

# Capacity Strategy 2027

Common document of

Infrabel, ProRail, ACF/CFL, SNCF Réseau, DB Netz AG, SBB  
Infrastruktur AG, BLS Netz AG, ÖBB Infrastruktur AG, RFI S.p.A and SŽ  
Infrastruktura

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Infrastruktura

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## Disclaimer

With the present document, the participating Infrastructure Managers (IM) test an integrated approach for delivering Capacity Strategies.

In the spirit of TTR, the aim beyond the pilot is to reach an understanding of the expected content, which should be harmonized yet detailed enough to feed a single document that covers several, intricately connected networks.

As of 2027, Infrabel, SBB Infrastruktur AG + BLS Netz AG, ÖBB Infra decided to publish a national Capacity Strategy. In case of discrepancies between the present document and the national Capacity Strategies, the latter remain the reference documents. For ProRail, DB Netz AG, RFI, SZ Infra the present document is the reference document.

**Note:** *SBB Infrastruktur and BLS Netz: Consultation on strategic planning instruments is conducted within the frame of the Swiss national process leading to the Network Usage Plan (“Netznutzungsplan” / “NNP”). The Network Usage Concept (NNK) and the Network Usage Plan (NNP) continue to be binding for ensuring capacity on the Swiss national rail network.*

## Introduction

TTR expects each 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.

The Capacity Strategy is the earliest TTR-planning instrument, based on which the Capacity Model (June 2025 for Timetable 2027) and, for some of the first implementing IMs, the Capacity Supply (January 2026 for Timetable 2027) will be developed.

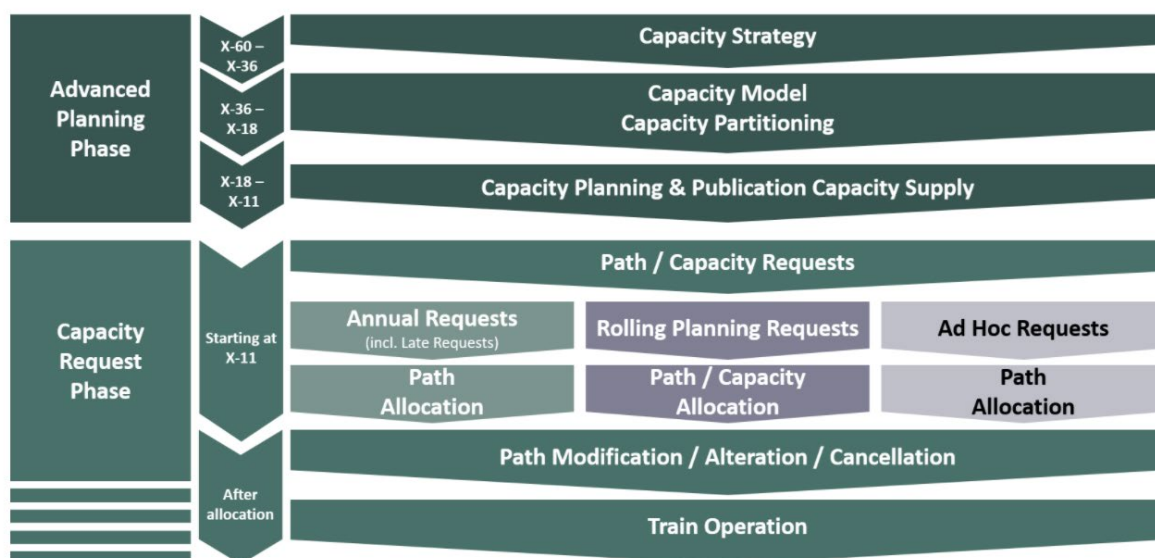


Figure 1: Steps of the TTR process (Source: RNE)

The present document aims at stressing the international character of TTR-end products to the benefit of consistency, coherence, and customer-friendliness. It has been developed based

on the RNE's Capacity Strategy Handbook, version 3.0<sup>1</sup> save the systematic publication of a national Capacity Strategy (s. Disclaimer).

The present document applies to Timetable 2027 on lines of international relevance. It encloses four main chapters:

- A 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 2027 at relevant border sections 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 endorsed by the Infrastructure Managers involved but is, however, non-binding.

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<sup>1</sup> [https://rne.eu/wp-content/uploads/HB\\_Capacity\\_Strategy\\_3.0\\_2023-05-31.pdf](https://rne.eu/wp-content/uploads/HB_Capacity_Strategy_3.0_2023-05-31.pdf)

# 0. Geographical scope

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 and lines are displayed in the following map<sup>2</sup>:

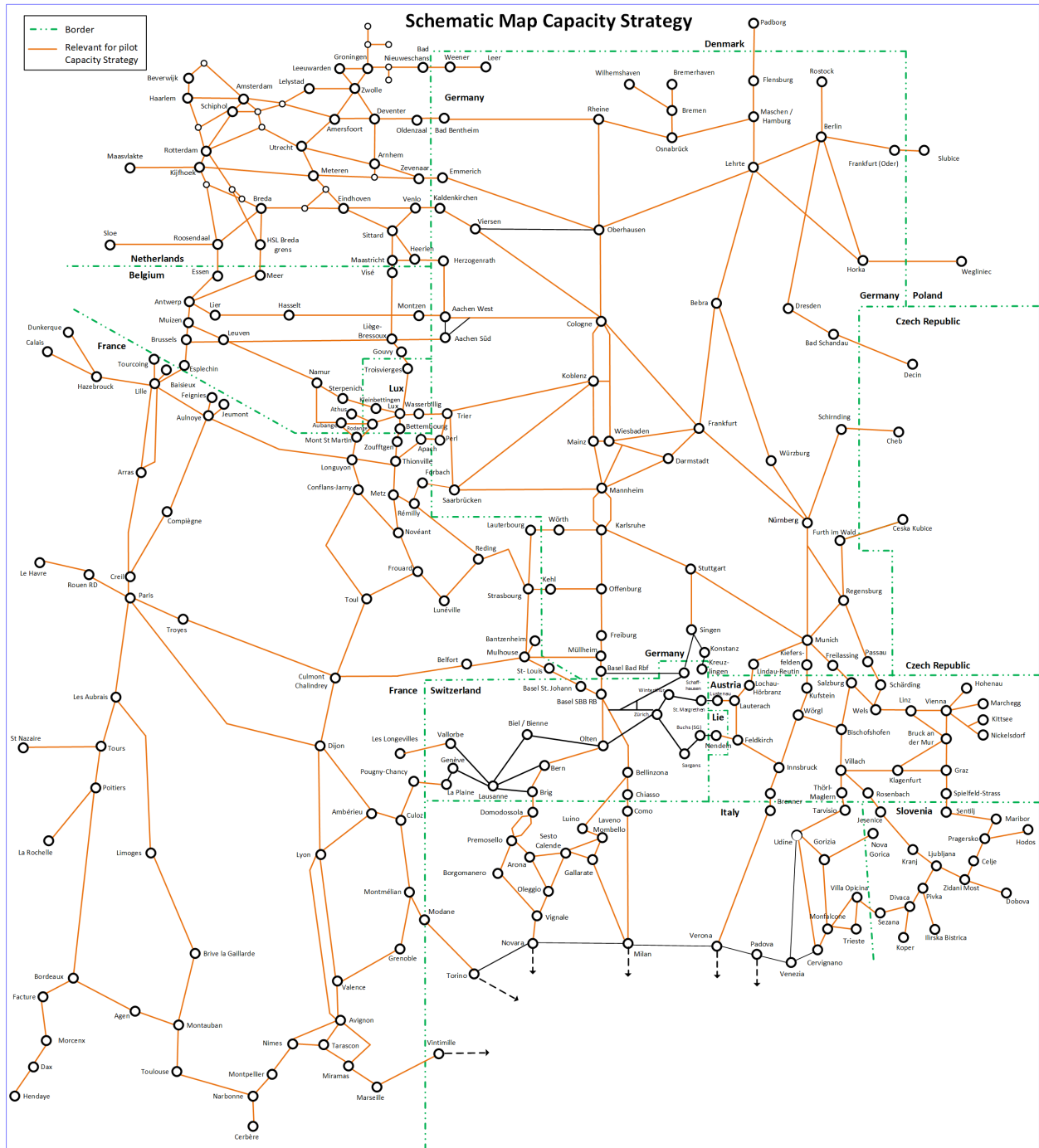


Figure 2: Schematic Map Capacity Strategy

<sup>2</sup> An overview of terminals and service facilities can be found here: <https://railfacilitiesportal.eu/>

# 1. Expected Capacity of Infrastructure in Timetable 2027

The present chapter provides an overview of significant positive or negative changes to the available capacity for Timetable 2027, compared to the infrastructure available in December 2023.

In case of changes regarding a positive capacity, which was already announced in previous Capacity Strategies, the modifications are shown in [blue color](#) to facilitate traceability.

The projects listed in this chapter fulfill the following criteria:

- Unlike TCRs which are mentioned in chapter 2, the project has a permanent impact on the available capacity,
- The project unfolds its effect on capacity for Timetable 2027. 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,
- About positive effects on capacity, projects labeled as “quantitative” are expected to allow a higher number of trains; projects labeled as “train characteristics” are expected to allow longer heavier or enhanced profile trains; projects labeled as “operational improvement” concern improvements in flexibility, marshalling and other.
- About negative effects on capacity, projects labeled as “quantitative” have, as outcome, a lower number of trains; projects labeled as “train characteristics” have, as outcome, a reduction of train length, weight, or profile; projects labeled as “operational restrictions” have, as outcome, a performance reduction about flexibility, marshalling and other.

In the maps at the end of the chapter, green bullets locate the projects that provide additional available capacity, red bullets locate the projects that provide reduced available capacity. They are linked to the IDs in the following tables.

## 1.1 Additional Available Capacity

Additional Available Capacity							
All listed projects have been approved by IM Management							
Country	ID	Network segment	Description	Effect	Estimated effects on capacity	Financing secured	Effective from [if available]
<b>2023</b>							
AT	1	Vienna Meidling–Altmannsdorf junction	Construction of second track	Increase of capacity, new high-performance line between Vienna and Wiener Neustadt	Quantitative	Yes	Dec-23
AT	2	Pottendorf Line, Vienna Blumental–Wampersdorf and Ebenfurth - Wiener Neustadt	2-track upgrade, raise speed up to 200 km/h, station refurbishments	increase of capacity, new high-performance line between Vienna and Wiener Neustadt	Quantitative	Yes	Dec-23
<b>2024</b>							
BE	1	Libramont L165/1 - L162	New link between L165/1 and L162	New diversion route for freight traffic	Train characteristics	Yes	Dec-24
NL	1	Leeuwarden	Layout adjustments, both main tracks on the west side and stabling yard on the north side	Shorter running times and simultaneous arrivals/departures from the directions of Zwolle, Sneek and Harlingen. More service capacity on the stabling yard	Operational improvement	Yes	Jun-24
NL	2	Hoogezand=Sappemeer - Zuidbroek	Speed increase from 100 km/h to 130 km/h	Shorter running times for Wunderline and for the regional express train Groningen - Winschoten	Operational improvement	Yes	Nov-24
NL	3	Wolvega en Akkrum	Adjustments on signalling	Shorter running times for regional trains in the direction of Meppel	Operational improvement	Yes	Sep-24
NL	4	Kampen Zuid	Increase speed along the platform from 140 km/h to 160 km/h	Shorter running times	Operational improvement	No	Dec-24

NL	5	Amersfoort Centraal	Adjustments layout west side of the station	Shorter running times and more simultaneities	Operational improvement	Yes	Jul-24
NL	6	Wierden	Adjustments lay-out	Shorter running times Almelo - Nijverdal	Operational improvement	Yes	Dec-24
NL	7	Hoofddorp stabling yard	Adjustment of layout and 4 additional tracks in central control panel	Extra capacity at Hoofddorp stabling yard	Operational improvement	Yes	Oct-24
NL	8	Rijswijk - Delft - Schiedam - Rotterdam Centraal	Track doubling from 2 to 4 tracks between Rijswijk and Delft Campus, from 2 to 4 platform tracks on Schiedam, extension of platform tracks 6-9 on Rotterdam and various layout adjustments on Rotterdam - Schiedam	Capacity for more and longer trains between Rotterdam and The Hague. Shorter running and headway times	Quantitative	Yes	Nov-24
NL	9	Zevenbergschehoek aansluiting	Zevenbergschehoek connection: Relocate SMB and remove phase separation	Better feasibility of train service	Operational improvement	Yes	Mar-24
NL	10	Tilburg Loven	Extension track 202a and electrification track 203	Up to 660m long freight trains possible. Departure towards 's Hertogenbosch with electric traction	Train characteristics	Yes	Jul-24
DE	1	Gäubahn: Horb - Neckarhausen	Two-track operation incl. ESTW Horb	Increase in capacity	Quantitative	Yes	Feb-24
DE	2	Weil am Rhein/Basel Bad	Transformer group	Modernization of electr. equipment	Operational improvement	Yes	Apr-24
DE	3	Reactivation Trier West Railway (Weststrecke) for regional rail	Construction of connection Ehrang, VST (Multi-Unit-Train-Control) Hafenstrasse and other stations	New regional line, transfer of another line from Trier Hbf to West Railway (Weststrecke)	Quantitative	Yes	Dec-24
DE	4	Rheine - Ibbenbüren-Esch	Modernization of bridge Dortmund-Ems-Kanal; Increase of the number of blocks of the track & crossovers;	New access to Rodde and Torfmoorse; Shorter headways	Quantitative	Yes	Dec-24
AT	3	Wartberg im Müritzal	Station refurbishment, 760m tracks	Passing of 750m freight trains possible	Train characteristics	Yes	Dec-24
AT	4	Peggau-Deutschfeistritz	Station refurbishment, 760m tracks	Passing of 750m freight trains possible	Train characteristics	Yes	Dec-24
AT	5	Linz - Summerau Railway Line	Enhancement and adapting the tracks in stations	Better feasibility of train service	Train characteristics	Yes	Dec-24



IT	1	Torino P. Susa - To. Rebaudengo F.	New interlocking	4' headway, increase in flexibility	Quantitative	Yes	Dec-24
IT	2	Settimo T. - Chivasso - B. Castelrosso	New interlocking	4' headway, increase in flexibility	Quantitative	Yes	Jul-24
IT	3	Chivasso	New interlocking and 750 m track	Adaption to TSI and increase in flexibility	Operational improvement	Yes	Jul-24
IT	4	Ternate	750 m passing tracks	Adaptation to TSI; 750 m trains admitted on the Laveno - Gallarate line	Train characteristics	Yes	May-24
IT	5	Gallarate	New 750 m passing tracks	Adaptation to TSI	Train characteristics	Yes	Jan-24
IT	6	Gallarate	New interlocking	Increase in flexibility	Operational improvement	Yes	Nov-24
IT	7	<b>Monza - Sesto S.G.</b>	New interlocking	4' headway, increase in flexibility	Quantitative	Yes	<b>Jul-24</b>
IT	8	<b>Mi. Greco P. - Mi. Lambrate - Mi. Smistamento</b>	New interlocking	4' headway	Quantitative	Yes	<b>Mar-24</b>
IT	9	Milano Centrale	Platform upgrade	More tracks upgraded for 400 m trains	Train characteristics	Yes	
IT	10	Sommacampagna	750 m passing track	Adaptation to TSI	Train characteristics	Yes	Jan-24
IT	11	Cervignano Smistamento	750 m arrival/departure tracks	Adaptation to TSI	Train characteristics	Yes	
IT	12	Palmanova	750 m passing track	Adaptation to TSI	Train characteristics	Yes	
CH	1	Basel SBB GB	Upgrade of stabling facilities, Basel South	Creation of necessary stabling capacities for additional S-Bahn trains and longer long-distance trains.	Operational improvement	Yes	Feb-24
CH	2	Chiasso	Sidings	Stabling areas for regional services.	Operational improvement	Yes	Sep-24
CH	3	Basel SBB RB	locomotive stabling areas	Improved RB performance.	Operational improvement	Yes	Dec-24
<b>2025</b>							
NL	11	Amsterdam Centraal	New UK-terminal in passenger tunnel near platform track 15	Secured boarding via Channel Tunnel to United Kingdom with capacity of 650 passengers	Operational improvement	Yes	Apr-25
NL	12	Groningen	Dead end tracks of regional lines will be connected, whereby 3 through platform tracks for the regional lines will be realized, and in addition 4 dead end tracks from/to Zwolle.	Connection of regional train services through Groningen, independent of train service to/from Assen	Quantitative	Yes	Aug-25

NL	13	Zuidbroek - Bad Nieuweschans	Various speed increases and removal of passing track in Winschoten	Shorter running times	Operational improvement	Yes	Jul-25
NL	14	Hengelo	Removal of switches and adjustment of layout of stabling yard	More service capacity on the stabling yard	Operational improvement	Partly	Dec-25
NL	15	Europoort	Electrification of 2 arrival and departure tracks	Freight trains with length of 740m can start/end at Europoort	Train characteristics	Yes	Aug-25
NL	16	Moerdijk	2 shunting tracks for 740m long freight trains	Freight trains with length of 740m can start/end at Moerdijk	Train characteristics	Yes	Jul-25
NL	17	HSL Breda border – Rotterdam Lombardijen and Rotterdam - Hoofddorp	Measurements for noise limits	Capacity for more trains and shorter running times	Quantitative	No	Dec-25
NL	18	Beilen	Removal of passing track and switches, signal adjustments	No possibility for overtaking anymore. Shorter running times for regional trains.	Operational improvement	Yes	May-25
LU	1	Luxembourg – Ettelbruck	New Blocks	Timetable stabilization Capacity augmentation of 5-30% (depending on timetable construction)	Operational improvement	Yes	Intended 2025 – 2027
DE	5	Berlin Hbf	Realization of missing switch connection (option switches W114/116, 121/122, 144/145)	Reduction of route exclusions, flexibility in strengthening/weakening trains. Maintain operational quality at least at status quo	Operational improvement	Yes	Apr-25
DE	6	Berlin Hbf	Part of realization of missing switch connection in connection with a safety-related division of tracks 1+8	Safety enhancement	Operational improvement	Yes	Apr-25
DE	7	Berlin Hbf	Part of realization of missing switch connection in connection with an adjustment of signal dependency from northbound direction	Safety enhancement	Operational improvement	Yes	Apr-25

DE	8	high performance corridor Hamburg - Berlin	New switch connections and crossovers 740m tracks Neustadt/Dosse Complete equipment with ETCS L2mS (additionally PZB) Increase of approach speeds	Shorter headways; increase in capacity	Quantitative	no approval yet	Dec-25
DE	9	Berlin - Hamburg	ETCS equipment with intermittent automatic train running control (PZB), likely without linear train influencing (LZB)		Train characteristics	Yes	Jul-05
DE	10	Dresdner Bahn Berlin: Berlin- Südkreuz Blankenfelde	Closing of a gap	Journey time reduction (ca. 10 min.)	Quantitative	Yes	Dec-25
DE	11	Signals (Zd) Frankfurt Hbf Gleise 10, 11, 14-17	Splitting of tracks to temporarily increase capacity Frankfurt Hbf	Increase in capacity	Quantitative	Yes	Dec-25
DE	12	Planning and implementation of ESTW Riedbahn in variant 2 (incl. Increase of the number of blocks of the track and speed optimization)	As of May 2019: Variant 2 incl. Increase of number of blocks (without speed optimization) is planned, Increase of number of blocks and speed optimization according to variant 2 during the establishment of ESTW Riedbahn, Currently ESTW Riedbahn (G.016105075) is a 1:1 substitute for outdated switch towers.	Shorter headways	Quantitative	Yes	Jan-25
DE	13	Tiefbahnhof Stuttgart 21 + Filder new-build line	Project S21 / new-build line Wendlingen Ulm	Travel time reduction approx. 15 min; prerequisite for realisation of half-hourly service in the long- distance north-south corridor and Mannheim - Munich	Quantitative	Yes	Dec-25

DE	14	Optimised lane plan Ulm (target state) inc. North head/South head Ulm	Project S21 / new-build line Wendlingen Ulm	Creation of required capacities (additional terminal track) for through-tracking to the Südbahn and to Neu-Ulm for the higher offer of the IBN-FP in long-distance and local traffic from the new-build line and Filstalbahn. (four-track to Neu Ulm and two-track on Südbahn, currently three+two).	Quantitative	Yes	Dec-25
DE	15	Line 5800 Schwandorf - Furth im Wald	Construction of additional platform on the continuous main track (currently platform only on the crossing track)	Journey time reduction	Quantitative	no approval yet	Dec-25
AT	6	Unterpurkersdorf, Tullnerbach-Pressbaum	Station refurbishments	Adapting infrastructure to local passenger traffic requirements and setting up a 760-m-track in Unterpurkersdorf	Operational improvement	Yes	Dec-25
AT	7	Seekirchen Süd	New stop and new crossover	New stop for passenger trains as well as increase in flexibility	Operational improvement	Yes	Dec-25
AT	8	Gramatneusiedl	Station refurbishment	Increasing switch speeds, erecting 760-m-tracks	Train characteristics	Yes	Dec-25
AT	9	Stadlau - Marchegg state border	Electrification and double-track upgrade	2-track upgrade, raise speed up to 200 km/h, station refurbishments	Quantitative	Yes	Dec-25
AT	10	Graz-Weitendorf	4-track upgrade Graz-Feldkirchen, extension of track lengths at Puntigam station	Increase of capacity, preparation for new Koralm Railway line	Quantitative	Yes	Dec-25
AT	11	Graz-Klagenfurt, Koralm railway line	Construction of Graz-Klagenfurt line	New high speed line between Graz an Klagenfurt	Quantitative	Yes	Dec-25
AT	12	Arnoldstein	Station refurbishment, 760m tracks	Passing of 750m freight trains possible	Operational improvement	Yes	Dec-25
IT	13	Cressa F.	750 m passing track	Adaptation to TSI	Train characteristics	Yes	Jan-25
IT	14	Chiasso - Como S.G. - B. Rosales	New interlocking	4' headway, increase in flexibility	Quantitative	Yes	Mid 2025

