ЕВРОПЕЙСКИ СЪЮЗ

ЕВРОПЕЙСКИ ФОНД ЗА РЕГИОНАЛНО РАЗВИТИЕ

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РУМЪНСКО ПРАВИТЕЛСТВО

БЪЛГАРСКО ПРАВИТЕЛСТВО

REPORT

on research, analysis, traffic safety measures developed to avoid life-threatening situation on the road and pedestrian safety system

Stage 1: Results of a survey on the traffic situation and road traffic injuries for the targeted road sections. Good practices in traffic safety.

www.interregrobg.eu

Project title: Better connected secondary and tertiary nodes to TEN-T core and comprehensive network through joint CBC measures/Project cod: ROBG-383
The project is co-financed by the European Union through European Regional Development Fund under the Interreg V-A Romania-Bulgaria Programme

This report has been developed within the project "Better connected secondary and tertiary nodes to TEN-T core and comprehensive network through joint CBC measures", Project code: ROBG - 383, funded under the CBC Programme "INTERREG V-A Romania - Bulgaria" 2014-2020, co-financed by the European Union through the European Regional Development Fund. The project partners are Veliko Tarnovo Municipality, Bulgaria, Calafat Municipality, Romania and Future Today Association, Bulgaria. The main objective of the project is to improve the conductivity of the Pan-European Transport Corridors (PTC) No 4, No 7 and No 9 in the cross-border region of Bulgaria and Romania, by rehabilitating and upgrading 6,614 km of road infrastructure with proven cross-border impact and direct connection to the core infrastructure of the Trans-European Transport Network (TEN-T) and developing 3 joint mechanisms (traffic safety measures, route guidance and safety awareness campaign) to facilitate the connection of the secondary transport corridors.

A report on the survey, analysis, traffic safety measures developed to avoid life-threatening situation on the road and pedestrian safety system in 3 phases has been created within the project activity "Implementation of traffic safety measures", with the main objective to include and implement at least one method and its applicable developed traffic safety measures to avoid life-threatening situation and pedestrian safety system on each of the following road sections:

- Str. Opalchenskaya, city of Veliko Tarnovo - from the connection with the road III-514 to the connection with the road E-85 (I-5) str. Theodosii Tarnovski from the road connection from str. "Magistralna" (ROAD E772 (I-4)) to str. Dimitar Naydenov str. Dimitar Naydenov str. from Dimitar Naydenov str. "Theodosius Tarnovsky" to str. "Slivnitsa", str. "Slivnitsa" from str. Dimitar Naydenov to Slivnitskaya str. Kliment Ohridski, str. Kliment Ohridski from str. Slivnitsa to a new bridgehead on the Yantra River and str. Ksiliforska from a new bridgehead on the Yantra River to road III-514
- Part of road E79 within the territory of Ruzhintsi Municipality - intersection of road III-114 with E-79;
- the exit from the port of Calafat to E-79, which is ul. Jui Blvd. Horia, Cloșca și Crișan, town of Cloșca. Calafat.

By implementing the developed road safety measures to avoid life-threatening situations on the road, the aim is to contribute to the implementation of the EU-wide policy to reduce road accident casualties, to conduct preventive education campaigns and to achieve one of the strategic objectives of the European Union

White Paper on Transport: 'No road accident deaths by 2050'. This report will be shared with the local authorities and the project partners (Veliko Tarnovo Municipality /Bulgaria/, Calafat Municipality /Romania/ and Ruzhinzi Municipality /Bulgaria/), with a proposal to include and implement at least one method and its applicable identified traffic safety measures to avoid life-threatening situation on the road for each targeted road section.

A three-part report has been developed to implement the activity:

- Stage 1: Results of a survey on the traffic situation and road traffic injuries for the targeted road sections. Good practices in traffic safety.
- Stage 2: Develop traffic safety measures to avoid life-threatening situation on the road
- Stage 3: Develop a pedestrian safety system applicable to each of the targeted road sections

