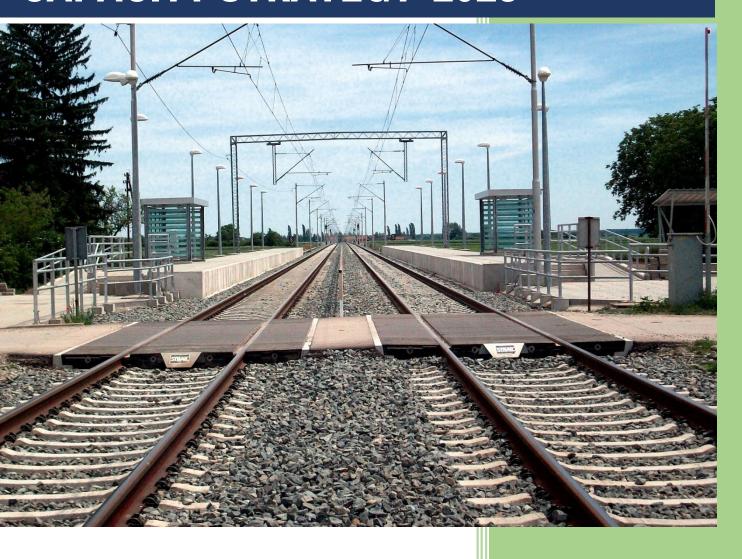


CAPACITY STRATEGY 2025







CONTENTS

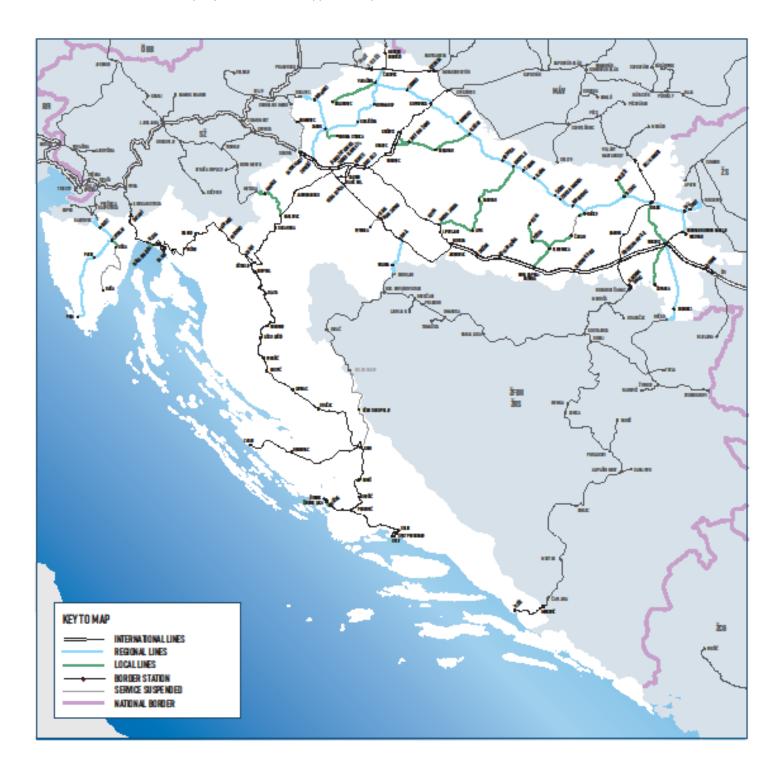
GEOG	RAPHI	CAL AREA	3
1.	Expe	cted capacity of infrastructure in TT2025	5
	1.1.	Reconstruction of the existing and construction of the second track of M201 railway line on the section Križevci - Koprivnica – state border (42.6 km)	
	1.2.	Reconstruction of the existing and construction of the second track of M201 railway line on the section Dugo Selo – Križevci (38.2 km)	
	1.3.	Upgrade and electrification of the M601 railway line Vinkovci - Vukovar (18.7 km)	7
	1.4.	Modernization and electrification of the R201 railway line on the section Zaprešić - Zabok (23.9 km)	
	1.5.	Reconstruction of the railway section Savski Marof - Zagreb West station on the line M101 DG - Savski Marof - Zagreb Main station (17.8 km)	
	1.6.	Improvement of railway infrastructure - establishment of a monitoring system for safety, security and technical control	
2.	Temp	orary Capacity Restrictions (TCRs):	. 11
	2.1.	Principles for TCR planning	
	2.2.	Expected bigger impact of TCRs	
		2.2.1. Reconstruction of the existing and construction of the second track on the section Hrvatski Leskovac - Karlovac on the railway line M202 Zagreb Main	
		Station - Rijeka (TCR 1)	11
		2.2.2. Reconstruction of railway line M104 Novska - Tovarnik, section Okučani - Vinkovci (TCR 2)	11
		2.2.3. Modernization of the railway line M202 Zagreb GK – Rijeka, section Karlovac - Oštarije (TCR 3)	11
		Upgrade, reconstruction, construction of the second track and construction of a new double-track line on the section Dugo Selo - Novska (TCR 4)	
		2.2.5. Construction of the second track, modernization and reconstruction on the section of the railway Škrljevo - Rijeka - Jurdani (TCR 5)	
		2.2.6. Modernization of the railway line M604 Oštarije - Knin - Split (TCR 6)	
3.	Traffi	c planning principles and traffic flows:	. 13
	3.1.	Traffic planning principles	13
	32	Traffic flows	