IT	15	Milano Smistamento	New yard connected to Teralp new terminal	750 m trains enabled to the new Teralp terminal	Quantitative	Yes	
IT	16	Brescia Scalo	Freight terminal upgrade	Tracks upgraded to 750 m	Quantitative	Yes	Feb-25
IT	17	Trieste C.M.	750 m tracks and new interlocking	Adaptation to TSI; Increased transportation capacity to 20 arrivals and 20 departures per day	Quantitative and Train Characteristics	Yes	
CH	4	Vezia - Capolago	Reduction of train headways incl. extension of Track 3 in Capolago for 750m trains	Elimination of stability risks	Operational improvement	Yes	May-25
CH	5	Liestal	Liestal four track upgrade	Traffic segregation thanks to 4 track upgrade.	Quantitative	Yes	Dec-25
CH	6	Liestal	Liestal reversing track	Prerequisites for the quarter-hourly S-Bahn service between Basel and Liestal.	Quantitative	Yes	Dec-25
CH	7	Basel SBB	Basel SBB station upgrade	Greater capacity due to adjustments to the track layout and to an additional platform on track 19/20. Prerequisites for the half-hourly long traffic service between Basel and Biel.	Quantitative	Yes	Dec-25
CH	8	Basel – Ost - Muttenz	Basel–Muttenz traffic segregation	Prerequisite for increased services and punctuality.	Quantitative	Yes	Dec-25
CH	9	Basel SBB RB	Longer Tracks D-Group	Performance enhancement for Basel SBB marshalling yard.	Train characteristics	Yes	Dec-25
<b>2026</b>							
NL	19	Tilburg – Breda	Adjustments layout and fourth platform track Tilburg. Remove switches Gilze-Rijen. Adjustment signalling Tilburg - Breda	Higher platform capacity and shorter headway times	Quantitative	Yes	2026
NL	20	Lelystad - Zwolle	Adjustment of ERTMS to newer version Level 2 baseline 3	Capacity for more trains between Lelystad and Lelystad stabling yard. No significant change between Lelystad stabling yard and Zwolle.	Operational improvement	Yes	Dec-26

NL	21	Almere Oostvaarders	New switches for higher speed	Shorter running and headway times	Operational improvement	Yes	Jul-26
NL	22	Amsterdam Aziëhaven	Extra track for 740m long freight trains	Capacity for more 740m-long freight trains	Train characteristics	Yes	Jun-26
NL	23	Hoofddorp	Adjustment layout	Realize simultaneous departure from different platforms to Hoofddorp stabling yard and terminal tracks Hoofddorp Midden. Increasing capacity at Hoofddorp and improving accessibility of the stabling yard	Operational improvement	Yes	Mar-26
NL	24	Oudewater	Adjustments of signalling	Shorter headway times	Operational improvement	Yes	Jun-26
NL	25	Merseyweg, connecting track with Botlek	Local track will be made suitable for 740m trains and adjustments to interlocking	Capacity for more freight trains, track prepared for 740m trains. Shunting yard Botlek, to which Merseyweg connects, still has a length restriction of 700m	Train characteristics	Yes	Dec-26
NL	26	Sophiaspoortunnel	Adjustments on signalling	Capacity increased from 6 to 8 freight trains per hour in each direction	Quantitative	Yes	Dec-26
NL	27	Valburg	New container terminal	New origin and destination for freight trains	Quantitative	Yes	2026
NL	28	Eindhoven Centraal	Adjustments layout east side	Shorter running times and more simultaneities	Operational improvement	Yes	Nov-26
NL	29	Venlo	Adjustments layout and longer platform tracks	Stopping with longer trains possible	Train characteristics	Yes	Nov-26
NL	30	Heerlen	Adjustments layout west side	Optimized shunting process	Operational improvement	Yes	Jun-26
NL	31	Haanrade	Making switches operable for central control	Faster handling of freight trains from/to Haanrade possible. Shorter occupation times for section Landgraaf - Herzogenrath	Operational improvement	Yes	May-26
NL	32	Wolfheze	Remove passing track and switches, adjustment of signalling	Less possibilities for traffic control. Shorter headway times	Operational improvement	Partly	Dec-26

DE	16	1. BS Electrification Lehrter Stammbahn (Hannover - Berlin)	Electrification of section Schönhausen West - Wuster Damm and Nahrstedt - Gardelegen, 4 new junctions to line 6185, 740m track Gardelegen	Enabling access with elect. rolling stock; Bypassing track 6185 possible	Operational improvement	Yes	Dec-26
DE	17	ESTW Flörsheim	Track 3603 Hattersheim - Mainz-Kastel, Track 3525 Kostheim - Kaiserbrücke, Increase of the number of blocks of the tracks, speed optimization, optimization of the usable length	Shorter headways	Quantitative	Yes	Dec-26
DE	18	Karlsruhe - Basel	New-built line	Journey time reduction approx. 3min in long distance traffic, capacity expansion to 4-track, continuous 4-track Karlsruhe - Offenburg	Quantitative	Yes	Dec-26
DE	19	Wendlinger Kurve	Project S21 / new-build line Wendlingen Ulm: restoration of two-track operation	Elimination of dependencies direction and opposite direction	Quantitative	Yes	Dec-26
DE	20	München Pasing	Construction of an additional platform on the north side incl. track plan adjustment and travel time reduction in the direction of Augsburg	Increased capacity in the Munich node (especially from/to Augsburg) Closer following between Olching and Munich Relief effect on Munich main station (especially in the case of otherwise unsolvable conflicts at the main station) Possibility of having trains from/to the west end and start in Pasing (possibly even on schedule)	Quantitative	no approval yet	Dec-26
AT	13	Mixnitz-Bärenschützklamm	Station refurbishment	Increase of station capacity and extension of tracks for 750m freight trains	Train characteristics	Yes	Dec-26
AT	14	Pottendorf Line, Wampersdorf-Ebenfurth	Raise speed up to 160 km/h, station refurbishments	Increase of capacity, new high performance line between Vienna and Wiener Neustadt	Quantitative	Yes	Dec-26

IT	18	Milano Porta Garibaldi	New interlocking and track layout	Increase in capacity and flexibility	Quantitative	Yes	
IT	19	Brescia Est - Verona Ovest	New High Speed / High Capacity 2-tracks line	Increase in capacity, running times reduction	Quantitative	Yes	
IT	20	Bretella di Riga	New 1-track link	Direct southward connection from the Pusteria Valley line to the Brenner line	Operational improvement	Yes	
IT	21	Venezia Airport link	New 2-tracks line	New link branching from the Venezia - Trieste line	Quantitative	Yes	
IT	22	Portogruaro - Ronchi d.L. Sud	New interlocking	5' headway, increase in regularity	Quantitative	Yes	
IT	23	Venezia Mestre - Ronchi d.L. Sud	Infrastructural enhancement	Speed limitations for heavy trains removal	Operational improvement	Yes	
IT	24	S. Giorgio di Nogaro	750 m passing tracks	Adaptation to TSI	Train characteristics	Yes	
IT	25	Cervignano Smistamento	New interlocking	Possibility of 750 m through trains	Train characteristics	Yes	
IT	26	Villa Opicina	New interlocking and 750 m tracks	Adaption to TSI and increase in flexibility	Train characteristics	Yes	
SL	1	Divača-Koper	Building a second track	Increasing the share of freight,operational reliability,level of traffic safety	Quantitative Train characteristics	Yes	
SL	2	Ljubljana rail hub	upgrade the railway stations and the sections between the stations	Removing a bottleneck at the junction of major traffic flows in transit across the Republic of Slovenia.	Quantitative Train characteristics	Yes	
<b>2027</b>							
NL	33	Onnen - Groningen Vork	Electrification of 740m track on Onnen and electrification of 3rd track Onnen - Groningen Vork. Adjustments layout Onnen and Onnen Noord	Making electric freight trains of 740m possible. Additional simultaneity of electric passenger rolling stock from Onnen to Groningen	Train characteristics	Yes	Dec-27
NL	34	Rotterdam Noord Goederen	New stabling yard for passenger trains, realize passing track for 740m long freight trains	Extra capacity for stabling of passenger rolling stock, enable 740m long freight trains on corridor Kijfhoek – Bentheim / Amsterdam / Onnen	Train characteristics	Yes	Jun-27



NL	35	Maasvlakte	New railway yard Maasvlakte Zuid, construction of first set of 6 tracks for 740m long freight trains.	Capacity for more freight trains to/from Maasvlakte	Quantitative	Yes	Q3-27
NL	36	Ijsselmonde	Adjustments of layout, extension of process tracks and realization of additional stabling tracks. Also security measures for railway yard	Process tracks suitable for longer freight trains, increased stabling capacity (e.g. long-stay stabling), higher basic security level.	Train characteristics	Yes	Q1-27
NL	37	Lage Zwaluwe	2 shunting tracks for 740m long freight trains	Higher capacity for 740m trains	Train characteristics	Yes	Jul-27
NL	38	Arnhem - Doetinchem	Track doubling from 1 to 2 tracks between Didam-Doetinchem de Huet	Capacity for more trains between Zevenaar and Doetinchem	Quantitative	Yes	Dec-27
NL	39	Acht	Removal switches and adjustments layout yard	No impact on running trains	Operational improvement		Dec-27
LU	2	Luxembourg – Bettembourg	New line Luxembourg – Bettembourg New platforms in Howald Reorganization tracks in Luxembourg, Howald and Bettembourg	Separate lines for traffic to France and national Doubling of capacity between Luxembourg and Bettembourg	Quantitative	Yes	From 2027
DE	21	Flying junction Dresden	New signals and tracks	More flexibility in running trains; Increase in max. speed at Dresden Hbf	Train characteristics	Yes	Dec-27
DE	22	Mannheim-Käfertal - Mannheim-Rennplatz - Mannheim Hbf	Restoration of two-track operation. Superstructure and control and safety technologie (LST) measures as well as overhead line measures. Connection with the new Mannheim-Neuostheim depot	Possibility of running regional and long distance traffic concept	Operational improvement	Yes	Sep-27
IT	27	Torino Orbassano	New interlocking	Increase in capacity and flexibility	Train characteristics	Yes	
IT	28	Chivasso	Further 750 m track	Increase in 750 m trains admitted	Operational improvement	Yes	
IT	29	Milano Certosa	New interlocking and 750 m passing tracks	Adaptation to TSI; increase in flexibility.	Train characteristics	Yes	
IT	30	Trento Belt Line	New 2-tracks line	New freight line shunting Trento	Train characteristics	Yes	
IT	31	Verona Quadrante Europa	New interlocking	Increase in flexibility and regularity	Train characteristics	Yes	

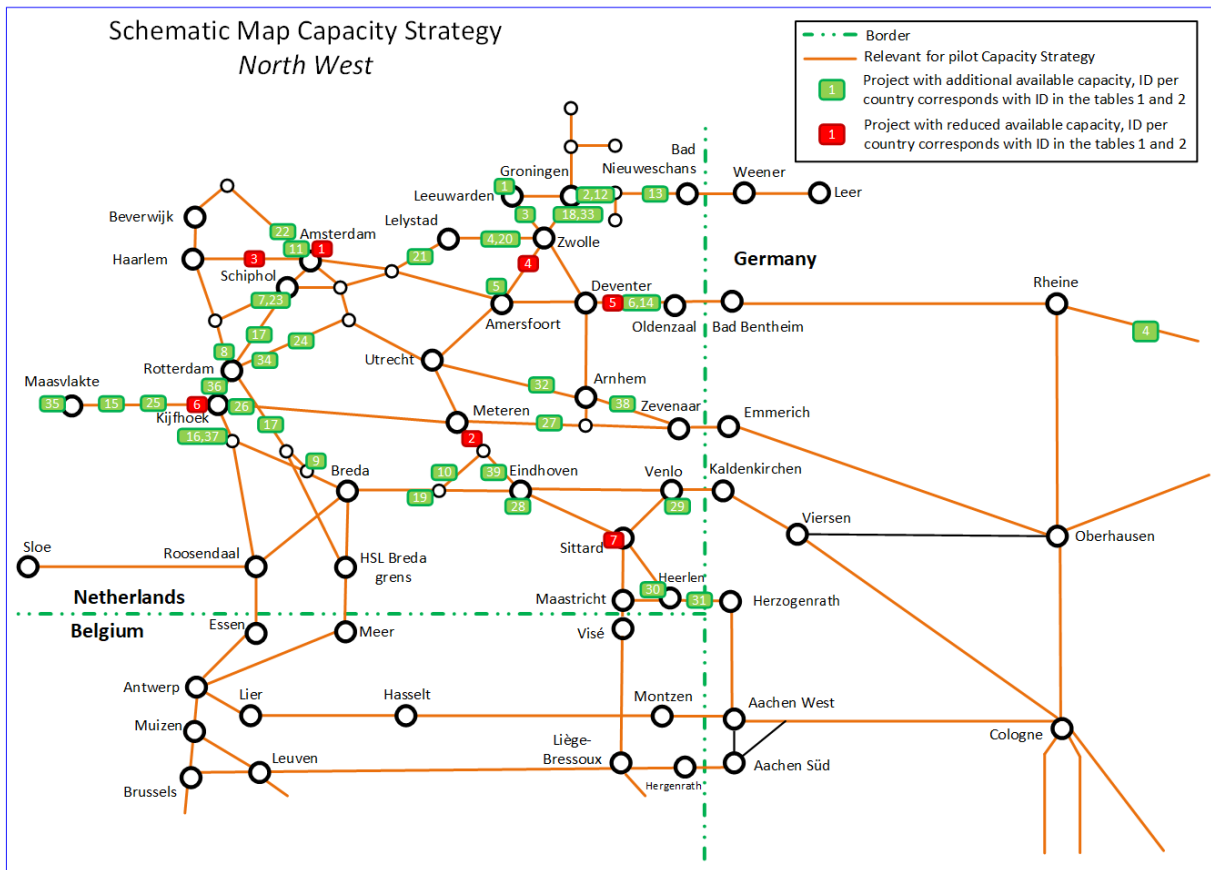
IT	32	Verona Porta Nuova	New interlocking and track layout	Increase in capacity and flexibility, faster routes	Quantitative	Yes	
IT	33	Verona P.V. - B. Vicenza	New High Speed / High Capacity 2-tracks line	Increase in capacity, running times reduction	Quantitative	Yes	
IT	34	Venezia Mestre - Portogruaro	New interlocking	5' headway, increase in regularity	Quantitative	Yes	
IT	35	Udine - Ronchi d.L. Nord	Technological upgrade	Increase in capacity	Quantitative	Yes	
IT	36	S.Giovanni Nat. and Cormons	750 m passing tracks	Adaptation to TSI; 750 m trains admitted on the Udine - Trieste line	Train characteristics	Yes	
IT	37	<a href="#">Gorizia direct link</a>	New 1-track link	Direct southward route from Slovenia	Operational improvement	Yes	
IT	38	Bivio d'Aurisina - Villa Opicina	Technological upgrade	Increase in capacity	Quantitative	Yes	
SL	3	Croatian border – Dobova – Zidani Most section	Upgrading the stations and sections	Modernising the traffic control centres, increasing level of traffic safety	Quantitative Train characteristics	Yes	
CH	10	Maroggia	Track 2 lengthened for 750m trains	Elimination of stability risks.	Operational improvement	Yes	<a href="#">Jan-27</a>

**Table 1: List of pilot-relevant infrastructure projects with positive capacity effects expected active by TT2027**

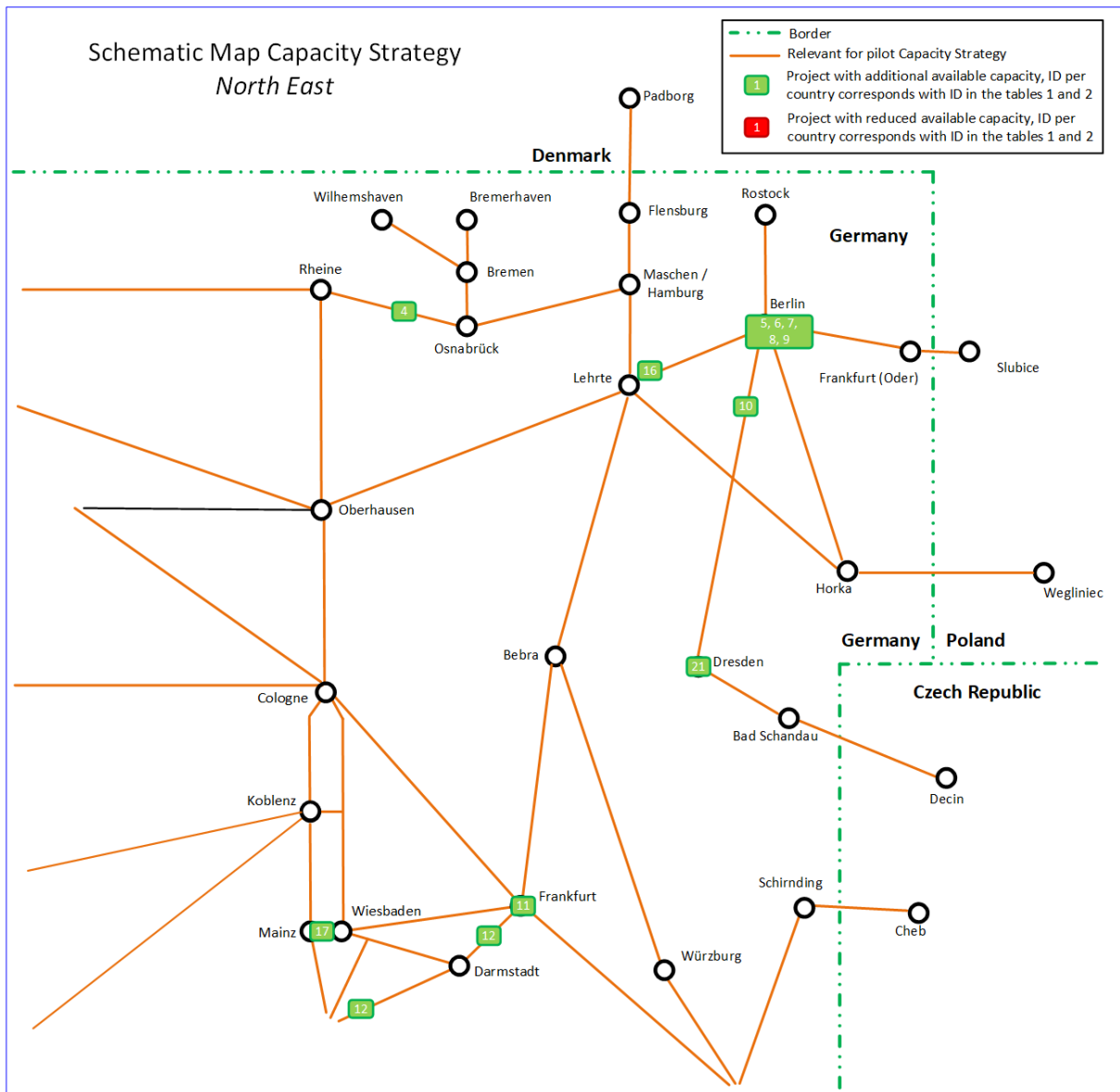
## 1.2 Reduced Available Capacity

<b>Reduced Available Capacity</b> All listed projects have been approved by IM Management					
Country	ID	Network segment	Description	Estimated effects on capacity	Capacity reduced since
<b>2024</b>					
BE	1	L144 Moustier – Garage	Single track operations	Quantitative	Immediate
NL	1	Amsterdam Centraal	Closing UK-terminal on platform track 15	Operational restrictions	Jul-24
NL	2	Zaltbommel	Remove passing track and switches Oud-Zaltbommel	Operational restrictions	Dec-24
IT	1	Ponte Gardena	Passing track removal	Operational restrictions	Oct-24
<b>2025</b>					
NL	3	Halfweg	Remove passing tracks and switches	Operational restrictions	Dec-25
NL	4	Nunspeet	Removal of switches, passing track in the middle becomes dead-end track	Operational restrictions	Jul-25
NL	5	Rijssen	Remove sidetrack and switches	Operational restrictions	Dec-25
NL	6	Kijfhoek	Renewal of hump yard, whereby 2 of the 43 shunting tracks will be remove due to realization of calamity roads	Train characteristics	Apr-25
<b>2026</b>					
<b>2027</b>					
NL	7	Sittard	Removal of switches and 2 stabling tracks	Operational restrictions	2027
LU	1	Luxemburg – Hollerich (Lines 5 and 7)	Track & Platform reorganization 2 instead of 4 tracks between Luxembourg and Hollerich	Operational restrictions	2027 – 2034

Table 2: List of pilot-relevant infrastructure projects with negative capacity effects expected active by TT2027



