

ICOMOS INTERNATIONAL COUNCIL ON MONUMENTS AND SITES

**REPORT ON THE SEMMERING RAILWAY (AUSTRIA) MISSION
20 - 23 APRIL, 2010**

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REPORT

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EXECUTIVE SUMMARY AND LIST OF RECOMMENDATIONS

The Federal Ministry of Education, the Arts and Culture of the Republic of Austria asked the World Heritage Centre of UNESCO on 14 September 2009 to study the impact of the new Semmering base tunnel on the “Outstanding Universal Value” of the UNESCO World Heritage Semmering Railway. Toni Häfliger, Arch. Mag. was appointed to carry out this assessment on 1 March 2010 and examined the impact of the project from 20 to 23 April 2010.

The ÖBB Infrastruktur AG is preparing the base tunnel project and will soon be ready to start the process of securing the approval of the relevant state authorities. The new base tunnel has a length of 27 kilometres. It is one of the important European railway infrastructure projects and part of the freight-transit-axis, Danzig – Bologna (Baltic-Adriatic-Corridor). The base tunnel is also an important Austrian railway-infrastructure project connecting the regions north and south of the Alps.¹ The tunnel will be built between 2012 and 2025. Besides the tunnel through the mountains, many buildings and installations such as bridges, energy installations and tunnel portals themselves will have to be built at both ends of the tunnel. In addition the project will impact the landscape at both ends of the tunnel. During the building of the tunnel, roads, ventilation shafts, drainage installations, etc. will have to be provided. All these temporary installations will be removed after the completion of the base tunnel.

The new Semmering-Base-Tunnel project mainly affects the UNESCO World Heritage Semmering Railway at Gloggnitz and Mürzzuschlag, the two ends of the base tunnel.² In principle, the project does not put into question the “Outstanding Universal Value” of the historic railway line. The ÖBB Infrastruktur AG project is of high quality and sensibly planned. Nevertheless, additional measures are necessary in order to minimize the impact on the world heritage site. These recommendations include both measures for the newly built infrastructures and observations about conditions at the world heritage railway line itself.³

1 BACKGROUND TO THE MISSION

Inscription history

The Semmering Railway is one of the most important engineering projects from the pioneer phase of railway building.⁴ It was the first railway line to cross the Alps. It connected Vienna, the capital of the Austro-Hungarian Empire, with Trieste on the Adriatic Sea. The line from Gloggnitz to Mürzzuschlag, 41 Kilometres in length, was built between 1848 and 1854. The line traverses, for the first time, a range in elevation of 460 metres. The line includes numerous monumental civil engineering structures such as bridges and tunnels. The Semmering countryside became an attractive travel destination for the nobility and the wealthy bourgeoisie of Vienna and Budapest. Grand hotels, manor houses and villas, which shape today’s landscape, were built.

In 1995, the Republic of Austria put the Semmering Railway on the tentative list of UNESCO World Heritage Sites. In May 1996, ICOMOS/TICCIH experts reviewed the

¹ See also chapter 3.3

² In future the geographical terms „north“ and „south“ will be used to describe both ends of the tunnels.

³ See also abstract and recommendation chapters 5.2 and 5.4

⁴ Carl Ritter von Ghega (1802 – 1860) was responsible for the planning and construction process

application and proposed inscription on the World Heritage List. The World Heritage Committee nominated the Semmering Railway as a UNESCO World Heritage Site at its 22nd Conference in Kyoto, Japan (30 November – 5 December, 1998).

Criteria and World Heritage values

The Committee inscribed this site on the World Heritage List on the basis of criteria (ii) and (iv):

Criterion (ii): The Semmering Railway represents an outstanding technological solution to a major physical problem in the construction of early railways.

Criterion (iv): With the construction of the Semmering Railway, areas of great natural beauty became more easily accessible and as a result these were developed for residential and recreational use, creating a new form of cultural landscape.

Several delegates supported the inscription even though it reflected the inclusion of new categories of properties on the World Heritage List.

Examination of the State of Conservation by the World Heritage Committee and its Bureau

Since its inscription on the World Heritage List in 1998 – as far as it is known – there have been no audits made on the state of conservation of the site. The application of the Semmering Railway only included, as was requested at the time, a summary description of the surrounding landscape. No detailed inventory of or management plan for the protected features of the railway line and the included landscape existed. Such a plan was handed in to the World Heritage Committee in 2008.⁵

Along with this evaluation of the impact of the base tunnel on the Heritage Site, a rough overview and assessment of the current state of conservation at the site has also been included. As expected, the consultant has been able to pinpoint some modifications, which have been made to the infrastructure since the inscription.

Justification of the mission⁶

On 14 September 2009 the Federal Ministry of Education, the Arts and Culture of the Republic of Austria, represented by Dr. Bruno Maldoner, Ing. Mag., requested the World Heritage Centre of the UNESCO, represented by the director, Francesco Bandarin, to study the impact of the new Semmering base tunnel on the “Outstanding Universal Value” of the UNESCO World Heritage Semmering Railway.⁷ On 1 March 2010, Regina Durighello, director of the World Heritage Programs of ICOMOS International, informed H.E. Ms. Helene Steinhäusl, Ambassador of the Republic of Austria to the UNESCO that Toni Häfliger, Head of the Department of Conservation Issues of the Swiss Federal Railways had been appointed to report on the impact of the project on the World Heritage site. Toni Häfliger did his survey from 20 to 23 April on the Semmering Railway itself followed by a concluding discussion in Vienna.

