

EXECUTIVE SUMMARY

Background

This is the draft EIA report for upgrading of the Belgrade – Novi Sad motorway. The report builds on a number of reports prepared locally in Serbia, notably the Preliminary Environmental Impact Assessment (EIA), the Feasibility Study for the Second Carriageway of the E 75 and the Spatial Plan for the Belgrade - Subotica Corridor.

The road under consideration runs from Batajnica, about 5 km north-west of Belgrade, to the north of Novi Sad, a distance of 65 km. There is a major bridge which crosses the Danube River at Beska, about half way between Belgrade and Novi Sad. It is a single structure with one carriageway. When the current scheme was conceived, the road was a single carriageway. Since then, much of the second carriageway has been completed to formation level, funded by the Serbian Government.

The upgrading scheme for which this EIA has been prepared comprises:

- **Construction of new second carriageway.** Provision of intersections, equipment and roadside facilities for the new carriageway from Belgrade to Beska Bridge, plus the full carriageway works from Beska Bridge to Novi Sad (27km), will be completed under EIB financing.
- **Construction of a second bridge over the Danube at Beska.** This will be financed by EBRD.
- **Rehabilitation of the existing carriageway.** The existing carriageway (excluding the bridge) will be resurfaced and repaired as necessary under an EBRD financed contract.
- **Rehabilitation of the existing Beska Bridge.** The last phase will be repair and rehabilitation of the old Beska Bridge with EIB finance.

Preliminary design of the whole scheme has been undertaken and this provided the basis for the Preliminary EIA. Detailed design has been undertaken for most of the main carriageway works, but designs for the remaining carriageway works, intersections, the bridge and associated facilities have yet to be completed. Local public consultation has proceeded on the Spatial Plan but not on the scheme itself. The intention is to commission a feasibility study for the bridge, which will provide the basis for obtaining the construction permit and tender designs.

Technical aspects of the scheme

Traffic levels are now very high for a single carriageway road. This, coupled with the potential confusion and hazard of 3 traffic lanes, has led to a high level of accidents. In addition to this, the road surface itself is in poor condition and in urgent need of repair. The bridge has suffered a number of problems since it was first constructed, including evidence of settling, and a variety of repairs have been undertaken over the last 20 years.

These are the issues to be addressed by the scheme. A dual carriageway will be constructed throughout, with high levels of safety and convenience by incorporating latest western technology and experience, together with off-road facilities such as fuel stations and rest areas. This will apply to both the new second carriageway and also rehabilitation of the existing carriageway.

The southern end of the scheme will be within the proposed Belgrade Bypass, which will intersect the scheme at Batajnica. The 5 km section of existing carriageway within the Bypass alignment will be rehabilitated (as part of the scheme), to serve until the Bypass is constructed but will not be dualled.

The 4 km of motorway from the centre of Novi Sad to the northern end of the scheme is the only part of the main carriageway to be constructed on a new alignment. This is for two reasons:

- (i) The horizontal alignment of the existing road is not up to motorway standards.
- (ii) The new alignment will be more suited to the needs of Novi Sad.

The new alignment will comprise a main dual carriageway with service roads alongside, on which the toll booths will be located.

The new bridge will be built on an alignment 20 metres downstream from the existing bridge. The bridge is to be constructed on deeper piles than the existing, also providing some structural support to the existing bridge. The only outstanding issue is whether the main bridge spans are to be entirely concrete or a steel/concrete composite. The bridge will have two lanes plus a hard shoulder, mirroring the existing bridge.

The scheme will include a closed toll system with toll plazas at all entries to the new motorway. This involves design of a new toll plaza and redesign of all access points to the motorway to incorporate toll plazas.

The proposed programme of work is scheduled to be spread over the period 2003 to 2007. The first lots where construction is to be started are the new second carriageway and the bridge approaches, in July 2004. Construction of the second bridge at Beska is scheduled to commence in 2005 and to be completed in 2007. Rehabilitation of the existing Beska Bridge will follow immediately after the opening of the new bridge.

Recent traffic growth on the motorway has generally been strong. Daily traffic in 2002 averaged 11,000 – 16,000 vehicles. The proportion of heavy vehicles is around 16%, while the percentage of foreign vehicles is some 15%. Traffic growth is forecast at 4-7% per year, reflecting the key role of this route. Without the upgrading, average speeds on the road are expected to decline to around 50km/h; with the scheme this will increase to nearer 90 km/h.

The economic justification is based on savings in travel time, vehicle operating costs and accidents. There could also be savings in maintenance costs, but these have not been quantified. An average of

more than 200 accidents per year are forecast to be saved, of which 11 would be fatal.

The existing environment

Temperatures in the road corridor range over 50 degrees centigrade, with a yearly average of about 12 degrees centigrade. In winter, temperatures can drop well below 0 degrees centigrade and snow can fall during 6 months of the year. Summer temperatures regularly exceed 32 degrees centigrade. Average monthly rainfall is 60mm.