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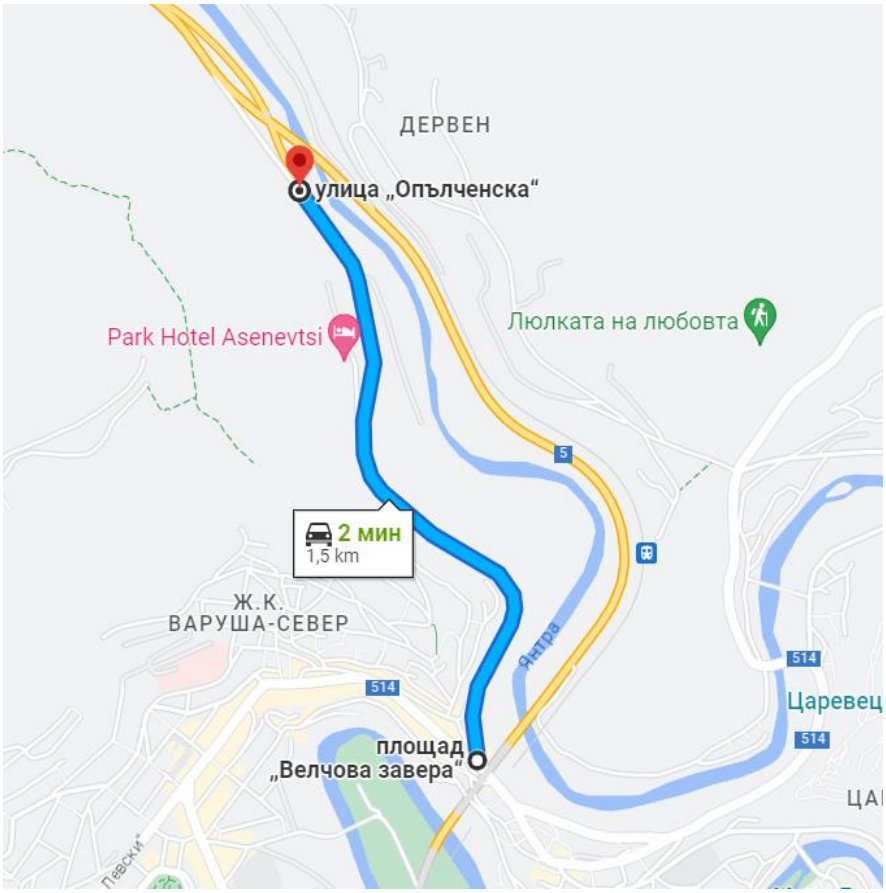
I. Territorial scope of the report - targeted road sections

The territorial scope of this report is the following road sections:

I.1. Targeted road sections in Veliko Tarnovo, Bulgaria:

- Str. Oplichenska, town of Veliko Tarnovo from the connection with road III-514 to the connection with road E-85 (I-5);



Source: https://www.google.com/maps

- Str. Theodosius Tarnovo from the road connection from str. "Magistralna" (ROUTE E772 (I-4)) to str. Dimitar Naydenov str. Dimitar Naydenov str. from Dimitar Naydenov str. Theodosii Tarnovskiy to str. Slivnitsa str. Slivnitsa from str. Dimitar Naydenov to str. Kliment Ohridski str. Kliment Ohridski from str. Slivnitsa to the new bridging of the river Yantra and str. Ksiiloforska from a new bridging of the river Yantra to road III-514"

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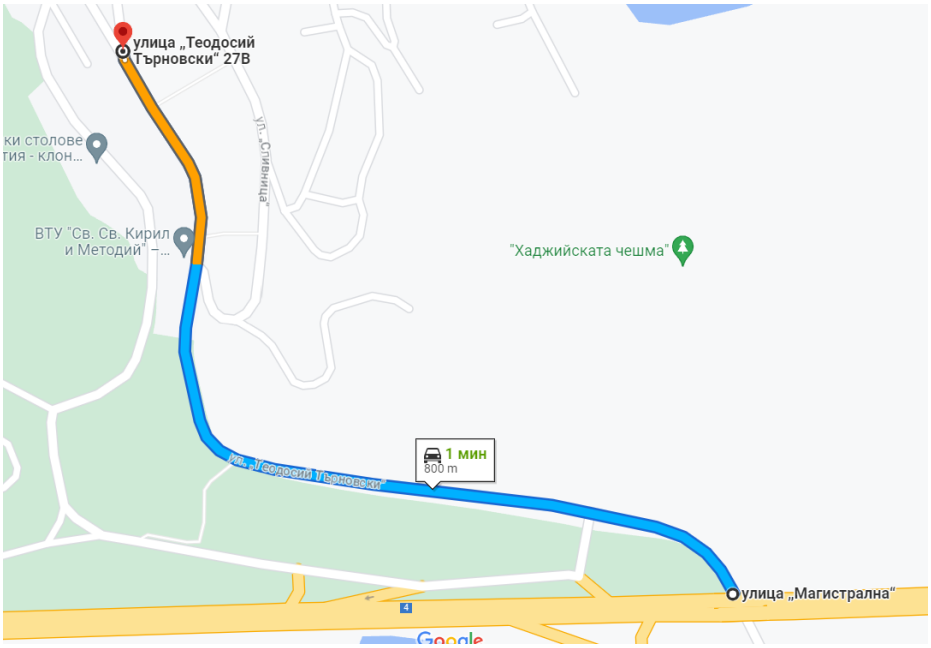

