

# RECONSTRUCTION AND MODERNIZATION OF THE RAILWAY LINE BELGRADE – NIŠ

July 2024

← НИШ





# Importance of the railway line Belgrade-Niš



## The first railway in Serbia built in 1884

From its construction until today, it continuously meets the social, economic and cultural needs of the people connected with it.



## Pillar in the nation's transportation infrastructure development strategy

Holds utmost significance for the Republic of Serbia.



## Crucial segment of the SEETO Corridor X

It serves as a pivotal link between Central and Western Europe, and regions spanning Greece, Turkey, and the Middle East.



## Extension of TEN-T railway network to WB

It constitutes an integral component of the indicative expansion of the Core TEN-T railway network across the Western Balkans.

Source:  
<https://www.euzatebe.rs>

# Reconstruction and modernization of the railway line Belgrade – Niš

The Republic of Serbia intends to finance the Project through multiple sources, including the European Investment Bank (EIB), the European Bank for Reconstruction and Development (EBRD) and the EU grant funds provided through the Western Balkans Investment Framework (WBIF).

**Investment costs are estimated to amount to € 2.8 billion, out of which**

**€ 600 million from the EU** – the largest EU grant donation for a single project in Serbia to date.

## Transport data of the railway line Belgrade-Niš



### Freight (current & forecasted)

(mil. tons)	2022	2030	2040	2050
Export	1.9	2.3	3.0	3.8
Import	2.6	3.2	4.1	5.2
Local	2.2	2.8	3.1	3.5
Transit	2.0	2.3	2.8	3.3
<b>Total</b>	<b>8.6</b>	<b>10.6</b>	<b>12.9</b>	<b>15.8</b>



### Passenger (current & forecasted)

(mil. pax)	2022	2030	2040	2050
<b>Total</b>	<b>0.6</b>	<b>1.1-2.5</b>	<b>1.4 - 3.2</b>	<b>1.8 - 4</b>



### Operation (current & forecasted)

(no. pass. trains)	2022	2030	2040
<b>Total</b>	<b>20</b>	<b>42</b>	<b>84</b>



### Travel Time (current & forecasted)

(hh:mm)	2022	2030-...
<b>Travel time Belgrade – Niš</b>	<b>06:19</b>	<b>Less than 2:00</b>

**Up to 200km/h** between the two cities enabling faster flow of goods and services as well as contribute to the speedy integration into the EU railway networks



# Reconstruction and modernization of the railway line Belgrade – Niš

Reconstruction and modernization of railway line Belgrade – Niš has the potential to provide the following wider benefits:

- Contribution to the economic growth of Serbia through better connections to the European network, which will stimulate the development of the region;
- A significant contribution to environmental protection, which is reflected by reducing the number of vehicles in road traffic and the use of environmentally favourable energy types;
- Reducing travel time and cost on both rail and road networks;
- Reducing maintenance costs of infrastructure and rolling stock;
- Better and more efficient utilization of rolling stock, and
- Cost savings due to the reduction of negative environmental impact, reducing the number of accidents, and elimination of environmental pollution compared to road transport.



# Reconstruction and modernization of the railway line Belgrade – Niš



Under the auspices of the project Project Preparation Facility 9, European Union Delegation in Serbia is supporting the preparation of technical documentation for the **reconstruction and modernization of the railway line Belgrade – Niš (Belgrade Centre – Railroad junction “G” – Rakovica – Mladenovac – Lapovo – Niš)**, in line with the Serbian, as well as the EU and EIB/EBRD requirements, as follows:

- Preliminary Design
- Feasibility Study
- Environmental and Social Impact Assessment Study
- Tender Documentation



# Reconstruction and modernization of the railway line Belgrade – Niš

## Preliminary Design will be prepared in two phases:

- Phase one - reconstruction of the part of the railway from Resnik to Trupale, divided into following subsections:

- **Section 1:** Resnik - Velika Plana;
- **Section 2:** Velika Plana – Paracin (without Gilje-Paracin subsection)
- **Section 3:** Paracin – Trupale (without Stalac – Djunis subsection)

*\*Length of the above three sections is approximately 183km.*

- Phase two - reconstruction of the Belgrade and Niš railway nodes.





# Design development overview - Section 1: Resnik - Velika Plana

## Description of the railway route:

**7** railway Stations:  
Resnik – Ripanj – Ralja – Sopot  
Kosmajski – Mladenovac –  
Kusadak – Smederevska Palanka

Double-track railway line  
for two-way traffic and train  
speed of up to **200 km/h**

More than **40**  
bridges / culverts

**6** tunnels, total  
length **L=6.65km**

More than **20**  
overpasses

Construction of new facilities  
(culverts, bridges) along the entire  
route is planned. In places where  
the planned route coincides with  
the existing one, it is planned to  
demolish the existing buildings  
and replace them with new ones.

