecutive days and % of traffic cancelled, diverted or substituted to be classified by impact as minimum - minor - medium - high - large, the TCR will be classified by its immediately lower impact.

The ADIF Capacity Manual includes, among other information, such as the characteristics and equipment of each line or the maintenance band interval, any traffic restrictions that may exist for accessing each of the lines comprising the ADIF and ADIF-AV network.



2.1.1 Clustering of TCRs to minimize the gravity of impact and duration.

In accordance with the specific procedure *Scheduling of Intervals for Extraordinary Works* (ADIF-PE-402-001-005-SC-524), whenever possible and when conditions are adequate, efforts will be made to coincide the extraordinary works on a line or route, thus benefiting from traffic suspension and alternative plans.

2.1.2 Description of connected areas where TCRs due to the shortage of capacity shall not be planned simultaneously.

No high or major impact TCRs will be planned simultaneously on the Zaragoza – Reus section of lines 200 and 210 as this would have a very negative impact on freight traffic between Zaragoza and Tarragona. These two lines are single track lines and are operated as a double track line in which each line is specialized in one direction: the 200 in the Zaragoza – Reus direction and the 210 in the Reus – Zaragoza direction. In the case of TCRs on one of them, the other is the alternative route.



Likewise, whenever possible, no simultaneous TCRs will be planned on lines that cross the same border.

2.1.3 Description of the periods when regular TCR windows will be planned (nights, weekends)

With respect to the general principles to be considered for the planning of the TCRs, the actions will involve, in most cases, works in the maintenance band, in order to not affect the traffic. Those actions that require a cut in traffic will be carried out as far as possible on weekends when the effect on traffic is less. As a last option, they will involve traffic cuts on working days, preferably on one lane, so that the total cut of both lanes will only be carried out in strictly necessary cases. Likewise, the most severe restrictions are preferably planned for seasons with lower traffic volumes, such as the summer season.

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2.1.4 Description of how the TCR allocation process will look like, how the coordination and consultation will be ensured.

In the ADIF and ADIF-AV Network Statement a catalogue of high and major impact TCRs on the General Interest Railway Network is published as an annex. The catalogue is available by clicking on the following link:

- [ADIF TCRs Catalogue](#)
- [ADIF-AV TCRs Catalogue](#)

The information contained in the catalogues is presented in a table that, together with the reason for the restriction, highlights the type of traffic impact (total closure, track availability restriction, speed restriction, weight... etc.), explaining the expected impact in as much detail as possible. In addition, maps are included to make it easier to identify the different actions, distinguishing them by geographical area. These catalogues and maps are periodically updated with information from the TOC Commissions, which are the ones that define and agree on the programming of actions and works on the infrastructure. They provide information on future capacity restrictions, agreed with the applicants to enable them to adapt their operations and transportation needs.

However, **the coordination and communication process between ADIF and ADIF-AV and the Railway Undertakings** when TCRs exist is not limited to the TOC Commissions, –with their central and territorial, ordinary and extraordinary sessions–, nor to the publication of the Catalogues in the Network Statement.

There are, in this sense, other instruments through which the communication of possible total closures and their dates is carried out, such as specific or monographic meetings to discuss the works, the schedules of the affected trains, and even the alternative routes.

Finally, to specify the operation of a TCR that exceeds the capacity reserved for maintenance and conservation works (known as Maintenance Band), ADIF and ADIF-AV inform Railway Undertakings through Extraordinary Work Documents (TBP/TBA) where they can find the details. In addition to general information and timetables, these documents include aspects related to traffic safety. These documents are usually sent as soon as they are available, and traceability is maintained in the notices and communications between ADIF and the Railway Undertakings.

2.1.5 Description of currently existing (national, Bi-trilateral) escalation process(es) in case of disagreement of the involved stakeholders.

In accordance with ADIF's specific procedure, Scheduling of Intervals for Extraordinary Works, provided that the Traffic Directorate notifies the railway companies and qualified applicants of the works to be carried out with the established advance notice, the latter must assume the repercussions thereof. Even if, for extraordinary reasons, the communication period is shorter, they must also assume the consequences without the right to financial compensation.

However, any objections raised by the railway companies and qualified applicants will be considered in case it is possible to take them into account before the work is approved and an alternative transport plan will be agreed with them.

