

Capacity Strategy 2025

Common document of

Infrabel, ProRail, ACF, DB Netz AG, SBB Infrastruktur AG, BLS Netz
AG, ÖBB Infrastruktur AG und RFI S.p.A

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INFRABEL

ProRail



LE GOUVERNEMENT
DU GRAND-DUCHÉ DE LUXEMBOURG
Ministère de la Mobilité
et des Travaux publics

Administration des chemins de fer

DB NETZE

DB Netz AG



SBB CFF FFS

bls

ÖBB

INFRA

RFI
RETE FERROVIARIA ITALIANA
GRUPPO FERROVIE DELLO STATO

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Introduction

TTR expects each Infrastructure Manager (IM) to publish a Capacity Strategy until 3 years prior to timetable-change (X-36). General aim of the Capacity Strategy is to provide indication on key values of capacity planning, i.e., on changes in the availability of the infrastructure, Temporary Capacity Restrictions (TCRs or “negative capacity”) as well as on commercial capacity (“positive capacity”) for a given timetable.

For Timetable 2025, the Capacity Strategy will exceptionally be delivered at the end of June 2022, sixth months later as planned in the above-mentioned target timeline.

The Capacity Strategy is the earliest TTR-planning instrument, based on which the Capacity Model (June 2023 for Timetable 2025) and, for some of the first implementing IMs, the Capacity Supply (January 2024 for Timetable 2025) will be developed.



Figure 1: Steps of the TTR process (Source: RNE)

The present document

- aims at stressing the international character of TTR-end products by testing to which extent a common document can be pushed beyond borders to the benefit of consistency, coherence, and customer-friendliness,
- results from the MVP Capacity Strategy started 2021 among Infrabel, ProRail, ACF, DB Netz, SBB Infrastruktur, BLS Netz, ÖBB Infrastruktur and RFI,
- adds to but doesn't replace the Capacity Strategy of each involved Infrastructure Manager except for ÖBB Infrastruktur, which will publish no individual Capacity Strategy for 2025,

- meets the requirements of RNE's Capacity Strategy Handbook, version 1.0¹,
- focuses for Timetable 2025 on lines of international relevance,
- encloses four main chapters:
 - Description of the geographic scope
 - Expected permanent changes in infrastructure capacity,
 - Expected Temporary Capacity Restrictions (TCRs) with major impact,
 - Expected traffic flows, whereby the values displayed apply for Timetable 2025 to relevant border points within the geographical scope.

The Capacity Strategy targets applicants as well as their end customers, service facilities and terminals, policy decision makers as well as any other stakeholder of rail capacity planning and allocation.

The present document is non-binding. It applies to Timetable 2025. It will be updated in the second half of 2022 for Timetable 2026. The Capacity Strategy 2026 is expected to be published in its updated version in December 2022.

It is endorsed by the involved Infrastructure Managers.

¹ [hb_capacity_strategy_1.0_2021-12-07_0.pdf \(rne.eu\)](#)

0. Geographical scope

0.1 Relevant border points

The lines of international relevance were selected on basis of experience, starting from border points with the highest volume of international traffic, both passenger and freight. The relevant border points are listed in the following table:

	ProRail	InfraBel	DB Netz	SBB Infra	RFI	ACF	ÖBB Infra
ProRail		Roosendaal- Essen Meer/ Hazeldonk (HSL), Maastricht/ Visé	Venlo, Emmerich, Bad Bentheim				
InfraBel	Roosendaal/ Essen, Meer/ Hazeldonk (HSL), Maastricht/ Visé		Aachen/ Montzen			Aubange/ Rodange, Kleinbettingen /Sterpenich, Gouvy/ Troisvierges	
DB Netz	Venlo, Emmerich, Bad Bentheim	Aachen/ Montzen		Basel			Kiefersfelden/ Kufstein, Freilassing/ Salzburg, Passau/ Schärding
SBB Infra			Basel		Luino, Domodossola, Chiasso		
RFI				Luino, Domodossola, Chiasso			Brennero, Tarvisio
ACF		Aubange/ Rodange, Kleinbettingen /Sterpenich, Gouvy/ Troisvierges					
ÖBB Infra			Kiefersfelden/ Kufstein, Freilassing/ Salzburg, Passau/ Schärding		Brennero, Tarvisio		

Table 1: Selected border crossings for MVP 2025

1. Expected Capacity of the Infrastructure

1.1 General Principles

The present chapter provides an overview of significant positive or negative changes to the available capacity for Timetable 2025.

The projects listed in this chapter fulfill the following criteria:

- Unlike TCRs, the project has a permanent impact on the available capacity, (Chapter 2),
- The project unfolds its effect on capacity between Timetable 2022 and Timetable 2025. Subsequent Capacity Strategies will provide annual updates,
- The projects have a significant size and are located on network segments relevant for international traffic, whereby each Infrastructure Manager evaluates the fulfillment of this criteria on its own.

1.2 Additional Available Capacity

The following projects fulfill the above listed criteria:

Country	Network Segment	Description	Effect	Impact on capacity as of	Remark (e.g., to indicate status)
2022					
BE	L162 Hatrival-Y.Autelbas	Power Switch 3kV -> 25kV	No major effect before the end of the project Axis 3	09/2022	Definitive
BE	L165 Bertrix - Y.Aubange	New switches in Straimont and in Signeulx	Possibility of shorter Single-Track Operations for maintenance	12/2022	Definitive
NL	Almelo	Electrification platform track 3	Electric trains can change direction at all platform tracks	08/2022	Definitive
NL	Ede-Wageningen	Adjustments layout and extra platform track	Changing direction from middle platform tracks, fewer dependencies	09/2022	Definitive
NL	Deventer	Adjustments layout	Shorter running and headway times	10/2022	Definitive
LU	Rodange	Infrastructural change	Reorganization of the tracks	09/2022	Definitive
DE	Fürth	Linking the new Fürth Hbf - Fürth-Klinikum S-Bahn tracks, which have already been built parallel to the existing line and are not in operation, with the existing line Fürth - Bamberg by installing 6 points; production of a four-track section Fürth Hbf - Fürth-Klinikum	Increase in line capacity Fürth - Erlangen, consolidation of the S-Bahn Nuremberg - Bamberg to a 20-minute interval in the Nuremberg - Erlangen section	04/2022	Definitive

DE	Wendlingen - Ulm	New line (incl. minimum connection Ulm) (Project S21)	Travel time reduction approx. 15 minutes. Prerequisite for realization of a half-hourly service on the long-distance North-South corridor and Mannheim - Munich (together with S21 subterranean rail station, IBN 1)	12/2022	Definitive
DE	Augsburg, Au-Oberhausen - Au main station	Augsburg Hbf station, upgrading of secondary track 170 between Au-Oberhausen station and Au Hbf to the main track for carrying out train movements	6. main track between Au-Oberhausen and Au Hbf enables more flexible planning and operational management in the Augsburg node and secures the necessary path capacities, for the freight lines after densification of the long-distance lines	12/2022	Definitive
DE	Frankfurt-Höchst	Frankfurt-Höchst node: connection of track 4/6 with extension track Zeilsheim	Ensuring refueling of H2 vehicles	12/2022	Definitive
AT	Wels - Schwandenstadt	ETCS Level 2 implementation	Improved safety and inter-operability; ETCS-rollout on Danube axis ongoing	Starting 2022	
AT	Kufstein - Innsbruck	Abzw. Radfeld - Abzw. Fritzens-Wattens 2; additional blocks	Increase of capacity; On high-speed/freight line	2022	
IT	Luino route	Loading gauge	PC 80/410 gauge on Luino axis; Increased transportation capacity without change in available train volumes	2022	Definitive
2023					
NL	Apeldoorn	Adjustments layout and extra platform track	Shorter running times and fewer dependencies	07/2023	Definitive
NL	Tilburg	Adjustments layout and extra platform track	Higher platform capacity and shorter headway times	09/2023	Definitive
NL	Gilze-Rijen	Remove switches, adjustments to free track	Less possibilities for traffic control, shorter headway times	09/2023	Definitive