S&T requirements:  
ERTMS/ETCS Application  
Level 2 (train equipped with  
ERTMS/ETCS operating on a  
line controlled by a Radio  
Block Centre and equipped  
with Eurobalises and  
Euroradio) with train position  
and train integrity proving  
performed by the trackside

Length: **74.66 km**

Preparation of Preliminary Design  
is in progress and is expected to  
be finalized in the spring 2025.

Spatial Plan of the Spatial Purpose  
Area from Resnik to Velika Plana  
will be prepared.

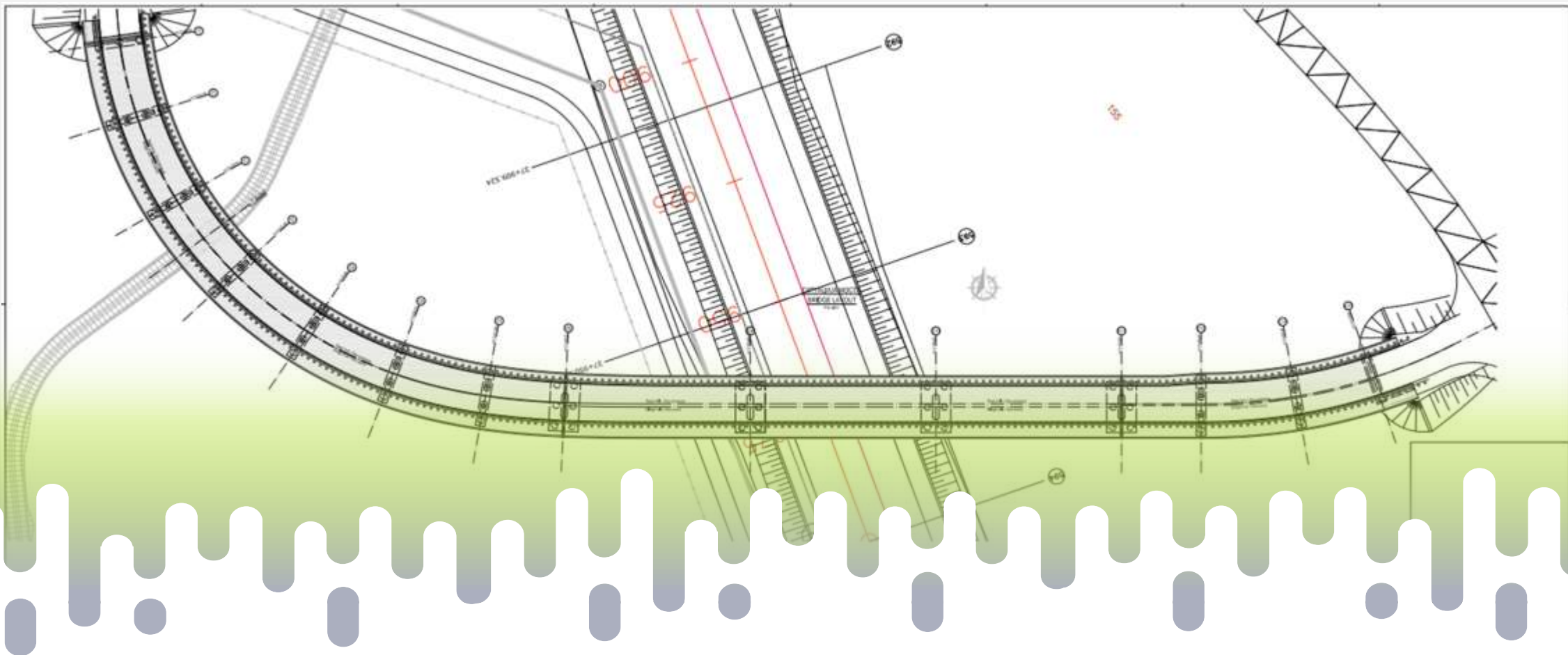


## Section 1: Resnik - Velika Plana (In progress)

No.	Structures	Chainage	Width	Lenght	Technical parameters
1.	Viaduct	29+458.40	8.30 m	$L=2 \times 25.60 + 3 \times 26.20 = 129.80\text{m}$	Reinforced concrete bridge - 5 simply supported beams structures with prestressed girders
2.	Viaduct	35+450	13.30m	$L=2 \times 25.60 + 3 \times 26.20 = 129.80\text{m}$	Reinforced concrete bridge - 5 simply supported beams structures with prestressed girders
3.	Viaduct	35+898.10	13.305m	$L=2 \times 25.60 + 9 \times 26.20 = 298.40\text{m}$	Reinforced concrete bridge - 11 simply supported beams structures with prestressed girders
4.	Overpass	37+971.36	12.25-13.00m	$L=4 \times 15 + 6 \times 18 + 3 \times 35 = 273.00\text{m}$	Three segment bridge. 1. Seven span in-situ concrete T-beams 2. Three span prestressed girders 3. Three span in-situ concrete T-beams







## Section 1: Resnik - Velika Plana (In progress)

**Example: Overpass 37+971.36 (273.00m)**



# Design development overview - Section 2: Velika Plana – Paracin (without Gilje-Paracin subsection)

## Description of the railway route:

● Preparation of Preliminary Design is in progress and is expected to be finalized in the fall of 2024.