2.2.- **Expected high and major impact TCRs**

Due to their significant impact on the capacity allocated and in order the Railway Undertakings can consider them for planning their transport plans, high and major impact TCRs are detailed below. High and major impact TCRs are for example those whose duration is greater than 7 consecutive days and which result in a cancellation, rerouting or substitution by other modes of

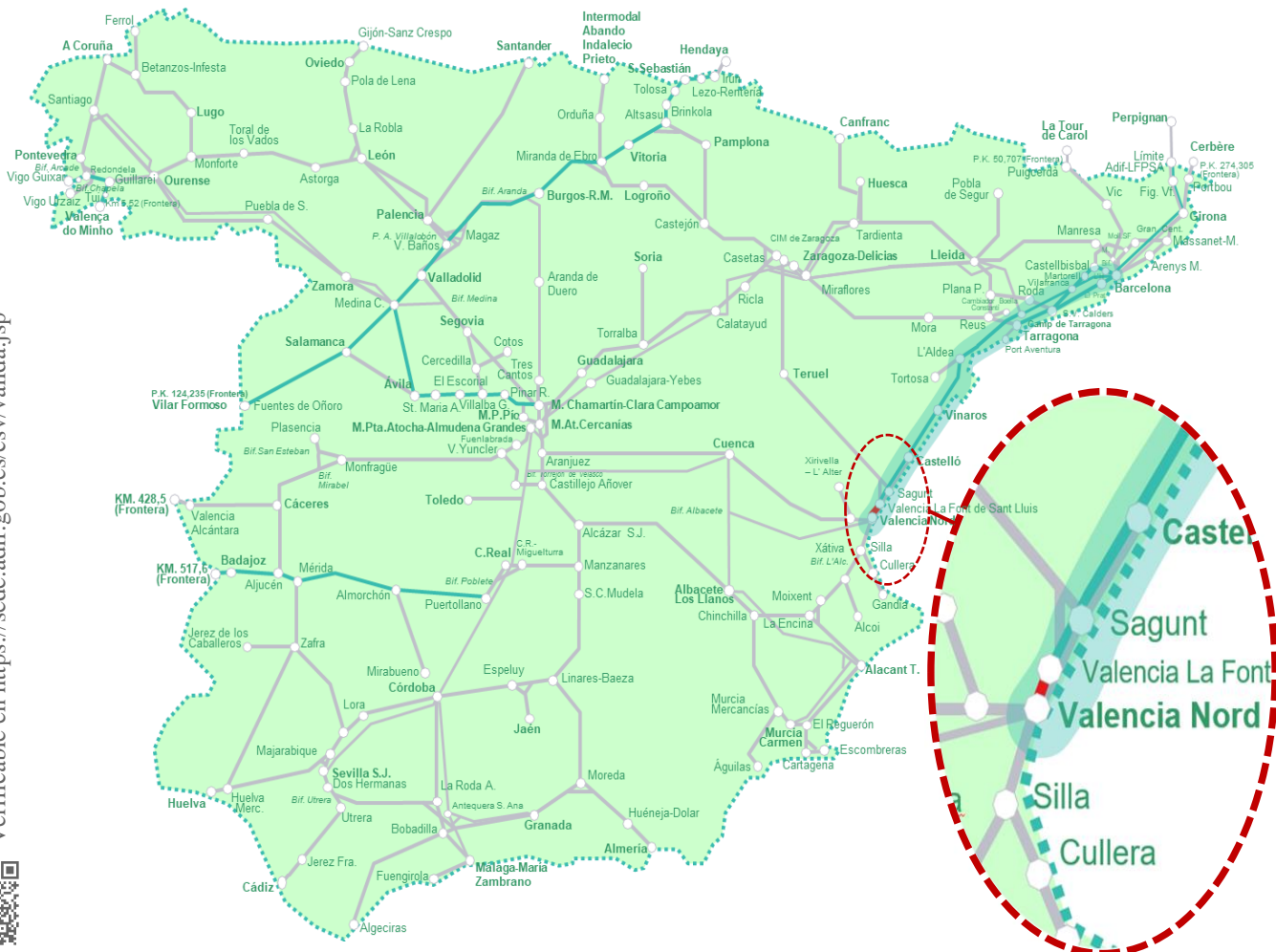


transport in more than 30% of the estimated daily traffic volume on a railway line. The TCRs specified below are only for 2028 and exclusively for the selected geographical area.

Detailed information on these restrictions, as well as those of the rest of the rail network, is available in the ADIF and ADIF-AV Network Statement.

➤ **Line 600 VALENCIA –TARRAGONA:**

Network segment	Purpose	Time of execution	Start (quarterly basis)	Impact (total closure/single track operation/speed restriction)	Impact to Passenger & freight traffic	Project approved by ADIF's management	Financing secured
VALENCIA-NORD – VALENCIA LA FONT DE SANT LLUIS	High Speed Integration in Valencia City	5 years	3rd quarter 2023	<ul style="list-style-type: none"> Nighttime cuts Occasionally, total cuts for a maximum of 4 consecutive days. Temporary speed limitations. Definitive elimination of 1668 track gauge in Valencia Joaquín Sorolla Station from 2026. 	<ul style="list-style-type: none"> Freight and Passenger nighttime/total interruption. 	Yes	Yes