Geographical area

HŽ Infrastruktura manages the 2,617 km long railway network, of which 2,341 km are single-track and 276 km are double-track lines with a standard track gauge of 1435 mm. 1013 km of railway lines have been electrified, of which:

- 1010 km with 25 kV, 50 Hz AC
- 3 km 3 kV DC (only on the route Šapjane SB).





The following freight corridors are part of the railway network managed by HŽ Infrastruktura:

- Mediterranean Rail Freight Corridor 6 (RFC 6) established by Regulation 913/2010 concerning a European rail network for competitive freight, which corresponds to the Mediterranean TEN-T corridor.
- Alpine-Western Balkan Rail Freight Corridor (RFC 10) established by four Member States (Austria, Slovenia, Croatia and Bulgaria) and Serbia. The corridor connects Austria (Salzburg and Wels / Linz) with Svilengrad on the Bulgarian-Turkish border.

The railway infrastructure of the Republic of Croatia managed by HŽ Infrastruktura is connected to the railway infrastructure of four countries:

- Slovenia,
- Hungary,
- Serbia,
- Bosnia and Herzegovina.

Border	Line	Neighbouring	Infrastr.	Remarks
station		country	manager	
Buzet	SB - Buzet – Pula	Slovenia	SŽ	For passenger trains
Lupoglav	SB - Buzet – Pula	Slovenia	SŽ	For freight trains
Šapjane	Rijeka - Šapjane - SB	Slovenia	SŽ	
Kamanje	Karlovac - Kamanje - SB	Slovenia	SŽ	
Savski Marof	SB - Savski Marof - Zagreb Gk	Slovenia	SŽ	
Kumrovec	Savski Marof - Kumrovec - SB	Slovenia	SŽ	Traffic suspended
Đurmanec	Zabok - Đurmanec - SB	Slovenia	SŽ	
Čakovec	SB - Čakovec – Kotoriba - SB	Slovenia	SŽ	
Čakovec	Čakovec - Mursko Središće - SB	Slovenia	SŽ	
Kotoriba	SB - Čakovec - Kotoriba - SB	Hungary	MAV	
Koprivnica	SB - Botovo - Dugo Selo	Hungary	MAV	
Beli Manastir	SB - Beli Manastir - Osijek	Hungary	MAV	
Erdut	Vukovar/B. Naselje - Erdut - SB	Serbia	ŽS	
Tovarnik	Novska - Tovarnik - SB	Serbia	ŽS	
Drenovci	Vinkovci - Drenovci - SB	Bosnia and Her	ŽRS	
Slavonski Šamac	Strizivojna-Vrpolje - Slavonski Šamac - SB	Bosnia and Her	ŽRS	
Volinja	Sunja -Volinja - SB	Bosnia and Her	ŽRS	
Ličko Dugo Polje	SB - Ličko Dugo Polje - Knin	Bosnia and Her	ŽFBH	Traffic suspended
Metković	SB - Metković - Ploče	Bosnia and Her	ŽFBH	