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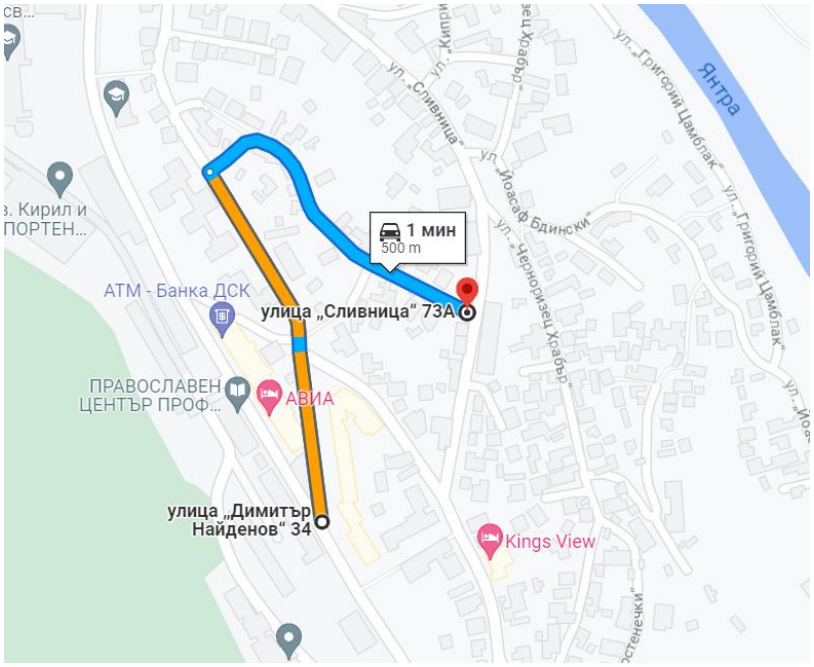
- Str. Dimitar Naydenov from str. "Theodosius Tarnovsky" to str. "Slivnitsa";



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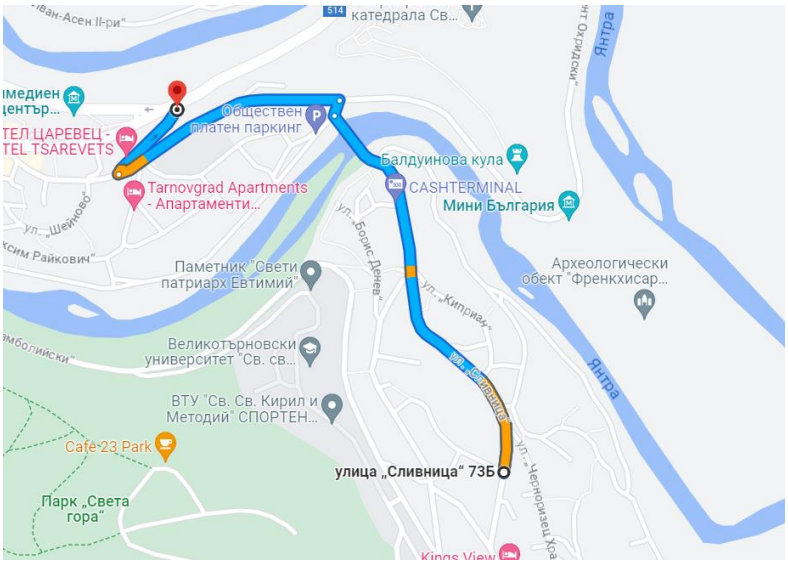
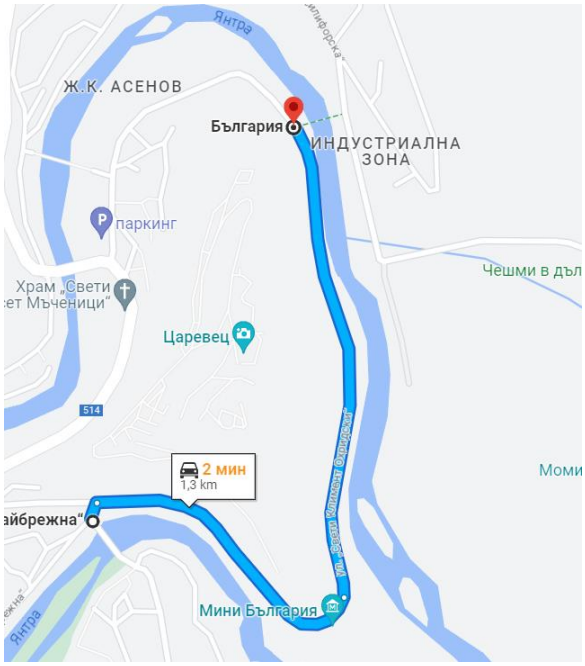
Source: https://www.google.com/maps