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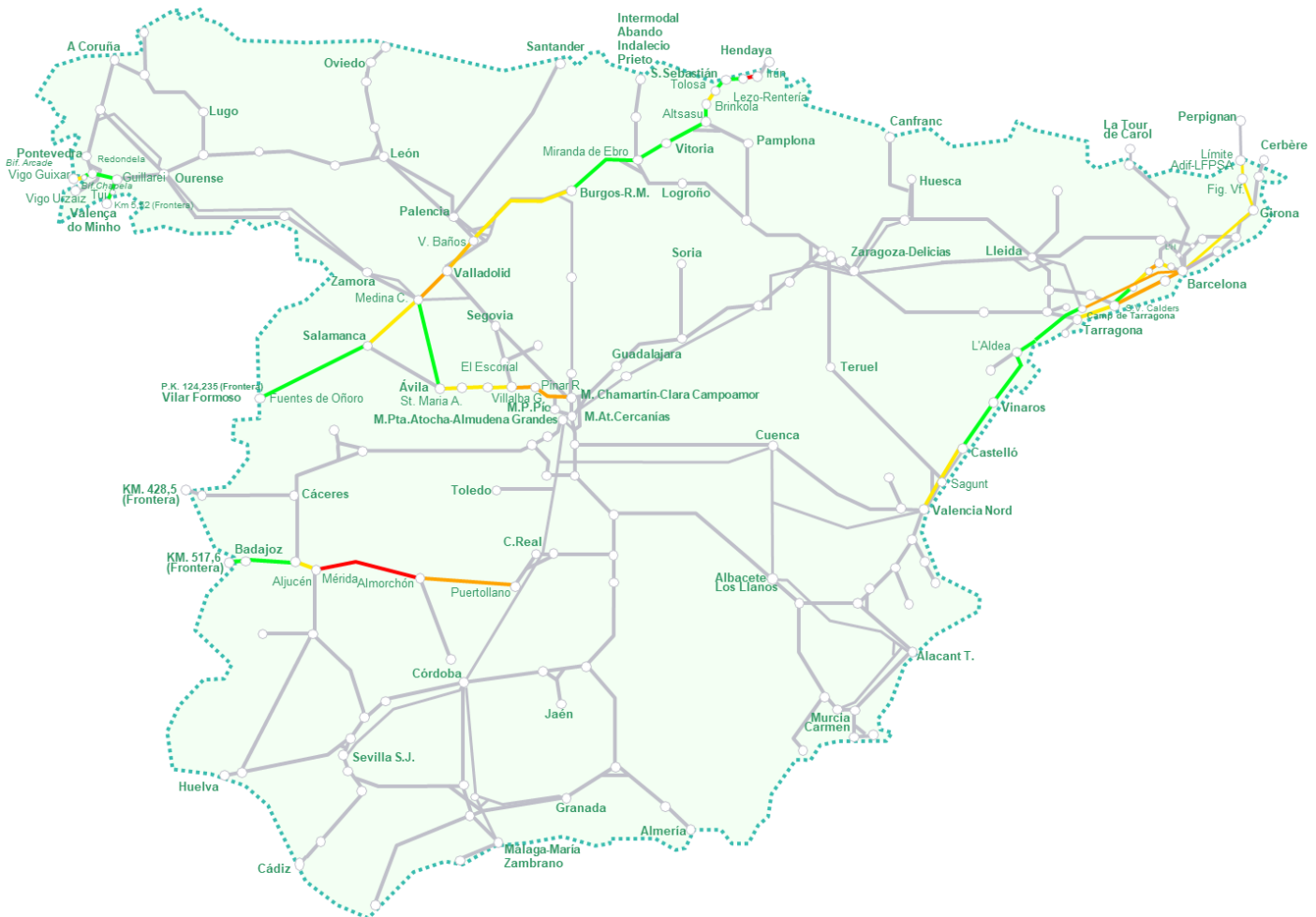


CHAPTER 3 – TRAFFIC PLANNING PRINCIPLES AND TRAFFIC FLOWS

As an introduction to this chapter, we present the saturation map of the network sections presented in this Capacity Strategy. Each of the significant sections has been coloured to visualize its degree of saturation according to the following references:

- Green: Less than 25%. The section has a low amount of traffic. No saturation problems.
- Yellow: Between 25% and 50%. The section has a normal level of traffic. No saturation problems.
- Orange: Between 50% and 75%. The section has high traffic levels. Occasional saturation problems.
- Red: More than 75%. Traffic is around the maximum acceptable for the section. Systematic saturation problems, occasionally reaching congestion.

The details for calculating these saturation levels are described for each one of the sections in the following subsections of this chapter.



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3.1.- Principles for traffic planning

This section describes the main principles for traffic planning (hereinafter TPP) for each railway line. These principles will be used later in the planning of the elements of the Capacity Model and Capacity Allocation

The data of train paths quotas offered are presented. It must be considered that the figures are indicative data since the final capacity of the infrastructure is influenced by the technical characteristics of the traffic running on it: stops, loads, material, etc.

For this reason, the process of creating the grids itself, and the track occupancy graph (GOV) of the stations determine the ultimate capacity in each particular situation. The effective capacity may so differ slightly from the train path quotas foreseen as a result of the effective configuration in each case.