The following border crossings are included in the Capacity Strategy;

- 1. Slovenia Dobova/Savski Marof and Šapjane/Ilirska Bistrica
- 2. Hungary Koprivnica/Gyekenyes, Kotoriba/Murakeresztur, Beli Manastir/Magyarboly
- 3. Serbia Tovarnik/Šid, Erdut Bogojevo
- 4. Bosnia and Herzegovina Metković/Čapljina, Volinja/Dobrljin

The information contained in this Capacity Strategy refers to the data for the annual timetable 2025 and to all main lines in the Republic of Croatia except for lines of regional and local importance.



1. Expected capacity of infrastructure in TT2025

In accordance with the implementation of investments under the programs, a total of about 935 million euros was invested in the reconstruction of railway lines, plants, stations, stops and other infrastructure facilities from 2010 to the end of 2019. The plan for the period from 2020 to 2024 is to invest as much as 1.8 billion euros, of which almost 78.7% refers to projects co-financed by the European Structural and Investment Funds (ESI) and the Connecting Europe Facility (CEF).

Investments are focused on the reconstruction and modernization of railway lines and sections, construction of new railway lines and tracks, reconstruction of railway stations, securing of level crossings with devices, and electrification. Additional investments are necessary to increase the safety of railway traffic, such as the repair of cuttings, replacement and reconstruction of bridges and tunnels, construction of culverts, replacement of switches, replacement of signalling and safety and telecommunications devices and more. The network is being modernized mostly on the Croatian part of the Mediterranean Corridor.

Performed works in the period from 2013 to 2019:

1. Reconstruction of the railway Vinkovci - Tovarnik - State border

Reconstruction of the Vinkovci - Tovarnik - state border section was the first project in Croatia to be financed from EU pre-accession funds and the first to co-finance investments in railway infrastructure from EU funds. 67 kilometres of tracks on the double-track railway were restored. The axle load allowed on them is now 22.5 tons per axle and 8.0 tons per meter of length, and the maximum permitted speed on them is 160 km/h.

The works were completed in 2012.

2. Modernization of the Zagreb Main Railway Station signalling and interlocking system

The project of replacing the signalling and interlocking system at Zagreb Main Station, co-financed by EU grants, started on 18 October 2010. The project included replacing the signalling and interlocking devices, replacing telecommunications equipment, reconstructing the station tracks and renovating the signal box building.

This significantly increased the flow of train traffic through the largest Croatian station, because the impact of the so-called bottleneck in long-distance transport at the junction of the RH1 and RH2 corridors was reduced, and more regular and safer services could be provided to railway passengers at the Zagreb hub.

The works were completed in 2013.

3. Construction of a new railway for suburban traffic on the section Gradec - Sveti Ivan Žabno

The project built a single-track, non-electrified 12.2 km long railway line intended for suburban railway traffic. During the design the of the project, the profiles of the track section were defined in a way that can be electrified in the future were defined. The Gradec - Sveti Ivan Žabno line is designed for a speed of 120 km/ and for an axle load of 22.5 t and 8 t/m.

The railway line was put into operation on 15 December 2019 with a new timetable for 2019/2020.

4. Development of a multimodal platform in the Port of Rijeka and connection to Adriatic Gate container terminal

The development of a multimodal platform in the Port of Rijeka and the connection to Adriatic Gate container terminal was a joint project of the Port of Rijeka Authority and HŽ Infrastruktura d.o.o. The project covered the reconstruction of the Rijeka Brajdica railway station and the construction of intermodal container terminal Brajdica.