NL	Oudewater	Remove sidetracks and switches, adjustments to signaling	Less possibilities for traffic control, shorter headway times	11/2023	Definitive
NL	Oldenzaal border - Hengelo	Higher maximum speed, short term adjustments layout Oldenzaal	Shorter running times	2023/2024	Risky (in study)
LU	Ettelbruck	Infrastructural change	Reorganization of the tracks / Additional platform	09/2023	Definitive
DE	Eltersdorf	Southern connection of the Eltersdorf S-Bahn platform to the double-track existing line; complete integration of the transport station into the S-Bahn/freight train tracks	Regional trains in Eltersdorf no longer stop at the tracks of the future high-speed line (at temporary platforms) but still or already in the area of the four-track system (i.e., the rapid transit line); limit load problem between Erlangen and Fürth will be eliminated; There will then be an alternative route for heavy freight trains to the south (Fürth) not only via the (too steep) flyover of the mainline tracks, but also via the S-Bahn/ freight train tracks.	06/2023	Definitive
DE	Corridor A: Basel - Kenzingen	ETCS corridor A, Basel - Kenzingen; Elimination of LZB restrictions, no new electronic interlocking (ESTW) required	Capacity increase	07/2023	Definitive
DE	Gäubahn: Horb - Neckarhausen	Extension on dual track	Capacity increase	12/2023	Definitive
DE	Horb	Electronic interlocking (ESTW)	Capacity increase	12/2023	Definitive
DE	Aschaffenburg	Track 505 Usable length for 740m freight trains	Capacity increase	12/2023	Definitive
DE	Bingen, Darmstadt-Eberstadt	740 m passing loop	Capacity increase	Darmstadt-Ebersadt	Definitive

				12/2023, Bingen 12/2024	
CH	Basel SBB RB	Train routes bypass north and center	Increase in performance	06/2023	
CH	Basel SBB RB	Brake test system	Increase in performance	09/2023	
CH	Chiasso	<u>Expansion and modernization Chiasso</u>	Freight traffic: 5 tracks extended to 750m length. Fascio U: Completion of electrification of the tracks for departures to the south.	09/2023	
CH	Maroggia - Capolago	GSM-R Doubling frequencies	Eliminates stability risks.	12/2023	
IT	Milano node	Technological	Increase of capacity and regularity	2023	Definitive
2024					
BE	L162/1	New link between L165/1 and L162 in Libramont	New diversion route for freight traffic	12/2024	Definitive
NL	Amersfoort C	Adjustments layout	Shorter running times	09/2024	Definitive
NL	Rotterdam Centraal	Adjustments layout and longer platform tracks	Shorter running and headway times, more platform tracks for long trains.	10/2024	Definitive
NL	Kijfhoek	Renewal of hump yard, possibly with adjustments layout	Depends on adjustments	2024	Likely
NL	Venlo	Adjustments in layout and longer platform tracks	Stopping with longer trains possible	2024/ 2025	Risky
NL	Tilburg Industrie	Extend arrival and departure track	Longer freight trains	2024	Risky
NL	Valburg	New container terminal	New origin and destination for freight trains	2024/ 2025	Likely

NL	Eindhoven	Adjustments in layout east side	Shorter running times and fewer dependencies	2024/ 2025	Likely
DE	Weil am Rhein/ Basel Bad	Transformation group	Capacity increase	05/2024	Definitive
DE	Riedbahn	Increasing the number of signal blocks (without speed optimization) in the course of construction electronic interlocking (ESTW)	Shorter lead times, production level of operating quality analogous to (at least) status quo, limitation of RE 70 stop failures to 2	ESTW 12/2024, ETCS 12/2024	Definitive
DE	Straubing Hafen	Line 5812 Straubing - Bogen new stop Straubing-Hafen	New traffic stop for better connection to public infrastructure	12/2024	Definitive
DE	Euregiobahn Aachen	Electrification of the Euregiobahn Aachen (only on Deutsche Bahn infrastructure up to the border Herzogenrath, Stolberg), stop signal Aachen-Richterich	Capacity increase	12/2024	Definitive
DE	Rüsselsheim	Electronic interlocking (ESTW), Replacement of signal box E43	Acceleration of the S-Bahn route	ESTW 12/2024	Definitive
CH	Basel SBB GB	<u>Expansion of parking facilities Basel Süd SBB</u>	Creation of necessary parking capacities for additional S-Bahn trains and longer long-distance trains.	02/2024	
CH	Chiasso	Sidings	Parking capacities for regional trains	09/2024	
CH	Basel SBB RB	Basel SBB RB; Locomotive parking spaces	Increase in performance	12/2024	
IT	Gotthard and Simplon axis	750 module	Adaptation to STI; Increased transportation capacity without changes in available train volumes	2024	Definitive
IT	Chiasso - Monza	Technological	Increase of capacity and regularity	2024	Definitive

IT	Verona - Bologna	Technological	Increase of capacity and regularity	2024	Definitive
IT	Monza - Milano Smistamento	Technological and infrastructural	Increase of capacity and regularity	2024	Definitive
2025					
NL	Moerdijk	Two arrival and departure tracks for 740m-trains	740m-freight trains from to Moerdijk	2025	Likely
NL	Europoort	Electrification of two arrival and departure tracks	740m-freight trains from to Europoort	2025	Likely
DE	Offenburg	Production of the high-capacity block (measure high-capacity block) in the southern station head Offenburg and construction of an additional switch connection (measure switches and overlap)	Additional turnout connection: prevention of track exclusions for regional trains and freight trains; implementation of high-capacity block leads to shorter intervals between trains and capacity increase	04/2025	Definitive
DE	Offenburg, Appenweier, Bühl, Baden-Baden	Electronic interlocking (ESTW)	Capacity increase	04/2025	Definitive
CH	Vezia - Capolago	Train sequence time reduction	Eliminates stability risks	05/2025	
AT	Villach - Arnoldstein - Tarvisio	Renovation of train station "Arnoldstein"	Increase of freight track lengths >760m	12/2025	
AT	Kufstein - Innsbruck	New Vomp station for freight trains with 760m tracks	Increase of capacity	2025	On high-speed/freight line
IT	Villa Opicina - Aurisina	Technological	Increase of capacity and regularity	2025	Definitive
IT	Gorizia branch	Infrastructural	New single-track link to Slovenia	2025	Definitive

Table 2: List of MVP-relevant infrastructure projects with positive capacity effects expected active by TT2025

1.3 Reduced Available Capacity

Country	Network Segment	Description	Effect	Impact on capacity as of	Remark (e.g., to indicate status)
2022					
BE	L144	Single track operations	Limitations on available capacity	Immediate	Long term
2023					
NL	Gilze-Rijen	Remove switches, adjustments to free track	Less possibilities for traffic control, shorter headway times	09/2023	Definitive
NL	Oudewater	Remove sidetracks and switches, adjustments to signalling	Less possibilities for traffic control, shorter headway times	11/2023	Definitive
2024					
NL	Zaltbommel	Remove sidetracks and switches Oud-Zaltbommel	Less possibilities for traffic control	2024	Definitive
2025					
NL	Wolfheze	Remove middle track and switches	Less possibilities for traffic control	2025	Likely
NL	Rijssen	Remove sidetrack	Less possibilities for traffic control	2025	Likely

Table 3: List of MVP-relevant infrastructure projects with negative capacity effects expected active by TT2025

2. Expected Temporary Capacity Restrictions with major impact

2.1 General Principles

Infrastructure Managers are required to plan TCRs following “Annex VII”².

