

Non-technical summary

The Railway Electrification including PEÚ (Pre-electrification adaptations) Šatov – Znojmo is located within the Border – Šatov – Okříšky track section in the southern part of the South Moravian region. Electrification within the Šatov – Znojmo track section is the natural continuation of electrification of the track section Austria/Czech Republic border – Šatov train station, completed in 2006. Through the project completion the region will become directly connected with the capital of the Republic of Austria by electrified railway. The aim of the construction is to bring the railway track and relating constructions and equipment to a technical condition complying with European parameters and standards. The mentioned parameters follow from the AGC and AGTC international agreements that the Czech Republic has undertaken to fulfil.

Based on the tendering conditions the railway track was proposed for optimization with an emphasis on smoothness of tilting railway vehicle ride.

In compliance with Act No. 100/2001 Coll., as amended by Act No. 93/2004 Coll., documentation assessing the environmental impact of the construction has been prepared in relation to the intended project “Railway Electrification including PEÚ (Pre-electrification) Znojmo – Šatov – Border section“, which comprises the “Railway Electrification including PEÚ (Pre-electrification) Šatov – Znojmo section“. Based on the documentation, the South Moravian Regional Council issued a positive opinion, ref. no.: JMK 5174/2005/OŽP/Vr/2 on the intended project pursuant to §10, Act no.100/2001 Coll. as amended by Act No. 93/2004 Coll.

PLANNING PERMISSION :

The construction is located within the South Moravian Region. It affects the cadastral areas of Znojmo, Šatov, Havraníky, Konice u Znojma, Nový Šaldorf, Sedlešovice, Citonice, Makovice u Znojma, Terúrký u Znojma, Dobšice u Znojma, Dyje, Tasovice nad Dyjí and Hodonice.

The planning permission for the construction of “Railway Electrification including PEÚ Šatov – Znojmo section“ was issued by the Znojmo Municipal Council on 19 April 2007 under ref.no. MUZN Výst 113960/2006-S1 Rozh.

CONSTRUCTION PERMIT:

The following phase consists in obtaining construction permit, issued based on the approved project documentation; this documentation was prepared as of 31 January 2008. It exactly specifies both the technical solution and the environmental protection requirements (monitoring, protective measures etc.). The construction permit was issued by the Railway Office, Olomouc, on 2 April 2008 under ref.no. 21-5037/08-10669-DÚ/Kf.

PURPOSE AND SCOPE OF CONSTRUCTION :

The project includes pre-electrification adaptations and electrification itself within the Šatov - Znojmo track section and of specified rails at Znojmo train station, as well as protection of telecommunication and signalling equipment against the effects of alternating traction in the Znojmo – Olbramkostel and Znojmo – Hodonice sections. Railway

electrification will be carried out by the alternating traction system of Austrian railways, i.e. 15kV 16 2/3 Hz supplied from the Austrian side.

The line in the Šatov – Znojmo track section will be brought to a constructional-technical and operational condition with transport limitations removed and allowing for electrification. The complete renovation of track superstructure, substructure and bridges will be carried out, new telecommunication and signalling cable lines and traction lines will be installed. The construction execution will not change the existing character of the railway.

The construction is delimited by the section of electrification of the Šatov – Znojmo line from km 89.589 to km 100.751, and the following sections:

- Znojmo – Hodonice track section to km 16.734 (cable laying only),
- Znojmo – Olbramkostel track section to km 112.590 (cable laying only).

Construction design :

Existing condition:

The Šatov – Znojmo track section is a single-track unelectrified line. Its technical parameters are as follows:

- railway speed 60 – 70 km/hour with restriction at Znojmo to 30 km/hour;
- T-shape track superstructure, S49 largely from 1947 and 1980-82;
- load capability class C3;
- 4 level grade crossings secured by warning crosses;
- 8 bridges not meeting load capability class D4 at the highest railway speed;
- 13 culverts, not meeting load capability class D4 at the highest railway speed.

