





Capacity strategy of ŽSR for the annual timetable 2027

Železnice Slovenskej republiky



November 2023



Table of Contents

0	History of changes	3
0.1	Introduction and scope of this document	4
0.2	List of abbreviations and explanatory notes	5
0.2.1	List of tables	8
0.2.2	List of images	8
0.3	List of contacts	9
0.3.1	Boundary sections of selected lines	10
0.4	Geographical area KS ŽSR TT 2027	11
0.4.1	Specification of the geographical area of KS ŽSR TT 2027	12
0.4.1.1	Basic track section data	12
1	Expected RU capacity for TT 2027	19
1.1	Additional available capacity for TT 2027	19
1.2	Reduction of the available capacity for TT 2027	22
2	Planned temporary capacity restriction (TCR)	23
2.1	Principles of TCR planning on ŽSR	24
2.2	Description of the TCR planning process, including escalation processes	25
2.3	Expected TCR for TT 2027	27
3	Principles of train traffic planning and traffic volumes	29
3.1	Transport planning principles	29
3.1.1 TT desi	Principles of cooperation with service facilities as well as other strategic components for ign	
3.1.2	Basic principles of train service planning for individual line sections	31
3.2	Basic train categories on lines RFC5, RFC7, RFC9 and RFC 11	41
	Passenger transport	41
	Freight transport:	43
3.3	Traffic intensities	45
3.4	Expected intensities at border sections for TT 2027	48
4	Approval and publication of the TT 2027 CP	49
	References used:	49



0 History of changes

View Full Version	Edited by	Date	Description of the change
3.0a	Bc. Jakub Kuna	01.11.2023	Creating a document structure
3.0b	Bc. Jakub Kuna	27.2.2024	Comment
3.1	Bc. Jakub Kuna	21.3.2024	Incorporation of comments
3.1	Bc. Jakub Kuna	16.4.2024	Final structure



0.1 Introduction and scope of this document

An essential part of the TTR process is pre-planning, the first element of which is the capacity strategy. Article 26 of the EPaR Directive 2012/34/EU requires EU Member States to ensure that capacity allocation schemes for rail infrastructure follow the principles set out in EU legislation to enable Infrastructure Manager (IM) to make optimum efficient use of available infrastructure capacity. In order to effectively meet this legal requirement, it is important to have timely knowledge of the capacity available for given timetables and general capacity needs. The capacity strategy process should help to gather and organize this information and establish general principles to be further used in the capacity planning and allocation process. This knowledge also needs to be shared and harmonized with relevant stakeholders.

This document describes the process by which IMs and allocating bodies (hereafter referred to as ABs) must prepare capacity strategies in accordance with the TTR principles. Infrastructure Managers shall follow these procedures under the chapter 'Transition Period' and thereby support internationally harmonized capacity management processes within the Single European Railway Area.

This guide follows the principles set out in:

Description of the Capacity Redesign and Timetable Development Process version 2.0, which includes further description and glossary of terms used in this document.

Directive 2012/34/EU, in particular:

- Article 26, according to which EU Member States shall ensure that capacity allocation schemes
 for railway infrastructure follow the principles set down in EU legislation and thus allow the IM to
 make optimum and effective use of the available infrastructure capacity.
- Article 8, according to which EU Member States (taking into account the need to cooperate with neighbouring IM) shall draw up five-year rail infrastructure development strategies as well as IM business plans to ensure optimal and efficient use, provision and development while ensuring a financial balance and providing means for these objectives to be achieved.
- Article 30 and Annex V, which describes the basic principles and parameters of multiannual (minimum 5 years) contractual agreements between competent authorities and infrastructure managers, including all aspects of infrastructure management: maintenance and renewal of the infrastructure already in operation and construction of new infrastructure.



0.2 List of abbreviations and explanatory notes

Shortcut	Meaning of
AC	Alternating current (AC)
AD HOC	Paths off trains ordered by the applicant that were constructed outside the annual TT development process
АН	Automatic line block system
АТ	Republic of Austria
CZ	Czech Republic
CRD	Traffic Management Centre
DC	Direct current (DC)
DOT	Remote controlled track
DOZZ	Remotely operated safety device
EE	Electrical engineering and power engineering
EPaR	European Parliament and Council
ERTMS	European Rail Traffic Management System
ETCS	European Train Control System
EU	European Union
GSM-R	Global Mobile Communication System for Rail
HKV	Driving rail vehicle
HU	Republic of Hungary
IA	Investment action
IS	Information system
IT	Information Technology
IZ	Investment assignment
KRK	Comprehensive reconstruction of the track
KRT	Comprehensive reconstruction of the line
KRTV	Comprehensive reconstruction of the overhead contact line
KRŽI	Comprehensive reconstruction of railway infrastructure



KRŽM	Comprehensive reconstruction of the railway bridge
KRŽZ	Comprehensive reconstruction of the railway superstructure
CS ŽSR	Capacity strategy of ŽSR
IM	Infrastructure Manager
N/a	Results unavailable (Not available)
ND	Freight transport
NPIM	National TTR Implementation Manager
PAX	Passenger transport
OZT	Communication and safety systems
PDO	Transport Service Plan
PIS	Operational Information System
PL	Republic of Poland
POD	Transport Recovery Plan
POO	Recovery and Resilience Plan
POTR	Temporary line speed restriction
PPŽS	Network Statement
PZZ	Level crossing safety equipment
TT (GVD)	Annual timetable (Train timetable)
RFC	Rail Freight Corridor
RNE	RailNetEurope (Association of IMs and AB in the EU)
SR	Slovak Republic
SROV	Collection of track closure orders
SZZ	Station safety equipment
SŽCZ	Správa Železnic, státní organizace
TCR	Temporary Capacity Restrictions (Planned Temporary Capacity Restrictions)
TIOP	Integrated passenger transport terminal



TNS	Traction substation
TTP	Book of track conditions
TTR	TimeTabling and Capacity Redesign (Intelligent Rail Capacity Management)
TU	Track section
TV	Traction lines
TZZ	Track-side signalling equipment
zab. zar	Signal&Control system
ŽI	Railway infrastructure
žkm	Railway kilometre
ŽSR	Železnice Slovenskej republiky

Explanation	Description
Applicant	A railway undertaking or an international grouping of railway undertakings or other persons or legal entities as well as the competent authorities pursuant to Regulation (EC) No 1370/2007 and consignors, freight forwarders and combined transport operators having a public service or commercial interest in the procurement of infrastructure capacity
IM	Infrastructure Manager, who is responsible for the Capacity Strategy development process. Several IMs may develop a common Capacity Strategy
Terminal	The installation which has been specially arranged to allow the loading and/or the unloading of goods onto/from freight trains, and the integration of rail freight services with road, maritime, river and air services and either the forming or the modification of the composition of freight trains, and, where necessary, performing border operations and procedures with European third countries.
Service facility	is the installation , including ground area, buildings and equipment, which has been specially arranged as a whole or in part to allow the supply of one or more of services listed in Act of the National Council of the Slovak Republic No.513/2009 Coll. on railways and on amendment of certain acts, as amended, in § 54 Conditions of access to services in Annex 13, Part B, second to fourth points.



0.2.1 List of tables

Table 1: List of IAs with a positive impact on RU capacity	19
Table 2: Projected reduction in available RU capacity in TT 2027	22
Table 3: Distribution of TCRs according to Annex VII of Directive 2012/34/EU	23
Table 4: Required timetable for coordination, consultation and publication of TCR information	26
Table 5: List of expected TCRs for TT 2027	27
Table 6: Distribution of railway lines RFC5, RFC7, RFC9 and RFC 11 according to the level of capacity utilisation of RU and the categories of trains operated	31
Table 7: Basic parameters of passenger trains	42
Table 8: Basic parameters of freight trains	43
Table 9: Responsible IM for the construction of the TT, the Capacity Model and the Capacity Offer on the border line section	
Table 10: Prospective traffic intensities expressed in number of trains per 24 hours	45
Table 11: International traffic volumes at border sections	48
0.2.2 List of images	
Figure 1: Visualisation of the geographical area of the lines included in CS ŽSR TT 2027	11
Figure 2: Graphical view of the TCR category breakdown according to Annex VII of Directive 34/2012/EU	24
Figure 3: TCR visualisation for TT 2027	28
Figure 4: Visualisation of the level of fulfilment of RU capacity for TT 2027	39
Figure 5: Line visualization section	40



0.3 List of contacts

List of IMs concerned and contact information of National TTR Implementation Managers (NPIMs):

Name of IM	Position	Name	Tel. number	Email
Železnice Slovenskej republiky	NPIM	Ivana Makarova	+421 2 2029 3037	makarova.ivana@zsr.sk
Správa železnic, státní organizace	NPIM	Richard Těhník	+420 972 244 641	tehnikr@spravazeleznic.cz
Österreichische Bundesbahnen INFRA AG.	NPIM	Jean-Marc Hillenberg	+436 648 217 242	jean-marc.hillenberg@oebb.at
Magyar Államvasutak Zrt.	NPIM	Zoltán Imre Kovács	+36 30 565 5613	kovacs.zoltan.imre@mav.hu
Polskie Linie Kolejowe S.A.	NPIM	N/a	N/a	N/a
VAS Ukrzaliznycia	aliznycia NPIM N/a		N/a	N/a