The scheme passes through a generally fairly flat terrain, with only one slightly hilly section on the south bank of the Danube River. The underlying geology of the area determines the engineering and environmental characteristics of the terrain. These comprise the alluvial sediments of the Danube Basin and loess materials.

The road corridor is not considered to be in an area of major seismic activity. The terrain is generally stable except for the area on the south (right) bank of the Danube River, which is unstable and is sliding towards the river. This has implications for the construction of the new bridge and protection of the existing bridge. The Danube is the only major river crossing but the motorway also crosses a number of minor rivers and watercourses, all of which eventually flow either directly or indirectly into the Danube.

The motorway passes through largely uninteresting landscape of open farmland, with few roadside trees or other distinguishing features. The road is normally raised above the surrounding landscape on a low embankment and, from this, settlements can be seen, usually at some distance, with church towers the only clearly distinguishable features.

The Beska Bridge has a dramatic and attractive setting, crossing the water at a slight bend in the river, so that views from the bridge are good. Views of the bridge from the riverbanks are also impressive, the bridge's elegant structure providing a very attractive addition to the landscape.

The motorway passes through two distinct ecological zones. Most of the route is in an agricultural zone, which is intensively used for arable farming. Human activities dominate and leave little room for any habitats of ecological interest or importance. However, on the north bank of the Danube the road passes through the Kovilj- Petrovaradin Marsh Special Nature Reserve. This is a low lying area of swampy and boggy land covered in forest.

There is no data available on the ambient air quality in the road corridor. Since few people live close to the existing road, the impact of possible air pollution from road traffic has not been considered of concern to human health. There is no available baseline data for existing noise levels but again these are not considered to be of concern.

The immediate motorway corridor is protected from uncontrolled development by a Special Development Control Zone. This control appears to be enforced, since there has been very few new developments near the road. Most of the land required to construct the

scheme has been safeguarded for many years and does not include any legally erected structures. However, additional land acquisition will be required just north of Novi Sad and for the new road junctions and toll stations. All land to be acquired is currently still in agricultural use and that for the new alignment near Novi Sad has been safeguarded by Novi Sad city.

There have been a large number of archaeological finds in the wider road corridor over recent years and more may remain to be discovered. The only known archaeological site which could be affected by the scheme is a prehistoric site on the south bank of the Danube at Beska, which is in the direct path of the new bridge approach road. This site is being investigated by specialist authorities.

Significant environmental impacts

From the information currently available, the only significant environmental impact of the proposed scheme that can be identified is the positive effect of accident reduction on the community. All other impacts would appear to be minor and/or readily treatable. Nevertheless, the EIA provides a record of the issues examined and the reason why these impacts are not considered significant.

The main area of **ecological interest** is the Kovilj- Petrovaradin Marsh Special Nature Reserve. Otherwise there are no areas of significant ecological importance. Works to be constructed in the nature reserve comprise the road embankment and bridge viaduct. Much of the construction work could be sited away from the marsh but some limited additional areas for temporary construction plant and equipment may be required. Since the road will be on viaduct for about 1500 metres, wildlife will still be able to pass underneath the road between the river bank and the start of the road embankment.

It is recommended that a detailed ecological study is undertaken of the construction zone around the proposed new bridge, approach viaduct and embankment once the design and construction method of the new bridge are known.

There is only one site of known **archaeological importance** and archaeological investigations are due to be completed there before the new bridge is constructed. The investigation and recording of finds will mitigate the adverse effect of the destruction of the site, which is not sufficiently important to justify any more radical mitigation measures.

In areas where there will be new land acquisition and construction works, archaeologists will need to conduct surveys to determine if there are any other remains of interest. Finds of great importance might necessitate amending the design of the road.

The principal issues during construction works are **piling and vibration** operations in connection with the new bridge. The type of noise associated with piling works depends on the method of piling used. Any negative impacts might be mitigated by scheduling the piling works for the winter months.

The majority of the **land required** for completion of the scheme was acquired approximately 30 years ago. The additional land required is understood to be either unused or in agricultural use. Parts of the existing road layout will be redundant and, if appropriate, the land could be returned to farm use or planted as woodland.

Some additional borrow **materials** may need to be obtained for the remaining sections of road and the new interchanges but this will be limited. Materials will most likely be delivered by road, although it may be possible to deliver some materials, for example rock and stone, by barge. Neither the supply nor transport of any of these materials is expected to have significant environmental effects. Wherever possible, materials should be recycled so as to conserve natural resources. Measures for the control and handling of waste, especially contaminated materials, need to be specified in the EMP.

