

## **APPENDIX IV**

### **Non-technical summary of the Environment Impact Study**

Prepared under Article 5(3) of Directive 85/337/EEC.

#### **Relevant national documents related to EIA – copies of the documents with their English translation**

- Decision on environmental acceptability of a project, 8 November 2005 (replacing Development consent)
- Opinion on the compliance of the expert bases for obtaining location permit with environment protection measures from the Decision on environmental acceptability of a project, dated 8 November 2005, for the project Reconstruction of the existing and construction of second track Dugo Selo – Križevci, incl. Vrbovec, Gradec and Križevci stations, 14th May 2009
- Opinion on the compliance of the preliminary design for obtaining location permit with environment protection measures from the Decision on environmental acceptability of a project, dated 8 November 2005, for the project Reconstruction of the Dugo Selo station and construction of an overpass and a part of county road, 20th September 2010
- Resolution on appointment of the members of the Environment Impact Assessment Commission of the second track construction Botovo- Zagreb- Rijeka, section Dugo Selo- Križevci, based on the expert analysis – Environment Impact Assessment prepared by IPZ Uniprojekt MCI, 19th November 2004

**And**

**Obtained location permits (cover pages) with their English translation**

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# **SUMMARY OF THE STUDY of the environmental impact of the second track of the railway line MG 1 Botovo – Zagreb – Rijeka on the section Dugo Selo - Križevci**

## **1. Purpose of the study**

Purpose of the Study of the Environmental Impact of the Second Track of the Railway Line MG 1 Botovo – Zagreb – Rijeka on the section Dugo Selo - Križevci is an analytical expert appraisal of the possible environmental impact during the construction and use of the railway line and also the appraisal of its acceptability in this area, on the condition of implementation of certain protection measures. The carrier of this project is HŽ Infrastructure Ltd from Zagreb, and the Study is developed by IPZ Uniprojekt MCF from Zagreb.

The procedure of appraisal of the environmental impact and development of the study to this purpose are obligatory for such spatial projects and are based on the Environment Protection Act and on the Rulebook on the Appraisal of the Environmental Impact. The quality of the study is evaluated by a special Commission appointed by the Ministry of Environment Protection and Physical Planning, which also issues the Resolution of the acceptability of the project, based on the Study and Commission's Conclusion. It is a legal obligation to inform the interested public and thus provide the possibility for them to put forward possible questions, objections and proposals. Study is one of the documents in the process of obtaining the location permit and other legally required documents and permits for legal activity.

## **2. Description and purpose of the project**

The reconstruction of the railway line Dugo Selo - Botovo – state border was implemented according to the conceptual solution developed by the Railway Project Society Ltd Zagreb in 1988. This railway line is a part of the main railway line MG 1 State Border-Botovo – Zagreb – Rijeka. Railway line MG 1 from the state border with Hungary via Koprivnica up to Rijeka represents the shortest link between the Baltic and Adriatic, and is also introduced into the Branch of the Vth Pane European Transport corridor. This railway route is also seen as the priority in the HŽ development plans.

This environmental study deals with the construction of the second track of the railway line Dugo Selo – Križevci, in total length of 35,9 km, which would enable the growth of the line capacity together with the increase of train speeds. Construction of the second track is planned next to the existing track, on its left or right, depending on other technical parameters.

Railway line Dugo Selo – Križevci passes through the foothill of the eastern slopes of Medvednica and Kalničko gorje and southwestern slopes of Bilogora. Along the opening section from Dugo Selo up to nearly Božjakovina the land is mostly level, and farther from Božjakovina towards Vrbovec and Križevci it becomes slightly hilly. In general, the railway line Dugo Selo-Križevci can be said to pass through the area mostly composed of layers of weak permeability. Layers with greater permeability are of very small scope and thickness, so that the whole area is rather poor in underground waters. For this reason along the whole

route there is only one well- area of the public water supply. This well-area is Trstenik and it is situated in the area of one of the foothill and valley aquifers in the area between the rivers Glogovnice and Koruška rijeka, on the southern outskirts of Križevci.