0.3.1 Boundary sections of selected linesList of selected border crossings of ŽSR with neighbouring countries:

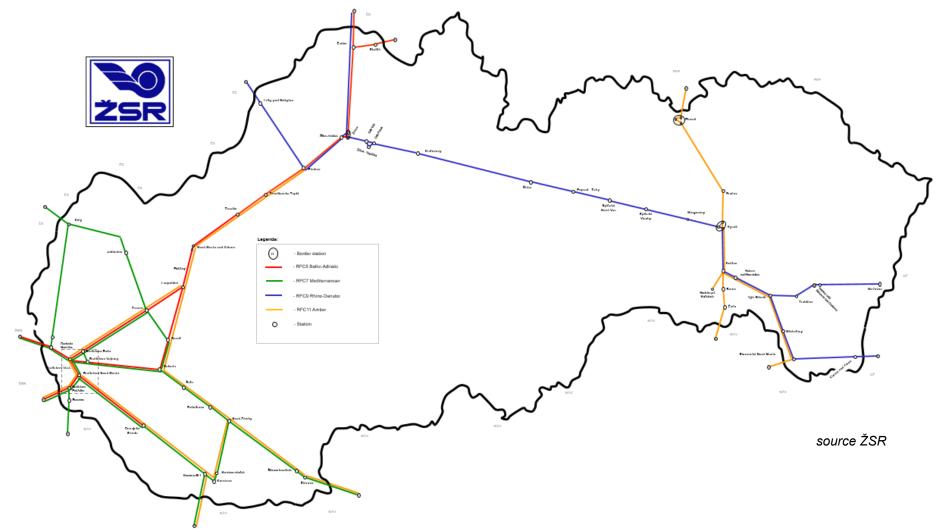
Name of border section	Neighbouring country	Type of transport operated
Kúty - Lanžhot	Czech Republic	Passenger, Freight
Devínska Nová Ves - Marchegg	Republic of Austria	Passenger, Freight
Bratislava-Petržalka - Kittsee	Republic of Austria	Passenger, Freight
Rusovce - Rajka	Republic of Hungary	Passenger, Freight
Štúrovo - Szob	Republic of Hungary	Passenger, Freight
Komárno - Komárom	Republic of Hungary	Passenger, Freight
Čadca - Mosty u Jablunkova	Czech Republic	Passenger, Freight
Skalité - Zwardoń	Republic of Poland	Passenger, Freight
Čaňa - Hidasnémeti	Republic of Hungary	Passenger, Freight
Plaveč - Muszyna	Republic of Poland	Passenger, Freight
Maťovce ŠRT - Uzhgorod	Ukraine	Freight
Lúky pod Makytou - Horní Lideč	Czech Republic	Passenger, Freight
Čierna nad Tisou - Čop	Ukraine	Passenger, Freight



0.4 Geographical area CS ŽSR TT 2027

ŽSR has developed this Capacity Strategy of ŽSR for TT 2027 in the scope of line sections of corridors RFC5 "Baltic-Adriatic", " RFC7 "Orient/East-Med" and RFC9 "Rhine-Danube" and RFC11 "Amber" - (including alternative and connecting lines) as an important railway connection running in the axis North-South, West-South, East-West on which a significant volume of international railway traffic is realized.

Figure 1: Visualization of the geographical area of the lines included in the CS ŽSR TT 2027





0.4.1 Specification of the geographical area of CS ŽSR TT 2027

In terms of the territorial division of the Slovak Republic, the lines in the scope of the Capacity Strategy of ŽSR for TT 2027 are located in the south-western and north-western part of the Slovak Republic, in the territories of the Bratislava, Trnava, Nitra, Trenčín, Žilina, Prešov and Košice regions.

0.4.1.1 Basic track section data

Track	ТТР	No. Of tracks	Length in km	Vertical load category	P/C Profile	Traction system	Maximum line speed in km/h	Corridor
Devínska Nová Ves - Devínska Nová Ves št.hr.	(TTP 126B)	1	3.62	C3	70/400	Unelectrifi ed	80	RFC 5 RFC 7 alt
Devínska Nová Ves - Bratislava hl. st.	(TTP 126A)	2	12.841	D3/D4	70/400	25kV, 50Hz	140	RFC 5 RFC 7 alt
Bratislava hl. st Bratislava- Nové Mesto	(TTP 127G)	1	5.11	D4	70/400	25kV, 50Hz	80	RFC 5 RFC 7
Bratislava- Nové Mesto - Bratislava- Petržalka - Kitsee (AT)	(TTP 127C)	2	14.98	D4	80/400	25kV AC, 50Hz; Zhlavie BA- Petržalka- Kitsee (AT) 15kV, 16,7 Hz	60	RFC 5 RFC 7
Bratislava hl.st Bratislava- Rača	<u>(TTP</u> 125A)	2	7.4	D4	70/400	25kV AC, 50Hz	160	RFC 5 RFC 7
Bratislava- Rača - Puchov	(TTP 125A)	2	150	D4	99/429	25kV AC, 50Hz	160	RFC 5
Puchov - Žilina	(TTP 106A)	2	43	D4	70/400	3Kv	160 Žilina Zr.st. - Žilina 40	RFC 5



Žilina - Čadca - Mosty u Jablunkova (CZ)	(TTP 106D)	2	41	D4	70/400	ЗКv	140 Krásno - Čadca 100; Čadca - Čadca nr. hr. 80	RFC 5
Žilina Zr.stanice - Budatín odb.	(TTP 106E)	1	0.58	D4	70/400	ЗКv	40	RFC 5
Čadca - Skalité Zwardoń	(TTP 114B)	1	20	D4	70/400	ЗКv	100 Skalité - Skalité nr. hr. 70	RFC 5

Track	ТТР	No. of tracks	Length in km	Vertical load category	P/C Profile	Traction system	Maximum line speed in km/h	Corridor
Bratislava hl. st Galanta	(TTP 120A)	2	48,69	D4	70/400	25 kV, 50Hz	140	RFC 5 alt. RFC 7
Galanta - Sereď	(TTP 128A)	2	12	D4	80/400	25kV, 50Hz	100	RFC 5 alt. RFC 7 alt.
Sereď - Leopoldov	(TTP 128A)	2	16.9	D4	80/400	25 kV, 50Hz	100	RFC 5 alt.
Bratislava- Nové Mesto - Dunajská Streda	(TTP 124A)	1	37.31	C4/D4	70/400	BA-Nové Mesto, km 3,520= 25kV, 50 Hz single phase; Komárno, km 2,500= 25kV, 50 Hz single phase	80	RFC 5 alt. RFC7 alt.



Track	ТТР	No. of tracks	Length in km	Vertical load category	P/C Profile	Traction system	Maximum line speed in km/h	Corridor
Szob (HU) - Štúrovo - Bratislava hl. st.	(TTP 120A)	2	149	D4	70/400	25 kV, 50Hz	140	RFC 7
Bratislava hl. st Kúty - Lanžhot (CZ)	(TTP 126A)	2	74	D3/D4	70/400	25 kV , 50Hz	140	RFC 7
Devínska Nová Ves - Devínska Nová Ves št.hr.	(TTP 126B)	1	3.62	СЗ	70/400	25 kV, 50Hz	80	RFC 7
Bratislava-Nové Mesto - Bratislava- Petržalka - Rusovce - Rajka (HU)	(TTP 127C)	2; Petržalka - Rusovce 1	27	D4	70/400	25 kV, 50 Hz	80	RFC 7
Komárom (HU) - Komárno - Nové Zámky	(TTP 120B)	1	33	D4	70/400	25 kV, 50Hz	100	RFC 7
Trnava - Bratislava hl. st.	(TTP 125A)	2	46	D4	99/429 Svätý Jur - Bratislava hl. st. = 70/400	25 kV, 50Hz	160	RFC 7
Trnava - Kúty	(TTP 128C)	1	69	D4	70/400	25kV, 50Hz	90	RFC 7



Trnava - Sereď	(TTP 128B)	1	46	D4	70/400	25kV, 50Hz	80	RFC 7
Sereď - Galanta	(TTP 128A)	2	12	D4	80/400	25kV, 50Hz	100	RFC 7
Bratislava hl. st Bratislava-Nové Mesto	(TTP 127G)	1	5,11	D4	70/400	25kV, 50Hz	80	RFC 7

Track	ТТР	No. of tracks	Length in km	Vertical load category	P/C Profile	Traction	Maximum line speed in km/h	Corridor
Komárom (HU) - Komárno - Nové Zámky	(TTP 120B)	1	33	D4	70/400	25 kV, 50Hz	100	RFC 7
Trnava - Bratislava hl. st.	(TTP 125A)	2	46	D4	99/429 Svätý Jur - Bratislava hl. St. = 70/400	25 kV, 50Hz	160	RFC 7
Trnava - Kúty	(TTP 128C)	1	69	D4	70/400	25kV, 50Hz	90	RFC 7
Trnava - Sereď	(TTP 128B)	1	46	D4	70/400	25kV, 50Hz	80	RFC 7
Sereď - Galanta	(TTP 128A)	2	12	D4	80/400	25kV, 50Hz	100	RFC 7