⁵ See also chapter 3, paragraph „Management“

⁶ See annexes: terms of reference, programme and composition of mission team

⁷ See chapter 3.3 for the national and international situation (with footnote 18)

2 NATIONAL POLICY FOR THE PRESERVATION AND MANAGEMENT OF THE WORLD HERITAGE PROPERTY

Protected area legislation

In 1923, the Republic of Austria declared considerable parts and objects of the Semmering Railway as a listed historic monument. The Semmering Railway, a property of the Republic was automatically a listed historic monument (§ 2, Landmark Protection Law). The Landmark Protection Law was amended in 1978 and 1990 and revised in 1999. Based on the Landmark Protection Law, the Federal Office for the Protection of Historical Monuments published (17 March 1997) that the preservation of the Semmering Railway is of public interest and the railway has to be considered a listed monument (GZ 16.605/1/1997). This decision was the basis for its nomination as a UNESCO World Heritage Site. In addition, regulations by the Federal Provinces of Styria (1977) and Lower Austria (1955 and 1978) exist for the protection of the cultural landscape of the Semmering region.

Institutional framework

The Federal Ministry of Education, the Arts and Culture of the Republic of Austria (BMUKK) is the driving force responsible for the protection of the World Heritage Site. The Office for Protection of Historical Monuments, a department of the Ministry, monitors and provides advice on conservation issues concerning the railway monuments in the core zone. The railway line is owned by the ÖBB-Infrastruktur AG. It is responsible for technical maintenance, repair and conservation.

By order of the Federal Ministry for Transport, Innovation and Technology of the Republic of Austria (BMVIT), the ÖBB-Infrastruktur AG is in charge of the planning and construction of the base tunnel and its access lines. The Ministry is responsible for monitoring the planning, design and realization of the project. It coordinates the relevant processes with the federal and provincial authorities.

The Federal Office for Protection of Historical Monuments is responsible for the assessment of activities affecting the core zone of the World Heritage Site. The branch offices of the Federal Office for Protection of Historical Monuments in Styria and Lower Austria are responsible for monitoring and providing advice to the owners of any other objects other than railway monuments, which are protected or worthy of protection within the buffer zones. The federal provinces of Lower Austria and Styria are responsible for the planning and implementation of landscape preservation and land-use regulation in the Semmering area. The land in the buffer zone is owned by local authorities or is in private ownership. Any procedure for the protection of such areas has to follow the laws of the appropriate federal province. The federal provinces and the ÖBB-Infrastruktur AG have to comply with the federal legislation and the instructions of the Federal Ministries.

Management structure

According to the institutional framework the management structure is as follows: the BMUKK, represented by Dr. Bruno Maldoner, Ing. Mag. supervises the Office for the Protection of Historical Monuments, represented by Dr. Richard Wittasek-Dieckmann. Ing. Mag.; the BMUKK coordinates with other federal ministries, in particular with the BMVIT; the ÖBB-Infrastruktur AG has established a project team for the base tunnel

project; the team is managed by Gerhard Grobiet, Dipl. Ing.; within the ÖBB-Infrastruktur AG, Reinhard Stradner, Ing. Mag. and his team are responsible for the conservation of the World Heritage Railway; Dr. Günter Dinhobl, Staff Research, Development and Systems Engineering ÖBB-Infrastruktur AG is the contact person in railway history issues, for the departments involved of the ÖBB AG, the BMUKK and the Federal Office for the Protection of Historical Monuments.

Response to the recognition of values under international treaties and programmes (World Heritage, Biosphere Reserve designation)

In 1998 the Semmering Railway became a World Heritage Site under criteria (ii) and (iv). According to the agreement between the UNESCO and the Republic of Austria, the Republic was responsible for the preservation of the site, but no special requirements for a conservation management plan or a detailed zoning plan were established. In the meantime, the Office for the Protection of Historical Monuments in the Federal Ministry of Education, the Arts and Culture, and the OeBB-Infrastruktur AG agreed that additional measures had to be taken for preserving the site. In 2008 they began to develop a management plan including a detailed zoning plan assuring the preservation of the site.⁸ In 2009 the management plan was presented to the World Heritage Centre of the UNESCO. In the meantime the BMUKK is developing the management plan more precisely. The provisional management plan was given to the consultant.