In the change of the Spatial Plan of the Town of Vrbovec the shift of route of the railway line is planned since this deviation is necessary for the railway line speed of 160 km/h, and also in consideration of intersection with the planned state road Sv. Helena – Vrbovec - Bjelovar (bypass road of the town of Vrbovec) and required works in the Vrbovec station.

The planned shift of the railway line has been harmonized with the Spatial plan of Zagrebačka County, according to the Article 101 of the Resolution of Adoption of Spatial Plan of Zagrebačka County (Glasnik Zagrebačke županije 3/02): “On the existing railway line routes it is allowed to perform the reconstructions of the sections to the purpose of improvement of transport and technical elements, which is not considered as the change of the route. “

The same problem exists with the Town of Križevci, however, here it was recognized on time, so the shift of the railway line was introduced in the Final Proposal of the Spatial Plan of Physical Planning of the Town of Križevci as well as in the new General Urbanistic Plan of the (GUP) of the town of Križevci.

### **3. Environmental impact of the project**

Railways have the smallest environmental impact of all the modes of mainland transport. Also, compared to other branches, railways manifest numerous advantages. Railways have the smallest emission of harmful of gases (railways are increasingly electrified and electrical train traction is becoming prevalent), consumption of energy per transport unit is smallest on railways and in water transport. Railways occupy ca three times less land surface compared to roads, safety of transport is greater, the impact of noise is smaller etc.

1-Following negative or unwanted aspects of the project may occur, if the valid legal regulations during the construction or works are not observed:

- ⇒ noise
- ⇒ water pollution
- ⇒ atmosphere pollution
- ⇒ other

#### **3.1. Noise**

Implementation of the project in question the belt around the railway line which is jeopardized by the noise from the railway line, will become wider, with night being the critical period. On places by the facilities, where it is to expect levels of noise higher than allowed, it is necessary to take additional measures for protection from noise. The calculation shows that this refers to all those residential or business facilities which are situated at the distance smaller than 281 from the axis of the planned railway line.

### 3.2. Impact upon waters

Pollutions of water may occur during the construction of the second track of the railway line Dugo Selo – Križevci, as well as during the time of use of railway line and during the sudden pollution.

During the execution of civil-engineering works there can be negative consequences upon the regime of flowing and quality of water. In this respect the biggest danger represent civil-engineering works - deep excavations, removal of the natural cover layer and similar. Fuel supply of civil-engineering machines and heavy vehicles for transport and execution of works, as well as their maintenance and repair, are points where pollution may occur due to strewing or incidental spills of oil and oil derivatives as well as of other harmful substances.

Earthen and stone material which is brought to the location and is required for the construction of the second track, as well as the humus material from the excavation, if deposited out of control, can cause turbidity of surface and underground water flows.

Surface and underground waters can be polluted due to inadequate management of sanitary and other waste waters, such as waters from pouring stations, service workshop and similar, that is, from the facilities which are built for the needs of the construction site. All these impacts will be prevented by implementation of adequate protection measures.

Drainage system of precipitation waters and preservation of the existing drainage system is highly important to avoid disruptions in drainage of the track formation. This is why it is necessary to secure regular function of the existing drainage of the track formation in all stages of the construction of the second track regarding relatively long planned duration period of works. Channels to drain precipitation waters must be permanently cleaned and controlled during the construction of the second track but also during the use of the railway line. Drainage of precipitation waters on temporary crossings needs to be managed in an adequate way, which will be defined within the main project.

Crossing of the railway line over the existing watercourses is secured by bridges or culverts. Considering the fact that until now there weren't any negative impacts of the existing railway line upon the watercourses even at high water levels, it is assumed that in normal working activities, with observation of the collective protection measures, there will be no impacts on the existing watercourses.

Entire area that the railway line Dugo Selo – Križevci passes through is relatively poor with underground waters. Along the whole route there is only one water-well of public water supply- „Trstenik“, which is situated on the southern outskirts of Križevci.