Bratislava hl. st Bratislava-Nové Mesto	(TTP 127G)	1	5,11	D4	70/400	25kV, 50Hz	80	RFC 7
Bratislava-Nové Mesto - Bratislava- Petržalka - Kitsee (AT)	(TTP 127C)	2	14.98	D4	80/400	25kV, 50Hz; Zhlavie BA- Petržalka - Kitsee (AT) 15kV, 16,7 Hz	60	RFC 7

Track	ТТР	No. Of tracks	Length in km	Vertical load category	P/C Profile	Traction system	Maximum line speed in km/h	Corridor
Čierna n/Tisou nr.hr- Košice	(TTP 101A)	2	94,539	D4	70/400	3 kV	100 (SNM - Michaľany - 120)	RFC9
Košice - Kralovany	<u>(TTP</u> 105A)	2	209,488	D4	70/400	3 kV	120	RFC9
Kraľovany - Puchov	(TTP 106A)	2	81,95	D4	70/400	3 kV	120 (Žilina zr.st - Púchov - 160)	RFC9
Žilina - Čadca šr.hr.	(TTP 106D)	2	32,056	D4	70/400	3 kV	140	RFC9
Púchov - Lúky p/Makytou	(TTP 106F)	2	21,031	D4	70/400	3 kV (ŽST Púchov = 25 kV, 50 Hz)	90	RFC9



Track	ТТР	No. of tracks	Length in km	Vertical load category	P/C Profile	Traction system	Maximum line speed in km/h	Corridor
Maťovce - Bánovce n/Ondavou	(TTP 104A)	1	28,959	D4	70/400	3 kV	80	RFC9alt
Bánovce n/Ondavou - Trebišov	(TTP 103A)	1	10,764	D4	70/400	3 kV	100	RFC9alt
Trebišov - Výh. Slivník	(TTP 103B)	1	15,3	D4	70/400	3 kV	80	RFC9alt

Track	ТТР	No. Of tracks	Length in km	Vertical load category	P/C Profile	Traction	Maximum line speed in km/h	Corridor
Slovenské Nové Mesto - Barca St. 1	(TTP 101A)	2	94,539	D4	70/400	3 kV	100 (SNM - Michaľany - 120)	RFC11
Haniská pri Košice - Barca	(TTP 109A)	2	6,14	D4	70/400	3 kV	100	RFC11
Hidasnémeti - Barca	(TTP 109B)	1	18,211	D4	70/400	3 kV	100	RFC11
Barca - Barca St. 1	(TTP 101A)	1	1,121	D4	70/400	3 kV	100	RFC11
Barca St. 1 - Košice	(TTP 101A)	2	3,814	D4	70/400	3 kV	100	RFC11
Košice - Kysak	(TTP 105A)	2	15,738	D4	70/400	3 kV	100	RFC11
Kysak výh. č. 39/40 - Plaveč št.hr	(TTP 107A)	1	75,932	D4	70/400	3 kV	Plaveč nr. hr Lipany 60 km/h; Lipany - Prešov 100 km/h;	RFC11



							Prešov - Kysak 80 km/h	
Kysak - Kysak výh. č. 39/40 = "Kysacka spojka"	(TTP 107C)	1	0,851	D4	70/400	3 kV	80	RFC11

Track	ТТР	No. of tracks	Length in km	Vertical load category	P/C Profile	Traction system	Maximum line speed in km/h	Corridor
Slovenské Nové Mesto - Barca st. 1	(TTP 101A)	2	94,539	D4	70/400	3 kV	100 (SNM - Michaľany - 120)	RFC11 alt
Sátoraljaújhely (HU) - Slovenské Nové Mesto	(TTP 101C)	1	2,0	D4	70/400	Unelectrif ied	40	RFC11 alt



1 Expected capacity for TT 2027

1.1 Additional available capacity for TT 2027

This chapter contains information on ŽSR Investment Actions (IA) that are **implemented or planned** to be implemented by the time of validity of TT 2027 with a positive impact on the capacity of railway lines under ŽSR management. In the overview table below, a description of the positive impact on the capacity of the railway is also provided.

Table 1: List of IAs with a positive impact on capacity

Action number	Track section	Description	Impact	Benefits	Project approved by IM	Funding secured
A16204	Bratislava - Nové Mesto - Bratislava ÚNS	KRŽZ	safety/ reduction of operating costs costs in subsequent years.	improving the technical condition	Yes	Yes
ZSR038	Bratislava Rača - Trnava - Leopoldov	CRD	Elimination of high occupancy rates, preemption, delays, inability to bundle schedules	construction of AH + double track couplings	Yes	Yes
A19157	CR/SR - Devínska Nová Ves	Modernization	increasing the line speed up to 200 km/h, //safety and traffic flow// passenger safety, increasing the culture, comfort and fluidity of travel	Reduction of travel time// improvement of the quality of infrastructure in terms of safety, reliability and efficiency	Yes	Yes
A06099.1	Poprad Tatry - Krompachy	Modernization	increasing the line speed up to 160km/h, //safety and traffic flow// passenger safety, //interchange crossing of roads	Reduction of travel time// improvement of the quality of infrastructure in terms of safety, reliability and efficiency	Yes	No
Action number	Track section	Description	Impact	Benefits	Project approved by IM	Funding secured
A16199	Trnava - Kúty, Šelpice - Boleráz	KRŽI	increase of line speed to 100km/hour, modernisation of the Klčovany stop, construction	Reduction of travel time// improvement of the quality of infrastructure	Yes	No



			modifications of the bridge at km 12,180, new TV columns, modification of the equipment	in terms of safety, reliability and efficiency		
A17093	Prešov - Veľký Šariš	KRŽZ	Increase in space permeability, line speed, safety of traffic, passengers, level crossings// Reduction of maintenance costs	improving the technical condition of the railway superstructure	Yes	No
A16021	Veľký Horeš - Streda nad Bodrogom	KRK	achieving the standard speed of 100km/hr// improving the substandard condition of the railway substructure// reducing maintenance costs//	improving the technical condition	Yes	No
A17088	Nižná Myšľa - Ruskov	Modernizing	Construction of TV at track No.2// Reconstructed railway superstructure/un derneath - bridges and culverts in the whole section// Bohdanovce, Vyšná Myšľa - new platforms at track No.2// Modification of the equipment	Reduction of travel time// Increase in the quality of infrastructure in terms of safety, reliability, travel culture and efficiency	Yes	No



Action number	Track section	Description	Impact	Benefits	Project approved by IM	Funding secured
A11108	Bratislava Nové Mesto- Dunajská Streda	KRŽM	New single-pole bridge stiffened with an arch in a new position parallel to the existing bridge + two level crossings and modification of the adjacent sections of the railway. line	To ensure that the serviceability of the line is maintained// ND restrictions in this section are lifted// Increased comfort for passengers// Continuity of traffic and increased capacity// Reduction of travel time	Yes	No
A18033	Bratislava - Petržalka	platforms 1 and 2	increasing safety and comfort for passengers	improving the quality of infrastructure in terms of safety, reliability, travel culture	Yes	No
A07302	Lúky pod Makytou	KRTV track 1	KRTV	improving the quality of infrastructure in terms of safety, reliability and efficiency	Yes	N/a
A07304	Lúky pod Makytou	KRTV track 2	KRTV	improving the quality of infrastructure in terms of safety, reliability and efficiency	Yes	N/a
A19000	Varín - Košice - Čierna n/Tisou	GSMR	improved communication between IM and RU	improving the quality of communication infrastructure	N/a	N/a
A14200	žst. Matovce	KRŽI	KRŽI + zab.zar	improving the quality of infrastructure in terms of safety and capacity	N/a	N/a



1.2 Reducing the available capacity for TT 2027

Table 2: Projected reduction in available capacity in TT 2027

Track section	Reason	Period	Quarterly	Characteristics (whole section/single track/POTR)	Project approved by IM	Funding secured
Sátoraljaújhely (HU) - Slovenské Nové Mesto	non-electrified line section	N/a	N/a	N/a	N/a	N/a



2 Planned temporary capacity restrictions (TCR)

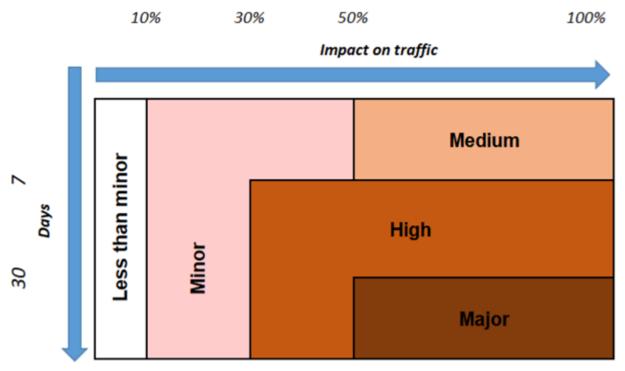
Infrastructure Managers are required to follow the <u>Commission Delegated Decision (EU) 2017/2075</u> replacing Annex VII to the Directive 2012/34/EU when planning TCRs. This sets out the overall framework of conditions for capacity planning, including TCRs, with a preference for robust advanced planning, international coordination of TCRs between IMs and transparency of consultation and publication of TCR information to applicants. The **publication of TCRs is intended to make upcoming restrictions more transparent and thus help to plan the competitiveness of rail services.**

Table 3: Distribution of TCRs according to Annex VII of Directive 2012/34/EU

TCR category	Days of duration	Impact on transport (estimated cancellation, rerouting or alternative mode of transport)
TCR with major impact (major)	More than 30 consecutive days	More than 50% of the traffic volume on a given section per day
TCR with high impact (high)	More than 7 consecutive days	More than 30% of the traffic volume on a given section per day
TCR with medium impact (medium)	7 consecutive days or less	More than 50% of the traffic volume on a given section per day
TCR with minor impact (minor)	Undefined	More than 10% of the traffic volume on a given section per day



Figure 2: Graphical view of the TCR category breakdown according to Annex VII of Directive 34/2012/EU



2.1 TCR planning principles at ŽSR

This chapter presents the principles for planning TCRs on railway lines (RFC 5, RFC 7, RFC 9 and RFC 11) as well as the list of TCRs foreseen for the TT 2027. The TCR development processes are directly related to the development of the railway CS, but **they are independent of** the processes for the development of the railway CS.