3 IDENTIFICATION AND ASSESSMENT OF ISSUES

Management

The detailed zoning plan was approved by the World Heritage Committee in 2009 at the 33rd meeting in Seville, Spain, but the approval of the management plan is still pending. The core zone encompasses the railway facilities of the historical Semmering Railway along with engineering structures and buildings. These include the railway station areas along the line as well as parts of the railway station areas at Gloggnitz and Mürzzuschlag. In addition, various buffer zones were designated such as a local surrounding area, an area of historical landscape for settlement and tourism and supplementary areas for tourism and settlements.⁹

Factors affecting the property

3.1 Introduction

The main purpose of the mission is to evaluate the effect of the new base tunnel on the historical Semmering Railway. The report does not assess the necessity of the new base tunnel for the international and national railway systems. The evaluation will show whether the base tunnel project is compatible with the World Heritage Site or whether the project will actually reduce or even destroy the “Outstanding Universal Value” of the site. The start of the tunnel construction is planned for 2012 with completion in 2025. The twin-bore tunnel will have a length of 27 kilometres. For various reasons (geological, railway and construction engineering) the tunnel will

⁸ Annex 6.4 / management plan map 2 (state of November 2008)

⁹ Annex 6.4 / op. cit.

describe a large radius curve on the south side of the historical line.^{10 11} It is a large, infrastructure project, which will cost several milliards of Euros. The new railway line will contact the historical line at several points.¹² The project can be compared in size and technology to the St Gotthard base tunnel in Switzerland.¹³

The approval process for the project was started in May 2010. The builder responsible for the tunnel handed in the Environmental Impact Assessment (EIA) which, in Austria, includes proof of compliance with federal railway and environmental protection legislation, as well as with the legislation of the provinces Lower-Austria and Styria for the protection of nature, flora and fauna. The report on the influence of the base tunnel line on the World Heritage Site is part of the assessment process.

The mission deals with very complex questions, which include numerous problems of a technical nature and problems concerning the preservation of historical railway monuments. The annex includes a selection of documents, which illustrate important aspects of the complexity of the project. The survey comments on the following aspects:

- Principles of the preservation of historical railway monuments
- Contextualization of the base tunnel project within the European Transport Policy
- Relationship between the new base tunnel line and the historical railway especially at the two railway stations Gloggnitz and Mürzzuschlag, which are the beginning and end of both lines.
- Temporary installations for the building of the base line and their impact on the World Heritage Site.
- Condition of the World Heritage Site.¹⁴

3.2 Principles for the preservation of historical railway monuments

Railways are dynamic systems. They are in a constant development. The infrastructure of railways has to be modernized frequently to meet the requirements of today's transportation needs. Changing customer demands, new security legislation and other commercial exigencies may force adjustments. New facilities have to be built. Historical monuments have to be adapted or even torn down. All elements of railway facilities such as tunnels, bridges, railway lines and buildings are included. Change is inherent to a railway system. Railway infrastructure lies in the middle of an area of conflict between technical innovation, economic considerations and the care of historical structures. A complex relationship exists between the need to conserve historical structures and the ongoing development of the railway system. Especially for World Heritage Sites like the Semmering Railway, high restrictions on its development have to be made. The public interest in preservation has to be weighed against the developmental interests of the project. In the interest of preservation of historic monuments, suitable solutions must be found.

Basic principles have to be established for evaluating and weighing the preservation and development issues. First of all, not everything has to be preserved. The

¹⁰ Annex 6.4 / map 3

¹¹ sufficient length because the height difference between Gloggnitz and Mürzzuschlag (little inclination for high speed)

¹² Annex 6.4 / maps 5, 6, 7, 14, 17

¹³ Length of the St. Gotthard base tunnel: 57 kilometres; two single-track bores; transfer tunnels between the two bores; construction with tunnel-drilling machines; cut-and-cover tunnelling

¹⁴ See also chapter 4

importance of the historical structure has to be evaluated. Important structures need to be preserved and protected. A significant aspect in railway construction is the sequence of structures along the line, a chain of infrastructures that make up a railway. These sequences may include objects of different time periods, which exemplify the history and development. Sometimes it is not possible to preserve the whole or even parts of the historical structures. If it is necessary to develop new buildings and other objects within the historical monument, the planning and building of the new infrastructure should follow the guidelines of high architectural quality, which has always been the tradition in the building of railways. When it is necessary to build new infrastructures, it is important to pay attention to the interconnection between the old and the new. An important discussion, resulting in guidelines for these issues, was carried out at the ICOMOS International conference in 1999 « Railways as world heritage sites ».¹⁵

„No operating railway can be wholly authentic from a strictly historical point of view; items wear out and are replaced, methods of organization and operating are adapted to changing circumstances. However, arguably continuity through change is part of what makes a railway landscape or location: railways are by their very nature evolving socio-technical systems. Indeed, the drive to modernize and become more efficient appears to be an imperative of modern railway management world-wide. The key challenge is to identify just what it is about a railway location that makes it worthy of World Heritage status. A focus on the purely physical aspects of structures or technologies arguably makes it more likely that a site will be deemed 'inauthentic' as modernization proceeds than if equal (or greater) weight is given to the historical continuity of a railway's socio-economic functions. This is not an argument for any weakening of the imperative of good management of those historic features which do remain. Co-operation between railway operators and conservation bodies can make sensitive development possible and ensure that the integrity of sites is maintained, as the example of the British network over the last two decades shows (Burman & Stratton 1997). It is, we suggest, preferable to have a viable and useful railway rather than one which faces an uncertain future.“