Water well "Trstenik" possesses the Resolution of the Zones of Sanitary Protection and Protective Measures which has been in force since 1987. The Resolution is based on the Rulebook on Protective Measures and Conditions for Designation of Zones of Sanitary Protection of the Sources of Drinking Water (Official Gazette No 22/86), which defines the zones of sources in the water-wells with intergranular porosity, as follows:

- Zone of limitation and control – 3rd Zone
- Zone of strict limitation - 2nd Zone
- Zone of strict protection regime - 1st Zone

According to the valid Resolution of Zones of Sanitary Protection of Sources of Drinking Water "Trstenik", the analyzed second track of the railway line Dugo Selo – Križevci passes through the narrow water protection area – 2nd zone. According to that Resolution and Article 14, the construction of roads and railway lines, parking lots and reservoirs of any purposes is forbidden on the area of the 2nd Zone. As an exception to the Article 14 of this Resolution, the construction of roads and railway lines is allowed on the narrow water protection area of the 2nd Zone, in line with special terms of construction, pursuant to Article 24 of the Rulebook on Protective Measures and Conditions for Designation of Zones of Sanitary Protection of the Sources of Drinking Water (Official Gazette No 22/86), when it considerably contributes to solving of the transport problems of the city.

Possible impacts on the water well "Trstenik" can occur during the construction of the railway line (chainage 480 + 100 do 481 + 400). Due to this it is necessary to prevent all the possible impacts. In 2004 the Institute for Geological Research, Zagreb, developed a proposal of the new Resolution of the Zones of Sanitary Protection of the Water well "Trstenik" which will very soon take effect, and which contains certain changes. According to the proposal of the new Resolution the analyzed railway line is situated on the external edge of the 3rd Zone of Sanitary Protection (Zone of Strict Regime). Proposal of measures within the 3rd Protection Zone does not forbid construction of railway lines, railway stations and other accompanying railway facilities.

Impacts of the water-well "Trstenik", that is the pollution risk must be reduced to the minimum.

During the use and maintenance of the railway line the pollution of water as well as of immediate belt by the railway line is possible, which can have negative impact upon the quality of surface and underground waters. Pollutions of bigger proportions can occur during the transport of dangerous materials (trains collision, capsizing of the tank or coach with dangerous substances during the transport, bursting of the tank or of the coach or some other damage which can occur because of the inobservance, either from ignorance or disregard/negligence of the worker or breakdown of the equipment and similar).

In regard of this, the employees must be trained for work in a safe manner, pursuant to the Occupational Safety Act (*Official Gazette 59/96, Official Gazette 94/96*).

### **3.3. Impact upon atmosphere**

During the construction of the second track there can appear dust when unloading the material or during the execution of works themselves. The dust is of limited reach (up to 50 m from the construction site).

Due to exposure of the wagon tanks to high temperature, the pressure within them can rapidly increase, and tanks may burst and result in explosion and ignition of combustible liquids within very short time (less than one second). Fires can also occur due to negligence of fire workers (smoking, working with appliances which emit sparks) or natural phenomena (thunder).

Explosion and fire can also occur if the wagons/tanks which contain dangerous substances are defective. In that case a whole quantity of dangerous material can flow out into the environment and ignite.

Fires can occur as a result of following:

- Negligence of fire workers (smoking, working with appliances which emit sparks) or natural phenomena (thunder

- due to defective wagons /tanks which contain dangerous substances. In that case a whole quantity of dangerous material can flow out into the environment and ignite.

- during the transport of wagons/tanks with dangerous substances incidents can also happen. To avoid them, it is necessary to take collective preventive measures, which will be described in more detail in Item 1.1, of Chapter C.

### **3.4. Other**

#### ***3.4.1. Impact on soil and agricultural land***

Railway line in question passes on the section from Dugo Selo to Božjakovina mostly through level area, which is an agricultural area. Within the zone of railway line impact the land has been used mostly for vineyards, orchards and crops. Impact of the railway line on the technological processes in the agriculture manifests in the loss of soil due to the permanent re-use of the part of the agricultural plots along the line and to a smaller extent, by fragmentation of agricultural plots, emission of harmful substances into the soil and similar. This is why it can be expected that negative effects on technological processes will primarily manifest in the change of the use of agricultural land within the zone of impact.