5. Renewal and reconstruction of the section of the railway Okučani - Novska

The project Renewal and reconstruction of the railway line section Okučani - Novska included the reconstruction of the double-track railway between Okučani and Novska (about 16.8 km), the reconstruction of the Okučani station (about 3 km) and the reconstruction of the Rajić stop. Works on the track and on civil engineering and electric-engineering installations included overhaul of the open track, renovation of the substructure of the track, culverts and drainage system and adjustment of the catenary reconstruction. The works on signalling and interlocking and telecommunication sub-systems included the adaptation of signalling and interlocking devices, the installation of an automatic track block for two-way traffic and ETCS level 1, and the rehabilitation of the existing level crossings and the existing telecommunication system.

The project was completed in 2017.

The ongoing and future projects on the main lines of the Republic of Croatia that will increase the availability and efficiency of the existing infrastructure by the time the annual timetable 2024/2025 comes into effect:

Reconstruction of the existing and construction of the second track of M201 railway line on the section Križevci - Koprivnica - state border (42.6 km)

The project covers the reconstruction of the existing track, construction of the second track on the whole 42.6 km line section, reconstruction/construction of stations and stops, construction of bridges, viaducts, road overpasses and underpasses to replace level crossings, and subways. It also includes the construction and reconstruction of the overhead contact line and other power facilities, as well as modernisation of signalling-interlocking and telecommunication devices.

Positive impact on the infrastructure: this section will become a double-track line, with much more favourable use characteristics that will meet future corridor traffic requirements and will enable adequate capacity increase as well as a considerable reduction of the journey time between Zagreb, Koprivnica, Varaždin and Čakovec; journey time of passenger trains on this section will be reduced from current 36.5 minutes to 31.1 minutes. Upon the completion of the project passenger trains will run at the speed of up to 160 km/h.

Status: ongoing works Planned completion: by 2024

1.2. Reconstruction of the existing and construction of the second track of M201 railway line on the section Dugo Selo – Križevci (38.2 km)

The project covers the reconstruction of the existing track, construction of the second track on the 36.4 km long line section (including the reconstruction of Dugo Selo station 38.23 km), reconstruction/construction of stations and stops, reconstruction/construction of bridges, road overpasses and underpasses to replace level crossings, and subways.

Within the framework of power supply infrastructure sub-system, the overhead contact line will be constructed/reconstructed, and within the framework of traffic management and signalling and interlocking sub-systems, signalling-interlocking and telecommunication devices will be modernised. Upon the completion of the project passenger trains will run at the speed of up to 160 km/h.

Positive impact on the infrastructure: significant capacity increase (2.5 times), journey time reduction (30%) and improvement of journey quality, with the possibility to include Bjelovar, Križevci and Koprivnica in the suburban rail traffic of the city of Zagreb.

Status: ongoing works Planned completion: by 2024



1.3. Upgrade and electrification of the M601 railway line Vinkovci - Vukovar (18.7 km)

The project includes the reconstruction and renewal of a 18.7 km long single-track railway line, the reconstruction of stations and stops, the reconstruction of a bridge and the securing of level crossings. Within the framework of power supply infrastructure sub-system, the overhead contact line will be constructed, and within the framework of traffic management and signalling and interlocking sub-systems new signalling-interlocking and telecommunication devices will be installed.

Positive impact on the infrastructure: capacity increase; reduction of travel time; modern signalling and interlocking and telecommunication devices will be installed; modernization of stations and stops; parking lots for vehicles and cyclists will be built near the stop, access for people with disabilities will be provided, safety will be increased and it will be possible to cross the railway line more safely (securing level crossings, building underpasses), walls will be built to protect against noise, rail electrification will have the effect of reducing noise. Upon completion of the works, passenger trains will run at speeds of up to 120 km/h.

Status: ongoing works Planned completion: by 2022

1.4. Modernization and electrification of the R201 railway line on the section Zaprešić - Zabok (23.9 km)

The project includes the modernization of the railway line Zaprešić - Čakovec on the 23.9 km long section Zaprešić - Zabok, reconstruction of stations and stops, upgrade / reconstruction and construction of completely new railway structures (bridges, culverts, canals) and securing / upgrade of level crossings.

