Capacity Strategy 2028

Common document of
ProRail, ACF/CFL, SNCF Réseau, DB InfraGO AG, ÖBB Infrastruktur AG, RFI S.p.A,
SŽ Infrastruktura, SZCZ

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Table of content

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.
For the first time as a pilot the document is the result of a new approach which sees the participation of FTE and some EU railway companies.

In the long run, the present pilot helps collecting experience and building up know-how together with RailNetEurope (RNE) and Forum Train Europe (FTE) in view of the future European Regulation on the use of railway infrastructure capacity in the single European railway area [COM (2023) 443/2]. The first timetable with which the Regulation will be implemented is expected to be decided during 2025.

As of 2028 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 InfraGO, RFI, SZ Infra, SNCF Reseau SZCZ and ACF/CFL the present document is the reference document

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 2026 for Timetable 2028) and, for some of the first implementing IMs, the Capacity Supply (January 2027 for Timetable 2028) will be developed.

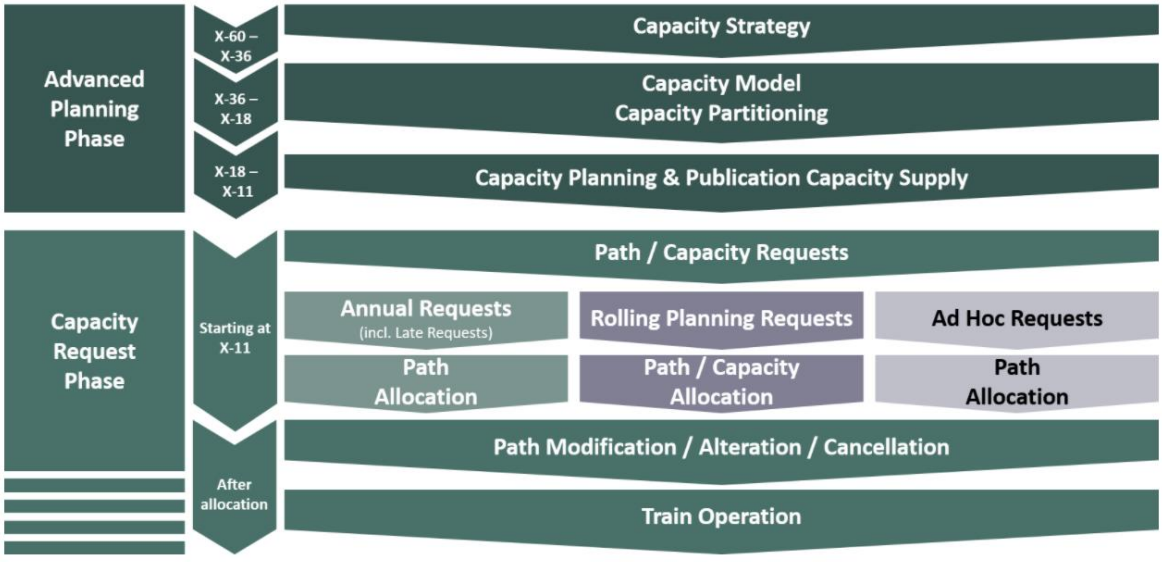

Figure 1: Steps of the TTR process (Source: RNE)

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[1] save the systematic publication of a national Capacity Strategy (s. Disclaimer).

The present document applies to Timetable 2028 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 2028 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.

[1] https://rne.eu/wp-content/uploads/HB_Capacity_Strategy_3.0_2023-05-31.pdf

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0. Geographical Scope

The lines with international relevance were selected on basis of experience, starting from border points with the highest volume of international traffic, both passenger and freight. An overview of the geographic scope is displayed in the map in Figure 2 [2]. For reasons of better visualization, not all border points and lines are displayed in this map. The whole scope is displayed in the submaps which are displayed in the chapters 1 and 2.

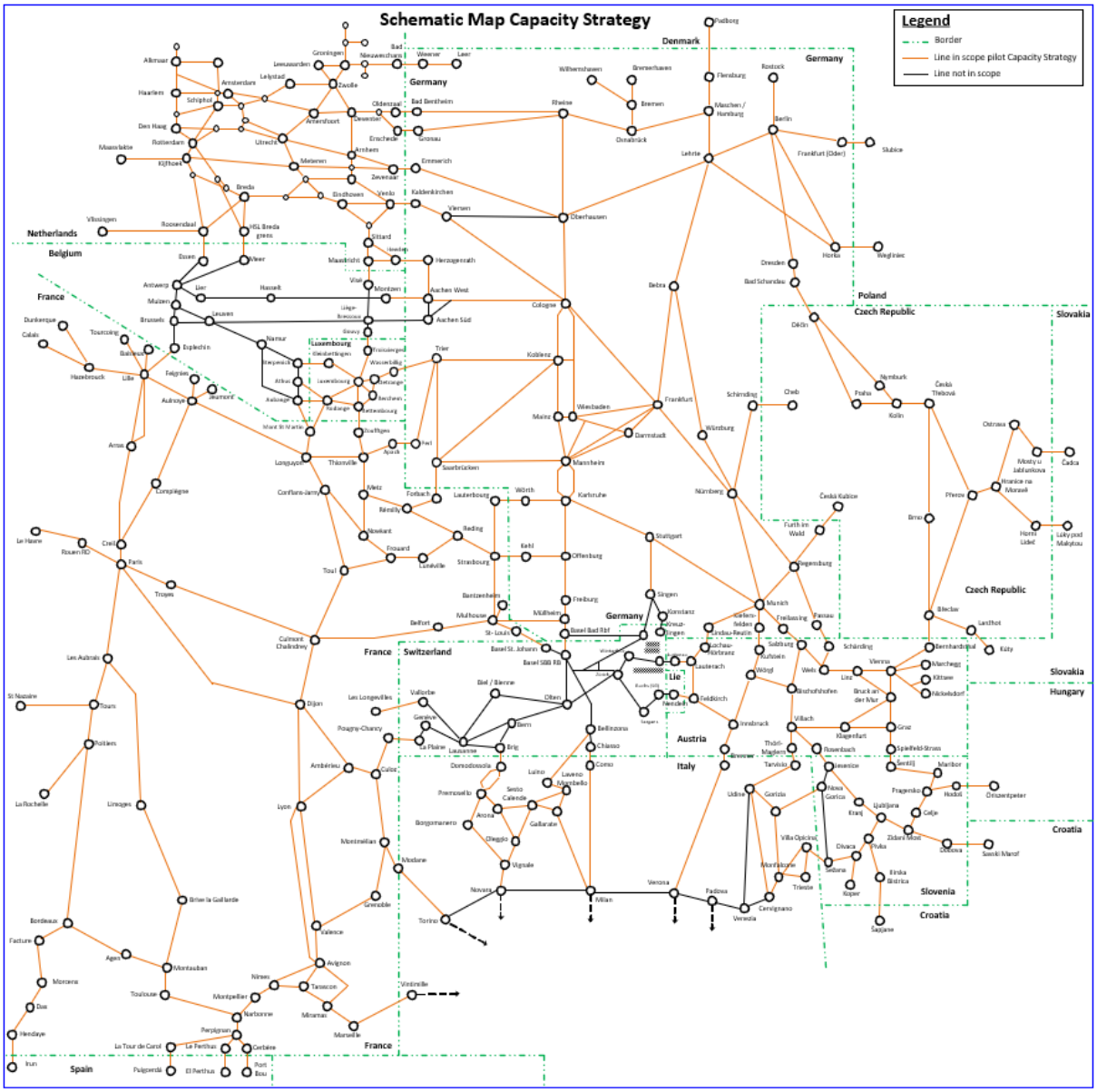


Figure 2: Schematic Map Capacity Strategy

[2] An overview of terminals and service facilities can be found here: https://railfacilitiesportal.eu/

1. Expected Capacity of Infrastructure in Timetable 2028

The present chapter provides an overview of significant positive or negative changes to the available capacity for Timetable 2028, compared to the infrastructure available in December 2024.

In case of changes regarding 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 2028. Subsequent Capacity Strategies will provide annual updates.

- The projects have a significant effect on capacity 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]**
Dec-2024							
CZ	1	Pardubice	Complete modernisation of the railway junction. Construction of a new platform, extension of the track length	Operation of longer trains, higher capacity of platforms	Train characteristic	Yes	**Dec-24**
CZ	2	More sections within main line network	Addition of ETCS control stations	Safety enhancement	Operational improvement	Yes	**Dec-24**
CZ	3	Brno - Česká Třebová	Addition of ETCS control stations	Safety enhancement	Operational improvement	Yes	**Dec-24**
AT	1	Wartberg im Mürztal	Station refurbishment, 760m tracks	Passing of 750m freight trains possible	Train characteristics	Yes	**Dec-24**
AT	2	Peggau-Deutschfeistritz	Station refurbishment, 760m tracks	Passing of 750m freight trains possible	Train characteristics	Yes	**Dec-24**
AT	3	Linz - Summerau Railway Line	Enhancement and adapting the tracks in stations	Better feasibility of train service	Train characteristics	Yes	**Dec-24**
IT	1	Milano Centrale	Platform upgrade	More tracks upgraded for 400 m trains	Train characteristics	Yes	**Dec-24**
2025							
NL	1	Beilen	Removal of passing track and switches, signal adjustments	No possibility for overtaking anymore. Shorter running times for regional trains.	Operational improvement	Yes	**Mar-25**
NL	2	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	3	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 passenger trains between Rotterdam and The Hague. Shorter running and headway times	Quantitative	Yes	**Apr-25**
NL	4	Zwolle - Wierden	Various speed increases and adjustments on platform tracks in Heino and Raalte	Shorter running times	Operational improvement	Yes	**Jun-25**

NL	5	Zuidbroek - Bad Nieuweschans	Various speed increases and removal of passing track in Winschoten	Shorter running times	Operational improvement	Yes	**Jun-25**
NL	6	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	7	Hengelo	Removal of switches and adjustment of layout of stabling yard	More service capacity on the stabling yard	Operational improvement	Yes	**Oct-25**
LU	1	Luxembourg - Ettelbruck	New blocks	Additional capacity	Timetable stabilisation, capacity augmentation	Yes	**2025**
DE	1	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	2	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	3	Berlin-Südkreuz - Blankenfelde	Dresdner Bahn Berlin: Closing of a gap	Journey time reduction (ca. 10 min.)	Quantitative	Yes	**Dec-25**
DE	4	Frankfurt Hbf	Signals (Zd) tracks 10, 11, 14-17: Splitting of tracks for possibility to temporarily increase capacity in Frankfurt Hbf	Increase in capacity	Quantitative	Yes	**Dec-25**
DE	5	Frankfurt - Mannheim	Riedbahn: General refurbishment with additional implementation of new switch connections und crossovers; refurbishment of signalling with ETCS L2mS and increased number of blocks after general refurbishment (additionally PZB)	Increase in performance	Qualitative	Yes	**Jan-25**
CZ	4	Vsetín	Complete modernisation of the railway station	Stopping with longer trains possible	Train characteristic	Yes	**Jan-25**

CZ	5	Kralupy nad Vltavou - Praha - Kolín	Construction of ETCS	Safety enhancement	Operational improvement	Yes	**Sep-25**
AT	4	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	5	Seekirchen Süd	New stop and new crossover	New stop for passenger trains as well as increase in flexibility	Operational improvement	Yes	**Dec-25**
AT	6	Gramatneusiedl	Station refurbishment	Increasing switch speeds, erecting 760-m-tracks	Train characteristics	Yes	**Dec-25**
AT	7	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	8	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	9	Graz-Klagenfurt, Koralm railway line	Construction of Graz–Klagenfurt line	New high speed line between Graz an Klagenfurt	Quantitative	Yes	**Dec-25**
AT	10	Arnoldstein	Station refurbishment, 760m tracks	Passing of 750m freight trains possible	Operational improvement	Yes	**Dec-25**
IT	2	Gallarate	New 750 m passing tracks	Adaptation to TSI	Train characteristics	Yes	**Mar-25**
IT	3	Gallarate	New interlocking	Increase in flexibility	Operational improvement	Yes	**Mar-25**
IT	4	Torino P. Susa - To. Rebaudengo F.	New interlocking	4' headway, increase in flexibility	Quantitative	Yes	**Jun-25**
IT	5	Cervignano Smistamento	750 m arrival/departure tracks	Adaptation to TSI	Train characteristics	Yes	**Dec-25**
IT	6	Cressa F.	750 m passing track	Adaptation to TSI	Train characteristics	Yes	**Jun-25**
IT	7	Chiasso - Como S.G. - B. Rosales	New interlocking	4' headway, increase in flexibility	Quantitative	Yes	**new date under discussion**
IT	8	Milano Smistamento	New yard connected to Teralp new terminal	750 m trains enabled to the new Teralp terminal	Quantitative	Yes	**Dec-25**
IT	9	Brescia Scalo	Freight terminal upgrade	Tracks upgraded to 750 m	Quantitative	Yes	**2025 First Phase 2027 Final Phase**

IT	10	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	**2025**
IT	11	Udine	New interlocking	Increase in flexibility	Operational improvement	Yes	**Dec-25**
2026							
NL	8	Hoofddorp	Adjustmenst 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	**Jan-26**
NL	9	Moerdijk	2 shunting tracks for 740m long freight trains	Freight trains with length of 740m can start/end at Moerdijk	Train characteristics	Yes	**Mar-26**
NL	10	Almere Oostvaarders	New switches for higher speed	Shorter running and headway times	Operational improvement	Yes	**Sep-26**
NL	11	Europoort	Electrification of 2 arrival and departure tracks	Freight trains with length of 740m can start/end at Europoort	Train characteristics	Yes	**Apr-26**
NL	12	Den Haag Centraal	Two extra platform tracks, adjustments layout and signalling	Capacity for more trains. Shorter running and headway times	Quantitative	Yes	**Aug-26**
NL	13	Eindhoven Centraal	Adjustments layout east side	Shorter running times and more simultaneities	Operational improvement	Yes	**Jul-26**
NL	14	Wolfheze	Remove passing track and switches, adjustment of signalling	Less possibilities for traffic control. Shorter headway times	Operational improvement	Partly	**Nov-26**
NL	15	Heerlen	Adjustments layout west side	Optimized shunting process	Operational improvement	Yes	**Dec-26**
NL	16	Coevorden	Extra platform track, adjustments layout and signalling	New passenger service Coevorden - Neuenhausen	Quantitative	Yes	**Dec-26**
NL	17	Lelystad - Zwolle	Speed increase Lelystad - Hattemerbroek to 180 km/h and speed increase to 160 km/h along the platforms of Kampen Zuid	Shorter running times	Operational improvement	No	**Dec-26**
DE	6	Hamburg - Berlin	General refurbishment with additional implementation of new switch connections und crossovers; refurbishment of signalling with sectional implementation of ETCS L2mS and increased number of blocks after general refurbishment (additionally PZB)	Increase in performance	Qualitative	Yes	**May-26**

DE	7	Hagen – Wuppertal – Köln	General refurbishment with additional implementation of new switch connections and crossovers	Increase in performance	Qualitative	No	**Jul-26**
DE	8	Nürnberg – Regensburg	General refurbishment with additional implementation of new switch connections und crossovers, Refurbishment of signalling, with "ETCS ready" (additionally PZB)	Shorter headways; Increase in performance	Qualitative	Yes	**Jul-26**
DE	9	Troisdorf – Koblenz	General refurbishment between Troisdorf and Koblenz as part of Corridor Rhine-Alpine with additional implementation of ETCS L2 and refurbishment of PZB signalling	Increase in performance	Qualitative	Yes	**Dec-26**
DE	10	Koblenz – Wiesbaden	General refurbishment between Koblenz and Wiesbaden as part of Corridor Rhine-Alpine with additional implementation of ETCS L2 and refurbishment of PZB signalling; additional implementation of new switch connections and crossovers	Increase in performance	Qualitative	Yes	**Dec 26**
DE	11	Stuttgart	Tiefbahnhof Stuttgart 21 + Filder new-built line	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-26**
DE	12	Hannover - Berlin	1. BS Electrification Lehrter Stammbahn: 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	13	Flörsheim	New 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	14	Karlsruhe - Offenburg	ABS/NBS Karlsruhe - Basel: New-built line between Karlsruhe and Offenburg	Journey time reduction approx. 3min in long dictance traffic, capacity expansion to 4-track, continuous 4-track Karlsruhe - Offenburg	Quantitative	Yes	**Dec-26**
DE	15	Wendlingen	Project S21 / new-build line Wendlingen Ulm: restoration of two-track operation	Elimination of dependencies direction and opposite direction	Quantitative	Yes	**Dec-26**

DE	16	Obertraubling - Passau	General refurbishment with additional implementation of new switch connections und crossovers, Refurbishment of signalling, with "ETCS ready".	Shorter headways; increase in performance	Qualitative	Yes	**Dec-26**
CZ	6	Border point Horní Lideč - Vsetín	Traction power system conversion	Shortening of the electrical interval	Train characteristic	Yes	**Dec-26**
AT	11	Mixnitz-Bärenschützklamm	Station refurbishment	Increase of station capacity and extension of tracks for 750m freight trains	Train characteristics	Yes	**Dec-26**
AT	12	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	12	Settimo T. - Chivasso - B. Castelrosso	New interlocking	4' headway, increase in flexibility	Quantitative	Yes	**Dec-26**
IT	13	Chivasso	New interlocking and 750 m track	Adaption to TSI and increase in flexibility	Operational improvement	Yes	**Jan-26**
IT	14	Milano Porta Garibaldi	New interlocking and track layout	Increase in capacity and flexibility	Quantitative	Yes	**Jun-26**
IT	15	Brescia Est - Verona Ovest	New High Speed / High Capacity 2-tracks line	Increase in capacity, running times reduction	Quantitative	Yes	**Dec-26**
IT	16	Bretella di Riga	New 1-track link	Direct southward connection from the Pusteria Valley line to the Brenner line	Operational improvement	Yes	**2026**
IT	17	Venezia Airport link	New 2-tracks line	New link branching from the Venezia - Trieste line	Quantitative	Yes	**2026**
IT	18	Portogruaro - Ronchi d.L. Sud	New interlocking	5' headway, increase in regularity	Quantitative	Yes	**Apr-26**
IT	19	Venezia Mestre - Ronchi d.L. Sud	Infrastructural enhancement	Speed limitations for heavy trains removal	Operational improvement	Yes	**2026**
IT	20	S. Giorgio di Nogaro	750 m passing tracks	Adaptation to TSI	Train characteristics	Yes	**Apr-26**
IT	21	Cervignano Smistamento	New interlocking	Possibility of 750 m through trains	Train characteristics	Yes	**2026**
IT	22	Villa Opicina	New interlocking and 750 m tracks	Adaption to TSI and increase in flexibility	Train characteristics	Yes	**2026**
2027							
NL	18	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	**Feb-27**