General principles of TCR planning on ŽSR:

The process of planning, consultation and coordination of **long-term** planning of temporary capacity restrictions (TCR) is not in place at ŽSR. As part of the proposal for new TCR processes at ŽSR, a proposal is approved to split the current process of Track closure Activity' into 'long term' and 'interim' TCR planning processes as follows:

- A) "long-range" TCR planning activity, which includes the development of multi-year, three-year, two-year, and annual TCR plans and activities:
 - regular production, updating and publication of long-term TCR plans,
 - coordination of TCR within the ŽSR internal units,
 - coordination with neighbouring IMs and members on the relevant rail freight corridors (RFCs) within the framework of international activities of ŽSR,
 - coordination meetings with the parties concerned;

B) "continuous" TCR planning activity, the so-called "late" TCR:

- elaboration, updating of four-monthly/monthly TCR plans on the basis of the long-term TCR plan and the current requirements of the relevant Regional Directorate for limiting the capacity of the railway,
- internal negotiation of late TCRs with respect to the track closures,
- coordination meetings with the participation of affected parties of applicants and RUs,
- communication and mutual information/approval of TCRs with neighbouring IMs;



Minor Maintenance works resulting from immediate or preventive maintenance and requiring a certain "smaller time space" should not have a significant impact on the limitation of the capacity of the railway and should be solved in the so-called "Railway Maintenance Windows", which ŽSR will determine in advance and announce in the form of allocation of the necessary part of the capacity of the railway line for the relevant period in the form of SROV's (collection of track closure orders) before the validity of the relevant ATT in accordance with the regulation of ŽSR DP 4 "Track Closure Activity of ŽSR".

The general list of SROVs for the lines RFC 5, RFC 7, RFC 9 and RFC 11 is annexed to this CS of ŽSR.

2.2 Description of the TCR planning process, including escalation processes

TCR coordination: means the active exchange of information on the TCR plan between neighbouring IMs through formal communication channels. These formal communication channels include:

- open meetings, e.g. stakeholders are invited to attend an open meeting or several meetings;
- written information to interested parties with an opportunity to submit comments. The IM planning the TCR shall actively initiate communication with the neighbouring IMs to inform about the TCR. TCR coordination is required when TCRs impact a neighbouring IM. This means that the TCR takes place on one line section, possibly also on a subsequent line section if its impact affects traffic at a neighbouring IM. In the case of continuous TCR, the objective is to carry out the maximum amount of work simultaneously. TCR coordination includes the expected coordination of train management on alternative track sections within reroutings. TCR coordination is also required for harmonization of track closures with neighbouring IM if the same track sections are expected to be used for reroutings.

TCR Consultation: means an active process of exchange of information on TCRs between ŽSR, applicants and the main operators of the service facilities concerned through formal communication channels. These formal communication channels include:

- open meetings, e.g. stakeholders are invited to attend an open meeting or several meetings
- written information to interested parties with an opportunity to submit comments. ŽSR actively initiates communication with applicants for information on TCRs.

Following the coordination process and prior to the TCR plan approval process, ŽSR shall ask the applicants/RU's/main operators of the service facilities concerned for their opinion on the planned measures to be implemented in relation to the planned temporary capacity restrictions (TCRs) for the defined thresholds (affected traffic volumes as defined in Commission Delegated Decision (EU) 2017/2075 replacing Annex VII of the Directive 2012/34/EU).

TCRs require the disclosure of information at the time and to the extent according to a specified categories and criteria.



Table 4: Required timetable for coordination, consultation and publication of TCR information

	TCR with medium impact	<u> </u>	TCRs with major impact	
		Preliminary consultation with applicants Coordination with neighbouring IMs Applicants' requirements		Before X-24
		First publica	ation of TCR	X-24
				X-23
			Final decision	X-22
	Consultation and		options, consultation and	X-21
	coordination		coordination	X-20
	ocoramation			X-19
		Consultation and coordination	Completion of coordination	X-18
Preliminary			Final consultation	X-17
consultation and				X-16
coordination				X-15
	Coordinatio	n completed		X-14
	Coordination completed Final consultation			X-13
	Publication	Second TCR	X-12	
				X-11
				X-10
				X-9
				X-8
First information				X-7
Consultation and				X-6
coordination				X-5
Publication				X-4



2.3 Expected TCR for TT 2027

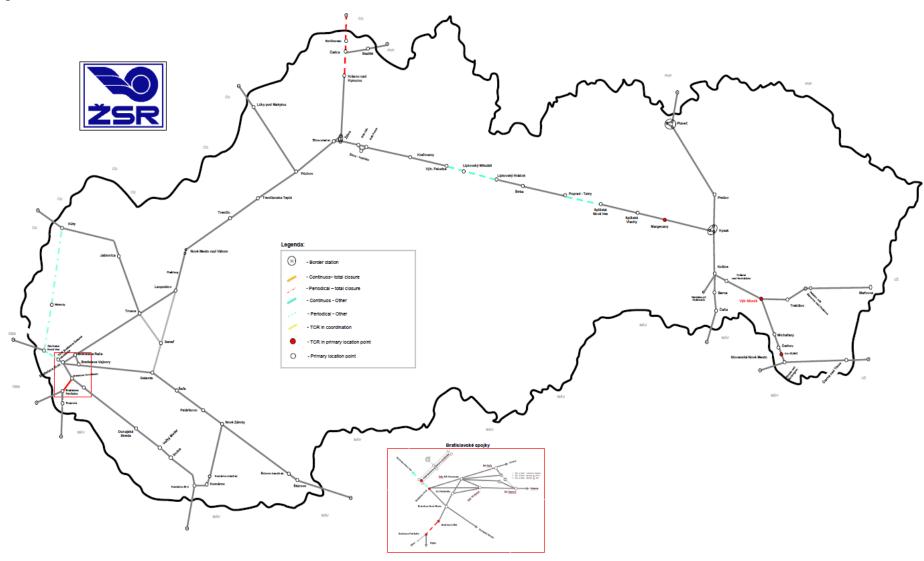
This chapter lists the expected TCRs for the ATT 2027. **The information on the TCRs** listed is compiled from currently available information (that is more than 740 days before the start date of the TCR), should be considered as a forecast, and this **may change over time**. The TCRs listed in Table 5 have met the criteria for inclusion in the 'major' and 'high' categories. These TCRs are expected to have a significant impact on international traffic and will significantly affect the capacity of the railway line concerned.

Table 5: List of expected TCRs for TT 2027

rable 5. List 01 exp	The IA	The investment		
Code IA	Name of IA	draft is defined	is approved by the ŽSR management	Funding is secured
A06048.5	Modernisation of the railway line Žilina - Košice, section Liptovský Mikuláš - Poprad Tatry (out of 5th stage), section Paludza - Liptovský Hrádok	Yes	N/a	N/a
A06099.2	Modernisation of the railway line Žilina - Košice, section Poprad Tatry (out of stage) - Krompachy, 1st stage A1 (Poprad - Spišská Nová Ves), project preparation and realisation (1st stage + DOZZ, ETCS)	Yes	N/a	N/a
A12018	Bratislava ÚNS - Bratislava Petržalka KRK	Yes	N/a	N/a
A14198	Slivník switching station - reconstruction of switches 1-10	Yes	N/a	N/a
A14002	BA hl.stanica - Kúty št.hr reconstruction of 6kV cables - UAB		N/a	N/a
A14179	Establishment of a secured pedestrian crossing Čierna nad Tisou - Košice žkm 43,640	Yes	N/a	N/a
A17080	Žst. Margecany comprehensive reconstruction of the station	N/a	N/a	N/a
ZSR020	Krásno nad Kysucou - Čadca	Yes	Yes	Yes
ZSR041	TIOP Bratislava-Železná studienka	Yes	N/a	N/a



Figure 3: TCR visualization for TT 2027





3 Principles of train traffic planning and traffic flows

3.1 Principles of traffic planning

This chapter describes the main principles of train path construction for the line sections managed by ŽSR included in this CS (the range of lines RFC 5, RFC 7, RFC 9 and RFC 11), which will be used in the planning of the individual elements in the Capacity Models.

