

**Report on the joint ICOMOS/IUCN Advisory mission
to the Natural and Cultural Heritage of the Ohrid Region
(North Macedonian part)**

10-12 December 2019

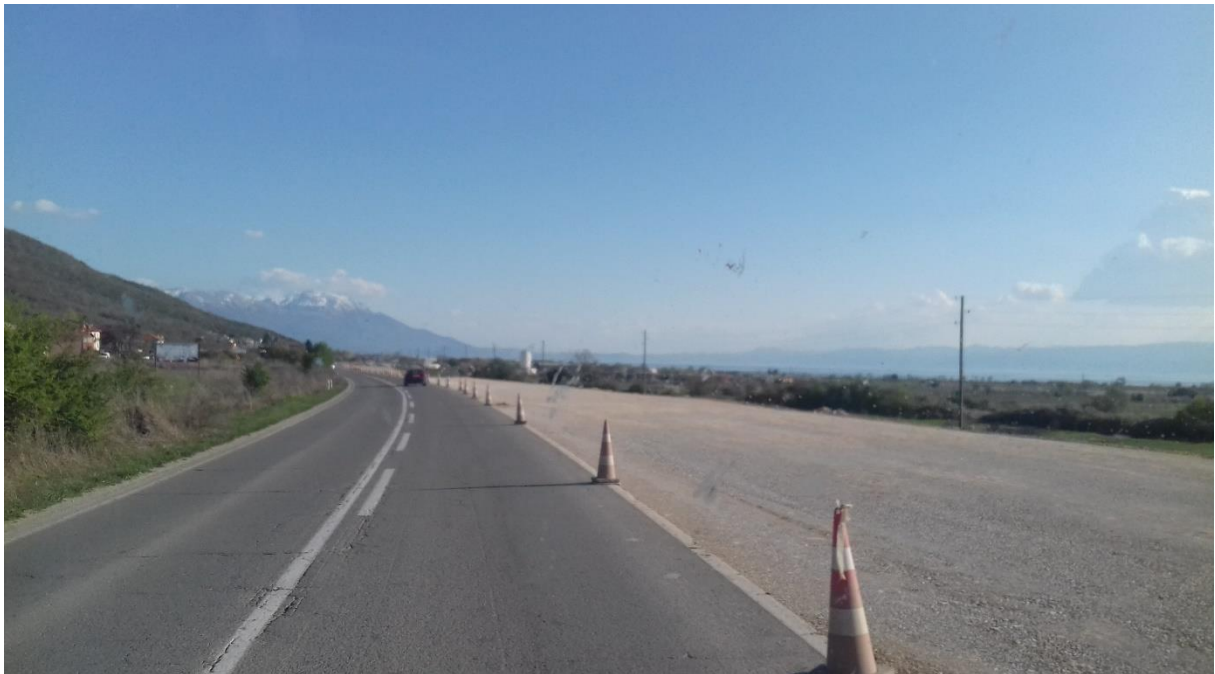


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Mission programme

1.1 Meeting on highway sections Kičevo-Ohrid and Trebenište-Struga

Time:	Tuesday, 10 th December, 2019, 10h30-13h
Location:	Public Enterprise for State Roads
Present:	Susanna Lindeman, IUCN Pierre-Marie Tricaud, ICOMOS Sashka Ajceva, Environment protection advisor, Public Enterprise for State Roads (PESR) Aleksandra Trajkovska, Head of Sector for Designing projects, Civil Eng. Institute Makedonija Ance Tolevska, Architect and planner, Civil Engineering Institute Makedonija Martina Blinkova, Biologist-ecologist, Civil Engineering Institute Makedonija

The Civil Engineering Institute Makedonija has been commissioned by the Public Enterprise for State Roads (PESR) to design the A2 highway project for two sections, numbered 1, Kičevo-Ohrid, and 2, Trebenište-Struga. Section 1 is mainly outside the World Heritage property, but in the watershed of Lake Ohrid, and runs close to the River Sateska that discharges into Lake Ohrid. Section 2 is situated inside the World Heritage property.

Highway A2 is a part of European corridor VIII, connecting the Black Sea with the Adriatic Sea. It is designed as a motorway, i.e. a dual carriageway with graded interchanges, and geometric standards (slopes, horizontal and vertical radii) calculated for a reference speed of 120 km/h.

In section 1, the existing Kičevo-Ohrid road, built in the 1970s, follows geometric standards that allow to reuse and enlarge its easement on many sub-sections. The works had begun during the 2017 joint World Heritage Centre/ICOMOS/IUCN Reactive Monitoring mission, but PESR representatives state that they have been suspended due to contract reasons.

In section 2, there is no existing road in the corridor, so the road is entirely new.

Highway section 1: Kičevo-Ohrid

The maps of the highway project provided to the Mission were divided into five sub-sections:

- Sub-section 1-1: Kičevo-Podvis
- Sub-section 1-2: Podvis-Preseka
- Sub-section 1-3: Preseka-Pesochani
- Sub-section 1-4: Pesochani-Trebenište
- Sub-section 1-5: Trebenište-Ohrid

Connecting roads

In section 1, outside the World Heritage property, the State Party's expert from Civil Engineering Institute Makedonija has identified a need to build two roads re-connecting local villages which are no longer served by the upgraded road, which is inaccessible to slow vehicles. Those new local roads were not included in the original plans. They follow the route of the highway.

Dumpsites

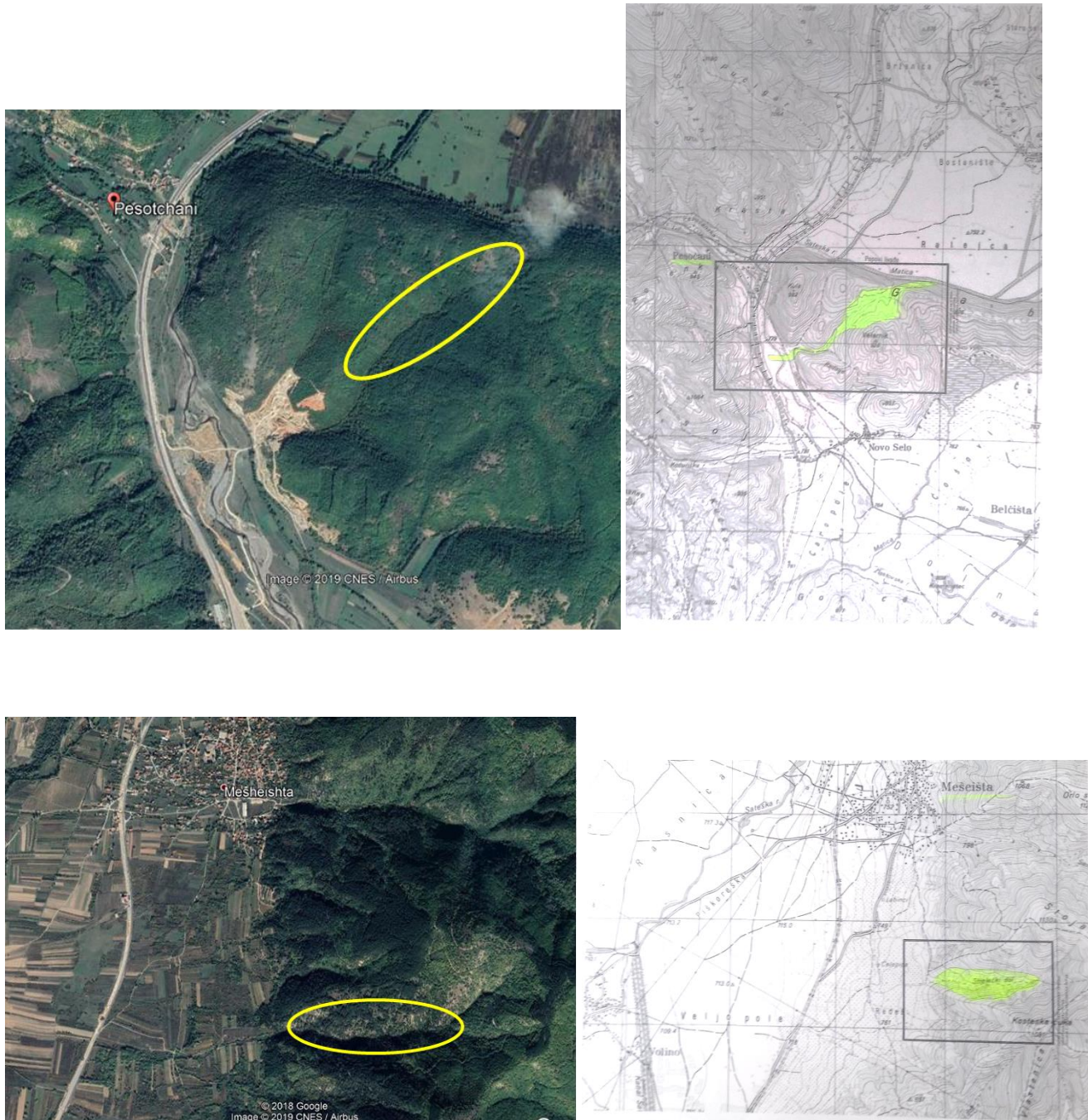
According to the State Party's experts, the project will generate more excavations than embankments, as a long section (1-1 to 1-4) is along the valley of River Sateska, where it will make large cuttings (see annexe 7, "Visualisations of some technical terms"). The sections which are mainly on embankments (especially 2, Trebenište-Struga) will not compensate this excess. Therefore, there is a need to find dumpsites. The excavated materials that will be dumped are inert and nontoxic.