Proposed condition :

The Railway Electrification construction including Šatov – Znojmo PEÚ (Pre-electrification) comprises the construction of the below listed capabilities:

- Introduction of pressure category 22.5 tonnes and load capability class D4;
- renovation of track superstructure mainly by S49 material, in bends of up to a 300 m radius, UIC60 material will be used;
- modernization of telecommunication and signalling equipment;
- track section electrification;
- increase in railway speed to 90 km/hour and removing of local speed limitations;
- interlocking stations and tracks by Category 3 locking equipment according to railway technical standard 34 2620;
- renovation of bridges and buildings to meet load capability class D4 at 90 km/hour speed.

Capacity data	
<u>Railway speed</u>	
Conventional trains	75 – 90 km/hour
Trains with tilting vehicles	80 – 90 km/hour
<u>Track superstructure and substructure</u>	
Superstructure renovation with new UIC 60 material	1 213 m
Superstructure renovation with S49 or R65 materials	8 830 m
Number of newly inserted points S49	7 pcs
Number of regenerated points S49	6 pcs
Construction of a 550 mm high platform edge (without ramps)	903 m

Capacity data	
<u>Bridges and culverts</u>	
Railway bridges, renovated	13 pcs
Culverts, renovated	8 pcs
Flyover adaptations	1 pcs
<u>Interlocking plant</u>	
Station with new station interlocking unit, Category 3, electronic interlock type with an integrated inside track blocking system unit and interlocking functions	1 pcs
Level crossing flashing lights protection installation with gates	3 pcs
Level crossing flashing lights protection installation without gates	7 pcs
<u>Telecommunication equipment</u>	
Track cable	36.3 km (1 089 km pairs)
– whole profile lead	7 pcs
– pin	11 pcs
Diagnostic optical cable, 24 fibres	13.1 km
Local cabling, metallic cables	4.6 km (161.7 km pairs)
Intercom for passengers	1 station
– maximum installed capacity in total	600 W
Automatic self-extinguishing unit	1 station
Electronic signalling equipment	1 station
Information equipment	8 boards
Clock	1 station
<u>Power engineering equipment</u>	
Electronic heating equipped points	17 pcs
<u>Traction line</u>	
Length of electrified rails	12.8 km
<u>Building constructions</u>	
Total area of adapted rooms	625 m ²
Cable	715 running m
Platform roofing	686.5 m ²
Individual noise reduction measures	42 construction elements

DESCRIPTION OF INTEREST AREA

The interest area is situated in the Lechovice bioregion, along its western border.

Situation

The bioregion is situated in the centre of southern Moravia, and its largest part lies on Austrian territory. The interest area is located in close proximity to the border with Austria, in the South Moravian region within the extended competence municipality of Znojmo. The construction is located in part in the river Dyje flood plain.

Rocks and relief

Rock substratum consists of loose sediments from the sea Neogene – clays, sands, gravel, in places more consolidated and with different contents of lime, however buried beneath the Pleistocene terraced gravel-sands. Both rock types are then mostly covered by loess layers of

usually small thickness. The relief is largely unbroken, flat, in places, mainly along the highlands edge, rising into low hills. A characteristic feature is the long and relatively straight, 1-4 km broad and no more than 20-40 m deep valleys of through-flowing streams.

The relief around the city of Znojmo has a character of basin and far stretching depression of tectonic origin with accumulation fill, to the south and southwest passing to broken upland with erosionally accumulation surface. The deep river Dyje valley with partial cuts of its tributaries (Mašovický, Gránický brooks,...) is characteristic of this part of the area. The river flood plain belongs to flat type relief of medium watercourses. Elevation of the relevant area ranges from 198 m above sea level (eastern part of the relevant area – the river Dyje) to 396 m above sea level (a hill in the south-west part of the relevant area).