Annex VII sets the frame for TCR-planning, the aim of which is to promote early planning, international coordination among Infrastructure Managers, transparency towards Applicants and planning stability. Ultimately, it pursues the goal of increased performance and competitiveness of rail services.

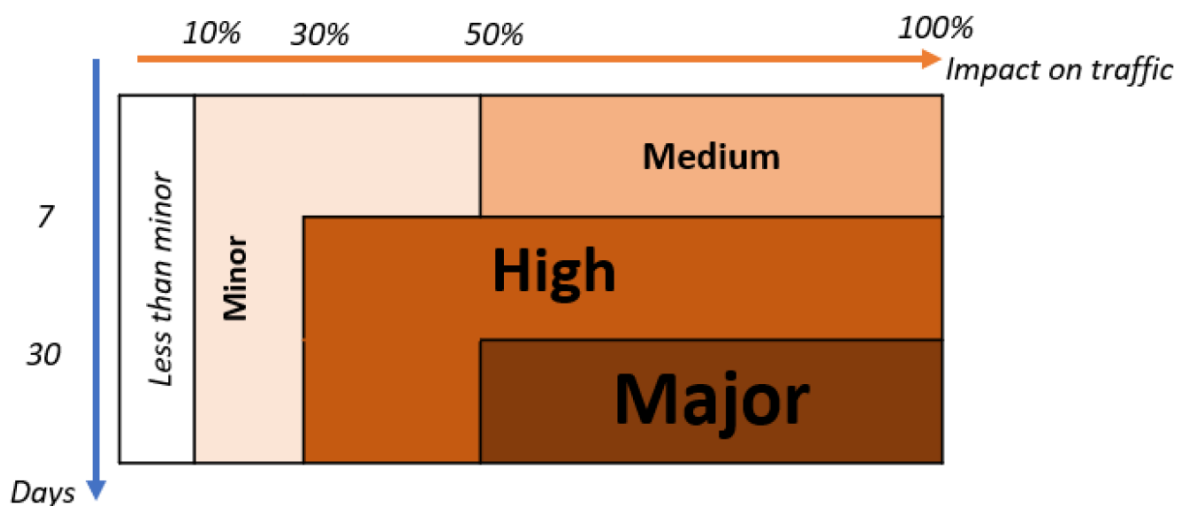


Figure 3: Overview of Annex VII-categories of TCRs (Source: RNE)

The TCRs listed in this Chapter fulfill the following criteria:

- The TCR falls in the category of major TCRs in Figure 3
- Within this category, the TCR is expected to have a significant impact on international traffic due to its duration, its volume and/or location. Each Infrastructure Manager evaluates the fulfillment of this criteria on its own
- The TCR will impact capacity of Timetable 2025, regardless of its start and completion date
- The TCR is financed

² COMMISSION DELEGATED DECISION (EU) 2017/ 2075 - of 4 September 2017 - replacing Annex VII to Directive 2012/ 34/ EU of the European Parliament and of the Council establishing a single European railway area (europa.eu)

2.2 National Specificities

Infrabel

The following chapter contains a summary of the TCR planning principles for Infrabel. The full version is available in the national Capacity Strategy document.

TCR windows

The maintenance of the infrastructure is repetitive in nature. Every asset must be maintained regularly with a frequency fixed by the regulation. Therefore, planning can be based on this regularity and does not have to start from scratch every time. By elaborating a regular planning, maintenance is facilitated, which will positively affect the availability of the infrastructure.

Tying the planning of maintenance to a recurring principle also means that less effort is required to create the planning. This will make the planning process more efficient. The rotation plan is part of the Capacity Strategy and the Capacity Based Planning (CBP) is developed to ensure that sufficient capacity is available to carry out the maintenance. At the same time, alternative routes for freight and long-distance passenger services are safeguarded.

Regular TCRs

Infrabel plans TCRs in different coordination phases, in order to align the planning of the different types of TCRs with the particularities of Infrabels network, with its needs in terms of resources and with the needs of applicants in terms of information, as well as in compliance with Annex VII of Directive 2012/34/EU.

RNE TRCs Definitions	Consecutive days	Impact on traffic (estimated traffic cancelled, re-routed or replaced by other modes of transport)	Planification and coordination phases		
Major impact TCR	More than 30 consecutive days	More than 50% of the estimated traffic volume on a railway line per day	Phase 1		
High impact TCR	More than 7 consecutive days	More than 30% of the estimated traffic volume on a railway line per day			
Medium impact	7 consecutive days or less	More than 50% of the estimated traffic volume on a railway line per day		Phase 2	
Minor impact TCR	unspecified	More than 10% of the estimated traffic volume on a railway line per day			Phase 3
Less than Minor TCR impact	unspecified	Less than 10% of the estimated traffic volume on a railway line per day	Phase 4		
Not Defined	Unspecified	No impact	Phase 5 ³		

Table 4: Overview of different TCR types

Consultation Process

As part of its task of providing information on the temporary capacity restrictions necessary to maintain, renew and extend its network, Infrabel draws up a schedule of works considering these TCRs and the routes or corridors that must remain free of any capacity constraints to ensure the continuity of traffic. To facilitate the planning of the works and to facilitate the consultation process, general recommendations are agreed between Infrabel and the applicants. Infrabel uses these general recommendations as a basis for determining which corridors should remain open and for coordinating the annual planning of the works. The TCRs and the routes left open are published annually in the form of a Corridor Book. This Corridor Book is made available to applicants on the Infrabel Business Corner.

ProRail

This chapter contains a summary of the TCR planning principles of ProRail. The full version can be read in the national Capacity Strategy document.

³ Phase 5 integrated in the short-term process

The so called “Corridor Book” contains a more detailed elaboration of many of the planning principles for regular TCRs mentioned in this paragraph as well as a definition of all deviation routes.

ProRail is considering an 80-weeks TCR by DB Netz between Emmerich and Oberhausen from the beginning of November 2024 to the end of May 2026. To keep as much capacity as possible available for traffic, ProRail will use amended TCR planning principles on deviation routes in the Netherlands during this period. These are included in the national Capacity Strategy⁴ document.

TCR windows

TCR Windows are allocated on all track sections in the Netherlands and facilitate TCRs for short-cycle maintenance as well as other minor TCRs that fit in the window.