Two sites are presented, both filling natural ravines (one is near Pesočani, outside the World Heritage property, 7 ha; the other is near Mešeishte: 5 ha, inside the World Heritage property, see Figure 1).

Figure 1.

Locations proposed by PESR for dumpsites of excess materials

Above: near Pesočani; below: near Mešeishte



1.2 Meeting on highway section Struga-Kjafasan

Time:	Tuesday, 10 th December, 14h-16h
Location:	Public Enterprise for State Roads
Present:	Susanna Lindeman, IUCN Pierre-Marie Tricaud, ICOMOS Sashka Ajceva, Environment Protection Advisor, Public Enterprise for State Roads (PESR) Mirjana Jankovikj, Civil Engineer, PESR Zoran Slamkov, Head of Investment Sector for projects financed by IFI, PESR

This 14-km highway section is inside the World Heritage property. It is not possible to upgrade the existing road, due to its slope (10%, while the maximum admissible is 6%).

The Terms of Reference for the detailed design of the highway are based on a study from 2002, which gave horizontal alignment (given to the mission on a map at a reduced scale), vertical alignment (not given) and cross-sections (not given) for only one alternative. This alternative will be provided to the consultant, but it is understood that the consultant will be allowed to propose any route between the starting point (Struga) and end point (Kjafasan, Albanian border) – although this remains to be confirmed.

In the northern part, the route studied in 2002 will have to be moved further from Struga, due to urban development in the meantime.

1.3 Concluding meeting for highway A2

Time:	Wednesday, 11 th December, 10h-12h30
Location:	Public Enterprise for State Roads
Present:	Susanna Lindeman, IUCN Pierre-Marie Tricaud, ICOMOS Sashka Ajceva, Environment Protection Advisor, Public Enterprise for State Roads (PESR)

1.4 Discussion about the draft management plan

Time:	Wednesday, 11 th December, 14h30-16h
Location:	Ministry of Environment
Present:	Susanna Lindeman, IUCN Martina Blinkova, biologist-ecologist, Civil Engineering Institute Makedonija Ana Petrovska, State Secretary, Ministry of Environment and Physical Planning (MOEPP) Yilber Mirta, Head of Water Department, (MOEPP) Aleksandar Nastov, Head of Biodiversity Unite, (MOEPP)

The State Party submitted the draft management plan for the North Macedonian part of the Natural and Cultural Heritage of the Ohrid Region to the World Heritage Centre in October 2019. The draft management plan was assessed by ICOMOS in its November 2019 Technical Review.

Since then, the State Party has held a public hearing and received various comments from the public and stakeholders. As a result of the public hearing, the State Party is now considering adding the restoration of deteriorated habitats to the management plan. They are also aware of the need to add more management zones to the lake area, for commercial fishing and tourism pressure management, but this will probably be added at a later stage.

1.5 Discussion about the state of Lake Ohrid and mitigation measures in the watershed

Time:	Thursday, 12 th December, 11h-12h
Location:	Government of North Macedonia,
Present:	Susanna Lindeman, IUCN Kristijan Gjorgjievski, Advisor of the Prime Minister, Government of North Macedonia Saska Trajanovski, Professor, Hydrobiological Institute of Ohrid

The meeting discussed the possibilities of combining the construction of the A2 highway with mitigation measures (such as highway run-off management, water filtration, artificial wetlands and restoring deteriorated wetlands) for safeguarding the Outstanding Universal Value (OUV) of Lake Ohrid. Additionally, the meeting elaborated on the possibilities of adding management zones (e.g. fishing, recreation) in the lake area, updating the scientific knowledge of the state of the water quality (especially signs of eutrophication) and developing joint projects with the State Party of Albania to improve the ecological conditions of Lake Ohrid.

2. Conclusions and recommendations

2.1 Issues regarding all sections of highway A2

2.1.1 Documents presented

No new documents have been presented to the mission in addition to those presented to the 2017 Reactive Monitoring mission. The detailed maps of the highway alignments were not presented during the 2017 mission, but already existed at this time.

The projects for the 3 main sections were presented on detailed topographic maps (contour lines every 5m), that had been updated in the 1970s (presenting the highway in dotted lines). A background map, updated 50 years ago, is sufficient with regard to physical terrain and to the few changes in land use since. But the maps of each section or sub-section were presented with very different scales: from an original scale of the background map which is estimated to be 1: 25 000, some sub-sections were presented on 1: 10 000 enlargements (sub-sections 1-1, 1-2, 1-4, 1-5), while others were presented on 1: 50 000 or smaller (sections 2 and 3, the former being especially difficult to read due to the small size of the writing); one sub-section (1-3) was even presented without a background map, on a blank sheet. The poor quality of documents did not allow the Mission to clearly understand the project.

The main issue is that only the horizontal alignment was traced on the background map (with a 50-m strip for section 1 Kičevo-Ohrid, and a line for sections 2 Trebenišhte-Struga and 3 Struga-Kjafasan), which is insufficient to assess some impacts (especially the lateral extent of earthworks).

A detailed plan of horizontal alignment, vertical alignment, cross-sections and associated infrastructure (interchanges resting areas, etc.) is necessary to give grounded advice.

This material was subsequently submitted by the State Party to the World Heritage Centre, and shared with ICOMOS and IUCN, on 23 January 2020, and was included in the background documentation of the January 2020 joint World Heritage Centre/ICOMOS/IUCN Reactive Monitoring mission to the property.

2.1.2 Relevance of the advisory mission's recommendations

For section 1 (Kičevo-Ohrid), the relevance of the recommendations is limited by the fact that the entire project has already been decided, and the construction works are in progress (and had even started in 2017, see fig. 1). Here, recommendations can be made only regarding mitigation measures, such as dumpsite positions – if these have not already started to be filled – and highway water runoff management.

For section 2 (Trebenišhte-Struga), the works have not started, but the project is completed, and the alignment seems difficult to change. Environmental Impact Assessments (EIA) and Heritage Impact Assessments (HIA) have been implemented for this section of the A2 highway. However, the cumulative assessment of impacts of the A2 highway and the proposed railway on the property's OUV, as requested by the 2017 Reactive Monitoring mission (see annexe 5 for the list of recommendations from the 2017 Reactive Monitoring mission)), has not yet been carried out.

The above-mentioned cumulative assessment might result in a recommendation for modifying the route for section 2 of highway A2; in case this change cannot be implemented, it is important that at least some additional mitigation measures that have been recommended here, such as broadening underpasses and highway water runoff management, be taken into account.

For section 3 (Struga-Kjafasan), which is just at the stage of establishing the Terms of Reference for a call of tenders, it seems still possible to influence the project to better consider the OUV of the property and mitigate negative impacts.

2.1.3 Taking Outstanding Universal Value (OUV) into consideration

For the highway section 2 (Trebenište-Struga), it seems that the completed EIA did not include an assessment of the impact on the OUV (criterion vii) in line with the IUCN World Heritage Advice Note for Environmental Assessments (IUCN, 2013). Furthermore, the completed HIA for section 2 only assess the cultural criteria, not the natural (vii): *“The preservation of Lake Ohrid dating from pre-glacial times is a superlative natural phenomenon. As a result of its geographic isolation and uninterrupted biological activity, Lake Ohrid provides a unique refuge for numerous endemic and relict freshwater species of flora and fauna. Its oligotrophic waters contain over 200 endemic species with high levels of endemism for benthic species in particular, including algae, diatoms, turbellarian flatworms, snails, crustaceans and 17 endemic species of fish. The Lake Ohrid region also harbours a rich birdlife”.*

As a result, the possible negative impacts of section 2 on the OUV have **only partially been identified**. Since the EIA process for section 3 has not yet started, it would be of utmost importance to carry it out in accordance with the above-mentioned Advice Note (IUCN, 2013) as well as with the 2011 ICOMOS Guidance on HIAs for Cultural World Heritage Properties. For example, it is stated in the Advice Note that an EIA for a project with potential impact on a World Heritage property should include a **separate chapter** for the assessment of likely impacts on the OUV. Since Lake Ohrid is a mixed World Heritage Property, **the recommendation is to assess impacts on both cultural (under criteria i, iii, and iv) and natural values / attributes (under criterion vii) in the EIA for section 3 and not to implement a separate HIA for the assessment of impacts on cultural values / attributes**. This would be more efficient and lead to a more coherent, complete assessment in the same document. **Furthermore, the State Party should include the approved Statement of OUV for Lake Ohrid (see annexe 4) in the Terms of Reference for tendering processes and make explicit that, from a World Heritage perspective, what is to be assessed are impacts on the attributes supporting the OUV.**

2.1.4 Combined study of road and railway projects

As stated above, the Mission noted that the recommendation 3 of the 2017 Reactive Monitoring mission to assess cumulative impacts of the A2 highway and proposed railway (following the same Corridor VIII) on the OUV (see annexe 5 for the list of recommendations from the 2017 Reactive Monitoring mission) has still not been addressed.