Likewise, the train path quotas include maintenance bands, but not extraordinary works.

In this sense, the offer of train path quotas is made for three-hour periods and classified according to the following three types of services:

- **VLD: Long Distance passenger services**
- **VCR: Cercanías and Media Distancia passenger services**
- **Merc: Freight services**

3.1.1. PPT on Line 050 Section TARRAGONA – BARCELONA – FRENCH BORDER

IM	Section	Principle and elements
ADIF	Camp de Tarragona- Barcelona Sants	<ul style="list-style-type: none"> • Line with a high level of capacity saturation. • Capacity estimated following the Cadenced Integrated Network model influenced by the congestion of Barcelona Sants station. • Maintenance Band: 5 hours between 0:00 and 5:00 a.m. • Paths offered: 184 • Passenger trains maximum length: 400m • Freight trains maximum length: 750m • Special length:750m
ADIF	Barcelona Sants- Límite ADIF LFPSA	<ul style="list-style-type: none"> • International line with medium level of capacity saturation. • Capacity estimated following the free network model conditioned by the high saturation level of Barcelona Sants Station. • Maintenance Band: 5 hours between 0:00 and 5:00 a.m. Tuesday to Saturday • Paths offered: 152 • Freight trains maximum length: 750m • Special length:750m



3.1.2. PPT on Line 100 MADRID CHAMARTÍN CLARA CAMPOAMOR – IRÚN – FRENCH BORDER

IM	Section	Principle and elements
ADIF	Chamartín – El Escorial	<ul style="list-style-type: none"> Line with a high level of capacity saturation. Capacity estimated following the Cadenced Integrated Network model. Maintenance Band: 4 to 5 hours distributed between 0:30 a.m and 5:30 a.m, depending on the section considered. Paths offered: between 302 and 362 (65% for VCR services) Passenger trains maximum length: 420m Freight trains maximum length: 480m Special length: 550m
ADIF	El Escorial – Venta de Baños	<ul style="list-style-type: none"> Line with a medium/low level of capacity saturation. Capacity estimated following the Free Network model. Maintenance Band: 5 hours distributed between 0:30 a.m. and 5:30 a.m. depending on the section considered. Paths offered: between 96 and 248 depending on the section (70% for freight, 5-10% for VLD and the rest for VCR) Passenger trains maximum length: 420m Freight trains maximum length: 480m Special length: 550m
ADIF	Venta de Baños – Miranda de Ebro.	<ul style="list-style-type: none"> Line with a medium/low level of capacity saturation. Capacity estimated following the Integral Pregraphed Network model. Maintenance Band: 5 hours distributed between 7:00a.m. and 1:00 p.m. depending on the section considered. Paths offered: between 88 and 200 depending on the section (60-70% for freight and the rest shared for VLD and VCR) Passenger trains maximum length: 420m Freight trains maximum length: 520m Special length: 550m.
ADIF	Miranda de Ebro – Brinkola.	<ul style="list-style-type: none"> Line with a low level of capacity saturation. Capacity estimated following the Free Network model. Maintenance Band: 5 hours between 8:30 a.m. and 1:30 p.m. (Miranda de Ebro-Altsasu) and between 0:00 and 5:00 a.m. (Altsasu-Brinkola) Paths offered: between 138 and 234 depending on the section (50-70% for freight and the rest shared for VLD and VCR, being the quota for VLD slightly higher). Passenger trains maximum length: 325m. Freight trains maximum length: 520m between Miranda de Ebro and Altsasu, and 450m between Altsasu and Brinkola. Special length: 550m.
ADIF	Brinkola – Irún	<ul style="list-style-type: none"> Line with a medium/high level of capacity saturation. Capacity estimated following the Cadenced Integrated Network model. Maintenance Band: 5 hours between 0:00 and 5:00 a.m.. Paths offered: between 274 and 324 except the section Lezo-Rentería- Irún with only 49 paths offered due to the works (45-50% for VCR, 40-45% for freight and very few for VLD). Passenger trains maximum length: 325m. Freight trains maximum length: 450m. Special length: 550m.



3.1.3. PPT on Line 120 MEDINA DEL CAMPO – PORTUGUESE BORDER

IM	Section	Principle and elements
ADIF	Medina del Campo – Salamanca	<ul style="list-style-type: none"> Line with a medium level of capacity saturation. Capacity estimated following the Free Network model. Maintenance Band: 3 hours between 0:30 and 3:30 a. m. in Medina del Campo and between 1:15 a.m and 4:15 a.m. in Salamanca. Paths offered: 55 Passenger trains maximum length: 300m Freight trains maximum length: 550m Special length: 600m
ADIF	Salamanca – Fuentes de Oñoro	<ul style="list-style-type: none"> Line with a low level of capacity saturation. Capacity estimated following the Free Network model. Maintenance Band: 3 hours between 4:10 p.m. and 7:10 p.m. in Salamanca and between 3:30 p.m. and 6:30 p.m. in Fuentes de Oñoro. Paths offered: 33 Passenger trains maximum length: 300m Freight trains maximum length: 550m Special length:600m.