3.3 The Semmering base tunnel project as part of the European Transport Policy

Within the European railway transport system, the Semmering is an important part of the Danzig – Bologna freight transport corridor (Baltic-Adriatic-Corridor).¹⁶ The historical Semmering Railway line is going to become a bottleneck. The capacity of the line does not meet the needs of the new corridor. Tight curves only allow a maximum speed of 60 km/h. The operation of the line is very expensive. The energy costs are high because the tight curves cause high friction resistance. Up to three locomotives are required to run freight trains on the steep inclines. The construction of the base tunnel would eliminate the bottleneck. Higher speeds would reduce the transit time of the Semmering by 30 minutes. On the other hand, the base tunnel project will have an impact on the Gloggnitz and Mürzzuschlag railway stations, which serve both the north and south ends of the historical line and those of the base tunnel.¹⁷

After the opening of the base tunnel, the historical line is going to be kept in operation. It will relieve the base line during maintenance work on the tunnel (three times eight hours each week) and for regional rail transport. The base tunnel will

¹⁵ « Railways as world heritage sites » of ICOMOS International 1999 (page 7) - <http://www.icomos.org/studies/railways.htm>

¹⁶ Annex 6.4 / map 4

¹⁷ Annex 6.4 / maps 5, 6

unburden the historical line. The pressure of renewal and change will certainly be diminished. It will be easier to preserve its authenticity and its originality. According to the ÖBB-Infrastruktur AG, 212 trains per day are running on the line at present. After the opening of the base line, no more than 79 trains per day are expected. If the infrastructure of the historical line will have to be changed or simplified, these building projects will have to be monitored carefully in order not to endanger the “Outstanding Universal Value” of the Semmering Railway Line.

The statistics of the Swiss Federal Office of Transport show that the present-day Semmering line does serve international and national freight-transport needs but they also show that there are significant differences between France, Austria and Switzerland. All Transalpine railways lines absorb a significant traffic flow.¹⁸

3.4 Influence of the permanent base tunnel installations on the World Heritage Site

a) Introduction

The project is in the planning stage. Projections exist for architectural and landscape changes on the Semmering area. These plans show the projected appearance of the interventions. The following inputs will help to minimize the undesirable impact on the World Heritage Site and should be integrated into the detailed planning process.

b) Gloggnitz (North)

In the area of Gloggnitz, the south end of the base tunnel, new infrastructures have to be built or the existing ones adapted.¹⁹ They will include: the adjustment of the topography of the tracks; the construction of the tunnel portal and its surrounding terrain with facilities for technical purposes; bridges; power supply facilities; adaptation of the flood-protection features; noise and drainage measures; maintenance facilities and the demolition of an old guard house. The core zone of the World Heritage Site itself will only be marginally affected. These measures will mainly affect the buffer zone close to Gloggnitz.²⁰

The adaptation of the existing track topology at the railway station will include the building of additional switches and track changes. These measures will provide for the connection of the existing line to the new base line tunnel entrance. A part of the adaptations have to be made within the core zone of the World Heritage Site. Since they must comply with today’s standards of railway technology, they will not affect the “Outstanding Universal Value” of the historical line.

One-family houses, which stand in the area of the future tunnel portal, have been bought by the ÖBB and will be removed. The free space gained will allow for more freedom in the integration of the new base tunnel facilities into the area.

Architectural and landscape changes are planned for the tunnel portal zone. A portion of the slope must be removed to make room for the construction and future operation

¹⁸ 1984-1989: <http://www.bav.admin.ch/themen/verkehrspolitik/00501/01409/index.html?lang=de>
 1990-1999: <http://www.bav.admin.ch/themen/verkehrspolitik/00501/01412/index.html?lang=de>
 2000-2005: <http://www.bav.admin.ch/themen/verkehrspolitik/00501/01414/index.html?lang=de>
 2008: <http://www.bav.admin.ch/verlagerung/01529/index.html?lang=de>

¹⁹ Annex 6.4 / map 7

²⁰ Annex 6.4 / maps 5, 6, 8

of the tunnel. The tunnel portal consists of the entrance of the tunnel itself and horizontally placed concrete lamellas around the portal zone. The two semicircular tunnel portals will appear as clear-cut concrete frames. The planned lamellas will stabilize the slope and add a design element. The lamellas will look like contour lines and accentuate the shape of the landscape. Maintenance rooms and an information centre are planned for behind the concrete lamella zone. The concrete lining makes sense for stabilizing the slope, but it is too dominant in appearance. Even future patina of the concrete and growing vegetation will not make it disappear enough.²¹

The access line between Gloggnitz and the new tunnel crosses the river Schwarza on two parallel, 70 metre steel bridges - one for each track. Because of the limited space above the water, a top chord structure is required. The bridge is quite close to the portal area. The proposed, curved, top chord conflicts with the basically horizontal flow of the line. Visual elements of varying form 'collide' in a confined space. A horizontal top flange design would provide a smooth appearance and emphasize the horizontal flow of the line.²²

A similar question concerns the proposed road bridge over the Schwarza River (Huyckbrücke) at the east of the tunnel portal zone. The bridge will provide access to the Huyck Company industrial area. The existing flat concrete bridge will have to be replaced. The proposed bridge design should be more restrained.