In the TCR Windows, works can be planned without further consultation of RUs or coordination with neighboring IMs, both before and after the X-4 publication.

The number of TCR Windows at a certain location depends on the historical and/or expected need for maintenance and projects. On most locations, multiple TCR Windows are planned, each repeating on a weekly basis.

TCR Windows are planned throughout the network in such a way that (alternative) routes remain available on all days of traffic demand between the main origin and destination locations of freight trains and night trains, including locations in Germany and Belgium.

TCR Windows are spread as much as possible over all nights of the week and are basically planned when there is as little traffic as possible. A limited number of TCR Windows is scheduled during daytime.

Each TCR Window lasts at least 4 hours.

TCR Windows are designed so that work can be done safely. On most single-track and double-track line sections this results in a total closure of the line. Exceptions apply.

TCR Windows on deviation routes due to regular TCRs will be cancelled.

Non activated TCR Windows will be cancelled 12 days in advance. Exceptions apply. This term may be harmonized at European level in the context of TTR.

⁴ National document can be found at: <https://www.prorail.nl/samenwerken/vervoerders/network-statement>

Minor TCRs that do not fit in a TCR Window are often scheduled during a TCR Window plus the evening before.

Regular TCRs

The size of a TCR, both in terms of duration and space, does not exceed the size needed for the safe execution of the planned works. This considers a safety zone and a time buffer.

Works are planned in total closures on single-track and double-track sections. As many activities as possible from different projects are executed simultaneously (clustering).

On multi-track sections and transport nodes (yards), total closures are usually avoided if technically possible. When designing a TCR and clustering with other projects, a trade-off is made between more impact during a shorter period of time or a solution with less impact for during a longer time. The trade-off is made on total impact and costs.

On all track sections, the maximum size (distance) of a TCR does not exceed pre-defined “sub-corridor” for reasons of quality of alternative passenger transport, unless this is technically not possible otherwise.

Major work is often divided into TCRs with a duration of two days, which are planned during weekends to limit the impact on traffic. TCRs last longer than weekends if technically necessary. TCRs can be extended to multiple days if this is more efficient or to avoid many weekends with impact on traffic.

The duration of a TCR is typically chosen between the end of the passenger service in the evening and the start of the passenger service in the morning, considering the interests of freight traffic.

The planning of TCRs takes several aspects into account to limit the impact for RUs and their customers and to avoid peak deployment of scarce resources of contractors.

TCRs are often planned during weekends, public holidays, and holiday periods. However, because of the availability and economically responsible deployment of resources, ProRail will more often than before plan TCRs outside weekends and holiday periods.

Consultation Process

Phasing of major projects (depending on needs of the project; preferably before X-30)

- This part of the process is only completed for large, usually multi-annual projects with a complex construction phasing. A preliminary consultation with applicants is done in multiple meetings about the way the work will be done.
- The result of this process step is a detailed plan that contains the available tracks during each construction phase and its duration, as well as constraints for the TCR planning. An alternative timetable could be agreed upon for one or more construction phases.
- The phasing steps are fitted into the draft of the multi-year national TCR planning.

Masterplanning phase (X-29 to X-21)

- In this process step, a first estimation is made of the capacity needs per project with an indication of the TCRs in terms of number, location, duration and the extent of the capacity restriction (total or partly closure). The cluster possibilities of TCRs on a line section are determined for the first time.
- A first version of the national TCR planning is made and subject to a preliminary consultation with applicants and coordination with other infrastructure managers.
- The result of this process step is a publication of Major and High TCRs at X-24 and a feasibility check on the planning possibilities of Medium TCRs on X-21. At the end of this phase, the Masterplan is established, which sets out the projects that will be done in the primary focus year, with a view to the four subsequent years.

Preparation for final publication (X-17 to X-12; for minor TCRs up to X-4)

- The exact size (at track level) and duration of the TCR is determined and consulted with applicants. Clustering of TCRs is finalized. The final national TCR planning is made, coordinated with neighbouring infrastructure managers, and consulted with applicants.
- The TCRs with Minor impact are determined, incorporated into the planning of larger TCRs and consulted with applicants.

- The result of this process step is at the publication at X-12 of all Medium, High and Major TCRs and at X-4 of all Minor TCRs.

ACF

The infrastructure manager CFL is responsible for the maintenance of the rail network in Luxembourg, with the validation of operations by the entity ACF. Maintenance works are validated in cooperation to ensure the availability of the network.

TCR windows

CFL doesn't properly use maintenance windows, but the organization is to plan all minor maintenance works at night to avoid disruption of the traffic. On the other hand, all minor maintenance works are integrated in the TCR-plannings process. As the number of trains circulating during the night is rising, we are aware that this way of planning will change in future.

For medium/major maintenance, the window can be considered at the summer period (between mid-July and mid-September), during which the major changes can be operated.

Regular TCRs

Regular TCRs are planned at first at European level, within Rail Freight Corridor North Sea-Mediterranean. CFL and ACF are part of the project TCR- Tool, into which all programmed maintenance is entered.

TCRs are collected in a tool that gives access to all RUs that have a license to access the Luxembourgish rail network. Between X-42 and X-37, TCRs are collected and coordinated internally. At X-37, a first draw of TCRs is discussed between CFL and ACF to validate a basis for the discussion with other IMs and RUs. Mainly, the known TCRs at that point are major and high TCRs. Nevertheless, also medium TCRs are treated at this date if known.

At X-25, all the known TCRs are published. Major and high TCRs should stay fix at this moment. Publication means meetings between IM and RUs, as well as an E-mail with a TCR-list. If any major or high TCR must be changed after this date, the process validates the changes from the RUs.

At X-13, all the known TCRs are published. Major and high TCRs should stay fix at this point in time. Publication means meetings between IM and RUs, as well as an E-mail

with a TCR-list. If any major or high TCRs must be changed after this date, the process provides a validation of the changes from the Rus.

Consultation process

To ensure that maintenance works are conducted rightfully, the IM prepares exchange meetings with the RU to correctly transmit the information. After agreement, the planning is validated by ACF. Once the TCRs planning is agreed, it is transmitted to the RUs by the IM, and the planning is made available on the ACF-website for consultation.

DB Netz

DB Netz is currently revising its TCR planning processes according to Annex VII. A full implementation of Annex VII is expected to be achieved in calendar year 2027 for Timetable 2028. The processes of regular TCR-Planning, consultation and international coordination described in this Chapter are therefore subject to further adjustments that will be duly explained in the following Capacity Strategies.

TCR windows

At DB Netz, a distinction is made between two instruments for considering maintenance work: maintenance corridors and so-called timetable windows

Maintenance corridors ('longer' closures, e.g., twice a year for one to two weeks at night, normally in track-changing operation) are planned during the medium-term capacity management phase, i.e., five to three years ahead, and processed up to X-26. Planning results are available as of X-26.

Timetable windows (regular - periodic - closures, e.g., one or two days a week for 6 hours for a longer period of up to one year) are planned two years ahead and processed by X-21. Planning results are available as of X-21.