- Str. "Slivnitsa" from str. Dimitar Naydenov to str. Kliment Ohridski;



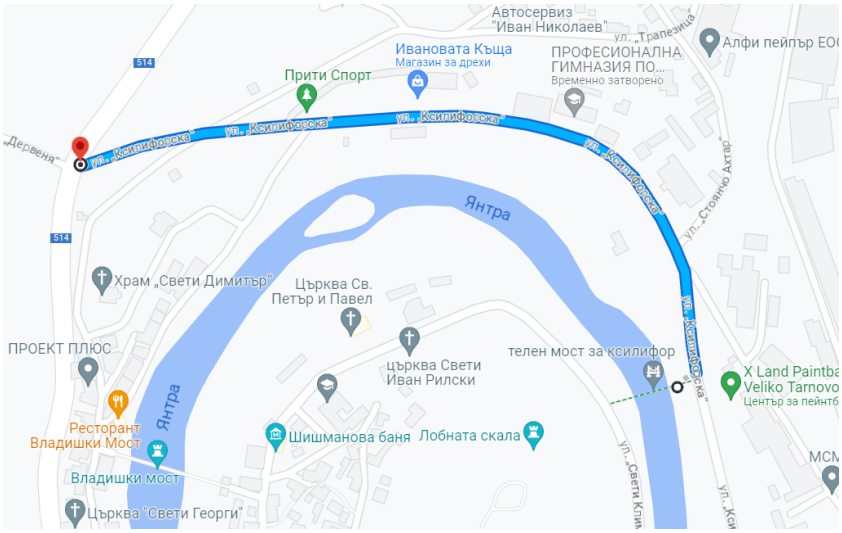
Source: https://www.google.com/maps

- Str. Kliment Ohridski from str. Slivnitsa to a new bridgehead on the Yantra River;