Significant new measures are planned for the electrical supply to the tunnel. They will be mostly high voltage installations (110 kV).²³ The 1950's Schlöglmühl substation, which lies in the core area, as well as the high-voltage power line connecting the substation with the main high-voltage power line, will be torn down. The main high-voltage power line which runs from northeast to southwest through the Semmering area will be kept unchanged. The new substation is planned for the triangle between the old and the new railway line to the west of the tunnel portal. It will be hidden and integrated into the landscape by planting trees and hedges. Attention must be paid to the quality of the architecture of the substation building and its integration into the surrounding landscape. The connecting high-voltage power line to the new substation will have to cross the wooded hill in the river bend. The forest clearing for the new high-voltage power line will be done in such a way that gaps along the horizon do not show (creation of scenic backgrounds). It should be explored if this principle could be further optimized with a curved line or trees and hedges. Alternative routes for the lines or underground cabling were considered. However, these are not possible for various reasons (statutory limits, proximity to residential areas with exposure to electromagnetic radiation). Under the conditions mentioned, it seems that it will be feasible to build the new substation and the high-voltage power line without compromising the World Heritage Site.

Near the tunnel portal zone two-metre-high noise protection walls are planned. However, these walls have not been integrated into the design of the portal zone architecture.²⁴ Their design should be part of the portal zone architecture (integration in the embankment zones, etc.). The entire line should be integrated into the landscape using plantation measures.

²¹ Annex 6.4, maps 9, 10, 12

²² Annex 6.4, map 11 (alternative design by ÖBB-Infrastruktur AG)

²³ Annex 6.4, map 8

²⁴ Annex 6.4, map 10

The open space between the existing industrial buildings near the Gloggnitz train station and the tunnel portal zone is reserved for industrial use.²⁵ The appropriate zoning is already in place. The zone lies within the immediate area of the World Heritage Site buffer zone. Covering this area with buildings will have a strong impact on the appearance of the landscape. The future industrial buildings will define the view and the sight lines toward the Gloggnitz castle situated prominently on the hill. The industrial development is adjacent to and visually connects to the planned railway substation. The landscape design measures for both areas need to be interrelated. Attention should also be paid to the architectural quality of the industrial buildings as well as to the landscape design (trees or hedges) of both areas.

A road network is required for access to the railway facilities.²⁶ For the most part, the existing routes will be used, but in some cases they will be upgraded or extended. Some roads will have to be built for the tunnel construction, but these will later be removed. There will be no direct or compromising impact on the core zone of the World Heritage Site. Through the use of landscaping (trees or hedges), the best possible integration of the road network and conservation of the countryside will be attained.

In the area of the Schwarza River east of Gloggnitz, water-engineering measures are planned, which will contribute to the stabilization of the water flow and provide flood protection.²⁷ The current flood zones will be modified in order to include the new facilities. Near Mühlhof, a largely underground retention basin is planned to accommodate floodwaters. The core zone of the listed site is not directly affected. All of these construction measures apply to the local surrounding area and the measures are acceptable.

A currently unused guardhouse is located in the area of the access line to the tunnel and the new substation and will be torn down. It is one of 49 similar houses along the historical railway line. This loss is acceptable given the large number of remaining guardhouses along the way. If the house were left within the future railway and industrial zone, access to the house would no longer be possible and it would appear out of place. Living or working in such an environment would be problematic due to the electromagnetic radiation. Demolition and stone material from the house might be integrated into landscaping measures around the substation.

c) Mürzzuschlag (South)

Various measures are planned in the Mürzzuschlag area.²⁸ There will be modifications in the track topology in the area of the railway station and a new access line to the tunnel. There will be adjustments to the terrain: a lowered tunnel portal; new facilities for power supply, maintenance and running of the line; removal of some facilities from early tunnel building phases. The core zone of the World Heritage Site ends east of the Mürzzuschlag railway station. The building of the base tunnel facilities around Mürzzuschlag will only affect the local surrounding area.²⁹ The SÜDBAHN museum (the former workshops and the roundhouse with a turntable) is a part of the core zone north of the railway station on the other side of the tracks. This area will not be affected by the project.

²⁵ Annex 6.4 / map 9

²⁶ Annex 6.4, maps 8 and 12

²⁷ Annex 6.4, map 13

²⁸ Annex 6.4, map 17

²⁹ Annex 6.4, map 18

The adaptation of the existing track topology will include the building of additional switches and track changes. These measures will allow for the connection of the existing line to the new tunnel entrance. The adaptations will be in the local area adjacent to the World Heritage Site. Because they comply with today's standards of railway technology, they do not affect the authenticity of the site.

The new access route to the tunnel portals will run through a long, deep, largely flat, open cut and will run in a straight line from the Mürzzuschlag station directly into the mountain.³⁰ In contrast, the historical mountain route gains height in a gentle curve along the east flank of the new portal area. Landscaping measures are planned parallel to the portal zone. These will consist of horizontal concrete lamellas stabilizing the affected slope on the one hand and emphasizing the modulation of the topography (contour lines) on the other. This is the same landscaping concept used at the portal area in Gloggnitz. The horizontal supporting structures provide both slope and portal area safety. The tunnel portal incision and the slope lamellas should both be much less dominant in the landscape. Even the future patina of the concrete construction and the growing vegetation will not make it disappear sufficiently.

In a previous tunnel project, an exploratory tunnel was driven northwards from Mürzzuschlag. The tunnel is used today for diverting mountain water. As a positive side effect, the tunnel will be closed down and filled up.