Such assessment should have either justified the selected choice of keeping both infrastructures at distance, or have led to a change in their alignments in order to bring them closer, or even to pair them on the same platform.

The assessment of cumulative impacts of the A2 and of the proposed railway remains crucial for the understanding of the scale of the impacts on the OUV of the property.

It is understood that pairing is, in any case, difficult in section 1, where the narrowness of the valley floor does not allow it and where the railway will have more tunnels and viaducts. But

it could have been envisaged in section 2, on a flat land where a single platform and its banks would take less space than the addition of road and railway platforms and their banks.

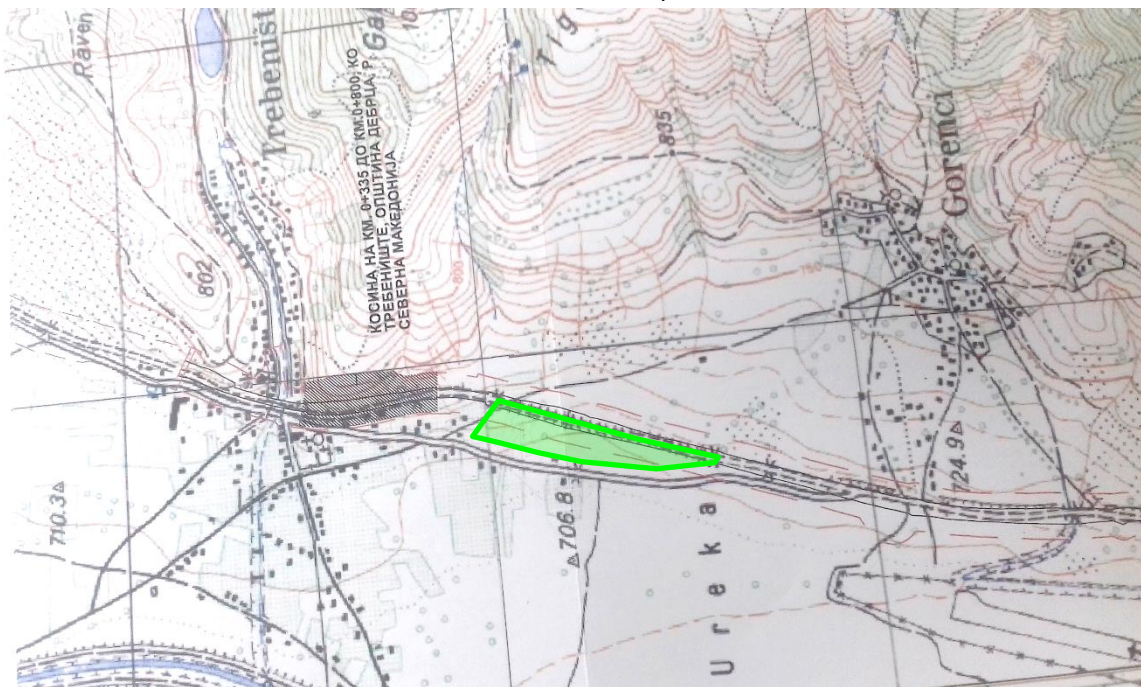
It is also understood that in section 2, the highway elevation may vary according to the underpasses (2m in average; 5m where there is a road underpass), while the railway cannot follow the same slopes, which imposes a constant elevation to its platform.

This is another reason why detailed vertical alignment should have been provided during the mission. In addition, if the railway is later established separately and at a higher elevation, **it is strongly recommended that it be constructed on a pier** (see illustration in annexe 7 “Visualisations of some technical terms”), **allowing the passage of water, animals and views in all parts, while a high embankment would have a high negative visual impact, even if there are as many underpasses as under the road, and is considered unacceptable.**

It is also understood that the railway project is planned over a much longer timeframe than the road project, which makes pairing difficult.

Figure 2

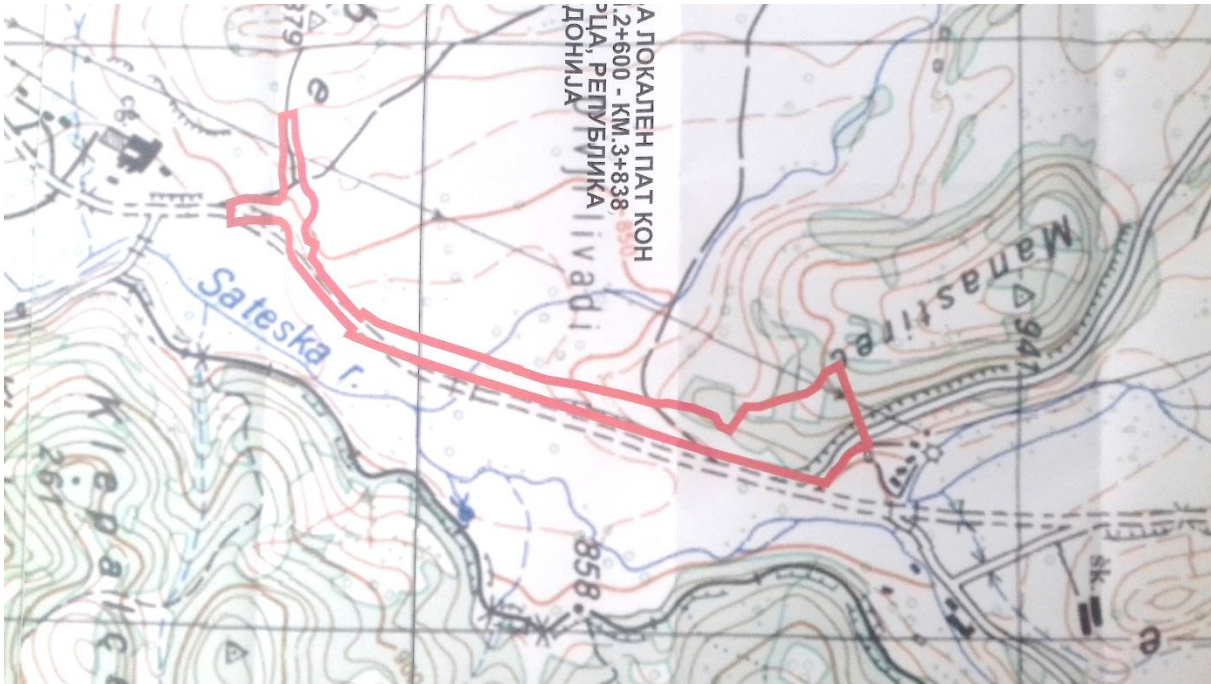
Alternative location for a dump site



If the new road is elevated over the natural ground, a landfill in gentle slope can be done here between the new and the old roads

Figure 3

Easement for new road for local traffic in Sateska valley



2.1.5 Dumpsites and quarries

First of all, the Mission notes that some information is still lacking, preventing a proper assessment of the earthwork's management:

Is the balance between excavations and embankments calculated together for sections 1 (Kičevo-Ohrid) and 2 (Trebenište-Struga) or for each section separately? It is surprising that the 5-km long, 2-m high embankment of section 2 cannot take all the excavations of section 1, and even requires more material; **for this too, detailed vertical alignments are necessary.**

How far has the project progressed? The earthworks seemed to be well engaged in 2017, but are said to have been suspended since. It is necessary to know the location of the excavations that generate the materials which will fill the proposed dumpsites.

Will there be a need to make new quarries for embankment material for highway A2? And if yes, where will they be located?

If there is, however, a need for dumpsites, **an appropriate approach for the choice and preparation** of dumpsites for excess materials can be pursued by observing the following 3 stages:

1. **Identify potential sites in the vicinity:**
 - a) Within the project easement or directly adjacent to it;
 - b) Quarries;
 - c) Sites with natural soil (to be resorted to only if the 2 first options are not possible).
2. **Identify the capacity and impacts** (landscape, water, habitats...) for each site:
 - a) Within the project easement or directly adjacent to it: are there plots of land that are too small or too inaccessible to be used (e.g. within interchange loops,

- between the motorway and local road, as in Figure 2...)? What is the profile of these plots, so that landfilling can create gentle slopes instead of steep banks?
- b) Quarries: what stage of operation are they in? There will be more capacity and less economic and environmental impact if quarries are close to the end of operation, as filling a site that has not been completely excavated will require the opening of a new quarry to supply necessary building materials;
 - c) Sites with natural soil: what is their visibility from distance (higher for a slope than for a ravine)?; what impacts could this have on habitats (higher for a ravine)?; what would be the impact on water runoff?
3. Choose the best sites from **a comparison of the impacts and benefits** of each location, and prepare for each of the chosen sites **a rehabilitation plan** with landscape terracing, water runoff control, reconstitution of habitats...