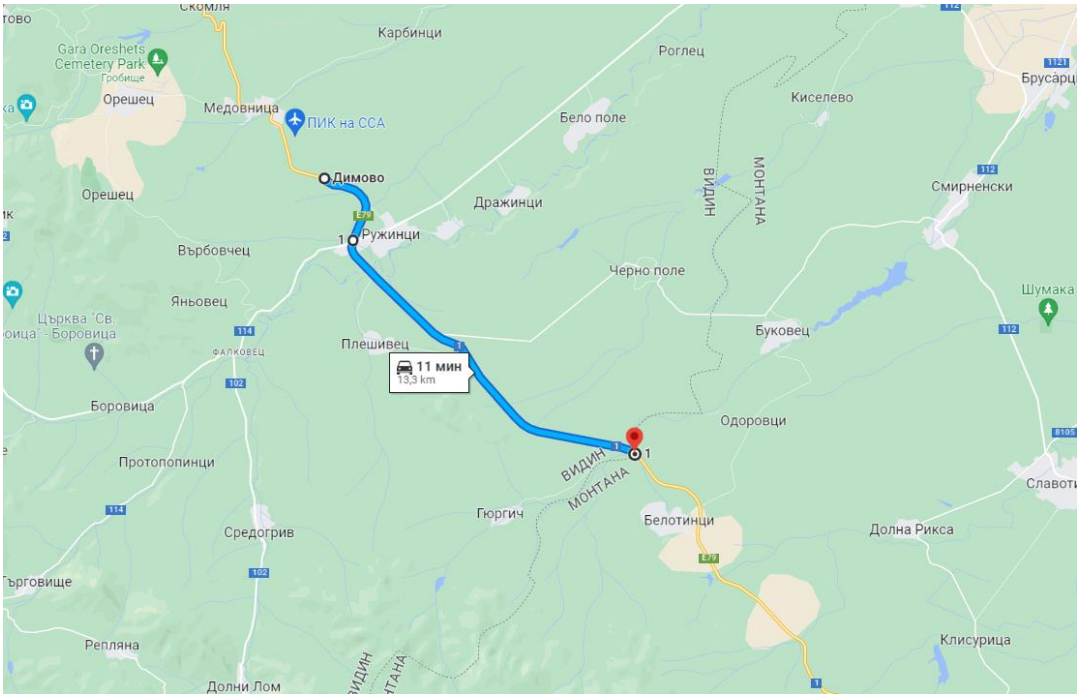
Source: https://www.google.com/maps

- Str. Ksiliforska from the new bridgehead of the Yantra river to road III-514



Източник: https://www.google.com/maps

I.2. Part of road E79 within the territory of Ruzhintsi Municipality - intersection of road III-114 with E-79;



Източник: https://www.google.com/maps

I.3. The exit from the port of Calafat to the E-79, which is the street. Jui Blvd. Horia, Cloșca și Crișan, town of Cloșca, Calafat

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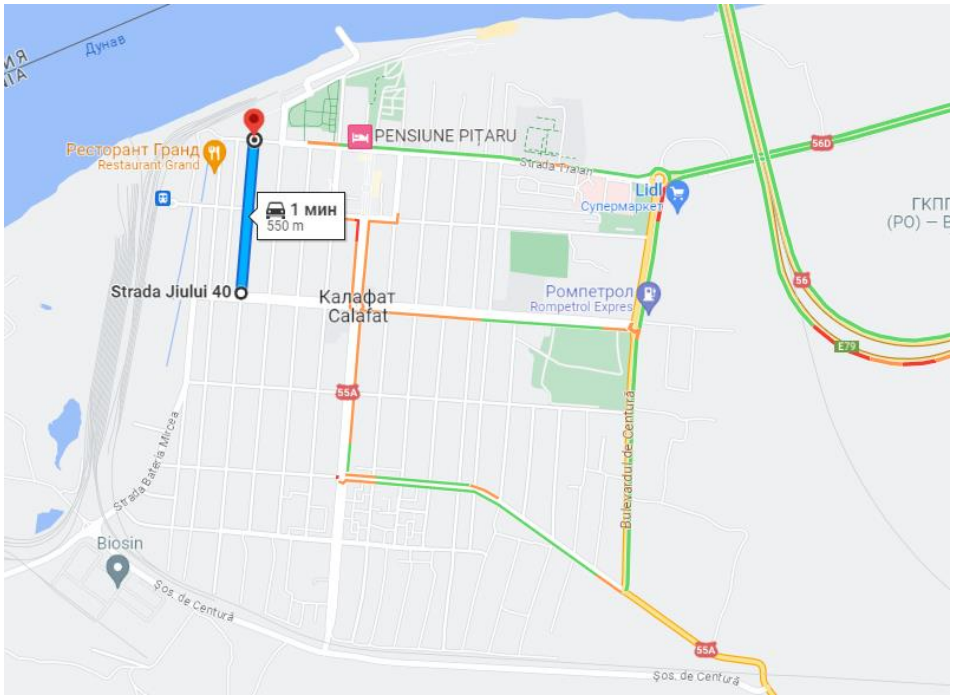

Source: https://www.google.com/maps

II. Traffic situation and condition of road sections

II.1.1. Str. Opalchenska, town of Veliko Tarnovo from the connection with road III-514 to the connection with road E-85 (I-5);

Opalchenska Street in Veliko Tarnovo is the northern entrance to the city, part of the national road III-514 and a link with the road I-5 Ruse - Veliko Tarnovo, connecting also the old capital and Gorna Oryahovitsa, which determines the busy traffic on it during the peak hours of the day. Along it are located a number of ancient buildings, monuments of culture, John's Inn and hotels. The street, according to the classification of Ordinance No. 2 on the planning and design of the communication and transport system of urban areas, is of secondary street network class 5 - collector streets. The pavement of the street is asphalt concrete, laid on pavement, but it is in a very poor condition with numerous cracks, falls, patches and potholes posing a prerequisite for an increased risk of road traffic accidents (RTA). There are pavements of concrete slabs in the urban area, which have multiple damages, and in many places the slabs are missing. There is no stormwater drainage system in the road section, only single stormwater inlets with cross drains. Outside

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the urban part of the section, there are banked areas which are overgrown and buried, and their level is above the road surface, making it difficult for surface water to run off. Drainage is provided only by earth or lined ditches, which are buried in large sections and do not fulfil their function. Horizontal markings on the road section are obliterated and vertical signage is insufficient and in poor condition.