Geological structure is generally varied and its diversity reflects the meeting of two large continental geological bodies – the low mountain range of the Czech Massif, with the adjoining geologically younger formation of the Carpathians. It is predominantly filled with the Tertiary and Quaternary, little consolidated sediments – calcific clays, sands, sandstones, conglomerates. The upper youngest layers remained settled horizontally. They are broken by numerous fractures, near the eastern edge, simply folded on sites of the flysch Carpathians shift. The Czech Massif structure (northern and western parts) is predominantly built by crystalline rocks (Paleozoic volcanic rocks) - biotite orthogneisses, cordieritic gneisses, granites, granodiorites. There are extensive stretches of loess and loess clays overlays, whose thicknesses increase southwards. Presence of kaolin deposits as a result of deep weathering in the tropical Tertiary climate is characteristic of the Znojmo region.

Climate

According to climatic regionalization (Quitt 1971), four climatic areas affect the Podyjí National Park: its western part (reaching as far as the “Klaperův brook“ valley) belongs to the mildly warm area MT 9. Its central part lies within the mildly warm area MT 11, passing to the warm area T 2 (towards the Dyje valley edges between Znojmo and the border), and the warm area T 4 affects the easternmost end of the national park.

The warm area T 2 has a long, warm and dry summer, very short transient periods of warm to mildly warm spring and autumn, winter is short, mildly warm, dry to very dry, with blankets of snow lasting very shortly.

T 4 area is characterized by very long, very warm, very dry summer periods, the transitory period is very short with warm spring and autumn, winter is short, mildly warm, dry to very dry, with blankets of snow lasting very shortly (Quitt 1971).

In the surroundings of Znojmo average annual temperatures are 8.8 °C. The coldest month is typically January, the warmest July. Average temperatures around Znojmo in January are – 1.9 °C, in July 19,0 °C. The highest temperature taken within the National Park has been 37.2 °C, right in Znojmo. The summer season (characterized by average daily temperature of 15 °C and more) begins in Znojmo on 25 May and lasts for 109 days (Quitt 1984).

The whole district of Znojmo belongs to extremely dry regions in the Czech Republic. Within the cold half of the year rainfall amounts to 219 - 268 mm, which is 33.9 – 35.5 % of annual rainfall total, the summer rainfall total reaching 329 - 397 mm (66.1 – 64.5 %). The rainiest period is typically summer (June), while minimum rainfall can be expected in March.

Soils

Depending on the terrain morphology, bottom layer, climate and other factors, different soil types have developed in the area. The extensive Quaternary drifting action of winds drifted sands and loesses to the vast Carpathian plains, mainly from river terraces, alluvial cones, geests etc. Vast stretches of black soils, carbonated and degraded black soils predominate on the territory. Alluvia contain alluvial, illimerized soils. Significant is the

proportion of soils of various thickness overlay loess loams, such as decalcified loesses. They have a greater content of clay particles (50 - 60%), are deep ochre to rust-brown coloured and contain a small amount of gravel in their lower layers. On granites and gneisses, undeveloped shallow to deep brown soils settled depending on the extent of weathering. They are dense, clay-loamy to loam-sandy.

Biota

The bioregion is situated in the Thermo phytic in the eastern part of phytogeographic district 16, Znojmo-Brno upland, and in the north-western tip of phytogeographic subdistrict 20b, Hustopeče upland.

Vegetation levels (Skalický): undulating, hilly country

A potentially larger part of the area is covered by oak-hornbeam groves, mainly thermophilic Pannonian (*Primulo veris-Carpinetum*), marginally also mixed with Hercynian groves (*Melampyro nemorosi-Carpinetum*). On more extreme drying habitats thermophilic oak-woods can be expected. Plant life reflects the position where Pannonian and Central European areas meet. This bioregion includes numerous marginal elements, with a number of habitat boundaries running through it. Fauna of the bioregion belongs to the Pannonian part of Moravia with occurrence of representatives of Ponto-Mediterranean element toward the Czech highland eastern slopes. E.g. spreading of the praying mantis, *Mantispa styriaca* or *Zerynthia polyxena* is manifested, of the reptiles e.g. green lizard.