NL	19	Leeuwarden - Harlingen Haven	New interlocking with ETCS	Safety enhancement	Train characteristics	Yes	**Apr-27**
NL	20	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	**Jul-27**
NL	21	Almelo - Mariënberg	Electrification of line	Making electric trains possible, shorter running times	Quantitative and train characteristics	Yes	**Oct-27**
NL	22	Leeuwarden - Stavoren	New interlocking with ETCS	Safety enhancement	Train characteristics	Yes	**Nov-27**
NL	23	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	24	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	**Dec-27**
NL	25	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	**Q4-27**
NL	26	Nijmegen - Venlo - Roermond	Electrification of line, longer double track sections and increase of speed	Making electric trains possible, shorter running times, higher capacity. Note; this line has ATB-NG-signalling	Qualitative and train characteristics	Yes	**Dec-27**
DE	17	Frankurt – Heidelberg	General refurbishment with additional implementation of new switch connections und crossovers; refurbishment of signalling with ETCS L2mS and increased number of blocks after general refurbishment (additionally PZB)	Increase in performance	Qualitative	Yes	**Jul-27**
DE	18	Rosenheim – Salzburg	General refurbishment with additional implementation of new switch connections und crossovers; refurbishment of signalling with ETCS L2mS and increased number of blocks after general refurbishment (additionally PZB)	Increase in performance	Qualitative	Yes	**Jul-27**
DE	19	Dresden Hbf	Flying junction Dresden: New signals and tracks	More flexibility in running trains; Increase in max. speed at Dresden Hbf	Operational improvement	Yes	**Dec-27**

DE	20	Müllheim-Schliengen	ABS/NBS Karlsruhe - Basel: New tracks between Müllheim-Schliengen	Speed increase to 250 km/h, capacity expansion to 4 tracks	Quantitative	Yes	**Dec-27**
DE	21	Haltingen-Basel Bad Bf	ABS/NBS Karlsruhe - Basel: New tracks between Haltingen-Basel Bad Bf	Speed increase to 160 km/h, capacity expansion to 4 tracks	Quantitative	Yes	**Dec-27**
DE	22	Bremerhaven – Berlin	General refurbishment with additional implementation of new switch connections und crossovers; refurbishment of signalling with ETCS L2mS and increased number of blocks after general refurbishment (additionally PZB)	Increase in performance	Qualitative	Yes	**Dec-27**
DE	23	Lehrte – Berlin	General refurbishment with additional implementation of new switch connections and crossovers, Refurbishment of signalling, with "ETCS ready" and increased number of blocks after general refurbishment (additionally PZB)	Increase in performance	Qualitative	Yes	**Dec-27**
DE	24	Lübeck – Hamburg	General refurbisment of the connection to the Fehmarnbelt link Hamburg - Luebeck with implementation of new switch connections and crossovers; implementation of ETCS L2mS and increased number of blocks after general refurbishment (additionally PZB)	Increase in performance	Qualitative	Yes	**Dec-27**
CZ	7	Lipník nad Bečvou - Drahotuše	Complete modernisation of the railway line.	More flexibility in traffic management and increased stability of the timetable	Operational improvement	Yes	**Mar-27**
CZ	8	Valašské Meziříčí	Platform modernisation in the railway station.	Extension of platforms	Train characteristic	Yes	**Sep-27**
CZ	9	Nedakonice	Increasing the power of the traction power station	Shortening of the electrical interval	Train characteristic	Yes	**Dec-27**
IT	23	Torino Orbassano	New interlocking	Increase in capacity and flexibility	Train characteristics	Yes	**2027**
IT	24	Chivasso	Further 750 m track	Increse in 750 m trains admitted	Operational improvement	Yes	**2027**
IT	25	Milano Certosa	New interlocking and 750 m passing tracks	Adaptation to TSI; increase in flexibility.	Train characteristics	Yes	**2027**
IT	26	Trento Belt Line	New 2-tracks line	New freight line shunting Trento	Train characteristics	Yes	**2027**
IT	27	Verona Quadrante Europa	New interlocking	Increase in flexibility and regularity	Train characteristics	Yes	**2027**
IT	28	Verona Porta Nuova	New interlocking and track layout	Increase in capacity and flexibility, faster routes	Quantitative	Yes	**2027**

IT	29	Verona P.V. - B. Vicenza	New High Speed / High Capacity 2-tracks line	Increase in capacity, running times reduction	Quantitative	Yes	**2027**
IT	30	Venezia Mestre - Portogruaro	New interlocking	5' headway, increase in regularity	Quantitative	Yes	**2027**
IT	31	Udine - Ronchi d.L. Nord	Technological upgrade	Increase in capacity	Quantitative	Yes	**2027**
IT	32	S.Giovanni Nat. and Cormons	750 m passing tracks	Adaptation to TSI; 750 m trains admitted on the Udine - Trieste line	Train characteristics	Yes	**2027**
IT	33	Gorizia direct link	New 1-track link	Direct southward route from Slovenia	Operational improvement	Yes	**2027**
IT	34	Bivio d'Aurisina - Villa Opicina	Technological upgrade	Increase in capacity	Quantitative	Yes	**2027**
LU	2	Luxembourg - Bettembourg	Construction of a new line, additional platforms in Howald, trach reorganisation	Traffic segregation (national / international to France)	Operational improvement	Yes	**2027**
2028							
NL	27	Amsterdam Aziëhaven	Extra track for 740m long freight trains	Capacity for more 740m-long freight trains	Train characteristics	Yes	**2028**
NL	28	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	**2028**
NL	29	Lage Zwaluwe	2 shunting tracks for 740m long freight trains	Higher capacity for 740m trains	Train characteristics	Yes	**2028**
NL	30	Arnhem - Doetinchem	Track doubling from 1 to 2 tracks between Didam-Doetinchem de Huet	Capacity for more trains between Zevenaar and Doetinchem	Quantitative	Yes	**2028**
NL	31	Venlo	Adjustments layout and longer platform tracks	Stopping with longer passenger trains possible	Train characteristics	Yes	**2028**
NL	32	Sauwerd - Delfzijl	New interlocking with ETCS	Safety enhancement	Train characteristics	Yes	**2028**
NL	33	Nijmegen	Extra platform track, adjustments layout of track at station and stabling yard, increase of speed and adjustment of signalling	Capacity for more trains, shorter running and headway times. Higher capacity for stabling of passenger rolling stock.	Quantitative	Yes	**2028**
NL	34	Waalhaven	Adjustment lay out to realize more tracks for 740m long freight trains	Higher capacity for 740m trains	Train characteristics	Yes	**2028**
DE	25	Fulda – Hanau	General refurbishment with additional implementation of new switch connections und crossovers, Refurbishment of signalling,	Increase in performance	Qualitative	Yes	**Feb-28**

			with ETCS L2mS and increased number of blocks after general refurbishment (additionally PZB)				
FR	1020	Hendaye / Irun	Y Basque	Capacity increase	2028	Yes	
IT	35	Torino Porta Susa - Torino Porta Nuova	New 2-tracks line	Increase in capacity	Quantitative	Yes	**2028**
IT	36	Bolzano	New layout with 3 tracks (New Virgolo Tunnel)	Increase in capacity	Quantitative	Yes	**2028**
IT	37	Verona	West Node	Increase in capacity	Quantitative	Yes	**2028**
IT	38	Udine (New Cargnacco Freight Station)	750 m passing tracks	Adaptation to TSI; 750 m trains admitted on the Udine - Trieste line	Train characteristics	Yes	**2028**
SI	1	Divača- Koper	Building new track	Increase in capacity	Quantitative	Yes	
SI	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 and Train characteristics	Yes	
SI	3	Croatian border – Dobova – Zidani Most section	Upgrading the stations and sections	Modernising the traffic control centres, increasing level of traffic safety	Quantitative and Train characteristics	Yes	
SI	4	Ljubljana- Sežana	Technological upgrade	Increase in capacity	Quantitative	Yes	
SI	5	Zidani Most -Maribor	Technological upgrade	Modernising the traffic control centres, increasing level of traffic safety	Quantitative	Yes	

Table 1: List of pilot-relevant infrastructure projects with positive capacity effects expected active by TT2028

1.2 Reduced Available Capacity

Reduced Available Capacity All listed projects have been approved by IM Management					
Country	**ID**	**Network segment**	**Description**	**Estimated effects on capacity**	**Capacity reduced since**
2025					
NL	1	Kijfhoek	Renewal of hump yard, whereby 2 of the 43 shunting tracks will be remove due to realization of calamity roads	Quantitative	Apr-25
NL	2	Nunspeet	Removal of switches, passing track in the middle becomes dead-end track	Operational restrictions	Jul-25
SI	1	Ljubljana	Renewal main station (reduced tracks, switches)	Operational restrictions	Apr-25
2026					
NL	3	Rijssen	Remove sidetrack and switches	Operational restrictions	**Jun-26**
NL	4	Zaltbommel	Remove passing track and switches Oud-Zaltbommel	Operational restrictions	**Mar-27**
2028					

Table 2: List of pilot-relevant infrastructure projects with negative capacity effects expected active by TT2028