II.1.2. Str. Theodosius Tarnovo from the road connection from str. "Magistralna" (ROUTE E772 (I-4)) to str. Dimitar Naydenov str. Dimitar Naydenov str. from Dimitar Naydenov str. Theodosii Tarnovskiy to str. Slivnitsa str. Slivnitsa from str. Dimitar Naydenov to str. Kliment Ohridski str. Kliment Ohridski from str. Slivnitsa to the new bridging of the river Yantra and str. Ksiiloforska from a new bridging of the river Yantra to road III-514"

The streets are part of a Class 5 minor street network - collector streets. Prior to the implementation of the envisaged repair works, the pavement of the streets is asphalt concrete, in a very poor condition - with numerous damages and deformations, which is a prerequisite for deteriorated traffic situation and increased risk of traffic accidents and life-threatening situations. In the urban part - quartier B. There are sidewalks made of concrete slabs, which have multiple damages or are completely missing. In the section, no collector system has been implemented to drain storm water from the road surface, creating risky situations during rainy weather. Outside of the urban area there are overgrown and obstructed banks. Their level is above the road surface, making it even more difficult to drain surface water. Drainage is provided by a ditch which is blocked in large sections and does not fulfil its function. The drainage system is not functioning properly. Kliment Ohridski on the side of the Yantra River, the roadway is insufficiently wide and needs to be widened and new sidewalks built to replace the existing earth ones. In the section of Str. There is an existing old bridge on the river Yantra, which is not in good condition and has insufficient gauge. The intersection with road III-514 is not well signalized and needs a new traffic organization ensuring safety for all road users. Part of the road sections accommodate a large flow of vehicles moving from one to the other of the constructed parts of the Hemus motorway connecting the capital of Bulgaria - Sofia with one of the largest seaside resorts in the country - Varna. This fact, in combination with the poor condition of the road section, determines the difficult and delayed passage of vehicles, frequent traffic congestion in the peak city hours, with the most difficult traffic during the weekends and throughout the summer season.

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II.2. Part of road E79 within the territory of Ruzhintsi Municipality - intersection of road III-114 with road E-79

The E79 is one of the main road arteries in Bulgaria, connecting the capital Sofia with the border crossing Kulata to Serbia. The section of the E79, which falls within the territory of the Municipality of Ruzhintsi and includes the intersection of road III-114 with the E79, is of exceptional transport logistic importance.

This intersection represents the meeting of two important road routes in Bulgaria and plays a key role in connecting different regions and settlements. Road III-114 connects Ruzhintsi with other towns and settlements in the region, while road E79 provides a direct link to Sofia and the border with Serbia.

II.3. The exit from the port of Calafat to the E-79, which is the street. Jui Blvd. Horia, Cloșca și Crișan, town of Cloșca, Calafat

The E-79 is one of the main roads in Romania, connecting the cities of Orsova and Silistra in Bulgaria with the capital Bucharest and other major cities in Romania, such as Timisoara and Cluj-Napoca. The port of Calafat carries freight on the Danube and is the link to the international waterway, providing the opportunity to deliver freight to other European countries on the Danube. The transport infrastructure in this area is important for the transport of goods and ensures the smooth functioning of trade and logistics activities. This determines the essential importance for logistics and transport of the road section from the exit of the port of Calafat to the E-79, ensuring the connectivity between river and road transport as well as supporting regional and international trade.

This road section experiences frequent congestion due to insufficient capacity, at the same time creating conditions for traffic accidents. The road surface has numerous cracks and deformations, causing damage to the passing flow of motor vehicles and buildings located close to the street. There are no curbs along the road section.

To improve the safety and comfort of both drivers and pedestrians, it is necessary to improve the condition of the road surface, construct kerbs and renew the signposting. This will also contribute to improving traffic conditions, safety and conductivity in the TEN-T infrastructure in the Calafat-Vidin border area.