#### ***3.4.2. Impact on flora and fauna***

Within the impact zone, as well as in the zone of civil-engineering works, where the line passes through the forest area, attention must be paid during construction, not to damage trees, bury or remove them. Since during the construction of the second track Dugo Selo – Križevci new forest areas will not be utilized, the railway line construction will not have any bigger impact on forest areas. All impacts will reflect in the reduction of scope of plant communities as well as in damage of the surrounding area during the construction of the railway line itself (removal of surface cover, construction of approaching roads, material depots and similar). Since the railway line passes through the agricultural area, the impact will also reflect in reduction of use of areas claimed by the construction. Also, expansion of weed and forest sorts next to the railway line is to be counted with.

The railway line passes through various types of biotopes. Negative impacts upon fauna can reflect in separation, that is, smaller abilities of migration of populations of individual animal species as well as due to decreased size of biotopes (especially of underground ones) on the spot of construction of the railway line, which demands special protection measures.

#### ***3.4.3. Impact on the visual quality of landscape***

Impacts on the visual quality of the landscape are reduced to the minimum due to the fact that the construction of the second track of the railway line Dugo Selo – Križevci takes place next to the existing railway line, and the facility itself is of low height, therefore lines of sight are not interrupted, which entirely fits into natural surroundings.

Second track of the railway line will be built on the area of the 3rd category of cultural landscape, that is, on the area without distinct spatial identity with individual values of

cultural goods, which means that the construction of railway line is allowed since this area does not contain a concentration of natural and cultural values.

#### **3.4.4. Impact on the cultural and historical heritage**

Planned construction of the second track of the railway line Dugo Selo – Križevci almost entirely follows the route of the existing track. From the point of view of cultural heritage, which was encompassed by this study, some minimum deviations from the existing route do not considerably affect the appraisal of acceptability of the project. On the area of archeologically and historically documented densely inhabited areas, as well as of present situation which is characterized by numerous settlements of mostly rural character, the route of the railway line circumvented to the great extent the preserved, registered and protected cultural goods. The most jeopardized category of goods, as encompassed by this Study, is the cultural goods which possess distinct spatial values. The most sensitive part of the route seen as such is the cultural landscape of the valley of the Koruška stream and the only historical, rurally marked settlement, through the centre of which the railway line passed when first constructed, back in 1870. Construction of the second track next to the existing, if protection measures are observed, should not to any considerable extent erode the existing spatial relations and qualities contained in the given cultural goods.

#### **3.4.5. Impact on the population and settlements**

From the aspect of spatial and planning documentation (population, construction areas of the settlement) and from the aspect of existing railway line, construction of the second track is almost completely acceptable. This railway line passes through 25 settlements, through the area of Zagrebačka and Koprivničko-Križevačka Counties. On the analyzed area through which the railway line passes, according to the data from the spatial and planning documentation, the number of inhabitants is not likely to increase significantly, which means that the construction of the second track will not have impact on the demographical development of individual towns/municipality.

#### **3.4.6. Impact on the existing and planned infrastructure**

Construction of second track will affect transport regarding the existing level crossings. It will be necessary to secure optimal conditions for the flow of road transport in all the stages of construction and all transition stages. This also refers to the local communications parallel to the railway line, used by local population. On sections where railway line intersects level crossings, incidents are possible, that is, collisions of trains and vehicles due to inobservance of transport and legal regulation etc.

Analyzed route of the second track intersects the *existing* infrastructure systems:

- main gas pipeline (between 445 km and 446 km)
- local gas pipeline (between 447 km and 448 km)
- power transmission line 110 kV (between 447 km and 448 km)
- power transmission line 30 kV (between 447 km and 448 km)
- power transmission line 35 (20) kV (between 460 km and 461 km)
- state road D28 (between 469 km and 470 km)
- main gas pipeline (between 470 km and 471 km)



- local gas pipeline, telecommunication lines and channels (between 469 km and 470 km)
- existing power transmission line 10 (kV) (between 473 km and 474 km)
- existing power transmission line (between 480 km and 481 km)
- existing pipeline (between 480 km and 481 km)
- border of the „narrow water protection area " (at 480 km).

Parallel to the route of the second track extends the local gas pipeline (between 461 km and 463 km). At chainage between 474 km and 476 km pass local pipeline and gas pipeline.