It is recommended to apply this approach to the dumpsites of section 3, which have not yet been chosen, and, if possible, also to those of section 1, which may, after this assessment, be different from those chosen.

It is also recommended that in any case, dumpsites in locations with natural soils (option 3), as well as new quarries, are not be located within the World Heritage property.

2.1.6 Visualisation of impacts

At least within the World Heritage property, the visualisation of possible impacts on the integrity of the property (with views of current state and simulation of future state) should be done from major viewpoints (such as the entrance to Struga plain at Mešeište, fig. 2; north of Struga; St John Kaneo church in Ohrid, etc.).

2.1.7 Highway water runoff management and associated mitigation measures

It is highly recommended for the State Party to explore possibilities to combine the construction phase of the A2 highway with protective measures and mitigation of negative environmental effects from highway water runoff.

Highway runoff contains heavy metals, nutrients and hydrocarbons and is therefore a potential threat to the OUV of Lake Ohrid (criterion vii). Protective and mitigation measures in the watershed of Lake Ohrid could, for example, comprise different types of **surface water filtration**, prolonging of **the distance and the time** before the run-offs from the highway reach recipient rivers and Lake Ohrid, and **restoration of previous wetlands or construction of new artificial wetlands**. Information and case studies from Europe (Hungary, Greece) of highway runoff mitigation, lake-shore restoration and artificial wetlands can, for example, be found in Boromisza et al. (2014), Tenenbaum & Dooley (2004) and Terzakis & et al. (2008). References to these articles are included in annexe 6).

Wetlands are often tourist attractions and popular recreational areas, and this is also a factor that should be considered in the planning process. Those which could be created near the towns of Ohrid and Struga could serve as peri-urban parks, with apparatus allowing people to take a walk, rest and look at the view without encroaching on natural habitats (wooden decks, guardrails, gazebos, etc.). All functional wetlands (natural, restored and artificial) in the watershed of Lake Ohrid will function as invaluable and cost-efficient complements to sewage systems, in particular during extreme weather events (flooding, heavy rains).

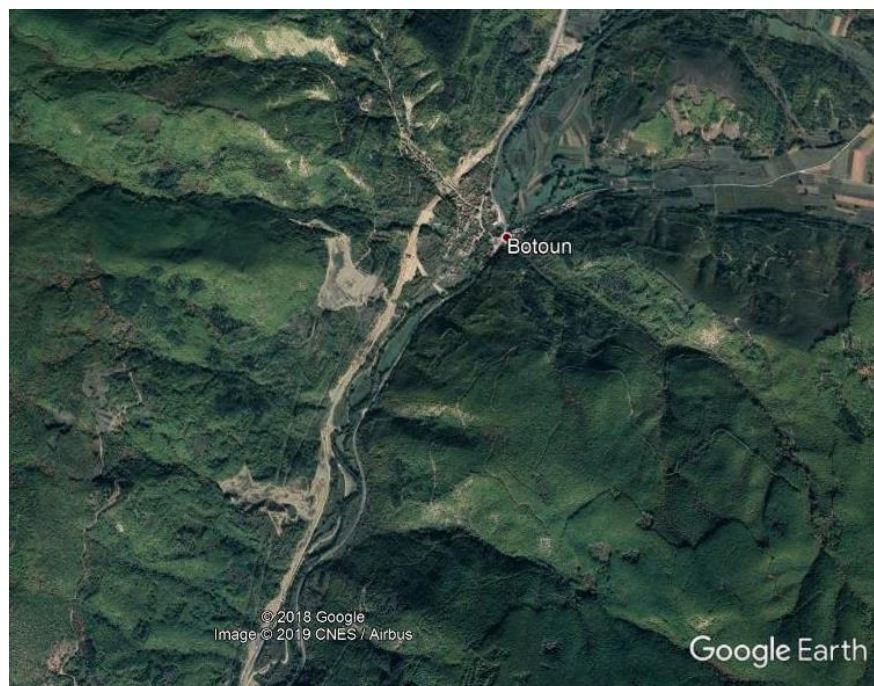
The Mission recommends that mitigation measures for water pollution should be considered along the whole highway alignment, inside and outside the World Heritage

property, since the watershed of Lake Ohrid is larger than the World Heritage property. Furthermore, regarding the possible restoration of deteriorated wetlands, the focus should be along the shores of Lake Ohrid.

To conclude, it would be more efficient (saving money and time) to start these mitigation measures while constructing the highway, since the same resources most likely could be used for planning and technical implementation of both the highway and the mitigation measures. Scientific data from the Hydrobiological Institute of Ohrid confirm clear signs of eutrophication in the oligotrophic Lake Ohrid region (Kostoski & et al., 2010).

Consequently, the Mission recommends to implement all feasible measures, including recommendations 13, 15 and 16 from the 2017 Reactive Monitoring mission, to halt the ongoing eutrophication process and other water pollution in order to safeguard the OUV (see annexe 5 for the list of recommendations from the 2017 Reactive Monitoring mission).

Figure 4
Earthworks, quarries
and eroded areas
in the vicinity of
River Sateska
in sub-section 1-3



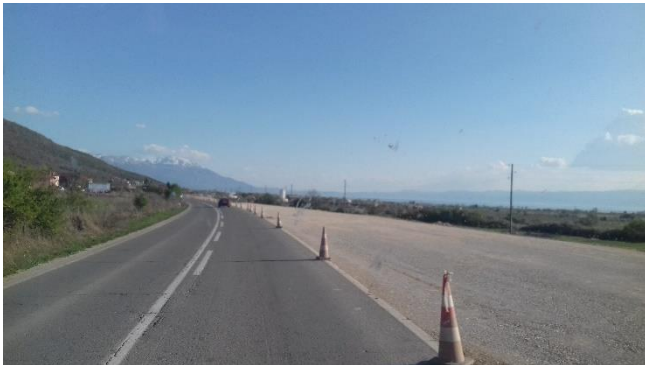


Figure 5. Progress of works in April 2017: (a) downstream of Kičevo; (b) upstream of Mešeiste; (c) and (d) along the lake shore between the airport and Ohrid



Figure 6. View on Struga plain from the road between Mešeiste and Trebenište (April 2017). The embankment of the new road (section Trebenište-Struga) may be visible from this point.



Figure 7.

A 2-m high underpass both allows the passage of pedestrians and large fauna when it is dry, and of small fauna even when it is flooded (photo J.-F. Bretaud, Cerema, France, <https://www.cerema.fr/fr/actualites/cerema-vie-sauvage>)

2.2 Issues regarding section Kičevo-Ohrid

2.2.1 New roads for local traffic

The proposals for new local roads along the highway, where the latter is put in place of the existing road, might be acceptable, but only if attention is given to keeping these new roads to a minimum, to protecting the river corridor when it is close, and to avoiding too many cuttings. In some places where the valley is narrow, such as in Figure 3 a balance must be found: if there is not enough space to put the local road between the highway and the hillside without huge earthworks, the alignment may encroach on the present riverbed if the latter is properly reconstituted. But this too would require the provision of more detailed plans to give grounded advice.

2.2.2 Impacts on the river corridor and Lake Ohrid

The construction phase of highway section 1 may already have contributed to an aggregation of sediments in the estuary of Sateska River in Lake Ohrid (see photos in Draft Management Plan, page 57, Figure 29). Satellite images along the highway alignment for section 1 reveal many sites with large excavations and eroded areas in the vicinity of River Sateska (see Figure 4).

Since construction work is still ongoing, the Mission recommends that the PESR ask the contractor to work together with the Hydrobiological Institute of Ohrid (HIO) regarding the monitoring of impacts on Lake Ohrid. If the OUV (criterion vii) has already been negatively impacted by the construction of highway A2, the contractor should be obligated to start, as soon as possible, mitigation measures to stop further negative impact on Lake Ohrid and also analyse if habitat restoration would be favourable for the OUV, in close collaboration with PESR and HIO. Additionally, the State Party could explore possibilities of combining the construction phase of the highway with mitigation measures for water pollution (see 2.1.7). Finally, it is recommended that the State Party enhances the process of implementing the re-division of the Sateska River back into the Crn Drim River (Recommendation 15, 2017 Reactive Monitoring mission).

2.3 Issues regarding highway section 2 Trebenišhte-Struga

2.3.1 Highway water runoff management

Highway section 2 is located inside the World Heritage property, relatively close to Lake Ohrid, and its drainage system will cross agricultural lands. According to Kostoski & et al. (2010, pp. 4002-4003), there is a nutrient load from this area to Lake Ohrid and the farmers are using an increasing amount of fertilizers and pesticides, but the magnitude of the threat to Lake Ohrid is not well known. If its relocation cannot be envisaged, the construction of the highway will most likely affect the drainage system of these agricultural lands and the highway project may serve at least as a good opportunity to decrease the loads of nutrients in Lake Ohrid and other water pollution. It is therefore recommended that the management of highway runoff be planned as an entity with the drainage system of the agricultural lands and that a range of feasible water pollution mitigation measures be explored (see Chapter 2.1.7 and List of References).