Regular TCRs

DB Netz is gradually introducing a TCR-planning process structured in three consultation phases. The first consultation phase aims at the publication of high and major impact TCRs until X-24, whereas the second consultation phase aims at the publication of high and major impact TCRs as well as of medium impact TCRs until X-

12. The third consultation phase is dedicated to minor impact TCRs to be published until X-4.

DB Netz further detailed the TCR fourfold typology of Annex VII into eight TCR-categories from the lowest impact TCRs in Category 1 (very low time impact, less than 10% impact on traffic volume) to the highest impact TCRs in Category 8 (time impact over 30 days and impact on traffic volume over 50%).

The impact on traffic volume is evaluated following a method that puts nominal capacity in relation with the estimated volume of path allocations in the relevant Annual Timetable.

The first consultation phase concentrates on bundling TCR-windows in space (“TCR-corridors”) and time (weekdays, weekends, days and/or nights) considering the extent of the capacity restriction (total or one-track-closure). The objective is to reduce the impact on traffic to the largest extent possible. The first consultation phase starts approximately forty months ahead of timetable change with the first publication of intended TCR-windows, the final draft of which are published X-24.

The second consultation phase focuses on updating the TCR-planning and detailing the effect of a TCR on path concepts following such criteria as total train routing, train routing from the end of the TCR-stretch to its destination, travel time incl. extensions because of TCRs, network effects of a cancellation or a deviation, potential for further delays and operational costs. Depending on the outcome of the evaluation, the TCRs will be taken in the Annual Timetable as capacity not available for commercial use and around which annual path requests will be planned. The second consultation phase may include smaller TCRs, not considered during the first consultation phase.

The third consultation phase addresses non-ATT relevant TCRs.

Consultation and coordination

DB Netz consults applicants and service facilities at three levels:

- Regionally, in seven areas corresponding to the regional subdivisions of DB Netz (North, East, Southeast, South, Southwest, Center and West), currently in March and October of each year covering multiple time periods.
- Nationally, currently in July of each year, covering multiple time periods as well.

On regional and national levels, DB Netz starts this process at X-40. Nonetheless, this consultation process is under revision and will be adapted in the next few months to better match Annex VII-requirements.

- Internationally, in seven areas: from/to Belgium and The Netherlands, Scandinavia, Poland, the Czech Republic, the Brenner Corridor (Austria and Italy) Switzerland as well as France, Luxemburg and the South of Belgium. The mapping considers traffic flows and diversionary options in case of TCRs on a line of international relevance.

Regional and national consultations are organized around two instruments:

- meetings ("*Bau- und Informationsdialog*" or "TCR an Information Dialog"), during which DB Netz informs and Applicants may comment
- online observation phases, following which Applicants are given the opportunity to deliver an opinion in written form

International consultations in the Annex VII-target picture are organized in meetings expected to take place in principle in early autumn (approx. X-39, X-27, and X-15) and in early spring (approx. X-31 and X-19). The exact month of consultation depends on how the milestones of all involved IMs can be coordinated to provide applicants with up-to-date information.

DB Netz considers the comments received to the extent possible.

DB Netz plans to coordinate internationally with neighboring IMs in meetings that precede the consultation of applicants by one or few days. These coordination meetings are planned equally in early autumn and in spring. Aim of the coordination is primarily to ensure bi- or trilaterally coherent bundling of TCRs as well as a coherent estimate of remaining capacity on diversionary lines.

SBB Infra & BLS Netz

Although Annex VII is not directly applicable to Switzerland, in practice a procedure is used that is largely in line with the deadlines set out in Annex VII.

In the MVP, it was agreed that on the North/South Axis (RFC RALP) a single-digit number of TCR announcements across all capacity strategies should be targeted as a guideline in terms of quantity. For the capacity strategy TTR@CH, this means that as a rule, only a few - so-called "crucial major" or "once-in-a-lifetime" - TCR are

published. As part of the business processes, SBB Infrastruktur has developed the following admission criteria:

TCR >90 days and more than 50% capacity restrictions.

More information about the TCR planning principles can be found in the national capacity strategy document.

ÖBB Infra

In general, ÖBB-Infrastruktur AG plans construction work and the resulting TCRs in a way to have as little impact on railway traffic as possible. Planning and publication of TCRs due to construction work as well as maintenance of the network of ÖBB-Infrastruktur AG is conducted in accordance with Annex VII of the EU-Directive 2012/34.

An overview of total closures due to TCRs is published in the network statement and available online as early as x-12. An overview of construction sites and restrictions as well as monthly construction plans are also available online on the Web-BBP Construction plan website.

TCR Windows

On the network of ÖBB-Infrastruktur, regular maintenance windows are only scheduled for tunnel segments. The planning process for maintenance windows is analogous to the planning of regular TCRs caused by construction sites. Maintenance windows are usually planned in periodical intervals; however, the time and duration of the maintenance windows can be adjusted in case other Temporary Capacity Restrictions occur on adjacent lines or corridors. The maintenance windows are published online on the Web-BBP Construction plan website.

Regular TCRs

The impact of temporary capacity restrictions (TCRs) is highly dependent on the available infrastructure as well as on the timetable of the affected lines.

In the process of timetable and TCR planning, the draft network timetable is the last planning step (x-12 until x) before timetable change and serves as the base for the short-term timetable (from x until x+12). Only TCRs which have a significant impact on the available capacity are considered in the draft network timetable. For TCRs to be

included in the draft network timetable, it is necessary to fulfil the following three criteria:

- Financing of the construction project must be secured and there are no further risks for potential delays of the project (e.g., Caused by environmental impact assessments)
- The temporary capacity restriction must be in place for at least 6 months during the network timetable period
- Travel time for train paths for long-distance passenger traffic is increased by more than 1 minute and/or the reduced track capacity due to the TCR is smaller than the expected track capacity needed to satisfy the demand for train paths.

All other Temporary Capacity Restrictions which do not fulfil the above criteria are considered in the short-term timetable (from x until x+12), which is adjusted continuously.

Based on the regulations of Annex VII of the EU-Directive 2012/34, TCRs on the network of ÖBB-Infrastruktur are categorized according to their impact on traffic and their duration. See table below for the different categories.

		Amount of train paths cancelled or re-routed per day			
		< 10%	10% – 30%	30% - 50%	> 50%
Duration of TCR	> 30 days	Kat IV	Kat III	Kat II	Kat I
	7 days – 30 days	Kat IV	Kat III	Kat II	Kat II
	24h – 7 days	Kat IV	Kat III	Kat III	Kat III
	< 24h	Kat IV	Kat IV	Kat IV	Kat IV

Table 5: Categorization of TCRs

The percentage of train paths cancelled or re-routed is calculated considering the conceptual timetable for an average weekday during the duration of the TCR.

The publication of TCRs in the annual network statements is done in compliance with the terms set in Annex VII. Ahead of the publication of the TCRs in the network statements, a consultation process with applicants as well as operators of service facilities is conducted.

For TCRs which also affect the networks of infrastructure managers in neighboring countries, bi-lateral or multilateral coordination is conducted in consideration of the due

dates set by Annex VII. The timeframe for the international coordination as well as for the publication of TCRs is indicated in the following table.