● Spatial Plan of the Spatial Purpose Area from Velika Plana to Niš is in process of adoption.

Double-track railway line for two-way traffic and train speed of up to **200 km/h**



Length: **50.14 km**



**5** railway Stations / stops:  
Velika Plana – Markovac –  
Lapovo – Bagrdan – Jagodina



**17** bridges / culverts  
(**5.5 m – 45 m** long)



Construction of new facilities (culverts, bridges) along the entire route is planned. In places where the planned route coincides with the existing one, it is planned to demolish the existing buildings and replace them with new ones.

**21** overpasses and underpasses



**0** tunnels



S&T requirements:  
ERTMS/ETCS Application Level 2 (train equipped with ERTMS/ETCS operating on a line controlled by a Radio Block Centre and equipped with Eurobalises and Euroradio) with train position and train integrity proving performed by the trackside

## Section 2: Velika Plana – Paracin

### Bridges and culverts

No.	Structures	Chainage	Width	Lenght	Technical parameters
1	Bridge (Culvert) over the Grabovački stream	91+411.87	13.10m	L=5.50m	
2	Bridge (Culvert) over the Južnomoravski melioration canal	95+888.52	13.30m	L=5.50m	
3	Bridge (Culvert) over the Gibavica stream	96+697.21	13.10m	L=5.50m	
4	Bridge over the Rača river	102+041.80	13.30m	L=22.40m	Reinforced concrete integral bridge. Single span frame structure.
5	Bridge (Culvert) over the Kazanski stream	105+649.16	41.47m	L=5.50m	
6	Bridge over the Liparski stream	106+917.26	36.40m	L=17.00m	Reinforced concrete integral bridge. Single span frame structure.
7	Bridge over the Lepenica river	110+251.82	13.55m	L=2×10.00+17.00=37.00m	Reinforced concrete integral bridge. Superstructure with three continuous prestressed spans.
8	Bridge over the Kijevski stream	111+238.55	13.30m	L= 11.37m	Reinforced concrete integral bridge. Single span frame structure.
9	Bridge over the Grabovik stream	115+711.04	13.30m	L= 17.50m	Reinforced concrete integral bridge. Single span frame structure.
10	Bridge (Culvert) over the Miloševo stream	116+539.52	13.10m	L=5.50m	
11	Bridge over the Osaonica river	120+786.44	13.55m	L=31.55m	Reinforced concrete integral bridge. Single span frame structure.
12	Bridge (Culvert) over the Novo Lanište stream	127+207.37	13.10m	L=5.50m	
13	Bridge (Culvert) over the Kameniti stream	128+544.14	13.10m	L=5.50m	
14	Bridge (Culvert) over the melioration canal	128+882.84	13.10m	L=5.50m	
15	Bridge (Culvert) over the Suvi stream	131+321.58	13.10m	L=5.50m	
16	Bridge over the Belica river	133+443.83	13.55m	L=2×11.50+14.00=37.00m	Reinforced concrete integral bridge. Superstructure with three continuous spans.
17	Bridge over the Lugomir river	136+715.28	13.55m	L=2×14.00+17.00=45m	Reinforced concrete integral bridge. Superstructure with three continuous prestressed spans.