The Railway infrastructure (railway line, service facility) has set its maximum capacity. This is the capability of the facility, how many trains (train paths) of different categories and different types can pass through the facility in different time windows. It is expressed by the number of train paths that can be constructed on a given line section for a given time interval (e.g. 24 hours). The capacity of multi-track sections shall be determined for each track separately. ŽSR allocates railway capacity in accordance with Act No 513/2009 Coll. Act on Railways and on Amendments to Certain Acts, as amended (hereinafter referred to as "Act 513/2009 Z.z") under the following conditions:

- IM is, in addition to the basic obligations of the infrastructure manager according to § 30 of Act No. 513/2009 Coll., obliged to allocate capacity in a fair and non-discriminatory manner to railway undertakings until the entire capacity of the railway infrastructure is allocated (§ 34);
- ŽSR allocates the capacity of railway infrastructure in the form of a train path from the origin station to the destination station (§ 34);
- the capacity of railway infrastructure in the form of a train path may be allocated to an applicant for a maximum period of validity of one timetable of the railway network, i.e. an 'annual timetable' (§ 40).

The conditions for requests for the capacity allocation are specified in the relevant Network Statement of the TT concerned in the subchapter. 3.2.1.

The process for allocating of capacity in the form of a train path is set out in the relevant Network Statement of the TT concerned in chapter 4.5.

Part of the TTR project is the development of a capacity model, which creates an assumption about the possible use of the capacity of the railway by individual transport segments with the respective capacity products. In addition to the pre-arranged train paths, serving primarily to meet the transport needs of applicants within predictable time and technical parameters, the relevant part of the capacity will be kept to satisfy AD HOC requests for capacity submitted during the relevant period of validity of the ATT.ŽSR in accordance with subchapter 4.5 of the Network Statement, has the right to **keep a capacity reserve of at least 10 % of the** capacity of the relevant railway line for the purpose of allocating infrastructure capacity to additional train path requests **for the TT 2027. The** capacity of the railway line to carry out planned maintenance and renewal is taken into account when allocating railway infrastructure capacity to applicants.

Within the implementation of the TTR project, a **new capacity product Rolling Planning** is considered, where the applicant will be allowed to submit one application for capacity for the period of validity of several timetables (max. for three TTs). The legislative framework for this activity is not yet in place.



ŽSR shall attempt to resolve any conflict in the allocation of capacity through negotiation with the applicants concerned. In the event that the ŽSR is **unable to resolve the conflicts by negotiation** with the applicants, **it shall resolve them**

through coordination. The conditions for the coordination process for the allocation of capacity are set out in the relevant Network Statement of the TT concerned in subchapter 4.5.4.

For the allocation of capacity on cross-border line sections where is the Network interconnection of two IMs, one of IM is designated according to the Railway Infrastructure Interconnection Agreement, that is responsible for the capacity planning on the given line section. This division of responsibilities between the individual IMs on the cross-border sections is also valid for the development of the relevant capacity models and capacity offer.

Congested infrastructure means a section of the rail network on which, even after negotiation with applicants and coordination, it is not possible to adequately satisfy the demand for railway capacity at a particular time or part of the day (§ 46).

If the coordination has not achieved a satisfactory result and the railway infrastructure has been declared congested for a given period or a given section of the day, IM shall apply the following **priorities** when allocating railway infrastructure capacity on the congested infrastructure:

- a) on the main railway lines in the following order:
 - 1. transport services in the public interest implemented by system or tact paths distribution,
 - 2. agreed international train paths for passenger services operated in the public interest,
 - 3. other agreed international train paths for passenger services,
 - 4. agreed international train paths for freight,
 - 5. transport services in the public interest not covered by the first and second points,
 - 6. other international passenger transport services,
 - 7. other international freight transport services,
 - 8. other transport services.
- b) on secondary railway lines in the following order:
 - 1. transport services in the public interest,
 - 2. passenger transport services,
 - 3. freight transport services,
 - 4. other transport services.

It follows from the above that the division and allocation of railway capacity described in the TTR rules cannot be used in the case of a declaration of congested infrastructure until a legislative change in this area is made.

3.1.1 Principles of cooperation with service facilities as well as other strategic components for future TT construction

Service facilities of other entities, which are connected to the railway network managed by ŽSR, have signed contract with ŽSR on the interconnection of railways (for service facility "TIP Žilina" there is a signed concession contract).

In the field of timetable development (TT), the operator/manager of service facilities communicates with ŽSR in a standard way through applicants (RUs) by requesting train paths. List of freight terminals (combined transport terminals) and service



equipment of other entities is available on the ŽSR website in the section:

"Carriers/Other Services/Service Facilities".

3.1.2 Basic principles of train service planning for individual line sections

When planning train traffic for individual railway lines, several qualitative and quantitative indicators must be taken into account, such as technical parameters of the railway line, the use of practical throughput, the uneven distribution of trains during the day, the development potential of the railway line for passenger and freight transport, respectively for international and national transport.

In different parts of the assessed capacity of the railway there is a different range of train traffic (intensities). The railway lines considered in this CS TT 2027 are divided into individual line sections, which have different parameters, from the point of view of train traffic planning. These are line sections between important railway junctions (train stations). In these junctions there are important service facilities such as railway depots or wagon repair depots (Kúty, Bratislava hl. st., Trnava, Bratislava East, Bratislava Nové Mesto, Nové Zámky, Štúrovo, Komárno, Žilina, Žilina Teplička, Poprad, Košice, Čierna nad Tisou, Prešov, Maťovce) and combined transport terminals (Bratislava ÚNS, Dunajská Streda, Žilina, Košice, TDK, Haniska pri Košice, Čierna n/Tisou).

The capacity allocated for AD HOC train path planning will be published in the form of a timetable offer of average train paths or in the form of bands. Bands for medium-term capacity planning (TT changes) will not be published. Maintenance windows in the form of SROVs are also not published, these are published in the monthly/weekly closure plans of the individual Regional Directorates. The residual capacity after all requested train paths have been allocated can then be prioritized for medium-term RU capacity planning.

Table 6: Distribution of railway lines RFC5, RFC7, RFC9 and RFC 11 according to the level of

capacity utilization and the categories of trains operated

MI	Track section	Description of the level of capacity utilization and train categories of trains operated	
SŽCZ - ŽSR	Lanžhot - Kúty	Line section used by international traffic with extremely high level of capacity utilization. The following categories of trains are operated of this line section: - International long-distance passenger trains; - International regional passenger trains; - Regional passenger trains; - International freight transport (combined transport trains, block trains, long-distance single-wagon trains);	
ŽSR	Kúty - Devínska Nová Ves	Line section used by international traffic with extremely high level of capacity utilization I. The following categories of trains are operated on this line section: - International long-distance passenger trains; - International regional passenger trains; - Regional passenger trains; - International freight transport (combined transport trains, block trains, long-distance single-wagon trains); - National freight transport (block trains, single-wagon trains).	



MI	Track section	Description of the level of capacity utilization and train categories of trains operated
ŽSR	Devínska Nová Ves - Bratislava hl. st.	Line section used by international traffic with extremely high level of capacity utilization. The following categories of trains are operated on this line section: - International regional passenger trains; - Regional passenger trains; - International freight transport (combined transport trains, block trains, long-distance single-wagon trains); - National freight transport (block trains, single-wagon trains).
ŽSR	Kúty - Trnava	In passenger transport it is a line section with regional trains and in freight transport it is a line section with international traffic with a low level of capacity utilization. The following categories of trains are operated on this line section: - Regional passenger trains; - International freight transport (block trains); - National freight transport (single-wagon trains).
ŽSR	Bratislava hl. st Nové Zámky	Line section used by international transport with high level of capacity utilization. The following categories of trains are operated on this line section: - International long-distance passenger trains; - National long-distance passenger trains; - Regional passenger trains; - International freight transport (combined transport trains, block trains, long-distance single-wagon trains); - National freight transport (block trains, single-wagon trains);
ŽSR	Nové Zámky - Komárno	In passenger transport it is a line section with regional trains and in freight transport it is a line section with international traffic with a high level of capacity utilization. The following categories of trains are operated on this line section: - Regional passenger trains; - International freight transport (combined transport trains, block trains); - National freight transport (single-wagon trains).
ŽSR	Nové Zámky - Štúrovo	Line section used by international transport with high level of capacity utilization . The following categories of trains are operated on this line section: - International long-distance passenger trains; - National long-distance passenger trains; - Regional passenger trains; - International freight transport (combined transport trains, block trains, long-distance single-wagon trains); - National freight transport (block trains, single-wagon trains).
ŽSR - MÁV Zrt. (HU)	Komárno - Komárom	Line section used by international transport with high level of capacity utilization. The following categories of trains are operated on this line section: - Regional (national) passenger trains, common line section Komárno - Dunajská Streda; - International freight transport (combined transport trains, block trains, long-distance single-wagon trains);



МІ	Track section	Description of the level of capacity utilization and train categories of trains operated	
ŽSR - MÁV Zrt. (HU)	Štúrovo - Szob	Line section used by international transport with low level of capacity utilization. The following categories of trains are operated on this line section: - International long-distance passenger trains; - International freight transport (combined transport trains, block trains, long-distance single-wagon trains);	
ŽSR	Trnava - Galanta	In passenger transport it is a line section with regional trains and in freight transport it is a line section with international traffic with a medium level of capacity utilization. The following categories of trains are operated on this line section: - Regional passenger trains; - International freight transport (block trains); - National freight transport (block trains, single-wagon trains).	
ŽSR	Bratislava hl. st Bratislava Nové Mesto	Line section used by international traffic with extremely high level of capacity utilization. The following categories of trains are operated on this line section: - International long-distance passenger trains; - International regional passenger trains; - Regional passenger trains; - International freight transport (combined transport trains, block trains, long-distance single-wagon trains); - National freight transport (block trains, single-wagon trains).	
ŽSR	Bratislava Nové Mesto - Rusovce	Line section used by international traffic with extremely high level of capacity utilization. The following categories of trains are operated on this line section: - International regional passenger trains; - Regional passenger trains; - International freight transport (combined transport trains, block trains, long-distance single-wagon trains); - National freight transport (block trains, single-wagon trains).	
ŽSR - Gysev Zrt. (HU)	Rusovce - Rajka	Line section used by international transport with medium level of capacity utilization. The following categories of trains are operated on this line section: - International long-distance passenger trains; - International regional passenger trains; - International freight transport (combined transport trains, block trains, long-distance single-wagon trains).	
ŽSR	Bratislava Nové Mesto - Komárno	In passenger transport it is a line section with regional trains and in freight transport it is a line section with international traffic with a high level of capacity utilization. The following categories of trains are operated on this line section: - Regional passenger trains; - International freight transport (combined transport trains); - National freight transport (block trains, single-wagon trains).	