III. Road traffic injuries in the targeted road sections

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Road traffic injury is a term used to describe all forms of injury, disability or death caused by road traffic accidents (RTAs). This term covers not only injuries that occur when directly involved in a road traffic accident as a driver, passenger or pedestrian, but also injuries caused by being struck, knocked out or off balance as a result of a road traffic accident.

Road traffic injury is a serious problem in many countries and cities around the world and is associated with a significant number of serious and fatal accidents. This problem affects both pedestrians and road users (cars, motorcycles, bicycles, etc.).

Some of the main causes of road traffic injuries include:

1. Excessive speed: High speed driving can have serious consequences in accidents, increasing the force of impact and the risk of injury.
2. Improper crossing of the road: Pedestrians' failure to obey the rules of the road can put them at risk of accidents with cars or other vehicles.
3. Improper driving of vehicles: Improper driving of cars, motorcycles and bicycles can lead to accidents and injuries.
4. Alcohol and drugs: Alcohol and drug consumption before driving is a serious factor increasing the risk of accidents and trauma.
5. Failure to comply with the rules of the road: Failure of road users to follow the rules of the road can lead to collisions and accidents.

Measures to improve road safety and reduce road traffic injuries include education campaigns on safe road behaviour, the introduction of zonal speed limits, infrastructure improvements, the use of technology to reduce risks and strict compliance by all road users. Raising awareness and taking preventive measures are essential to create a safer street environment for all.

	Number of road accidents according to the latest statistics	**Number of people killed as a result of traffic accidents**
Target road section area in Veliko Tarnovo, Bulgaria	105	10
Target road section area in Ruzhintsi, Bulgaria	31	6

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The area of the targeted road section in Calafat, Romania	714	61

Source: official statistics for the Republic of Bulgaria and the Republic of Romania

In the regions of both Veliko Tarnovo and Ruzhintsi, the number of men killed as a result of traffic accidents is almost twice that of women. Women were killed and injured most often as passengers and men as drivers. In the case of pedestrians, men were more often killed and women more often injured. The proportion of accidents caused by pedestrians was 0.77% of the national total. On the territory of Veliko Tarnovo there were 3 children killed and on the territory of Ruzhintsi there were no children killed in 2022. The number of injured children in Veliko Tarnovo for the year is more than 60, and on the territory of Vidin region, which includes the target road section in Ruzhintsi is a total of 11 children.

In the reporting year, the highest number of traffic accidents occurred as a result of driver violations - 6,470 (98% of the total 6,609 traffic accidents), resulting in 514 fatalities (97% of the total 531 fatalities) and 8,270 injuries (98% of the total 8,422 injuries) to road users. In comparison, in 2021, 5,945 PTIs (98% of 6,080 total PTIs, 525 more PTIs in 2022) occurred due to driver violations, with 548 fatalities (98% of 561 total fatalities, 34 fewer in 2022) and 7,464 injured (98% of 7,609 total injured, 806 more in 2022)

Unfortunately, Romania is the EU champion in fatal accidents, closely followed by Bulgaria. Data and information based on World Health Organisation data. In the area of the targeted road section in Calafat, Romania, most road accidents with personal injuries occur in towns and cities, not on roads outside cities or on motorways. Only 5% of accidents occur in the dark part of the day. More than three-quarters occur on dry roads. In addition, Fridays have the most crashes and Sundays the fewest. Accidents between two cars have the highest number of crashes, followed by those between a car and a pedestrian, with single-car accidents (crashing into a tree, wall, or other parked vehicle) coming in third. July and August are the months in which the most personal injury incidents occur. February has the fewest. Of the total number of people injured, most are over the age of 30. It should also be noted that the number of victims under the age of 20 is higher than those in the 20-29 age group. Less than 10% of the crashes occurred while under the influence of alcohol according to official data, and of these, the number of drivers who drank alcohol at the wheel and caused a crash is equal to the number of drunk pedestrians and cyclists.

IV. Good practices in road safety

This section contains a wide variety of road safety measures from across Europe. Measures are described in the following nine areas: institutional organisation of road safety; road infrastructure; road safety education and campaigns; driver education; traffic control; rehabilitation and diagnostics; post-accident medical care; data and road safety data collection. European countries vary widely in the level of safety they have achieved. Some have a considerably longer history of road safety policies. As the purpose of this handbook is to enable all stakeholders to find measures that meet their needs, the measures presented are very different in nature. Some are relatively simple, involving low costs; others are not so simple to implement and would require a larger budget. Some have been well known for a long time in some countries and regions but are less well known in others.