		Date of publication				
		X-24	X-18	X-13,5	X-12	X-6
Category	Kat I	First publication	Coordination concluded		Second Publication	Update
	Kat II	First publication		Coordination concluded	Second Publication	Update
	Kat III			Coordination concluded	First publication	Update
	Kat IV					First publication

Table 6: Terms of publication of TCRs according to Annex VII

Consultation Process

The consultation process with applicants generally takes place between x-24 and x-12. The result of the operational analysis for the period of the TCR is thereby presented to the applicants by ÖBB-Infrastruktur. The applicants are then given the opportunity to provide a written statement within a given period. In the further course of the planning process, the applicants’ written statements are considered and, if possible, adjustments to the operational planning are being made. The results of the operational analysis are published in the annex of the annual network statement.

RFI

TCRs are listed in the ePIR RFI web-portal, explaining the section and the period of execution of the works, with an estimate of the effects on the capacity (possibility of route limitations, detours, timetable changes, etc.) including the volume of traffic cancelled / diverted, in full compliance with the Delegated Decision 2017/2075, the definitive detail of which will be known with the delivery of the timetable. Any alternative route will also be explained, to allow RUs to proceed coherently as early as the path request phase.

TCR windows

Maintenance windows are planned according to RFI technical needs. According to RFI Network Statement, IPO maintenance windows that are not requested by maintenance are released for additional capacity to answer RU’s ad hoc requests.

Generally, duration, number and location of maintenance windows have only minor adaptation in subsequent timetables.

Every line has periodical maintenance windows, on a weekly basis, either on daytime or night-time. The use of IPOs makes possible to avoid timetable adjustments, as they are integrated into the running timetable, guaranteeing the ordinary/extraordinary maintenance, and upgrading of the infrastructure.

The (IPO) network maintenance windows are published annually in the Network Statement and can be consulted by the RUs on the RFI ePIR portal.

Regular TCRs

Whenever maintenance needs exceed what available by maintenance windows, specific additional TCR can be planned. The percentage of traffic diverted / cancelled is calculated considering the planned timetable, referring to the day with the greatest scheduled traffic volume within the duration of the temporary capacity restriction. If the TCR affects weekdays and holidays, the weekday with the highest scheduled traffic volume is selected; if the TCR affects only non-weekdays, the day with the highest volume of traffic is selected.

Consultation process

RFI carries out a consultation phase by sending to all Applicants/RUs and neighbouring IMs, one month before the publication, the program of infrastructural unavailability; in case of request and if possible, an alternative hypothesis for the execution of the works is provided. RFI considers the comments received during the publication phase at X-24, possibly organizing ad hoc meetings. Subsequently, before the entry into force of the timetable, the IM sends to all Applicants/RUs and neighbouring IMs possibly involved the updated TCRs program for a second consultation phase, by publishing the revised TCRs programs within 18 months after coordination with neighbouring infrastructure managers and considering the comments received in the second consultation with Applicants through the RFI ePIR portal.

2.3 International coordination and consultation

Infrabel – ProRail – DB Netz

Trilateral TCR-planning currently focuses in several meetings a year on the coordination of TCRs among Infrabel, ProRail and DB Netz two timetables ahead. As of 2022, two of these meetings, in September and May, will be enlarged to a trilateral exchange of information with applicants.

DB Netz – SBB Infrastruktur

Bilateral coordination of TCRs has so far taken place as part of the regular TCR-planning processes two to three years ahead, depending on the TCRs at stake. The Annex VII-target approach for international coordination and consultation including TCR-bundling, cross-border overview of diversionary lines and estimation of capacity, has been tested between DB Netz, SBB Infrastruktur, SNCF Réseau and applicants ahead of a total closure in the Rhine Valley in the late summer 2024. As of 2022, two of these meetings, in September and May, will be enlarged to an exchange of information with applicants.

SBB Infrastruktur – RFI

Bilateral strategic coordination takes place at Steering Committee meetings (high-level representatives of RFI & SBB-I). Periodical bi-lateral meetings are held to detail TCR harmonization. In addition, there is a constant interface between the territorial TCRs managers from SBB-I & RFI.

DB Netz – ÖBB Infrastruktur – RFI

TCR-coordination and consultation on the Brenner corridor has been up and running for over ten years, and addresses TCRs two to three years ahead, depending on the TCRs at stake, as well as short term information matters whenever deemed appropriate. It is structured in two meetings, in June and November, during which a first part (“day 1”) dedicated to coordination with neighbouring IMs is followed by a second part (“day 2”) enlarged to applicants. The timeline of coordination and consultation might be slightly adapted as of Autumn 2022.

Infrabel – ACF/ CFL

Infrabel, ACF and CFL coordinate the TCRs with impact on each other's neighbouring network together with SNCF Réseau on two levels (starting from X-33

- Coordination via the RFC NSM for TCRs located on these Rail Freight Corridor lines
- Coordination via the established trilateral working group for all TCRs impacting the borders (freight and passenger combined).

In practice, both levels are combined into one process with recurrent meetings.

To determine where TCR's must be located on the network in order to have an impact on the neighbouring network, an international perimeter has been agreed upon for the three countries concerned.

2.4 Selected Major Impact TCRs

Country	Network Segment	Purpose	Duration	Start (at quarterly level)	Impact (total closure/ single track closure/ speed restrictions)
2022					
AT	Attnang-Puchheim - Salzburg	Renovation of stations	TT 2025	Ongoing from 2022	Partly single line closures
AT	Kufstein - Brenner via Innsbruck and Innsbruck bypass	Construction of Brenner base tunnel and connecting lines	TT 2025	Ongoing	Partly single line closures
2023					
NL	Amsterdam C. - Weesp / Bijlmer / Sloterdijk	Increased capacity and transfer capacity at and around Amsterdam C.	Several years	Late 2023-April 2028	8 out of 10 platform tracks available at Amsterdam C.; during 3 weeks per year 6 out of 10 platform tracks available.

DE	Node Köln traction control unit (ASG)	Expansion Gummersbacher Straße (bend)	Whole year (2024-2026)	Q4 2023	Total closures and single-track closures
AT	(Linz-) Wels - Salzburg and (Linz-) Wels - Passau	Construction of new 4-track line east of Linz and between Linz and Wels	TT 2025	2023	Partly single line closures
AT	Villach Main Station	Renovation of Villach Main station	TT 2025	2023	Partly single line closures
2024					
LU	Bettembourg	Construction of a bridge	4 weeks	Q3 2024	Total closure of Bettembourg voyageurs
DE	Upgraded line (ABS) 46 Emmerich - Oberhausen	Multi-track expansion	80 weeks (2024+2025; 2026 in planning)	Q4 2024	Total closures and single-track closures
DE	Node Frankfurt Stadion	Expansion of the track or long-distance trains	Whole year (2024-2026)	Q1 2024	Total closures and single-track closures
AT	Salzburg - Villach (- Tarvisio)	Temporary closure of Tauerntunnel	8 months	11/2024-07/2025	Total closure
2025					
NL	's-Hertogenbosch - Boxtel / Tilburg	Increased capacity; freight trains Kijfhoek - Eindhoven via 's-Hertogenbosch instead of Breda - Tilburg	Several years	05/2025	Prolonged speed restriction (80km/h) between 's-Hertogenbosch en Vught Aansluiting
LU	Luxembourg - Bettembourg	Construction of a new line	60 days	Q3 2025	Total closure

CH	Basel SBB RB D-Gruppe	Track extensions D-Group	332 days	Q1 2025	Partial closure within the framework of approx. 50 - 60%. Concept not yet worked out. The trains are diverted via the other groups, which leads to time-table adjustments and also to a reduction in capacity.
BE	L162 - Namur - Luxembourg border	Different single-track operation to increase capacity between Namur and Luxembourg	12/2027	Ongoing	
BE	L161 / L162 - Ottignies area	RER - Ottignies	12/2029	Ongoing	
IT	Verbania-Premosello (Domodossola line)	Gauge enhancement	40 days	Q3 2025	Total closure

Table 7: List of MVP-relevant selected Major Impact TCRs with temporary capacity impacts during TT2025

3. Expected Traffic Flows and Traffic Planning

3.1 General Principles

Traffic flows are quantified in the present document at border points. Figures derive from national estimates and respond to no methodology that would be common to the involved Infrastructure Managers. Unless stated otherwise, the figures are harmonized and correspond to average values per traffic type per hour, without a differentiation between peak and off-peak hours.