Analyzed route of the second track of the railway line intersects following *planned* infrastructural systems:

- power transmission line of 110 kV which will be constructed along the route of the existing 30 kV power transmission line from TS Dugo Selo up to TS Vrbovec (between 447 km and 448 km)
- state highway Sv. Helena – Vrbovec – Bjelovar (between 458 km and 459 km)
- main pipeline (between 469 km and 470 km)
- pipeline (between 480 km and 481 km).

### ***3.4.7. Impact on the existing transport during construction of the second track***

Construction of the second track on the section Dugo Selo – Križevci, as well as the reconstruction of railway stations will have impact on the transport on the existing railway line only to a smaller extent. These impacts will be weakened through reduction of speed on the existing track during the works on the new track. Also, periodical closures of the railway line are possible.

Solution for the movement of the passengers on the stations during the reconstruction should be provided by the main project. Movement of the passengers on the stations during the reconstructions should be solved by the main project having in mind all the occupational safety measures.

### ***3.4.8. Impact on the purpose, use and organization of space***

The second track of the railway line Dugo Selo – Križevci, that was analyzed, was foreseen in the spatial and planning documentation which implies that it passes through the area that is not protected and where construction is allowed. Since the railway line stretches through two counties, it passes on its way through or next to forest area (between watercourse Lonja and settlements Novo Selo; Tučenski lug; Špiranečki lug), construction area, that is, settlements Dugo Selo, Kozinščak, Andrilovec, Lukarišće, Božjakovina, Prikraj, Brekvojljani, Gornja Greda, Novo Selo, Brčevac, Savska Cesta, Naselje Stjepana Radića, Vrbovec, Potočec, Gradečki Pavlovec, Gradec, Mali Brezovec, Veliki Brezovec, Podjales, Repinec, Festinec, Pokasin, Špiranec, Prikraj Križevački and Križevci. In front of the town of Vrbovec the railway line passes through the area of economic purpose.

We already said that the railway line would pass through the area of 3rd category of cultural landscape where construction is permitted since it does not contain a concentration of natural or cultural values, which minimizes its impact on the purpose, use and organization of the space.

### 3.4.9. Incidents

Hrvatske željeznice as a large transport system perform transport of different dangerous substances, which is regulated by following regulations:

1. Rulebook on international transport of dangerous materials by railways (Rulebook RID)
2. Instructions on goods transport (Instruction 162)
3. Transport rulebook (Rulebook 2)
4. Rulebook on use of coaches, containers, pallets and freight supplies (Rulebook 5)
5. Tariff for transport of goods in domestic transport (HRT 151-156)

On basis of incidental situations or accidents which happened somewhere else, it is possible to appraise experience-based possible causes of danger, as follows:

- Defective coaches
- Improper loading into wagons
- Negligence or disregard in work or inadequate handling
- Lack of control of process
- Damage of wagons /tanks through mechanical blows
- Mistakes during pouring out and filling of fuel tanks or defects on facilities for pouring over
- Fires
- Other extraordinary events (earthquakes, diversions and similar)

Dangerous substances must not be transported in railway vehicles with passengers. During transport of dangerous substances, apart from safety measures for transport of dangerous substances as regulated by this Act, the regulations of International Conference on Transport of Dangerous Goods by Railways and International Rulebook of Transport of Dangerous Goods by Railways are also applied (Regulations Concerning the International Carriage of Dangerous Goods by Rail - RID).

This Rulebook says: Due to an extraordinary event on railways (technical breakdown, deterioration of material or a strong blow in manoeuvring) dangerous goods can spill or pour out.

Depending on the art of the dangerous substance, workers who directly participate in transport of dangerous goods or in the elimination of irregularity are jeopardized, as well as the environment, where dangerous substances get.

In case of an extraordinary event, those working in all official places in HŽ are obliged to take all necessary measures for protection of people and environment. When eliminating irregularities in transport of dangerous substances, breakdowns first need to be eliminated in the stations, when collective protection measures must be taken.