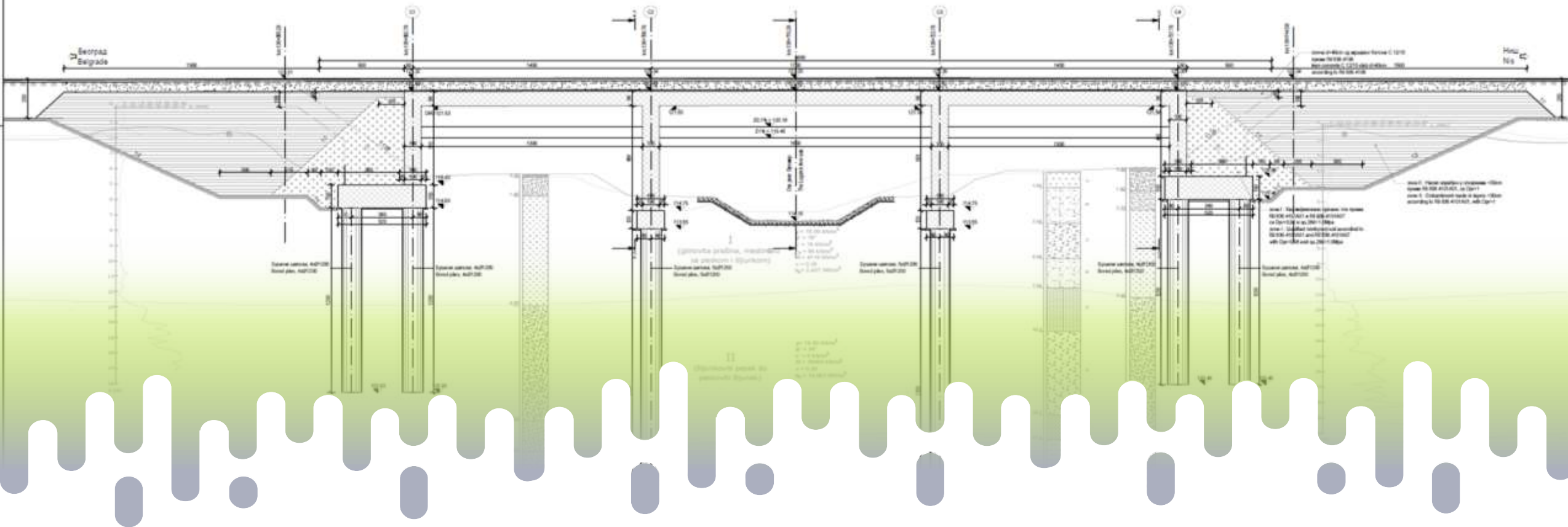
## Section 2: Velika Plana – Paracin

### Overpasses and underpasses

No.	Delevelled intersections	Location
1.	Underpass on the km 91+250	Connection between the 9th October and Marka Kraljevica Street, Velika Plana
2.	Underpass on the km 93+770	Connection between the 9th October and Boulevard of liberation, Velika Plana
3.	Underpass for pedestrians on the km 94+894	Street Lole Ribara, Staro selo
4.	Overpass on the km 97+490	Street 300 Karadjordjevic ustanika, Velika Plana
5.	Overpass on the km 99+120	Connection between the 9th October and 2. Sumadijski odred Street, Velika Plana
6.	Overpass at km 100+430	State the road IB order 27, Velika Plana
7.	Overpass at km 104+660	Link In your face brothers Jugović i In your face Duke Radomir passenger, Lapovo
8.	Underpass for pedestrians on the km 105+370.50	Vuka Karadzica Street, Lapovo
9.	Underpass for pedestrians on the km 106+130	Njegoseva Street, Lapovo
10.	Overpass at km 106+810	Ive Andrić Street (reconstruction of the existing one), Lapovo
11.	Overpass at km 108+810	Street Lapovo selo (reconstruction of the existing one), Lapovo
12.	Overpass at km 114+175	Connection between Vuka Karadzica and Moravska Street, Batocina
13.	Overpass at km 116+960	Jagodinska Street, Jagodina
14.	Overpass at km 120+660	Connection between Vidovdanska and Prote Milete Milosevica Street, Jagodina
15.	Underpass on the km 128+230	Belicka Street, Jagodina
16.	Underpass on the km 130+490	Village road by the village Bukovce, Jagodina
17.	Underpass on the km 132+680	Connection between Bukovacki road and Sretenjska Street (reconstruction of the inadequate existing underpass), Jagodina
18.	Overpass at km 133+810	Slovenski road (reconstruction of the existing one), Jagodina
19.	Underpass for pedestrians on the km 134+448.31	Koce Kapetana Street, Jagodina
20.	Overpass at km 135+550	Kraljevica Marka Street (reconstruction of the existing one), Jagodina
21.	Overpass at km 138+255	Kablovska Street, Jagodina

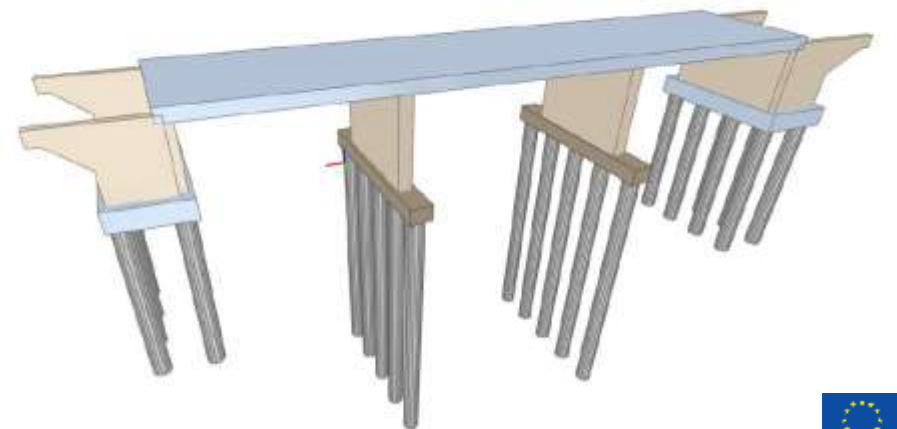


ПОДУЖНИ ПРЕСЕК МОСТА ПО ОСИ ДЕСНОГ КОЛОСЕКА  
LONGITUDINAL SECTION OF THE BRIDGE ALONG RIGHT TRACK AXIS



## Section 2: Velika Plana – Paracin

Example: Bridge over the Lugomir river (45m)



# Design development overview - Section 3: Paracin - Trupale, subsection Paracin - Stalac

## Description of the railway route:

- Preparation of Preliminary Design is in progress and is expected to be finalized in the fall of 2024.
- Spatial Plan of the Spatial Purpose Area from Velika Plana to Niš is in process of adoption.