A road network will be necessary for the development of the railway facilities.³¹ For the most part existing routes will be used and in some cases they will be upgraded or extended. Roads, which will no longer be used for the maintenance of the new line, will be removed after the completion of the tunnel. There will be no direct and compromising impact on the core zone of the World Heritage Site. Landscaping measures (trees or hedges) will provide the best possible integration of the road network and conservation of the countryside will be attained.

d) Tunnel between Gloggnitz and Mürzzuschlag

Almost without exception, the permanent tunnel installations are outside of the core zone or the buffer zones of the World Heritage Site.³² These include: ventilation shafts; water drainage systems; material disposal sites; galleries to the intermediate points for the tunnel construction and so on. They do not affect the quality of the World Heritage Site.

3.5 Temporary installations at the construction sites and their impact on the World Heritage Site.

For the construction of the tunnel (2012 to 2025) a number of temporary facilities will be necessary.³³ These will include roads, landfills, construction sites, drainage measures and so on. A small section of the tunnel at Mürzzuschlag will be built in the barrow pit system and later covered. After completing the new base tunnel line all of these infrastructure facilities will be removed and the landscape revegetated. During

³⁰ Annex 6.4, maps 19 and 20 (top)

³¹ Annex 6.4, maps 8 and 12

³² Annex 6.4, maps 5 and 6

³³ Annex 6.4, maps 14, 15, 16

construction there will be a temporary loss of quality in the buffer zones. The planned and shown temporary measures will not affect the "Outstanding Universal Value" of the listed site.

3.6 Proceedings

Tunnelling is extremely complex. It includes a large number of procedures and facilities. As analyzed, some of the planned permanent architectural and engineering systems appear too dominant. If designed more simply and more modestly, the impact on the historical line could be minimized and the World Heritage Status would not be called into question. In the following stages of the detailed planning, a team of international specialists in all the types of design, architecture, engineering, technology and landscaping, the conservation of historical (technical) monuments is absolutely necessary. They can provide the technical support to assure design quality and to minimize the impact on the Heritage Site.

This report does not comment on the environmental concerns regarding the base tunnel. In order to encompass all aspects of the planning of the base tunnel, opposition groups were part of a hearing from 20 to 23 April 2010. They had the opportunity to present their concerns regarding drainage or alleged drying out of the landscape and the risk of closing down the historical railway line.

4 ASSESSMENT OF THE STATE OF CONSERVATION OF THE SITE

Review whether the values, on the basis of which the property was entered on to the World Heritage List, are being maintained

The goal of this mission was to do a survey of the impact the new base tunnel project would have on the "Outstanding Universal Value" of the historic Semmering Railway. A detailed survey of the condition of the railway line itself is therefore not the subject matter of the mission. As far as it is known, no audit of the state of preservation of the site has been made by ICOMOS International or the World Heritage Centre since the inscription of the site.

The following observations were made during the mission:

- a) In November 2008 a management plan was handed in to the World Heritage Centre. No decisions have as yet been made. Approval is pending with the exception of the definition of the various zones. It should be examined whether the management plan includes all aspects concerning the preservation of the World Heritage Site.³⁴
- b) There is a high negative impact on road and settlement areas in the southern section of the core zone of the Heritage Site between Semmering and Mürzzuschlag. Whether the land-use planning measures of the federal provinces are sufficient to maintain and secure the values of the World Heritage Site has to be examined.
- c) A Heritage Site inventory is pending. It lists the existing historical objects, their state of conservation and their historical character. This inventory is a systematic base and can be used to define specific conservation goals and protection measures.

³⁴ See also chapter 3; zone planning see annex 6.4, map 2

- d) There is a good cooperation between the ÖBB-Infrastruktur AG, the owner of the line, and the Federal Office for the Conservation of Monuments monitoring the preservation measures. It is not clear whether this cooperation is systematic and includes a clear basis for cooperation. Some past interventions seem to have used a rather unsystematic approach. So far, these development measures on the line haven't done much or any harm to the "Outstanding Universal Value" of the historical line.³⁵

5 CONCLUSIONS AND RECOMMENDATIONS

5.1) Introduction

The new Semmering Base Tunnel project is one of the major European infrastructure projects in the railway sector (part of the Baltic-Adriatic corridor). The scope of the project is very complex and multidimensional. The railway line will serve both international and national transportation needs. The consultant is aware of the political dimensions of a project of this magnitude. Among the several technical and political aspects, the national heritage or landscape protection consideration is only one issue.

This report only has the function of judging whether the new project will affect (and if so, to what extent) or even destroys, the "Outstanding Universal Value" of the historic railway line across the Semmering. In regards to environmental policy, national instruments and procedures exist. If the authorities of the Republic of Austria decide to approve the tunnel project, it must be clear that the substance of the World Heritage Site must be preserved or even improved by all appropriate means. It will be a challenging task for the Republic of Austria.

5.2) Appraisal

If appropriate measures are taken, the new project will not endanger the historical core of the World Heritage Site.

The base tunnel project has been prepared with care and diligence. The measures affecting the World Heritage Site will have an impact but these are concentrated at the connection points in the areas of Gloggnitz and Mürzzuschlag. At the worst, the core zone will only be affected marginally, but there will be a considerable impact on the buffer zones. The building of the new line has to limit the impact on the buffer zones and to leave the core zone as unaffected as possible. The analysis of the Management Plan, presented at the World Heritage Centre in Paris, is not part of this report. The comments on the state of the Historical Line are based on the observations made between 20 and 23 April 2010.