#### **4. Environment protection measures during the construction, use and after the project, including measures for prevention and mitigation of consequences of possible ecological incidents**

##### **4.1. Measures of noise protection**

Measures of noise protection will depend on the configuration of the land through which the railway line passes. On individual sections of the railway line, which pass directly by the villages and towns, additional measures for protection of existing facilities will be taken through construction of protection barriers next to the railway line itself, that is, through mounting of protection doors and windows which depends on the specific situation on spot. Future construction should be protected by developing of quality spatial and planning documents, that is by considering noise an important parameter in choosing the location of construction and purpose of the facility, that is, by the change of the existing Spatial Plans.

##### **4.2. Measures for protection of waters**

###### ***Measures of protection of waters in the construction of the railway line***

Prior to the construction of the railway line, it is necessary to develop an Operational Plan of Action for Sudden Incidents, in case of an incident. In such a case, action is regulated by the State Plan for Protection of Waters (*Official Gazette 08/99*).

During the work with civil engineering machines it is prohibited to spill or to throw away waste oil, fuel and other waste material, which have the properties of dangerous waste (batteries and similar) next to the railway line. Fuel supply must be secured as to prevent spilling.

The excavated humus material which will be used for the adaptation of the embankment and for the planning of the land next to the railway line will be deposited on a specifically defined place as to prevent its washing away and draining from the construction site. It is prohibited to deposit the excess of material on places which are not designated to that purpose.

Problem of depositing and possible removal of the excess of earthen material, which was excavated during laying the foundation of the new embankment and which will not be used to the purpose of the construction, will be solved within the scope of the main project.

In order to prevent pollution through sanitary (faecal) waters on construction site, duly management of sanitary waste waters must be secured through use of portable toilet blocks.

It is necessary to secure regular function for the existing drainage of the track formation during all the stages of the construction of the second track considering the relatively long duration of works. The channels to accumulate the precipitation water must be permanently cleaned and controlled during the construction of the second track but also during the use of the railway line.

Pollution of the existing watercourses is possible during the incidental situation (if the tank with dangerous materials bursts, bad weather and similar) In case of pollution it is to be acted upon the Operational Action Plan with Sudden Pollution and in line with State Plan for Protection of Waters (*Official Gazette 08/99*).

In order to protect the water well of public water supply „Trstenik“ from negative impacts during civil engineering works, it is necessary to conduct permanent control of civil-engineering machinery and vehicles which take part in civil engineering works, as well as to secure a plateau for parking of vehicles, pouring over of fuels and lubricant and conduct other activities which may have harmful impact on water.

In order to prevent the incidents it is necessary to protect the construction site with safety equipment – machinery for speedy elimination of pollutions, portable water pumps, containers for waste disposal, agents for neutralization of pollution etc.

### ***Measures for protection of waters during use of the railway line and in extraordinary situations***

It is necessary to maintain the railway line during the use and exploitation in order to reduce the negative impacts to the minimum. The precondition is a well organized maintenance service and adequate quantity of service equipment.

Separated waste oils and sediments need to be under controlled management.

In case of an incident it is necessary to act in line with the Operational Plan for Implementation of Measures for Prevention of Spreading and Elimination of Pollution as well as with the State Plan for Protection of Waters (*Official Gazette 08/99*). It is also necessary to provide for the service for emergency interventions.

### **4.3. Measures for protection of air quality**

It is necessary to conduct measures to prevent fires and explosions in carriage of dangerous materials.

Packing in which dangerous materials are transported must be designed and sealed in the way that, in usual transport conditions, the contents cannot get out, especially due to oscillations in temperature, humidity or pressure.

Packing which is used for transport of dangerous substances must be attested and marked in line with valid standards and regulations.

In case of incidents it is necessary to act according to the Operational Plan for Implementation of Measures for Prevention of Spreading and Elimination of Pollution and State Plan for Protection of Waters (*Official Gazette 08/99*).

### **4.4. Other**

#### ***4.4.1. Measures for Protection of Forests***

During the construction of the second track new forest areas will not be claimed, so that special protection measures are not necessary.

#### ***4.4.2. Measures for protection of soil and agricultural areas***

During civil-engineering works there is a need for controlled deposition of humus layer, which should later be used for adaptation of embankment and of the green belt next to the railway line.