Though non-binding, they provide an average bookable capacity per hour for respectively long-distance passenger, regional passenger (wherever relevant highlighting capacity for regional express traffic) and freight trains for Timetable 2025. Further assessment and more detailed differentiation will occur with the Capacity Model and, wherever deemed appropriate for Timetable 2025, the Capacity Supply.

3.2 National Specificities

Infrabel

For timetable 2025, it has been agreed to offer a capacity model based on TTR principles on a reduced geographical scope, that is left to be defined at a later stage. In any case, this geographical scope will not exceed the geographical scope chosen for the capacity strategy.

As not all TTR process elements can already be implemented for timetable 2025, most notably because of the missing legal framework, the capacity model that Infrabel will develop will only have an advising character.

Infrabel intends to deliver a market driven capacity model, which we intend to achieve by using the following elements:

- Historical data
- Capacity Needs Announcements (CNA)

For the historical data, we will base ourselves on planned and finalized train runs over the last 3 year, including evolutions detected. For the Capacity Needs Announcements, we will invite all possible applicants to share their assessments for future traffics. This can be done via the existing exchange platforms or bilateral communication. Infrabel

is also open to test the newly developed CNA process (FTE/RNE) but no final decision has been taken for this up to this point. Exact modalities will be communicated at a later point in time.

ProRail

Base of the traffic flows for timetable 2025 is timetable 2022, including the intended developments for both passenger and freight traffic in the MVP-scope.

For passenger traffic we take into account the intended developments (or capacity needs announcements = CNA) as known in the mid-long term process (MLT-process). The CNA's up and to 2025 can be read in the national Capacity Strategy document.

For freight traffic we consider the forecasts for traffic growth for commercial freight trains based on a high growth scenario. This results in a number of freight paths per hour or per day for each OD-relation.

The basic principle is that a maximum of 75% of the available capacity for freight trains may be used, so that rail freight operators have some flexibility. A freight path that is available 24 hours a day in each direction offers capacity for up to 18 commercial freight trains in each direction, so 36 freight trains in both directions combined. This number is lower when freight paths from different directions converge.

In addition to the required capacity for freight trains, translated into the number of freight paths for each relation and border crossing, there are also other developments for freight trains, e.g. for longer trains. These are mentioned in the national Capacity Strategy document.

For international traffic flows for 2025, special attention is paid to TCR's for the Zevenaar - Emmerich border crossing, due to the works on the Emmerich - Oberhausen section that will take place throughout the year in 2025. This can be read in the national Capacity Strategy document.

ACF

The traffic flows for the "Capacity Strategy" are analyzed at the border points Luxembourg. The capacity for 2025 has been measured with the historical data, consultation with the neighbor network and the advice of the strategy team of our main RU.

The figures are also considering the future steps we can include with the transformation of our network. For passenger traffic, the cadence is defined by the Ministry of Mobility and Public Maintenance until 2035. For freight traffic, we fixed the strategy with the current requests. We expect to include more details of it with the tool CNA.

DB Netz

In the TTR-context and ahead of the implementation of the “Deutschlandtakt”, DB Netz is working on developing instruments for drivable, network-wide optimized capacity planning.

A first try was published as a pilot 1st April 2022 on DB Netz’s website. The mKoK⁵ (Medium-term concept for optimized capacity utilization) elaborates on previous Deutschlandtakt-planning processes, Timetable 2021 as well as on customer input on planned changes or additional trains compared to Timetable 2021. It applies primarily to Timetable 2024 and will be used in Germany to drive the allocation of framework contracts for Timetables 2024 and 2025. It is furthermore the best available data basis for the present Chapter.

The mKoK delivers the maximum number of thoroughly plannable system capacities - further referred to as sample capacities - for passenger and freight trains in two hour-windows in the timeframe 6 a.m. to 10 p.m. The traffic volumes at border points enclosed in Chapter 3.3 are mKoK-figures. The different categories of system capacities are displayed in the following table:

Category	Name	Parameters
Long distance	Intercity-Express (ICE)	250 km/h - 300 km/h (High Speed Traffic) 230 km/h (Tilting System)
Long distance	Intercity-Express (ICE)	230 km/h
Long distance	InterCity (IC)	160 km/h - 200 km/h
regional	Regional-Express (RE)	Accelerated regional and local transport
regional	Regionalbahn (RB)	Regional and local transport with all stops
regional	S-Bahn / Stadtbahn	Local transport

⁵ published at <https://fahrweg.dbnetze.com/fahrweg-de/kunden/nutzungsbedingungen/nutzungsbedingungen/rahmenvertrag-1369214>

freight	Sample train 1	E-traction, 1.600 t, 100 km/h
freight	Sample train 2	E-traction, 1.600 t, 120 km/h
freight	Sample train 4	E-traction, 2.000 t, 100 km/h
freight	Sample train 5	E-traction, very heavy or very slow
freight	Sample train 6	Diesel, 1.600 t, 100 km/h
freight	Sample train 7	Diesel, 2.000 t, 100 km/h

Table 8: Overview of train categories and parameters

The mKoK combines macroscopic and microscopic planning. Macroscopic planning displays planned capacities using network graphics and sample capacity lists. Microscopic planning checks constructability of macroscopic sample capacities into bookable paths in bottleneck sections. Adjustments flow back into macroscopic planning in an iterative process ensuring timetable feasibility from early planning steps on.

mKoK-sample capacities give an indication of the minimum available capacity in the Annual Timetable in principle.

SBB Infrastruktur & BLS Netz

According to TTR, it is possible to define in the capacity strategy for individual routes whether they should be classified as "preplanned" (all capacities as prefabricated capacity products - analogous to today's route catalog), "semi-preplanned" (prefabricated capacity products and residual capacities for tailor-made orders) or "non-preplanned" (no prefabricated capacity products, only tailor-made orders). Since the maximum capacity of a route would have to be defined for the "preplanned" variant, which is in fact very difficult, TTR@CH envisages focusing on the "semi-preplanned" variant. Thus, for example, the routes secured in the NNP could be identified as prefabricated products in the capacity model and subsequent route catalog - for further capacity needs, customer-oriented solutions could then be found within any remaining capacities.