In addition to the permanent installations, the transient ones associated with construction will only have a temporary affect on the buffer zone. Although temporary, these interventions will need landscape design monitoring for the building and

³⁵ Example: The guidelines for handling historical engineering structures, developed by the Office of Conservation Issues of the Swiss Federal Railways could serve as an example.

operating phases, as well as for the final natural restoration of the areas. This also includes monitoring the installations outside of the buffer zones.

The goal should be that the historic railway line and the future tunnel base line are self-evident "brothers" of complementary contributions by different generations. Neither of the two systems is more important than the other; both leave the other its allotted space and each fulfils its assigned task.

5.3) New base tunnel line

Recommendations for the construction of the visible parts of the new base tunnel:

- a) The architectural, engineering and landscape-design measures of the tunnel project should be integrated into the natural and cultural landscape with restraint. The objective is a "confident humility" of a high technical and artistic quality. This especially concerns the two tunnel portal areas in Gloggnitz and Mürzzuschlag. As an example, the design of the slopes around the tunnel entrances with their facilities, the hydraulic measures and the bridge area as well as the facilities for the proposed substation in Gloggnitz (including the high-voltage power line to Schlöglmühl) could be mentioned. In particular, the planned steel bridges in Gloggnitz should be built with a horizontal top chord.
- b) A qualified, preferably interdisciplinary, design advisory board should be implemented. This international board would advise and assist the authorities and the project management during the planning and realization process in order to safeguard the architectural and landscape quality. Because of the size and importance of the project, it might be necessary to create different sub-committees of the board. The design advisory board should have adequate institutional competence and authority.
- c) A catalogue of all the tasks to be dealt with will be created for the board. The catalogue will refer to the permanent and temporary installations and list the architectural, landscaping and engineering measures including explanations and references in accordance with the preceding chapters, 3) and 5.1).

5.4) Historical line

The following recommendations for the preservation of the historical railway line are made as a result of the observations:

- d) An inventory of all historic elements should be created as soon as possible. The inventory should follow the criteria for the preservation of railway monuments.
- e) Railway historic preservation procedures and standards for facilities such as bridges, tunnels, supporting walls should be developed.
- f) An appropriate body needs to verify whether the submitted management plan covers all necessary measures for the protection of the route, especially within the regional space planning. Any deficiencies should be filled within a reasonable time.

5.5) Concluding remark

The consultant hopes to have contributed to an adequate handling of the World Heritage Site and to have given an impetus for the preservation of the site. The complexity of the new tunnel project and its contact points will require a continual dialogue during the process of planning and implementation. The author is prepared – if it is so desired - to present the report and the recommendations to the appropriate bodies.

20th June 2010

6 ANNEXES

6.1 Terms of reference

A request for the mission by ICOMOS International (Mrs Regina Durighello, Director World Heritage Programs) was made on 16 February, 2010:

“The State Party of Austria to the UNESCO World Heritage Convention requested the World Heritage Centre that an advisory mission be carried out for the Semmering Railway in order to review the project of a railway tunnel underneath the Semmering ...

With reference to the preparation of monitoring mission reports the World Heritage Committee:

Requests that reports of missions to review the state of conservation of World Heritage properties include, as appropriate:

(a) an indication of threats or significant improvement in the conservation of the property since the last report to the World Heritage Committee,

(b) any follow-up to previous decisions of the World Heritage Committee on the state of conservation of the property,

(c) information on any threat or damage to or loss of outstanding universal value, integrity and/or authenticity for which the property was inscribed on the World Heritage List.”

6.2 Itinerary and programmes

21 April, 2010 morning:

Presentations on:

- The base tunnel project and its points of contact to the World Heritage Site (Mr. Gerhard Gobiet, Ing. Mag., Project Management / Project Manager of the “Semmering and Koralmbahn 2”, ÖBB-Infrastruktur AG)
- The progress of work on the development of a management plan and the definition of the different zones of the UNESCO World Heritage Semmering Railway (Dr. Günter Dinthobl, Staff Research, Development and Systems Engineering, ÖBB-Infrastruktur AG)
- Presentation of the framework and organization of the environmental impact assessment (Hans Kordina and Bettina Riedmann, engineering consultants for spatial and regional planning)
- The responsibilities of the Austrian government (Dr. Bruno Maldoner, Ing. Mag., Representative of the Federal Ministry of Education Arts and Culture BMUKK).

21 April, 2010 afternoon:

- Visit with experts to the locations to be affected by the project and to the historical line

21 April, 2010 evening:

- Dinner with the people involved in the base tunnel project and the preservation and maintenance of the historical line of the ÖBB-Infrastruktur AG; the representatives of the Federal Ministry BMUKK; mayors from the region; representatives of the regional development offices; representatives of the SÜDBAHN Museum in Mürzzuschlag and others.