The interest area belongs to the Black Sea drainage area. The crucial watercourse running through the interest area is the river Dyje (hydrological sequence 4-17-01-114). It is one of the least aqueous watercourses in Moravia, with considerably uneven outflow, both during the year and over longer time-periods. The largest flows occur in May (40-50%) and the smallest in August (0.7m.s-1). The unfavourable flow conditions are partially made up for by the Vranov and Znojmo reservoirs. In the section of railway electrification the network of small streams is very sparse, another stream in the interest area is the brook Daniž, which together with the river Dyje is a major stream in the River Morava Catchment administration, the Dyje Plant. Within the area where only a cable route is to be laid, the brook Gránický (Znojmo – Okříšky track) is in close proximity and the brooks Leska and Dobšický run across the track (Znojmo – Hrušovany n. Jev. track).

The main source of surface drinking water is the Znojmo reservoir, used as the central source of the Znojmo group water works. Due to geological conditions in the flood plains the ground water is liable to contamination. Close beneath the surface the territory has a groundwater body and is exposed to industrial fertilizers and biocides runoff. Saturation is mainly porous, with only small groundwater reserves.

Natura 2000 is a system of localities protecting the most threatened plants, animals and habitats (e.g. peatbog, rock steppe or mountain spruce groves etc.) on the EU territory.

The essential EU regulations relating to environmental protection are as follows:

- Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds (abbreviated: Directive on birds).

- Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora. (abbreviated: Directive on habitats).

As of 22 December 2004 the Government of the Czech Republic established a list of Europe's significant localities, Government Decree No.132.

In the proximity of the interest area are localities proposed within NATURA 2000:

Podyjí Bird Habitat (established by Government Decree No.534 from 29 September 2004)

Code of locality:	CZ0621032
Name of locality:	Podyjí
Bio-geographical area:	Continental, Pannonian
Area of locality:	7665.72 ha
Proposed category of specially protected area:	NP – National Park

Species:

Barred warbler (*Sylvia nisoria*)
Southern wood-pie (*Dendrocopos syriacus*)

Podyjí European significant locality

Code of locality:	CZ0624096
Name of locality:	Podyjí
Bio-geographical area:	Continental, Pannonian
Area of locality:	6273.13 ha
Proposed category of specially protected area:	NP – National Park

Species:

Pasqueflower (*Pulsatilla grandis*)
Lady-slipper (*Cypripedium calceolus*)

Eft (*Triturus cristatus*), click-beetle (*Limoniscus violaceus*), barbastelle (*Barbastella barbastellus*), large mouse-eared bat (*Myotis bechsteini*), comfrey moth (*Callimorpha quadripunctaria*), stag-beetle (*Lucanus cervus*), sawyer beetle (*Cerambyx cerdo*), bull-head (*Cottus gobio*), horseshoe bat (*Rhinolophus hipposideros*)

Special protected areas

The construction is located on the *Podyjí National Park protective zone* border, the track forms the NP protective zone border at km 95.800-99.300.

There are two *natural monuments* near the construction: **PP Pustý kopec/Desert Hill'** (steppe plants) on the left, 25-80m away from the Znojmo-Šatov track, km 94.500-94.700 and **PP Cínová hora/Pewter Mountain** (former quarry) on the right adjoins the Znojmo-Olbramkostel track at km 104.900-105.500.

Description of the proposed solution alternatives

Alternative solutions of the relevant construction have not been considered given its character and size.

Environmental impact during construction

Impact on the air

Point and area pollution sources

During construction amounts of pollutants in the air are likely to increase, from the point, line and area sources.

Technology of the recycling plant may be considered as the main source of point as well as area air pollution. This involves solid emissions of natural, chemically untransformed materials, of relatively large sizes. Spread over larger distances is not expected.