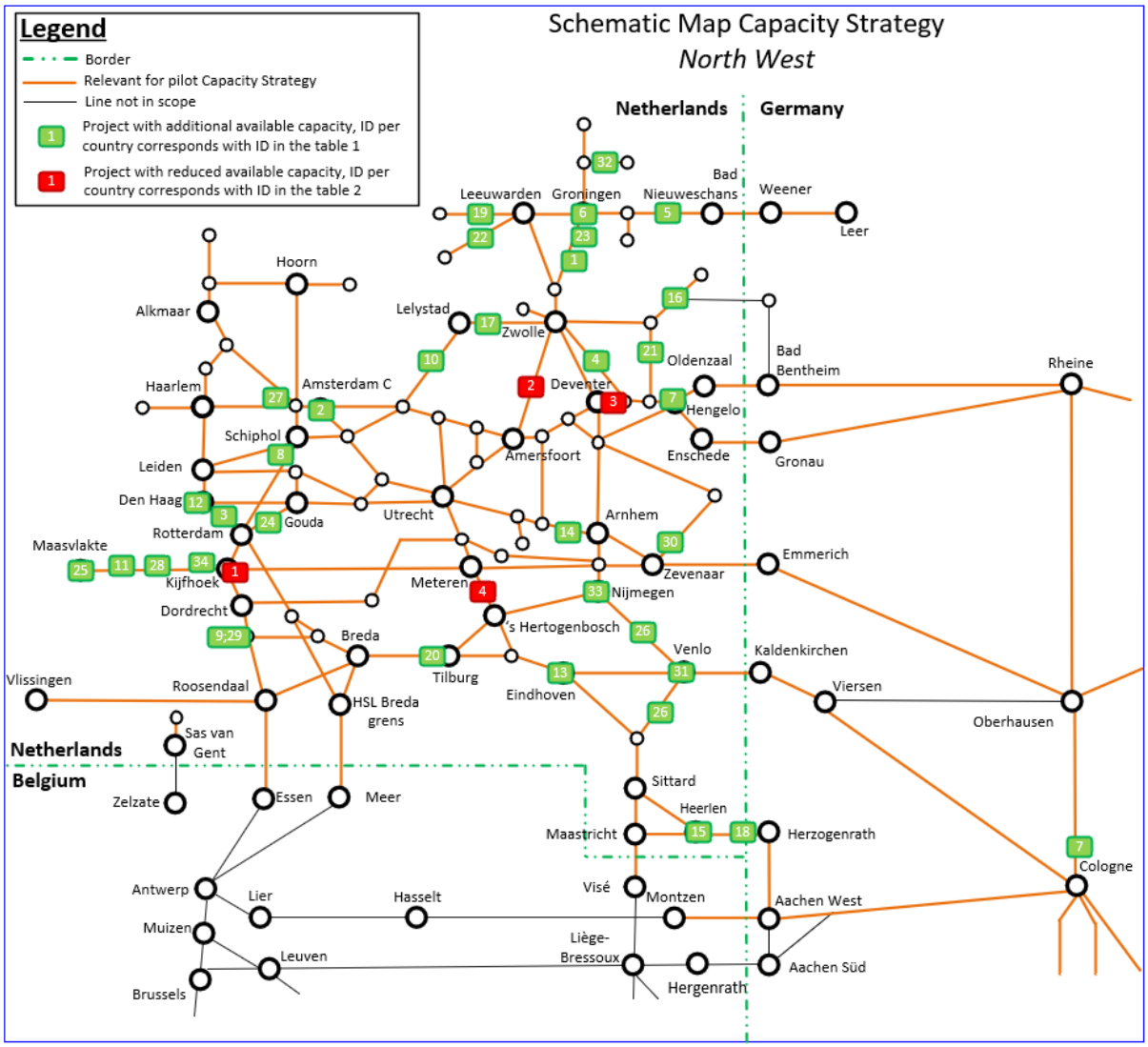


Figure 3: Schematic Map pilot Capacity Strategy. North West

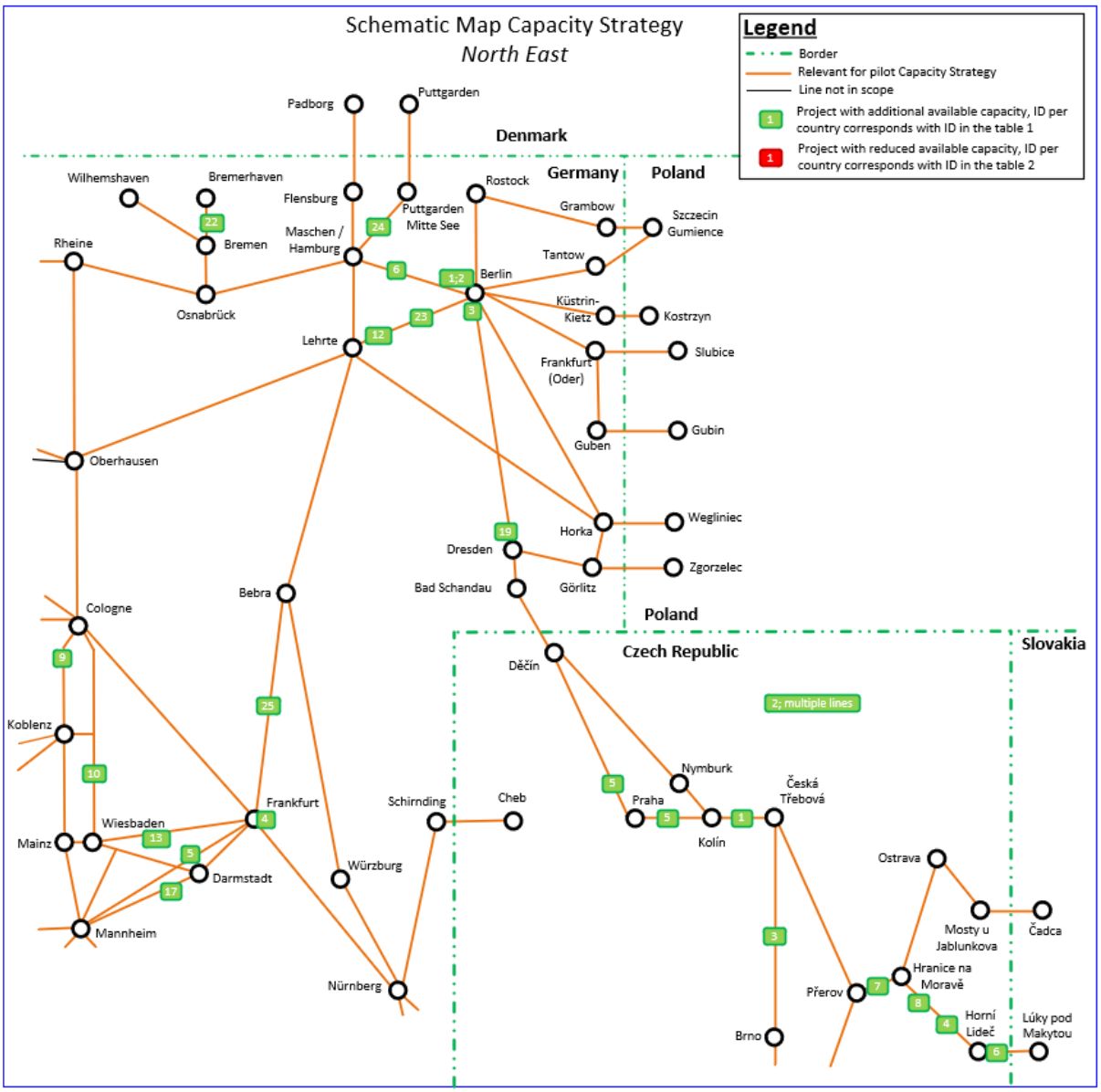


Figure 4: Schematic Map pilot Capacity Strategy. North East

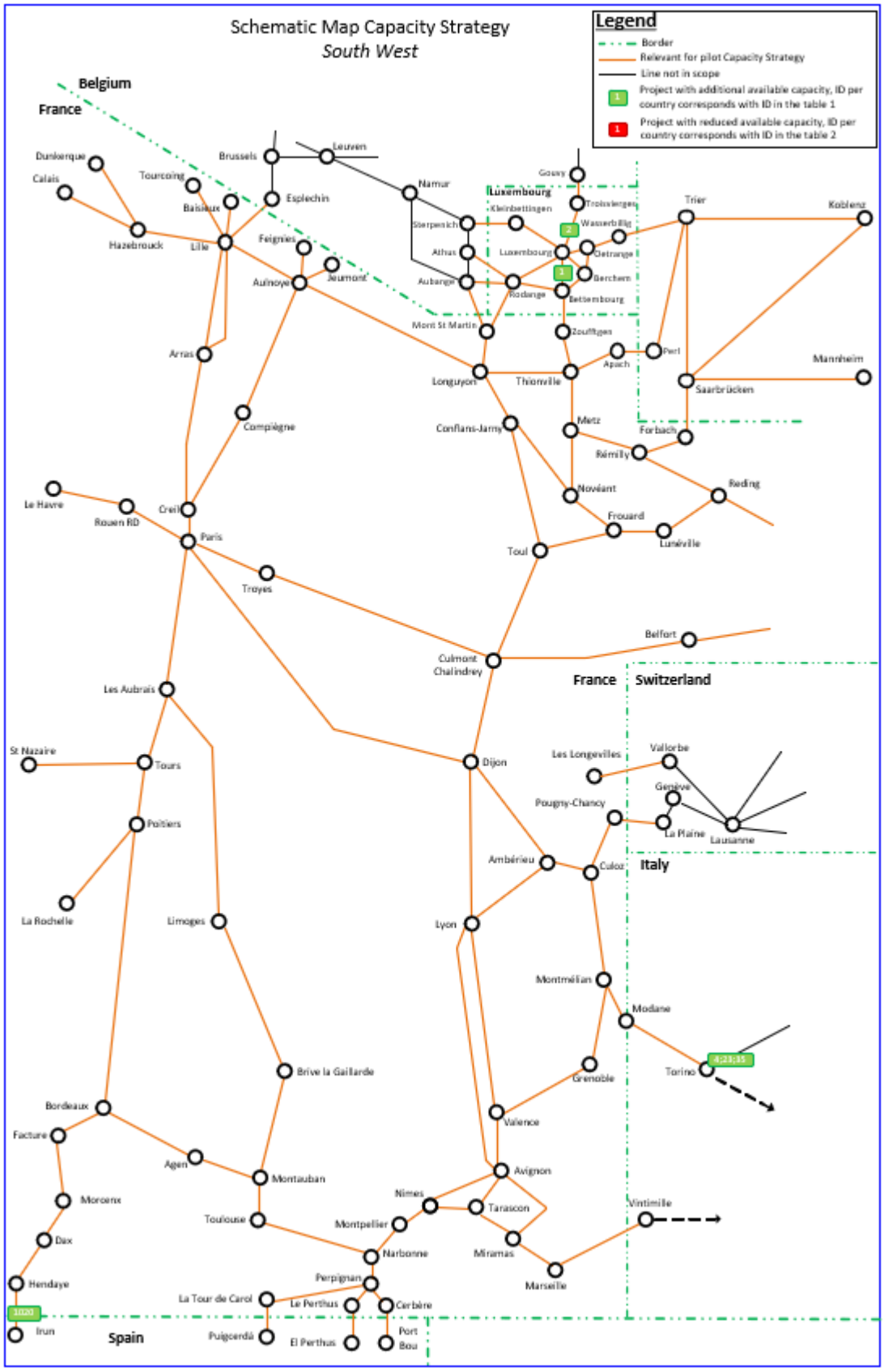


Figure 5: Schematic Map pilot Capacity Strategy. South West

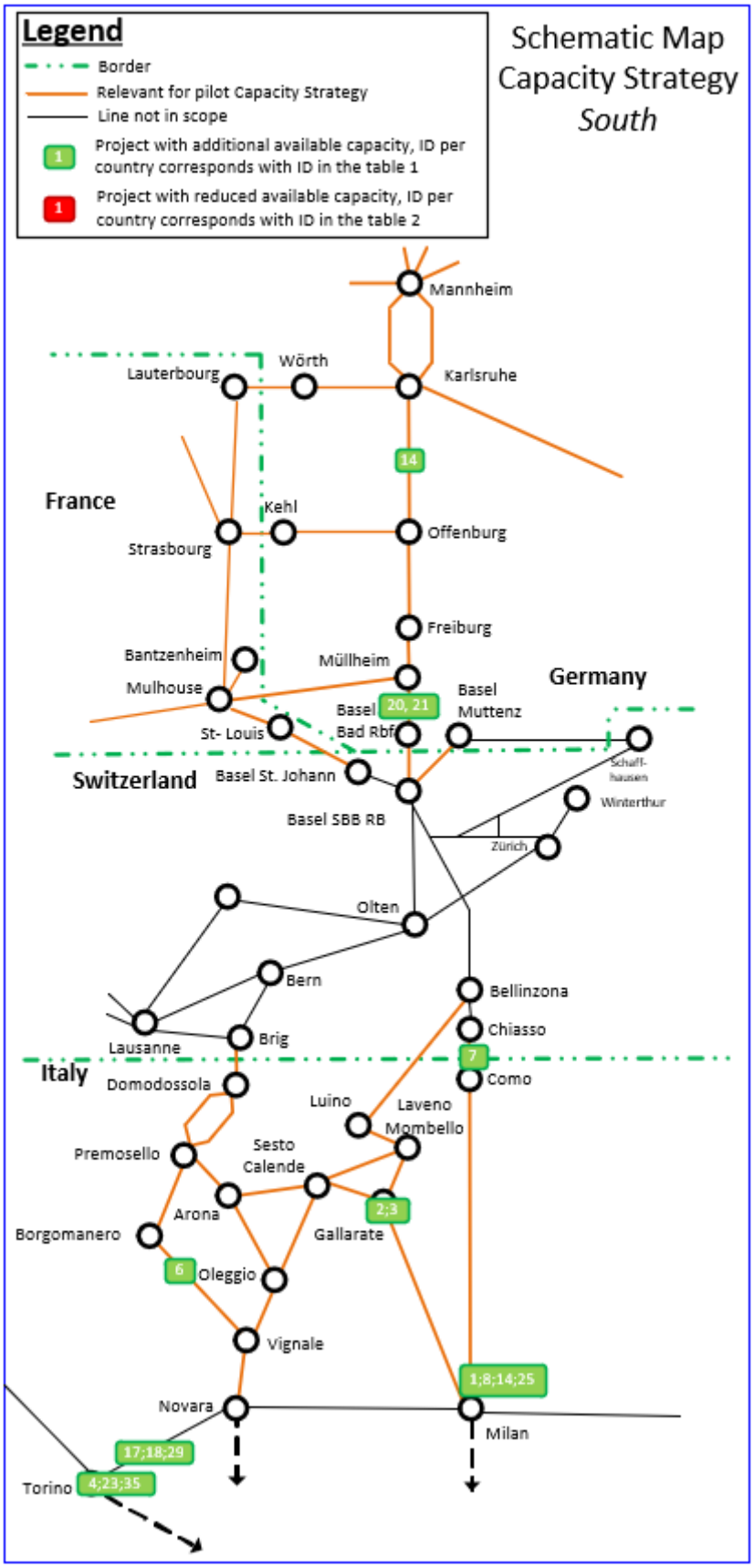


Figure 6: Schematic Map Capacity Strategy. South

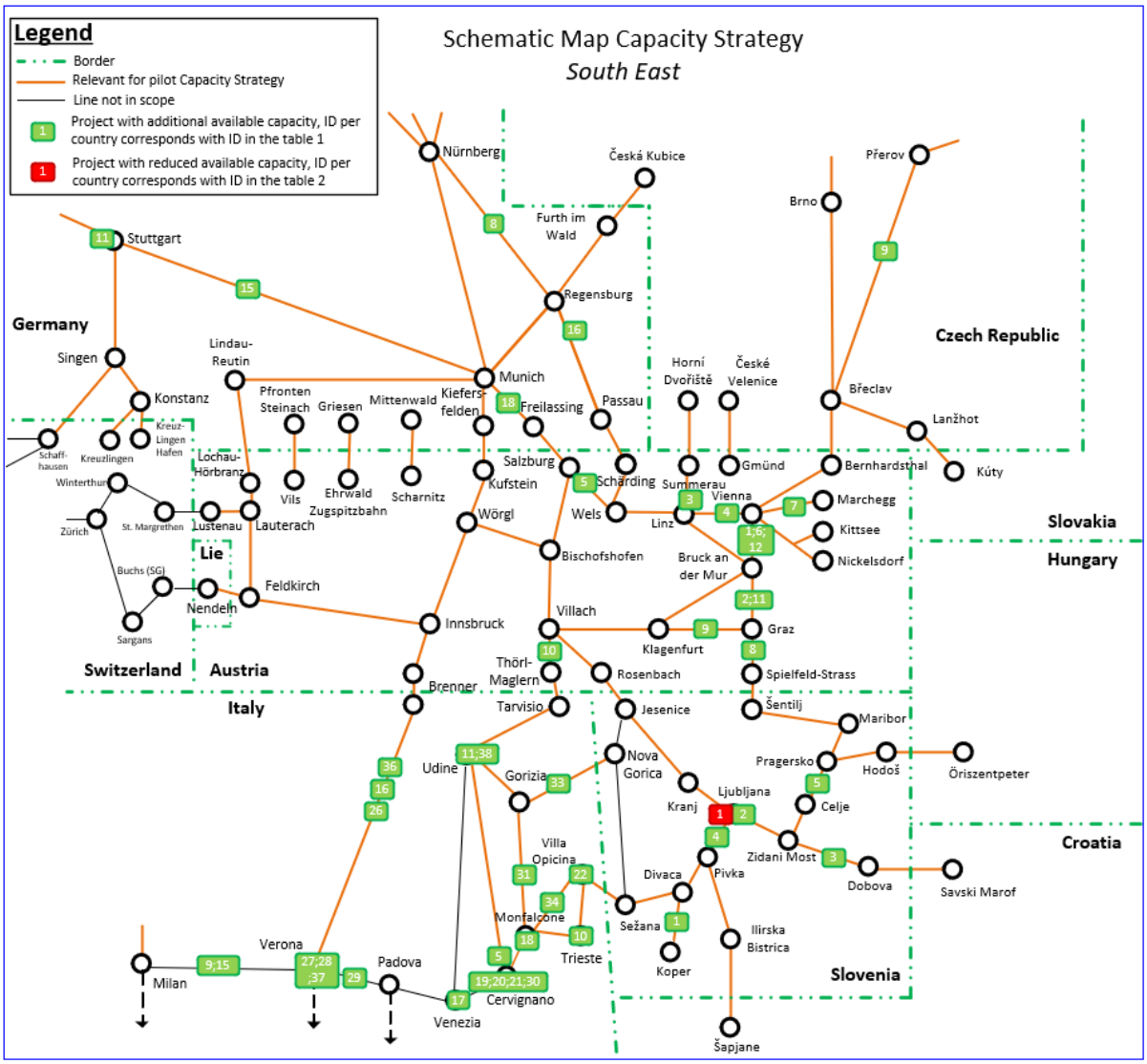


Figure 7: Schematic Map Capacity Strategy. South East

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.

	NL	LU	FR	DE	AT	IT	SI	CZ
Clustering is done to minimize gravity of impact	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustering is done to minimize duration of impact	No	Yes	No	Yes	Yes	No	Yes	Yes
Clustering for other reasons	Yes	Yes	Yes	Yes	No	Yes	No	Yes
Clustering process starts at …	X-28	X-43	X-28	X-45	X-48	X-26	X-14	X-28
Pre-defined agreements with RUs on clustering	Yes	Partially	Yes	No	No	No	No	Yes
Reference to network statement, where available	-	-	-	Richtlinie 402-0305	-	page 113 PIR2025 ed.mar24	NETWORK STATEMENT - Infrastruktura (sz.si)	Chapter 2.5.1

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.

	NL	LU	FR	DE	AT	IT	SI	CZ
Pre-defined deviation routes available - fixed	X		X			X	X	X
Multiple pre-defined deviation routes available – one (or more) to be left free of TCRs		(X)	X	X		X		X
No pre-defined deviation routes described, tailor made during planning		X			X			
Other reasons for not planning TCR simultaneously in connected areas	X	X					X	X
Major public events are considered in the planning of TCRs	X	If signalled by RU		X		X		X
Reference to network statement, where available	4.3.2.2	-	-	Richtlinie 402-0305		page 113 PIR2025 ed.mar24	NETWORK STATEMENT - Infrastruktura (sz.si)	Chapter 2.5.1 and Chapter 4.3

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

2.1.3 Description of the periods when regular TCRs will be executed if their nature makes is 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

	*NL**	*LU*	*FR*	*DE*	*AT*	*IT*	*SI*	*CZ*
During school holidays	★	★	☆	★	★	★	★	★
During weekends	★	★	☆	★	★	☆	★	★
During nights	☆	☆	☆	★	★	★	☆	☆
During summer	☆	★	☆	☆	☆	★	★	☆
During extended nights if technically necessary or economically justified	☆	☆	☆	★	★	☆	⊗	☆
During daytime	☆	⊗	☆	☆	☆	☆	☆	⊗
During daytime in hours with less traffic demand	⊗	⊗	☆	☆	☆	☆	★	★
Period depending on a rational assessment between impact on traffic and costs	☆	☆	⊗	☆	☆	☆	☆	★
More equally spread over all days of the year, because of a feasible planning for contractors	☆	⊗	⊗	☆	☆	⊗	☆	★

Reference to network statement, where available	-	-	-	-	-	-	-	-

★ favoured option; ☆ alternative option; ⊗ exceptional or impossible option

* See national specificities (section 2.1.8 of this document

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.

	NL*	**LU**	**FR**	**DE**	**AT**	**IT**	**SI**	**CZ**
Types of TCR windows: recurring all year	Yes	No	Yes	Yes	Yes	Yes	Yes	No
Types of TCR windows: recurring during a limited number of weeks	No	No	No	No, only few exceptions	Yes	No	No	No
Typical duration of TCR windows [hours]	4	-	6	8 (outside nodes)	4 - 6	4	6 - 9	-
Typical cycle time of recurring TCR Windows	Weekly (90%)	-	Weekly (90%)	Every four weeks	monthly	Weekly	Every second week	-
Number of windows per cycle per location	2 - 4	-	2 - 4	1	4 - 6	2 - 7	2 - 4	-

	NL*	LU	FR	DE	AT	IT	SI	CZ
Typical impact	Total closure (90%)	-	Single-track closure	Single track closure on double track lines, Total closure on single track lines	Total closure	Total or single-track closure	Total closure on single track lines, one track closure on double track lines	-
Time-positioning of TCR windows	Night (90%)	-	Night (90%)	Night (100%) - Maintenance Container only	Night	Night or day	Day	-
Days of the week	All, except Fri/Sat night	-	All	All, except Sun night	All, depend on the line	Depending on the line	Weekend, Mon	-
Lines covered by TCR Windows	100%	-	100%	65%	5%	100%	30%	-
TCR windows at stations and yards	100%	-	100%	Yes, for big nodes	no	0%	50%	-
TCR windows are released if not used at … days	x-12 (freight corridors x-21)	-	Week-5	-	x-6	30 days	x-14	-
TCR Windows can be used for small maintenance	Yes	-	Yes	Yes	Yes	Yes	Yes	-
TCR Windows can be used by other projects	Yes	-	Yes	Yes	Yes	Yes	Yes	-

	NL*	LU	FR	DE	AT	IT	SI	CZ
Safeguarding of alternative routes for freight, long-distance passenger services, and/or night train services in TCR Window model	Yes	-	Yes	Yes among maintenance windows	Yes	Yes	Yes	-
Cancellation of TCR Windows on deviation routes of regular TCRs	Yes	-	Yes	Generally no, but exceptions possible	Yes	Yes*	Yes	-
In annual timetable (no replanning of trains needed in later phases)	Yes (weekly windows only)	-	Yes	No	No	Yes	No	-
Works can be planned in the allocated TCR Windows without further consultation of RUs or coordination with neighboring IMs	Yes	-	Yes	Yes	Yes	Yes	Yes	-
Reference to network statement, where available	4.3.2.1	-	DRR 4.5.3	Richtlinie 402-0305	-	page 112 PIR2025 ed.mar24	NETWORK STATEMENT - Infrastruktura (sz.si)	-

* See national specificities (section 2.1.8 of this document)

** 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.

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.

Consultation level	NL	LU	FR	DE	AT	IT	SI	CZ
Project	S	S	S		S		S	
Regional	S	X	X	X	S	X	X	X
Corridor		X	S		P	P		
National	P	X	X	X	X	X	P	X
International	P	X	S	X	P	P	S	X
Reference to network statement, where available	4.3.1b 4.3.2.2	4.3.4	DRR 4.5.3	Richtlinie 402-0305		page 112 PIR2025 ed.mar24	NETWORK STATEMENT - Infrastruktura (sz.si)	Chapter 4.3, Annex 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 slights differences from country to country, as expressed in the table below:

Start of the consultation	NL	LU	FR	DE	AT	IT	SI	CZ
For the X-24 publication	X-27	X-40 (n-4) & X-27 (n-3)	X-26	X-40 (n-4) & x-27 (n-3)	-	X-26	-	X-26
For the X-12 publication	X-17	X-18	X-18	X-18	X-18	X-19 to X-13.5	X-15	X-18

For the X-4 publication	X-17	X-5	X-12	X-6,5	X-6	X-6	X-6	X-5
Reference to network statement, where available	-	-	DRR 4.5.3	Richtlinie 402-0305		page 112 PIR2025 ed.mar24	NETWORK STATEMENT - Infrastruktura (sz.si)	Annex S

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	NL	LU	FR	DE	AT	IT	SI	CZ
One or two meetings		X *				X	X	
Periodical meetings during consultation			X	X				X
Continuous meetings between IM and RU	X				X			
Reference to network statement, where available	4.3.2.2	-	DRR 4.5.3	Richtlinie 402-0305		page 112 PIR2025 ed.mar24	NETWORK STATEMENT - Infrastruktura (sz.si)	

* if needed for further consultation

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.

	NL	LU	FR	DE	AT	IT	SI	CZ
Ultimate moment for alternative TCR scenario	*	*	X-12	X-28	*	*	*	anytime
Reference to network statement, where available	-	-	DRR 4.5.3	Richtlinie 402-0305		.		

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

2.1.6 International Coordination

2.1.6.1 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 bilateraly 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 InfraGO 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 InfraGO – SNCF Réseau – SBB (" RAN Group")	DB InfraGO – ÖBB Infrastruktur – RFI („Brenner Group")	Infrabel – ProRail – DB InfraGO („BeNeDe Group")	RFI – SNCF Réseau	DB InfraGO – SBB Infrastruktur („Rhine Valley Rail" -Group)	RFI – SZ-Infrastruktura	ÖBB – SZ-Infrastruktura	DB InfraGO – Správa železnic (" Elbe valley group")	DB InfraGO – Scandinavia (" TCR ScanMed North")	SNCF Réseau - ADIF	DB InfraGO - SBB-nfrastruktur - RFI	DB InfraGO – PKP PLK (" Oder-Neiße Group – Grupa Odra-Nysa")	DB InfraGO – ÖBB Infrastruktur („Danube Group")	RFI –S BB Infrastruktur
Number of IMs involved	5	3	3	2	2	2	2	2	4	2	3	2	2	2
Synchronisation of TCRs on both sides of a border point	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Deviation routes safeguarded	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Capacities available and needed for re-routing are discussed	No	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Yes	No
2-days approach (2nd day with RUs)	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Standardized Gantt Chart is used	Excel chart	No (Excel file)	Yes	No (Excel file)	Yes	No (Excel file)	No (Excel table)	No (Maps used)	Yes	No	Yes	Yes	Yes	No
Timetable years in coordination in May 2025	26 - 28	25 - 28	25-28	25, 26, 27	25 - 28	25, 26	25, 26	25 - 28 (28 onl	25 - 28	23, 24, 25	26 - 28	26 - 28	25 - 27	25-28

	Infrabel – ACF/ CFL – DB InfraGO – SNCF Réseau – SBB (" RAN Group")	DB InfraGO – ÖBB Infrastruktur – RFI („Brenner Group")	Infrabel – ProRail – DB InfraGO („BeNeDe Group")	RFI – SNCF Réseau	DB InfraGO – SBB Infrastruktur („Rhine Valley Rail" -Group)	RFI – SZ-Infrastruktura	ÖBB – SZ-Infrastruktura	DB InfraGO – Správa železnic (" Elbe valley group")	DB InfraGO – Scandinavia (" TCR ScanMed North")	SNCF Réseau - ADIF	DB InfraGO - SBB-nfrastruktur - RFI	DB InfraGO – PKP PLK (" Oder-Neiße Group – Grupa Odra-Nysa")	DB InfraGO – ÖBB Infrastruktur („Danube Group")	RFI –S BB Infrastruktur
								y DE)						
Frequency of IM-IM meetings [number per year]	4	Min. 3	6	6	4	4	1	2	2	2	3	2	5 - 6	5

2.1.6.2 Specificities per coordination group of IMs

Infrabel – ProRail – DB InfraGO („BeNeDe Group")

During bimonthly meetings, the trilateral TCR-planning focuses on the coordination of TCRs among Infrabel, ProRail and DB InfraGO 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 including the joint presentation to RUs has been introduced and continues taking place twice a year, approximately at X-26, followed by an update at X-19 and X-14 accordingly.

DB InfraGO – 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, estimation of required deviation capacity and estimation of remaining capacity.

Starting in May 2023, the two-day model including the joint presentation to RUs has been introduced and continues taking place twice a year, approximately at X-30, followed by an update at X-25, X-18 and X-13 accordingly. and thus covers the envisaged coordination rhythm fully.

From September 2024, the two IMs will introduce additional coordination meetings at X-27, X-22, X-15 among themselves to coordinate the respective intermediate statuses between the major milestones according to the two-day model.