		231
MI	Track section	Description of the level of capacity utilization and train categories of trains operated
ŽSR	Trnava - Bratislava hl. st.	Line section used by international traffic with extremely high level of capacity utilization. The following categories of trains are operated on this line section: - International long-distance passenger trains; - National long-distance passenger trains; - Regional passenger trains; - International freight transport (combined transport trains, block trains, long-distance single-wagon trains); - National freight transport (combined transport trains, block trains, single-wagon trains);
ŽSR - ÖBB Infra (AT)	Devínska Nová Ves - Marchegg	Line section used by international transport with medium level of capacity utilization. The following categories of trains are operated on this line section: - International long-distance passenger trains; - International regional passenger trains; - International freight transport (block trains).
ŽSR - ÖBB Infra (AT)	Bratislava- Petržalka - Kittsee (AT)	Line section used by international transport with high level of capacity utilization. The following categories of trains are operated on this line section: - International long-distance passenger trains; - Regional passenger trains; - International freight transport (combined transport trains, block trains, long-distance single-wagon trains); - National freight transport (block trains, single-wagon trains).
ŽSR	Trnava - Nové Mesto nad Váhom	Line section used by international transport with high level of capacity utilization. The following categories of trains are operated on this line section: - International long-distance passenger trains; - National long-distance passenger trains - Regional passenger trains; - International freight transport (combined transport trains, block trains, long-distance single-wagon trains); - National freight transport (block trains, single-wagon trains).
ŽSR	Nové Mesto nad Váhom - Puchov	Line section used by international transport with high level of capacity utilization. The following categories of trains are operated on this line section: - International long-distance passenger trains; - National long-distance passenger trains - Regional passenger trains; - International freight transport (combined transport trains, block trains, long-distance single-wagon trains); - National freight transport (block trains, single-wagon trains).
ŽSR	Puchov - Žilina	Line section used by international transport with high level of capacity utilization. The following categories of trains are operated on this line section: - International long-distance passenger trains; - National long-distance passenger trains - Regional passenger trains; - International freight transport (combined transport trains, block trains, long-distance single-wagon trains); - National freight transport (block trains, single-wagon trains).



MI	Track section	Description of the level of capacity utilization and train categories of trains operated
ŽSR	Sereď - Leopoldov	Line section used by international transport with low level of capacity utilization. The following categories of trains are operated on this line section: - International freight transport (combined transport trains, block trains, long-distance single-wagon trains); - National freight transport (block trains, single-wagon trains).
ŽSR	Žilina - Žilina- Teplička departure group	Line section used by international transport with low level of capacity utilization. The following categories of trains are operated on this line section: - International freight transport (combined transport trains, block trains); - National freight transport (combined transport trains, block trains, single-wagon trains).
ŽSR	Žilina - Čadca	Line section used by international traffic with high level of capacity utilization. The following categories of trains are operated on this line section: - International long-distance passenger trains; - Regional passenger trains; - International freight transport (combined transport trains, block trains, long-distance single-wagon trains); - National freight transport (block trains, single-wagon trains).
ŽSR - SŽCZ (CZECH ONLY)	Čadca - Čadca št.hr	Line section used by international transport with high level of capacity utilization. The following categories of trains are operated on this line section: - International long-distance passenger trains; - International passenger trains; - International freight transport (combined transport trains, block trains).
ŽSR	Čadca - Skalité	Line section used by international transport with medium level of capacity utilization. The following categories of trains are operated on this line section: - International passenger trains; - Regional passenger trains; - National freight transport (single-wagon trains).
ŽSR - PLK SA (PL)	Skalité - Skalité št.hr	Line section used by international transport with medium level of capacity utilization. The following categories of trains are operated on this line section: - International passenger trains;
ŽSR - UA	Čop - Čierna nad Tisou	Line section used by international traffic with extremely high level of capacity utilization. The following categories of trains are operated on this line section: - International long-distance passenger trains; - Regional passenger trains; - International freight transport (block trains, long-distance single-wagon trains);



		Description of the level of capacity utilization and train
MI	Track section	categories of trains operated
ŽSR - UZ	Čierna n/Tisou nr.hr- Košice	Line section used by international transport with high level of capacity utilization. The following categories of trains are operated on this line section: - International long-distance passenger trains; - Regional passenger trains; - International freight transport (block trains, long-distance single-wagon trains); - National freight transport (block transport trains, integrated trains, single-wagon trains).
ŽSR	Košice - Kraľovany	Line section used by international transport with high level of capacity utilization. The following categories of trains are operated on this line section: - International long-distance passenger trains; - Regional passenger trains; - International freight transport (block trains, long-distance single-wagon trains); - National freight transport (block transport trains, integrated trains, single-wagon trains).
ŽSR	Kraľovany - Žilina- Teplička departure group	Line section used by international transport with high level of capacity utilization. The following categories of trains are operated on this line section: - International long-distance passenger trains; - Regional passenger trains; - International freight transport (block trains, long-distance single-wagon trains); - National freight transport (block transport trains, integrated trains, single-wagon trains).
ŽSR - SŽDC	Púchov - Lúky p/Makytou št.hr	Line section used by international transport with medium level of capacity utilization. On this line section the following categories of trains are operated: - International long-distance passenger trains; - International passenger trains; - International freight transport (block trains).
ŽSR	Maťovce - Bánovce n/Ondavou	Line section used by international transport with low level of capacity utilization. The following categories of trains are operated on this line section: - International freight transport (block trains) - National freight transport (block trains, single-wagon trains).
ŽSR	Bánovce n/Ondavou - Trebišov	Line section used by international transport with medium level of capacity utilization. The following categories of trains are operated on this line section: - International long-distance passenger trains; - National long-distance passenger trains - International freight transport (block trains) - National freight transport (block trains, single-wagon trains).
ŽSR	Trebišov - Výh. Slivník	Line section used by international transport with medium level of capacity utilization. The following categories of trains are operated on this line section: - International long-distance passenger trains; - National long-distance passenger trains



MI	Track section	Description of the level of capacity utilization and train categories of trains operated
		- International freight transport (block trains) - National freight transport (block trains, single-wagon trains).
ŽSR	Kysak - Košice	Line section used by international transport with high level of capacity utilization. The following categories of trains are operated on this line section: - Regional passenger trains; - International freight transport (block trains, long-distance single-wagon trains); - National freight transport (block trains, single-wagon trains).
ŽSR	Kysak - Prešov	Line section used by international transport with high level of capacity utilization. The following categories of trains are operated on this line section: - Regional passenger trains; - International freight transport (block trains, long-distance single-wagon trains); - National freight transport (block trains, single-wagon trains).
ŽSR	Prešov - Plaveč	Line section used by international transport with medium level of capacity utilization. The following categories of trains are operated on this line section: - International passenger trains; - International freight transport (block trains, single-wagon trains).
ŽSR - PL	Plaveč - Muszyna	Line section used by international traffic with a low level of capacity utilization. The following categories of trains are operated on this line section: - International passenger trains; - Regional passenger trains; - International freight transport (combined transport trains, block trains, long-distance single-wagon trains); - National freight transport.
ŽSR- HU	Slovenské Nové Mesto - Sátoraljaújhely	Line section used by international traffic with a low level of capacity utilization. The following categories of trains are operated on this line section: - International passenger trains; - Regional passenger trains; - International freight transport
ŽSR - HU	Barca - Hidasnémeti	Line section used by international traffic with a medium level of capacity utilization. The following categories of trains are operated on this line section: - International passenger trains; - International freight transport (block trains, single-wagon trains).
ŽSR	Haniska pri Košiciach - Barca St. 1	In passenger transport it is a line section with regional trains and in freight transport it is a line section with a high level of capacity utilization. The following categories of trains are operated on this line section: - Long-distance passenger trains - Regional passenger trains;