Line sources

Outlook: By comparing the resulting values of the existing and target conditions we arrive at the conclusion that following implementation of the changes, i.e. increased number of passenger train connections, increase in speed of transport and replacement of 810 and 2016 ÖBB gas-engine locomotives by electric locomotives, emissions of the monitored harmful substances will be reduced by approx. 22% compared with the current state.

During construction the population will be affected by noise and local air pollution caused by dust and exhaust fumes as a result of earthwork, use of heavy machinery and transport of material by lorries. The described impact will only be temporary.

Noise impact

At present the limits of noise levels are exceeded due to railway operation both in part of the city of Znojmo and for dwelling houses along the track. The greatest noise load from the track operation in Znojmo comes from trains crossing the Znojmo viaduct at km 99.297. This bridge over the Dyje is currently used as a stopgap and is inadequate for electrification. Within the pre-electrification adaptations the lower part of the bridge construction will be renovated and the upper part will be rebuilt of steel-reinforced concrete.

Another noise load is generated by the train station traffic, mainly by passage through points and braking of trains coming to a halt.

This noise load cannot be utterly removed, it may be, however, to a reasonably achievable extent minimized through the proposed individual noise reductions measures. The proposed measures will be aimed at providing the highest admissible level of acoustic pressure within the inside protected spaces of buildings against noise contributions from the CD track operation. This involves in Znojmo the bridge across the Dyje, the area near the streets Vídeňská and M. Horákové and the hospital complex of 'Stará nemocnice'.

Vibrations impact

In respect to the planned complete modernization of the railway substructure and superstructure (quality crushed stone ballast, new sleepers), based on measurements made on the already modernized track sections it can be assumed that vibration levels will be reduced along the whole construction section.

Impact on waters

There are no substantial changes of the route in the spatial solution of the construction. The design respects the existing stable and intermittent streams and their crossing is provided by means of culverts or bridges. The project's execution also does not interfere with any water bodies, or water source protective zones.

The greatest risk for ground water quality is presented by possible spills of oil substances (diesel oil, petrol, hydraulic oils etc.) used in operating construction machinery.

In most cases, such spills occur as a result of lacking work discipline or insufficient instructing of workers.

In general it is necessary to give great attention to handling dangerous substances within the complete railway section, since separate groundwater resources (e.g. home wells) may be scattered over the area.

The recommendations made in the submitted documentation therefore specify the following conditions:

- On construction sites and within work performance protective safety measures preventing ground and surface water contamination shall be observed and special shall be given to handling oil-containing substances, and in case of spillage of oil-containing substances the spilled product has to be promptly caught and disposed of. Each worker is obliged to prevent further spreading of spillage, promptly collect the spilled product with shovels in leak-proof metal containers designated for that purpose and complete the spilled product decontamination using a sorptive substance. Sorbent with oil-containing substance shall be again collected in designated containers.
- Generally, space for construction machinery movement has to be provided. Construction machinery has to be equipped with decontamination agents in case that possible oil spillage has to be remedied. If construction machinery is temporarily parked metal catch containers will be placed underneath.
- During the construction works within the reconstruction of the Dyje bridge, material will not be placed in the riverbed and flow capacity of the river will not be reduced.

Impact on soil and forest

Although the construction will be mainly carried out on the railway land, there will be also land of other owners occupied, both temporarily and permanently (temporary occupation ZPF=0.7786 ha, permanent occupation ZPF=0.2189 ha, permanent occupation PUPFL=0.0050 ha). The relevant area is mainly farmland. Large stretches of black soils and alluvial soils prevail, also large in extent are loess loams, followed by shallow to deep brown soils.

During construction activities it is necessary pursuant to Article 8, par. (1,2) under the Act to take measures to prevent spillage/release of solid, liquid and gaseous substances contaminating the affected as well as plots adjacent to those negatively affecting ZPF and its vegetation cover. Works on the plots has to be first of all performed outside the vegetation period and in the manner causing the least possible damage; after the work completion, the affected land will be returned to its original state.

Construction works in the forest protective zone have been discussed with the forest administrators and the competent public authority and the above conditions agreed, stipulating that forest stand will not be damaged during performance of works and forest land will not be used as part of construction site.