2.3.2 Underpasses

The 2017 Reactive Monitoring mission recommended to have at least one 2-m-high underpass (or culvert) every kilometre (see list of recommendations in annexe 5).

The reasons for this are as follows (also see Figure 7.):

- 1-m culverts do not allow passage of small fauna when they are flooded (i.e. a large part of the year in Lake Ohrid), while 2-m culverts can have a small passageway at half-height allowing this passage up to a flooding level of 1 m;
- 1-m culverts do not allow passage of large fauna and human pedestrians, while 2-m ones do; even if there seems to be no present need for such passage (no large fauna corridors, no hiking...), future needs should be anticipated, at a cost which seems acceptable (placing a few precast 2-m pipes instead of 1-m ones will represent a small fraction of the total cost).

While it was said during the work meeting that this demand had been taken into consideration and five 2-m culverts have been planned, these do not appear on the given map, where only two 5-m passages and 30 to 40 1-m culverts are included. **In any case, five 2-m passages are not enough, as this makes an average of 1 km between two of them (sometimes less, sometimes more), while the recommendation of the 2017 Reactive Monitoring mission was to take this measure as a minimum, not an average.**

2.4 Issues regarding highway A2 section 3 Struga-Kjafasan

2.4.1 Impacts of 2002 alignment on landscape and water runoff

The alignment studied in 2002, which will be given to the consultant, is a potential threat to the OUV, as it passes on a slope overhanging the lake shore, with at least two impacts:

- A high visual impact, affecting the integrity of the property, as it will be directly visible from the lake from one kilometre (some PESR experts estimate that this would offer a magnificent view to the road and make it a parkway, but this advantage will not compensate the loss of OUV, and could be replaced by a viewpoint and a rest area accessed from the highway by a small feeder road);
- Risks of polluted highway runoff to the lake shore and waters, a shore area which is currently one of the few still preserved in a good condition (Draft Management Plan, p. 76, see Figure 9 below).

For this reason, it is strongly recommended to also study an alternative route through Frangovo valley, which is hidden from the lake shore by a ridge of hills; as it is not possible to follow the existing road due to the slope, the new alignment could follow the hillside of this valley (see Figure 8.).

The construction of section 3 of the highway will most likely affect both the sewage systems of urbanised areas and the drainage system of the agricultural lands west of Struga. Along the shore west of Struga, there are still some remains of a former larger wetland area. It is recommended that the highway water runoff management is planned as an entity with sewage and drainage systems in the vicinity of the highway and that a range of feasible water pollution mitigation measures are explored (see chapter 2.1.7). In particular, a restoration of the former wetlands along the coast should be considered as a mitigation measure. If the wetlands are restored, they could also serve as a tourist attraction and give added recreational values to the local community.

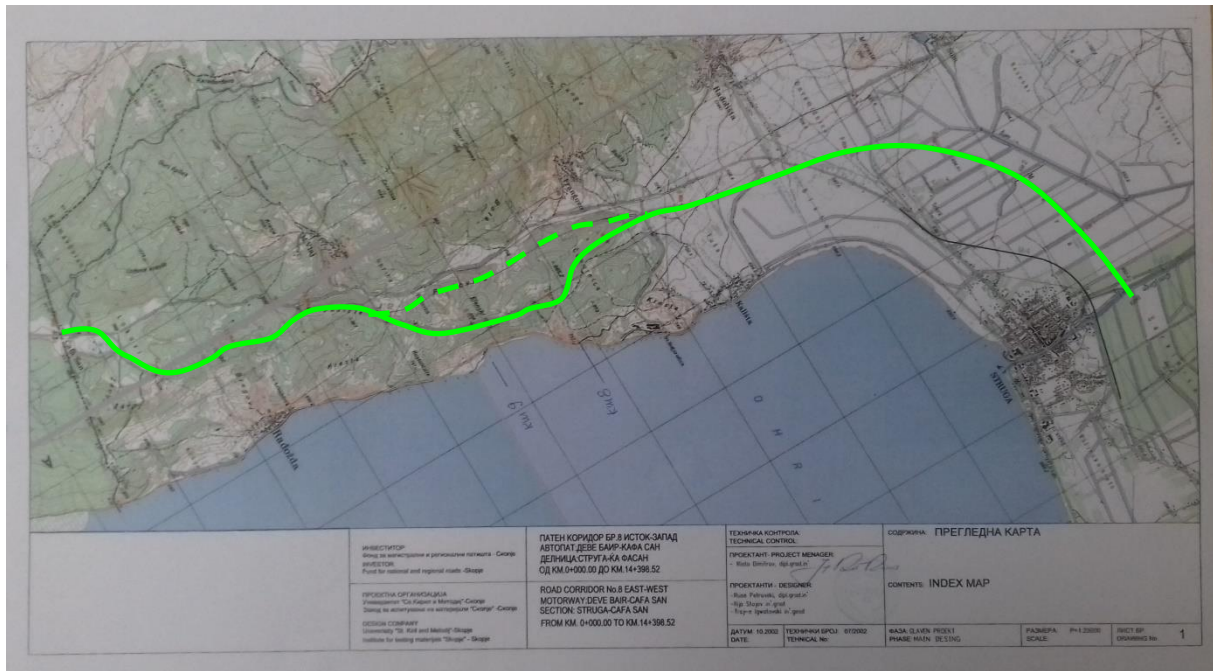


Figure 8.

Struga-Kjafasan section: alignment proposed in the Terms of Reference from 2002 study (in full green line);
alternative through Frangovo valley to study (in dotted green line)



Figure 9

Natural quality of lake shores expressed
by Shorezone Functionality Index
(Draft Management Plan, p. 76)

2.5 Summary of recommendations

The Mission recommends that the State Party consider the following:

General recommendations for highway A2

- Include the adopted Statement of Outstanding Universal Value for Lake Ohrid in the Terms of References of tendering processes regarding highway A2, as a reference for the assessment of impacts on the OUV and its supporting attributes;
- Assess cumulative impacts of the railway and highway A2 on the OUV (recommendation 3 of the 2017 Reactive Monitoring mission);
- Consider mitigation measures for water pollution along the whole highway A2 alignment inside and outside the World Heritage property;
- Implement all feasible measures, including recommendations 13, 15 and 16 of the 2017 Reactive Monitoring mission, , to halt the ongoing eutrophication process in Lake Ohrid and other water pollution in order to safeguard the OUV;
- All dumpsites and new quarries should be located outside the World Heritage property;
- Submit information about the necessary dumpsites and quarries for highway A2 to the World Heritage Centre, including the following:
 - a. The calculated need for excavations and embankments for section 1 (Kičevo-Ohrid) and section 2 (Trebenište-Struga),
 - b. the position, capacity and area of *all present and planned* dumpsites and quarries used for highway A2,
 - c. the rationale behind choosing specific dumpsites and quarries and how the possible impacts on the OUV have been or will be avoided or mitigated;
- Present visualisations from major viewpoints of possible impacts on the integrity of the World Heritage property (with views of current state and simulation of future state);

Section 1 highway A2

- The Public Enterprise for State Roads (PESR) should ask the contractor to work together with the Hydrobiological Institute of Ohrid (HIO) regarding the monitoring of impacts on Lake Ohrid. If the OUV (criterion vii) already has been negatively impacted by the construction of highway A2 – section 1, the contractor should be obligated to start, as soon as possible, mitigation measures to stop the negative impact on Lake Ohrid and also analyse if habitat restoration would be favourable for the OUV in close collaboration with PESR and HIO;
- Enhance the process of implementing the re-diversion of the Sateska River back into the Crn Drim River (recommendation 15 of the 2017 Reactive Monitoring mission);

Section 2 highway A2

- If the modification of the route cannot be envisaged, plan the highway runoff water management and the drainage system of the agricultural lands as an entity and explore a range of feasible water pollution mitigation measures;
- Construct at least one 2-m-high underpass (or culvert) every kilometre (recommendation 2 of the 2017 Reactive Monitoring mission);

Section 3 highway A2

- Study an alternative route for the highway through Frangovo valley, further from Lake Ohrid than the presented route;

- Assess jointly the impacts on cultural and natural values and attributes supporting the criteria illustrating the OUV (i, iii, iv and vii) in the EIA, rather than assessing the impacts on cultural values/attributes through a separate HIA;
- Plan the highway water runoff management as an entity with sewage and drainage systems in the vicinity of the highway and explore a range of feasible water pollution mitigation measures.