SBB Infrastruktur – RFI – DB InfraGO

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 InfraGO.

DB InfraGO – ÖBB Infrastruktur – RFI („Brenner Group“)

TCR-coordination and exchange with customers on the Brenner corridor has been up and running for over ten years, and addresses TCRs 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 February/March, June and November, during which a first part (“Day 1”) dedicated to coordination with neighbouring IMs takes place and is followed by a second part (“Day 2”) in the June and November/December editions. That day is open to applicants and all interested parties. 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.

DB InfraGO – ÖBB Infrastruktur („Danube Group“)

DB InfraGO and ÖBB- Infrastruktur have been coordinating their TCR on further lines and jointly border points, as those being in focus within the Brenner-Group, every two months within so called “SoFaZo” format. For the first time, this has been extended with the 27th June 2024 as “Day 2” being open to customers and all interested parties, with focus on TCR for Timetables 2025 and 2026.

This exchange is planned to take place twice a year - approximately in June and October, in a standardised format. The well established Excel-based overview from the Benner-Group is used here as well.

Infrabel – ACF/ CFL – DB InfraGO – SNCF Réseau – SBB Infrastruktur (RAN Group = Rhine-Ardennes-North Sea Group)

Between the IMs SNCF Reseau, DB InfraGO, Infrabel, ACF / CFL and SBB I, pre-coordination start at X 33, followed by an update at X-30, X-27, X-21, X-18 and X-15 accordingly.

Starting in November 2023, the two-day model including the joint presentation to RUs has been introduced and will continue taking place every year approximately at X-25

The coordination via the established multilateral working group covers all TCRs impacting the borders (freight and passenger combined).

To determine where TCRs must be located on the network in order to reduce an impact on the neighboring network or to facilitate diversion capacity, an international perimeter has been agreed upon for the five countries concerned.

SŽ-Infrastruktura - ÖBB

ÖBB Infra - SŽ-Infrastruktura continuously coordinate the TCRs with effects on the other neighbouring 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 InfraGO – SZCZ

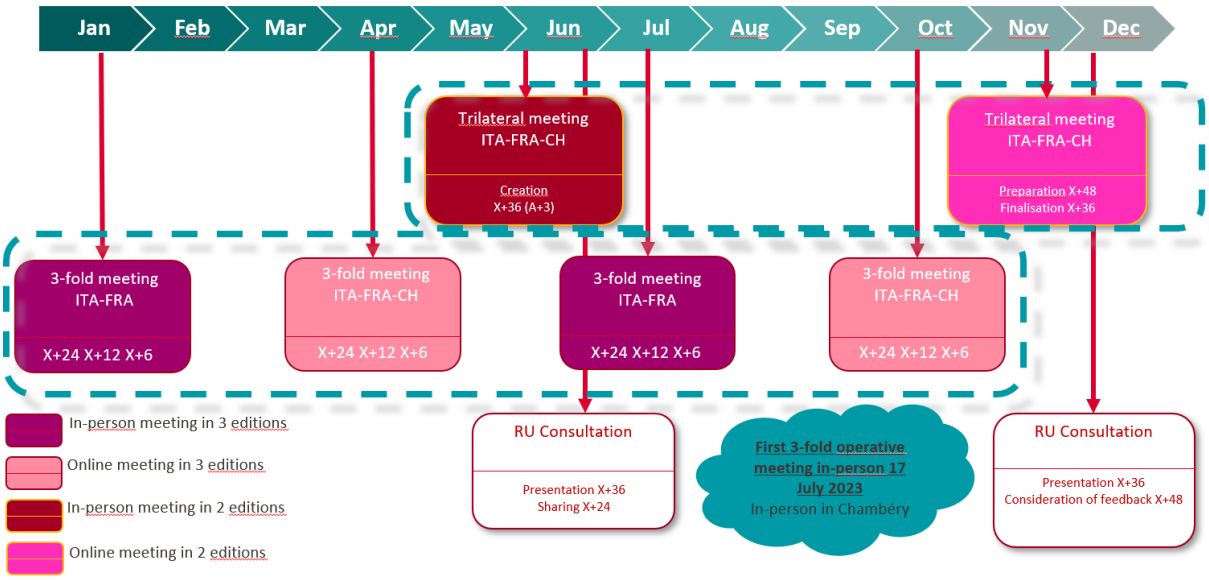
DB InfraGO and Správa železnic coordinate their TCRs twice per year - approximately in May/June and October/November in a standardised format.

The 2-day exchange during May 2024 focused on milestone X-19 (TT26). In addition, DB InfraGO presented the planning status of TCRs regarding milestone X-31 (TT27). The Applicants were kindly asked to raise questions and remarks regarding the planning status.

It is targeted, that autumn coordination in 2023 will cover the milestones X-13,5 (TT26) and X 27 (TT27) and if available X-39 (TT28).

Geographic Maps in PowerPoint are used as a coordination template here.

SNCF Réseau – SBB – RFI



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.

	NL	LU	DE	AT	IT	SI	CZ
Pre-defined international IM-IM escalation	No	No	No	No	No	No	No
National escalation process IM-RU	Yes	Yes	Yes	Yes	No	No	Yes
Reference to network statement, where available	4.5.5	-		2.5.1 and 4.2.4	.		

2.1.8 National Specificities

ProRail

Due to a larger number of projects, limited availability of technically skilled personel at our contractors as well as financial limitations, ProRail is likely to reconsider the planning principles for both TCRs and TCR Windows. For TCR Windows, a project has already been started with representatives of all stakeholders. In particular the information in paragraph 2.1.3 and 2.1.4 of this document could be affected, tending to more impact of TCRs on traffic.

A planned revision of the TCR process, also to implement TTR, may affect the mentioned timelines in paragraph 2.1.5 as well as the consultation approach.

The standardised deviation routes and other planning principles are part of the Corridor book, which is available for applicants through the ProRail Logistics Portal (folder “Corridorboeken”). Note that the linked folder requires authentication in Sharepoint. Applicants can request access via the process outlined at https://www.spoordata.nl/nieuws/het-logistiek-portaal in case of interest. The ProRail Network Statement can be found here.

SNCF Réseau

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.

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.

- "generique“ 6 h usually at night
- "corrective" 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.
  - “Poreuse“; which literally means « go through » , is SNCF-R method to avoid the total closure of a line, by working on one of the two tracks, while running the trains in batteries or sequences on the other track, either uphill or downhill. The transition from one direction to another is decided at the last moment, which makes this type of intervention an operational management. As trains are treated in the most derogatory conditions (opposite direction), the separation times are increased, as the traffic flow reduces (SNCF-R regulation AR30190). In a limited number, the paths are drawn within the range of the works, without conflict (AR30240). This additional time allows, depending on the direction given, to be able to rework the train paths without further impact (AR30190). Impact that will have already been regulated during Capacity Supply timeline.

For such operations, SNCF Réseau will base its decisions case-by-case on efforts to strike the best possible technical and economic balance, which may result in the following operational measures:

1. total stoppage of traffic for a given period on the track concerned or on both tracks, if necessary;
2. temporary speed restrictions (TSR) on the concerned track and on adjacent tracks.

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 InfraGO, 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 InfraGO

TCR-planning principles are described in Chapter 2.5.3 of our Network Statement (English version here).

DB InfraGO is committed to fully implementing Annex VII until Timetable 2028 and describes its yearly migration steps in the RiL 402.0305. The version applicable to Timetable 2025 can be uploaded

	Container - Type	Type of closure	Duration (in months)	Intended TCR-free time after Container measure (in years)
High-Performance Network & Cross-regional Network	A	Total closure	5	5-10
	B	Total closure	3	4
	C	Total closure	2	2
	D	Single-track closure	5	4
	E	Single-track closure	3	2
	F	Single-track closure	2	1

here (in German only). The version applicable to Timetable 2026 will be published 15th December 2024 together with the NS 2026 and will be published here.

Furthermore, DB InfraGO will introduce as from Timetable 2026 a container approach for TCR-planning. As a general principle, containers have a fixed duration and are structured in two categories: Investment and Maintenance Containers.

Furthermore, the container concept aims at standardizing the use of capacity for TCR-purposes on the most requested and therefore key parts of the network. Investment Containers pursue the goal of either extending, renewing or refurbishing infrastructure capacity whereas Maintenance Containers enclose standard-keeping TCRs.

Investment Containers are of six types and all of them may apply to both the High-Performance-Network and Cross-Regional-Networks.

They are defined as follows:

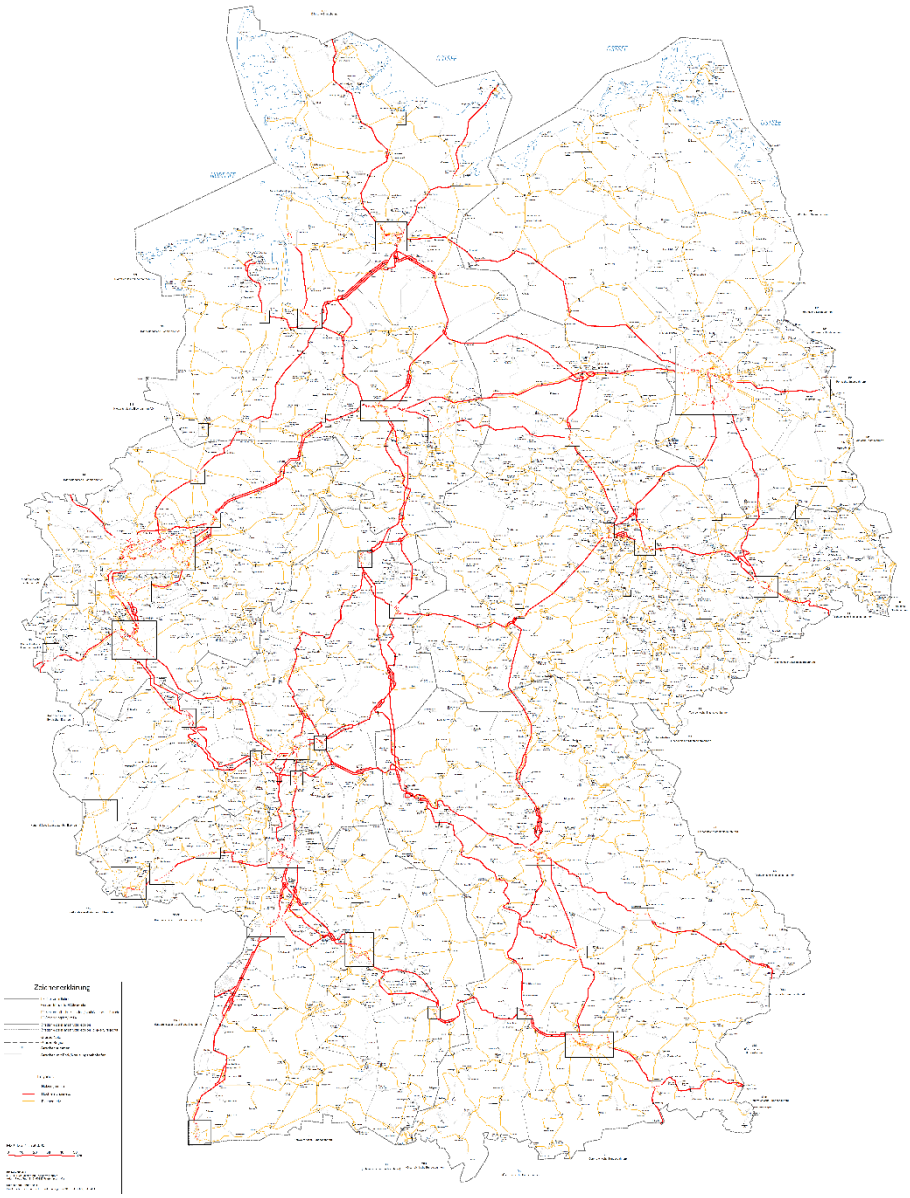


Figure 8: Route Numbering Map DB-InfraGO (High-Performance Corridor in red, Rest of Network in green) available via www.dbinfrago.com/streckennummerkarte in high-resolution

Maintenance containers are 8-hour TCR-windows planned every 4 weeks as ESP. They are planned alternatively on in- and outbound tracks and known 12 months ahead of Timetable change.

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.

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.

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.

SZCZ

In the Network Statement only are listed the major TCRs affecting traffic in "Annex S".

<u>Planning and negotiation of TCRs on SŽ</u>

1) Long-term plans (3, 2 and 1 year ahead)

a. DOK - Long-term capacity limitation (according to European law - 3 and 2 years ahead).

b. RVP - Annual closure plan (according to Railway Law - 1 year ahead)

2) Medium-term plans (4, 3, 2 months ahead)

3) Short-term plans (weekly)

Long-term and medium-term plans are discussed and consulted with carriers (122), public passenger transport customers (15) and interest groups (2), all referred to as "participants".

In principle, all types of planning and coordination follow this procedure:

- Internal compilation of draft plans according to individual requirements, including CPS (foreign legal entity).
- Sending the draft plans to all participants for their comments.
- Incorporation of comments received with every effort to comply.

- Circulation of the revised plans to all participants after incorporation of comments prior to the hearing.
- Conference call with all participants.
- Incorporation of comments after the conference hearing.
- Publication of the resulting negotiated plans on the Rail Operations Portal.

Participants are notified at all stages (invitations, documents, minutes) by data mail or email.

The annual plans and subsequent amendments are approved by the Authority

Brief timeline of long-term plan discussions during the calendar year

January - March - compilation of closure requests at the level of Construction Administrations and Regional Directorates. Sending the draft plan to the participants.

March - April - discussion of lockout requirements at regional level with regular participants. Resulting draft Annual Plan sent to all participants for comments as a basis for national coordination.

May - Incorporation of comments received from participants.

- Conference discussion at annual statewide meeting
- Plan update at DOK

June - Send out coordinated materials after statewide meeting for comments.

- Settlement of comments received
- Final discussion with all participants

July - Request to DOK for approval of Annual Plan.

Autumn - Publication of the Annual Plan (depending on the length of the administrative procedure).

September - Internal drafting of DOK X-24 (this year will be 2025) and update of DOK X-12 (2024).

October - Distribution of DOK X-24 and X-12 documents to all participants for comment.

November

- Incorporate comments from participants into the DOK plans and resend to all participants as a basis for consultation.
- Consultation of DOK plans with all participants.

December - Publication of DOK X-24 and X-12 by the start of the new Timetable.

Medium-term planning

New requirements and changes requested to the already approved Annual Plan are coordinated and discussed on a monthly basis. Only new requests for X-4 and changes to X-3 and X-2 are discussed.

First week of the month - compilation of new requirements and changes from the Annual Plan. Send out documents for regional lockout meetings.

Second week of the month - regional lockout meetings are held.

Third week of the month - incorporation of agreed changes from regional lockout meetings and distribution of materials to all participants for monthly statewide lockout meeting(s).

Last Thursday of the month - monthly national lockout meeting is held.

First week of the following month - minutes of the monthly national lockout meeting are sent to all participants for comments.

Second week of the following month - minutes are finalized and individual requests are sent to the Authority for approval of discussed changes from the approved Annual Plan.

Short-term planning

Friday - summarize weekly plans, including the addition of necessary lockouts to address known emergencies or natural disasters.

Monday and Tuesday - checking all lockouts to ensure that the appropriate lockout orders have been issued and that they coincide with the discussed scope of restrictions.

Wednesday - Issuance of the Schedule of Authorized Lockouts for the following week, which also authorizes the conduct of individual lockouts.

2.2 Pre-Announcement of Major Impact TCRs and Their Standard Re-Routings

This chapter includes a pre-announcement of major impact TCRs that will affect the timetable 2028. Additionally, it provides a visualization of the TCR locations on the map and a compilation of potential re-routings for the pre-announced TCRs.

2.2.1 Table With 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 9 to Figure 13.

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.

All projects listed hereunder have been approved by the respective IM´s management.

The Timing of TCRs planned cannot be guaranteed and is subject to changes relating to international TCR coordination, financing and other considerations.

The below table constitutes a preview of the current state of planning. It shall be noted that the first official publication date for major TCRs is only at x-24, not x-36 when this Capacity Strategy 2028 is published.

As regards DB InfraGO the initial publication of TCRs for 2028 is planned until 1st November 2024. Those TCRs deemed relevant for this document will be added as soon as the required information is available.

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
AT	1	Info available mid-/end October 2024	Info available mid-/end October 2024	Info available mid-/end October 2024	Info available mid-/end October 2024	Info available mid-/end October 2024	Info available mid-/end October 2024	Info available mid-/end October 2024
CZ	1	Hranice na Moravě - Střelná	Construction of GSM-R and ETCS	03/2024 - 11/2030	Q1/2024	uncertain, expected limitations on the interlocking, speed restrictions	uncertain, tentatively estimated 30-50% reduction of capacity	Yes
CZ	2	Kralupy nad Vltavou - Státní hranice Německo	Construction of ETCS	03/2024 - 11/2030	Q1/2024	uncertain, expected limitations on the interlocking, speed restrictions	uncertain, tentatively estimated 30-50% reduction of capacity	Yes
CZ	3	Railway centre Česká Třebová	Complete reconstruction of the station and surrounding line sections	12/2024 - 12/2031	Q4/2024	complete closure of the passanger station part with the lines to Třebovice v Čechách and Odb. Les, rerouting	about 30-50% reduction of capacity	Yes

						the passanger trains through the freight parts of the station, temporary platform in the freight group, speed reductions		
CZ	4	Otrokovice	Modification of the station in the context of the reconstruction of the connecting line	01/2026 - 12/2030	Q1/2026	uncertain, expected reduced speed, reduced number of tracks and platforms in the station, some single track operations, total closure is expected on the line to Zlín	uncertain, expected about 30-50% capacity reduction	Yes
CZ	5	Hulín	Modernisation of the station	01/2026 - 12/2030	Q1/2026	uncertain, expected reduced speed, reduced number of tracks and platforms in the station, some single track operations	uncertain, expected about 30-50% capacity reduction	No
CZ	6	Říkovice - Hranice na Moravě	Traction system change	05/2026 - 01/2029	Q2/2026	uncertain, expected limitations on the interlocking, speed restrictions, voltage disruptions	uncertain, tentatively estimated 50% reduction of capacity	No
CZ	7	Praha Libeň - Praha Běchovice	Construction of out-of-level track switch on the connecting line	06/2026 - 07/2029	Q2/2026	unsure, even group of tracks in Praha- Libeň affected, expected some speed reduction and limitations on lines to Praha-Běchovice and Praha-Malešice	uncertain, tentatively estimated 30-50% reduction of capacity	Yes