➢ Sustainable Safety

A sustainable safe road system aims to prevent road traffic accidents (RTAs) and reduce the consequences of those that do occur. At its core is the idea that people are physically vulnerable and make mistakes. The main principles identified are: functionality, homogeneity, predictability, tolerance and awareness of the state and responsible authorities and institutions. "Sustainable Safety" and its vision has a major impact on practical road safety work. For example, one implication of the homogeneity principle is that vehicles and vulnerable road users - pedestrians, cyclists, etc. - can only interact if vehicle speeds are low. Otherwise, additional separate accommodations for vulnerable road users are required. Specific measures included and implemented to achieve this objective are a substantial increase in the number and size of 30 km/h zones in settlements, the introduction of 60 km/h zones outside settlements and speed limits at junctions. A similar measure has been successfully introduced in the Netherlands, where, following an evaluation, a reduction of 6 % in the number of deaths and hospital admissions has been reported for the whole country. The main costs of implementing this measure relate to road reconstruction and repair and are relatively high.

➢ Low speed zones in populated areas

It is low speeds that are crucial for safety, especially in cases where vehicles, pedestrians and cyclists use the same space to travel. Low speed zones near schools and shopping centres have been introduced in many countries. The most common in Europe are zones with a 30 km/h limit in residential areas, and in some places it is

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even lower: 10-15 km/h. It is not enough to simply post a speed limit sign to ensure compliance with the posted limits. Additional physical measures such as road narrowing, artificial bumps and bends are needed. Low speed zones can be part of more general traffic calming measures. Traffic calming aims not only to achieve low speeds, but also to reduce motorised traffic in individual areas or across the whole settlement by discouraging through traffic and encouraging walking, cycling and public transport. The results of one UK study showed that 30 km/h speed limit zones reduced accidents by 27%, injury accidents by 61% and serious accidents by 70%. Other benefits include an increase in walking and cycling and improved access for disabled people. Implementation and maintenance costs depend on the size of the area and the devices installed.

- "Don't be silent!" from Norway

Organising and conducting road safety campaigns as a stand-alone measure has little impact on road safety. They do, however, play a crucial role in supporting other measures. Campaigns usually aim to explain new laws, to inform about a specific road safety problem and why certain measures are needed. Some measures aim to change behaviour outright (e.g. don't drive fast, use seat belts, put lights on your bike, etc.). It is important to keep the message short, clear and unambiguous. It is also important that a campaign uses different sources of information, such as billboards, radio and TV, leaflets, etc., and is repeated several times. The target group of "Don't keep quiet!" is young people aged between 16 and 19 who travel by car in the evening, at night or at weekends. "Don't keep quiet" encourages these young people not to keep quiet if the driver is not driving safely, for example when he/she is driving very fast or under the influence of alcohol or drugs. Often young people are afraid to speak up because of peer pressure. Information and messages are disseminated through school visits and information boards at checkpoints, as well as through videos and T-shirts. Monitoring complements communication activities. The aim is both to encourage young people with established positive attitudes not to overspeak, and to check and sanction those who are unlikely to be influenced by the campaign. Checks are carried out at highly visible checkpoints by police officers in uniform. An evaluation of the first three years showed that the number of 16 to 19 year olds killed or injured was reduced by 27% in the first year, 31% in the second year and 36% in the third year. There was no change in the number of young car drivers killed or injured The cost-benefit ratio ranged from 1.9 (if training costs are

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included and the lower end of the confidence interval for the safety impact is taken) to 16.8 (if training costs are excluded and the best estimate of the impact is taken).

Literature and sources of information:

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3. REPORT ON ROAD TRANSPORT TRAFFIC IN 2022, Ministry of the Interior;

4. STATE OF ROAD TRAFFIC INJURIES BY MAY 2023, Ministry of the Interior;

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8. „Pedestrian Crossing Behavior at Signalized Intersections: An Observational Study and Impact Evaluation" by Fernanda Carolina Rodrigues Leite, et al. (Source: Accident Analysis and Prevention, 2020);

9. "Global Plan for the Decade of Action for Road Safety 2011-2020" by the World Health Organization (WHO).

10. Road safety action plan, Ministry of the Interior - Bulgaria;

11. Strategia Națională privind Siguranța Rutieră 2022 – 2030;

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