Impact on fauna and flora

Territorial system of environmental stability will be temporarily impacted in the course of construction i.e. renovation of bridges and culverts bringing the track across streams, which makes it impossible to avoid interventions in biocorridors. Still, this would

only constitute a significant influence with serious effects on the water ecosystem in case of an accident.

Interventions in the Territorial system of environmental stability (ÚSES) and their impacts will be minimized and protective measures preventing water contamination will be observed. Following the construction work completion the building sites will be returned to the original state, functionality of biocorridors and possibilities of animal migration will not be permanently impaired by the construction. Bridges and culverts will retain their existing inside diameters in places where the track crosses migration corridors.

Out-of-forest green near the track will only be cut down to a minimum necessary extent. This mainly concerns bushes growing on the trackbed, regularly maintained by felling primarily airborne green. The felling will only be performed outside the vegetation period from November to March.

As the construction will be mainly executed on the trackbed, nature protection elements are not expected to be affected by construction (to the exclusion of a contingency situation arising, causing spillage of fuel or other dangerous substances)

Impact on specially protected areas

The construction is located on the border of Podýjí National Park protective zone, its impacting is not expected.

The construction will impact the protective zone of Pustý kopec Natural Monument. Prior to construction start the boundaries of Pustý kopec Natural Monument will be visibly marked out so as to prevent any intervention into its territory.

As for PP Cínová hora locality, the cable run has to be installed along the track on the boundary of the natural monument. There was a field investigation organized where the nature protection authority, designers and the investor's representative participated. Based on the assessment, conditions were established for the construction performance and the cable run was designed accordingly.

Impact on NATURA 2000

The construction will not significantly impact the NATURA 2000 localities.

Wastes

Wastes generated during the construction work will be transported and disposed of outside of the construction site. Waste disposal will be provided by the building contractor or a specialist firm. The project documentation will address the waste-related problems with an emphasis on ensuring preferential utilization of maximum amount of 'gains', i.e. reusable materials before their disposal: crushed stone ballast removed from the trackbed, uncontaminated, will be taken to a recycling plant to be established for the whole section at the Šatov train station, and after regrinding, screening and adding coarse fraction to it, it will be brought back to the trackbed. Crushed stone ballast from under the points possibly contaminated, as well as possibly contaminated excavated soil, will after removing be taken straight to a biodegradation site and subsequently utilized if possible, or taken to a disposal site. Other materials that CD will not find any use for, will be offered to other businesses or

sold as secondary raw material, the rest will be handed over to companies dealing in waste disposal and disposed of in accordance with the legal regulation in force.

Impacts on cultural monuments and archaeology

The city of Znojmo and adjoining municipalities of Dobšice, Kuchařovice, Nový Šaldorf – Sedlešovice and Suchohrdly are in terms of settlement geography part of the old settlement territory. Several tens of prehistoric and medieval settlements, some of them of major historical importance, are known to date from the cadastres of the city and the surrounding villages. Considering the exceptional density of prehistoric and medieval settlements discovered so far and the assumed existence of further archaeological sites, all the cadastres have to be classified as areas of archaeological finds.

Znojmo's historical centre is a listed urban conservation area. Its conservation zone also includes the railway bridge/viaduct over the Dyje as a culturally technical monument (register no. 8418 of the Central list of immovable monuments), and parts of the adjoining railway along both the valley sides. The project documentation for the bridge reconstruction has been consulted with a National Monument Institution (NPÚ) specialist at the local office in Brno, in accordance with Article 14, par. 7 of the National Monument Conservation Act.

Impact on the character of the country

As the existing track electrification is involved, the character of the scenery will not be noticeably affected.