CZ	8	Děčín východ dolní nádraží	Modernisation of the station. Construction of platforms, extension of track length. Traction system change	08/2026 - 01/2029	Q3/2026	uncertain, expected reduced speed, reduced number of tracks in the station, some single track operations	uncertain, expected about 30-50% capacity reduction	Yes
CZ	9	Litoměřice dolní nádraží - Ústí nad Labem Střekov	Modernisation of the railway line and stations. Construction of platforms, extension of track length. Construction of branching-off point. Traction system change	11/2026 - 07/2030	Q4/2026	uncertain, expected reduced speed and single track operation	uncertain, estimated about 50% capacity reduction	Yes
CZ	10	Ústí nad Labem Střekov - Děčín východ	Modernisation of the railway line and stations. Construction of platforms, extension of track length. Traction system change	11/2026 - 07/2029	Q4/2026	total closure for 6 months due to reconstruction of tunnel, single track operation, reduced speed	uncertain, estimated about 50-75% capacity reduction	Yes
CZ	11	Prackovice nad Labem - Ústí nad Labem	Modernisation of the railway line. Construction of branching-off point. Traction system change	11/2026 - 04/2028	Q4/2026	Expected single track operations from branching-off point Chvalov gradually to both directions, speed restrictions	uncertain, tentatively estimated 50% reduction of capacity	Yes
CZ	13	Praha Běchovice - Poříčany	Connection of the high-speed line to the existing infrastructure in Praha Běchovice, Poříčany. Modernisation of the station Praha Běchovice	12/2026 - 12/2031	Q4/2026	uncertain, expected reduced speed, reduced number of tracks and platforms in the station, some single/double track operations	uncertain, expected about 50% capacity reduction	Yes

CZ	14	Set of buildings of the high-speed line Brodek u Přerova - Ostrava	Connection of the high-speed line to the existing infrastructure in Brodek u Přerova, Prosenice, Hranice na Moravě, Ostrava Svinov. Modernisation of station Hranice na Moravě	12/2026 - 12/2032	Q4/2026	uncertain, expected reduced speed, reduced number of tracks and platforms in the station, some single track operations	uncertain, expected about 50% capacity reduction	Yes
CZ	16	Polom – Suchdol nad Odrou.	Modernisation of the line, construction of branching-off point	02/2027 - 11/2029	Q1/2027	approximately 8 months of single track operation in section branching-off point Vrážné - Suchdol n. O.	uncertain, tentatively estimated 50% reduction of capacity	Yes
CZ	17	Rájec-Jestřebí - Skalice nad Svitavou	Construction of a branching-off point and a new connection in the direction of Boskovice	01/2027 - 12/2028	Q1/2027	not certain at the moment, some single track operations or speed restrictions are expected	uncertain, expected about 50 % capacity reduction	No
CZ	18	Kralupy nad Vltavou - Nelahozeves	Modernisation of the railway line, Construction of branching-off point.	01/2027 - 09/2029	Q1/2027	uncertain, expected single track operation from branching-off point Tunely to Kralupy fort the entire year 2028, speed restrictions	uncertain, estimated about 50-75% capacity reduction	Yes
CZ	19	Kralupy nad Vltavou - Státní hranice Německo	Traction system change	03/2027 - 03/2029	Q1/2027	uncertain, expected limitations on the interlocking, speed restrictions, voltage disruptions	uncertain, tentatively estimated 50% reduction of capacity	n/a
CZ	20	Suchol nad Odrou - Studénka	Construction of a branching-off point and a new connection in the direction of Sedlnice	02/2027 - 04/2031	Q1/2027	not certain at the moment, some single track operations or	uncertain, expected about 50 % capacity reduction	Yes

						speed restrictions are expected		
CZ	21	Brodek u Přerova - výhybna Dluhonice	Construction of out-of-level track switch	08/2027 - 10/2029	Q3/2027	unknown at the moment, expected reduced speed, some single track operations and some total closures preferably at night	uncertain, estimated about 30-50% reduction	Yes
CZ	22	Vsetín - Valašské Meziříčí	Modernisation of the line	08/2027 - 09/2030	Q3/2027	approximately 9 months of single track operation in different parts (1 month Jablůnka - Val. Meziříčí; 3,5 months Jablůnka - Bystřička, track 1; 4 months Jablůnka - Bystřička. track 2), reduced number of available tracks in stations Bystřička and Jablůnka	about 50-60% reduction of capacity	No
CZ	23	Hranice na Moravě - Vsetín	Traction system change	07/2027 - 12/2030	Q3/2027	uncertain, expected limitations on the interlocking, speed restrictions, voltage disruptions	uncertain, tentatively estimated 50% reduction of capacity	No
CZ	24	Modřice - Adamov	Construction of ETCS	07/2027 - 05/2029	Q3/2027	uncertain, expected limitations on the interlocking, speed restrictions	uncertain, tentatively estimated 30-50% reduction of capacity	No
CZ	25	Modřice - Rakvice	Connection of the high-speed line to the existing	07/2027 - 05/2031	Q3/2027	uncertain, expected reduced speed,	uncertain, expected about	Yes

			infrastructure in Modřice, Šakvice. Relocation of the railway line between Pouzdřany and Šakvice			reduced number of tracks and platforms in the station, some single track operations	50% capacity reduction	
CZ	26	Railway centre Brno	Relocation of the passenger station to a new position, modernisation of surrounding line sections	01/2028 - 12/2035	Q1/2028	not known at the moment, but it is expected that some single track operations and/or speed restrictions will be required	unknown	n/a
CZ	27	Railway centre Ostrava	Reconstruction of the section Ostrava-Hrušov - Ostrava-Svinov, construction of the third track of the section Ostrava-Svinov - Ostrava hl. n., construction of out-of-level track switch	01/2028 - 12/2034	Q1/2028	approximately 7 months of single track operation between Ostrava-Svinov - Ostrava hl. n.	uncertain, tentatively estimated 50% reduction of capacity	n/a
CZ	28	Napajedla - Otrokovice	Replacing three level crossings with a road overpass	03/2028 - 11/2029	Q1/2028	unknown at the moment, expected reduced speed, some single track operations and some total closures preferably at night	uncertain, expected about about 30-50% reduction of capacity	n/a
CZ	29	Rohatec	Replacing level crossing with a road overpass.	02/2028 - 07/2029	Q1/2028	unknown at the moment, expected reduced speed, some single track operations and some total closures preferably at night	uncertain, expected about about 30-50% reduction of capacity	n/a

CZ	30	Mosty u Jablunkova - Státní hranice SK	Repair of an unstable section of the line	03/2028 -12/2028	Q1/2028	uncertain, expected reduced speed and single track operation	uncertain, estimated about 50% capacity reduction	n/a
CZ	31	Návsí - Bystřice	Repair of an unstable section of the line	03/2028 -12/2029	Q1/2028	uncertain, expected reduced speed and single track operation	uncertain, estimated about 50% capacity reduction	n/a
CZ	32	Lovosice - Prackovice nad Labem	Modernisation of the railway line. Construction of branching-off point. Traction system change	02/2028 - 08/2029	Q1/2028	unsure at this point, single track operation Lovosice - Prackovice for construction of the branching-off point Č. Brána, after the construction, single track operations from Č. Brána gradually to both directions, reconstruction of the station Prackovice	uncertain, tentatively estimated 30-50% reduction of capacity	Yes
CZ	33	Hranice na Moravě - Polanka nad Odrou	Traction system change	06/2028 - 11/2030	Q2/2028	uncertain, expected limitations on the interlocking, speed restrictions, voltage disruptions	uncertain, tentatively estimated 50% reduction of capacity	n/a
CZ	34	Suchdol nad Odrou	Modernisation of the station, change of track configuration, extension of track length	04/2028 - 12/2029	Q2/2028	not certain at the moment, some single track operations or speed restrictions are expected	uncertain, it is expected that the number of availible tracks and platforms will be reduced during the construction	n/a

CZ	35	Kralupy nad Vltavou	Modernisation of the station	06/2028 - 11/2031	Q2/2028	uncertain, expected reduced speed, reduced number of tracks and platforms in the station, some single track operations	uncertain, expected about 30-50% capacity reduction	n/a
DE	1	Köln - Bonn - Koblenz	general overhaul	04.02.2028 – 07.07.2028	Q1/2028	Total closure	Passenger: rerouting Eastern Rhine track Freight: rerouting Eastern Rhine track incl. relocated train classification & Main-Weser-line & North-South	Yes
DE	2	Koblenz - Mainz	general overhaul	04.02.2028 – 07.07.2028	Q1/2028	Total closure	Passenger: rerouting Eastern Rhine track Freight: rerouting Eastern Rhine track incl. relocated train classification & Main-Weser-	Yes

							line & North-South	
DE	3	Hagen - Unna- Hamm	general overhaul	04.02.2028 – 07.07.2028	Q1/2028	Total closure	Passenger: rerouting via Hamm, Bochum Freight: rerouting via Hamm, Recklinghausen	Yes
DE	4	München - Rosenheim	general overhaul	04.02.2028 – 07.07.2028	Q1/2028	Total closure	Passenger: rerouting via Holzkirchen, Mühldorf Freight: rerouting via Passau, Mühldorf	Yes
DE	5	Würzburg - Treuchtlingen	general overhaul	07.07.2028 – 08.12.2028	Q3/2028	Total closure	Passenger: - Freight: rerouting via Nuremberg/ Nürnberg	Yes
DE	6	Aachen - Köln	general overhaul	07.07.2028 – 08.12.2028	Q3/2028	Total closure	Passenger: rerouting via Mönchengladbach Freight: rerouting via Mönchengladba	Yes

							ch and extensive	
DE	7	Forbach - Ludwigshafen	general overhaul	07.07.2028 – 08.12.2028	Q3/2028	Total closure	Passenger: rerouting via Karlsruhe Freight: Rerouting via Perl / Apach	Yes
DE	8	Minden - Wunstorf	general overhaul	07.07.2028 – 08.12.2028	Q3/2028	Total closure	Passenger: rerouting via Altenbeken Freight: rerouting via Altenbeken, Osnabrück	Yes
DE	9	Weddel - Magdeburg	general overhaul	07.07.2028 – 08.12.2028	Q3/2028	Total closure	Passenger: rerouting via Stendal Freight: rerouting via Lehrte, Stendal	Yes
DE	10	Hannover - Schulenburger Landstr.	Bridge renewal	07.07.2028 – 15.09.2028	Q3/2028	Total closure	Passenger: rerouting via GUB (freight bypass) Freight: extensive rerouting	Yes
DE	11	"Kölner Brücken"	Railroad overpass	07.07.2028 – 13.12.2029	Q3/2028	Total closure	Passenger: rerouting via	Yes

							Mönchengladbach Freight: rerouting Eastern Rhine track incl. relocated train classification & Main-Weser-line	
DE	12	Flieden- Burgsinn	Tunnel renovation	15.10.2027 – 31.01.2029	Q4/2028	Total closure	Passenger: extensive rerouting Freight: rerouting via SFS (high-speed line) and Rhine	Yes
IT	1	Brennero - Verona	Brenner wall	01/2028	08/2028	Closure of tracks 8, 9, 10, 11, 12 in Brennero station	Yes	Not yet
LU	1	Rodange - Rodange frontière b1 Rodange - Rodange frontière b2 Rodange - Rodange frontière f	Connection of the new maintenance and storage facility Improving of the track configuration	02.2028 - 12.2028	Q1-Q4 2028	Total closure	No passenger traffic Re-routing options of freight trains in discussion	No
LU	2	Esch/Alz. - Differdange	Modernisation of the line	07.2028 - 09.2028	Q3 2028	Total closure	No passenger traffic	No

							Re-routing of freight trains via lines 6 and 7	
NL	1	Amsterdam Centraal	*Increased capacity and transfer capacity at and around Amsterdam C.*	Dec 2023 – 2030	Q4/2023	7 out of 10 platform tracks available at Amsterdam C.	To be elaborated	Yes
NL	2	Haarlem	Renewal and update lay-out	2027-2028	t.b.a.	No or limited availability of platform tracks + total closures on adjacent sections	Yes	Yes
NL	3	Sluiskil	Renovation of bridge	2028	t.b.a.	Total closure alternated with windows for freight trains	Yes	By Rijkswaterstaat
NL	4	Leiden - Alphen aan den Rijn	New station, geotechnical measures, removal and relocation of railway crossings + underpass	2028	t.b.a.	Total closure	Yes	Yes
NL	5	Lage Zwaluwe	tracks for 740m freight trains	2028	t.b.a.	TCR scenario's to be discussed. Multiple TCRs expected, no Major TCRs	Yes, affecting Moerdijk, Oosterhout Weststad as well as main corridors. HSL not affected	Yes
NL	6	Kijfhoek - Roosendaal grens	ERTMS	2028	t.b.a.	Total closure. Multiple TCRs expected, no Major TCRs	Yes	Yes

NL	7	Groningen - Sauwerd - Delfzijl / Eemshaven	ERTMS	2028	t.b.a.	Total closure, multiple weeks, to be discussed	Yes	Yes
NL	8	Groningen - Nieuweschans grens / Veendam	ERTMS	2028	t.b.a.	Total closure, multiple weeks, to be discussed	Yes	Yes
FR	1403	Nantes	Superstructure renewal	2028	Q2 2028	Miscellaneous	Yes	Yes
FR	1351	TELT St Jean de Maurienne	Phase 3 Torino tunnel	2028	Q3 2028	?	No	Yes
FR	1343	CCR Marseille Vintimille	Control center modification	2028		?	Yes	Yes
FR	1091	CCR Blainville Nancy	Control center modification	2028	2027	Major	Yes	Yes
FR	1020	Double tracks 1435mm Hendaye Irun	Improvement cross border capacity	2028	Q4 2028	?	Yes	Yes