Double-track railway line for two-way traffic and train speed of up to **200 km/h**



Length: **20.8 km**

**3** railway Stations / stops: Paraćin – Sikirica/Ratare – Čićevac



**10** bridges / culverts (5,5 m – 36 m long, with one bridge more than 150 m long)



**0** tunnels



**14** overpasses and underpasses



Construction of new facilities (culverts, bridges) along the entire route is planned. In places where the planned route coincides with the existing one, it is planned to demolish the existing buildings and replace them with new ones.

S&T requirements:  
ERTMS/ETCS Application Level 2 (train equipped with ERTMS/ETCS operating on a line controlled by a Radio Block Centre and equipped with Eurobalises and Euroradio) with train position and train integrity proving performed by the trackside



## Section 3: Paracin - Trupale, subsection Paracin - Stalac

### Bridges and culverts

No.	Structures	Station	Width	Lenght	Technical parameters
1.	Bridge over the Crnica river	155+908.80	13.55m	$L=2 \times 11.25 + 13.50 = 36.00\text{m}$	Semi-integral three continuous spans bridge
2.	Bridge (Culvert) over the Bačijski stream	158+844.06	13.10m	$L=5.50\text{m}$	
3.	Bridge (Culvert) over the Burdeljski stream	159+814.29	13.10m	$L=5.50\text{m}$	
4.	Bridge (Culvert) over the Slatinski stream	160+349.47	13.10m	$L=5.50\text{m}$	
5.	Bridge over the Planski stream	163+861.90	13.55m	$L=21.00\text{m}$	Reinforced concrete integral bridge. Single span frame structure.
6.	Bridge over the Jovanovačka river	169+425.07	14.50m	$L=2 \times 9.85 + 13 \times 10.40 = 154.90\text{m}$	Prestressed reinforced concrete integral bridge. Five segments bridge with three prestressed spans.
7.	Bridge over the Kočanski stream	172+051.85	13.55m	$L= 16.00\text{m}$	Reinforced concrete integral bridge. Single span frame structure.
8.	Road bridge over the Kočanski stream	1+004.67	10.55m	$L= 37.11\text{m}$	Reinforced concrete integral bridge. Single span frame structure.
9.	Bridge over the Akalavica stream	173+709.21	13.30m	$L=18.80\text{m}$	Reinforced concrete integral bridge. Single span frame structure.
10.	Macadam road bridge over the Akalavica stream	0+042.35	5.5m	$L=18.20\text{m}$	Reinforced concrete integral bridge. Single span frame structure.



## Section 3: Paracin - Trupale, subsection Paracin - Stalac

### Overpasses and underpasses

No.	Delevelled intersection	Location
1.	Overpass at km 153+941.53	Part of the bypass road, Paracin
2.	Underpass for pedestrians at km 155+495	Sumadijska Street, Paracin
3.	Underpass at km 155+991.45	Major Gavrilovica Street, Paracin
4.	Underpass at km 156+851.81	Striška Street, Paracin
5.	Underpass at km 158+955.08	Kralja Petra I Street, Striža
6.	Underpass at km 162+505.32	Vozda Karadjordja Street, Ratare
7.	Underpass at km 164+502.60	Branko Krsmanovića Street, Sikirica
8.	Underpass at km 166+669.98	Beogradska Street, Drenovac
9.	Overpass at km 169+150.51	Atar road, Pojate
10.	Overpass at km 170+131.95	Zmaj Jovina Street,
11.	Underpass for pedestrians 171+772.00	Železnicka Street, Cicevac
12.	Overpass at km 172+515.95	Ulica Radnicka, Cicevac
13.	Underpass at km 173+134.14	Mirka Tomica Street, Cicevac
14.	Underpass for pedestrians at km 173+678.00	Moravska Street, Cicevac



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# Design development overview - Section 3: Paracin - Trupale, subsection Djunis - Trupale

## Description of the railway route:

- Preparation of Preliminary Design is in progress and is expected to be finalized in the fall of 2024.
- Spatial Plan of the Spatial Purpose Area from Velika Plana to Niš is in process of adoption.

Double-track railway line for two-way traffic and train speed of up to **200 km/h**