Since the emission of liquid substances into the soil next to the railway line is possible, for example of fuel, as well as spilling of dangerous substances in incidental situations, it is necessary to act in line with Operational Plan for Implementation of Measures for Prevention of Spreading and Elimination of Pollution and State plan for Protection of Waters (*Official Gazette 08/99*).

#### ***4.4.3. Measures for Protection of Flora and Fauna***

A horticultural project for the construction of protection belt next to the railway line must be developed.

In case that some underground facilities are found during the works, all the works must be stopped until the team of bio speleologists determine the condition of the locality and defines its value and related measures of protection of underground flora and fauna.

#### ***4.4.4. Protection measures for reduction of harmful impacts upon the visual quality of the landscape***

Since the second track will be constructed on the area of the 3rd category of the cultural landscape special measures of landscape are not necessary.

#### ***4.4.5. Measures for protection of cultural and historical heritage***

In the area of Gradec and Pokasin, where the protected cultural goods is situated – the valley of the stream Koruška, as a measure for the reduction of the impact of construction on the protected landscape it will be provided for the development and implementation of the project of horticultural adaptation of the project area, which stretches along the protected landscape. As for the case of a single historical settlement with preserved rural properties through which the railway line passes, village Prikraj, the research and documentation of the cultural goods will be conducted.

In this village there is a wooden barn, which is a valuable example of traditional farm building, and will be protected on the spot or this cultural good will be moved to some other location. For other cultural goods periodical conservationist supervision will be conducted during construction works.

Research and documentation of archaeological places of discovery, which are directly jeopardized by planned construction, will be conducted.

It is necessary to conduct permanent archaeological supervision over the whole route of the new track, especially because of valuable archaeological findings and discovery places in the vicinity of the route.

#### ***4.4.6. Measures for protection of population and towns and villages***

Measures of protection which are provided for, as well as measures of noise protection on places next to facilities, where the levels of noise, higher than allowed, are recorded (within 281 m from the railway line) will be taken. High vegetation can be planted next to the construction areas only if it does not prevent the visibility of signalization, which is in function of regulation and safety of railway transport.

#### ***4.4.7. Measures for protection of existing infrastructure***

It is necessary to ensure optimal conditions for the flow of road transport on existing level crossings in all stages of construction and in all transition stages. This also includes local communications which are parallel with the railway line, which are used by local population.

All crossings of railway lines with state and county roads need to be devised in two levels or need to be secured pursuant to “Programme for Level Crossings on HŽ Railway Lines“ according to a certain dynamics.

During development of project of the second track of the railway line Dugo Selo – Križevci, it is necessary to take into consideration of the existing and planned infrastructure which is intersected by the railway line in question.

In case of incidents it is necessary to act in line with the Operational Plan for Implementation of Measures for Prevention of Spreading and Elimination of Pollution and State Plan for Protection of Waters (*Official Gazette 08/99*).

#### ***4.4.8. Measures for protection of existing traffic during construction of the second track***

Traffic along the existing track during the construction of the second track will take place at reduced speed and with occasional track closures, as required by the technology of realization.

#### ***4.4.9. Protection measures for mitigation of negative impacts on the purpose, use and organization of space***

On areas within the protective railway line belt, during the passing of the railway line next to construction areas, it is necessary to plant high vegetation, if it does not interfere with signalization. On parts of the route where the railway line intersects the existing communications which are relevant for spatial organization of the settlement, it is necessary to fully secure the continuity of local roads.

#### ***4.4.10. Implementation of measures in case of incidents***

It is necessary to develop an Operational Plan in Case of Extraordinary Pollution with Measures of Prevention, Spreading and Elimination of Sudden Pollution, pursuant to the regulations of the State Protection Plan.

## **5. Programme of Monitoring of the Environmental Condition during the Construction and Use of Planned Facility**

Following the conclusion of the construction of the second track of the railway line Dugo Selo – Križevci, it is necessary to conduct measuring of noise on critical points of emission (pursuant to the Main Project of Noise Protection).

Measurement needs to be repeated if, in traffic counting, a considerable increase and/or change of structure and change of technical condition of the railway line are detected.

In the first year of exploitation it is necessary to conduct monitoring to determine the need for the additional protection measures.