ANNEXES

- Annexe 1: Terms of Reference
- Annexe 2: Mission programme and people met
- Annexe 3: Composition of the mission team
- Annexe 4: Statement of Outstanding Universal Value
- Annexe 5: Recommendations of the 2017 joint World Heritage Centre/ICOMOS/IUCN
Reactive Monitoring mission
- Annexe 6: References
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Terms of Reference for the joint ICOMOS/IUCN Advisory Mission to the Natural and Cultural Heritage of the Ohrid Region World Heritage site (North Macedonian part)

Background

The Republic of North Macedonia intends to improve transport infrastructure in the country with planning and realizing different projects inter alia in the road sector. The Public Enterprise for State Roads (PESR) is the responsible governmental institution for planning, designing, construction, reconstruction, rehabilitation and maintaining of the state roads (including highways, expressways, regional and national roads). The State Party is in the process of constructing two main international Corridors, which are very important for the progress of the economy, social life, culture life, improvement of the living conditions, as well as ensuring safety, fast and comfortable transport. These pan-European corridors, VIII and X, are a historical milestone as they connect the region within for the first time in its history; opening a new chapter of regional cohesion and cooperation, as well as wider European integration.

The road network of concern for the Advisory Mission is Corridor VIII, which runs west to east. Within the territory of North Macedonia this Corridor runs along the route border crossing Deve Bair, Republic of Bulgaria – Kriva Palanka - Kumanovo – Tetovo – Gostivar – Kichevo –border crossing Kjafasan, Republic of Albania. Corridor X runs north to south, along the route border crossing Tabanovce, Republic of Serbia – Kumanovo - Veles – Demir Kapija – border crossing Bogorodica, Republic of Greece. The main aim of the National Transport Strategy of North Macedonia is to complete both Corridors on a highway level according international standards and conditions.

Objective

The principal objective of this joint ICOMOS/IUCN Advisory Mission is to hold a series of consultancy meetings with the involved stakeholders on several road Projects in different stages (planning, designing, construction – complete designing process) lead by PESR. The experts would need to familiarize themselves in detail about the ongoing activities and plans, advise and identify potential adverse impacts on the natural and cultural heritage of the Ohrid Region, a World Heritage Site, and suggest any potential and adequate mitigation measures.

During the Advisory Mission, the State Party seeks to discuss and clarify all outstanding issues concerning the road infrastructure on the territory of the heritage site, as noted in the Reactive Monitoring Mission of 2017.

The review process will focus specifically on the following routes:

- Construction of highway A2, section Kicevo-Ohrid with total length of 57 km – This is an ongoing construction Project, but during construction period by the engaged Supervision Engineer and Contractor have been stated many

defects and irregularities in the project documentations which has huge impact of the competition of the Project. PESR engaged designing company to improve all those errors for the Project;

- Construction of the highway A2, section Trebeniste-Struga in total length of 8 km – This Project has been noted in the joint UNESCO World Heritage Centre/ICOMOS/IUCN Reactive Monitoring Mission in 2017 and all Recommendation given from the mission Report have been taken into consideration and sent to UNESCO; and,
- Construction of the highway A2, section Struga – crossing border Kjafasan in total length of about 14 km – now PESR is preparing Terms of reference for construction on new alignment. Upgrading on the existing alignment is not possible due to the heavy natural relief and terrain.

Scope of service

The mission experts will be responsible for advising PESR and its consultants and designers during ongoing procedures about the above-mentioned Projects with regard to their potential adverse impacts on the natural and cultural heritage in the Ohrid Region in order to ensure appropriate implementation of the relevant Recommendations from the 2017 Reactive Monitoring Mission, to provide suggestions to avoid/reduce/mitigate any detected adverse impact on the property and to avoid any potential miscommunication about these issues of great significance for the State Party of North Macedonia.

The scope of work will focus on:

- Construction of highway A2, section Kicevo-Ohrid – The mission experts will get information about the current design options, designing procedure, implementation phases and organization, and activities undertaken by the engaged Company. This includes construction of new access roads, new alternative regional roads, and access on the oil patrols etc., which are located in the Ohrid region. This is the reason for the invitation of the Advisory mission to work closely with the PESR and its Consultants/Designers;
- Construction of highway A2, section Trebeniste-Struga – PESR has implemented the recommendation from the Reactive Monitoring Mission held in 2017 for this Project, but it still needs to finalize the Project and plan its realization; and
- Construction of the highway A2, Struga – Crossing Border Kjafasan – PESR has commenced producing Terms of Reference for construction of new alignment on a highway level for this section; it is very important for PESR and the State Party in general, that the Advisory mission experts are involved in the early project development stage, so they can provide recommendations to be taken into account in the designing procedure and preparation of the technical documentations.

Mission Programme and People Met

Tuesday 10 December

Meeting on highway sections Kičevo-Ohrid and Trebenišhte-Struga

Time: Tuesday, 10th December, 2019, 10h30-13h
Location: Public Enterprise for State Roads
Present: Susanna Lindeman, IUCN
Pierre-Marie Tricaud, ICOMOS
Sashka Ajceva, Environment protection advisor, Public Enterprise for State Roads (PESR)
Aleksandra Trajkovska, Head of Sector for Designing projects, Civil Eng. Institute Makedonija
Ance Tolevska, Architect and planner, Civil Engineering Institute Makedonija
Martina Blinkova, Biologist-ecologist, Civil Engineering Institute Makedonija

Meeting on highway section Struga-Kjafasan

Time: Tuesday, 10th December, 14h-16h
Location: Public Enterprise for State Roads
Present: Susanna Lindeman, IUCN
Pierre-Marie Tricaud, ICOMOS
Sashka Ajceva, Environment Protection Advisor, Public Enterprise for State Roads (PESR)
Mirjana Jankovikj, Civil Engineer, PESR
Zoran Slamkov, Head of Investment Sector for projects financed by IFI, PESR

Dinner

Time: Tuesday, 10th December, 18h
Present: Susanna Lindeman, IUCN
Pierre-Marie Tricaud, ICOMOS
Kristijan Gjorgjievski, Advisor of the Prime Minister, Government of North Macedonia
Vasko Lazarevski, Advisor, Cabinet of the Minister without portfolio for Diaspora
Ana Petrovska, State Secretary, Ministry of Environment and Physical Planning
Yilber Mirta, Head of Water Department, Ministry of Environment and Physical Planning
Zoran Pavlov, Department for cultural heritage, Ministry of Culture
Aco Kostov, Director of the Department for cultural heritage, Ministry of Culture

Wednesday 11 December

Concluding meeting for highway A2

Time: Wednesday, 11th December, 10h-12h30
Location: Public Enterprise for State Roads
Present: Susanna Lindeman, IUCN
Pierre-Marie Tricaud, ICOMOS
Sashka Ajceva, Environment Protection Advisor, Public Enterprise for State Roads (PESR)

Discussion about the draft management plan

Time: Wednesday, 11th December, 14h30-16h
Location: Ministry of Environment
Present: Susanna Lindeman, IUCN
Martina Blinkova, biologist-ecologist, Civil Engineering Institute Makedonija

Ana Petrovska, State Secretary, Ministry of Environment and Physical Planning (MOEPP)
Yilber Mirta, Head of Water Department, (MOEPP)
Aleksandar Nastov, Head of Biodiversity Unit, (MOEPP)

Thursday 12 December

Discussion about the state of Lake Ohrid and mitigation measures in the watershed

Time: Thursday, 12th December, 11h-12h
Location: Government of North Macedonia,
Present: Susanna Lindeman, IUCN
Kristijan Gjorgjievski, Advisor of the Prime Minister, Government of North Macedonia
Saska Trajanovski, Professor, Hydrobiological Institute of Ohrid

Composition of the Mission Team

Susanna Lindeman, IUCN

Pierre-Marie Tricaud, ICOMOS

Statement of Outstanding Universal Value (Decision 43 COM 8B.9)

Brief synthesis

The Lake Ohrid region, a mixed World Heritage property covering c. 94,729 ha, was first inscribed for its nature conservation values in 1979 and for its cultural heritage values a year later. These inscriptions related to the part of the lake located in North Macedonia. The property was extended to include the rest of Lake Ohrid, located in Albania, in 2019.

Lake Ohrid is a superlative natural phenomenon, providing refuge for numerous endemic and relict freshwater species of flora and fauna dating from the tertiary period. As a deep and ancient lake of tectonic origin, Lake Ohrid has existed continuously for approximately two to three million years. Its oligotrophic waters conserve over 200 species of plants and animals unique to the lake, including algae, turbellarian flatworms, snails, crustaceans and 17 endemic species of fish including two species of trout, as well as a rich birdlife.

Situated on the shores of Lake Ohrid, the town of Ohrid is one of the oldest human settlements in Europe. Built mostly between the 7th and 19th centuries, Ohrid is home to the oldest Slav monastery (dedicated to St. Pantelejmon) and more than 800 Byzantine-style icons of worldwide fame dating from the 11th century to the end of the 14th century. Ohrid's architecture represents the best preserved and most complete ensemble of ancient urban architecture of this part of Europe. Slav culture spread from Ohrid to other parts of Europe. Seven basilicas have thus far been discovered in archaeological excavations in the old part of Ohrid. These basilicas were built during the 4th, 5th and beginning of the 6th centuries and contain architectural and decorative characteristics that indisputably point to a strong ascent and glory of Lychnidos, the former name of the town. The structure of the city nucleus is also enriched by a large number of archaeological sites, with an emphasis on early Christian basilicas, which are also known for their mosaic floors. Special emphasis regarding Ohrid's old urban architecture must be given to the town's masonry heritage. In particular, Ohrid's traditional local influence can be seen among its well-preserved late-Ottoman urban residential architecture dating from the 18th and 19th centuries. The limited space for construction activities has led to the formation of a very narrow network of streets.