# Section 3: Paracin - Trupale, subsection Djunis - Trupale

## Bridges, culverts and viaducts

No.	Structures	Station	Width	Lenght	Technical parameters
1.	Bridge over the Sima`s stream	193+426.23	13.30m	L=18.30m	Reinforced concrete integral bridge. Single span frame structure.
2.	Bridge (culvert) over the Janko`s stream	194+581.36	13.30m	L=5.50m	
3.	Bridge over the Srezovačka river	196+848.21	13.30m	L=30.80m	Reinforced concrete integral bridge. Single span frame structure.
4.	Road bridge over the Srezovačka river	0+205.27	10.05m	L=21.75m	Reinforced concrete integral bridge. Single span frame structure.
5.	Bridge over the Radevačka river	201+255.67	27.80m	L= 27.60m	Reinforced concrete integral bridge. Single span frame structure.
6.	Bridge over the Suvi stream	205+958.44	19.95m	L= 27.54m	Reinforced concrete integral bridge. Single span frame structure.
7.	Bridge (culvert) over the Suhotnički stream	208+820.85	19.15m	L=5.50m	
8.	Road bridge over the Suhotnički stream	00+60.20	7.20m	L=6.60m	
9.	Bridge (culvert) over the Mlada Belja stream	213+918.55	26.15m	L=5.50m	
10.	Bridge over the Turija river	217+642.36	24.70m	L=38.75m	Reinforced concrete integral bridge. Superstructure with prestressed slab.
11.	Bridge over the Dašnička river	219+097.12	18.05m	L=34.60m	Reinforced concrete integral bridge. Single span frame structure.
12.	Bridge (culvert) over the Grejač stream	220+015.38	13.65m	L=5.50m	
13.	Bridge (culvert) over the Drenovački stream	220+315.24	13.10m	L=5.50m	
14.	Viaduct	220+544.70	13.30m	L=2×25.62+10×26.22=313.44m	Reinforced concrete bridge - 12 simply supported beams structures with prestressed girders.
15.	Bridge over the Južna Morava river	223+054.48	13.30m	L=2×32.99+33.99=99.97m	Semi-integral three spans bridge with prestressed girders.
16.	Viaduct	223+205.49	13.30m	L=2×25.62+3×26.22=129.90m	Reinforced concrete bridge - 5 simply supported beams structures with prestressed girders.