The **visual impact** of the motorway and new bridge is assessed from two perspectives, from the surrounding countryside, and from the road and bridge. It also includes current landscape designs for the road. Completion of the new carriageways will have no discernible visual impact when viewed from the surrounding area, the road profile already having been completed to at least base course level along the length of the road. At the new road junctions and toll plazas, the new construction will rise above the surrounding landscape. Appropriate landscape designs would help reduce the visual impact.

A scheme for providing landscape planting throughout the road length has been prepared as part of the highway design. The landscape design does not currently include proposals for the whole of the road scheme, for example around all facilities, and at all interchanges. Further landscape design work is therefore required. It would be beneficial to redesign the whole landscape scheme in accordance with current international thinking and practice.

From the travellers' point of view, the new bridge will restrict views on the side of the new bridge and will thus represent a minor adverse impact. From the river bank, it is arguable whether the second bridge will significantly alter the overall view of the landscape.

Consideration of **air pollution** revealed that limit values of annual concentrations are exceeded on most sections of the road at the edge of the carriageway. However, beyond 70metres from the road, all concentrations are forecast to be below limit values. Since there are no settlements close to the motorway and it is located in a corridor within which residential development is restricted, the scheme is not expected to be a danger to health.

Noise impacts have been predicted for each section of the new road. Regulations specify that if noise from a new road exceeds the above prescribed limit levels, mitigation measures would be introduced. Forecasts for 2020 show that 25 metres away from the centre line of the motorway, both day and night time noise limits would be exceeded. However, there are no residential areas currently this close to the road centreline, so there is not expected to be a problem. It is suggested that

noise reduction measures for roadside facilities are incorporated in detailed design.

Water resources can be affected by a wide range of potential pollutants arising from road traffic. Building interceptor traps areas close to the stream can reduce pollution of the small streams. At the Danube there is a more serious potential problem because of the larger run off in the catchment area but this can also be significantly reduced by constructing a system of interceptor drains. The construction of interceptor drains will also reduce the impact of any accidental spills.

Proposed mitigation measures

Once the design and construction method of the new Beska Bridge and approach viaducts and embankments is fixed, it is proposed that an **ecological study** is undertaken of the construction zone within the nature reserve. This study will be required to identify any necessary mitigation measures.

In areas where there will be new land acquisition and construction works, **archaeological (reconnaissance) surveys** should be commissioned to determine if there are any other remains of interest. The surveys will be required to make recommendations as to any further archaeological investigations and mitigation measures, including changes to scheme design where and if appropriate.

The successful contractor for the new Beska Bridge should be required to prepare a **noise minimisation plan**. This should include predictions of noise from the construction site and measures to reduce noise to a minimum. The design of roadside facilities should incorporate **noise reduction measures**.

A **new landscape plan** for the whole scheme should be prepared in accordance with international best practice. The new plan should be commissioned as soon as the final decisions have been made on all land to be acquired and junction arrangements are completed and agreed.

Interceptor traps must be constructed at the entrance of drainage channels to all streams and rivers, including at the Danube River at Beska. Interceptor drains must be regularly cleaned and maintained so as to ensure that they are always effective. The spreading of winter salt should be carefully managed so as to reduce its use to an absolute minimum consistent with road safety.

The road contractor(s) will be required to prepare a **waste disposal plan** so as to cater for the safe control and handling of waste, especially contaminated materials. This will also show how reusable materials will be recycled.

Outstanding activities

In addition to the **additional studies and designs** specified above, the following approach to **public consultation** has been agreed with the Roads Directorate:

- The EIA Report will be put on display at two locations open to the general public, one in Belgrade and one in Novi Sad, for at least a month.
- The display to be advertised in the local press and possibly announced on local radio.
- The EIA also to be placed on the website of the EBRD and possibly those of Belgrade and Novi Sad cities.
- Written comments on the EIA will be invited from the public and any interested parties.
- A Report of Comments received will be prepared by the Roads Directorate after 30 days.
- The Report of Comments will be updated each month if necessary, reflecting any new comment received after the initial reportsince preparation of the last report.

An **EMP** must be prepared in order to define the environmental measures and procedures that will need to be adopted for the scheme and to identify those responsible for their implementation. The EMP will need to be revised during the course of the project or alternatively be prepared when the design of the project is completed and the contractors' working methods are known and agreed.

The EMP must contain the following information:

- mitigation measures;
- provision for monitoring;
- institutional measures to be taken during project construction and operation;
- actions needed to implement measures.

The EMP should define the timing, frequency, duration and cost of mitigation measures in an implementation schedule and integrate these actions with the overall project work plan

An **Environmental Monitoring Plan** should also be prepared setting out proposal for monitoring the environmental mitigation measures during the construction phase. This is not expected to be a major document because of the limited number of impacts identified during the EIA.

During detailed design, a **Pollution Incident Plan** should be prepared to deal with emergency situations, such as accidental spillage of oil, fuel or hazardous materials as the result of a collision on the motorway.