3.1.4. PPT on Section PORTUGUESE BORDER – BADAJOZ – MÉRIDA – PUERTOLLANO

IM	Section	Principle and elements
ADIF	Badajoz – Mérida	<ul style="list-style-type: none"> Line with a high level of capacity saturation. Capacity estimated following the Free Network model. Maintenance Band: 3 hours between 11:00 p.m. and 2:00 a.m. Paths offered: 106 Passenger trains maximum length: 400m Freight trains maximum length: 400m Special length:460m.
ADIF	Mérida – Puertollano	<ul style="list-style-type: none"> Line with a high level of capacity saturation. Capacity estimated following the Free Network model. Maintenance Band: 3 hours between 2:00 a.m. and 5:00 a.m. (Almorchón-Mérida) and between 1:00 a.m. and 4:00 a.m. (Puertollano-Almorchón) Paths offered: 10-12 Passenger trains maximum length: 420m Freight trains maximum length: 400m Special length:460m



3.1.5. PPT on Section PORTUGUESE BORDER – TUI – VIGO

IM	Section	Principle and elements
ADIF	Tuí – Vigo Guixar	<ul style="list-style-type: none"> Line with a medium/low level of capacity saturation. Capacity estimated following the Free Network model. Maintenance Band: 3 hours between 2:00 a.m. and 5:00 a.m. except for the section Guillarei – FRONTERA, in which it is between 2:30 a.m. and 5:30 a.m. Paths offered: between 72 and 96 except in the double track section Redondela – Bif. Chapela where 360 are offered. Passenger trains maximum length: 300m Freight trains maximum length: 400m Special Length: 465m.

3.1.6. PPT on the Mediterranean Corridor (BARCELONA to VALENCIA)

IM	Section	Principle and elements
ADIF	L'Hospitalet de Llobregat – San Vicenç de Calders (line 240)	<ul style="list-style-type: none"> Line with a high level of capacity saturation. Capacity estimated following the Cadenced Integrated Network model. Maintenance Band: 5 hours between 0:00 and 5:00 a.m. Paths offered: around 400 Passenger trains maximum length: 350m Freight trains maximum length: 500m Special Length: 575m
ADIF	San Vicenç de Calders – Barcelona Sants (line 200)	<ul style="list-style-type: none"> Line with a high level of capacity saturation. Capacity estimated following the Cadenced Integrated Network model. Maintenance Band: 5 hours between 11:30 p.m. and 4:30 a.m. Paths offered: around 450 Passenger trains maximum length: 350m Freight trains maximum length: 450m Special Length: 550m
ADIF	Tarragona – San Vicenç de Calders (line 210)	<ul style="list-style-type: none"> Line with a high level of capacity saturation. Capacity estimated following the Free Network model. Maintenance Band: 5 hours between 0:00 and 5:00 a.m. Paths offered: 362 Passenger trains maximum length: 350m Freight trains maximum length: 450m Special Length: 550m
ADIF	Cambiador de la Boella – Valencia Nord (line 600)	<ul style="list-style-type: none"> International line with low level of saturation in the section Cambiador de la Boella – Castelló and high in the section Castelló Valencia Nord. Capacity estimated following the Free Network model. Maintenance Band: 5 hours distributed between 0:00 and 5:45 a.m., depending on the section considered. Paths offered: 246–352 Passenger trains maximum length: 350m Freight trains maximum length: 500m Special Length: 550m



3.2.- Traffic Flows

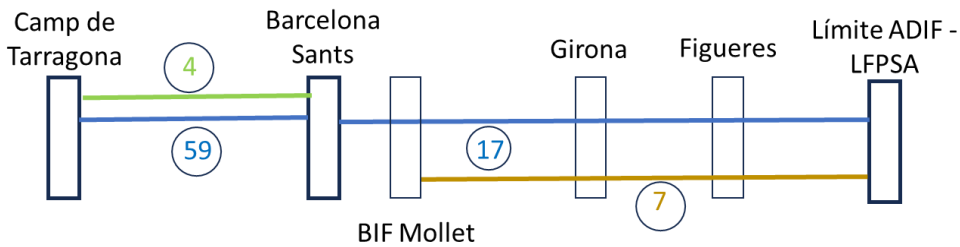
In this section the traffic flows for the different lines considered are presented schematically.

The legend for the traffic flows is as follows:

- Tráfico de Cercanías
- Tráfico de Larga Distancia
- Tráfico de Media Distancia
- Tráfico de Mercancías
- X Trenes por sentido y día

The average saturation level of each of the lines will also be indicated, detailing the saturation of each section of the line by enlarging the corresponding section of the previous map.