# Section 3: Paracin - Trupale, subsection Djunis - Trupale

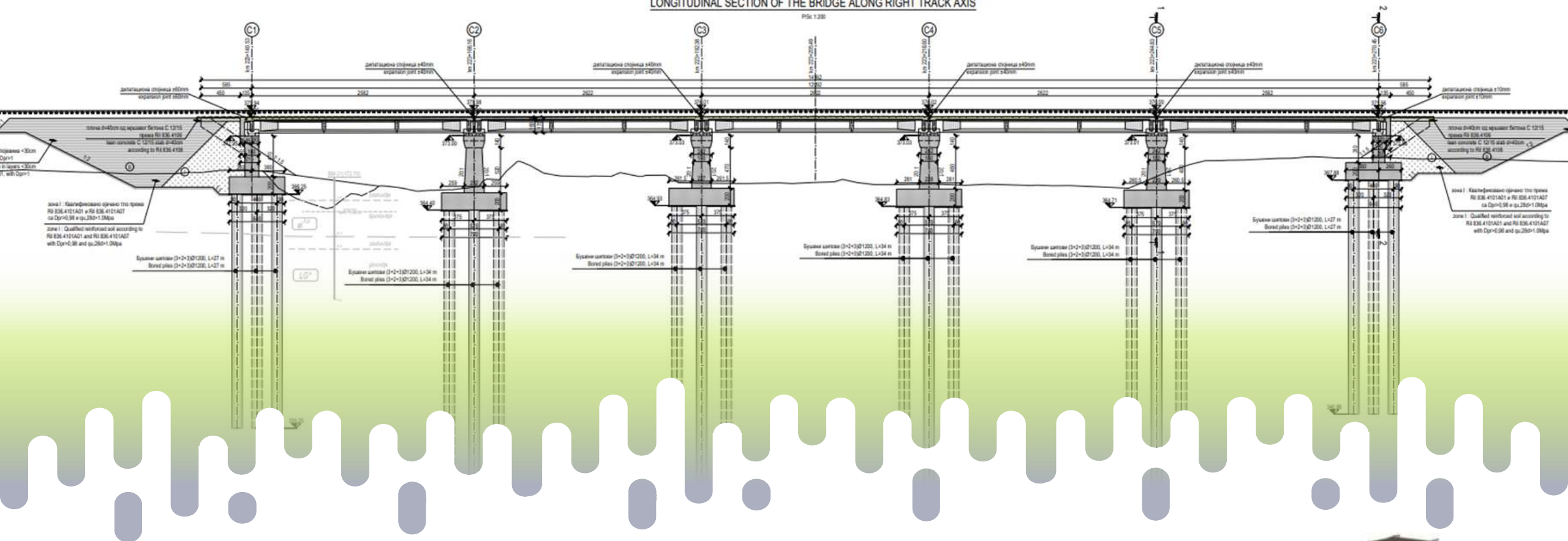
## Overpasses and underpasses

No.	Delevelled intersection	Location
1.	Overpass at km 193+051.67	J.N.A Street, Vitkovac
2.	Underpass at km 194+665.63	Traffic connection between J.N.A Street and Sava Kovacevica Street, Donji Ljubes
3.	Underpass at km 196+164.67	Jordana Pavlovica-Pavla Street, Donji Ljubes
4.	Underpass at km 197+383.93	25 May Street, Srezovac
5.	Underpass at km 200+287.27	Knez Lazar and Milan Marinkovic Street, Korman
6.	Underpass at km 202+340.17	Omladinska Street, Trnjane
7.	Underpass at km 205+802.46	Local road, Donji Adrovac
8.	Underpass at km 206+821.81	Deligradska Street, Donji Adrovac
9.	Underpass at km 208+746.14	Milentija Popovica Street, Zitkovac
10.	Overpass at km 210+360.94	Traffic connection of the settlement of Moravac with the state road IIA no. 217
11.	Overpass at km 212+642.82	Traffic connection of the settlement of Stublina with the state road IIA no. 217
12.	Overpass at km 214+249.68	Atar road, Lužane
13.	Underpass at km 217+044.45	State road IIA no. 217, Tesica
14.	Overpass at km 219+404.75	Local road, Grejac
15.	Underpass at km 221+359.49	Atar road, Veliki Drenovac
16.	Underpass at km 223+500.00	Peke Dapcevic Street, Mezgraja
17.	Underpass for pedestrians at km 224+180	Marshal Tito Street, Mezgraja
18.	Overpass at km 227+126.66	Beogradska Street, Vrtiste
19.	Underpass at km 229+419.58	Zeleznicka Street, Trupale



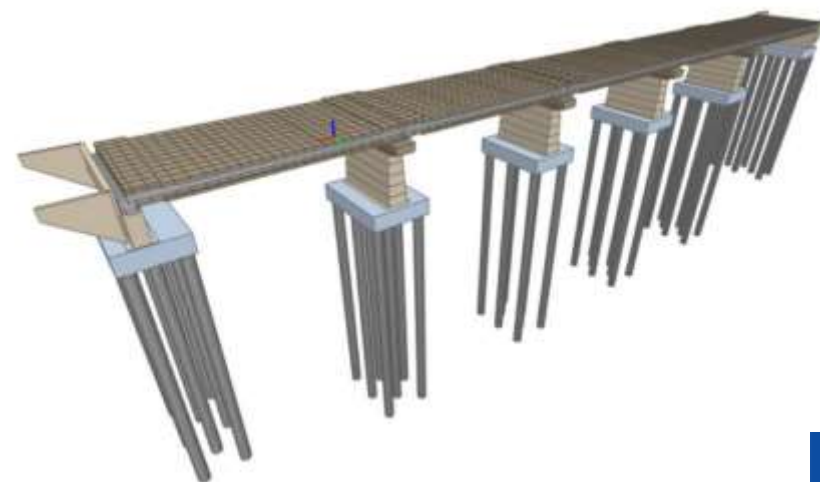


ПОДУЖНИ ПРЕСЕК МОСТА ПО ОСИ ДЕСНОГ КОЛЕСЕКА  
LONGITUDINAL SECTION OF THE BRIDGE ALONG RIGHT TRACK AXIS



## Section 3: Paracin - Trupale, subsection Djunis - Trupale

Example: Viaduct 223+205.49 (129.9 km)





## ESIA

Environmental and Social Impact  
Assessment for each section



## NTS

Non-Technical Summary



## SEP

Stakeholder Engagement Plan



## ESMP

Environmental and Social  
Management Plan



## RPF

Resettlement Policy  
Framework



## RAP

Resettlement Action Plan



# Main ESIA Deliverables



## Key Environmental Impacts

Key environmental impacts are related to:

- Climate change
- Air pollution
- Waste
- Biodiversity and Protected Areas
- Noise and Vibrations
- Geohazards
- Soil
- Water

## Key Social Impacts

Mitigation measures will be implemented to address key social impacts related to:

- Land use and land acquisition, including particularly physical and economic displacement
- Community separation and loss of access
- Infrastructure and municipal services
- Community safety and security
- Enhancing local employment and stimulate local procurement

A key measure to mitigate all impacts is maintaining regular communication with local communities and managing complaints.