Within the framework of power supply infrastructure sub-system, the overhead contact line will be constructed, and within the framework of traffic management and signalling and interlocking sub-systems new signalling-interlocking and telecommunication devices will be installed. Upon completion of the works, passenger trains will run at speeds of up to 120 km/h.

Positive impact on the infrastructure: electrification and speed of 120 km/h will enable full integration into suburban railway traffic system in the wider area of the city of Zagreb; modernization of the section will increase the speed of traffic and shorten travel time; increase of the carrying capacity of the railway line will remove the current restrictions in freight transport; car parks and bicycle racks will be built at all stations and stops, and locating public bus stops next to railway stations will enable better connections, easier and faster travel.

Status: ongoing works

Planned completion: by 2022

1.5. Reconstruction of the railway section Savski Marof - Zagreb West station on the line M101 DG - Savski Marof - Zagreb Main station (17.8 km)

The works are being carried out on the 17.8 km long section of the double-track railway. The project includes works on the permanent way and substructure of the track, upgrade of stations and stops, and repair of bridges, culverts and underpasses.

As part of the power supply infrastructure sub-system, a complete renovation of the catenary system will be carried out. Also, dilapidated parts of the signalling-interlocking and traffic-management infrastructure sub-system will be replaced. Upon completion of the works, passenger trains will be able to run at speeds of up to 120 km/h and the capacity of the line will be increased, which will enable transporting a larger number of daily commuters.



Positive impact on the infrastructure: improving local and regional passenger transport; better integration of the railway into the public transport system of the city of Zagreb; improving the accessibility of rail and local public transport; increasing the share of railway and local public transport in total transport in the wider area of the city of Zagreb.

Status: ongoing works

Implementation of works: from 2022 to 2024

1.6. Improvement of railway infrastructure - establishment of a monitoring system for safety, security and technical control

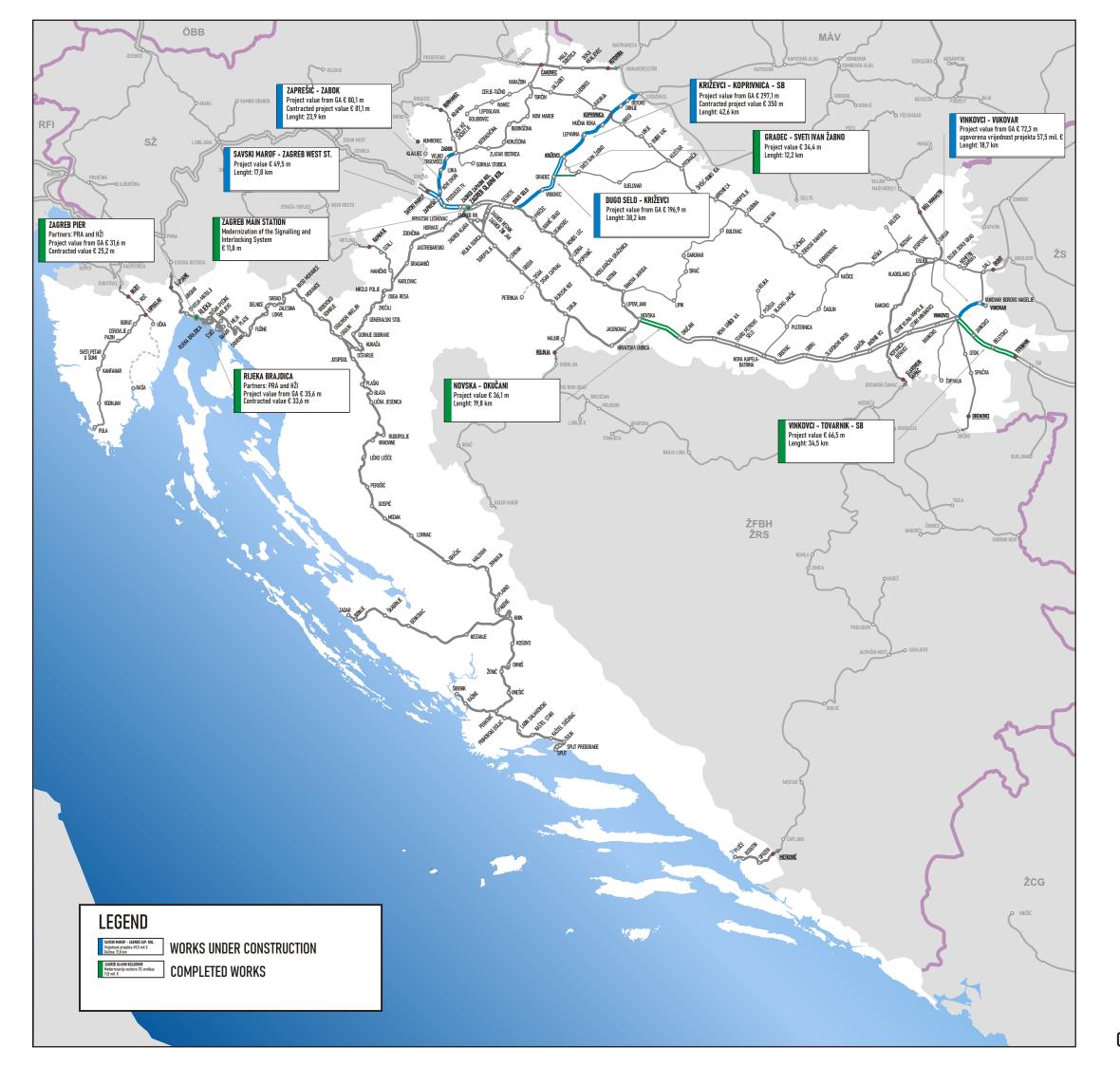
Positive impact on the infrastructure: increase in safety and interoperability; enabling automatic collection of safety data, safety and technical parameters of trains and interaction of trains and tracks in real time, which will reduce the risk of bottlenecks on the railway lines of the Core Network, reduction of maintenance costs due to the possibility of prompt detection of irregularities in railway vehicles and thus preventing damage to railway infrastructure.