**Figure 3: Schematic Map pilot Capacity Strategy. North West**



**Figure 4: Schematic Map pilot Capacity Strategy. North East**

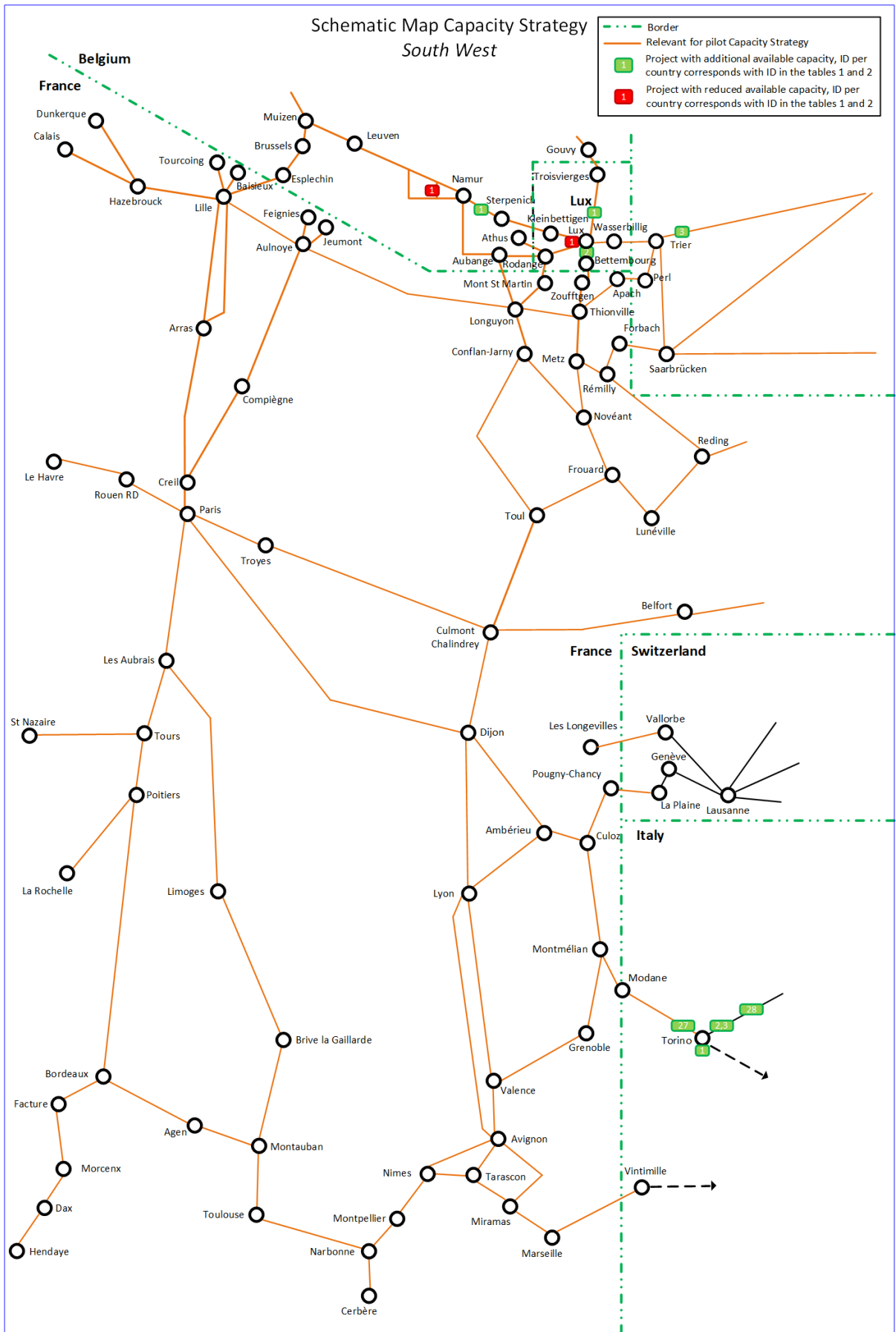


Figure 5: Schematic Map pilot Capacity Strategy. South West

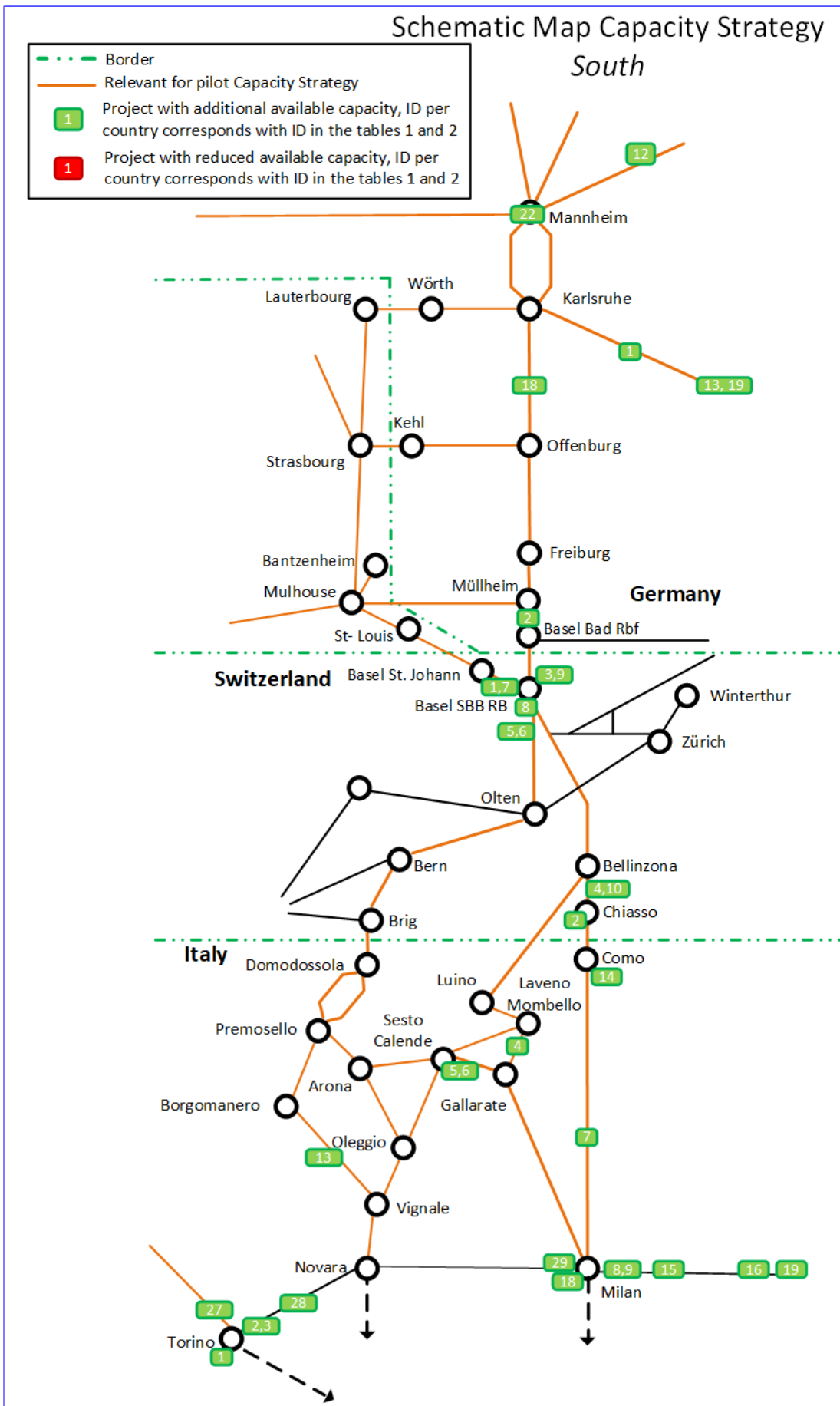


Figure 6: Schematic Map Capacity Strategy. South

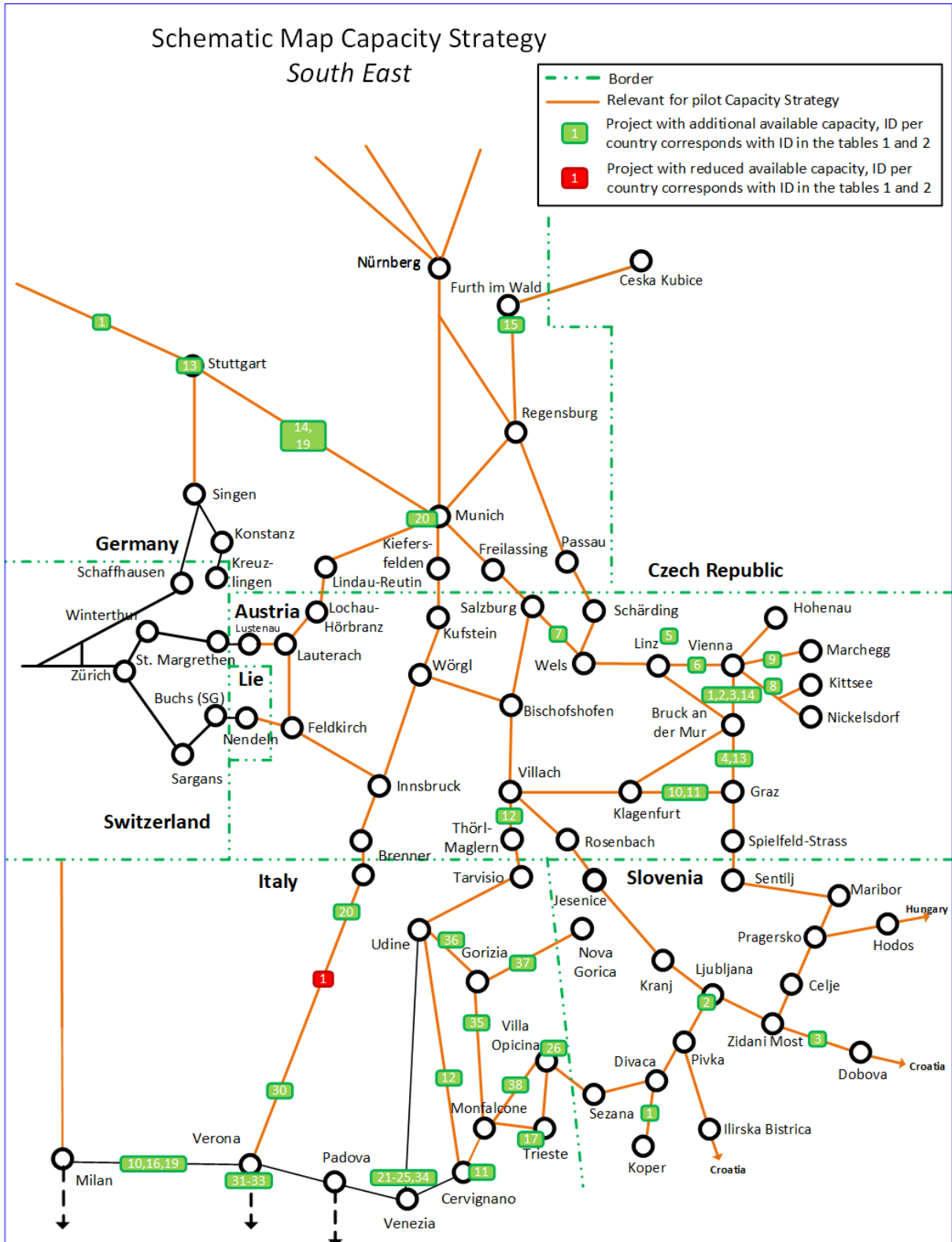


Figure 7: Schematic Map Capacity Strategy. South East



## 2. Temporary Capacity Restrictions

In this chapter the principles and typology for the planning of TCRs is described in paragraph 2.1. Several aspects of TCR planning are considered. Each subparagraph contains the common denominators (the principles that are used by most or all IMs), a summarizing table and a description of national specificities where necessary.

A selection of Major TCRs is pre-announced in paragraph 2.2, anticipating the first publication at X-24.

### 2.1 Principles for TCR Planning

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

##### ***Common denominators***

Clustering of works geographically and timewise, with the aim of deriving a single alternative transport concept, can be an effective way to minimize the gravity of impact and/or the duration of impact of TCRs for RUs. From an IM point of view, working with multiple projects close to each other, or taking advantage of larger TCRs to organize small TCR or maintenance works is possible if it's technically possible, if works logistics are permitting and if the plannings of the individual projects have the required flexibility to plan the works simultaneously. Clustering of works is a continuous process.

	BE	NL	LU	DE	FR	CH	AT	IT	SI
<b>Clustering is done to minimize gravity of impact</b>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>Clustering is done to minimize duration of impact</b>	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes
<b>Clustering for other reasons</b>	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
<b>Clustering process starts at ...</b>	X-33	X-28	X-37	X-48	X-28	X-43	X-48	X-25	X-12
<b>Pre-defined agreements with RUs on clustering</b>	Yes	Yes	Yes	No	Yes	Yes	No	No	No

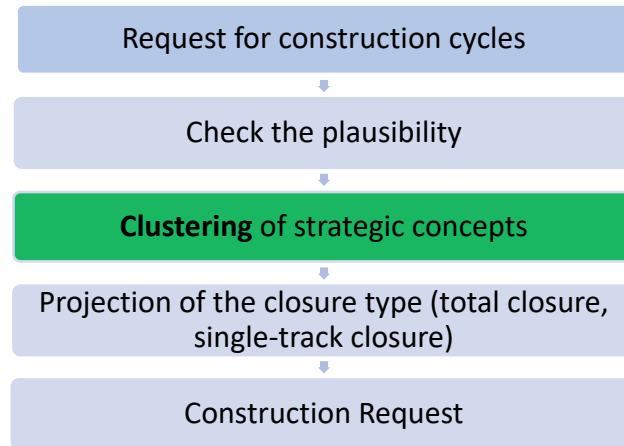
##### **National specificities**

###### **ACF/CFL**

TCR clustering is a common practice to minimize gravity and duration of impact, but also to reduce the involved resources. Most of the time, the IM take advantage of larger TCRs to organize small TCRs or maintenance works on a concerned segment. Moreover, TCRs are coordinated with external actors (road infrastructure authority, communes, bus operators) to optimize the national infrastructure maintenance process. The clustering starts at X-37, directly by creation of TCRs. Finally, new TCRs are regularly communicated to the RUs when the IM introduced and ACF (Allocation Body) validated it.

## DB Netz

DB Netz is gradually introducing a TCR-planning process structured in three consultation phases. The first consultation phase concentrates on bundling “construction requests” into construction cycles in space and time (weekdays, weekends, days and/or nights) considering the extent of the capacity restriction (total or one-track-closure).



### Quality criteria of a construction request

A construction request fulfils several quality criteria. The construction request will be optimized according to the type of the closure and preferred alternatives for the closure will be elaborated. In addition, the construction requests will be prioritized in a meaningful and realistic manner among each other. Additionally, they will be optimized in terms of duration and timing. Strategic concepts will be set up to cover all construction requests along one corridor. When the construction request is formulated the whole corridor view will be considered.

### Optimization calculation

Once all steps are completed, this forms the input for optimization calculation. During the optimization calculation the goal is to place as many construction cycles (respecting their priority) as possible within the network without conflicts. It will be decided which construction request will be bundled in a construction cycle on which corridor and during which week taking into account of “Lighthouse measures“(Leuchtturmmaßnahmen) form the framework for the allocation of construction cycles. Lighthouse measures are individual construction measures with a prominent network effect and high priority implementation are centrally defined and fixed as a framework for the classification of all further allocation of construction cycles.

### Second and third consultation phase

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. The second consultation phase may include smaller TCRs, not considered during the first consultation phase.

The third consultation phase addresses non-ATT relevant TCRs. The third consultation phase is dedicated to minor impact TCRs to be published until X-4.

### Infrabel

Other reasons for clustering works are:

- Quality of the end result
- Safety reasons
- Financial reasons
- Work-life balance of the employees...

Infrabel and RU's have agreed upon general recommendations which can serve as a base for clustering.

### **ProRail**

With a growing number of projects and a limited number of employees at contractors, there is a shift in the balance between optimizing on traffic impact and creating a feasible planning for contractors. As a result of this, it can be expected that in 2027 works are and more often clustered in longer TCRs instead of being split in 2-days TCRs planned during weekends.

The sections of the network where clustering is possible (maximum distance) are predefined in the Corridorbook, based on a feasible alternative transport plan and re-routing possibilities.

### **SNCF Reseau**

The process of allocation capacities is based on fragmentation, depending on the timetable : a site is divided into windows. A major TCR at X-24 can thus have as a result several high or medium windows at X-12. In addition, the restriction can be optimized by positioning one or more TCRs in the shadow of the main site, without additional impact on traffic.

### **SBB / BLS**

- **TCR planning follows the following planning principles:**
- The focus in this document is mainly on the two north-south corridors of Switzerland.
- Transparent planning at an early stage.
- Stable and robust construction schedules.
- Construction site planning coordinated with neighboring IMs.
- Customer needs taken into account as far as possible with minimized impact. This includes combining different construction activities.
- If many construction activities with major impacts are necessary, a total closure over several weeks may be the appropriate solution.
- Alternative concepts coordinated with partners.

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

### **Common denominators**

To avoid an (extra) shortage of capacity during TCRs, IMs can define areas where TCRs shall not be planned simultaneously. That includes deviation routes. IMs have several approaches of defining and handling deviation routes:

1. A "Corridorbook" like approach, with pre-defined deviation route(s) which need to be applied if a certain line is closed
2. A "Corridorbook" like approach, with multiple pre-defined deviation routes per line, of which at least one needs to be open
3. No pre-defined deviation routes are described or agreed on, but deviation possibilities are reviewed while planning TCRs

Besides deviation routes there can be other connected areas where TCRs shall not be planned at the same moment.

	BE	NL	LU	DE	FR	CH	AT	IT	SI
<b>Pre-defined deviation routes available - fixed</b>		X			X	X		X	X
<b>Multiple pre-defined deviation routes available – one (or more) to be left free of TCRs</b>	X				X	X		X	
<b>No pre-defined deviation routes described, tailor made during planning</b>			X	X		X*	X		
<b>Other reasons for not planning TCR simultaneously in connected areas</b>	X	X	X			X			X
<b>Major public events are considered in the planning of TCRs</b>	X	X		X		X		X	

\* Tailormade solutions in addition to predefined deviation routes if needed.

## National specificities

### ACF/CFL

In Luxembourg, no alternative routes are predefined in case of TCRs. Alternative routes have to be tailor-made and international coordination (DB Netz, SNCF Réseau and Infrabel) has to be done in order to ensure the access to:

- Rail Freight Corridor NSM
- Industrial Railway Network « Réseau Tertiaire »
- Private branches to be as less impacted as possible
- Port Mertert
- Terminal Bettembourg

However, the simultaneous closure of certain segments is incompatible. In Annex 1 a non-exhaustive list of incompatibilities observed on the network.

### DB Netz

DB Netz applies no “TCR-exclusion-zone” principle, following which a TCR on a line would automatically cause a TCR-exclusion on its diversionary line(s).

The multiplicity of routing options, that can reach for some TCR-corridors as much as three-hundred rerouting options for freight, the complexity of traffic flows on a network, the biggest share of which is used by several market segments, requires the highest possible flexibility to best conciliate TCR-implementation and the lowest possible impact on available capacity.

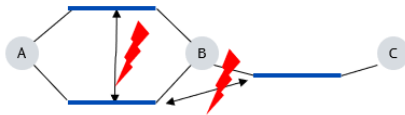
By means of an algorithm, such TCR-exclusion may however be decided when TCRs on two or more “TCR-corridors” cause capacity usage on diversionary lines to overstep their

maximum capacity, i.e., 125% of the capacity providing for acceptable quality standards (“Nennleistung”).

The earliest overview of diversionary lines and their estimated capacity usage on a weekly basis is delivered with the publication of TCR-corridors, on 1st August of each year (X-40).

Traffic flow-related exclusions

Traffic flow-related exclusions are defined in advance and are a prerequisite for a market-compatible solution. One example to prevent the simultaneous planning of construction cycles is shown in the picture below.



Simultaneous construction cycles on a selection of 2 to  $n^3$  corridors are excluded. These exclusions are based on expert knowledge or are formed by the capacity consideration in the planning model.

## Infrabel

Infrabel and the RU's (National/ International passengers' traffic, Freight traffic) have agreed upon general recommendations for deviation routes in case of works. These general recommendations are bundled by type of transport in the following documents:

- For [National Passengers Traffic](#)
- For [National Freight Traffic](#)
- For [International Traffic](#)

Complementary, [agreements](#) have been made between Infrabel and the RU for National Passengers Transport concerning the planning of works on lines towards touristic hotspots/ lines where long (in terms of duration) total closures of lines can be planned.

## ÖBB Infra

In principle, ÖBB-INFRA can provide the required capacity on the planned detour routes. A ban on TCR on re-routing lines applies only in exceptional cases. TCRs can therefore also be planned on the detour route(s) if it is ensured that the capacity is sufficient.

## ProRail

To avoid capacity shortage on the common deviation routes, ProRail does not plan TCRs simultaneously on Kijfhoek - Zevenaar Oost (Betuwe freight route) and the following lines:

- Roosendaal - Lage Zwaluwe
- Rotterdam Lombardijen - Zevenbergschen Hoek aansluiting (high-speed line)
- Eindhoven - Roermond

Complementary, ProRail and RUs have also agreed on recommendations not to plan TCRs simultaneously:

- On lines that lead to the main border points for international freight traffic (capacity)
- On lines that are on different sides of the same transport hub (gravity of impact)

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<sup>3</sup>Non-negative integers  $n > 3,4,5,6...$

- On lines that are on the same corridor for passenger transport (gravity of impact)

The standardised deviation routes as well as other recommendations are part of the Corridor book, which is available for applicants through the ProRail [Logistics Portal](#) (folder “Corridorboeken”).

## RFI

The general principle in agreement with the neighboring Infrastructure Managers is to guarantee alternative international itineraries that safeguard railway traffic. See map in Annex 1. This coordination is generally managed within the working groups of the various rail freight corridors in which this Infrastructure Manager is involved or with bi-trilateral meetings between neighboring Infrastructure Managers.

## SNCF Réseau

The general principle is to keep always at least one of the paths open. The two courses can be not equal in time, it is then necessary to apply compensation.

## SŽ – Infrastruktura

When planning the TCR, SŽ-Infrastruktura takes into account the corridor approach with predefined reroutes, if this is not possible, the possibilities of rerouting are examined in the planning phase of each TCR. TCRs are not planned at the same time in connected areas – see maps in Annex 1. The traffic dispatcher can only have one planned closure at the same time on the section where he is operating traffic.

### 2.1.3 Description of the periods when regular TCRs will be executed if their nature makes it possible (nights, weekends)

#### **Common denominators**

In general, TCR are planned in all countries on periods with a reduced traffic to minimize their impact on passengers: during (extended) nights, weekends, school holidays or in summer (marked in blue in the table below). However, some IMs don't necessary distinguish the periods by traffic intensity and can also plan during daytime or at workdays. Because of the intensification of construction and maintenance activities, IMs can be obliged to spread more equally the TCR to preserve costs and resources. All the exceptions observed in the working group are described in the paragraph “National specificities”.

Periods when regular TCRs will be executed

	BE	NL	LU	DE	FR	CH	AT	IT	SI	Σ
<b>During school holidays</b>	★★	★★	★★	★★	★	★	★★	★★	★	15
<b>During weekends</b>	★★	★★	★★	★★	★	★★	★★	★	★	15
<b>During nights</b>	★★	★	★	★★	★	★★	★★	★	★	13
<b>During summer</b>	★	★	★★	★	★	★★	★	★★	★	12

<b>During extended nights if technically necessary or economically justified</b>	★★	★	★	★★	★	★★	★★	★	⊖	12
<b>During daytime</b>	★	★	⊖	★	★	★	★	★	⊖	7
<b>During daytime in hours with less traffic demand</b>	★	⊖	⊖	★	★	★	★	★	⊖	6
<b>Period depending on a rational assessment between impact on traffic and costs</b>	★	★	⊖	★	⊖	★	★	★	⊖	6
<b>More equally spread over all days of the year, because of a feasible planning for contractors</b>	★	★	⊖	★	⊖	⊖	★	⊖	⊖	4

★★ favoured option ★ alternative option ⊖ exceptional or impossible option

## National specificities

### DB Netz

DB Netz traditionally plans TCRs during (extended) nights, weekends and holidays. Nonetheless, it is being observed that TCRs will be planned also outside weekends and holiday periods. In addition, TCRs are spread throughout the year allowing a market-oriented and balanced situation between driving and construction activities. This results from several factors, the general increase in the TCR activities, the procedures following the financial agreements and among several other factors also the impact of the High-Performance-Network.