As already mentioned, the NNP 2025⁶ already covers the TTR requirements for the chapters "Traffic Planning and Traffic Flows". The NNP describes the planned distribution of capacity between long-distance, regional, freight and other modes of transport (such as car trains) in written form. The Network Usage Plan includes the capacities that will be secured in one regular hour and during the rush hour of passenger traffic (6 a.m. to 9 a.m. and 4 p.m. to 7 p.m., Monday to Friday, excluding general holidays) for the allocation of train paths of the 2025 timetable. The minute information as well as connections and bindings on the network graphics are not binding. The number of registered routes on the sections corresponds to the maximum number of routes secured for one type of transport on that entire section. Sections on this section may have fewer routes. The NNP 2025 does not yet list any restrictions due to intervals.

ÖBB Infrastruktur

The long-term target network of ÖBB-Infrastruktur is defined in the „Zielnetz 2025+“. The Zielnetz 2025+ includes a node-transit-node model which specifies the aspired transport times between important stations for different train types in the target network. The TTR capacity strategy serves as a medium-term milestone in the process of reaching the defined long-term network development goals.

The number of system paths shown in the tables below is based on multiple sources. The 2022 timetable provides a basis for the evaluation of the system paths. The Austrian traffic forecast (VPÖ 2025+), the national public service obligations (Verkehrsdiensteverträge VDV) as well as open access traffic were considered to calculate the number of system paths for passenger and freight traffic.

RFI

As a general statement, on single-track corridor lines, which have a high degree of capacity saturation, a rigid path catalogue is in force, as path timetable and available channels are defined by a clock-face model that considers pre-determined dwell times at the cross-border stations.

⁶ <https://www.bav.admin.ch/dam/bav/de/dokumente/verkehrstraeger/eisenbahn/nnp/nnp-2025.pdf.download.pdf/NNP%202025.pdf>

On other lines, for which there is a lower level of capacity saturation, the available paths are published in pre-planned mode. A certain level of flexibility in the construction of the Timetable is admitted to take into account all market needs.

In compliance with the Network Statement of RFI, the general approach is to manage the freight timetable construction phase through a pre-planned path offer (Paths catalogue). The possible offer of Rolling Planning capacity, starting from the predefined and pre-built capacity catalogue, will depend on the regulatory developments currently being studied at European level as well as on the decisions taken in the RNE area regarding the implementation of the steps of the TTR project for timetable 2025.

Passenger trains timetabling is based mainly upon Framework Agreements; further market demands are considered as well according to the criteria stated in RFI Network Statement.

The table below lists the main parameters for passenger and freight trains:

Line	Passenger trains				Freight trains	
	High-speed	Long-distance	Express regional	Regional	D4 P/C 80 750 m	D4 P/C 50 < 750 m
Maximum trainset speed**	300 km/h	200 km/h	160 km/h	160 km/h	100 km/h	100 km/h
Maximum trainset length*	400 m	400 m	250 m	250 m	750 m	< 750 m

* Maximum length allowed at each stop to be checked on Network Statement

** Maximum trainset speed, not necessarily attainable on the specific MVP lines

Table 9: Main parameters for passenger and freight trains

The harmonization with neighboring IMs, for each border section here dealt with, has been reached on daytime system paths per hour per direction. Further paths, not systematic, could be considered in timetabling construction phase. According to the approach used in this document, the numbers provided relate to cross-network trains, i.e., to train paths that run on line sections managed by each of the bordering IMs. Therefore, the numbers shown can be slightly different from the ones stated in RFI national capacity strategy.

3.3 Traffic flows

Border point	passenger train paths per hour per direction		freight train paths per hour
	long distance	regional	
Essen (BE) - Roosendaal (NL)	0	1	3 north to south 2 south to north
Meer (BE) - Hazeldonk (NL)	4	0	0
Visé (BE) - Eijsden (NL)	0	2	1

Border point	passenger train paths per hour per direction		freight train paths per hour
	long distance	regional	
Aubange (BE) - Rodange (LU)	0	0	1
Sterpenich (BE) - Kleinbettingen (LU)	1	2	0
Gouvy (BE) - Troisvierges (LU)	0	1	0

Border point	passenger train paths per hour per direction		freight train paths per hour
	long distance	regional	
Montzen (BE) - Aachen West (D)	0	0	3*
Hergenrath (BE) - Aachen Süd (D)	1	1	0

* Up to five freight train paths per hour may be possible.

Border point	passenger train paths per hour per direction		freight train paths per hour*
	long distance	regional	
Venlo (NL) - Kaldenkirchen (D)	0	1	3
Zevenaar (NL) - Emmerich (D)	1	1	3*
Oldenzaal (NL) - Bad Bentheim (D)	0,5	1	2

* Up to five freight train paths per hour may be possible.

The figures displayed in this chapter disregard in principle the effect of TCRs on capacity. The duration of ABS Emmerich-Oberhausen (s. Chapter 2.4) justifies publishing adjusted capacity estimates during periods of single track and total closure on the segment Emmerich - Oberhausen. The use of diversionary routes via Aachen-Montzen-Netherlands or Herzogenrath-Heerlen are currently in discussion with the involved stakeholders. Whether these diversionary routes provide for enough capacity depends on various IM parameters, legal regulations in the Netherlands (noise protection) and the exact design of Timetable 2024.

Single track closure Emmerich	passenger train paths per hour per direction *		freight train paths per hour per direction *
	long distance	regional	
Venlo (NL) - Kaldenkirchen (D)	0	1	3
Zevenaar (NL) - Emmerich (D)	0,5	1	1,8
Oldenzaal (NL) - Bad Bentheim (D)	0,5	1	2,5

* Total capacity (regular traffic + diversion)

Total closure Emmerich	passenger train paths per hour per direction *		freight train paths per hour per direction *
	long distance	regional	
Venlo (NL) - Kaldenkirchen (D)	0,5	0	3,5
Zevenaar (NL) - Emmerich (D)	0	0	0
Oldenzaal (NL) - Bad Bentheim (D)	0,5	1	2,5

* Total capacity (regular traffic + diversion)

Border point	passenger train paths per hour per direction		freight train paths per hour
	long distance	regional	
Basel Bad/ Basel Bad Rbf (D) - Basel SBB/ Basel SBB RB (CH)	1,5	2	5*

* An increase to eight freight train paths per hour will only be possible with four-track strong trailer (not before 2028).

Border point	passenger train paths per hour per direction		freight train paths per hour
	long distance	regional	
Kiefersfelden (D) - Kufstein (AT)	2	2	2,5
Freilassing (D) - Salzburg (AT)	2,5	6	2*
Passau (D) - Schärding (AT)	0,5	1	3,5

* Up to 4 freight train paths per hour may be possible to Salzburg Lieferung.

Border point	passenger train paths per hour per direction		freight train paths per hour
	long distance	regional	
Brig (CH) - Domodossola (IT)	0,5	0	3,5
Bellinzona (CH) - Luino (IT)	-	0,5	2
Chiasso (CH) - Como (IT)	1	2 R + 1 RE	4

Border point	passenger train paths per hour		freight train paths per hour
	long distance	Regional	
Steinach/Tirol (AT)- Brennero/Brenner (IT)	0,5	0*	3
Thörl-Maglern (AT) - Tarvisio (IT)	Non systematic	Non systematic	2

* Regional traffic from Austria (1 path/hour) terminates at the border station Brennero/Brenner.

4. Validation & Publication

The present document has been approved by all participated IMs according to their internal processes. It will be published by RNE on its own webpage accessible directly or by means of link from the page dedicated by each participating IM to its own Capacity Strategy.