3.2.1. Traffic on Line 050 – Section TARRAGONA – BARCELONA – FRENCH BORDER



Average saturation level:

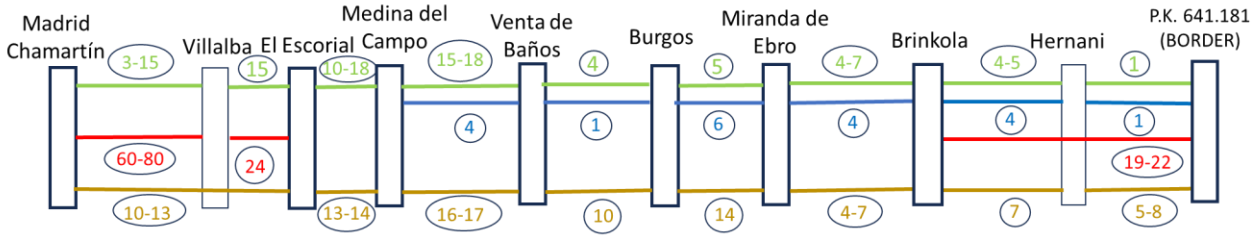
Camp de Tarragona – Barcelona Sants: 71%
Barcelona Sants – Límite ADIF – LFPSA: 26%



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3.2.2. Traffic on Line 100 MADRID CHAMARTÍN CLARA CAMPOAMOR – IRÚN – FRENCH BORDER



Average saturation level:

Madrid Chamartín – El Escorial: 55-65%

El Escorial – Venta de Baños: 25% except for single track sections between Medina del Campo and Valladolid with a saturation level of 60-65%

Venta de Baños – Miranda de Ebro: 20-20%

Miranda de Ebro – Brinkola: 13-27%

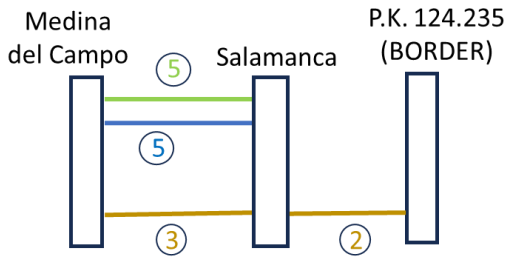
Brinkola – P.K. 641.181 (BORDER): 30-35% except for the section Lezo – Rentería with a saturation level of 100%.



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3.2.3. Traffic on Line 120 MEDINA DEL CAMPO – PORTUGUESE BORDER

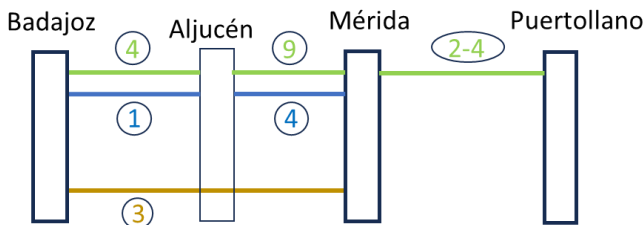


Average saturation level:

Medina del Campo - Salamanca: 39-48%
 Salamanca – P.K. 124.235 (BORDER): 6-12%



3.2.4. Traffic on Section PORTUGUESE BORDER – BADAJOZ – MÉRIDA – PUERTOLLANO



Average saturation level:

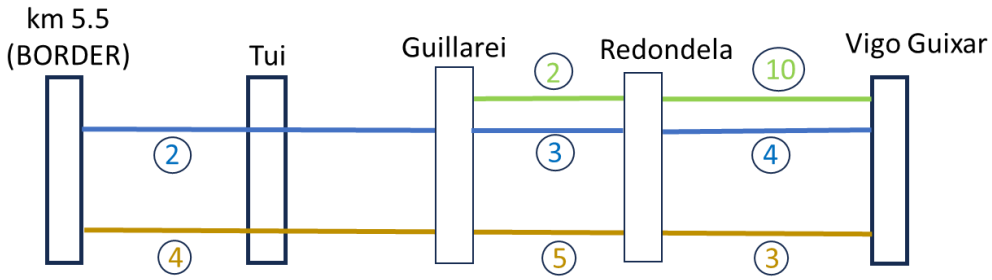
Badajoz-Aljucén: 11%
 Mérida – Almorchón: 83%
 Almorchón – Puertollano: 60%



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3.2.5. Traffic on Section PORTUGUESE BORDER – TUI – VIGO



Average saturation level:

km. 5.5 (BORDER) – Vigo Guixar: 25%

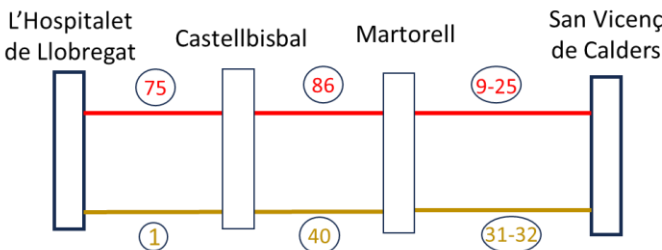


3.2.6. Traffic on the Mediterranean Corridor (BARCELONA to VALENCIA)

This section analyses the traffic flows of the main lines connecting Barcelona and Tarragona and the continuation of the section from Tarragona to Valencia through line 600.