Table 3: Overview Major Impact TCR

2.2.2 Map Visualization of Pre-Announced Major Impact TCRs

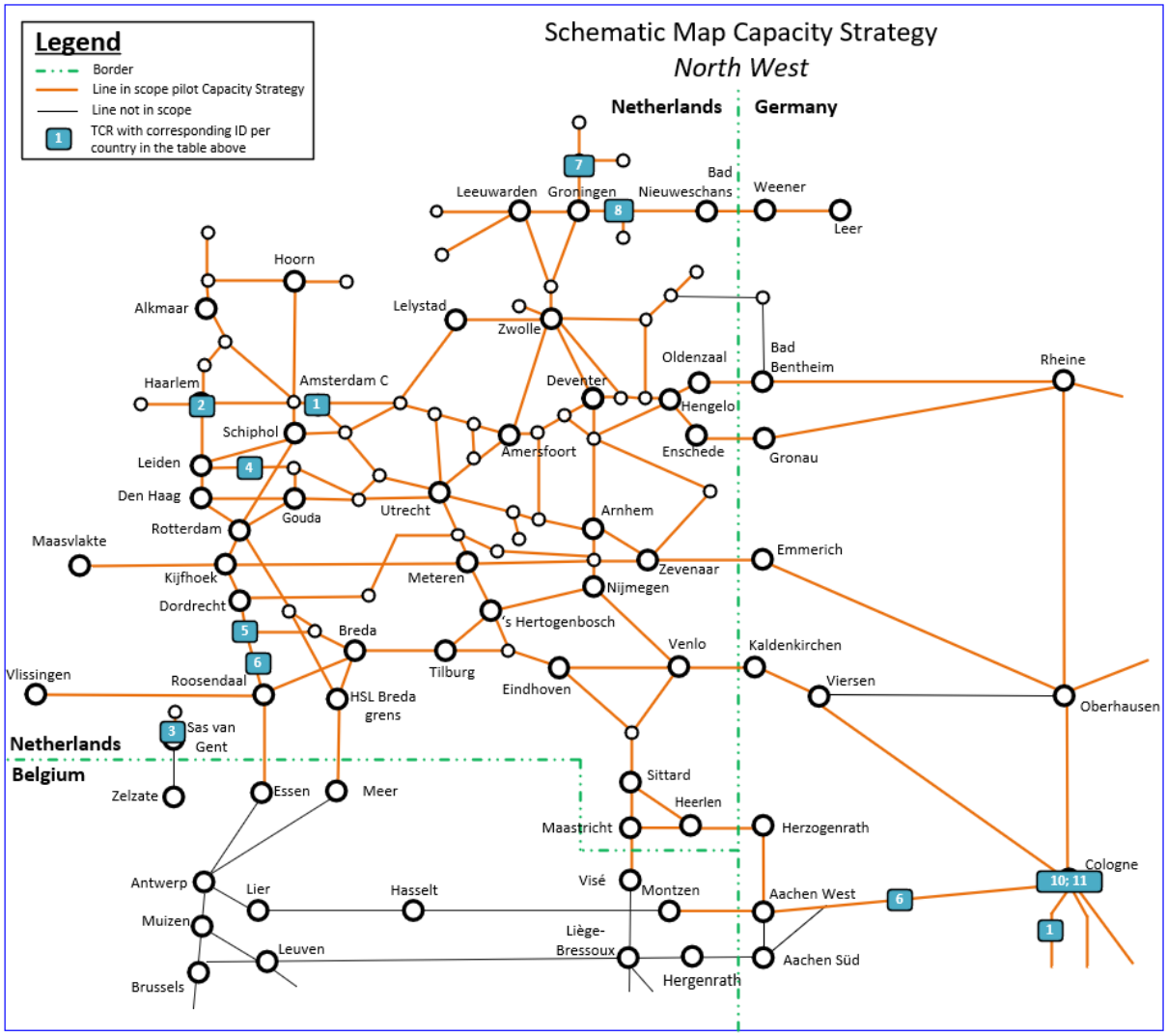


Figure 9: Schematic Map TCRs North West

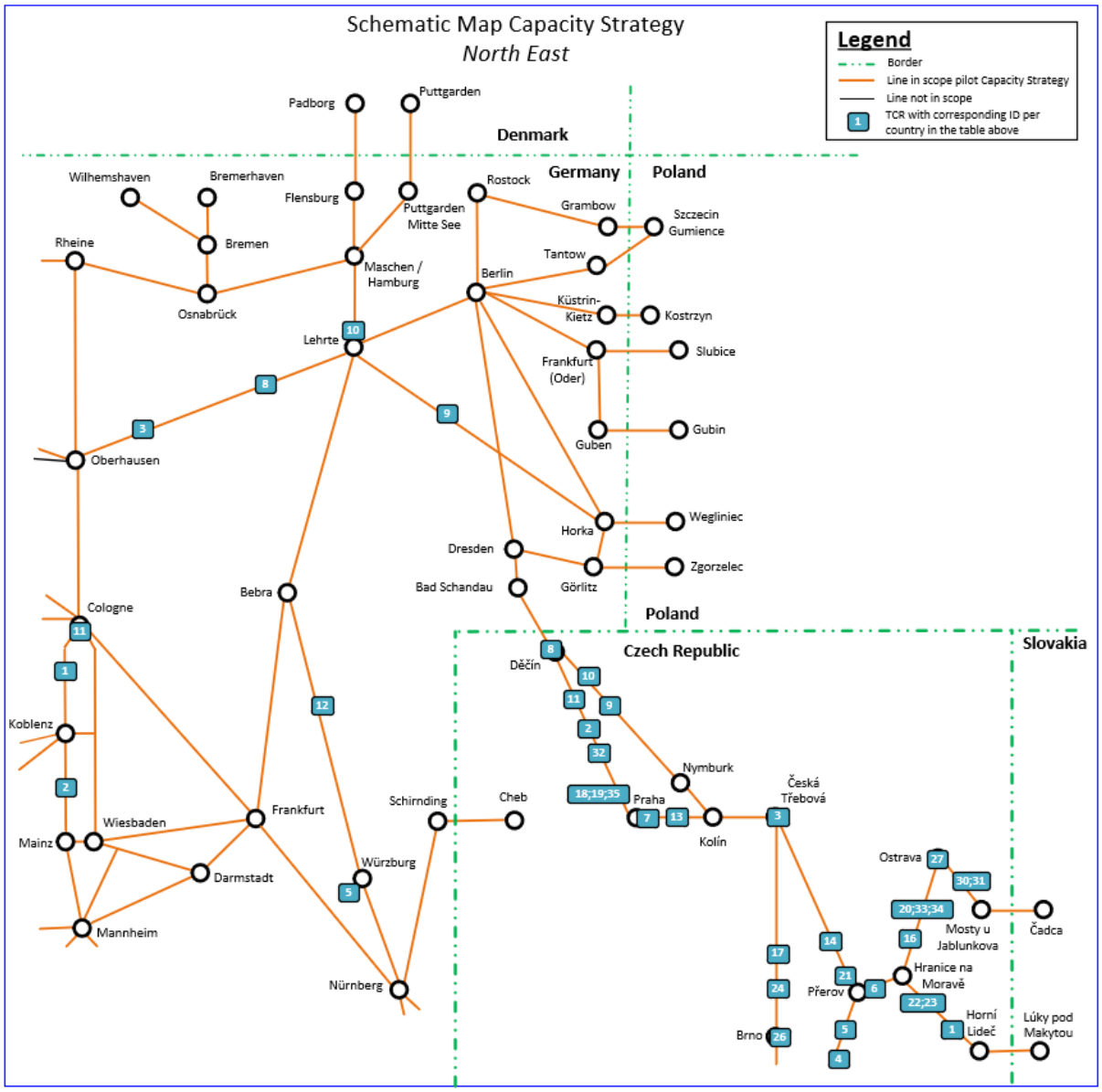


Figure 10: Schematic Map TCRs North East

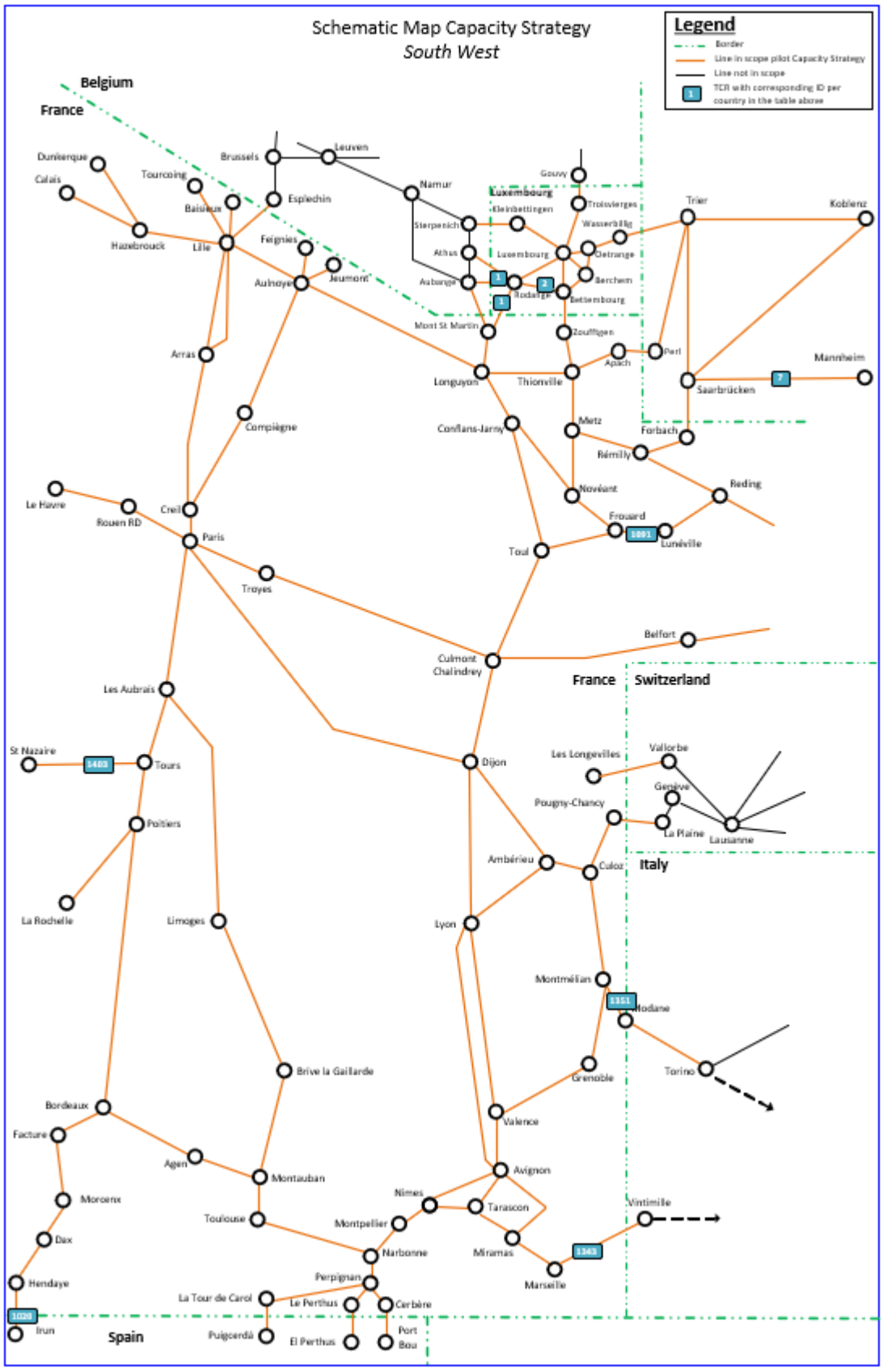


Figure 11: Schematic Map TCRs South West

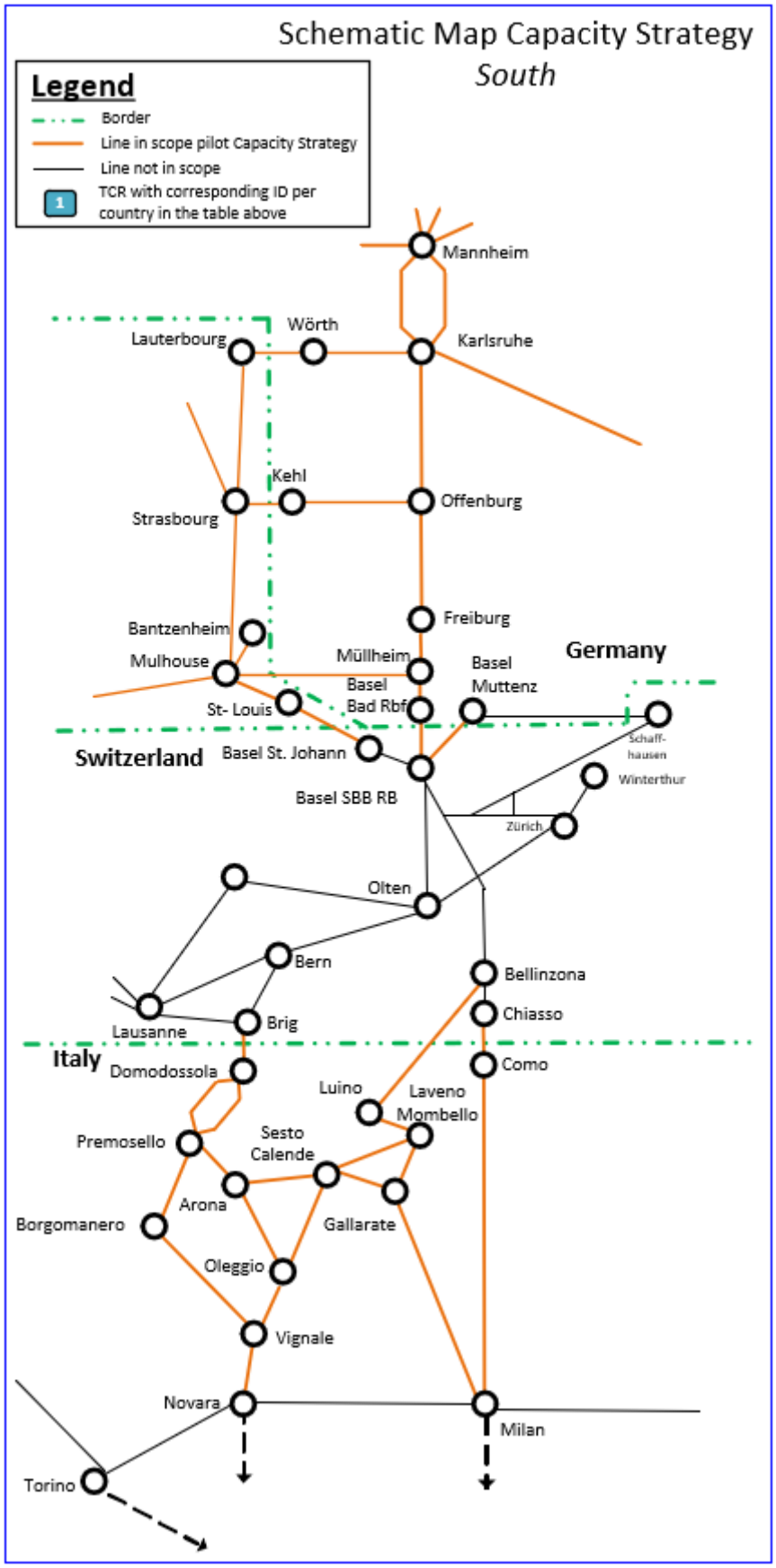


Figure 12: Schematic Map TCRs South

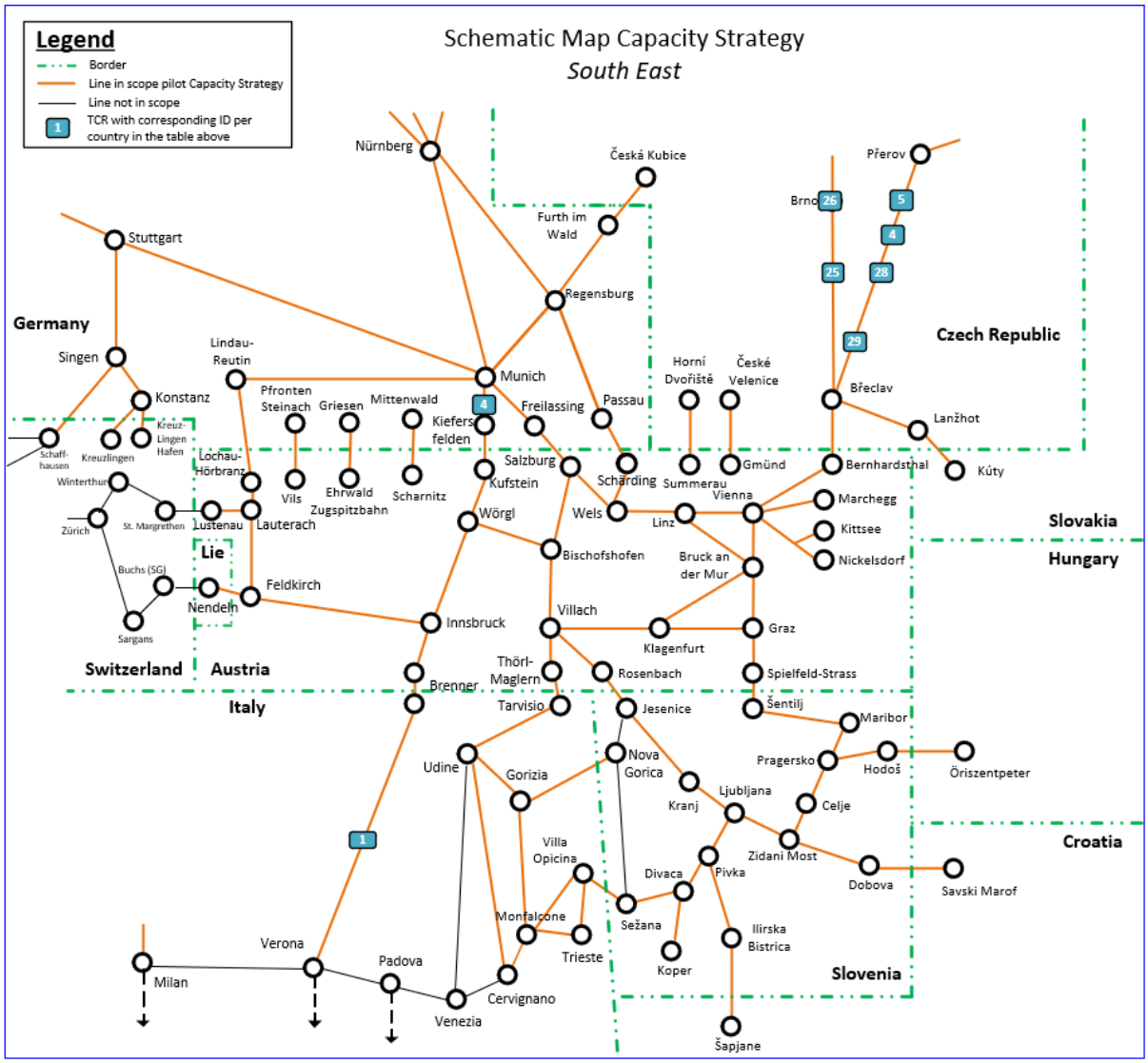


Figure 13: Schematic Map TCRs South East

2.2.3 Standard Re-Routings for Pre-Announced Major Impact TCRs

SŽ-Infrastruktura

At the time of the creation and publication of the 2028 Capacity Strategy, there was no information about planned TCRs with a significant impact in 2028. Once the data - implementation dates and scope of work will be known, the TCRs will be coordinated with the neighbouring IMs and all involved parties, and also re-routing options will be created, and subsequently the TCRs will also be taken into account when creating the capacity model.

SZCZ

We offer re-reouting routes, if possible, to RUs during our planning and consultation process described above. It depends on RUs, if they accept them. It depends on the requirements of the carriers in terms of train length, weight, traction and the capacity of any diverging routes to be considered.

DB InfraGO

Since no standardised deviation routes are in operation in Germany, but any such deviation is developed on a case-by-case basis, only guidelines can be communicated.

For TCR reroutings related to the TCRs published in the document (see section 2.2 of this document), the chart includes rerouting information per each high-performance corridor concerned.

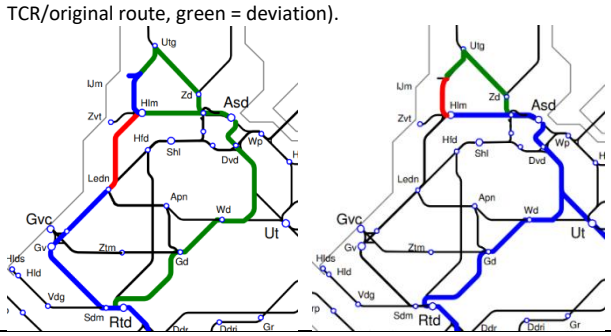
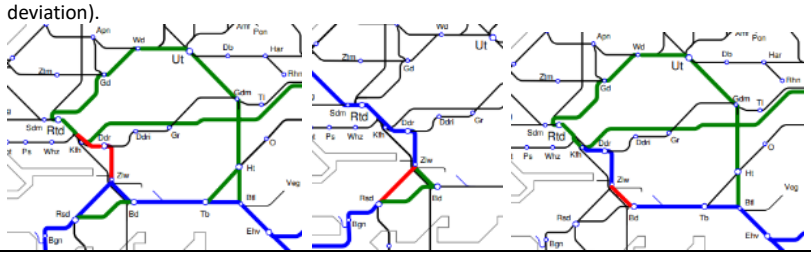
In general, any total closure results in some cancellations of paths, which usually concern regional traffic and in the rerouting of others, which usually concern both freight and long-distance traffic, following general principles such as the usage of an alternative line, as in the example of the Eastern Rhine train line if the Western Rhine line is blocked, and vice-versa.

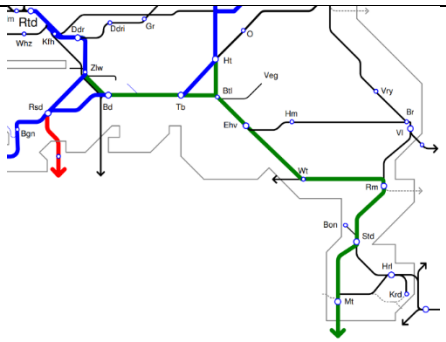
Finally, as there was no reliable information on all TCR reroutings for TT2028 at the time of publication, such information will become available later on in the process and will be communicated through the pertinent channels.

ProRail

The standardised deviation routes and other planning principles are part of the Corridor book, which is available for applicants through the ProRail Logistics Portal (folder “Corridorboeken”).

The numbers in the table below refer to the table in paragraph 2.2.1

NL	1	Amsterdam Centraal	Traffic impact to be elaborated.
NL	2	Haarlem	See maps 33 & 35 in the Corridor book (shown maps below for freight only. Red = TCR/original route, green = deviation). 
NL	3	Sluiskil (bridge)	No re-routing possible. Windows for freight traffic expected.
NL	4	Leiden - Alphen aan den Rijn	No re-routing of trains foreseen.
NL	5	Lage Zwaluwe	See maps 38, 39 & 42 in the Corridor book. (shown maps below for freight only; also to be used by long distance passenger traffic not using HSL. Red = TCR/original route, green = deviation). 
NL	6	Kijfhoek - Roosendaal grens	See the maps mentioned under TCR NL-5 (38, 39 & 42), together with map 41:

			
NL	7	Groningen - Eemshaven / Delfzijl	No re-routing possible.
NL	8	Groningen - Nieuweschans grens / Veendam	No re-routing possible.

SNCF Réseau

SNCF-R offers two permanent alternatives, the first is a modify request outside the periods impacted by TCRs. The second is a modify request for alternative path: The impact of TCRs is limited by using alternative routes when the infrastructure facilities allow it. The general principle is to keep always at least one of the paths open. The two courses can be not equal in time, tracks number or speed limit. It is then necessary to apply compensation.