ENVIRONMENTAL IMPACT DURING THE RAILWAY OPERATION

Impact on the population

The greatest noise load from the track operation in Znojmo from trains crossing the Znojmo Viaduct at km 99.297. This bridge over the Dyje is currently used as a stopgap and is inadequate for electrification. Within the construction project the lower part of the bridge construction will be renovated and the upper part will be completely rebuilt of steel-reinforced concrete with a concrete tank and continuous gravel of ballast. This new construction will contribute to significant noise reduction. It was impossible to design efficient noise protection screens as part of the construction (steel bridge, adverse field conditions). In localities exceeding the noise limits individual noise reduction elements will be installed – windows replacement.

With respect to the complete modernization of the railway substructure and superstructure (quality crushed stone ballast, new sleepers) it may be assumed that vibration levels will be reduced along the whole construction section. On the steel bridge across the Dyje, antivibration mats will be used in the newly constructed track superstructure.

Impact on water

There are no risk factors following from the optimized track operation alone, which may directly affect the ground water quality. Ground water contamination might potentially only occur in relation to a train accident, especially if carriages containing dangerous substances were included.

Impact on soil

The standard operation of an optimized track is not a direct source of contamination or another kind of soil degradation. Contamination may potentially only occur in relation to a train accident and resulting potential leakage of technological fluids or transported freight into trackbed surroundings. The risk will be smaller than it is now – putting diesel locomotives out of service and introducing new trains will improve the safety and smoothness of operation.

Impact on NATURA 2000

Within its operation lifespan the proposed construction will not affect the locality of European significance or the bird habitat.

Impact on flora and fauna

There are no significant negative effects on the biota expected within the railway track operation.

Description of measures proposed for the prevention, elimination, minimization and compensation of environmental impacts:

CONSTRUCTION STAGE

- Protection against excessive dust nuisance, noise and vibrations shall be maintained during construction.
- The new bridge construction of Znojmo Viaduct at km 99.297 will be designed with elastic mounting of rails on crushed stone ballast
- Within the next stage of project preparation check acoustic measurements will be carried out in selected construction areas in compliance with the relevant Health authority requirements.
- Within the trial operation acoustic measurements of effects of the new bridge construction will be made and individual noise reduction measures for the surrounding built-up area will be specified based on the results.
- Effects on areas/buildings listed as monuments to be preserved, shall be consulted with the National Monument Institution.
- Within the advanced stages of project preparation investigation of ballast contamination was completed for purposes of assessment in accordance with Annexe 6 to Regulation 383/2001 Coll., issued by the Ministry of the Environment (MŽP), and MP (Methodical Instructions) MŽP ČR – Criteria for soil and ground water contamination.
- The construction contractor shall have a contract concluded for secondary use of wastes or their disposal.
- During the construction work all the rules for water protection against contaminants shall be observed. For all the construction site installations such methods of handling fuels and other substances have to be in place that will eliminate their possible leakage in the surrounding environment.
- Intermediate dumping sites of spoil if any will be maintained in weed-free state and within six weeks following their liquidation will be grassed. These areas or approach

roads to the construction site shall not be established within NP Podyjí, PP Pustý kopec and PP Cínová hora protective zones.

- Securing the track against weed infestation in OP NP Podyjí will be mechanical and greasing of points will only be provided by environmentally friendly greases.
- Within the renovation of bridges sliding or spillage of building materials into watercourse shall be prevented. In case of such an event, its effects will be immediately rectified.
- Generally it applies to all the constructions bringing the track across streams that the principle of maintaining (or possibly restoring) unobstructed passage for small vertebrates must be observed. With small streams, maintaining or creating a migration walkway on either bank will do.
- In cases of proven presence of specially protected species in the meaning of Act 114/1992 Coll. within the interest area, the Investor shall prior to the construction start arrange awarding of an exemption from the protective conditions and possibly rescue transfer of specific animals within the next stage of the project preparation.
- Streamside vegetation will not be affected beyond the extent necessary for the proper completion of the construction, and all trimmings proposed will aim to make riversides function even better as natural migration paths.
- A detailed dendrological research has been undertaken in the interest area of construction, and has specified growth and woody plants to be removed. Removing of woody plants from the railway embankment has to be carried out outside the nesting period (outside periods IV – VII) and will only be done by mechanical means, without the use of herbicides.
- A replacement planting project has been prepared to replace woody plants removed within construction in the scope established by a relevant environmental protection authority. Wooden species proposed for new plantings are suitable in respect of local climatic conditions and their following care is also proposed.
- Streamside vegetation will not be affected beyond the extent necessary for the proper completion of the construction, and all trimmings proposed will aim to make riversides function even better as natural migration paths.