### ÖBB Infra

When planning the TCR, ÖBB INFRA traditionally not only takes into account the capacity limitations caused by the construction work, but also attaches great importance to reliability (punctuality) during the construction work. The construction works are therefore planned along the main axes in the network with end-beginning relationships over the entire timetable year. Works that cause major capacity restriction are planned during holiday periods or weekends when traffic is lighter.

### ProRail

ProRail has a tradition of planning TCRs during (extended) nights, weekends and school holidays. To achieve a feasible planning of TCRs for contractors and an economically responsible deployment of resources, ProRail is committed to a more equally spread of works throughout the year and over the days of the week. To this end, more often than before, TCRs will be planned outside weekends and holiday periods. When choosing activities to be done outside weekends and holiday periods, impact for passengers, costs for freight RUs, feasibility of the alternative transport, the use of critical resources and a spread of the extra impact across RUs and regions are the most important factors.

## 2.1.4 Description of the periods when TCR windows will be planned (nights, weekends)

### **Common denominators**

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

Tying the planning of maintenance to a recurring principle of TCR Windows also means that less effort is required to create the planning. This will make the planning process more efficient.

	BE	NL	LU	DE	FR	CH	AT	IT	SI
<b>Types of TCR windows: recurring all year</b>	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
<b>Types of TCR windows: recurring during a limited number of weeks</b>	No	No	Yes	Yes	No	Yes	Yes	No	No
<b>Typical duration of TCR windows [hours]</b>	4-6 (*)	4	4	5-6	6	4-8h	4h-6h	4	6-9
<b>Typical cycle time of recurring TCR Windows</b>	Rotation plan	Weekly (90%)	Weekly	Weekly	Weekly (90%)	Depending on the need and the timetabling situation	monthly	Weekly	Every second week
<b>Number of windows per cycle per location</b>	Variable	2 to 4	Not defined	1 or 2	2 to 4	Depending on the need and the timetabling situation	4-6	2 to 5	2-4



<b>Typical impact</b>	Total line closure	Total closure (90%)	Total or partial closure	Single track closure, but for High-speed-lines typically total closure	Single-track closure	Single-track closure Total closure if rerouting available	Total closure	Total or single-track closure	Total closure on single track lines, one track closure on double track lines
<b>Time-positioning of TCR windows</b>	Night	Night (90%)	Night	Mostly night	Night (90%)	Night	Night	Night or day	Day
<b>Days of the week</b>	Weeknights (rotation plan), All (werkvensters)	All, except Fri/Sat night	All days possible	All	All	Weekend, Mon	All, depend on the line	Depending on the line	Weekend, Mon
<b>Lines covered by TCR Windows</b>	100%	100%	Not defined	Only for relevant lines	100%	80%	5%	100%	30%
<b>TCR windows at stations and yards</b>	100% (goal)	100%	Not defined	No fixed TCR windows	100%	In specific cases	no	0%	50%
<b>TCR windows are released if not used at ... days</b>	At latest 28 days before start	x-12 (freight corridors x-21)	Not concerned	n.n.	Week-5	Normally not	x-6	30 days	x-14
<b>TCR Windows can be used for small maintenance</b>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>TCR Windows can be used by other projects</b>	Yes	Yes	Yes	Yes, but not very common	Yes	Yes	Yes	Yes	Yes
<b>Safeguarding of alternative routes</b>	Yes	Yes	Yes	Yes	Yes	Yes**	Yes	Yes	Yes

<b>for freight, long-distance passenger services, and/or night train services in TCR Window model</b>									
<b>Cancellation of TCR Windows on deviation routes of regular TCRs</b>	Yes	Yes	Not concerned	Yes	Yes	Yes**	Yes	Yes*	Yes
<b>In annual timetable (no replanning of trains needed in later phases)</b>	Yes (for werkvensters / blancs travaux) No (rotation plan ) *	Yes (weekly windows only)	No	Yes	Yes	No	No	Yes	No
<b>Works can be planned in the allocated TCR Windows without further consultation of RUs or coordination with neighboring IMs</b>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

\*\* In specific cases (e.g. night Sat/Sun and Sun/Mon) alternative routes are not available. Due to total closure on both axis in the context of the minor demand.

## **National specificities**

### **ACF / CFL**

Most TCRs in Luxembourg are planned continuously (namely in a single time block) on a defined period (ex. all nights from 00:40 to 04:00 for two weeks). TCR windows stay rather exceptional and are planned for closures with complex works. In other words, the Luxembourgish IM tries to organize tailor-made TCRs as much as possible in advance in order to avoid capacity wastes. Currently, the large amount of bigger TCRs on the Luxembourgish network allows the hanging of smaller TCRs without additional capacity issues.

### **DB Netz**

At DB Netz, a distinction is made between two instruments for considering maintenance work: maintenance corridors and 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.

### **Infrabel**

\*At Infrabel we distinguish 2 types of TCR windows:

- Maintenance windows ("werkvensters/ blancs travaux"): 1 period of 4 hours for each line every week
- Windows in the rotation plan ("CBP"): 5 periods (each weekday) of 6 hours a week in a rotation mode (approximately 16 weeks a year, except for lines which are difficult to "obtain" for planning of works)

### **ÖBB Infra**

ÖBB Infra plans maintenance windows (total closures) on the one hand in the tunnel sections, mostly at weekends, and on the other hand on the little-used single-track sections of the network, mostly in the morning or in the evening.

### **ProRail**

Exceptions to the weekly schedule:

- at locations where this is not possible due to traffic needs and the absence of diversion routes,
- if the demand for Maintenance Windows is so low that a bi-weekly or four-weekly schedule is also sufficient for performing works and reducing ad hoc impact to traffic as a result of ad hoc TCRs,
- if works require a TCR larger than the periodically scheduled windows, these are planned on a fixed date by means of a Low Frequency Maintenance Window or a Maintenance Window with Additional Conditions.

## **RFI**

The planning of the periodic maintenance windows (IPO) is recurring on an annual basis, but can be subject to remodulation according to significant TCRs on alternative traffic lines. Generally, no trains are planned during IPOs; in few cases related to PSO trains, special timetable arrangements are taken to manage them during one-track closures. The (IPO) maintenance windows along all the entire network are published annually in the Network Statement and can be consulted by the RUs on the RFI ePIR portal.

## **SNCF Réseau**

The capacities allocated for works needs are the object of "works windows" defined on sections with windows. Several types are available:

- "Regular windows" corresponding to capacity for the most common works carried out during periods of reduced commercial demand.
  - "générique" 6 h usually at night
  - "corrective" during from Sunday night to Monday morning
  - "surveillance" for maintenance 1 h during the day
- "Distorted windows" applied to a limited number of weeks and likely to have a significant impact on train paths.
  - "déformé" 8h; the pattern is base on a "generic" windows with extended hours.
  - "capacité" limited inside a station to a few tracks.

## **SŽ – Infrastruktura**

On single-track lines, within the framework of the maintenance windows, there is a complete interruption of traffic, while on double-track lines, one track of the double-track line is closed. Maintenance windows are not planned simultaneously on interconnected sections.

They are distributed throughout the year and last between 6 and 9 hours. Typically, maintenance windows are scheduled every second week. Most maintenance windows are scheduled during weekends when there is less passenger traffic and on Mondays when there is less freight traffic. Maintenance windows are not taken into account in the annual timetable, the train timetable is adjusted operationally.

Maintenance windows are planned for approximately 30% of the public railway infrastructure network, namely on lines with higher traffic density. On other lines, maintenance is carried out between trains.

If the individual maintenance window will not be used, the IM will cancel it 14 days before the scheduled window. Maintenance windows can also be used for other works within the project. If this requires an extension of the maintenance windows, this is not done without prior consultation with neighbouring IMs, insofar as they affect the traffic of international trains.

### **2.1.5 Description of how the TCR allocation process will look like, how the coordination and consultation will be ensured**

## **Consultation level**

The market is consulted on the TCR Planning in all involved countries. Market consultations take place at a minimum of 1 level and a maximum of 5 levels.

Most countries do the consultation of all aspects of the TCRs in the same meeting; some make a distinction between discussing TCR scenario's (number of TCRs, duration, affected tracks) and the TCR planning including deviation routes.

<b>Consultation level</b>	<b>BE</b>	<b>NL</b>	<b>LU</b>	<b>DE</b>	<b>FR</b>	<b>CH</b>	<b>AT</b>	<b>IT</b>	<b>SI</b>
<b>Project</b>	P	S			S	S	S		S
<b>Regional</b>	X	S		X	X	X	S	X	X
<b>Corridor</b>					S		P	X	
<b>National</b>	P	P	X	X	X	X	X	X	P
<b>International</b>	*	*	P*	x	S	X	P		S

X = all aspects of TCR planning (S+P)

S = TCR scenario's/alternatives of individual TCRs

P = TCR planning only (scheduling, re-routing)

## **Start of the consultations**

In all countries RUs are consulted before each publication at X-24, X-12 and X-4. Although the publication moments of TCRs are harmonized by Annex VII, the consultation periods or moments have some slight differences from country to country, as expressed in the table below:

<b>Start of the consultation</b>	<b>BE</b>	<b>NL</b>	<b>LU</b>	<b>DE</b>	<b>FR</b>	<b>CH</b>	<b>AT</b>	<b>IT</b>	<b>SI</b>
<b>For the X-24 publication</b>	X-33	X-27	X-26	X-40	X-26	X-26	-	X-25	-
<b>For the X-12 publication</b>	X-23	X-17	X-26 to X-13	-	X-18	X-16	X-18	X-19 to X-13.5	X-14
<b>For the X-4 publication</b>	X-11	X-17	-	-	X-12	-	X-6	X-6	X-6

## **Number of consultation meetings per phase**

Some IMs have concentrated their consultation for every phase in one or two meetings per year. Other countries have periodical meetings throughout the consultation phase or even continuous meetings throughout the year.

Number of consultation meetings per phase	BE	NL	LU	DE	FR	CH	AT	IT	SI
One or two meetings			X					X	X
Periodical meetings during consultation	X			X	X	X			
Continuous meetings between IM and RU	X	X	X*			X*	X		

\* if needed

How and until when the applicants can ask for two alternatives concerning major impact TCRs

Applicants can request a comparison of the conditions to be encountered under at least two alternatives of capacity restrictions with regards to major Impact TCRs. The highest flexibility to check for alternatives is in the first consultation phase. Some IM do not have a fixed deadline by which the alternative scenario must be requested. Some IM also offer the possibility to carry out alternative scenarios for high and medium TCR.

	BE	NL	LU	DE	FR	CH	AT	IT	SI
Ultimate moment for alternative TCR scenario	X-18	*	*	X-28	X-12	X-13	*	*	*

\* Alternative scenarios can be requested during the whole consultation phase, no fixed deadline.

## National specificities

### ACF / CFL

In Luxembourg, two levels of consultation can be distinguished:

- National consultations: all aspects of TCR planning, including TCR scenarios (number, duration, tracks) are discussed.
- International: they include the neighbouring IMs (DB Netz, SNCF Réseau and Infrabel) and additionally the concerned IMs by the RFC (SBB). During those meetings, only TCR schedules (date, time) are discussed. It is planned to extend the consultation to corresponding international RUs.

The consultations for the X-24 publication start at X-26 and occur until X-13 for the X-12 publication. One or two consultation meetings per phase are planned. Moreover, continuous meetings between IM and RU can be organized if needed.

### DB Netz

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.

- 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.
- If, due to the long-term planning of the construction measure, a consultation is required 40 months before the timetable change (before the first consultation phase), communication on these TCRs will take place within the framework of the central “TCR information Dialog”.

Regional and national consultations are organized around two instruments:

- meetings (“Bau- und Informationsdialog” or “TCR 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 neighbouring 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.

## **Infrabel**

Infrabel’s consultation of the RU’s/ applicants consists of:

- National consultations: twice a year, in spring (June) and autumn (December), Infrabel organises a Biannual meeting with all RU’s and representatives of applicants. At these meetings the following TCR’s are presented of discussed:
  - June Y :
    - Presentation of Major and High TCR for Y+3.
    - Consultation/discussion for Major and High TCR Y+2
  - December Y:
    - Consultation/discussion for Major and High TCR Y + 2
    - Consultation/discussion for Medium TCR Y + 2 with impact on international level
    - Consultation/discussion for Medium TCR Y+2

In these meetings the details about the periods, duration and tracks of the TCR’s are presented/ discussed. The RU’s/ applicants have a period of 20 working days to send all remarks on the presented planning.

- Regional consultation (Area): remarks from the RU’s / applicants are discussed in detail on a regional level, the so-called areas. Infrabel consists of 5 areas.
- Project: important TCR are discussed further in detail in specific project meetings (SIRU meetings) as from X-18.
- International: Together with ProRail and DB Netz (BeNeDe group) relevant internationally relevant TCRs are shared with RUs, although these meetings are not part of the formal consultation process.

## **ÖBB Infra**

At ÖBB Infra there is a special consultation process for complex large-scale projects, which begins before the dates given in the table and is preferably finished at X-24. Consultation on the major, high and medium TCR begins at time X-18.

At ÖBB Infra the request for an alternative TCR scenario is not strictly limited to Major TCRs. Alternatives can be requested during consultation meetings.

## **ProRail**

TCR alternatives / scenario's ("how the works is done") are usually consulted in regional meetings, except for complex projects, often with a multi annual scope, which have a dedicated consultation process. The consultation of these complex projects is starting ahead of the dates mentioned in the table.

The planning of TCRs ("when the work is done") is consulted on a national level. Together with Infrabel and DB Netz relevant internationally relevant TCRs are shared with RUs, although these meetings are not part of the formal consultation process.

Major and High TCRs are planned from X-27 onwards, including a high-level consultation before X-24. A more detailed consultation starts at X-17, resulting in a publication at X-12.

The consultation of Minor TCRs has a main focus from X-10 onwards but can be part of the "X-12" consultation phase as well.

The request for an alternative TCR scenario is not strictly limited to Major TCRs. Alternatives can be requested during consultation meetings. No fixed deadline is set for these requests; it depends on the agenda of the consultation meetings.

## **RFI**

RFI details the procedures for consulting Applicants in its National Network Statement, which implements European Directive 2017/2075.

Alternatives can be requested during consultation meetings as mentioned in the National Network Statement. No fixed deadline is set for these requests; it depends on the agenda of the consultation meetings.

## **SNCF Réseau**

Before making a choice between alternative capacity restriction scenarios, SNCF Réseau consults with the candidates concerned and takes into account the impact of different scenarios on these candidates and on the users of services.

- **November Y-3:** for the FIC work sites and for category 1 and 2 RTC sites on the national railway network, SNCF Réseau invites its customers to "reviews of macro axes" with the aim of an iterative sharing of the first frames for consideration in future scheduling. These exchanges are based on "macro sequencing" and time loss graphs taking into account the capacity needs of the identified sites.
- **December Y-3:** publication on the SNCF Réseau website of a first version of category 1 and 2 RTC projects on the national railway network, in the form of macro sequencing, as well as the report of the reviews of macro axes. Where appropriate, an estimate of the commercial capacity of diversion routes is also published.



- **January Y-2 to the end of April Y-2:** On the basis of an initial sequencing of work sites, definition of the final framework of the generic and distorted windows during an iterative and concerted process with all the parties involved.

If the impact of the RTC is not limited to a single network, the infrastructure managers concerned, including the infrastructure managers who could be affected by the change of train routes, coordinate between them the restrictions of the capacities.

Where appropriate, infrastructure managers must invite candidates operating on the relevant lines, the main operators of service facilities, and the freight corridors concerned to participate in this coordination.

The "axis reviews", organised in mid-April, are intended to consult the candidates about the following information from the first sequencing:

- the activation weeks of generic windows;
- the types and activation weeks of the distorted windows and the capacity requests;
- the time loss graphs.

- **May Y-2 to July Y-2:** Final sequencing of the work sites in the capacity granted by the generic and distorted windows framework.

At the same time, SNCF Réseau organises **meetings referred to as "RP0"**, together with the applicants (train paths and works) in the following cases:

- work sites that require distortion of the windows;
- work sites that impact on generic windows or on sections outside the windows with a severe temporary speed restriction;
- work sites that impact on sections outside the windows with a significant reduction in capacity.

the RP0s are organised according to the following schedule:

- From the start of February to the end of April Y-2: Anticipated RP0 of FIC sites.
- Mid-April to end of June Y-2: RP0 gathering all of the work sites together by section of a particular corridor.

- **July Y-2 to December Y-2:** Adjustment of the timetable positioning of windows in line with the construction phase of the "24-hour train diagram".
- **Mid-December Y-2:** Publication of the General Programme of works Windows (PGF) via the TCAP IS, which describes the windows and capacities allocated to works. Where appropriate, an estimate of the commercial capacity of diversion routes is also published via the SNCF Réseau website.

## **SŽ – Infrastruktura**

Consultations begin as soon as we – SŽ Infrastruktura - receive information about the planned investment TCRs from the Ministry. This is usually done as part of the regular annual meeting with RUs in October (X-14).

For TCRs with higher impact, consultation on all aspects of the TCR takes place at specially organized meetings. The discussion includes different TCR scenarios (number of TCRs, duration, impact on available capacity) and TCR planning, including rerouting options.

No fixed deadline is set for the requests of alternatives for major TCRs at SŽ-Infrastruktura. Alternatives can be requested during consultation meetings.

## **SBB / BLS**

A distinction is made between two types of concepts:

"simple": low impact for the railway undertakings

"complex": medium to high impact (if the "minimum requirements" or other known requirements of the RUs cannot be realised, the concept is to be assessed as "complex").

Complex concepts are transparently labelled as such in the "construction site map", which is made available to the Steering Meeting (StM) members. The stakeholders (incl. RUs) are involved proactively and at an early stage in the development and approval processes, particularly in the case of "complex" concepts.

Process for complex rough concepts:

Timetable workshop: TVS (Allocation Body) and affected RUs (cantons if required) and any partners are welcomed before the Steering meeting (StM) as part of preliminary discussions or timetable workshops. Prior exchange (preliminary consultation, timetable workshop) on the needs of the stakeholders (if necessary with the proactive involvement of the canton) and on the possibilities and restrictions of SBB infrastructure (network, timetable, resources, infrastructure, rolling stock, etc.).

Once the concepts approved beforehand or in the StM have been provided, no more questions or demands should arise.

## 2.1.6 International coordination

### **General principles**

All IMs coordinate their TCRs in order to synchronize as much as possible their TCRs on both sides of a border point and to ensure that deviation routes are available. Coordination can be done bilaterally from IM to IM or in a group of IMs, especially when lines or deviation routes impact multiple countries.

With the Brenner Group as an example and DB Netz as a booster, several groups have introduced a "2-days approach". This means that twice a year RUs are invited to the regular coordination meetings of IMs, which are extended with an extra day: IMs do their normal coordination on the first day and discuss the results with RU's on the second day.

Several IM groups use a harmonized Gantt chart for sharing and coordinating their TCRs. A similar chart will be implemented in the TCR Tool and will probably replace current versions shortly.

	Infrabel – ACF/ CFL – DB Netz – SNCF Réseau – SBB	DB Netz – ÖBB Infrastruktur – RFI („Brenner Group“ )	Infrabel – ProRail – DB Netz („BeNeDe Group“ )	SBB Infrastruktur – RFI – SNCF Réseau	DB Netz – SBB Infrastruktur („Rhine Valley Rail“ - Group)	RFI – SZ-Infrastruktur	ÖBB – SZ-Infrastruktur	DB Netz – Správa železnic	DB Netz – Scandinavia	SNCF Réseau - ADIF	SBB I – RFI + SBB-I – RFI - DB
<b>Number of IMs involved</b>	5	3	3	3	2	2	2	2	2	2	2-3
<b>Synchronisation of TCRs on both sides of a border point</b>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>Deviation routes safeguarded</b>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>Capacities available and needed for re-routing are discussed</b>	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>2-days approach (2<sup>nd</sup> day with RUs)</b>	No	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
<b>Standardized Gantt Chart is used</b>	Excel chart	No (Excel file)	Yes	No	Yes	No	No (Excel table)	No (Maps used)	Yes	No	Yes
<b>Timetable years in coordination in May 2023</b>	24, 25, 26	23, 24, 25, 26	23, 24, 25	23, 24, 25	23, 24, 25, 26	23, 24, 25	23, 24,	23, 24, 25, 26 (only DE)	25, 26	23, 24, 25	23, 24, 25, 26, 27
<b>Frequency of IM-IM meetings [number per year]</b>	2-6	2	8	6	2	8	1	2	2	2	2-5

## **Specificities per coordination group of IMs**

### **Infrabel – ProRail – DB Netz („BeNeDe Group“)**

During six-weekly meetings trilateral TCR-planning currently focuses on the coordination of TCRs among Infrabel, ProRail and DB Netz two timetables ahead. The planning of TCRs is synchronized and one or multiple deviation routes, based on historical experience, are safeguarded to provide sufficient rerouting capacity. Starting in September 2022, the two-day model has been introduced, which is expected also to be used for timetable 2027, approximately at X-26, followed by an update at X-19 and X-14 accordingly.

### **DB Netz – SBB Infrastruktur („Rhine Valley Rail“-Group)**

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 includes TCR-bundling, cross-border overview of diversionary lines and estimation of capacity.

The Day 1-exchange during May 2023 focused on milestones X-31(TT26) and X-19 (TT25) and thus covered the envisaged coordination rhythm fully.

The introduction of Day 2 has been achieved in May 2023, where the milestones X-31 (TT26) and X-19 (TT25) were presented and coordinated. It is targeted, that autumn coordination will cover the milestones X-15 (TT25), X-27 (TT26) and X-39 (TT27).

### **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.

### **SBB Infrastruktur – RFI – DB Netz**

Periodical tri-lateral meetings are held to detail TCR harmonization and capacity coordination. In addition, there is a periodical meeting between the territorial TCRs managers from SBB-I & RFI & DB Netz.

### **DB Netz – ÖBB Infrastruktur – RFI („Brenner Group“)**

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 three meetings, in March, 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. As from 2024 the rhythm of those meetings will be twice per year – approximately in June and October/ November.

In this area, the GANTT-Chart has not been introduced considering that another, well established Excel-based overview had previously been used. This overview will continue to be used until the TCR-Tool can be used.

The last Day 1 - Day 2-cycle took place on the Brenner segment on 13<sup>th</sup> and 14<sup>th</sup> June, with a focus to Timetables 2023- 2026.

### **Infrabel – ACF/ CFL – DB Netz – SNCF Réseau – SBB Infrastruktur**

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)

Between SNCF Réseau and DB Netz pre-coordinations start at X-33.