22 April, 2010 morning:

Presentation on:

- Historical development of the Südbahn and the Semmering base tunnel project (Dr. Hans Wehr, Project Management / Business Unit Manager, ÖBB-Infrastruktur AG);
- Grassroots objections to the tunnel project (Christian Schuhböck, Alliance for Nature / Horst Reingruber, Citizens Initiative Semmering / Schloglstrasse);
- Current Projects and potential of the Semmering Railway (Mayor Horst Schröttner, village of Semmering; Ogris Kerstin, Head of the Südbahnmuseum Mürzzuschlag; Representatives of the regional management: Mr. Jochen Mag. Werderitsch of Leoben, Styria, and Andrew Weiss, Katzelsdorf, Lower Austria.

22 April, 2010 afternoon:

Presentation on:

- The current operations on the mountain railway line; necessary maintenance work and the future operation of the historical railway line after the opening of the base tunnel (Reinhard Stradner, Track and Station Management, ÖBB-Infrastruktur AG);
- Architectural design measures for the new base tunnel (Sandra Burger and Günter Klein, Engineering Services / Architecture and Structural Engineering, ÖBB-Infrastruktur AG)

23 April, 2010 (10:00 – 12:30):

Review of the hearings and first impressions:

- Mr. Andreas Matthä, Ing. Mag., (Chairman of the Board of Management / Assets Department, ÖBB-Infrastruktur AG) and Dr. Georg-Michael Vavrosky (Member of the Board of Management / Project Management Department, ÖBB-Infrastruktur AG).

The recapitulation of the programme only encompasses the significant events and people. The presentations took place in the meeting room of the project organization, ÖBB Infrastructure AG in Semmering on 21 and 22 April 2010. The review and the discussions took place in Vienna at the headquarters of the ÖBB-Infrastruktur AG on 23 April, 2010.

6.3 Composition of mission team

Toni Haefliger, Arch. Mag. who was assigned to the mission, has been head of the Office for Conservation Issues of the Swiss Federal Railways (SBB) since 2001. After his retirement in 2010 he will continue to remain active as a private consultant. The Office for Conservation Issues was established at the request of the Swiss Federal Office of Culture (BAK), the Federal Commission for Conservation (EKD) and several cantons. The office provides advice to the people responsible for developing new railway projects within the SBB. The goal is to integrate conservation issues into the planning process phase in order to prevent legal objection, which would delay the

projects. The consulting includes all infrastructure facilities such as buildings, workshops, bridges, retaining structures, tunnels, art objects, integration of noise barriers and antennas. To systematize and to publicize the work, the office makes inventories, documentations and publications (for example a publication series on the history of railway architecture and technology in cooperation with the Swiss Society for Art History, GSK).

The consultant is a trained architect and spatial planner. Among other things, he was responsible for spatial planning in the Swiss canton of Nidwalden from 1975 - 1988. He has been working as an executive for the SBB since 1988. Between 1991 and 2003 he was deputy to the head architect of the SBB. He is a member of BSA Swiss Federation of Architects, SIA Swiss society of engineers and architects, FSU Swiss federation of urbanists, ICOMOS Switzerland.

He is a member of the monitoring committee for the preservation of the infrastructure in accordance with the Management Plan of the World Heritage Railway Site: Albula-Bernina.

He taught as a part-time lecturer at the Lucerne University of Applied Science and Arts from 1976 – 2000, at the University of Engineering and Architecture in Lucerne from 2000 to 2005 and was a visiting lecturer at the University of Applied Sciences in Biberach (Riss), Germany in the summer of 2009. He is a guest lecturer at the Swiss Federal Institute of Technology in Zurich ETHZ (Institute for Research and Preservation, Professor Dr. Uta Hassler; Institute of History and Theory of Architecture, Prof. Dr. Andreas Tönnemann). He has given numerous lectures in Switzerland and abroad. As a curator of the architecture gallery in Lucerne (1984 - 2005) he organized numerous exhibitions and symposia with international works and people.

6.4 Maps (see special document)

2

World Heritage Semmering Railway – Core and buffer zones

3

Overview tunnel route and historical line

4

Actual line of the Baltic-Adriatic Corridor (left) / Planned line of the Baltic-Adriatic Corridor

5

Connecting points base tunnel SEMMERING new and historical Semmering railway line

6

Overview base tunnel SEMMERING new and historical Semmering railway line

7

Tunnel line sector “Gloggnitz” – detail view of the planned measures

8

Situation at Mürzzuschlag - measures

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Situation at Gloggnitz – visualization overview
- 10
Substation at Gloggnitz –view from Silbersberg
- 11
Visualization portal zone Gloggnitz – alternative design proposition
- 12
Landscape design portal zone Gloggnitz
- 13
Portal zone Gloggnitz – connection point/ Retention basin Mühlhof
- 14
Situation tunnel route „middle section“- detail overview of the planned measures
- 15
Construction road Steinhaus and S6 HAS Dürrgraben / Intermediate point Fröschnitz
/ Intermediate point Gostritz
- 16
Intermediate point Grautschenhof, BL Sommerau
- 17
Situation tunnel route „section Mürzzuschlag“ - detailed overview of the planned
measures
- 18
Situation portal zone Mürzzuschlag – measures planned
- 19
Visualisation portal zone Mürzzuschlag
- 20
Landscape design portal zone Mürzzuschlag

6.5 Photographs

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Near Peyerbach – view in the direction of Gloggnitz
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