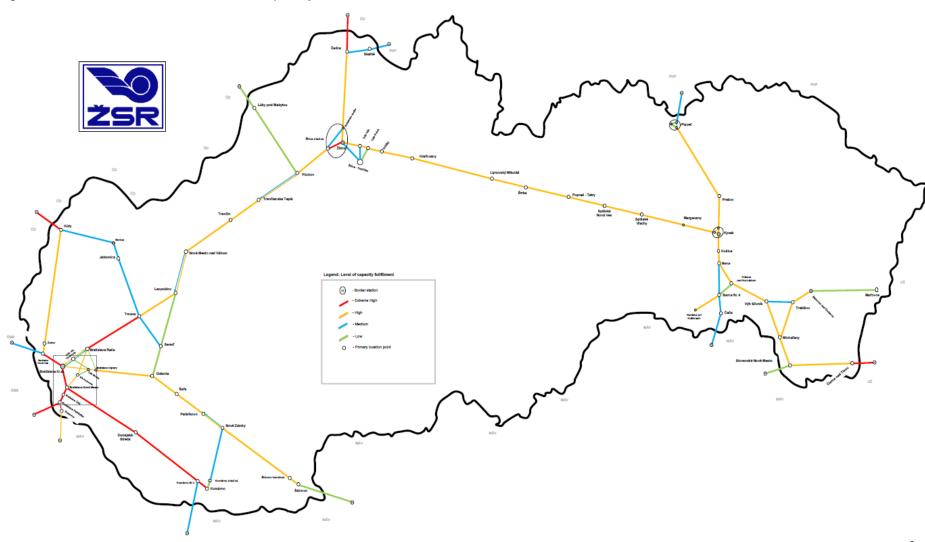


MI	Track section	Description of the level of capacity utilization and train categories of trains operated
		- International freight transport (combined transport trains, block
		trains, long-distance single-wagon trains);
		- National freight transport.

To determine the current level capacity utilisation, the data of the "Railway Infrastructure Capacity Workbook TT (GVD) 2023/2024" are used. A visualization of the level of capacity utilization on the individual line sections RFC5, RFC7, RFC9 and RFC11 is shown in Figure 4 on the following page.



Figure 4: Visualization of the level of capacity utilization for TT 2027



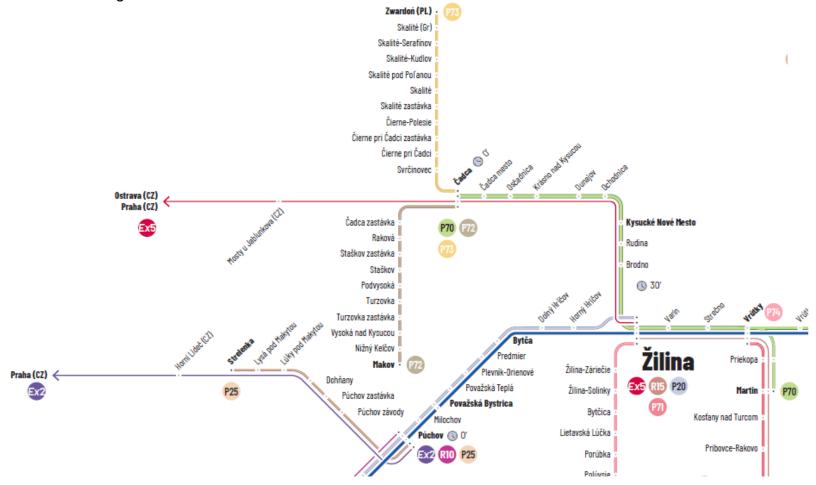
source ŽSR



In passenger transport, various concepts of transport service of the territory and the routing of long-distance lines based on **the Transport**Service Plan of the Slovak Republic (TSP SR) are used. The full scheme of the line routing as well as the prospective status in 2030 is on the page:

https://www.mindop.sk/ministerstvo-1/doprava-3/strategia/verejna-osobna-doprava/plan-dopravnej-obsluznosti-slovenska-pre-zeleznicnu-osobnu-dopravu/prilohy

Figure 5: Line routing visualization



Source ŽSR.



3.2 General train categories on RFC5, RFC7, RFC9 and RFC 11

Passenger transport

• International passenger trains:

Budapest - Brno - Prague - Hamburg

Budapest - Warsaw - Terespol

Bratislava - Zurich

Bratislava - Hegyeshalom

Košice - Bratislava - Wien (Marchegg)

Bratislava - Wien (Kittsee)

Žilina - Púchov - Prague

Žilina - Čadca - Ostrava

Žilina - Čadca - Prague

Žilina - Bratislava - Kúty - Prague

Humenné - Košice - Ostrava - Prague

Košice - Ostrava - Prague

Košice - Prešov - Ostrava - Prague

Prešov - Puchov - Prague

Čadca - Ostrava

Čadca - Zwardoń

Košice - Hidasnémeti - Budapest

Plaveč - Muszyna

Košice - Čierna nad Tisou - (Mukachevo)

• Long-distance passenger trains:

Nové Zámky - Galanta - Bratislava

Košice - Banská Bystrica - Palárikovo - Bratislava

Banská Bystrica - Palárikovo - Bratislava

Bratislava - Žilina

Bratislava - Žilina - Košice

Bratislava - Leopoldov - Prievidza

Regional passenger trains:

Nové Zámky - Štúrovo

Nové Zámky - Galanta - Bratislava

Nové Zámky - Komárno

Trnava - Senica

Senica - Skalica in Slovakia

Trnava - Galanta

Trnava - Bratislava - Malacky - Kúty

Bratislava - Malacky



Pezinok - Bratislava-Petržalka

Senec - Bratislava-Nové Mesto

Bratislava - Dunajská Streda - Komárno

Bratislava - Kvetoslavov

Trnava - Leopoldov - Nitra

Nové Mesto nad Váhom - Trenčín

Trenčín - Zlatovce - Žilina

Trenčín - Bratislava

Čadca - Žilina

Čadca - Martin

Čadca - Liptovský Mikuláš

Čadca - Skalité

Skalité - Vrútky

Skalité - Liptovský Hrádok

Liptovský Mikuláš - Poprad-Tatry

Košice - Poprad-Tatry

Čierna nad Tisou - Košice - Prešov

Košice - Prešov

Košice - Lipany

Košice - Trebišov

(Moldava nad Bodvou mesto) - Haniska pri Košiciach - Košice

Košice - Čierna nad Tisou

Košice - Plaveč

Table 7: General parameters of passenger trains

Parameter code	Train length	Weight of the train	Length of the train set	Weight of the train set	Loco Type	Required speed	Min. Braking. %
OZSR01	284	590	265	500	VECTRON	140	148
OZSR02	79	233	-	-	671	160	182
OZSR03	156	330	137	250	ER20	120	106
OZSR04	80	197	ı	ı	661	120	120
OZSR05	137	284	120	200	263	100	122
OZSR06	369	720	350	630	VECTRON	160	152
OZSR07	219	400	200	490	VECTRON	160	152
OZSR08	219	300	200	390	350	160	160
OZSR09	127	264	110	180	263	120	133
OZSR10	42	81	-	-	648	100	120
OZSR11	50	51	ı	ı	5047	120	100
OZSR12	204	456	185	370	1116	160	197
OZSR13	28	39	-	-	813	90	45
OZSR14	106	202	-	-	660	160	111
OZSR15	197	440	180	350	350	160	57
OZSR16	256	536	240	450	361.1	160	43

=	0
ŽS	5R

Parameter code	Train length	Weight of the train	Length of the train set	Weight of the train set	Loco Type	Required speed	Min. Braking. %
OZSR17	185	378	-	-	680	140	37
OZSR18	418	720	400	630	VECTRON	120	31
OZSR19	191	382	175	300	151	140	31
OZSR20	156	320	ı	1	561	160	160
OZSR21	59	120	ı	1	861	140	156
OZSR22	142	334	125	250	163	120	123
OZSR23	149	299	132	215	162	140	67

Freight transport:

- National freight trains
- International and national block freight trains
- International and national combined transport trains
- International and domestic freight trains

Table 8: General parameters of freight trains

Parameter code	Train length	Weight of the train	Lengt h of the train set	Weight of the train set	Loco Type	Required speed	Min. Braking %
NZSR01	654	2084	635	2000	E186	100	80
NZSR02	620	2690	600	2600	E189	90	64
NZSR03	649	2090	630	2000	Vectron	100	80
NZSR04	594	2590	575	2500	Vectron	100	75
NZSR05	696	1585	680	1500	230	100	80
NZSR06	669	2084	650	2000	E186	90	72
NZSR07	627	1680	608	1600	ER20	100	72
NZSR08	433	1769	417	1685	242	100	84
NZSR09	416	1685	400	1600	240	100	70
NZSR10	594	1090	575	1000	240	100	70
NZSR11	594	1686	575	1600	1116	100	76
NZSR12	594	1486	575	1400	1116	100	72
NZSR13	590	1680	550	1600	230	100	70
NZSR14	590	1680	550	1600	ER20	100	71
NZSR15	740	1600	706	1428	363	90	52



Parameter code	Train length	Weight of the train	Lengt h of the train set	Weight of the train set	Loco Type	Required speed	Min. Braking %
NZSR16	650	1250	600	1100	363	90	60
NZSR17	595	2734	575	2500	VECTRON MS	100	60
NZSR18	595	1090	575	1000	VECTRON MS	100	60
NZSR19	514	1164	500	1100	742	60	26
NZSR20	634	2969	600	2800	131	90	23
NZSR21	634	1169	600	1000	131	90	43
NZSR22	618	890	600	800	VECTRON	100	43
NZSR24	318	924	300	900	181	90	31
NZSR25	318	1824	300	1800	181	90	36
NZSR26	653	2090	635	2000	VECTRON	100	49
NZSR27	600	1580	565	1500	ER20	90	54
NZSR28	600	2100	580	2000	363	90	59

Notes:

- The P/C profile is used according to the maximum value from the track;
- Traction is expressed by the type of locomotive;
- The basic category of the train is determined by the required speed.