The Day 1-exchange in May 2023 covered X-31 (TT26) and X-19 (TT25).

The Day2-format will very likely only occur during the autumn coordination meetings. The first Day2-coordination meeting will be held in November 2023.

Coordination via the established multilateral working group for all TCRs impacting the borders (freight and passenger combined).

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

### **RFI – SŽ-Infrastruktura**

Bilateral meetings (RFI - SŽ-Infrastruktura) are held usually every two-three months; in addition, other periodical meetings are organized by the Rail Freight Corridors n. 5 (Baltic - Adriatic) and n. 6 (Mediterranean) for IMs coordination and IMs/RUs consultation.

### **ÖBB – SŽ-Infrastruktura**

ÖBB Infra - SŽ-Infrastruktura continuously coordinate the TCRs with effects on the other neighboring network. The focus is on the period X-12 to x+12. The exchange takes place mainly via email. If necessary, meetings are organized.

### **DB Netz – Scandinavia**

The Day 1 and Day 2-exchanges during May 2023, which took a place on 30<sup>th</sup> and 31<sup>st</sup> May, focused on milestones X-31 (TT26) and X-19 (TT25) and thus covered the envisaged coordination rhythm fully.

The goal for autumn 2023 is that the coordination covers the milestones X-15 (TT25), X27 (TT26) and X-39 (TT27) as well, whereas the TCRs regarding X-39 (TT) will be presented by Banedanmark, Trafikverket, Banenor depending on availability of those TCR information.

Gantt– Chart is in use here as an instrument for exchange of TCR information among involved IMs.

### **DB Netz – Správa železnic**

DB Netz and Správa železnic coordinate their TCRs in a two coordination meetings per year scheme.

The Day 1 and Day2 -exchange during May 2023 focused on milestone X-19 (TT25)

It is targeted, that autumn coordination in 2023 will cover the milestones X-15 (TT25) and X-27 (TT26). It is very likely that the TCRs regarding X-39 (TT27) will only be presented by DB Netz.

Maps in PowerPoint are used as a coordination template here.

### DB Netz – PKP

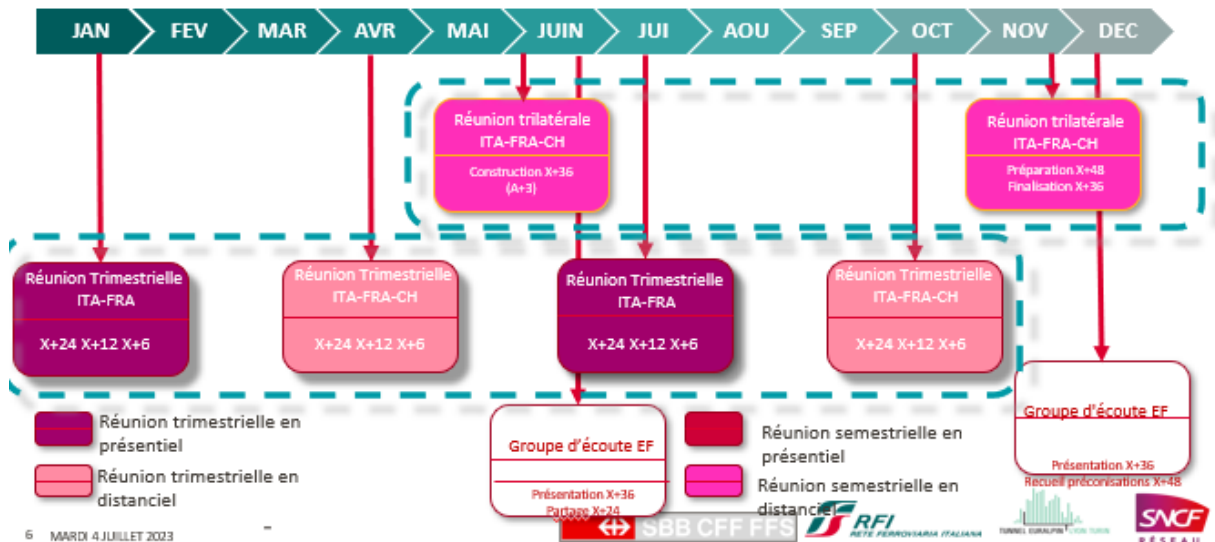
The envisaged start of the bilateral coordination format is supposed to start in October 2023 with the aim to coordinate X-26 (TT26) and X-15 (TT25)

The foreseen tool for the coordination is the Gantt-chart.

### SNCF Réseau – SBB – RFI

## LES RENDEZ VOUS DE DE LA PLANIFICATION TRAVAUX

POSITIONNEMENT DES RÉUNIONS



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

**Common denominators**

None of the IMs have agreed on a pre-defined TCR related escalation process with one or more of their neighbour-IMs.

For most IMs escalation in case of disagreement of involved stakeholders takes place within the regular national processes.

	BE	NL	LU	DE	FR	CH	AT	IT	SI
<b>Pre-defined international IM-IM escalation</b>	No	No	No	No	No	No	No	No	No
<b>National escalation process IM-RU</b>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No

**2.2 Pre-Announcement of Major impact TCRs**

A selection of TCRs with major impact on traffic is shown in Table 3. The corresponding numbers per country are shown on the maps in Figure 8 to Figure 12.

In general, the selected TCRs have impact on the timetable during an exceptional period of time and the financing of these TCRs is secured. Exceptions on these two criteria apply; please see the data in the table.

The first publication of High and Major impact TCRs is made by the IMs at X-24.

Country	Nr.	Network segment	Purpose	Time of execution	Start (quarterly basis)	Impact (total closure/single track operation/speed restriction)	Impact to passenger & freight traffic[1]	Financing secured
<b>AT</b>	1	Wien "S-Bahn Stammstrecke"	Increased capacity and establishment of ETCS	07/2026	12/2027	Total Closure in alternating sections	Bus replacement service or rerouting of suburban trains; No impact on freight traffic	Yes
<b>BE</b>	1	Rochefort-Jemelle - Grupont	Axe 3	14/12/2026 - 17/12/2027	Q4 2026	One Track during daytime + Total Line Closure during night (continuously)		Yes

<b>BE</b>	2	Haversin - Marloie	Axe 3	14/12/2026 - 17/12/2027	Q4 2026	One Track during daytime + Total Line Closure during night (continuously)		Yes
<b>BE</b>	3	L161/162 Ottignies	RER - Ottignies	TBD / several years	Q4 2029	Capacity Reductions in Ottignies		Yes
<b>DE</b>	1	Löhne (Westf.) - Bielefeld	Bridge restoration	12/2026	06/2027	Single closure	Yes	Yes
<b>DE</b>	2	Dortmund Obereving - Dortmund Kirchderne	ESTW access routes & track restoration	07/2027	12/2027	Total closure	Yes	Yes
<b>DE</b>	3	Hamm-Düsseldorf - Köln	High Performance Corridor (HLK) Hamm-Düsseldorf-Köln	07/2027	12/2027	Total closure	Yes	Yes
<b>DE</b>	4	Köln Steinstr. - Betzdorf (Sieg)	ETCS upgrade & modernization	12/2026	06/2027	Total closure	Yes	Yes
<b>DE</b>	5	Hamburg - Lübeck	High Performance Corridor (HLK) Hamburg - Lübeck	07/2027	12/2027	Total closure	Yes	Yes
<b>DE</b>	6	Hamburg Wandsbek - Hamburg Hbf - Hamb.-Roth.	Node Hamburg	2025	10/2027	Single closure	Yes	Yes
<b>DE</b>	7	Bremen - Bremerhaven	High Performance Corridor (HLK) Bremerhaven - Bremen	12/2026	12/2027	Single closure	Yes	Yes
<b>DE</b>	8	Osnabrück - Rheine	Bridge restoration Dortmund-Ems-Kanal	08/2027	12/2027	Single closure	Yes	Yes
<b>DE</b>	9	Ostendgestell - Stadtforst	Route modernization Berlin/Frankfurt Oder	12/2026	07/2027	Single closure	Yes	Yes
<b>DE</b>	10	Lehrte - Berlin	High Performance Corridor (HLK) Lehrte - Berlin	2026	12/2027	Total closure	Yes	Yes
<b>DE</b>	11	Cottbus Cbn - Cottbus W - Cottbus Hbf	Flying junction constr.	01/2027	12/2027	Total closure	Yes	Yes
<b>DE</b>	12	Cottbus - Horka	Relocating existing tracks	01/2027	04/2027	Single closure	Yes	Yes
<b>DE</b>	13	Dresden - Bad Schandau	Reduction of noise pollution &	2025	10/2027	Total closure & single closure	Yes	Yes



bridge restoration								
<b>DE</b>	14	Dresden Friedrichstr. - Freiburgstr. - Dresden Mitte	Construction of track 451 & superstructure	2025	07/2027	Single closure & total closure	Yes	Yes
<b>DE</b>	15	Frankfurt - Heidelberg	High Performance Corridor (HLK) Frankfurt - Heidelberg	02/2027	07/2027	Total closure	Yes	Yes
<b>DE</b>	16	Appenweier Nord - Kehl Grenze	Route modernization	12/2026	12/2027	Single closure	Yes	Yes
<b>DE</b>	17	Gundelfingen - Leutersberg	Rheintalbahn	2025	11/2027	Single closure	Yes	Yes
<b>DE</b>	18	Haltingen - Basel Bad - Schaffhausen	ESTW / construction Müllheim - Basel	12/2026	07/2027	Total closure & singel closure	Yes	Yes
<b>DE</b>	19	Karlsruhe-Durlach - Mühlacker	Restoration station Ersingen	04/2027	11/2027	Single closure	Yes	Yes
<b>DE</b>	20	Nürnberg - Treuchtlingen	DSD upgrade & bridge restoration Entengraben	05/2027	11/2027	Total closure	Yes	Yes
<b>DE</b>	21	München - Rosenheim	High Performance Corridor (HLK) München - Rosenheim	12/2026	07/2027	Total closure	Yes	Not yet
<b>DE</b>	22	Rosenheim - Salzburg	High Performance Corridor (HLK) Rosenheim - Salzburg	07/2027	12/2027	Total closure	Yes	Not yet
<b>FR</b>	1	Mantes la Jolie	Zone EOLE : Supersrtucture renewal	2024-2027	Q3 2024	?	No	Yes
<b>FR</b>	2	Marseille - Vintimille	CCR : Control center modification	2027		?	No	Yes
<b>FR</b>	3	Massy - Valenton	Improvement High speed line connection	2027		?	No	Yes
<b>FR</b>	4	PCD Bordeaux	Control center modification	2027	Q1 2027	?	No	Yes
<b>IT</b>	1	Carnia - Pontebba	Extraordinary maintenance of Zuc Dal Bor tunnel	August 2026	Q3/2026	Total closure for 30 days.	Re-routings via Brenner, Nova Gorica and Villa Opicina	Yes
<b>IT</b>	2	Iselle di Trasquera - Domodossola	P/C 80 Domodossola line	June - September 2026	Q2/2026	Total closure for 60 days.	Re-routings via Luino and Chiasso	Yes

<b>IT</b>	3	Arona - Domodossola	P/C 80 Domodossola line	June - September 2026	Q2/2026	Total closure for 50 days - in shadow to the previous activity.	Re-routings via Luino and Chiasso.	Yes
<b>IT</b>	4	PC Meana - Salbertrand	Extraordinary maintenance to tunnels	June - September 2026	Q2/2026	Track closure for 90 days.	Delayed trains.	Yes
<b>IT</b>	5	Carimate - Bivio/PC Rosales	Infrastructural upgrade of Bv Rosales	July - August 2026	Q3/2026	Track closure for 30 days of the section Carimate - Bv. Rosales (MO1) + total closure for 10 days of the sections Como-Carimate (MO1) and Chiasso - Carimate (MO2)	Re-routings via Luino and Domodossola.	Yes
<b>IT</b>	6	Iselle di Trasquera - Domodossola	P/C 80 Domodossola line	June - September 2027	Q2/2027	Interruption of track 100 for 40 days + total closure for 21 days.	Re-routings via Luino and Chiasso.	Yes
<b>IT</b>	7	Bivio/ PC Valle - Domodossola	P/C 80 Domodossola line	June - September 2027	Q2/2027	Total closure for 40 days - simultaneously with the previous activity	Re-routings via Luino and Chiasso	Yes
<b>IT</b>	8	Carnia - Pontebba	Extraordinary maintenance to tunnel Zuc Dal Bor	July - August 2027	Q3/2027	Total Closure for 45 days	Rerouting via Brenner, Nova Gorica and Villa Opicina.	Yes
<b>IT</b>	9	Trieste C.le - Bivio D'Aurisina	Works related to waterproofing viaduct Barcola - phase 1	April - July 2027	Q2- Q3/2027 .	Interruption of track for 86 days	Paths remodulation and rerouting via Tarvisio, Nova Gorica and Brenner	Yes
<b>LU</b>	1	Hollerich	Modernization and creation of a fully integrated interchange station	Apr 2027 - 2034	Q2/2027	Total station closure	Cancellation of the passenger traffic at the station. Bypass for passenger and freight trains still possible with reduced capacity.  Access to Luxembourg-Triage (marshalling yard) to be determined	Yes

<b>LU</b>	2	Luxembourg main station	Track reorganization of the south-wester part of the station	Jul 2027 - Sep 2027	Q2/2027	Total closure of the access to the lines Luxembourg - Kleinbettingen and Luxembourg - Pétange  Partial closure of the access to the line Luxembourg - Bettembourg	No passenger trains on the sections Luxembourg - Dippach-Reckange and Luxembourg - Bertrange-Strassen  Reduced capacity on the section Luxembourg - Howald	Yes
<b>NL</b>	1	Amsterdam Centraal	Increased capacity and transfer capacity at and around Amsterdam C.	Dec 2023 - Apr 2028	Q4/2023	8 out of 10 platform tracks available at Amsterdam C.	Impact is uncertain but expected to be limited, except during additional shorter TCRs at Amsterdam C.	Yes
<b>NL</b>	2	's-Hertogenbosch - Boxtel / Tilburg	Increased capacity; freight trains Kijfhoek - Eindhoven via 's-Hertogenbosch instead of Breda - Tilburg	May 2025 - 2029/2030	Q2/2025	Prolonged speed restriction (80km/h) between 's-Hertogenbosch and Vught Aansluiting + 2 out of 3 tracks available.	Limited extra travel time	Yes
<b>SI</b>	1	Ljubljana - Divača	upgrading entire section, new electric power supply stations and automatic block signalling	2022	2027	Single track operation,	Passenger traffic is replaced by buses, freight traffic re-routed via Jesenice	Yes
<b>SI</b>	2	Divača - Koper	Building a second track	2022	2026	/	/	Yes
<b>SI</b>	3	Croatian border - Dobova - Zidani Most section	Upgrading the stations and sections	2024	2027	Single track operation	Passenger traffic is replaced by buses,	Yes
<b>SI</b>	4	Ljubljana rail hub	upgrade the railway stations and the sections between the stations	2024	2027	Single track operation	Passenger traffic is replaced by buses,	Yes

**Table 3: Overview Major impact TCRs**

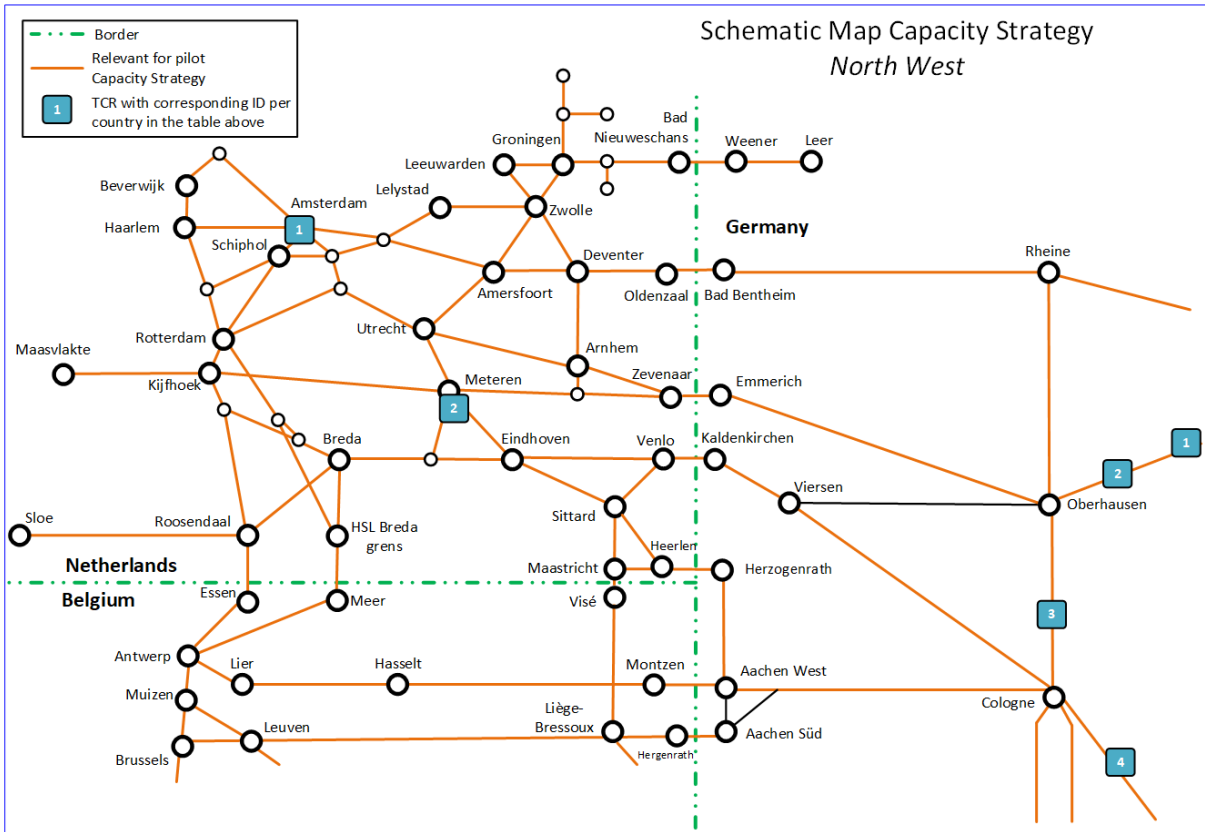
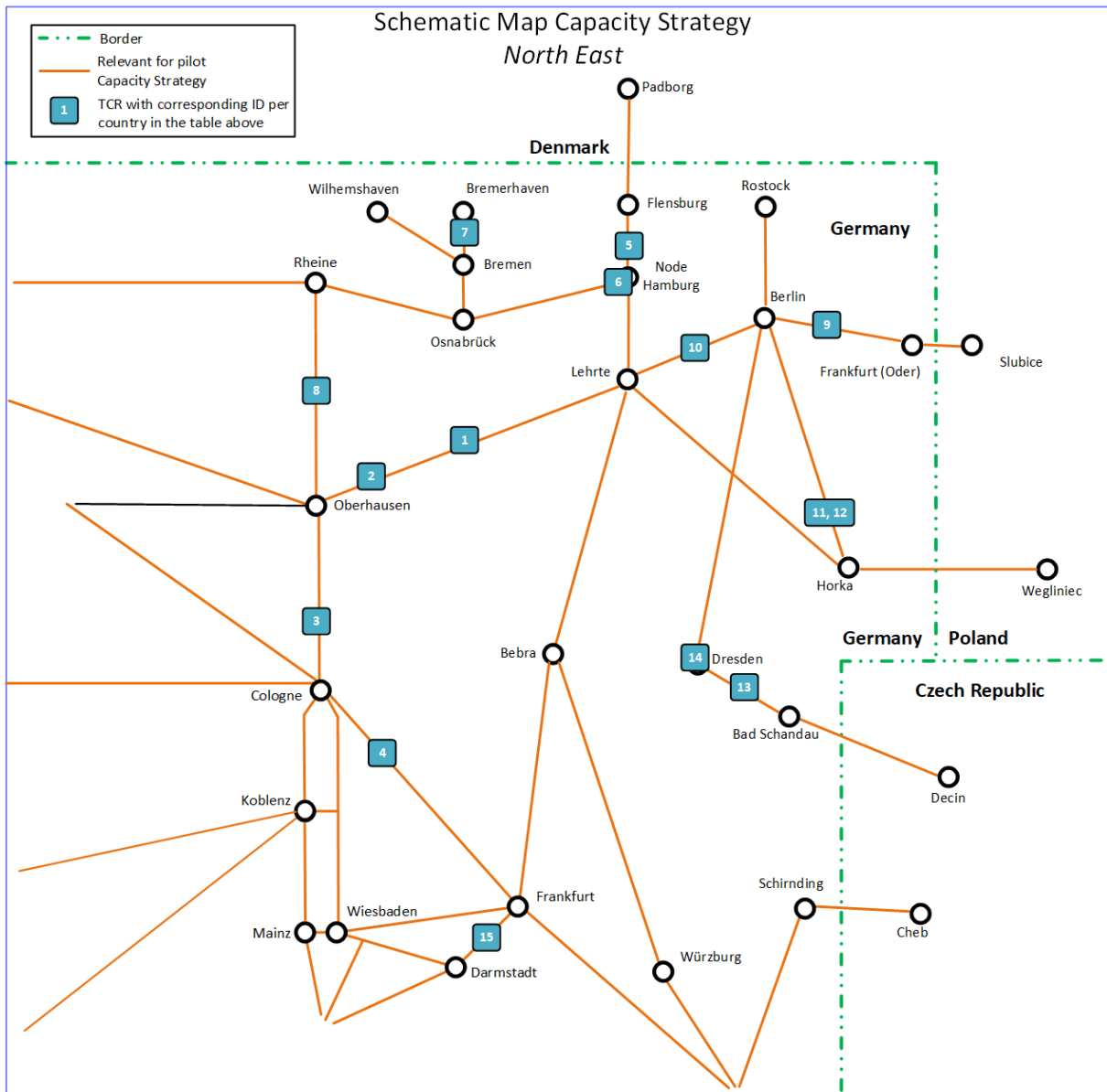