There are several options that connect the area around Barcelona with Tarragona, mainly:

- Line 240:



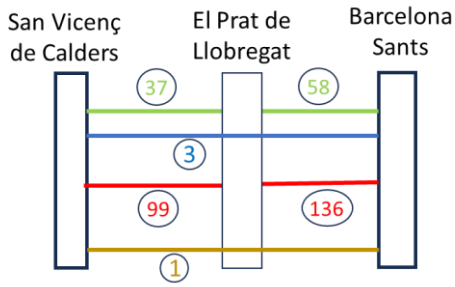
Average saturation level:

L'Hospitalet - Castellbisbal: 30-37%
 Castellbisbal - Martorell: 100%
 Martorell – San Vicenç de C: 30-37%

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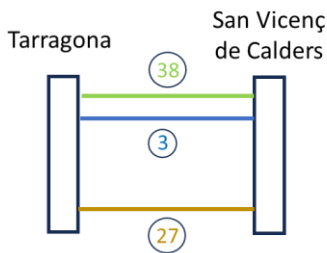
- Line 200:



Average saturation level:

San Vicenç de C – Barcelona Sants: 65-72%

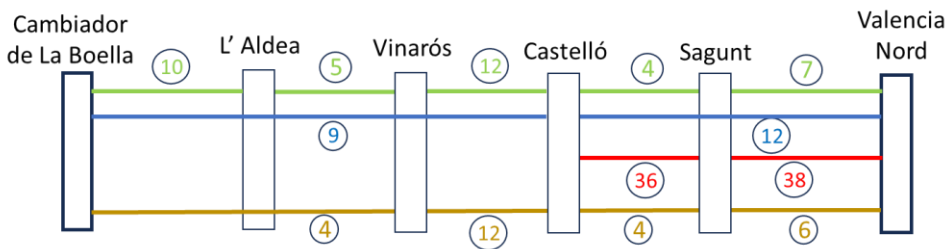
- Line 210:



Average saturation level:

Tarragona – San Vicenç de C: 35-38%

- Line 600:

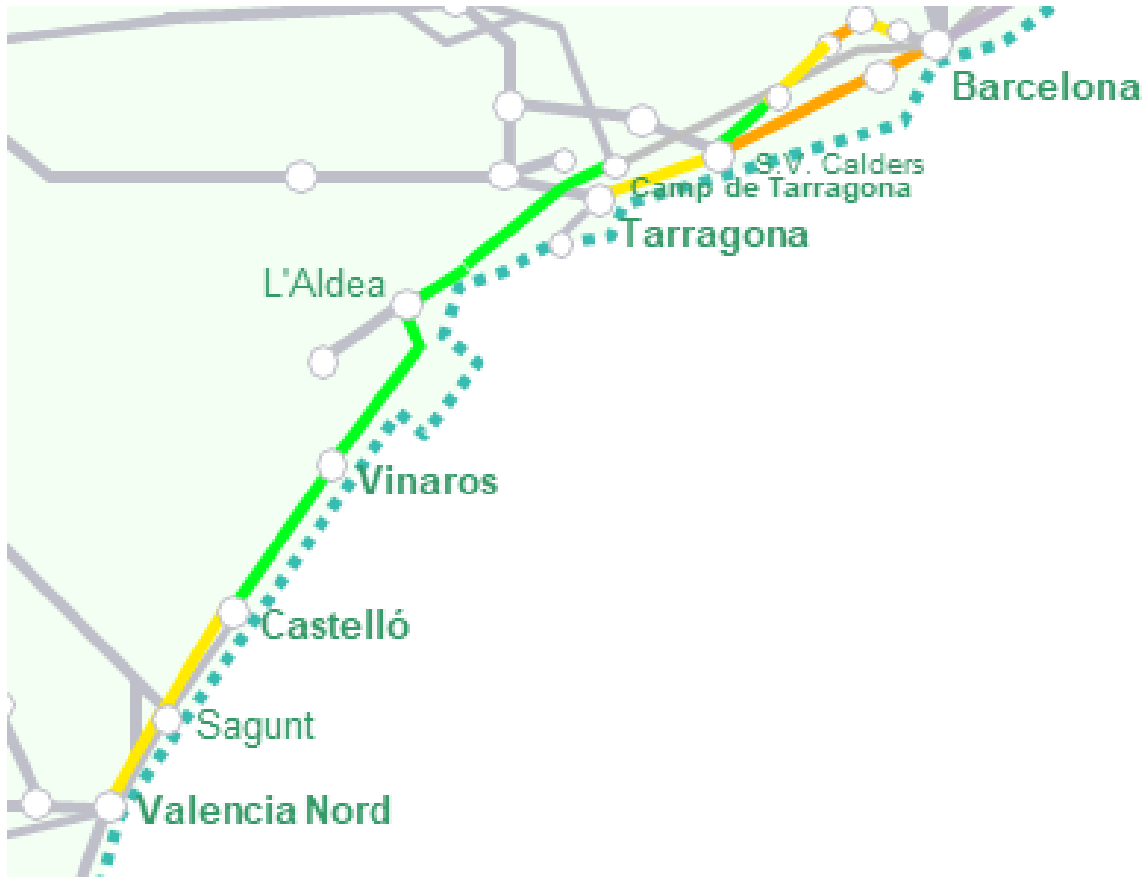


Average saturation level:

Camb. La Boella - Castelló: 10-20%

Castelló – Valencia N: 49-55%





3.2.7. Cross-border Traffic Flows

➤ Spain – France

General Considerations

- For the calculation of number of trains per hour it has been considered a week of 7 days and 24 hours per day except in some cases that are specified.
- It should be considered that cross-border traffic flow may not be homogeneous throughout the day, particularly during maintenance periods when infrastructure capacity may be reduced.
- The analysis of traffic flow along the Portbou–Cerbère and Irún–Hendaye borders has been carried out separately, taking into account the two different gauge tracks (UIC and Iberian) that cross the border section.
- The data shown in the table below comes from the information available to the IM (essentially the number of circulations requested for HS 2025). Some Spanish freight EEFs have acquired or are in the process of acquiring locomotives to run on the Figueres – Perpignan International Section, so a potential increase in freight traffic on this border section is expected in the coming years.



Border Section	Passenger train paths per hour		Freight train paths per hour
	Long Distance	Regional	
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">ES Figueres V. </div> <div style="border-left: 1px dashed gray; width: 1px; height: 100%;"></div> <div style="text-align: center;">FR Perpignan BV </div> </div>	0,8 ⁽¹⁾	0	0
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">ES Figueres V. </div> <div style="border-left: 1px dashed gray; width: 1px; height: 100%;"></div> <div style="text-align: center;">FR Perpignan FI (Le Soler) </div> </div>	0	0	0,7 ⁽¹⁾
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">FR Cerbère UIC </div> <div style="border-left: 1px dashed gray; width: 1px; height: 100%;"></div> <div style="text-align: center;">ES Portbou UIC </div> </div>	0	1,0	0,7
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">FR Cerbère A.Ibérico </div> <div style="border-left: 1px dashed gray; width: 1px; height: 100%;"></div> <div style="text-align: center;">ES Portbou A.Ibérico </div> </div>	0	0,9 ⁽²⁾	0,1
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">ES Irún UIC </div> <div style="border-left: 1px dashed gray; width: 1px; height: 100%;"></div> <div style="text-align: center;">FR Hendaye UIC </div> </div>	0	0	0,5
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">ES Irún A. Ibérico </div> <div style="border-left: 1px dashed gray; width: 1px; height: 100%;"></div> <div style="text-align: center;">FR Hendaye A. Ibérico </div> </div>	0	0	0,1
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">ES Puigcerdá A.Ibérico </div> <div style="border-left: 1px dashed gray; width: 1px; height: 100%;"></div> <div style="text-align: center;">FR La Tour de Carol A. Ibérico </div> </div>	0	0,8	0

(1) The maintenance band in the international section implies the total closure for 5 hours, so the number of hours per day considered is 19 hours.

(2) Traffic in both directions is counted, even if it has been requested in only one application (for both directions).

Cross-border traffic flow between Spain and France has been the subject of information exchange and coordination between ADIF and SNCF Réseau.

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➤ Spain – Portugal

General Considerations

- For the calculation of number of trains per hour it has been considered a week of 7 days and 24 hours per day.
- It should be considered that cross-border traffic flow may not be homogeneous throughout the day, particularly during maintenance periods when infrastructure capacity may be reduced.
- The data shown in the table below are derived from information available to the IM (essentially the number of circulations requested for HS 2025).

Border Section	Passenger train paths per hour		Freight train paths per hour
	Long Distance	Regional	
	0	0,2	0,1
	0	0	0,2
	0,2	0,2	0,4

The most important TCRs with international impact are shared with the collateral Infrastructure Managers (SNCF Réseau and Infraestruturas de Portugal) in two annual meetings held in May and November. At these meetings, the most important aspects of the TCRs and their impact on international traffic are presented.

Likewise, these meetings intend to coordinate the TCRs on both sides of the border so that the impact on traffic is as minimal as possible, as well as to present and agree on alternative routes when the TCRs entail the interruption of traffic.

REFERENCE DOCUMENTS

- ADIF TCRs Catalogue
- ADIF-AV TCRs Catalogue
- Annex H of the ADIF Network Statement
- Anexo H of the ADIF-AV Network Statement
- PISERVI

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CHAPTER 4.- VALIDATION

	Name and Position:	Signature and Date:
<i>Approve:</i>	Javier Achútegui Hernández Capacity Management Director - ADIF	

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