Table 9: Responsible IM for the construction of the TT, the Capacity Model and the Capacity Offer on the border line section

Name of border section	Neighbouring country	Responsible IM for the construction of the TT
Kúty - Lanžhot	Czech Republic	SŽCZ
Devínska Nová Ves - Marchegg	Republic of Austria	ŽSR
Bratislava Petržalka - Kittsee	Republic of Austria	ÖBB Infra (AT)
Rusovce - Rajka	Republic of Hungary	ŽSR
Štúrovo - Szob	Republic of Hungary	MAV Zrt. (HU)
Komárno - Komárom	Republic of Hungary	ŽSR
Čadca - Mosty u Jablunkova	Czech Republic	SŽCZ
Skalité - Zwardoń	Republic of Poland	ŽSR
Čierna n/Tisou - Čop	Ukraine	VAS "Ukrzaliznycia"



3.3 Traffic intensities

In this chapter, an **analysis of the approximate forecast of the demand for RU capacity** is made on the basis of current traffic flows (intensities) and their known or possible future adjustments. The prospective traffic volumes are based on realized traffic volumes 2023 - 2024

Prospective traffic intensities (planned train paths) for TT 2027 were determined from average realized train volumes from the ŽSR PIS information system, from data cubes for prospective freight and AD HOC trains and data of planned passenger train volumes from IS PIS ZONA for the published TT 2023 (after the introduction of the Transport Service Plan of the Slovak Republic). The data are divided into three basic categories according to the direction of regular train running. The values indicate the projected volume of trains per 24-hour period and the regular direction. For single-track operation, the value is given in both directions.

Table 10: Prospective traffic volumes expressed in number of trains per 24hr:

Table 10.1 respective trame volumes expres	Prospective throughput				
Track section	Even direction	Odd direction	Single-track operation		
Čop (UA) - Čierna nad Tisou	-	-	24		
Čierna nad Tisou - Michaľany	93	93	-		
Michaľany - Košice	167	117	-		
Words. Nové Mesto - Sátoraljaújhely (HU)	-	-	194		
Bánovce nad Ondavou - Michaľany	-	-	75		
Trebišov - Výh. Slivník	-	-	137		
Matovce - Bánovce nad Ondavou	-	-	73		
Košice - Kysak	179	179	-		
Kysak - Spišská Nová Ves	146	194	-		
Spišská Nová Ves - Štrba	130	194	-		
Štrba - Liptovský Mikuláš	179	137	-		
Liptovský Mikuláš - Kraľovany	156	156	-		
Kraľovany - Vrútky	194	156	-		
Vrútky - Žilina	167	156	-		
Žilina - Puchov	167	156			
Odb. Potok Výh. Váh	389	-	-		
Odb. Váh - Varín	-	333	-		
Žilina - Čadca	167	167	-		
Čadca - Mosty u Jablunkova (CZ)	167	146	-		



	P	Prospective throughput				
Track section	Even direction	Odd direction	Single-track operation			
Budatínska spojka	-	-	333			
Púchov - Lúky pod Makytou	97	78	-			
Lúky pod Makytou - Horní Lideč	78	78	-			
Žilina-Teplička - Žilina	-	-	194			
Muszyna (PL) - Plaveč	-	-	47			
Plaveč - Prešov	-	-	106			
Prešov - Kysak	-	-	123			
Košice - Haniská pri Košiciach	-	-	106			
Barca - Hidasnémeti	-	-	69			
Krásna nad Hornádom - Barca St.4	-	-	292			
Čadca - Skalité	-	-	111			
Skalité - Zwardoń	-	-	97			
Štúrovo - Szob (HU)	78	78	-			
Štúrovo - Nové Zámky	146	137	-			
Nové Zámky - Palárikovo	179	179	-			
Palárikovo - Galanta	179	167	-			
Galanta - Bratislava-Vajnory	167	156	-			
Bratislava-Vajnory - Bratislava hl. st.	167	179	-			
Komárom (HU) - Komárno	-	-	106			
Komárno zr. st Komárno	-	-	233			
Komárno zr. st Nové Zámky	-	-	117			
Komárno - Dunajská Streda	-	-	63			
Dunajská Streda - Bratislava-N. mesto	-	-	101			
Púchov - Trenčianska Teplá	194	194	-			
Trenčianska Teplá - Trenčín	156	146	-			
Nové Mesto nad Váhom - Leopoldov	156	137	-			
Leopoldov - Trnava	167	146	-			
Trnava - Bratislava-Rača	156	167	-			
Bratislava-Rača - Bratislava hl. st.	146	167	-			
Bratislava hl. st Devínska Nová Ves	179	194	-			



	Prospective throughput				
Track section	Even direction	Odd direction	Single-track operation		
Devínska Nová Ves - Zohor	194	194	-		
Zohor - Kúty	156	156	-		
Kúty - Lanžhot (CZ)	117	123	-		
Devínska Nová Ves - Marchegg (AT)	-	-	97		
Bratislava Vajnory - Bratislava vých. odch. sk. Juh	-	-	212		
Bratislava vých. odch. skup. Juh- Odb. Vinohrady	-	-	212		
Bratislava Východ - Bratislava-Rača	-	-	146		
Bratislava Východ - Bratislava ÚNS	146	146	-		
Bratislava ÚNS - Bratislava-Petržalka	130	130	-		
Bratislava-Petržalka - Rusovce	-	-	106		
Rusovce - Rajka (HU)	-	-	117		
Bratislava-Petržalka - Kittsee (AT)	-	-	156		
Odb. Močiar - Bratislava Predmestie	-	-	292		
Odb. Močiar - Odb. Vinohrady	-	-	333		
Bratislava-N. mesto- Bratislava hl. st.	-	-	130		
Galanta - Leopoldov	194	194	-		
Sereď - Trnava	-	-	75		
Trnava - Kúty	-	-	117		



3.4 Expected intensities at border sections for TT 2027

In Table 11 below, for the purpose of harmonizing the capacity of the railway lines at several border sections, an overview of the expected traffic volumes at the common border crossing points between the Czech Republic and the Slovak Republic in three sections, between Austria and the Slovak Republic in two sections, between Hungary and the Slovak Republic in four sections, between Poland and the Slovak Republic in two sections and between Ukraine and the Slovak Republic in one section is given. The **expected intensities on the border sections for the TT 2027 have been coordinated with the NPIMs of the neighbouring IMs.** The values in the table below are the volumes of trains per hour at both the entry and exit points.

Table 11: International traffic volumes at border sections

5		AD HOC		
Border section	Freight Trains	Long-distance Pax*	Regional Pax*	Freight trains
Bratislava-Petržalka - Kittsee	1,25	1	2	0,5
Čadca - Mosty u Jablunkova*	2	1*	0,5*	1
Čaňa - Hidasnémeti	1	0,58	0,25	1,29
Čierna n/Tisou - Čop	N/a	N/a	N/a	N/a
Devínska Nová Ves - Marchegg	1	2	2	1
Komárno - Komárom	0,6	0	0	0,5
Kúty - Lanžhot*	1	2*	1*	1,5
Lúky pod Makytou - Horní Lideč*	0,5	1*	1*	0,5
Plaveč - Muszyna	0,21	0	0	0,21
Rusovce - Rajka	1	0	1	0,5
Skalité - Zwardoń	0	0	0,5	0
Slovenské Nové Mesto - Sátoraljaújhely	0	0	0	0,21
Štúrovo - Szob	0,95	0,75	0	0,5

^{*} Weekday passenger traffic volume per hour, during daytime



4 Approval and publication of the TT 2027

The submitted version includes the forecast intensities at the border sections, which have been coordinated with all the IMs concerned.

The final version of the CS for the TT 2027 is published for the needs of the concerned entities of the railway transport market of the Slovak Republic (applicants, railway undertakings, MoD SR, SA SR, concerned VUCs, terminals) and approved by the Director General of ŽSR.

The final version of the CS for TT 2027 will be available on ŽSR website as well as on the RNE website in English.

References used:

Directive 2012/34/EU of the European Parliament and of the Council of 21 November 2012 establishing a single European railway area, as amended;

Act No. 513/2009 Coll. on railways and on amendment of certain acts as amended;

RNE Handbook for Capacity Strategy (Procedures for Capacity Strategy ver. 3.0);

Directive for the development of the Capacity Strategy in the conditions of ŽSR ver. 2.3.1;

Transport Service Plan of the Slovak Republic;

Network Statement for ATT 2024/2025;

ŽSR Regulation DP 4 " Track closure activity of ŽSR"

Throughput of the railway tracks of ŽSR for ATT 2023/2024

Prospective throughput of the ŽSR tracks for ATT 2024-2025