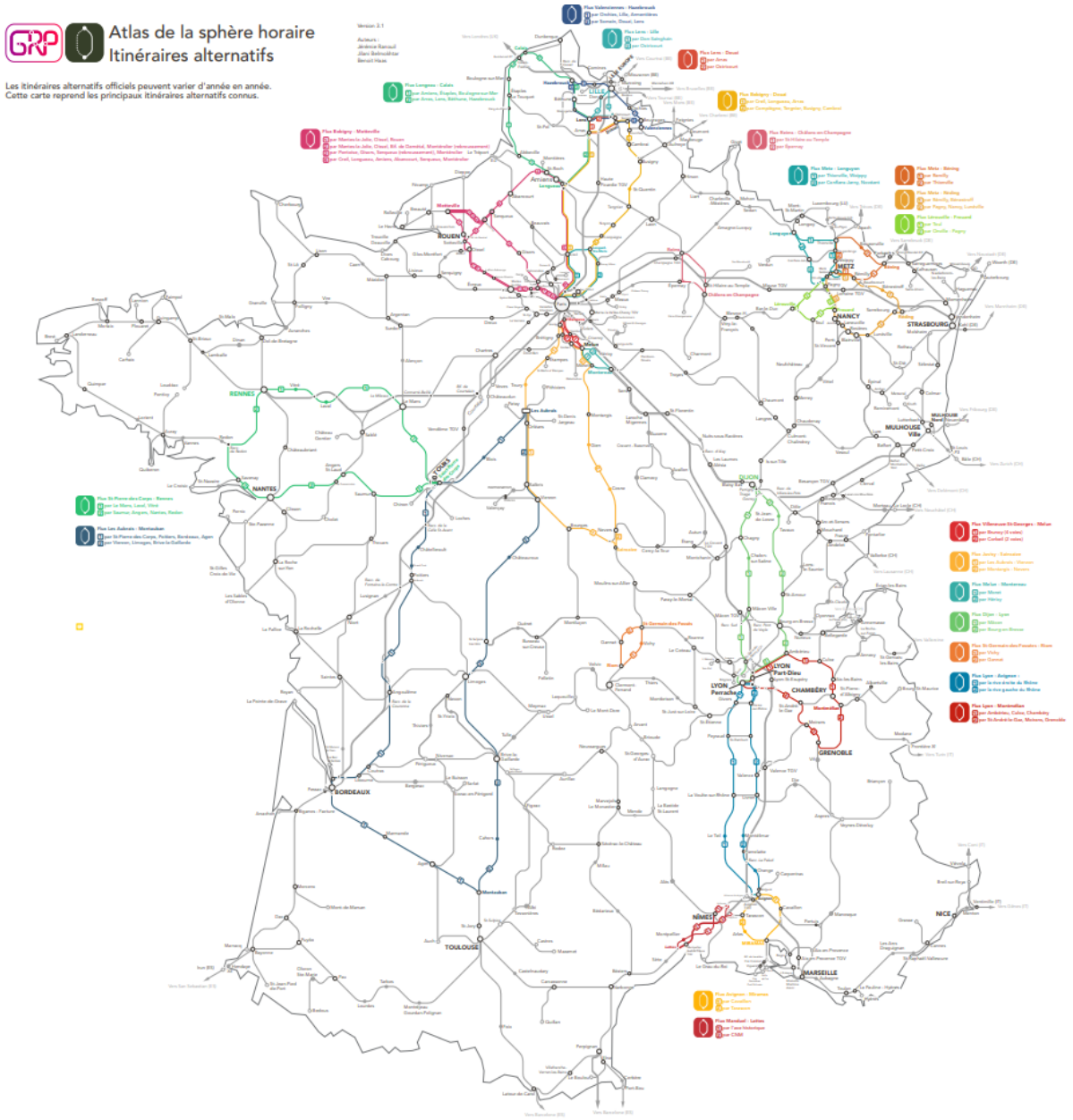


Figure 14 Schematic Map Capacity Strategy. https://www.sncf-reseau.com/fr/node/501

TABLEAU COMPARATIF DES ITINERAIRES ALTERNATIFS													
Secteur Picardie - Nord Pas de Calais													
Flux	**Corridors**	**Intervalle de gares**	**N° de ligne UIC**	**Puissance électrique**	**Mode de cantonnement**	**Gabarit**	**Vitesse**	**Nombre de voies**	**Distance en km**	**Temps de parcours**	**Temps compensatoire**	**Travaux planifiés**	**Restrictions**
Flow	**RFC**	**Line section**	**UIC line Number**	**Electrical power**	**Block system**	**Gauge**	**Speed**	**Number of tracks**	**Distance in km**	**Travel time**	**Compensatory time**	**Planned TCR**	**Constraints**
Paris - Le Havre	2	Bobigny Eragny	354000	25000v	BAL	GA/ GB1	120/ 160	2					

		Eragny Pontoise	338000	25000v	BAL	GB	160	2					
		Pontoise Serqueux	330000	25000v	BAPR	GB	160	2					
		Serqueux Montérolier	353/354000	25000v	VU	GB/GB1	100	1					Voie unique
		Montérolier Le Havre	340000	25000v	BAL	GB1	160	2	243	05h11	most important delay		
		Bobigny Longueau	272000	25000v	BAL	GA/GB1	120/160	4					
		Longueau St Roch	311000	25000v	BAL	GB	160	2					
		St Roch Serqueux	321000	25000v	BAPR	GB	160	2					
		Serqueux Montérolier	353/354000	25000v	VU	GB/GB1	100	1					Voie unique
		Montérolier Le Havre	340000	25000v	BAL	GB1	160	2	311	04h54	17'		
		Bobigny Longueau	272000	25000v	BAL	GA/GB1	120/160	4					
		Longueau St Roch	311000	25000v	BAL	GB	160	2					
		St Roch Serqueux	321000	25000v	BAPR	GB	160	2					
		Serqueux Darnétal	321000	25000v	BAPR	GB	160	2					Forte pente
		Darnétal Le Havre	340000	25000v	BAL	GB1	160	2	262	04h37	34'		
		Bobigny Mantes la Jolie	990000	1500/25000v	BAL	GB1	100	2					
		Mantes la Jolie Rouen	340000	25000v	BAL	GB1	160	2					
		Rouen Le Havre	340000	25000v	BAL	GB1	160	2	233	04h23	48'		Le Havre Soquence --> FA = VU
Paris - Lille	2	Bobigny Creil	272000	25000v	BAL	GA/GB1	120/160	2				Jour/Day	
		Creil Tergnier	242000	25000v	BAL	GB1	120	2					
		Tergnier Busigny	242000	25000v	BAL	GB1	120	2					
		Busigny Somain	250000	25000v	BAL	GB	120	2					
		Somain Arras	259/272000	25000v	BAL	GA/GB1	120/160	2					
		Arras Don	286000	25000v	BAL	GB1	140/100	2					
		Don Lille	289000	25000v	BAL		100	2	307	04h17	Temps le plus péjorant		
		Ormoy Tergnier	229000	25000v	BAL/BAPR/BM		100/120	2					

		Tergnier Busigny	232/242 000	25000v	BAL	GB1	120	2					
		Busigny Somain	250000	25000v	BAL	GB	120	2					
		Somain Arras	259/272 000	25000v	BAL	GA/ GB1	120/ 160	2					
		Arras Don	286000	25000v	BAL	GB1	140/ 100	2					
		Don Lille	289000	25000v	BAL		100	2	292	03h34	43'		
		Bobigny Creil	272000	25000v	BAL	GA/ GB1	120/ 160	2				Jour/Day	
		Creil Longueau	272000	25000v	BAL	GA/ GB1	120/ 160	2					
		Longueau Arras	272000	25000v	BAL	GA/ GB1	120/ 160	2					
		Arras Don	286000	25000v	BAL	GB	140/ 100	2					
		Don Lille	289000	25000v	BAL		100	2	240	03h10	57'		
		Bobigny Creil	272000	25000v	BAL	GA/ GB1	120/ 160	2					
		Creil Longueau	272000	25000v	BAL	GA/ GB1	120/ 160	2					
		Longueau Lens	286000	25000v	BAL	GB1	100	2					
		Lens Ostricourt	301000	25000v	BAL		90	2				Nuit/Night	
		Ostricourt Lille	272000	25000v	BAL	GA/ GB1	120/ 160	2	235	03h04	1h03		
Valenciennes - Hazebrouck	2	Valenciennes Somain	267/262 000	25000v	BAL	GB	120	2					Attention aux heures d'ouverture
		Somain Arras	262000	25000v	BAL	GB	120	2				Jour/Day	
		Arras Lens	286000	25000v	BAL	GB1	100	2				Jour/Day	
		Lens Hazebrouck	301000	25000v	BAL		140/ 120	2	124	02h26	most important delay		
		Valenciennes Somain	267/262 000	25000v	BAL	GB	120	2					
		Somain Douai	262000	25000v	BAL	GB	120	2					
		Douais Ostricourt	272000	25000v	BAL	GA/ GB1	120/ 160	2				Nuit/Night	
		Ostricourt Lens	301000	25000v	BAL		90	2					
		Lens Hazebrouck	301000	25000v	BAL		140/ 120	2	113	02h34	12'		
		Valenciennes Orchies	267000	25000v	BAL	GA	120/ 160	2					
		Orchies Lille	267000	25000v	BAL	GA	120/ 160	2					

		Lille Hazebrouck	295000	25000v	BAL	GC	120/160	2	98	01h14	01h22		
Secteur Est - ALCA													
Flux	**Corridors**	**Intervalle de gares**	**N° de ligne UIC**	**Puissance électrique**	**Mode de cantonnement**	**Gabarit**	**Vitesse**	**Nombre de voies**	**Distance en km**	**Temps de parcours**	**Temps compensatoire**	**Travaux planifiés**	**Restrictions**
Flow	**RFC**	**Line section**	**UIC line Number**	**Electrical power**	**Block system**	**Gauge**	**Speed**	**Number of tracks**	**Distance in km**	**Travel time**	**Compensatory time**	**Planned TCR**	**Constraints**
Bâle - Woippy AN	2	Mulhouse Saverne	115/070000	25000v	BAL	GB/GB1	220/160	2					
		Saverne Frouard	70000	25000v	BAL	GA/GB/GB1	120/160	2					
		Frouard Metz Marchandises	095/089000	25000v	BAL	GA	120/160	2					
		Metz March. Woippy	191300	25000v	BAL		110	2	315	05h30	most important delay		
		Mulhouse Saverne	115/070000	25000v	BAL	GB/GB1	220/160	2					
		Saverne Rémilly	070/140000	25000v	BAL	GB1	120	2					
		Rémilly Metz L3	140/192000	25000v	BAL	GB1	150/140	2					
		Metz L3 Woippy	192000	25000v	BAL		100	2	269	04h00	01h30		
Dijon - Metz AO	2	Dijon Toul	849/843/832000	25000v	BAL		140/100	2					
		Toul Frouard	70000	25000v	BAL	GA/GB/GB1	120/160	2					
		Frouard Novéant	90000	25000v	BAL	GA	120/160	2					
		Novéant Metz	89000	25000v	BAL	GA	120/160	2	256	03h30	Temps le plus péjorant		
		Dijon Toul	849/843/832000	25000v	BAL		140/100	2					
		Toul Lérouville	70000	25000v	BAL	GA/GB/GB1	120/160	2					
		Lérouville Novéant	89000	25000v	BAL	GA	120/160	2					
		Novéant Metz	89000	25000v	BAL	GA	120/160	2	272	03h17	12'		
Château-Thierry - Metz	2	Château-Thierry Lerouville	70000	25000v	BAL	GA/GB/GB1	120/160	2					
		Lerouville Frouard	70000	25000v	BAL	GA/GB/GB1	120/160	2					
		Frouard Novéant	90000	25000v	BAL	GA	120/160	2					

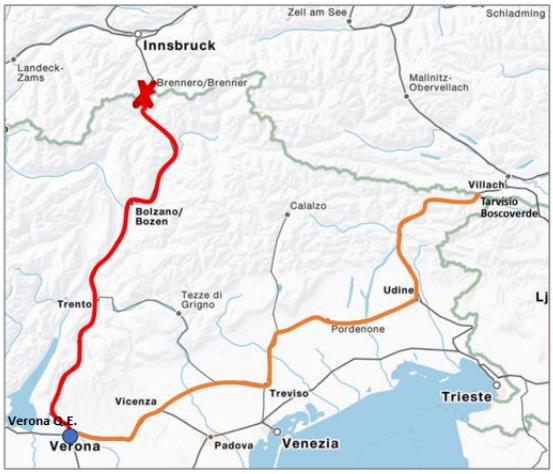
		Novéant Metz	89000	25000v	BAL	GA	120/160	2	259	03h35	most important delay		
		Château-Thierry Lerouville	70000	25000v	BAL	GA/GB/GB1	120/160	2					
		Lérouville Novéant	70000	25000v	BAL	GA/GB/GB1	120/160	2					
		Novéant Metz	89000	25000v	BAL	GA	120/160	2	257	02h55	50'		
Metz - Longuyon	2	Metz Onville	89000	25000v	BAL	GA	120/160	2					
		Onville Conflans-Jarny	95000	25000v	BAL	GA	100/120	2					
		Conflans-Jarny Longuyon	95000	25000v	BAL	GA	100/120	2	84	01h32	Temps le plus péjorant		
		Metz Thionville	180000	25000v	BAL	GA	120/160	2					
		Thionville Longuyon	204000	25000v	BAL	GA/GB	100/120	2	78	01h20	12'		
Secteur Sud-Est													
Flux	**Corridors**	**Intervalle de gares**	**N° de ligne UIC**	**Puissance électrique**	**Mode de cantonnement**	**Gabarit**	**Vitesse**	**Nombre de voies**	**Distance en km**	**Temps de parcours**	**Temps compensatoire**	**Travaux planifiés**	**Restrictions**
Flow	**RFC**	**Line section**	**UIC line Number**	**Electrical power**	**Block system**	**Gauge**	**Speed**	**Number of tracks**	**Distance in km**	**Travel time**	**Compensatory time**	**Planned TCR**	**Constraints**
Villeneuve - Melun	4	Villeneuve Juvisy	745000	1500v	BAL	GB	120/160	4					
		Juvisy Corbeil	745000	1500v	BAL	GB	120/160	2				Nuit/Night	
		Corbeil Melun	746000	1500v	BAL	GB	120/160	2	41	45'	most important delay	Nuit/Night	
		Villeneuve Brunoy	830000	1500v	BAL	GA	160	4					
		Brunoy Melun	830000	1500v	BAL	GA	160	4	30	16'	29'		
Melun - Montereau	4	Melun Héricy	746000	1500v	BAL	GB	120/160	2					
		Héricy Montereau	746000	1500v	BAL	GB	120/160	2	36	31'	Temps le plus péjorant		
		Melun Moret	830000	1500v	BAL	GA	160	2				Nuit/Night	
		Moret Montereau	830000	1500v	BAL	GA	160	2	34	21'	10'		
Dijon - Lyon 7P	6	Dijon Bourg en Bresse	860/880000	1500v	BAL	GA	120/160	2				Jour/Day	limitation à 4 circulations en simultané

		Bourg en Bresse Ambérieu	883000	1500v	BAL	GA	160	2					
		Ambérieu Lyon	890000	1500v	BAL		100/120/160	2	220	03h00	most important delay		
		Dijon Mâcon	830000	1500v	BAL	GA	160	2				Nuit/Night	
		Mâcon St Germain MO	830000	1500v	BAL	GA	160	2					
		St Germain MO Lyon	830000	1500v	BAL	GA	160	4	198	02h42	15'		
Lyon - Avignon	6	Lyon Givors	800000	1500v	BAL	GB1	120/160	4					
		Givors Peyraud	800000	1500v	BAL	GB1	120/160	2					
		Peyraud La Voulte	800000	1500v	BAL	GB1	120/160	2					
		La Voulte Villeneuve	800000	1500v	BAL	GB1	120/160	2					
		Villeneuve Avignon	824000	1500v	BAL	GA	140	2	223	02h45			Tête à queue possible selon suite itinéraire
		Lyon Chasse/Rhone	830000	1500v	BAL	GA	160	4				Nuit/Night	
		Chasse St Rambert	830000	1500v	BAL	GA	160	2					
		St Rambert Livron	830000	1500v	BAL	GA	160	2					
		Livron Orange	830000	1500v	BAL	GA	160	2					
		Orange Avignon	830000	1500v	BAL	GA	160	2	234	02h45			
Avignon - Nîmes	6	Avignon Tarascon	830000	1500v	BAL	GA	160	2				Nuit/Night	
		Tarascon Nîmes	810000	1500v	BAL	GA	120	2	49	50'	most important delay		
		Avignon Villeneuve	824301	1500v	BAL	GA	140	2					
		Villeneuve Nîmes	800000	1500v	BAL	GB1	120/160	2	47	30'	20'	Jour/Day	
Avignon - Miramas	6	Avignon Cavaillon	925000	1500v	BAL	GA	160/220	2				Jour/Day	
		Cavaillon Miramas	925000	1500v	BAL	GA	160/220	2	71	01h10	Temps le plus péjorant		Tête à queue possible selon suite itinéraire
		Avignon Tarascon	830000	1500v	BAL	GA	160	2				Nuit/Night	
		Tarascon Miramas	830000	1500v	BAL	GA	160	2	67	55'	15'		

ÖBB Infra

No information available at the moment of publication of this document.

RFI



TCR:
Interruption of tracks 8,9,10,11,12 in Brennero station
Example of Origin/destination for the standard route:
Verona Quadrante Europa - Brennero
Deviation route:
Tarvisio Boscoverde - Udine - Sacile - Treviso - Vicenza - Verona Quadrante Europa
Extra length of the re-routing in comparison to the standard route:
≈70 km
Suitability for different types of traffic:
Long distance + regional + freight
Restrictions in parameters in comparison to the standard route:

Section	Traction	Line class	Max. train lenght	Profile
Brennero - Bolzano	Electric - 3 kV	D4L	600	P/C80
Bolzano - Verona	Electric - 3 kV	D4	600	P/C80
Tarvisio B. - Udine	Electric - 3 kV	D4	625	P/C80
Udine - Sacile	Electric - 3 kV	D4L	580	P/C80
Sacile - Treviso	Electric - 3 kV	D4L	575	P/C80
Treviso - Vicenza	Electric - 3 kV	D4L	550/575	P/C80
Vicenza - Verona Q.E.	Electric - 3 kV	D4	600	P/C80

ACF/CFL

In Luxembourg, there is no re-routing concept existing. Ad-hoc alternative itineraries are considered for each TCR. However, two national rules are defined in the TCR planification (see map below) :

- On the line 1, the sections Luxembourg – Ettelbruck ¢ and Ettelbruck – Troisvierges ¢ cannot be closed simultanously;
- In order to garantee the itinerary Bettembourg – Pétange, the sections of the lines 6a/6f via Esch/Alz. ¢ and 6/7 via Luxembourg ¢ cannot be closed simultanously.

Moreover, the TCR having an impact on foreign networks are coordinated by the RAN Group = Rhine-Ardennes-North Sea Group.


Troisvierges
Ettelbruck
Luxembourg
Rodange
Pétange
Bettembourg
Esch/Alz.

3. Expected Traffic Flows and Traffic Planning

3.1 General Principles

This chapter describes the main principles of transport planning that will later be used in planning the elements of the Capacity Model, Capacity Supply and Capacity Allocation. These principles are different in each country and therefore a comparison is made for better visualisation.

Additionally, each country is in a distinct stage of implementation, and the expected progress with the TTR processes after the release of the Capacity Strategy is also discussed here.

Furthermore, the essential parameters for passenger and freight trains, which will be utilized in the capacity model, are defined. These parameters align with the Capacity Model Procedures.

The projected capacity figures are indicative as the final capacity of the infrastructure is influenced by the technical characteristics of the traffic and many other factors. Further assessment and a more detailed differentiation will be conducted while preparing the Capacity Model and the Capacity Supply.

3.2 Description of the Values Used in the Chapter

In all core parts of this chapter, we encounter a lack of common procedures that apply across IMs, which would lead to greater coherence between data that are further compared within the common outputs. There are several methods that are used in the traffic flow chapter.

Past timetables

One possible basis is the use of data from past timetables. The reference timetable may be the latest available timetable, or it may be the median, average or other method of calculation of several past timetables. The forward-looking approach provides a growth factor.

Capacity concepts

The second approach is to use pre-existing capacities delivered through established timetabling processes and is considered the best possible basis for estimating the volumes to be included in the capacity strategy.

Hybrid

The two approaches above can be combined in different ways.