Figure 8: Schematic map TCRs North West



**Figure 9: Schematic map TCRs North East**

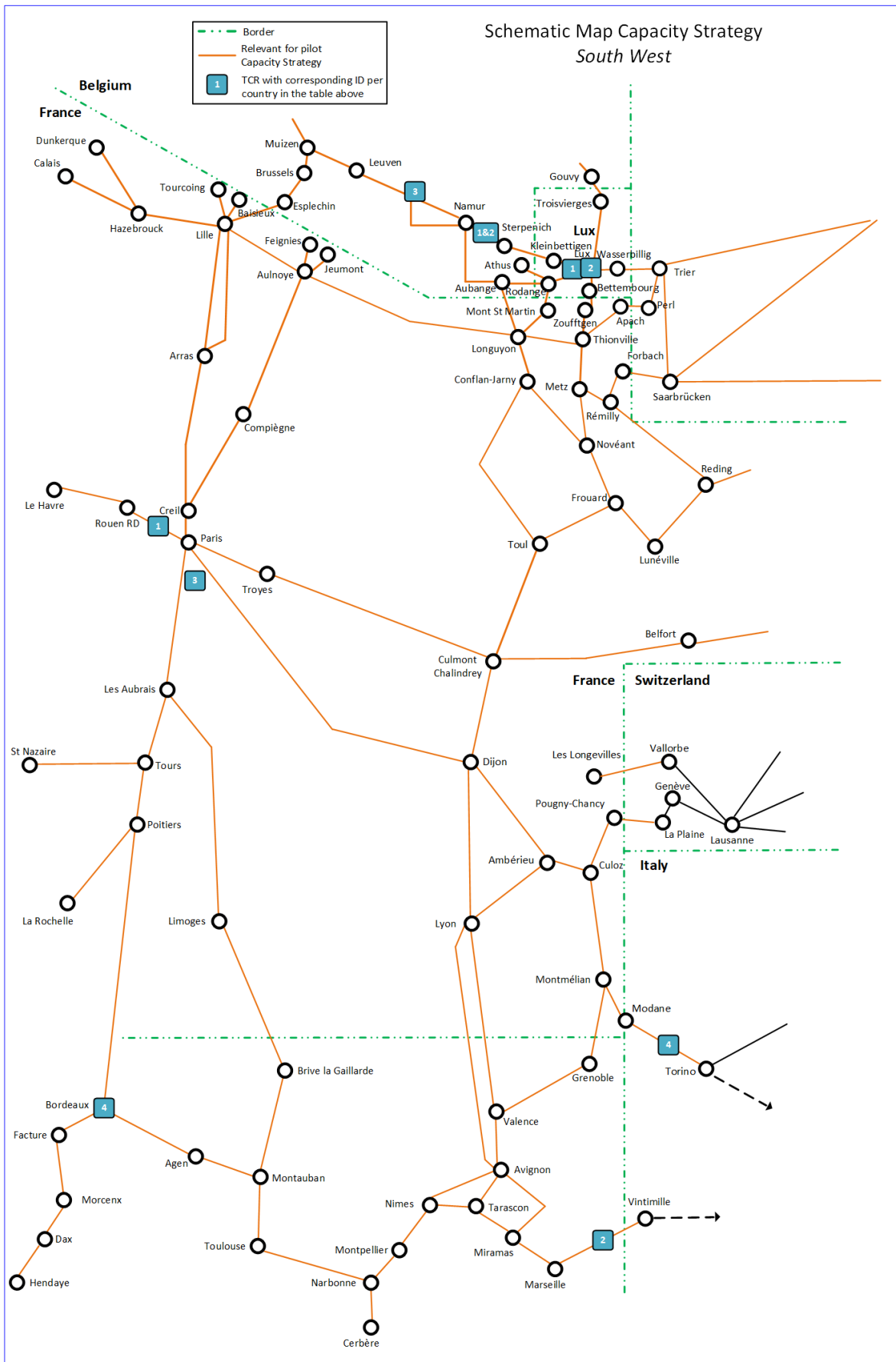


Figure 10: Schematic map TCRs South West

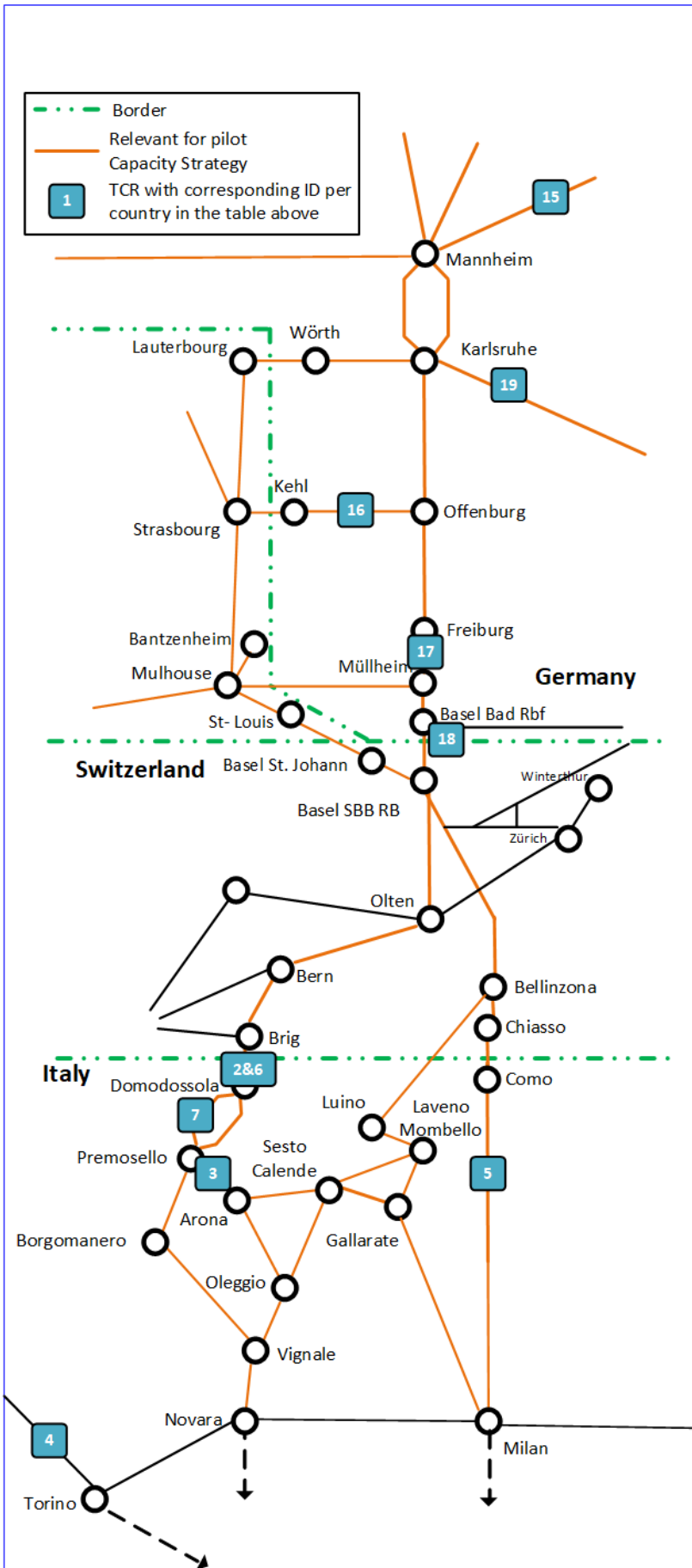


Figure 11: Schematic map TCRs South

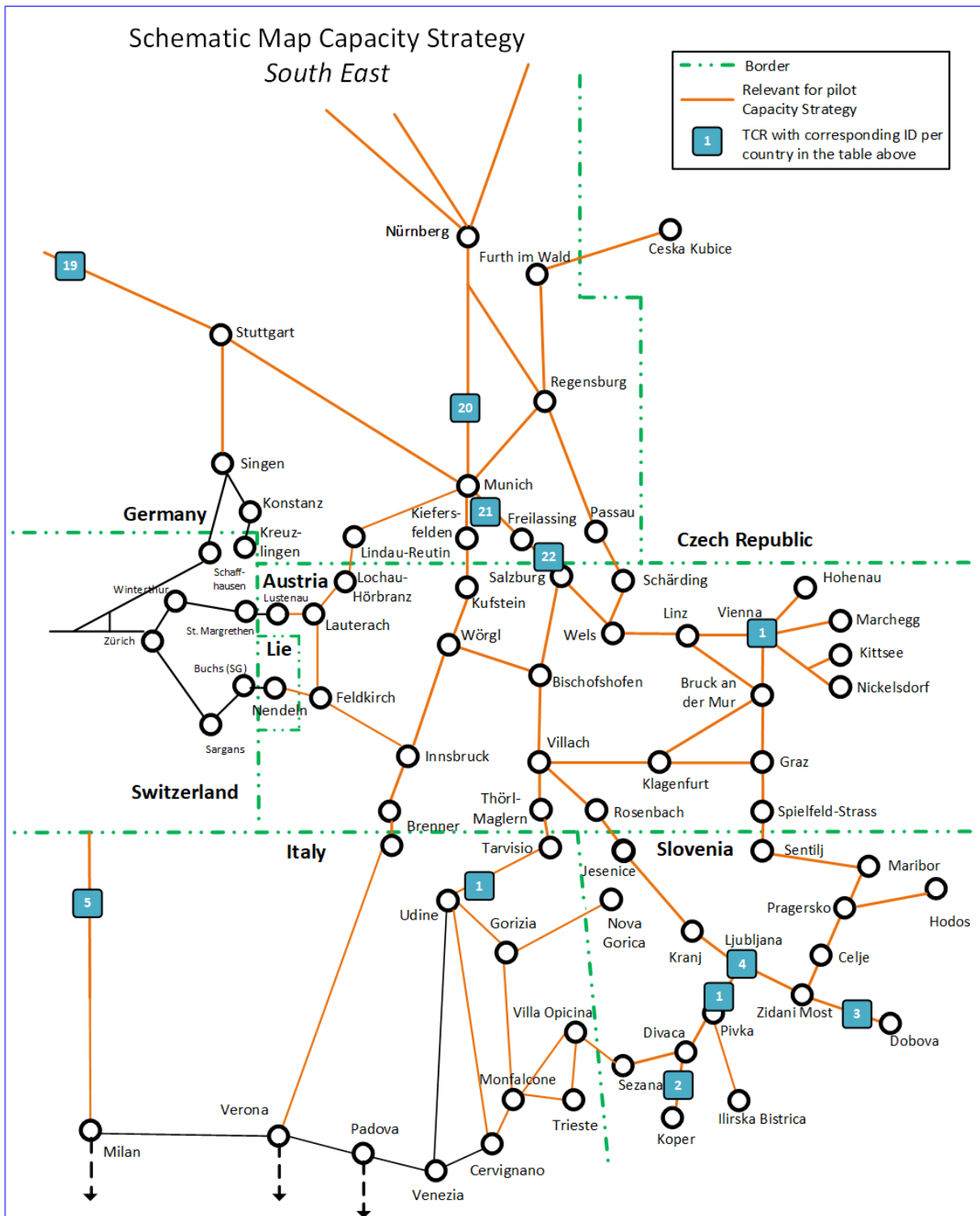


Figure 12: Schematic map TCRs South East



## 3. Expected Traffic Flows and Traffic Planning

### 3.1 General Principles

Unlike the previous Capacity Strategies, traffic flows in the present document are not only quantified at border points but to the node(s) unto which traffic volumes are expected to stay stable. Figures derive from national estimates and respond to no methodology that would be common to all involved Infrastructure Managers. Table 1 gives an overview of the dominating approaches. Chapter 3.2. describes these approaches and Chapter 3.3. provide details on national specificities.

Unless stated otherwise, the figures are harmonized and correspond to average values per traffic type per daytime hour, without a differentiation between peak and off-peak hours and without the consideration of TCRs.

The displayed figures provide for Timetable 2027 a non-binding average bookable capacity per hour for respectively long-distance passenger, regional passenger, and freight traffic.

Further assessment and a more detailed differentiation will be conducted while preparing the Capacity Model and the Capacity Supply.

	BE	NL	LU	DE	FR	CH	AT	IT	SI
Level of bindingness									
Market consultation		x	x	x	x	x			x
Past timetables updated with growth forecasts			x		x				
National capacity concept				x		x			
Hybrid approach	x	x					x	x	x

Table 4: Approaches for evaluation the traffic flows for the Capacity Strategy

### 3.2 Approaches for evaluating traffic flows in the Capacity Strategy and further in the Capacity Model

Depending on the data available at national level and its format, two approaches can be identified throughout the networks covered by the present Capacity Strategy that may come out mixed here and there in hybrid alternatives.

A largely shared characteristic of those approaches is the scaling of volumes at a plausible middle value that leaves some margin for short notice needs or not standardizable capacities to be accommodated in subsequent allocation phases. The Swiss Infrastructure Managers, as an exception, work with maximum capacity volumes (= Maximum quantity of train paths secured for one type of transport).

### 3.2.1 Directly quantified traffic volumes using past timetables updated with growth forecasts

Past timetables deliver one possible data basis. Depending on the network, the reference timetable may be the last available before delivering the Capacity Strategy, for e.g. the Annual Timetable 2024 for the Capacity Strategy 2027, or the two or three last Timetables from which a plausible middle value and/or a trend will be deducted.

Looking forward, this approach updates past data by taking into consideration growth prognosis

That approach is entirely conducted specifically for delivering the Capacity Strategy and is followed by Infrabel, ACF/CFL and SNCF Réseau.

### 3.2.2 Pre-existing capacity concepts aggregated to deliver traffic volumes

Another approach consists in using pre-constructed capacities delivered as part of already established timetable processes and seen as the best possible basis for estimating volumes expected to be shown in the Capacity Strategy.

Following that approach, capacities are “counted” and allocated to the market segments to be displayed in the Capacity Strategy.

This approach elaborates on pre-existing, national process steps. It is followed by DB Netz.

### 3.2.3 Hybrid

Both approaches mentioned above may be mixed in different ways.

An estimation of volumes for the Capacity Strategy on basis of past Timetables and growth forecasts may be checked against their plausibility (“can these volumes indeed be translated in active paths?”) by means of standard sample capacities that provide a first step towards the Capacity Model and the Capacity Supply. This approach is for example followed by ProRail.

The use of standard sample capacities as an underlying data basis may also defer depending on the market segment or the degree of congestion of a line (RFI).

As regards ÖBB Infrastruktur, a hybrid approach, using growth forecasts as well as microscopic capacity concepts (“network usage plans”) is taken.

## 3.3 National Specificities

### **Infrabel**

Historical data for defining traffic flows in the present Capacity Strategy combines:

- a growth prognosis for the entire network based on real train runs divided into five daily timeframes as from Timetable 2018:
  - the two peak hours 06:00 - 09:00 and 16:00 - 19:00
  - daytime: 09:00 - 16:00
  - evening: 19:00 - 22:00
  - nighttime 22:00-06:00
- planned and finalized train runs over the last 3 timetable years, including evolutions detected.

Both models are then compared to make final decisions per line or O/D.

## **ProRail**

The starting point for the traffic flows for timetable 2027 is the allocated timetable 2024, including the intended developments in both passenger and freight traffic up to and including 2027. Thereby we use the intended Medium Term (MLT) product steps, which are based on:

- Public Service Obligations (PSO's)
- Requests of railway undertakings
- Timetable adjustments because of new infrastructure which becomes available until 2027
- Timetable adjustments because of major TCR's at the start of TT2027 or which will be valid for a large part of 2027
- Growth forecasts for freight traffic, from which we derive the number of freight paths required per origin-destination relationship.

The number of trains per category is indicated for the busiest hour, which is usually the rush hour (06:30 - 09:00 and 16:00 - 18:30 from Monday till Friday). Trains that run only 1 or a few times a day and don't fit in foreseen train paths, are not included separately in this capacity strategy. These trains are included in the capacity model, the next TTR phase. In addition, there are train paths that cannot be used every hour of the day due to exclusions with other trains on a part of the route, due to bridge openings, due to maintenance windows or other TCR's, or due to other restrictions like noise or infrastructure limitations.

For freight traffic, we only include train numbers for commercial freight trains in this TTR phase. This does not include individual locomotives and trains of transporting contractors. Furthermore, freight trains in the special transport category (e.g. out of gauge, like military transport) are in this phase only taken into account for the number of freight trains, but we cannot guarantee that they fit in the specified train paths.

## **ACF/CFL**

The figures take into consideration the impact of the transformation of the national network. For passenger traffic, the Ministry of Mobility and Public Maintenance defined the forecast until 2035 in the National Mobility Plan 2035<sup>4</sup>.

For freight traffic, the future demand has been predicted based on discussions with the freight customers. A more detailed prognose is expected to be provided with CNAs (Capacity Needs Announcements) at the next planning stage.

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<sup>4</sup> Published at <https://mmt.p.gouvernement.lu/fr/dossiers.gouvernement%2Bfr%2Bdossiers%2B2022%2Bpnm2035.html>

## **SNCF Réseau**

To present the Capacity Strategy, we are using the reticular documents, elaborated in one hand with our historical data, and on the other hand with the forecasts provided from the marketing department, in link with our main business partners. We share then these data with our neighbors, to coordinate the result.

## **DB Netz AG**

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 mKoK<sup>5</sup> (Medium-term concept for optimized capacity utilization) elaborated on previous Deutschlandtakt-planning processes, Timetable 2021 as well as on customer input on planned changes or additional trains compared to Timetable 2021. It applied primarily to Timetable 2024 and has been used in Germany to drive the allocation of framework contracts for Timetables 2024 and 2025. It has been furthermore the best available data basis for the present Chapter in the Capacity Strategy 2025.

Elaborating on this first experience, an mKoK 2026-2028 will be delivered until April 2024. Already available mKoK-data delivers the basis for the Capacity Strategy 2027 and is cross-checked if needed against the latest available technical basis timetable (“technischer Basisfahrplan” or “TBF”, a DB Netz-internal, TCR-free timetable used primarily for ATT-relevant TCR-planning).

## **ÖBB Infrastruktur AG**

The infrastructure for the corresponding timetable year is considered to determine traffic flows. The 2023-infrastructure is supplemented by:

- Known amendments to the infrastructure for the timetable 2027 (s. Chapter 1)
- Known TCRs that presumably must be considered for the timetable 2027 (s. Chapter 2)

Traffic flows are evaluated based on the supposed infrastructure for Timetable 2027. Consequently, the 2023-timetable is supplemented by:

- Known requests for train paths for the scheduled timetable for 2024
- Known expansions of services in passenger traffic for the timetable 2027 (For e.g., pre-announced PSO6-traffic)
- Approx. 8% increase for freight traffic 2023-2027, rounded up to entire trains (2% per year)
- Adjustments in the scheduled timetable that are triggered due to new infrastructure (For e.g., commissioning construction and expansion plans)
- Adjustments in the scheduled timetable that are triggered due to TCRs that must presumably be considered for the 2027-timetable.
- Additionally, Information is gathered from network usage plans. Network usage plans include system paths for all relevant market segments. These system paths are generated using microscopic simulation. Network usage plans are developed for

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<sup>5</sup> Published at <https://fahrweg.dnnetze.com/fahrweg-de/kunden/nutzungsbedingungen/nutzungsbedingungen/rahmenvertrag-1369214>

<sup>6</sup> PSO: „Public Services Obligations“

timetable years with significant changes in traffic volume or travel times (For e.g., opening of major new lines)

## **RFI**

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 (path catalogue).

As a general statement, on single-track corridor lines, which have a high degree of capacity saturation, path timetable and available channels are defined by a clock-face model that considers pre-determined dwelling times at the cross-border stations, therefore paths are expected to bear a strong resemblance to what provided by the path catalogue.

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 consider all market needs.

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 2027.

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

## **SŽ Infrastruktura**

An evaluation approach based on historical timetables is used in the preparation of capacity strategies and models. The reference timetable for the 2027 capacity strategy is timetable 2023. When determining the volume of traffic, the average value for the average working day of the week is taken into account. In a later phase, the expected traffic growth based on traffic flow forecasts can also be taken into account.

The number of trains is coordinated with neighboring IMs and corresponds to average values according to the type of traffic per hour, without distinguishing between peak and off-peak periods. The figures shown show the non-binding average hourly available capacity for long-distance passenger, regional passenger and freight traffic for timetable 2027. Further assessment and more detailed differentiation will be carried out during the preparation of the capacity model and capacity supply.

When planning train paths, the available infrastructure capacity is allocated by the market segments, taking into account current traffic flows and planned capacity constraints. After determining the limits of use necessary for the implementation of large-scale engineering works, the available capacities are classified by segment and level of priority:

- Capacities for long-distance passenger trains within the framework of the implementation of the public service obligation.
- Capacities for regional passenger trains within the framework of the implementation of the public service obligation.
- Capacities for freight trains on Rail Freight Corridors (PaPs) and freight trains with known running days.

The possible offer of Rolling Planning capacity, starting from the predefined and pre-built capacity catalogue, will depend on the regulatory developments currently being proposed at European level for timetable 2027.

## **SBB / BLS**

The NNP 2027<sup>7</sup> already covers the TTR requirements for the "Transport planning and traffic flows" sections. In Switzerland, the various needs of the market and of stakeholders are ascertained at a very early stage. Approximately every 10 years, the federal government commissions an expansion phase. This expansion phase is planned in partnership with the various stakeholders - the federal government, cantons, sectors of the industry (including terminals and service facilities), RUs, etc. - under the leadership of the Federal Office of Transport (FOT). The outcome is an agreed service concept including the essential infrastructure measures. Parliament approves the expansion phase including the service concept and allocates the financial resources for the necessary infrastructure. The network usage concept (NNK) secures the train paths required for the long-distance, regional and freight services. Any stakeholder affected can request changes to the service concept during the change management process conducted annually on behalf of the federal government. The network usage plan (NNP) describes in written form the planned capacity distribution between long-distance, regional, freight and other traffic types (e.g. car-carrying trains) in the implementation years up to X-6 years in advance. Stakeholders are also consulted annually in the NNP process by means of a preliminary technical review and are given the opportunity to contribute accordingly.

### **3.4 Introduction to the Capacity Model**

Infrastructure Managers are expected to export their Capacity Model 2027 into ECMT until mid-June 2025. Following information can be shared at this stage:

	<b>BE</b>	<b>NL</b>	<b>LU</b>	<b>DE</b>	<b>FR</b>	<b>CH</b>	<b>AT</b>	<b>IT</b>	<b>SI</b>
<b>Conduction of CNAs</b>	X	X		X			X		X
<b>Capacity Model without TCRs</b>	X	X	X	X	X	X	X	X	X
<b>Acceptance by third party (e.g.: ministry of Transportation)</b>			X						

#### ***Train parameters***

The Infrastructure Managers party to the present Capacity Strategy will deliver their Capacity Models using the following categories that can be roughly defined as in Tables 6 and 7. However, the displayed values may deviate from network section to network depending on regional conditions and agreements with the RUs (e.g. for regional traffic). The values trend towards an experience-based, average value and are therefore only indicative.