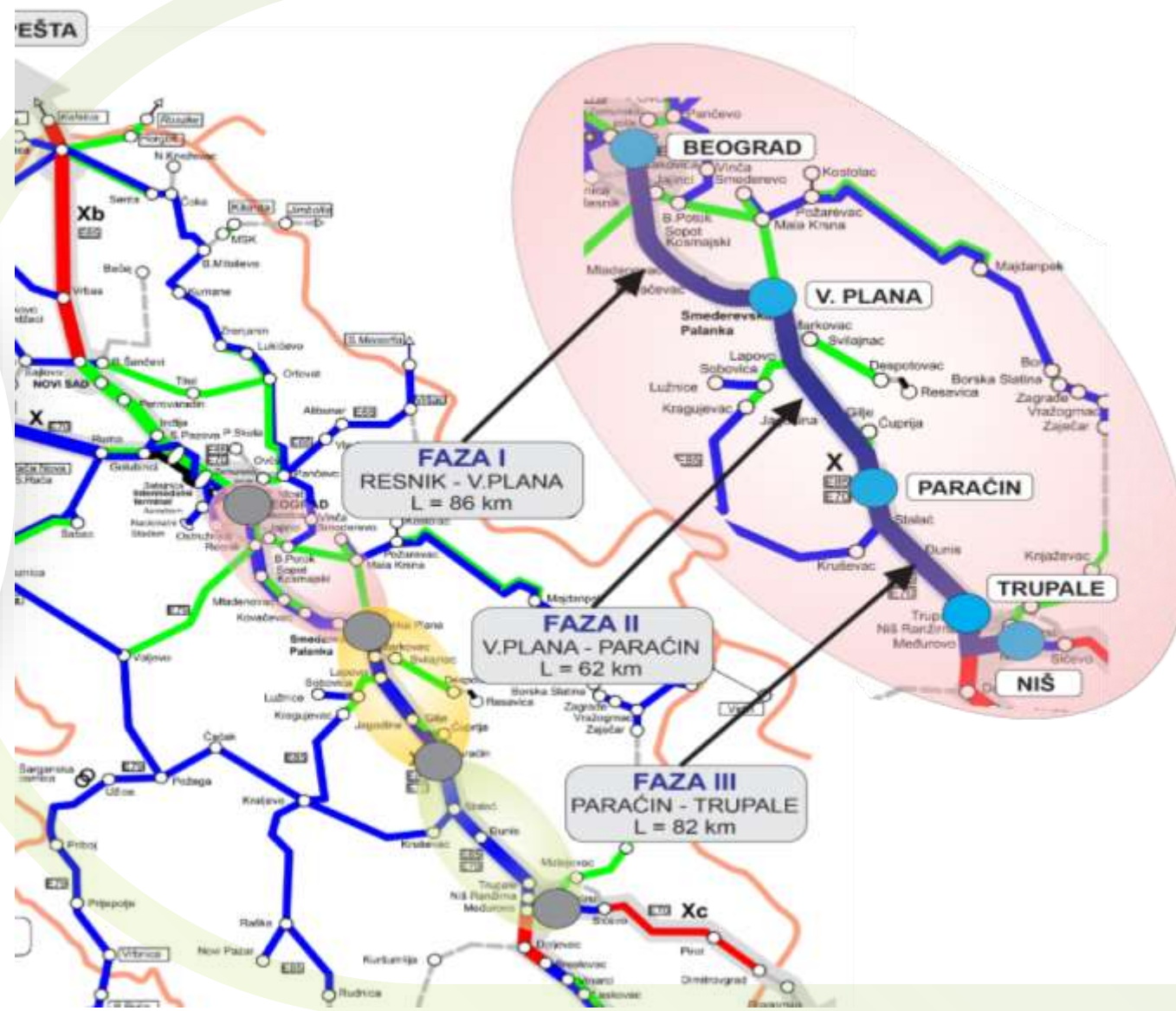
## E&S standards applied

- National Environmental and Social Regulatory Framework
- International Environmental and Social Regulatory Framework:
  - Relevant EU Directives
  - EIB Environmental and Social Policy
  - EBRD Environmental and Social Policy
  - International Multilateral Agreements, etc.





# Railway line Belgrade – Niš



# Procurement of Works Contracts

The Works will be procured as three separate Contracts (Sections 1, 2 & 3) for Civil and Electrification and one single Contract for Signalling and Telecommunication

## Scope Of Works

- Full reconstruction of superstructure, substructure and ancillary infrastructure including stations
- New bridges, viaducts, overpasses, underpasses, tunnels
- Electrification, including power supply
- Replacement of obsolete Signalling & Telecommunication equipment on the existing alignment and new equipment on the re-aligned sections to ensure an uninterrupted level of service commensurate with the existing provision

## Tender Procedure

- Restricted International procedure, **with Prequalification**
- All eligible economic operators may apply to participate in the tender procedure
- Entities that satisfy the Professional, Financial and Technical selection criteria (as specified in the Contract Notice) will be invited to participate in the second-stage tender procedure
- Award criteria: the most economically advantageous tender that is the technically compliant offering the lowest price





# Procurement of Works Contracts



## Contract Model

- The Contracting Authority will be "Serbian Railways Infrastructure" JSC
- The applicable Conditions of Contract will be **FIDIC Yellow Book**, based on a Preliminary Design provided with the Tender Documents
- All Works Contracts will be on a fixed price (lump sum) basis

## Time for Completion

- For each Contract, estimated 30\* months construction period plus 24 months Defects Notification Period

## Signaling & Telecommunications (Long-term Solution)

- Full modernisation of the S&T will be the subject of a separate contract for a single contractor.



\* Actual duration for each contract will be defined in the Invitation to Tender



# Procurement Time Schedule

(Works Contracts)



Procedure	Section 1	Section 2	Section 3
Invitation for Prequalification (Contract Notice)	07 / 2025	10 / 2024	09/ 2024
Submission of PQ Applications	08 / 2025	11 / 2024	10 / 2024
Invitation to Tender	12 / 2025	02 / 2025	01 / 2025
Submission of Tenders	03 / 2026	05 / 2025	04 / 2025
Contract Award	06 / 2026	08 / 2025	07 / 2025





# THANK YOU

July 2024

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