Method	Applied by
Past timetables	SNCF Réseau, SZCZ , ACF/CFL
Capacity concepts	DB InfraGO
Hybrid	ÖBB INFRA, RFI, ProRail, SŽ

3.3 National Specificities

3.3.1 PRORAIL

The starting point for the traffic flows for timetable 2028 is the allocated timetable 2025, including the intended developments in both passenger and freight traffic up to and including 2028. 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 2028
- Timetable adjustments because of major TCR's at the start of TT2028 or which will be valid for a large part of 2028
- Growth forecasts for freight traffic, from which we derive the number of freight paths required per origin-destination relationship.
- Reference models derived from TBOV (Toekomstbeeld Openbaar Vervoer; vision for future railway capacity usage).

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.

3.3.2 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 neighbours, to coordinate the result.

3.3.3 DB INFRAGO

In the TTR-context and ahead of the implementation of the "Deutschlandtakt", DB InfraGO 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 InfraGO's website. The mKoK (Mediumterm concept for optimized capacity utilization) elaborated on previous Deutschlandtaktplanning 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. In April 2024 an updated version of the mKoK has been published on DB InfraGO's website[3] for the Timetables 2026 and onwards. It serves as the best available data basis for the present Chapter in the Capacity Strategy 2028.

[3] https://www.dbinfrago.com/web/schienennetz/kazu-novum-11909200

3.3.4 ÖBB INFRA

The infrastructure for the corresponding timetable year is considered to determine traffic flows. The 2024-infrastructure is supplemented by:

Known amendments to the infrastructure for the timetable 2028 (s. Chapter 1)
Known TCRs that presumably must be considered for the timetable 2028 (s. Chapter 2)
Traffic flows are evaluated based on the supposed infrastructure for Timetable 2028. Consequently, the 2024-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 2028(For e.g., pre-announced PSO5-traffic)
Approx. 8% increase for freight traffic 2024–2028, 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 2028-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 timetable years with significant changes in traffic volume or travel times (For e.g., opening of major new lines).

3.3.5 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 utilization, 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 utilization, 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 2028.

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.

3.3.6 SŽ

An evaluation approach based on historical timetables is used in the preparation of capacity strategies and models. The reference timetable for the 2028 capacity strategy is timetable 2024. 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 neighbouring 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 2028. 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 2028.

3.3.7 SZCZ

Traffic planning principles

This chapter explains the national principles of rail capacity allocation and paths planning in the Czech Republic. Currently, rail capacity is in principle allocated for the duration of one timetable, on the basis of regular, late and ad-hoc requests for capacity.

Transport planning is carried out in accordance with the Network Statement (NS)

	Location/Chapter	Available from
Rail capacity application method and form	NS/4.2.1; 4.2.2	here
Dates for timetable preparation	NS/4.5.1.5; 4.5.1.6; 4.5.2	here
Coordination process and dispute resolution	NS/4.5.4; 4.5.5	here
Access to service facilities	NS/7.1; 7.2; 7.3	here

The process for allocating rail capacity on cross-border routes is addressed in the applicable Network Statements of both participating infrastructure managers. The way the paths are constructed is subsequently elaborated in the respective infrastructure interconnection agreements.

Traffic flows

For the preparation of the capacity models, the projected traffic flows are based on real traffic volumes between 2015 and 2023, taking into account the increase in available capacity from Chapter

1 and the temporary capacity restriction during the validity of the Timetable 2028, as described in Chapter 2. The reference timetable for the 2028 capacity model is the Timetable 2025. Data on the train counts were obtained from database and timetable data (IS KADR). The categories of passenger and freight trains according to the internal regulation SŽ D1 PART ONE were generalised into three categories:

- Freight service includes the categories: Nex (express freight train), Pn (standard freight train), Mn (handling train), Vleč (work-siding train), Lv (locomotive train), Služ (service train), Pom (ancillary train)
- Long-distance passenger service includes the categories: Ex (express train), R (long-distance fast train)
- Regional passenger service includes categories Sp (regional fast train), Os (regional train), Sv (empty train set)

The final capacity is influenced by the technical parameters of the infrastructure and the characteristics of the operational concept chosen. The numbers of planned paths may not reflect 100 % of the future traffic volume, but they approximate the volume of traffic which Správa železnic considers to be demanded in the course of long-term capacity planning.

For the purposes of the Timetable Redesign Project (TTR), train journeys are divided by the type of rail capacity into trains running according to the annual timetable, where all three modes are considered. For ad-hoc rail capacity, only freight trains are considered, as the proportion of passenger trains running on the basis of ad-hoc requests for rail capacity is marginal. The average calculation includes 99.9 % of all trains that used the infrastructure in the period 2015- 2023 between 00:00 and 24:00. These are really running trains, not planned trains. The arithmetic mean is used for the calculation, with the inclusion of zero values. Maximum values from the average number of train journeys per day between 2015 and 2023 are the result.

3.3.8 ACF/CFL

For passenger traffic, the Ministry of Mobility and Public Works defined the forecast until 2035 in the National Mobility Plan 2035[4].

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.

3.4 Outputs of the Capacity Strategy

	AT	CZ	DE	FR	IT	NL	SL	LU
Conduction of CNAs	Yes	Yes	No	Yes	No	Yes	Yes	No
Capacity Model without TCRs	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Capacity Model with TCRs	No	No	No	No	No	Yes	No	No

[4] Published at https://transports.public.lu/fr/publications/strategie/pnm-2035-brochure/pnm-2035-brochure-en.html

Capacity Supply	No	No	No	Yes	No	Yes	No	No

3.5 Train Parameters

For the context of TTR planning, the capacity strategy defines basic parameters for passengers and freight transport individually. The parameters of international train lines are also shown in the traffic flow map. These parameters take into account specific limits along the entire length of the train route.

Passenger transport

In passenger transport, the segments serving the area are defined. For each segment, the basic parameters (Referent trainset speed, Maximum trainset length) that should be complied with by the operating trains are given. The countries in which these parameters are valid are indicated separately in a column. Due to local specificities (e.g. length of platforms) there may be deviations from the values shown.

Category	Country	Stopping pattern	Referent trainset speed	Referent trainset length
High-speed trains	NL, DE, IT, FR	Connects main stations exclusively	300 km/h	400 m
Long distance trains	DE, AT, FR	Connects main stations exclusively	230 km/h	400 m
	DE, IT, AT		160 -200 km/h	400 m
	NL		200 km/h	330 m
	NL, LU		140 km/h	330 m
	CZ		160 km/h	400 m
	CZ		160 km/h	300 m
Express regional trains	IT, AT, SI	Does not serve all stops in section	160 km/h	250 m
	NL, LU		140 km/h	250 m
Regional trains	CZ, IT, AT, SI, FR	Serves all stops in section	160 km/h	180 - 250 m
	CZ, NL, LU		140 km/h	180 – 250 m

Freight transport

In freight transport, it is very difficult to specify train types due to the generality of the capacity strategy. There are a large number of individual and local limits that make it impossible to reliably specify specific parameters for a large network. The limiting parameters for freight transport include allowed line classes of loading, maximum allowed train length, maximum allowed train weight, track slope and others. More specific freight train types can be specified when the capacity model is developed.

Category	Referent trainset weight	Referent trainset length	Referent trainset speed
Standard 1			80 km/h

Standard 2	Maximum weight set by infrastructure limits	Maximum length set by infrastructure limits	100 km/h
Standard 3			120 km/h
Special (Danger/ Extraordinary trains)	Individual	Individual	Individual

Capacity availability

Rail capacity utilisation is an important index of the effectiveness and efficiency of rail transport. This concept includes the degree of utilisation of available capacity of lines. The capacity of a railway system is influenced by a variety of factors, including both infrastructural and traffic planning aspect. Therefore the expected available capacity is always related to an expected mix and structure of paths. Should significantly different commercial requests be received, the overall available capacity could be different.

However, determining in an harmonized way the actual level of capacity available is challenging due to the lack of a uniform and standardised method for calculating this indicator. Different countries and organisations use different methodologies and parameters, which makes international comparison and analysis difficult.

The specific level of available capacity is shown within the traffic flow map. The map visualises the available capacity at border crossings for passenger and freight traffic together in three levels:

- Green – All requests might be met
- Yellow – Changes might be necessary
- Red – High demand expected

Traffic flows

There is no common methodology within the participating IMs for calculating traffic flows for the purposes of the TTR capacity strategy. The traffic flows are based on the timetable concepts already available, taking into account the increase in available capacity from Chapter 1 and the Temporary Capacity Restriction during the validity of the timetable 2028 as described in Chapter 2. The route counts presented in this document may not reflect 100% of the future traffic flows, but they approximate the traffic volumes considered to be in demand during the long-term capacity planning process. The exact number of planned train paths is always known only when the timetable is drawn up and may change during the period of validity depending on the needs of the parties involved (applicants can make suggestions, in particular through the Capacity Needs Announcement (CNA)). The traffic flow volumes given in this document are considered as the starting point for the next phases of the TTR project implementation, the Capacity Model.

The planned traffic flows are shown in the map of Figure 15. This map contains international routes divided into long-distance traffic, regional traffic and freight traffic. Different line types are used for different intervals.

The traffic flow map can also be found via this link: **CS2028 traffic flows network_draft.pdf**, on which it is easier to zoom in on the details of the map, like the train parameters and expected capacity availability.

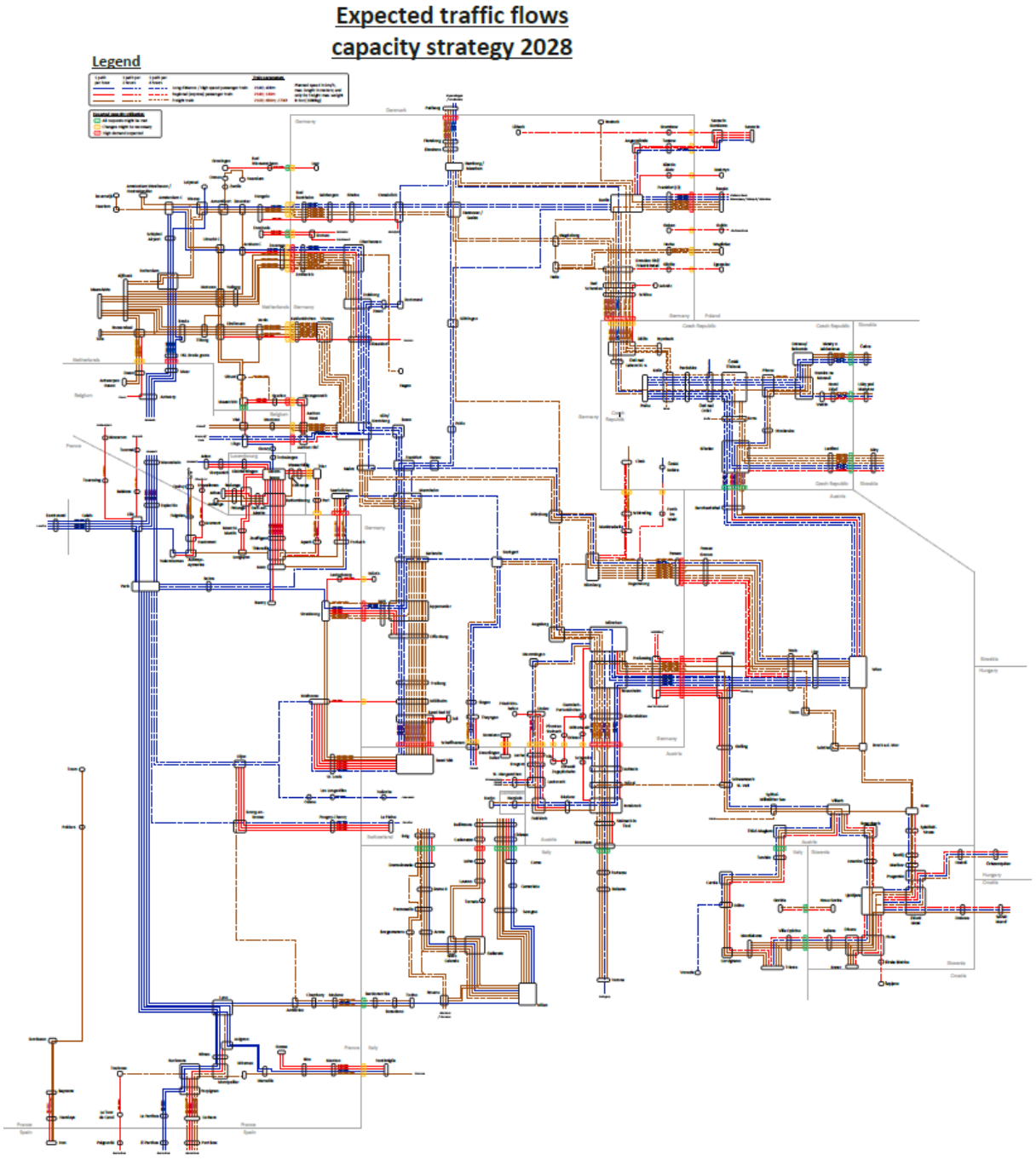


Figure 15: Traffic Flows[5]; see also the link to pdf-version of this map on the previous page

[5] *For DB InfraGO the designation as highly utilised line depends on the absolute traffic volume, not on the utilization rate.*

3.6 Border Traffic Flows

Border points Czech Republic - Austria	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
Břeclav – Bernhardsthal	1	1	2
České Velenice – Gmünd	0	0,5	non systematic
Horní Dvořiště - Summerau	non systematic	non systematic	0,5
Retz - Šatov	0	1	non systematic

Border points Czech Republic - Germany	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
Děčín - Bad Schandau	0,5	1	4
Cheb - Schirnding	0	1	0,5
Česká Kubice - Furth im Wald	0,5*		0

* This train is categorised as regional in Germany and long-distance in Czech Republic.

Border points Germany - France	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
Apach - Perl	0	0,5	0,5
Forbach - Saarbrücken	0,5	1	2
Port du Rhin - Kehl	1	2	1,5
Lauterbourg - Berg	0	1	0
Neuenburg - Mulhouse	0	1	non systemic

Border points Italy - France	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
Modane/ Bardonecchia	1	1	1,5
Vintimille/ Ventimiglia	1*	2*	1
TELT tunnel Lyon-Torino			

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

Border points Germany - Austria	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
Passau - Passau Grenze	0,5+non systematic	1	3,5
Pfronten Steinach - Vils	0	1	0
Griesen - Ehrwald Zugspitzbahn	0	1	non systematic
Mittenwald - Scharnitz	0	1	non systematic
Kiefersfelden - Kufstein	2,5	1 + non-systematic	3
Lindau Reutin - Lochau	0,5	2,5	non-systematic
Freilassing - Salzburg Liefering	3	6	2

Border points Germany - Netherlands	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
Bad Nieuweschans – Weener	0	1	0
Oldenzaal - Bad Bentheim	1	1	2
Zevenaar - Emmerich	1	1	3 west --> east 4 east --> west
Venlo - Kaldenkirchen	0	1	3
Heerlen - Herzogenrath	0	2	0 / 0,5 (runs in off peak hours)*
Gronau - Enschede	0	2	0

* DB scope is only 6-22h hence night traffic is underrepresented

Border points Slovenia - Austria	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
Jesenice-Rosenbach	0,5	0,5	1,5
Šentilj-Spielfeld-Strass	0,5	0,5	1,5

Border points Austria - Italy	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
Steinach/Tirol (AT) - Brennero/Brenner (IT)	0,5	0	3
Thorl-Maglern(AT)-Tarviso(IT)	0,5	0,5	2

Border points Slovenia - **RFC 5,6,10,11**	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
Koper tov./Koper-Divača	0	0,5	4

Border points Slovenia - Italy	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
Sežana-Villa Opicina	0,5	0,5	3
Nova Gorica-Gorizia	0	0,5	0,5

Border points Luxembourg - France	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
Mont St Martin (FR) – Rodange	0	2	0
Zoufftgen (FR) – Bettembourg	1	5	0

Border points Luxembourg – Germany	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
Wasserbillig - Trier	0	2	1

Border Points Not In Scope Of The Common Capacity Strategy 2028

Border points Belgium - France	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
Feignies - Quévy	1	0	1
Tourcoing - Mouscron	-	1	1
Jeumont - Erquelinnes	-	1	1
Baisieux - Blandain	-	1	1
Mont St Martin - Aubange	-	-	1
Wannehain - Esplechin	5	-	-

Border points Switzerland - France	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
St Louis - Basel	0,5	4	2
Pougny - Chancy/La Plaine (Genève)	0,5	3	-
Les Longevilles - Vallorbe	0,5	0	-

Border points Spain - France	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
Cerbere - Port Bou	0	2	2
Hendaye - Irun	0	1	2
Le Perthus - El Perthus (tunnel TP Ferro)	2	-	1
La Tour de Carol - Puigcerdá	-	1	-

Border points Belgium - Netherlands	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
Essen – Roosendaal	0	1	2
Meer – HSL Breda grens	4	0	0
Visé – Eijsden	0	1	1

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

** The numbers displayed in this table have not been aligned for TT 2028 and are solely endorsed by DB InfraGO.*

Border points Denmark – Germany*	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
Flensburg Weiche - Padborg	1	0	1,5

** The numbers displayed in this table have not been aligned for TT 2028 and are solely endorsed by DB InfraGO.*

Border points Poland – Germany*	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
Küstrin-Kietz - Kostrzyn	0	1	0
Tantow Grenze - Szczecin Gumience	0,5	1	0
Frankfurt (Oder) Brücke - Slubice / Rzepin	1	0,5	1,5
Horka - Wegliniec	0	0	1
Görlitz - Zgorzelec	0	0,5	0
Grambow - Sczeczin Gumience	0	0,5	0
Guben - Gubin	0	0,5	0

** The numbers displayed in this table have not been aligned for TT 2028 and are solely endorsed by DB InfraGO.*

Border points Italy - Switzerland	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
Brig (CH) – Domodossola (IT)	0	1	3,5
Bellinzona (CH) – Luino (IT)	0,5	1	2
Chiasso (CH) – Como (IT)	1	0,5	4

Border points Germany – Switzerland*	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
Basel Bad/ Basel Bad Rbf - Basel SBB/ Basel SBB RB	1,5	2	6
Konstanz Grenze - Kreuzlingen	0	3	0
Konstanz Grenze Romanshorn – Kreuzlingen Hafen	0	1	0
Schaffhausen Grenze - Schaffhausen	1	1	0

** The numbers displayed in this table have not been aligned for TT 2028 and are solely endorsed by DB InfraGO.*

Border points Slovenia - Croatia	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
Dobova-Savski Marof	0,5	0,5	1
Ilirska bistrica-Šapjane	0	0,5	0

Border points Slovenia - Hungary	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
Hodoš-Őriszentpeter	0,5	0,5	0,5

Border points Czech Republic - Slovakia	passenger train paths per hour per direction		freight train paths per hour per direction
	long distance	regional	
Lanžhot – Kúty	1	0,5	2
Horní Lideč - Lúky pod Makytou	0,5	0,5	0,5
Mosty u Jablunkova – Čadca	0,5	non systematic	2

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

4. Validation & Publication

The present document adds to but does not replace national Capacity Strategies where published. The present document will be made accessible by RNE on its own webpage directly or by means of a weblink from the page dedicated by any participating IM to its own national Capacity Strategy.