<sup>7</sup> <https://company.sbb.ch/de/sbb-als-geschaeftpartner/leistungen-evu/onestopshop/trassen.html>

Category	Country/IM	stopping pattern	Referent trainset speed	Maximum trainset length
<b>High-speed trains</b>	NL, DE, IT, FR, BE	connects main stations exclusively	300 km/h	400m
<b>Long distance trains</b>	CH		250 km/h	400m
	DE, AT, FR, BE		230 km/h	400m
	DE, IT, AT, BE, CH		200 km/h	400m
	NL		200 km/h	340m
<b>Express regional trains</b>	IT, AT, SI, BE, CH	does not serve all stops in section	160 km/h	250m / CH = 300m
	NL, LU, BE		140 km/h	
<b>Regional trains</b>	IT, AT, SI, FR, BE, CH	Serves all stops in section	160 km/h	250m / CH = 300m
	NL, LU, BE		140 km/h	

**Table 5: Basic categories and parameters passenger trains**

Category	Country/IM	Maximum trainset weight	Maximum trainset length	expected speed
<b>Standard</b>	DE, LU	1.600t	650m	120 km/h
<b>Standard</b>	DE, IT, FR, LU	1.600t*	740m	100 km/h
<b>Standard</b>	DE, LU, BE	2.000t	740m	100 km/h
<b>Standard</b>	DE, IT, LU, BE	1.600t*	740m	100 km/h
<b>Standard</b>	DE, LU	2.000t	740m	100 km/h
<b>Special</b>	DE	very heavy	740m	very slow
<b>Standard</b>	LU	2.200t	690m	100 km/h
<b>Standard</b>	NL	2.200t	690m	95 km/h ***
<b>Special</b>	NL	4.000t	690m	95 km/h ***
<b>Standard</b>	AT	1.600t**	650m**	100 km/h
<b>Standard</b>	SI, LU, BE	1800t*	600m	100 km/h
<b>National Standard</b>	CH	1.600t	750m	100 km/h
<b>National Express</b>	CH	800t	400m	120 km/h
<b>Transit North-South</b>	CH	1.600t	750m	100 km/h
<b>Transit South-North</b>	CH	1.400t	750m	100 km/h

\* higher mass can be accepted at certain conditions up to 2.500t in Italy and Slovenia

\*\* maximum parameters in Austria may vary significantly on certain lines (e.g. mountain lines)

\*\*\* planned speed is 95 km/h, maximum speed is 100 km/h

**Table 6: Basic categories and parameters freight trains**

## CNAs

The collection of market needs apply may take place either specifically for the Capacity Model, wherever the process appears mature enough based on learnings from pilots (s. for e.g. Infrabel) or as a part of otherwise conducted national processes to deliver a capacity

concept that will provide the basis for the Capacity Strategy and the Capacity Model (s. for e.g. DB Netz or SBB and BLS Infra).

### International harmonization

International harmonization takes place ahead of the publication of a draft Capacity Strategy as well as of the Capacity Model for consultation and is all the more so crucial, that IMs use different data basis depending on pre-existing national processes.

In case figures do not harmonize, an agreement will be sought for preferably towards the common denominator, i.e. the lowest figure.

## 3.5 Traffic flows

The figures for the border points below must be considered as schematic network graph

Legend for the traffic flows:

Hourly service	Not every hour	
		Long distance / High speed passenger train
		Regional (express) passenger train
		Freight train

Border points Belgium - Netherlands	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
<b>Essen (BE) – Roosendaal (NL)</b> 	0	1	3 north to south 2 south to north
<b>Meer (BE) – HSL Breda grens (NL)</b> 	4	0	0



<b>Visé (BE) – Eijsden (NL)</b>			
	0	2	1

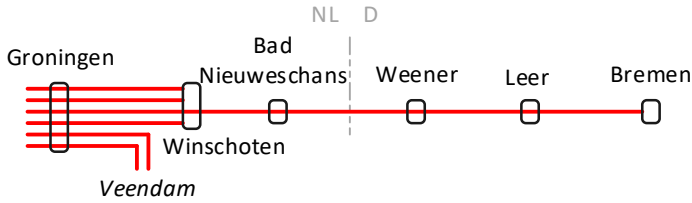
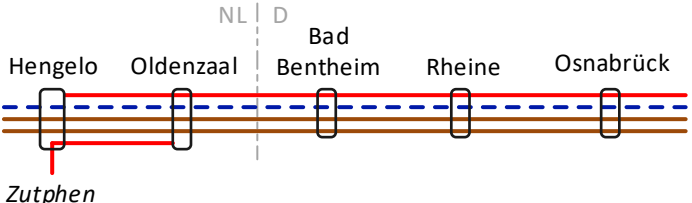
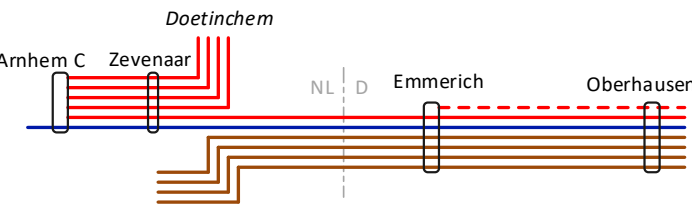
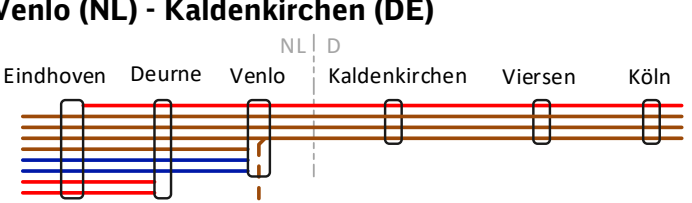
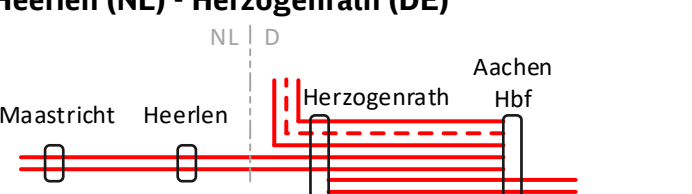
Border points Belgium – Luxembourg	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
<b>Aubange (BE) – Rodange (LU)</b> 	0	0	1
<b>Athus (BE) – Rodange (LU)</b> 	0	2	1
<b>Sterpenich (BE) – Kleinbettingen (LU)</b> 	1	2	0
<b>Gouvy (BE) – Troisvierges (LU)</b> 	1	0	0

Border points Belgium – France	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
<b>Quévy (BE) – Feignies (FR)</b> 	0	0,5	0,5
<b>Mouscron (BE) – Tourcoing (FR)</b> 	0	0,5	0,5

<b>Erquelinnes (BE) – Jeumont (FR)</b> 	-	0	0,5
<b>Blandain (BE) – Baisieux (FR)</b> 	-	0,5	0
<b>Aubange (BE) – Mont-St. Martin (FR)</b>	0	0	0
<b>Esplechin (BE) – Wannehain (FR)</b> 	5	0	0

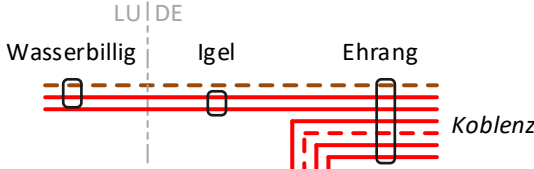
Border points Belgium - Germany	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
<b>Montzen (BE) - Aachen West (DE)</b> 	0	0	3*
<b>Hergenrath (BE) - Aachen Süd (DE)</b> 	1	2	0

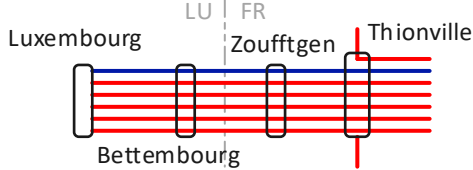
\* Up to five freight train paths per hour may be possible.

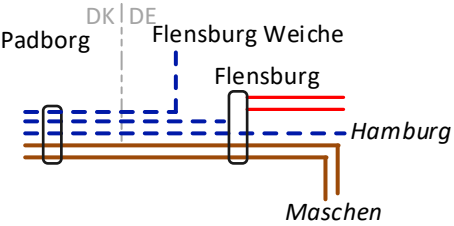
Border point Netherlands - Germany	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
<b>Bad Nieuweschans (NL) – Weener (DE)</b> 	0	1	0
<b>Oldenzaal (NL) - Bad Bentheim (DE)</b> 	0,5	1	2
<b>Zevenaar (NL) - Emmerich (DE)</b> 	1*	1	4
<b>Venlo (NL) - Kaldenkirchen (DE)</b> 	0	1	3
<b>Heerlen (NL) - Herzogenrath (DE)</b> 	0	2	0**

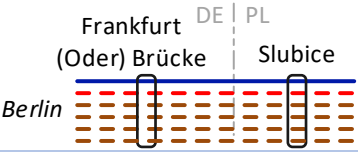

\* Not all hours of the day possible. Will be further detailed in Capacity Model phase.

\*\* In principle, path capacity allows 8 freight trains per direction between approx. 22:00 and 6:00. Currently not feasible due to noise restrictions in the Netherlands. If a freight train runs in other hours, a regional passenger train has to be cancelled.

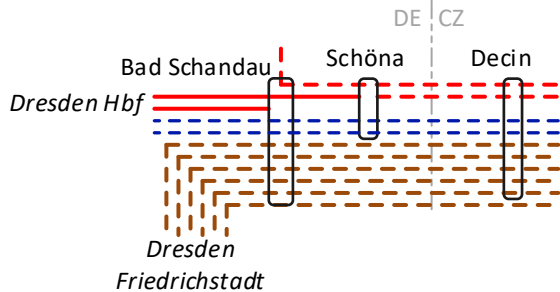

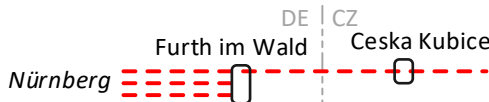
Border point Luxembourg - Germany	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
<b>Wasserbillig (LU) – Trier (DE)</b> 	0	2	1

Border points Luxembourg - France	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
<b>Rodange (LU) - Mont St. Martin (FR)</b>	-	2	1
<b>Bettembourg (LU) - Zoufftgen (FR)</b> 	1	6	1


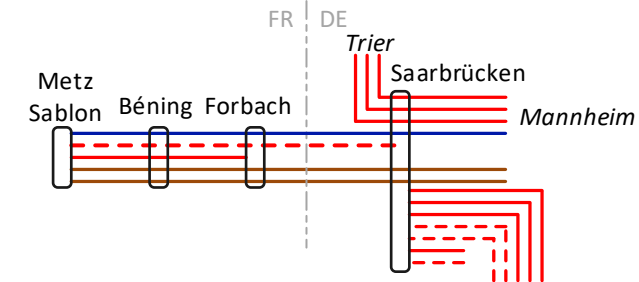
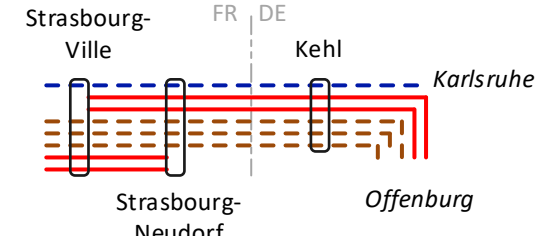
Border point Germany - Denmark	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
<b>Flensburg Weiche (DE) - Padborg (DK)</b> 	1,5	0	2

Border points Germany - Poland*	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
<b>Frankfurt (Oder) Brücke (DE) - Slubice / Rzepin (PL)</b> 	1	0,5	2
<b>Horka (DE) - Wegliniec (PL)</b> 	0	0	1

\* Due to PKP-PLK planning to implement TTR at a later stage, the numbers displayed in this table have not been aligned for TT 2027 and are solely endorsed by DB Netz.

Border points Germany - Czech Republic*	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
<b>Bad Schandau (DE) - Decin (CZ)</b> 	1	1	3
<b>Schirnding (DE) - Cheb (CZ)</b> 	0	1	0,5
<b>Furth im Wald (DE) - Ceska Kubice (CZ)</b> 	0	0,5	0

\* Due to SZ planning to implement TTR at a later stage, the numbers displayed in this table have not been aligned for TT 2027 and are solely endorsed by DB Netz.

Border points France - Germany	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
<b>Apach (FR) - Perl (DE)</b> 	0	0,5	0,5
<b>Metz Sablon (FR) - Saarbrücken (DE)</b> 	0,5	1	2
<b>Strasbourg (FR) - Kehl (DE)</b> 	0,5	2	1,5
<b>Mulhouse (FR) - Müllheim (DE)</b>	0	1	1

<p><b>Wörth (DE) - Lauterbourg (FR)</b></p>	0	1	0

Border point Germany - Switzerland	passenger train paths per hour per direction		freight train paths per hour
	long distance	regional	
<p><b>Basel Bad/ Basel Bad Rbf (DE) - Basel SBB/ Basel SBB RB (CH)</b></p>	1,5	3	5*

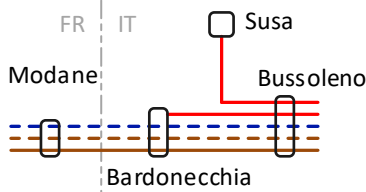
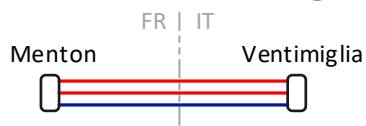
\* An increase to eight freight train paths per hour will only be possible with four-track strong trailer (not before 2028).

Border points Austria - Germany	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
<p><b>Kufstein (AT) - Kiefersfelden (DE)</b></p>	3	2	3

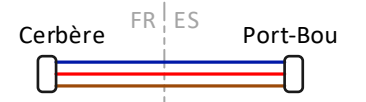



<p><b>Salzburg (AT) – Freilassing (DE)</b></p>	4	6	2*
<p><b>Schärding (AT) – Passau (DE)</b></p>	0,5 + non systematic	1	3,5
<p><b>Lochau-Hörbranz (AT) – Lindau-Reutin (DE)</b></p>	0,5	2 + non systematic	0,5

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

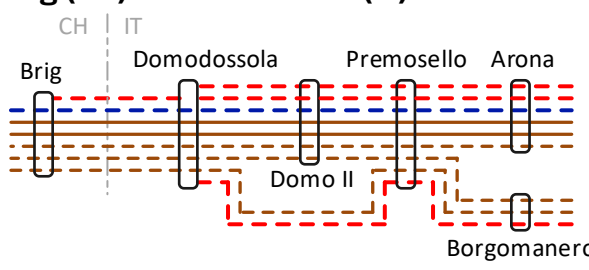
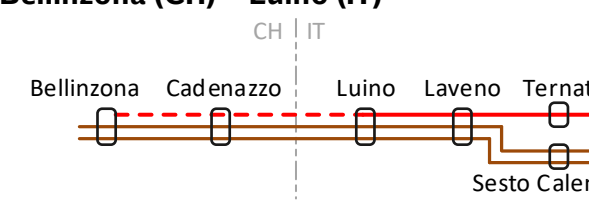
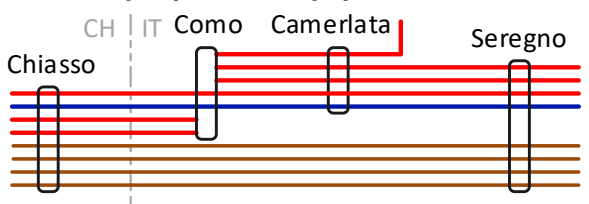
Border points France – Switzerland	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
<p><b>St. Louis (FR) – Basel St. Johann (CH)</b></p>	0,5	4	2
<p><b>Pougny-Chancy (FR) – La Plaine (Genève) (CH)</b></p>	0,5	3	0
<p><b>Les Longevilles (FR) – Vallorbe (CH)</b></p>	0,5	0	0

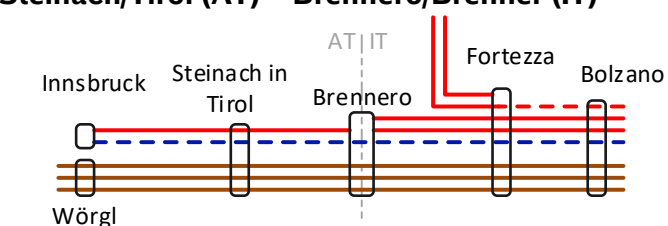
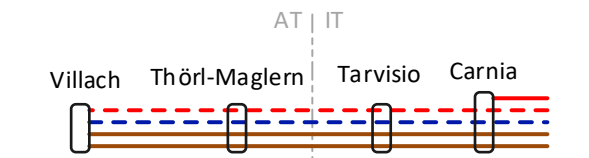
Border points France - Italy	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
<b>Modane (FR) – Bardonecchia (IT)</b> 	0,5	0	1,5
<b>Menton (FR) – Ventimiglia (IT)</b> 	1*	2*	0
<b>TELT tunnel Lyon (FR) – Torino (IT)</b>	-	-	-

\* All regional trains and most long distance trains terminate at the border station Ventimiglia.

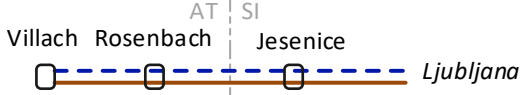
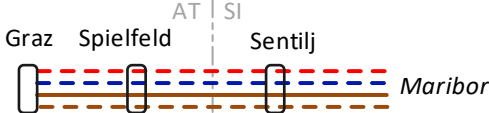
Border points France - Spain	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
<b>Cerbère (FR) – Port Bou (ES)</b> 	1	2	1
<b>Hendaye (FR) – Irun (ES)</b> 	0	0	1
<b>Le Perthus (FR) – El Perthus (tunnel TP Ferro) (ES)</b> 	1	-	0,5
<b>La Tour de Carol (FR) – Puigcerdá (ES)</b> 	-	1	-

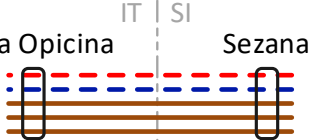



Border points Switzerland - Italy	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
<b>Brig (CH) – Domodossola (IT)*</b>  <p>*Handover point is at Domodossola, not at state border</p>	0,5	0	3,5
<b>Bellinzona (CH) – Luino (IT)</b> 	0	0,5	2
<b>Chiasso (CH) – Como (IT)</b> 	1	3	4

Border points Austria - Italy	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
<b>Steinach/Tirol (AT) – Brennero/Brenner (IT)</b> 	0,5	0*	3
<b>Thörl-Maglern (AT) – Tarvisio (IT)</b> 	0,5	0,5	2

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

Border points Austria - Slovenia	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
<b>Rosenbach (AT) – Jesenice (SI)</b> 	0,5	0	1
<b>Spielfeld-Strass (AT) – Šentilj (SI)</b> 	0,5	0,5	1,5

Border points Italy - Slovenia	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
<b>Villa Opicina (IT) - Sezana (SI)</b> 	0,5	0,5	3
<b>Gorizia (IT) – Nova Gorica (SI)</b> 	0	0	0,5

## **4. Validation & Publication**

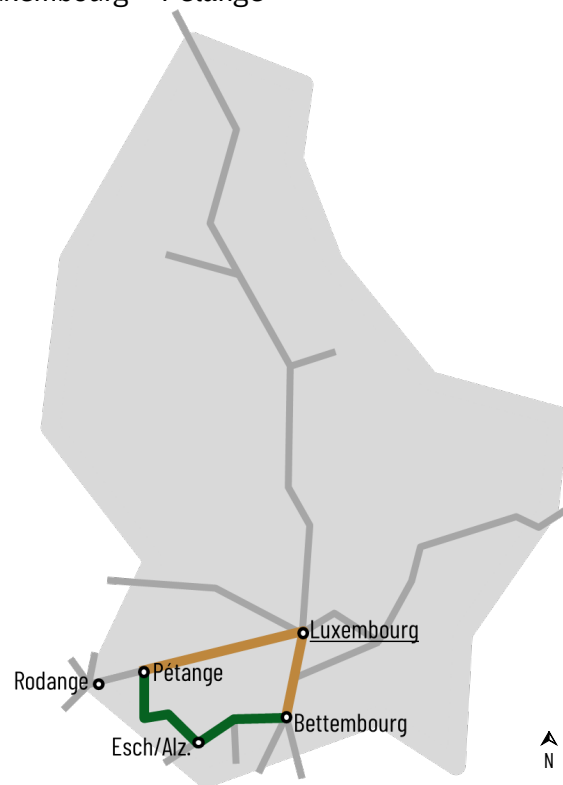
The present document adds to but doesn't replace national Capacity Strategies. It will be published by RNE on its own webpage accessible directly or by means of link from the page dedicated by each participating IM to its own Capacity Strategy.

## Annex 1 Connected areas where TCRs shall not be planned simultaneously

### ACF/CFL

In order to guarantee the traffic on the Rail Freight Corridor NSM, one of the following axes has to stay opened:

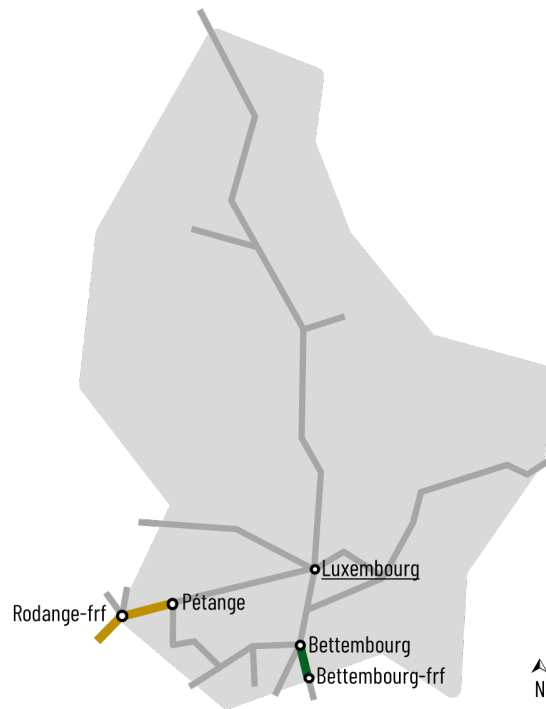
- Bettembourg - Esch/Alz. - Pétange
- Bettembourg - Luxembourg - Pétange



Closures on the segments Pétange - Rodange-frb1 and Bettembourg - Bettembourg-frf are coordinated with SNCF Réseau and Infrabel.