OPERATION STAGE

- Following completion check measurements to verify noise levels and effectiveness of the proposed noise abatement measures have to be taken

Prognostic methods used:

- Additional amount of air pollution is calculated using a mathematical model based on SYMOS '97 methodology, issued in June 1998 by the Czech Hydrometeorology Institute, Prague, named "System of stationary sources modelling". In the early 2003 the methodology was modified and extended within Release 02, in order to meet the conditions specified within Government Decree 350/2002 Coll., which provides for air pollution limits and methods of monitoring, assessing, evaluating and managing of quality of the air.
- Two computing programmes were used within the noise study preparation:

- LimA, where calculations of acoustic pressure levels are made in compliance with requirements of international standards and methods, selected based on recommendation of the European Commission and Directive 49 EU

- HLUK+, Release 6.27., created by the company Jp Soft Praha – J. Polášek. The calculation algorithm follows the instructions included in the publication “Metodické pokyny pro výpočet hladin hluku z dopravy“ (“Methodical instructions on calculating transport generated noise levels“) (prepared by Výzkumný ústav výstavby a architektury Praha / Research Institute of Building Construction and Architecture, published by a town planning establishment in Brno, 1991 – author: RNDr. Miloš Liberko).

- Evaluation of the field survey of contamination of the superstructure and base of ballast.

Inaccuracies in knowledge and uncertainty

A model-based creation of a noise study always entails some drawbacks. These depend on the level of input data reliability, an error in calculations inherent in the computation method etc. Deviations from assessment of individual effects may also arise during preparation of another stage of project documentation due to change of input data.

In case of interpreting information from maps of mainly medium scales, there is always some amount of generalization and some degree of inaccuracy involved in relation to the locality in question.

Also results of chemical analyses of aggregate and soils sampled from the interstation track sections, from under the points and station rails, and results of analyses of soils from under and around the Břeclav traction transformer station allow for a certain amount of inaccuracy, specified as measurement uncertainty (%) in the chemical analysis reports.

OUTLINE OF THE MONITORING AND CONTROL PROGRAMME AND THE POST-PROJECT ANALYSIS PLAN

- During construction, the quality of the base of ballast and part of the substructure to be included in the construction process, will be checked on a permanent basis. Analyses of the base of ballast samples will be undertaken and based on an accredited laboratory reports the way of handling this material will be further specified.
- Within the construction approval application the definition of types and volumes of wastes produced in the construction process will be specified and the way of their disposal documented.
- On starting the electrified track operation the check noise measurements will be performed, particularly in the areas with noise barriers erected.

Used abbreviations

List of abbreviations used in the text

ČD České dráhy/Czech Railways

SŽDC	Railway Infrastructure Administration
DÚR	documentation for planning permission
IPO	individual noise reduction measures – windows replacement
KN	land registry
NRBK	national biocorridor
RBK	regional biocorridor
LBK	local biocorridor
OPD	Railway track protective zone
PEÚ	Pre-electrification adaptations
PHS	Noise barrier
PP	Natural monument
PUPFL	Land designed to fulfil forest functions
PD	Project documentation
PM10	airborne dust <10 µm
POV	Project of construction organization
SŽDC	Railway Infrastructure Administration
SEE	Management of power engineering and electrical engineering
TK	surface of rail
TN	heavy lorries
TZL	solid pollutants
ÚSES	Territorial system of environmental stability
VKP	Significant landscape feature
ŽST	Train station
ZPF	Farm land resources