On the Lin Peninsula, in the west of the Lake, the Early Christian Lin church, founded in the mid-6th century, is related to the basilicas of Ohrid town in terms of its architectural form and decorative floor mosaics, and possibly also through liturgical links.

Although the town of Struga is located along the northern shores of Lake Ohrid, town life is concentrated along the banks of the Crn Drim River, which flows out of the lake. The existence of Struga is connected with several fishermen settlements on wooden piles situated along the lake shore. A great number of archaeological sites testify to origins from the Neolithic period, the Bronze Age, the Macedonian Hellenistic period, the Roman and the early Middle Age period. Similar pre-historic pile dwelling sites have also been identified in the western margins of the Lake.

The convergence of well-conserved natural values with the quality and diversity of its cultural, material and spiritual heritage makes this region truly unique.

Criterion (i): The town of Ohrid is one of the oldest human settlements in Europe. As one of the best preserved complete ensembles encompassing archaeological remains from the Bronze Age up to the Middle Ages, Ohrid boasts exemplary religious architecture dating from the 7th to 19th centuries as well as an urban structure showcasing vernacular architecture from the 18th and 19th centuries. All of them possess real historic, architectural, cultural and artistic values. The concentration of the archaeological remains and urban structures within the old urban centre of Ohrid, in the Lin Peninsula, and along the coast of Lake Ohrid as well as the surrounding areas creates an exceptional harmonious ensemble, which is one of the key features that make this region truly unique.

Criterion (iii): The property is a testimony of Byzantine arts, displayed by more than 2,500 square metres of frescoes and more than 800 icons of worldwide fame. The churches of St. Sophia (11th century), Holy Mother of God Perivleptos and St. John Kaneo notably display a high level of artistic achievements in their frescoes and theological representations, executed by local as well as foreign artists. Ancient architects erected immense basilicas, which were to serve as models for other basilicas for centuries. The development of ecclesiastical life along the shores of the lake, along with its own religious architecture, frescoes and icons, testifies to the significance of this region as a religious and cultural centre over the centuries. The similarities between the mosaics of Lin church in the west of the Lake with those of the early basilicas of Ohrid to the east, reflect a single cultural tradition.

Criterion (iv): The Lake Ohrid region boasts the most ancient Slavonic monastery and the first Slavonic University in the Balkans – the Ohrid literary school that spread writing, education and culture throughout the old Slavonic world. The old town centre of Ohrid is a uniquely preserved, authentic ancient urban entity, adjusted to its coastal lake position and terrain, which is characterised by exceptional sacred and profane architecture. The architectural remains comprising a forum, public buildings, housing and sacred buildings with their infrastructure date back to the ancient town of Lychnidos (the former name of the town). The presence of early Christian architecture from 4th to 6th centuries is attested by the lofty basilicas of Ohrid and the small church of Lin. The Byzantine architecture of Ohrid with a great number of preserved sacred buildings of different types from 9th to 14th centuries, is of paramount importance and contributes to the unity of its urban architecture.

Criterion (vii): The distinctive nature conservation values of Lake Ohrid, with a history dating from pre-glacial times, represent a superlative natural phenomenon. As a result of its geographic isolation and uninterrupted biological activity, Lake Ohrid provides a unique refuge for numerous endemic and relict freshwater species of flora and fauna. Its oligotrophic waters contain over 200 endemic species with high levels of endemism for benthic species in particular, including algae, diatoms, turbellarian flatworms, snails, crustaceans and 17 endemic species of fish. The natural birdlife of the Lake also contributes significantly to its conservation value.

Integrity

The property encompasses all of the features that convey the property's Outstanding Universal Value in relation to natural and cultural criteria.

Main threats to the integrity of the property include uncoordinated urban development, increasing population, inadequate treatment of wastewater and solid waste, and tourism pressure, as well as a number of other issues. In addition, pollution from increased traffic influences the quality of the water, which leads to the depletion of natural resources. The highly endemic biodiversity and natural beauty of the Lake are particularly vulnerable to changes in water quality, and there is alarming evidence of a growth in nutrients threatening the oligotrophic ecology of the Lake. This oligotrophic state is the basis for its nature conservation value, and action to tackle this threat must be a priority.

The integrity of the town of Ohrid suffered to some extent, as several houses built at the end of 19th century were demolished in order to exhibit the excavated remains of the Roman Theatre. The overall coherence of the property, and particularly the relationship between urban buildings and the landscape setting of the Lake, is vulnerable to the lack of adequate protection and control of new development.

Authenticity

The town of Ohrid is reasonably well preserved, although uncontrolled incremental interventions have impacted the overall form of the monumental urban ensemble as well as the lakeshore and wider landscape. These are also vulnerable to major infrastructure projects and other developments.

Concerning the religious buildings around Ohrid, important conservation and restoration works have been carried out since the 1990s. Conservation works on the monuments in the region have been thoroughly researched and documented, but some have impacted the property's authenticity. The icons and frescoes are in good condition and kept in the churches. The originally residential function of some buildings has changed over time, as have some of the interior outfitting of residential buildings, which were altered to improve living conditions. While reconstructions often used materials identical to those used at the time of construction, new materials have also been used on occasion, which presents a threat for the authenticity of the property.

The Lin church and its context is vulnerable to lack of protection and, inadequately controlled conservation and development. At the western side of the Lake, the support the buffer zone offers to the Lin peninsula and the landscape setting of the Lake is likely to be ineffective as a result of a lack of adequate protection and development control.

Protection and management requirements

The Natural and Cultural Heritage of the Ohrid region has several layers of legal protection afforded by both States Parties. In the North Macedonian part of the property, the protection of cultural heritage is regulated by the Law on Cultural

Heritage Protection (Official Gazette of RM No. 20/04, 115/07), by-laws and a law declaring the old city core of Ohrid as a cultural heritage of particular importance (Official Gazette of RM No. 47/11). There is currently no specific national protection for cultural sites located in Albania. The protection of natural heritage is regulated by the Law on Nature Protection (Official Gazette of RM No. 67/2004, 14/2006 and 84/2007), including within and outside of protected areas. There is also the Law on Managing the World Cultural and Natural Heritage of the Ohrid Region (Official Gazette of RM No. 75/10). In Albania, the Pogradec Terrestrial/Aquatic Protected Landscape (PPL) was legally established in 1999 to protect both terrestrial and aquatic eco-systems, and covers the entire area of the property and its buffer zone. The States Parties have also signed several agreements for management and protection of the Lake, for instance the 2003 Law on Protection of Transboundary Lakes. Legal instruments need to be kept updated and implemented to protect the property.

The property is managed and protected through a range of relevant management documents, and an effective overall management plan is a clear long-term requirement. The “Physical Plan of the Republic of Macedonia” [sic] of 2004 provides the most comprehensive long-term and integrated document for land management, providing a vision for the purpose, protection, organization and landscape of the country and how to manage it. In Albania, the management plan for the PPL is of a high-quality, and a Protective Landscape Management Plan was developed in 2014, with the objectives to strengthen management, increase habitat protection and conservation, develop touristic and recreational use, and encourage the development of sustainable agriculture and socio-economic activities. This includes a five-year Action Plan (2014-2019) that aims to start remedial measures through strengthening management and cooperation and improving the legal framework. The Plan proposes to exclude the urban areas and the areas where intensive agricultural practices take place around the towns of Pogradec and Buçimas from the zoning of the protected landscape. To this Management Plan has been added a World Heritage Supplement (2017-2027) that sets out systems to strengthen the management of the extended property and its buffer zone. This supplement covers both cultural and natural heritage in terms of threats and necessary actions. These plans need to be effectively implemented and updated regularly. Deficiencies have been noted in the general implementation of urban and protected area planning regulations and plans in both States Parties, which need to be addressed in full.

In North Macedonia, the property is managed by two ministries (the Ministry of Culture and the Ministry of Environment), via three municipalities (Ohrid, Struga and Debrca), although the municipalities legally do not have the authority to protect cultural and natural heritage. The Institute for Protection of Monuments of Culture and Museums in Ohrid has the authority to protect cultural heritage, and the Natural History Museum in Struga is responsible for protecting movable heritage. The Galichica National Park is authorized to manage natural heritage within the park as a whole, and part of the cultural heritage located within the territory of the Park. The Institute for Hydrobiology in Ohrid is responsible for the continuous monitoring of the Lake Ohrid ecosystem, the research and care for Lake Ohrid’s flora and fauna, as well as the management of the fish hatchery, also to enrich the Lake’s fish stocks. In Albania, a management committee is proposed that is a modified version of the Committee for the Protected Areas. This will consist of representatives of the key

government agencies covering both culture and nature, with the National Agency for Protected Areas having a central responsibility in relation to nature conservation matters, and a representative of a citizen's initiative.