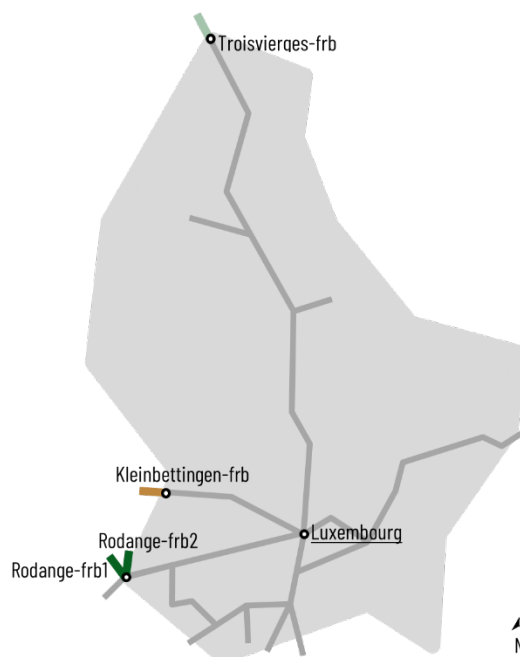
One of both border lines must stay open to allow the freight traffic to France:

- Bettembourg - Bettembourg-frf (French border)
- Pétange - Rodange-frf (French border)



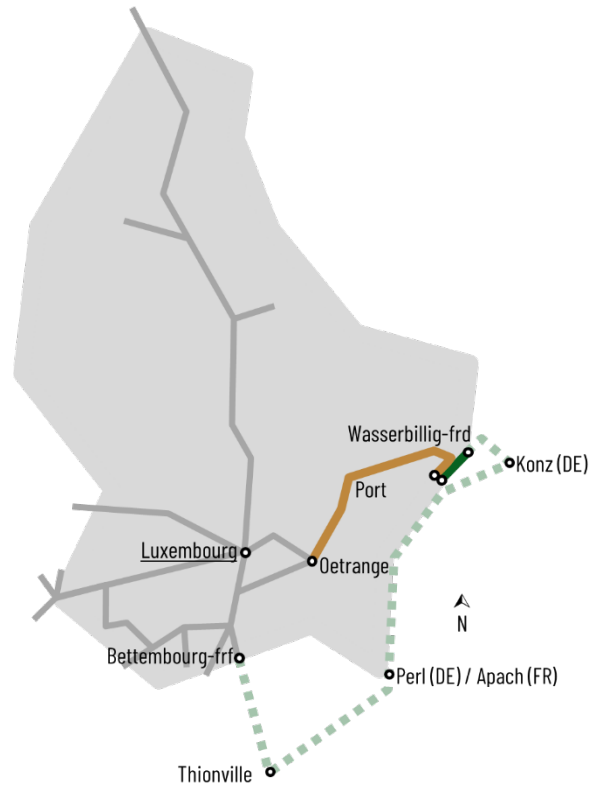
If two of the three following lines are impacted by TCRs, at least one must stay fully accessible to allow the freight traffic to Belgium:

- Luxembourg - Troisvierges-frb (Belgian border)
- Luxembourg - Kleinbettingen-frb (Belgian border)
- Luxembourg - Rodange-frb1 and Luxembourg - Rodange-frb2 (Belgian borders)



For the access to the Port Mertert, the closures on the following sections are incompatible:

- Port Mertert - Oetrange
- Port Mertert - Wasserbillig-frd (German border)
- If necessary, the access to Port Mertert can be discussed in trilateral coordination groups with DB Netz and SNCF Réseau.



One of both border lines must stay open to allow the freight traffic to Germany:

- Oetrange - Wasserbillig-frd (German border)
- Bettembourg - Bettembourg-frf (French border)

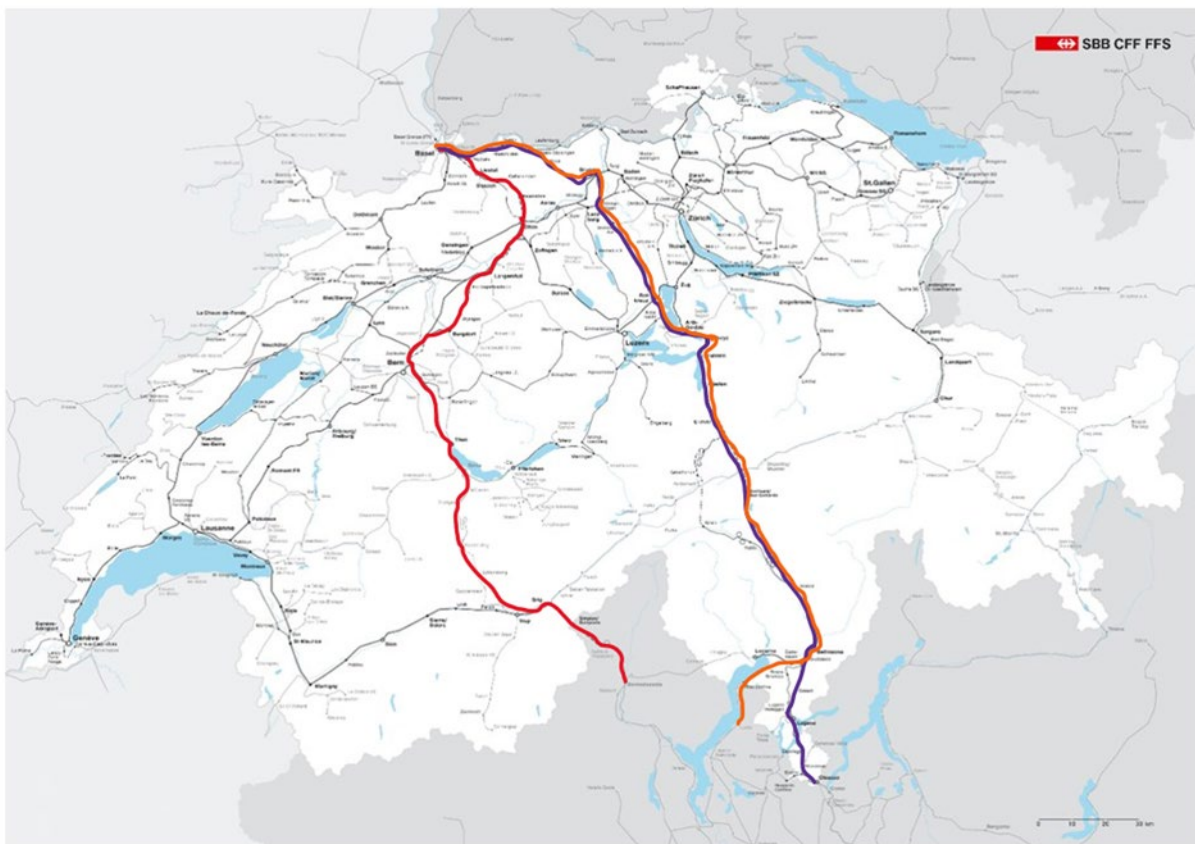


## SBB / BLS

In order to guarantee traffic on the RFC 1 rail freight corridor as far as possible, one of the following axes will be kept open. In specific cases (e.g. night Sat/Sun and Sun/Mon) alternative routes are not available. Due to total closure on both axis in the context of the minor demand.

- Basel - Lötschberg - Brig - Domodossola
- Basel - Gotthard - Bellinzona - Luino
- Basel - Gotthard - Bellinzona - Chiasso

Switzerland north-south transit axes.

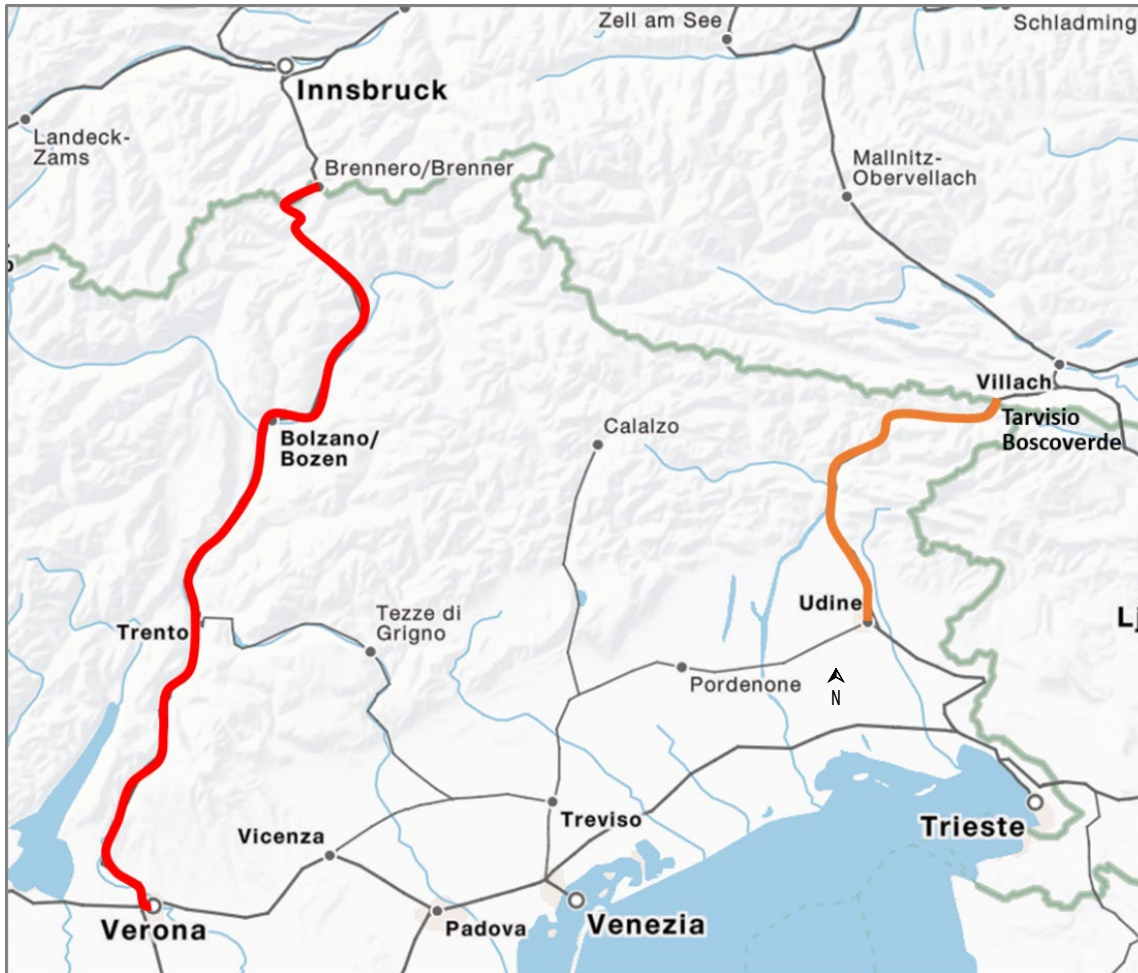


Closures on the Basel - Lötschberg / Gotthard - Italy segments are coordinated with RFI and generally ensure redundancy between axes.

## RFI

In order to guarantee the traffic on the Rail Freight Corridor RFC 3 and RFC 5, one of the following axles has to stay opened:

- Brennero - Bolzano - Verona
- Tarvisio Boscoverde - Udine



Closures on the segments Brennero - Bolzano - Verona and Tarvisio Boscoverde - Udine are coordinated with ÖBB and DB Netz.



In order to guarantee the traffic on the Rail Freight Corridor RFC 5 and RFC 6, one of the following axles has to stay opened:

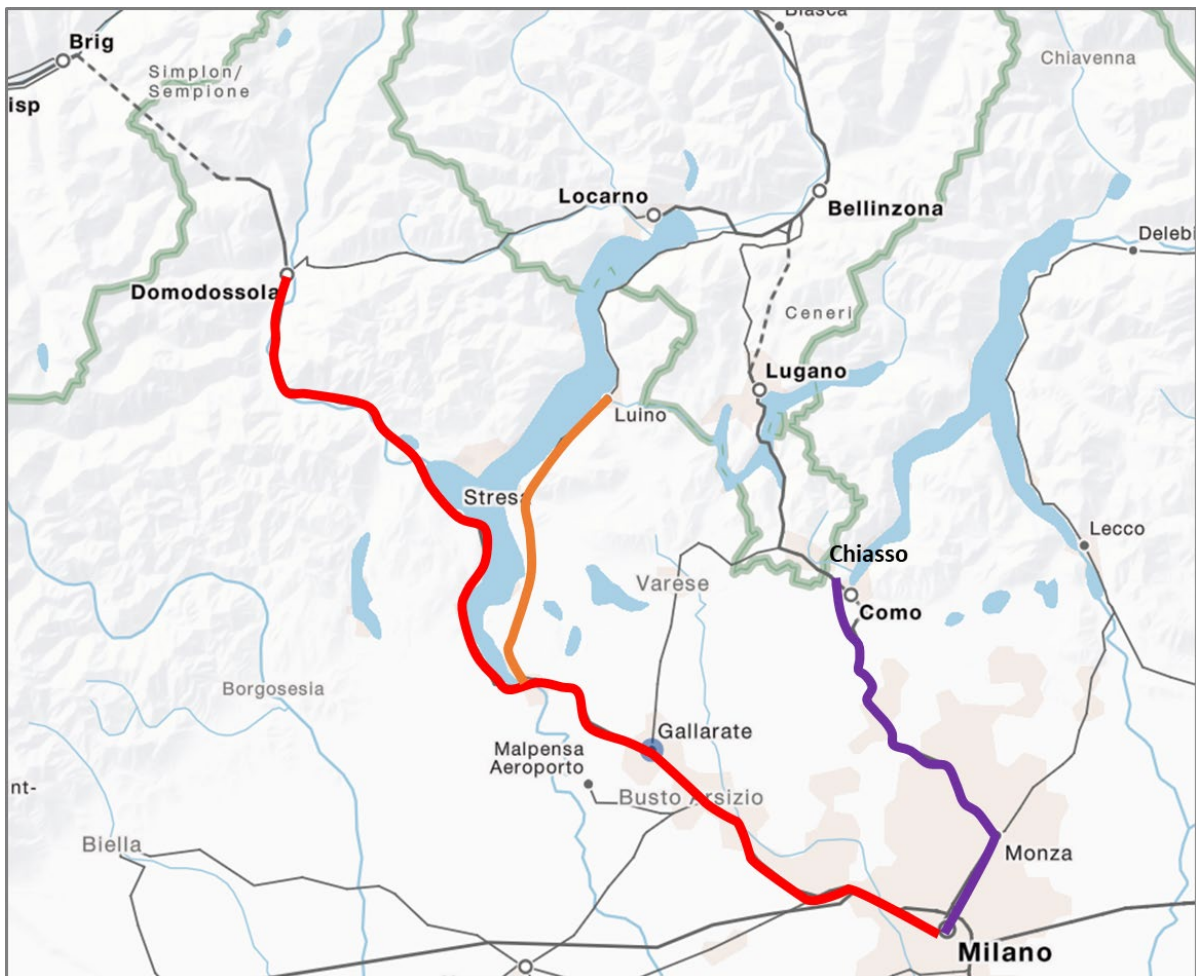
- Tarvisio Boscoverde - Udine
- Villa Opicina - Bv. Aurisina



Closures on the segments Tarvisio Boscoverde - Udine and Villa Opicina - Bv. Aurisina are coordinated with ÖBB and SŽ-Infrastruktura.

In order to guarantee the traffic on the Rail Freight Corridor RFC 1, one of the following axles has to stay opened:

- Domodossola - Gallarate - Milano
- Luino - Gallarate - Milano
- Chiasso - Monza - Milano

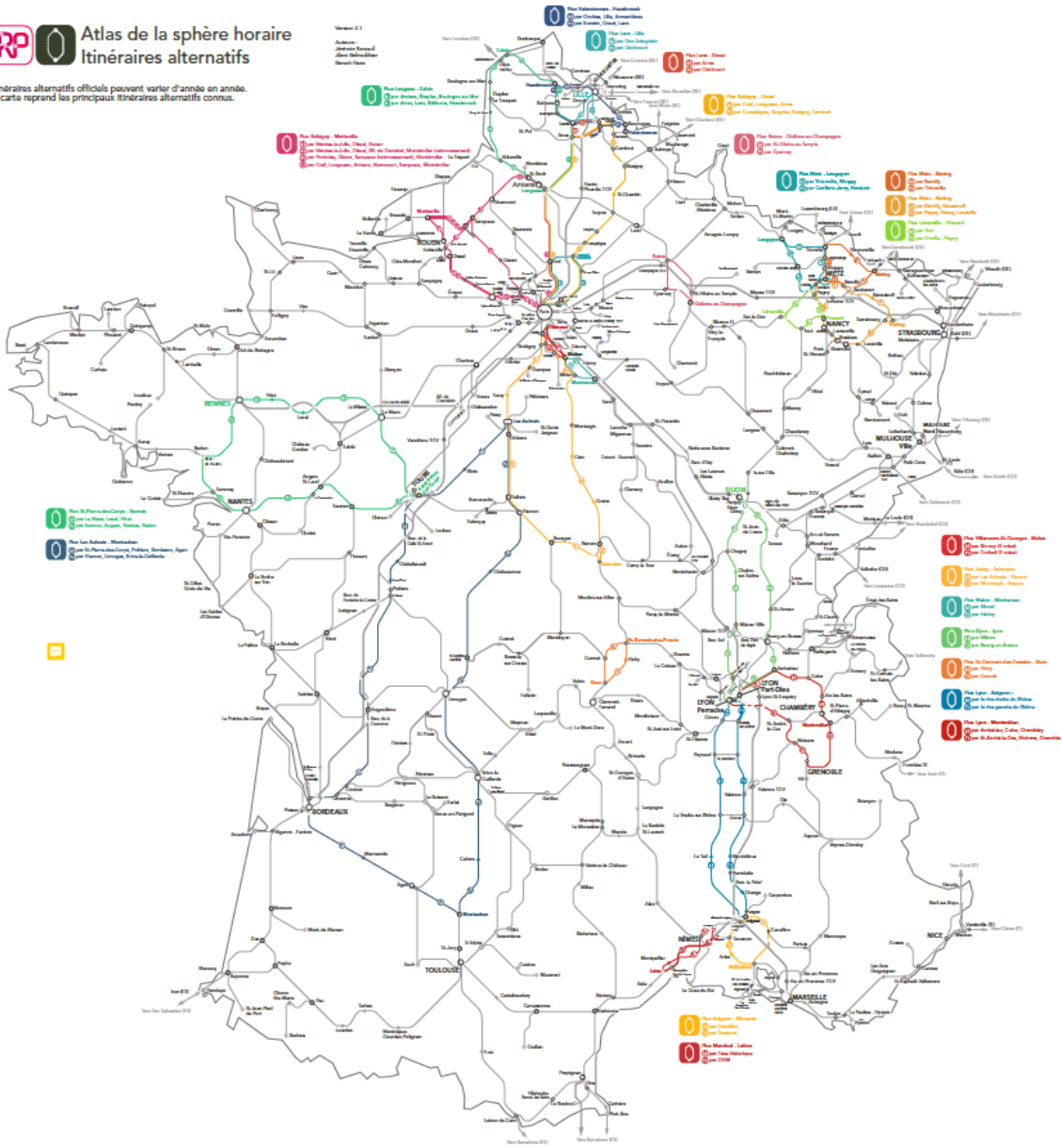


Closures on the segments Domodossola - Gallarate - Milano, Luino - Gallarate - Milano and Chiasso - Monza - Milano are coordinated with SBB Infrastruktur.

# SNCF Réseau

## Atlas de la sphère horaire Itinéraires alternatifs

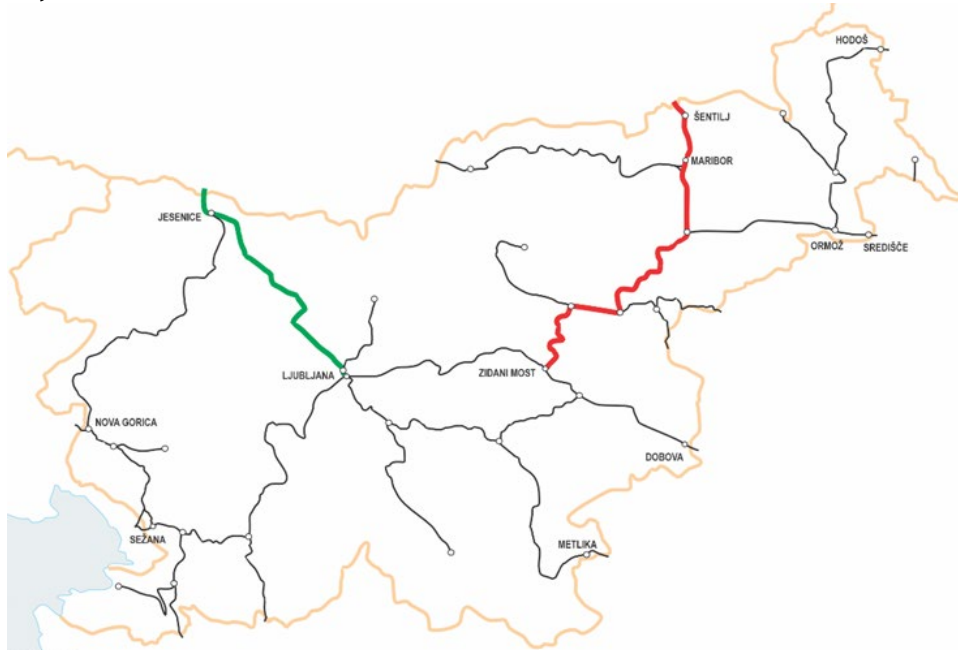
Les itinéraires alternatifs officiels peuvent varier d'année en année.  
Cette carte reprend les principaux itinéraires alternatifs connus.



## SZ Infrastruktura

In order to guarantee the traffic between Slovenia and Austria, one of the following axles has to stay opened:

- Ljubljana - Zidani Most - Maribor (Šentilj)
- Ljubljana - Jesenice border



Part of freight traffic from/to port of Koper can be rerouted across Italy.

In order to guarantee the traffic between Sežana and Jesenice, one of the following axles has to stay opened:

- Ljubljana - Jesenice
- Sežana - Nova Gorica - Jesenice



Part of traffic to the Italy can be rerouted via Austria.

In order to guarantee the traffic between Slovenia and Croatia, one of the following axles has to stay opened:

- Zidani Most - Dobova
- Ljubljana - Metlika and Ormož - Središče



In order to guarantee the traffic between Slovenia and Hungary, one of the following axles has to stay opened:

- Ormož - Hodoš
- Ormož - Središče