Status: future works

Implementation of works: from 2022 to 2024

Project name	Project proposal defined	Project approved by the IM's management	Financing secured
Reconstruction of the existing and construction of the second track of M201 railway line on the section Križevci - Koprivnica – state border	YES	YES	YES
Reconstruction of the existing and construction of the second track of M201 railway line on the section Dugo Selo – Križevci	YES	YES	YES
Upgrade and electrification of the M601 railway line Vinkovci - Vukovar	YES	YES	YES
Modernization and electrification of the R201 railway line on the section Zaprešić - Zabok	YES	YES	YES
Reconstruction of the railway section Savski Marof - Zagreb West station on the line M101 DG - Savski Marof - Zagreb Central station	YES	YES	NO*
Improvement of railway infrastructure - establishment of a monitoring system for safety, security and technical control	YES	YES	YES

^{*} project approved for co-financing from the National Recovery and Resilience Plan 2021-2026. (NPOO)







2. Temporary Capacity Restrictions (TCRs):

2.1. Principles for TCR planning

Big infrastructure projects are planned in a way to minimize their impact on infrastructure availability, and they take into account traffic organisation.

The basic principle of such works is to re-route the traffic, and if there is not enough capacity to take over the volumes planned for the original path, passenger trains are replaced by buses to get more capacity for freight transport, taking care to reduce the impact on international and seasonal trains, and trains running in peak hours as much as possible.

The works on double-track lines are organised in a way that one track is kept open for traffic. A temporary timetable for such single-track transport is drawn up in this case.

Regular maintenance is carried out during brief possessions. In case there is no alternative transport route freight transport is completely stopped and passenger transport is replaced by buses with potential reductions of some lines.

All possessions must be announced at least 20 days before the beginning of the planned works.