Integrated management of natural and cultural heritage through a joint coordinating body and joint management planning are urgently needed to ensure that both the natural and cultural values of the property are conserved in a fully integrated manner. Given the vulnerabilities of the property related to the development and impacts of tourism, the management requirements for the property need strengthening and new cooperation mechanisms and management practices must be put into place. This may include re-evaluating the existing protected areas, and ensuring adequate financial and human resources for management as well as effective management planning and proper law enforcement. Whilst transboundary management mechanisms are set up on paper, these need to be actively and fully operational, on an ongoing basis, in order to ensure the transboundary cooperation required to secure the long-term future for Lake Ohrid. Adequate budgets also need to be provided, beyond the aspirations set out in the management documents for the property. Effective integration and implementation of planning processes at various levels, cross-sectorial cooperation, community participation and transboundary conservation are all preconditions for the successful long-term management of Lake Ohrid.

A range of serious protection and management issues require strong and effective action by the States Parties, acting jointly for the whole of the property as well as within each of their territories. These include the urgent need to protect the water quality of the Lake and therefore maintain its oligotrophic ecological function; to tackle tourism and associated legal and illegal development and the impacts of development on habitats and species throughout the property, including on the lake shores. Resource extraction also needs to be effectively regulated, and enforced, including in relation to fisheries and timber harvesting; and action is required to protect against the introduction of alien invasive species. There is also evidence of climate change impacting the property, such as through the warming of the lake, which requires international attention as such issues cannot be tackled at the local level.

Recommendations of the 2017 joint World Heritage Centre/ICOMOS/IUCN Reactive Monitoring mission (available: at <https://whc.unesco.org/en/list/99/documents/>)

Recommendation 1)

Develop and submit to the World Heritage Centre, for review by the Advisory Bodies, a comprehensive comparative study of alternative routes for the European Corridor VIII railway including those that do not pass in close vicinity of the lakeshore, and in particular avoiding one of the last well-preserved stretches of the lakeshore on the Albanian-Macedonian border (including the option identified and proposed by ICOMOS, based on the mission's visit to the site, and presented in Annex 5, map 6.5.2.5.)

Recommendation 2)

With regards to the construction of highway A2:

- a. Ensure that sufficient passages for people and wildlife are provided that should be wide and high enough to enable smooth crossing by their users, and which should include at least one of the pipe culverts every kilometre with a diameter of two meters,
- b. Upgrade the existing road between Struga and the Albanian border, rather than tracing a new highway, in view of the fragility of the environment in that part of the property, and to the closeness of the lake,
- c. In case of new archaeological findings during the construction works, suspend all construction until the necessary research and inventory work has been carried out.

Recommendation 3)

Assess the cumulative impacts of the railway and highway A2 on the Outstanding Universal Value (OUV) of the property, and justify the choice of not pairing them, or not changing their alignments in order to bring them closer in the northern part of the property.

Recommendation 4)

Permanently abandon plans for the construction of sub-sections (a) and (e) of the A3 road, and suspend the construction of other sub-sections of the A3 road until all appropriate measures are taken to avoid and minimize their potential impacts on the OUV of the property, in line with the specific recommendations made in this report.

Recommendation 5)

Permanently abandon plans for the construction of the Galičica ski centre project, maintain the current internal national park zoning, and consider developing ecotourism options that would not negatively impact the property.

Recommendation 6)

Put in place a moratorium on any coastal and urban transformation within the World Heritage property, at least until all relevant planning documents (Management Plan, OUV-based Urban/Coastal Master Plans etc.) have been prepared and adopted, effective protective juridical regulations have been approved, and effective control mechanisms are established.

Recommendation 7)

Finalise all relevant planning documents (Management Plan, OUV-based Urban/Coastal Master Plans, OUV-based Tourism strategy, including regulations for tourism activities, movable facilities at the beaches and open-air commercial activity)

and submit them to the World Heritage Centre for review by the Advisory Bodies; It is strongly recommended that the SEA process be used for amending and strengthening parts of the Management Plan.

Recommendation 8)

Rigorously ensure that cumulative impacts of any infrastructure, urban and/or coastal development projects on the OUV of the property are assessed during the Strategic Environmental Assessment for Ohrid Region Management Plan (2016-2025), and submitted to the World Heritage Centre, for review and comments by the Advisory Bodies before any decisions are made that would be difficult to reverse, in accordance with paragraph 172 of the Operational Guidelines.

Recommendation 9)

In relation to illegal constructions within the property:

- a. undertake a detailed inventory of all existing illegal constructions within the property and carry out relevant Heritage and Environmental Impact Assessments (HIA and EIA) to assess their impacts on the OUV of the property,
- b. remove all illegal constructions within the property and in particular within the Galičica National Park, which, based on the above-mentioned HIAs and EIAs are considered to represent a threat to the property, including its authenticity and conditions of integrity, and
- c. ensure the strict enforcement of existing laws and regulations to prevent any further illegal construction within the property.

Recommendation 10)

Undertake a thorough assessment in view of defining and establishing a buffer zone for the property, in order to strengthen its protection, which should ideally include Prespa Lake, as an important part of the connected Ohrid-Prespa ecosystem, as well as the remaining part of Galičica National Park.

Recommendation 11)

Clarify the decision-making mechanism and tasks and functions of the Commission for Management of the Natural and Cultural Heritage of the Ohrid Region, and establish genuine participative approaches in the management of the property to ensure adequate involvement of local communities and civil society organizations.

Recommendation 12)

Strengthen transboundary cooperation with the State Party of Albania in the protection and conservation of the property, in particular on monitoring the lake's biodiversity and water quality, exchanging relevant scientific data, and establishing common management actions such as jointly agreed fishing quota.

Recommendation 13)

Improve the central wastewater treatment system for all settlements in the Lake Ohrid basin, and enable education and training of relevant staff to build their technical capacities.

Recommendation 14)

Provide to the World Heritage Centre, for review by the Advisory Bodies, detailed information about the chemical composition of wood pylons used for the walking boards in the Bay of Bones Museum, including a national expert opinion about the threat potentially posed by the chemical concentrations used on the pylons to fish spawning in the lake waters below the museum.

Recommendation 15)

Develop and implement appropriate measures to stabilise the water level of Lake Ohrid, including regular monitoring and control of discharge of lake waters into the Crn Drim river by Macedonian power plants company ELEM, and explore options to re-divert the Sateska river back into the Crn Drim river.

Recommendation 16)

Close and clean up the Bukovo landfill and all illegal waste dumping sites within the property, and establish a functional communal waste collection system.

Recommendation 17)

Take all necessary measures to control invasive species in Lake Ohrid and ensure the regular implementation of a biodiversity monitoring programme, and enforce legal provisions to ensure the protection of endangered and endemic species.

Recommendation 18)

Reduce motorised traffic in Ohrid old town, with time slots for access and restrictions to parking, referring to examples of good practices from other historic city centres around Europe and globally.

Recommendation 19)

Implement appropriate measures in order to prevent any loss of archaeological remains and deterioration of architectural and urban planning coherence, including by enhancing the surroundings of historical buildings and archaeological sites by landscaping and public space improvement, with observance of authenticity and integrity, avoiding shapes and materials too conspicuous or estranged to the site and local culture and flora (e.g. palm trees), as well as avoiding large size commercial billboards within the property, replacing them with smaller size posters.

References

- Boromisza, Z. P., Török, E., & Ács, T. (2014). "Lakeshore-restoration-landscape ecology-land use: Assessment of shore-sections, being suitable for restoration, by the example of Lake Velence (Hungary)". *Carpathian Journal of Earth and Environmental Sciences*, 9(1), 179-188
- ICOMOS (2011). *Guidance on Heritage Impact Assessments for Cultural World Heritage Properties*
- IUCN (2013). *Advice Note on World Heritage Environmental Assessment*. Retrieved at 12-12-2019 from <https://www.iucn.org/theme/world-heritage/resources/iucn-policies-world-heritage/environmental-assessment>
- Kostoski, G., et al. (2010). "A freshwater biodiversity hotspot under pressure. Assessing threats and identifying conservation needs for ancient Lake Ohrid". *Biogeosciences* 7(12): 3999-401
- Tenenbaum, D., & Dooley, E. (2004). Constructed Wetlands: Borrowing a Concept from Nature. *Environmental Health Perspectives*, 112(1), A44-9
- Terzakis, S., et al. (2008). "Constructed wetlands treating highway runoff in the central Mediterranean region". *Chemosphere* 72(2): 141-149

Visualisations of some technical terms

Earthworks: **embankments** (front stage) and **cuttings** (backstage) (A66 motorway, France)



Structures: **pier** (Tangiers-Kenitra high speed railway, Morocco)