2.2. Expected bigger impact of TCRs

Major investment projects that will have an impact on available capacity in 2025 are as follows:

- 2.2.1. Reconstruction of the existing and construction of the second track on the section Hrvatski Leskovac Karlovac on the railway line M202 Zagreb Main Station Rijeka (TCR 1)
 - subsection Hrvatski Leskovac Jastrebarsko and subsection Jastrebarsko Karlovac: daily closures every working day from 7 am to 4 pm, occasional closures on weekends lasting up to 72 hours in accordance with the needs of the Contractor, possible closures on the section Zagreb Delta Hrvatski Leskovac, Karlovac Mrzlo Polje (8 hours of railway closure in the interval 7 am 4 pm)
 - if necessary, longer closures will be needed, depending on the dynamics of works and the technology of performing certain critical phases of the project, for example track switching
- 2.2.2. Reconstruction of railway line M104 Novska Tovarnik, section Okučani Vinkovci (TCR 2)
 - occasional daily closures of the railway line will be in accordance with the needs of the Contractor and planned by the Traffic Technology Study
- 2.2.3. Modernization of the railway line M202 Zagreb GK Rijeka, section Karlovac Oštarije (TCR 3)
 - line closures are expected during the overhaul (reconstruction) of the Mostanje Duga Resa section (7.8 km of railway)
 - occasional daily closures of the line will be in accordance with the needs of the Contractor
 - for the section Karlovac Mostanje (3.1 km of railway) the works are planned in a way that a new track is constructed first and then the existing track is reconstructed, in order to reduce the need for line closures
 - line closures will also be needed for the construction of a connection to the existing M202 railway line in the Karlovac area
- 2.2.4. Upgrade, reconstruction, construction of the second track and construction of a new double-track line on the section Dugo Selo Novska (TCR 4)
 - daily closures of the line from 7 am to 4 pm and closures on weekends for up to 72 hours in accordance with the needs of the contractor (they occur when the works start)



2.2.5. Construction of the second track, modernization and reconstruction on the section of the railway Škrljevo - Rijeka - Jurdani (TCR 5)

- during permanent closures of the line, the substitution of passenger transport by buses is required
- shift freight traffic to road routes as much as possible
- in coordination with the Port of Rijeka Authority harmonize the timing of unloading ships in the port and permanent closures of the railway line, all with the aim of reducing the need for railway capacity to transport goods arrived at the port

2.2.6. Modernization of the railway line M604 Oštarije - Knin - Split (TCR 6)

- possibility of train traffic Perković only tracks no. 4, 5 and 6, possibility of crossing max 2 passenger trains, disconnection of the existing SS device until 01/2026.
- Labin Dalmatinski only 2 tracks without the possibility of crossing passenger trains interruption of SS devices until 01/2024.

TCR	Project proposal defined	Project approved by the IM´s management	Financing secured	Comments/ explanations
TCR1	YES	YES	YES	 daily closures every working day on a certain sub-section from 7 am to 4 pm, occasional closures on weekends lasting up to 72 hours in accordance with the needs of the Contractor if necessary, longer closures will be needed
TCR 2	YES	YES	YES	 occasional daily closures of the line will be in accordance with the needs of the Contractor and planned by the Traffic Technology Study
TCR 3	YES	YES	NO*	- the railway closures are expected during the overhaul (reconstruction) of the Mostanje - Duga Resa section - occasional daily closures of the railway line will be in accordance with the needs of the Contractor - line closures will also be needed for the construction of a connection to the existing M202 line in the Karlovac area
TCR 4	YES	YES	YES	 daily closures of the railway between 7 am and 4 pm and closures on weekends for up to 72 hours in accordance with the needs of the contractor (they occur when the works start)
TCR 5	YES	YES	NO*	 during permanent closures of the railway, the substitution of passenger transport by buses is required shift freight traffic to road routes as much as possible in coordination with the Port of Rijeka Authority harmonize the timing of unloading ships in the port and permanent closures of the railway line
TCR 6	YES	YES	NO**	 reduction of the number of train tracks and reduced possibility for train crossing at Perković station reduction of the number of tracks without the possibility of crossing trains and disconnection of the existing SS device in Labin Dalmatinski

^{*} planned submission of applications for the works phase for future calls for EU co-financing

^{**} projects approved for co-financing from the National Recovery and Resilience Plan 2021-2026 (NPOO)



3. Traffic planning principles and traffic flows:

3.1. Traffic planning principles

When planning train paths, the available infrastructure capacity shall be allocated in a fair and non-discriminatory manner, taking into account the planned TCRs. After the limitations necessary for carrying out big civil engineering works have been determined, the available capacity in the capacity model will be segmented into:

- capacity for train paths in annual timetable (regular and extraordinary requests)
- Capacity for ad hoc and rolling planning

Capacity allocation priorities are laid down in the Network Statement for each timetable.

For border crossing sections capacity model will include pre-arranged paths for international and cross-border passenger trains, and for freight trains in the annual timetable. Capacity for ad hoc path requests will be available as remaining capacity and capacity that is result of regular trains' cancellation.

For regional and local lines, the capacity model will not be defined.

The projected traffic flows are based on the current volume, taking into account the increase in available capacity with regard to the works that will be completed by the 2025 timetable.

Sekcija pruge	International passenger	Regional passenger	International freight	Domestic freight	Ad hoc
Zagreb GK – Savski Marof	12	28	24	0	8
Savski Marof – Dobova (SŽ)	12	0	24	0	8
Zagreb GK - Karlovac	14	24	30	8	6
Karlovac - Ogulin	14	18	28	8	6
OgulinRijeka	6	10	24	6	4
Rijeka - Šapjane	4	12	6	0	4
Šapjane – Ilirska Bistrica (SŽ)	4	0	6	0	2
Zagreb GK – Dugo Selo	14	66	42	14	12
Dugo Selo - Koprivnica	10	32	22	6	6
Koprivnica – Gyekenyes (MAV)	10	4	22	0	8
Beli Manastir – Magyarboly (MAV)	2	10	7	0	4
Osijek – Beli Manastir	2	10	7	2	4
Strizivojna Vrpolje – Osijek	2	13	0	2	2
Striziv. Vrpolje - Bos. Šamac (ŽRS)	2	0	6	0	2
Čakovec - Kotoriba	0	22	4	2	2
Kotoriba – Murakeresztur (MAV)	0	4	4	0	2
Dugo Selo – Vinkovci	4	36	21	8	6



Sekcija pruge	International	Regional	International	Domestic	Ad hoc
	passenger	passenger	freight	freight	
Vinkovci – Šid (IŽS)	6	0	23	0	8
Vinkovci – Vukovar	0	10	6	2	2
Vukovar Borovo Naselje – Erdut	0	0	6	2	2
Erdit – Bogojevo (IŽS)	0	4	4	0	2
Ploče - Metković	2	0	12	0	4
Metković – Čapljina (ŽFBH)	2	0	12	0	4
Ogulin (Oštarije) - Split	10	0	0	8	2
Zagreb GK- Sisak Caprag	2	27	6	4	2
Sisak Caprag - Volinja	2	10	6	2	2
Volinja – Dobrljin (ŽRS)	2	0	6	0	2

3.2. Traffic flows

Expected traffic flows at the common border points between HŽ Infrastrukture d.o.o. and Slovenian Railways - Infrastructure (SŽI), MÁV Zrt. Railway Infrastructure (MAV), Railway Infrastructure of Serbia (IŽS), Railways of the Federation of Bosnia and Herzegovina (ŽFBH) and Railways of Republika Srpska (ŽRS) are given in the table below.

The offer is (partially) aligned with neighbouring infrastructure managers.

Border crossing IM	Border crossing IM	International passenger	Regional passenger	International freight	Ad hoc
HŽI	SŽI				
Savski Marof	Dobova	12	0	24	8
Šapjane	Ilirska Bistrica	4	0	6	4
	MAV				
Koprivnica	Gyekenyes	10	4	22	8
Kotoriba	Murakeresztur	0	4	4	2
Beli Manastir	Magyarboly	2	10	7	4
	IŽS				
Tovarnik	Šid	6	0	23	8
Erdut	Bogojevo	0	4	6	2
	ŽFBH				
Ploče	Čapljina	2	0	12	6
	ŽRS				
Volinja	Dobrljin	2	0	6	2

The approximate daily available capacity for the 2025 timetable by different market segments is shown in the following schematic:

