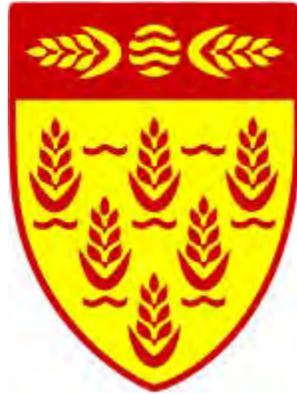


**LOCAL AND REGIONAL COMPETITIVENESS PROJECT  
INVESTMENTS IN TOURIST INFRASTRUCTURE  
IN THE MUNICIPALITY OF KOCHANI**



**ENVIRONMENTAL MANAGEMENT PLAN FOR THE  
PROJECT “MOUNT BIKE PARADISE”**

**JANUARY 2019**

## INTRODUCTION

Local and Regional Competitiveness Project (LRCP) is a four-year investment operation, supported by European Union using funds from IPA II earmarked to competitiveness and innovation in Macedonia. LRCP will be managed as a Hybrid Trust Fund and consist of four components, executed by the World Bank and the Government of Macedonia. The Project will provide investment funding and capacity building to support sector growth, investment in destinations and specific destination prosperity. At the regional and local levels, the Project will support selected tourism destinations in the country through a combination of technical assistance to improve destination management, infrastructure investment and investments in linkages and innovation. The investments will be undertaken through a grant scheme for the regional tourism stakeholders such as municipalities, institutions, NGOs and private sector.

This Environmental and Social Management Plan (ESMP) has been prepared for activities carried out under the project “Mount bike paradise” compliant to the Environmental and Social Management Framework (ESMF). All activities must ultimately be in compliance with the ESMF. The ESMP presents the environmental due diligence document comprised of project description, technical details, scope, setting and location based on which it assesses the environmental and social risks and the avoidance and mitigation measures addressing them. Implementation of mitigation measures addressing the identified risks and issues defined in the ESMP is mandatory.

Within the application for getting grant under Local and Regional Competitiveness Project - “Investment in tourism-related infrastructure and linkages at destinations”, the Municipality of Kocani prepared Environmental and Social Management Plan for the following project activities:

1. Construction, reconstruction and upgrading of mount bike trails on Osogovo Mountain (Ponikva –Lake Gratche – Kochani) – 35 km
2. Reconstruction of mountain lodge on Ponikva including providing of equipment.

The main aim of the project is improvement of tourism potential and development of adventure tourism in the Eastern part in Republic of Macedonia. Realization of the project will contribute for better living conditions and economic development in the Municipality of Kochani.

## MUNICIPALITY OF KOCHANI

With the Law on territorial organization of local self-government of Republic of Macedonia (Official Gazette of RM no. 55/04) was established municipality of Kochani like Unite of Local Self-Government and was determinate area with inhabited places which composition municipality of Kochani. Municipality of Kochani is situated in the east part of Republic of Macedonia and with new territorial partition of the Republic of Macedonia, Kochani has 38.092 inhabitants (according to the census from 2002 y.) and 28 inhabited places and it is spread on territory of 382 km<sup>2</sup>.

The main activities of the Municipality of Kochani are determinate with the Law on local self-government (Official Gazette of RM no. 5/02) under which municipalities are responsible for performing the following tasks:

1. Urban planning (urban and rural);
2. Environmental an nature protection;
3. Local Economy Development;
4. Communal activities;
5. Culture;
6. Sport and recreation;
7. Social and child protection;
8. Education;
9. Health protection;
10. Protection and rescue of people and property;
11. Fire protection;
12. Supervision and
13. Other statutory duties.

Municipal Administration of Local self-government of the Municipality of Kochani is organized in 5 sectors with 12 departments:

**Sector of Legal, Public Affairs and Public Works:**

- Department of Legal and General Affairs and
- Department of Public Affairs.

**Sector of Financial Affairs:**

- Department of Budget Coordination
- Department budget control
- Department of Accounting and Payment
- Department taxes, fees and charges

**Sector for urbanism, environmental protection and community activities:**

- Department of Urban Planning and Environmental Protection and
- Department of communal

**Sector for regulation and disposal of construction land:**

- Department for construction and land
- Department for action to dispose of land

**Sector for Planning and Development:**

- Department for LED and cross-border cooperation
- ICT and geo information systems department

There are also and 4 independent departments in the municipality as follows:

- Department for inspection services

- Department for internal revision
- Department for human resources and
- TFU (Territorial fire unit) of Kochani

The total number of employees in the Municipality of Kochani is 96 persons: 69 civil servants, 11 technical personnel and 16 employed in TFU.

### **Vision of the Municipality of Kochani**

Creation of conditions for positive economic growth within the municipality for the next 5 years with the establishment of a system of usage and management of local resources (economy) that will provide keeping of the current jobs, and at the same time will create conditions for opening new working places, which is a basic for improving the standard and living conditions within the Municipality.

### **Environmental staff in the Municipality**

Within the environmental sector in the Municipality, works only one person for environmental protection.

## **LEGAL FRAMEWORK**

**Implementation of all project activities will not be performed in the protected areas. Some of the proposed sub - projects activities are located in the frame of the proposed protected area – Protected Landscape “Osogovo Mountains”, but still this proposed landscape is not adopted by the Government of the RM as protected landscape.**

According to the national environmental legislation, environmental impact assessment must be conducted for the all the projects that includes construction/reconstruction of the pedestrian paths, and mountain lodge by preparing Elaborate for environmental protection/EIA Study (Decree for Elaborate for environmental protection/EIA Study (Official Gazette of RM no. 32/12)).

Within the **activity 1** - Construction, reconstruction and upgrading of mount bike trails on Osogovo Mountain (Ponikva –Lake Gratche – Kochani ) in total length of 35 km, 2 EIA studies were prepared for the Mount bike trail from Kochani (settlement Bavchaluk) to lake Gradche in total length of 2.801,44 m and pedestrian and mount bike trail from Hotel Gratche to the dam of the lake Gratche in total length of 520,81 m by the Company Impact Vizija LLC Skopje in June 2016. These two Environmental Elaborates were adopted by the Mr. Zoran Manasiev, Head of Department, authorized by the Mayor of the municipality of Kochani (Decision UPI no. 22-270 from 23.06.2017 (Annex 2) and Decision UPI no. 22-fsub-p271 from 23.06.2017(Annex 3).

Other bike trails (Mount bike trail Jastrebnik (from lake Gratche to SRC Ponikva) in total length of 15,21 km, mount bike from Ponikva to the dam of the lake Gratche in total length of 14,973 km, and Mount bike from the dam of the lake Gratche to waterfalls in total length of 1,567 km) are not in the area which is covered with detailed urban plans (according to the Law on construction) and therefore has not been prepared the Environmental Elaborates s for these trails.

According to the Decree for Elaborate for environmental protection / EIA Reports (Official Gazette of RM no. 32/12), **activity 2** - Reconstruction of mountain lodge on Ponikva including providing of equipment, belongs in Annex 1, Chapter XI, Point 2 - Accommodation facility and food service, preparation of Elaborate for environmental protection /EIA Report (not full EIA Study) it is mandatory for this sub-project. In January 2016, Elaborate/EIA Report for this activity 2 was prepared by the environmental inspector of Municipality Kochani, Mrs. Leta Georgieva and it was adopted by the Mayor of the municipality of Probistip, Mr. Toni Tonevski with Decision UP1 no.25-2 from 15.01.2016 (Annex 4).

All Environmental Elaborates were prepared in accordance with national regulation and contains the description of the main project goals, main sub-project activities, photos of the locations where the sub-project activities will be performed and general environmental mitigation measures. The scope of all three aforementioned approved EIAs are identical to the activities presented in the ESMP. Conclusions, recommendations, requirements and measures in the EIAs are included to this ESMP and will be implemented as an intrinsic part of this document.

**National legislation relevant for the project (during construction/ reconstruction and operational phase):**

- Law on Environment (Official Gazette of RM No.53/05, 81/05, 24/07, 159/08, 83/09, 124/10, 51/11, 123/12, 93/13, 187/13, 42/14, 44/15, 129/15, 192/15, 39/16);
- Decree on the activities for which the EIA Report – Elaborate should be prepared, and need to be adopted by the Mayor of the municipality or Mayor of City of Skopje (Official Gazette of RM" No. 80/09, 32/12)
- Rulebook on the form and content of the EIA Report, in accordance with the types of activities or activities for which an EIA Report is prepared, as well as in accordance with the providers of the activity and the scope of the activities and activities carried out by the legal entities and individuals, their approval, as well as the manner of keeping the register of approved reports ("Official Gazette of RM" No. 44/13, 111/14);
- Law on Waters (Official Gazette of RM No. 87/08, 6 / 09, 161/09, 83/10, 51/11, 44/12, 163/13, 180/14, 146/15);
- Decree on classification of waters (Official Gazette of RM No. 18/99);
- Decree on categorization of water streams, lakes, accumulations and groundwater (Official Gazette of RM No. 18/99, 71/99) ;
- Law on Waste (Official Gazette of RM No. 68/04, 71/04, 107/07, 102/08, 134/08, 124/10, 51/11, 123/12, 147/13, 163/13, 51/15, 146/15, 192/15);
- List of Waste Types (Official Gazette of RM No. 100/05);
- Law on Packaging and Packaging Waste (Official Gazette of RM No. 161/09, 06/09, 17/11, 47/11, 136/11, 6/12, 39/12, 163/13, 146/15);
- Rulebook on the procedures and manner of collection, transport, processing, storage, treatment and disposal of waste oils, and the manner of keeping records and submission of data (Official Gazette of RM No. 156/07);
- Rulebook on general rules for handling with communal and other non-hazardous waste (Official Gazette of RM No. 147/07);
- Rulebook of detailed conditions on the handling of hazardous waste, and on the manner of packaging and labelling (Official Gazette of RM No. 15/08);

- Law on Nature Protection (Official Gazette of RM No. 67/04, 14/06, 84/07, 35/10, 47/11, 148/11, 59/12, 13/13, 163/13, 41/14, 146/15)
- Law on Forests (Official Gazette of RM No. 64/09, 24/11, 54/11, 25/13, 79/13, 147/13, 43/14, 160/14 and 44/15);
- Lists for determining strictly protected and protected wild types (Official Gazette of RM No. 139/11);
- Law on Noise Protection (“ Official Gazette of RM No. 79/07, 124/10, 47/11, 163/13, 146/15)
- Rulebook on noise indicators and the area of application of additional noise indicators (Official Gazette of RM No. 107/08);
- Rulebook on the permissible level of noise in the environment (Official Gazette of RM No. 147/08);
- Rulebook for locations of measuring stations and measuring points (Official Gazette of RM No. 120/08);
- Law on Ambient Air Quality (Official Gazette of RM No. 67/04 with amendments No. 92/07, 35/10, 47/11, 59/12, 163/13, 10/15, 146/15);
- Decree on limit values of levels and types of pollutants in ambient air and alert thresholds, deadline for achieving limit values, margins of tolerance of the limit value, target values and long term goals (Official Gazette of RM No. 19/05);
- Law on Protection and Rescue ("Official Gazette of RM" No. 36/04, 49/04, 86/08, 124/10 and 18/11);
- Law on Protection of Cultural Heritage (Official Gazette of RM No. 20/04, 71/04, 115/07, 18/11, 148/11, 23/13, 137/13, 164/13, 38/14, 44/14, 199/14, 154/15);
- Law on Occupational Health and Safety (Official Gazette of RM No. 92/07, 98/10, 93/11, 136/11, 60/12, 23/13, 25/13, 137/13, 164/13, 158/14, 15/15 and 129/15);
- Law on Health Protection (Official Gazette of RM No. 43/12, 145/12, 87/13, 164/13, 39/14, 43/14, 132/14, 188/14, 10/15, 61/15)
- Rulebook on minimal requirements for occupational health and safety on working place (Official Gazette of RM No. 154/2008);
- Rulebook for personal protective equipment that uses employees at work (Official Gazette of RM No.92/07);
- Rulebook for occupational health and safety at work for workers exposed on risk of noise (Official Gazette of RM No. 21/2008);
- Law on public roads (Official Gazette of RM No. 84/08, 52/09, 114/09, 124/10, 23/11, 53/11,44/12, 168/12, 163/13, 187/13, 39/14, 42/14, 166/14, 44/15, 116/15,150/15, 31/16 and 71/16)
- Law on spatial and urban planning (Official Gazette of RM No. 51/05; changes 137/07 и 24/08 reviewed text, 91/09; changes 124/10, 53/2011, 144/12 и 70/13, 163/13, 42/14, 44/15, 193/15 and 31/16)
- Rulebook for standards and norms for spatial planning (Official Gazette of RM No.69/99)

## PROJECT DESCRIPTION

***Sub-project activity 1: Construction, reconstruction and upgrading of mount bike trails on Osogovo Mountain (Ponikva –Lake Gratche – Kochani) – 35 km***

The Sub-project activity 1 includes reconstruction, rehabilitation and upgrading of current not paved mount bike trails on Osogovo Mountain in total length of 35 km. In general, the project activities that will be performed along the trails on Osogovo Mountain will include:

- preparatory work - marking out and securing the route of the trail; removal of the small stem vegetation (low vegetation up to 40 cm); removal of the existing concrete tiles (only on trail Hotel Gratche to the dam of the lake Gratche);
- Construction work – removal of topsoil; installation of crushed stone material; paving with block paving tiles, construction of concrete stairs between 503.23 - 510.27m of the route (only on trail Hotel Gratche to the dam of the lake Gratche); installation of urban equipment along the trails (information boards, benches, waste bins, viewpoints, etc.); concrete reinforcement activities (straightening, cutting, bending, tying and installation of reinforcing bar; embedding concrete MB30, etc.) during the installation of the urban equipment along almost all trails, etc.
- Cleaning up the construction site from the generated wastes.

The detailed description of the planned activities for each trail (project location) will cover following:

1. Mount bike trail from Kochani (settlement Bavchaluk) to lake Gratche in total length of 2.801,44 m – the planned interventions include: marking out the existing route, clearing of vegetation along the trails (up to 40cm tall, and not outside the trails), the width of the trail will not undergo any changes, removal of topsoil on the trail, placement of crushed stone material, concrete reinforcement activities (straightening, cutting, bending, tying and installation of reinforcing bar; embedding concrete MB30, etc.) during installation of urban equipment (information boards (2), signposts (6), gazebos (4), benches (8), waste bins (12), viewpoints (2), etc.);
2. Pedestrian and mount bike trail Hotel Gratche to the dam of the lake Gratche in total length of 520,81 m, – the planned interventions include: marking out the existing route, clearing of vegetation along the trails (up to 40cm tall, and not outside the trails), the width of the trail will not undergo any changes, removal of topsoil on the trail, placement of crushed stone material, concrete reinforcement activities (straightening, cutting, removal of concrete (265 m<sup>3</sup> concrete tiles), bending, tying and installation of reinforcing bar; embedding concrete MB30, etc.) during installation of urban equipment (information boards (2), benches (2), waste bins (2), etc.), construction of stairs (between 503.23 - 510.27m of the route), paving with paving (bechaton) tiles with layer of 6cm;
3. Mount bike trail Jastrebnik (lake Gratche –SRC Ponikva) in total length of 15,21 km, – the planned interventions include: marking out the existing route, clearing of vegetation along the trails (up to 40cm tall, and not outside the trails), the width of the trail will not undergo any changes, removal of topsoil on the trail, concrete reinforcement activities **are not planned** during the installation of urban equipment (information boards (2), signposts (4), wooden overhang with bench (7),

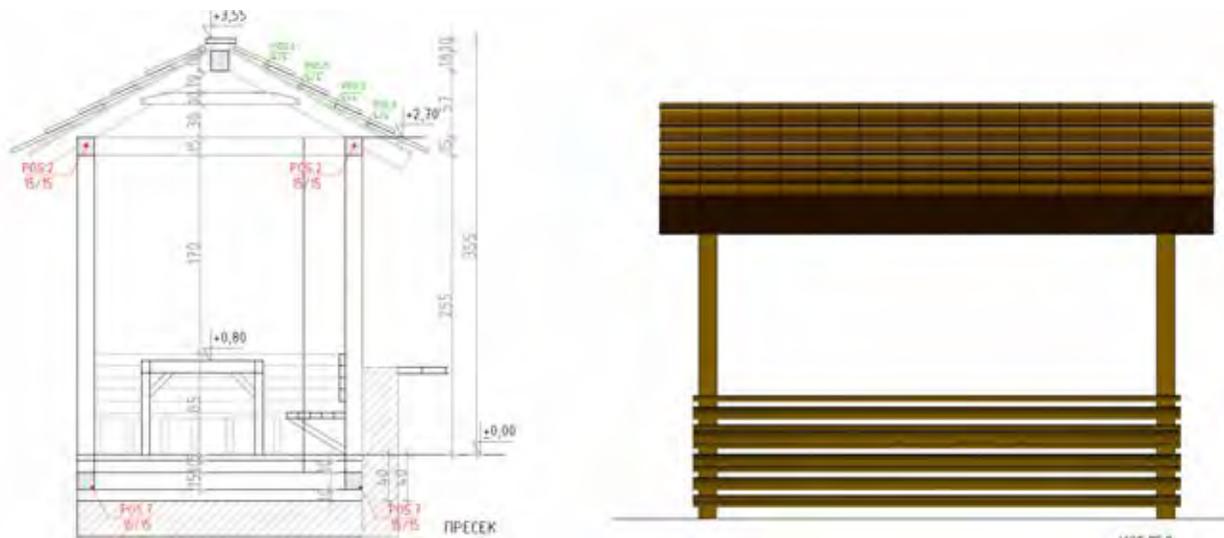
4. Mount bike from Ponikva to the dam of the lake Gratche in total length of 14,973 km, – the planned interventions include: marking out the existing route, clearing of vegetation along the trails (up to 40cm tall, and not outside the trails), the width of the trail will not undergo any changes, removal of topsoil, concrete reinforcement activities **are not planned** during the installation of urban equipment (information boards (2), signposts (4), wooden overhang with bench (6) and waste bins (6)).

Mount bike from the dam of the lake Gratche to waterfalls in total length of 1,567 km. – the planned interventions include: marking out the existing route, clearing of vegetation along the trails (up to 40cm tall, and not outside the trails), the width of the trail will not undergo any changes, removal of topsoil on the trail, placement of crushed stone material, concrete reinforcement activities (straightening, cutting, bending, tying and installation of reinforcing bar; embedding concrete MB30, etc.) during installation of urban equipment (information boards (2), signposts (6), gazebos (5), viewpoints (4), benches, (10), waste bins (15), barbecue (5) etc.);

The installation of the viewpoints/small gazebos along the trails will include:

- Soil removal and excavation;
- Concrete reinforcement activities (straightening, cutting, bending, tying and installation of reinforcing bar; embedding concrete MB30 in layer of 20cm, etc.)

Installation of wood construction of the viewpoints and gazebos (shelters, tables, benches, etc.). The viewpoints will be constructed from fabricated wood with height of 3,55m and width 2,55m. Between the pillars will be build 2 wooden benches with a backrest, stabilized for the supporting columns. In the middle of the viewpoint will be set a rectangular wooden table 103/135cm with a height of 80cm.

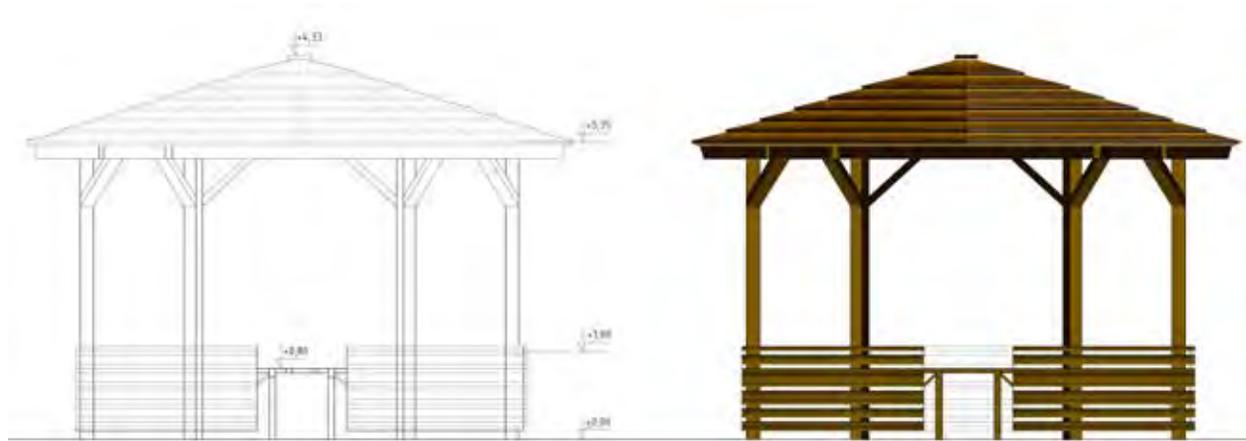


Wood viewpoint

Four (4) viewpoints will be constructed on the trail from the dam of the lake Gratche to the waterfalls on the following points: 23-0+440.00; 24-0+460.00; 43-0+840.00; 65-1+280.00.

Another two (2) wooden viewpoints will be constructed on the trail Bavchaluk – lake Gratche on the following points: 84-1+560.00 and 93-1+840.00.

The hexagonal gazebos will be constructed from fabricated wood, with height of 4,33m. Pillars be made of dried wood 15/15 /250 cm, set in the shape of a hexagon, at distance of 218 cm, set on wooden beams 15/15 cm and enhanced on the existing AB board. Wooden roof in the shape of a hexagon with a side 296 cm at a height of 265cm will be constructed. Between the pillars of the gazebo will be build 6 wooden benches with a backrest, stabilized on the supporting pillars. In the middle of the gazebo, a wooden table will be set up in the shape of a hexagon with a height of 80cm.



Hexagonal Gazebo

According the Main Design for the trails, on the 1<sup>st</sup> trail (Bavchaluk – lake Gratche) would be constructed 4 gazebos on the following points: 43-0+840.00; 48-0+940.00; 59-1+160.00; 120-2+20.00.

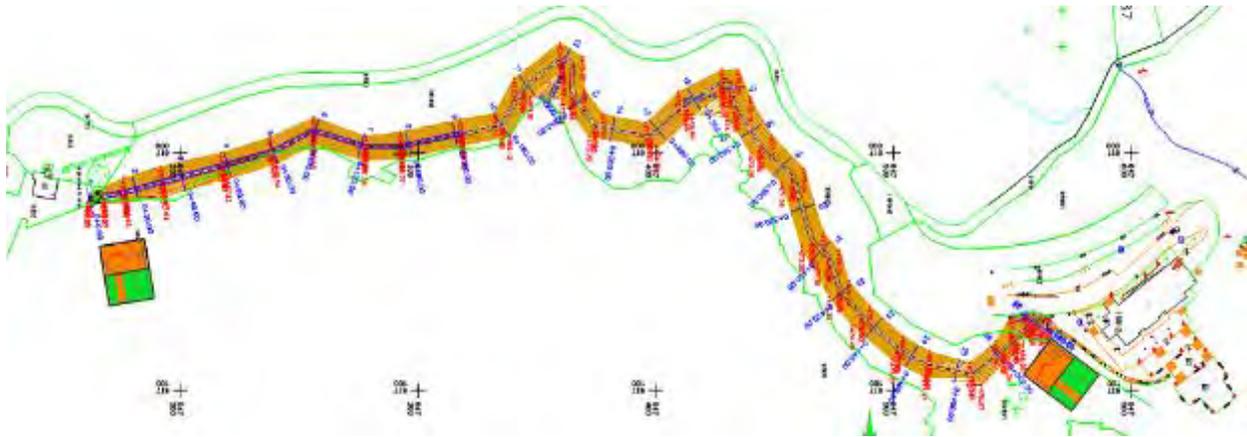
Also, on the 5<sup>th</sup> trail (from the dam of the lake Gratche to the waterfalls) would be constructed 5 gazebos on the following points: 12-0+220.00; 44-0+860.00; 70-1+380.00; 78-1+540.00.

No logging will take place.

Generally the project activities for reconstruction and upgrading of mount bike trails on Osogovo Mountain will include: marking out the **existing route** and clearing of vegetation along the trails where there is a need (approximately 21.000 m<sup>2</sup> for the all mount bike trails, but only low vegetation up to 40 cm, grass and roots; there is no need for cutting of the trees along the trails), removal of topsoil and concrete, transportation of the removed material to the designated temporary storage, placement of crushed stone, installation of urban equipment (information boards, waste bins, etc.) placement of children's requisites (playgrounds, upholsters) on the track from Kocani (n.c. Bachchaluk) to Lake Gratche and concrete works like building concrete steps on a part of the pedestrian and cycling path from the Hotel Gratche to the dam of the Gratche Lake.

Construction activities (paving with bechaton tiles) will be performed only on the trail from hotel Gratche to the dam of the Lake Gratche with the length of 521 m which according to the Main Design will include following:

- Landscaping – marking out and securing the route of the trail; removal of the small stem vegetation (low vegetation up to 40 cm); removal of the existing concrete tiles (265 m<sup>3</sup>); etc.
- Earth works – removal of soil; installation of crushed stone material in layers of 25 and 5cm; paving with bechaton tiles of 6cm; etc.
- Installation of urban equipment along the trail (information boards, benches, waste bins, etc). and
- Concrete works – construction of concrete stairs along the route of the trail (between 503.23 - 510.27m of the route).



**Figure 1** Layout of the trail from hotel Gratche to the dam of the Lake Gratche 775m<sup>2</sup> (source: Main project for the trail, Sivil Inzinerig - Skopje)

Reconstruction of the other mount bike trails (total length 34.643 m), within the existing width, will include: clearing of vegetation along the existing trails and installation of urban equipment from natural local raw materials (wood): benches, sightings, info boards, rest areas, garbage bins, children's playgrounds and etc.).

All pedestrian paths, except for path from the Hotel Gratche to the dam of the Gratche Lake, are envisaged to be unpaved pedestrian and bicycle paths (only arrangement and marking and clearing of existing paths without asphaltting), clearing up of their routes and removal of existing low steam vegetation (grass, routes, shrubs, etc.). No extension of their width will be performed nor installation of crushed stone material. The existing condition will be preserved – unpaved pedestrian and bicycle paths without a pavement/road construction.

All mentioned mount trails on Osogovo Mountain are existing and there is no need for new routes (Figure 2). Soil stability will be checked and ensured prior to works commence and geotechnical studies carried out if needed.



Figure 2 Current situation of the existing mount bike trails on Osogovo Mountain (Ponikva –Lake Gratche – Kochani)

### ***Activity 2: Reconstruction of mountain lodge on Ponikva including providing of equipment***

Project activities include reconstruction/extension of the mountain lodge Ponikva (is not located in the protected area) in three levels: basement, ground floor and first floor/attic. Currently the object has dimensions: 7 m x 35 m. Within the object there is one room which in the past was used as classroom for lectures and training of students. The walls are made of stone with 60 cm. The height of the building is 2.6 m. Doors and windows are wooden and quite damaged. The roof construction is wooden with a roof of tiles.

Total area of the mountain lodge will be 490.54 m<sup>2</sup> (Figure 3 ).The sub-project generally will include the following activities: demolition of the internal part of the existing building (internal walls), removal of a wooden roof structure covered with roofing tiles and making new roof, new reinforced concrete steel construction with construction of new concrete pillars attached to the existing stone walls, reinforced concrete stairs leading to the attic, excavation of the basement and installation of the electricity, connection to existing water supply and sewage system and LED lighting. The construction activities will include masonry, insulation and ceramic work, construction of facade, installation of pellet boiler and other activities related to the reconstruction of the mountain lodge. The roof is covered with tiles and there is no asbestos on the site.

The mountain lodge Ponikva will be connected to the existing municipal water supply network. The water supply connection will be conduct with polypropylene pipes with ø100mm. The discharge of wastewater from the mountain lodge will be provide trough the connection with the municipal sewerage system. This will be carried out with construction of internal (with PVC pipes with ø50 mm - ø125mm) and external (with PVC pipes with ø160 mm) sewerage system within the object.

For performing of the project activities would be used following equipment:

- Excavator for digging and loading;
- Truck for transportation of waste material;
- Mixer with pump for the laying of concrete;
- Construction work equipment (circular, scaffolding).



**Figure 3 Current situation with the mountain lodge on Ponikva**

The owner of the mountain lodge is Municipality of Kochani (With the Decision of the Municipalities of Probishtip and Kocani, the mountain lodge on Ponikva belongs to the Municipality of Kochani) which has obtained construction permit.

The mountain lodge can be easily access through the existing road that passes near the lodge (the terrain around the mountain lodge is flat and easily accessible for mechanization).

#### LOCATION OF THE PROJECT

##### ***Sub-project 1: Construction, reconstruction and upgrading of mount bike trails on Osogovo Mountain (Ponikva –Lake Gratche – Kochani) – 35 km***

The location of the project for construction, reconstruction and upgrading of mount bike trails on Osogovo Mountain is around the accumulation Gratche on a distance of 3 km from Kochani and includes the area from Lake Gratche to tourist locality Ponikva.

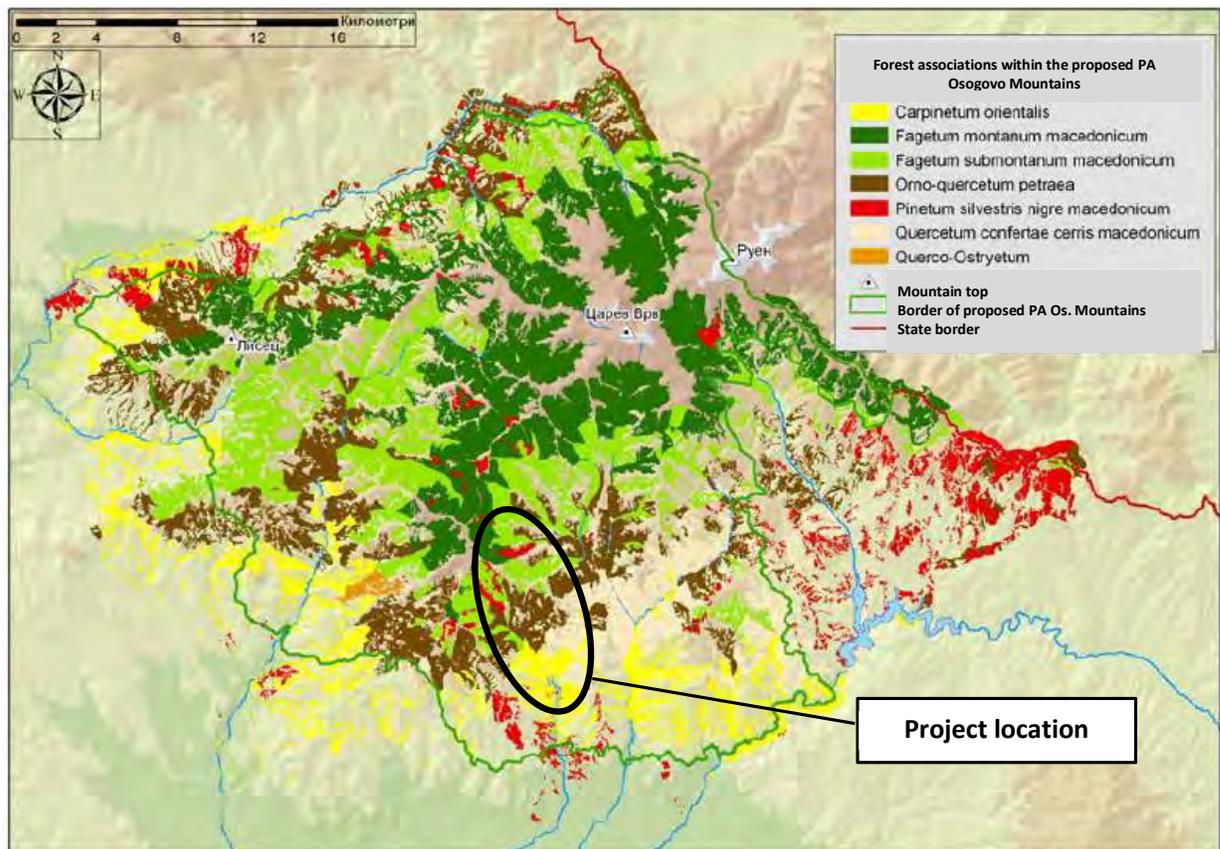


**Figure 4 Location of the project “Mount bike trails on Osogovo Mountain” (Ponikva –Lake Gratche – Kochani)**

Proposed projects activities are located in the frame of the proposed protected area – Protected Landscape “Osogovo Mountains”, but this proposed protected landscape is not adopted as a protected area. There are no protected species and habitats around the project location, nor sensitive areas.

The project location covers area with altitude from 400 to 1500m above sea level. Starting from the lowest point of elevation (400 till 1500m), along the project location can be found habitats of low stem forest vegetation such as: *Corylus avellana* (hazelnut - *IUCN Status: Least Concern*), *Carpinus betulis* (hornbeams - *IUCN Status: Least Concern*), *Fraxinus excelsior* (European ash - *IUCN Status: Near Threatened*) and *Quercus petraea* (sessile oak - *IUCN Status: Least Concern*). Above this forest belt, as representative forest habitat appears European beech (*Fagus sylvatica*). At the highest point of elevation of the project location, on small areas, can be found conifers represent by the following species: *Pinus sylvestris* (white pine - *IUCN Status: Least Concern*), *Pinus nigra* (black pine - *IUCN Status: Least Concern*), *Abies alba* (European silver fir - *IUCN Status: Least Concern*) and *Juniperus communis* (common juniper - *IUCN Status: Least Concern*).

The distribution of forests associations (vegetation) within the Osogovo Mountains and also vegetation which can be found along the project locations are shown on the following figure.



Source: Study for valorization of proposed protected landscape area Osogovo Mountains

Figure 5 Forest communities in the Osogovo area

All the trails already exist and there is no need to cut trees (only clearing from low vegetation up to 40 cm), therefore the project does not plan any logging.

The land where the project activities will be performed is mainly uninhabited, owned by the Republic of Macedonia. Around the bike trails there are only few weekend houses at distance of about 500 m from the 3<sup>rd</sup> trail (mountain villages Jastrebnik and Curiljak which are dispersed

villages) and on the 4<sup>th</sup> trail (Jastrebnik – Gratche) there are around 10 -15 houses in village Leshki (200 m from the trail).



Village Jastrebnik



Locality Ponikva

On the locality Ponikva there are weekend houses, ski center, bungalows, sports and recreation playgrounds, hotels etc. The locality Ponikva is located 20 km north from Kocani on the Osogovo Mountains at 1580m above sea level, which is an extraordinary place for the development of summer and winter tourism. On Ponikva there is a resort with 82 beds, ski trails, two ski lifts, a weekend settlement, restaurants, motels, and a special attraction is offered by the hunting reserve "Osogovo" rich in game such as deer, roe deer, wild sheep and wild boar.

All the trails are existing and there will not be cutting of trees. Only clearing of low vegetation (max. up to 40 cm) where is needed along the trails.

The first bike trail goes on the west part of Kochanska River. It starts from unpaved parking located on the road Kochani – dam of the lake Gratche. The second bike trail starts from Hotel Gratche and ends near the dam of the lake Gratche. The third trail starts from the Gratche dam goes through two mountain villages Churiljak and Jastrebnik. Old school adapted in Center for valorization of cultural heritage is located in Jastrebnic village. This trail ends on SRC Ponikva. The fourth bike trail starts from village Jastrebnik and ends at Gratche dam, while the last trail starts from Gratche dam, follows the lake coast and ends at the waterfalls.

Total length of the mount bike trails is 35 km with width from 1,5 to 2 m width. Locations of the 5 mount bike trails are presented in the figure 6.



Legend:

1	Mount bike trail of 2.801,44 m	Kochani (settlement Bachchaluk) to Lake Gradce in the length of 2.801,44 m
2	Mount bike trail of 520,81 m	Hotel Gradce to the crown of the dam Gradce in length of 520,81 m
3	Mount bike trail of 15,21 km	Jastrebnik (Lake Gardce - SRC Ponikva) in length of 15,21 km
4	Mount bike trail of 14,973 km	Ponikva to the dam Gradce in length of 14,973 km
5	Mount bike trail of 1,567 km	the crown to the dam Gradce to the waterfalls in the length of 1,567 km

Figure 6 Location of the sub-projects -Pedestrian and biking trails

***Sub-project 2: Reconstruction of mountain lodge on Ponikva including providing of equipment***

Mountain Lodge Ponikva is located in cadastral parcel 332/442 in the cadastral municipality Jamniste (Municipality Probistip) in SRC Ponikva. The owner of the mountain lodge is Municipality of Kochani (With the Decision of the Municipalities of Probishtip and Kochani, the mountain lodge on Ponikva belongs to the Municipality of Kocani) which has obtained construction permit. Surrounding land around the mountain lodge is owned by the Republic of Macedonia.

The mountain Lodge Ponikva is not protected as historical or cultural heritage.

The building is located on steep terrain from the northeast to the southwest. Access to the building is through three pedestrian paths which are connected with the existing asphalt road Kochani - Ponikva.

In the close surrounding of Mountain Lodge on Ponikva are located tourist facilities. Some of them are renovated, while other are ruined and are not in operation. On the Figure 7 is presented location of the mountain lodge on Ponikva.



Figure 7 location of the mountain lodge Ponikva

Photos from the inside and outside of the mountain lodge on Ponikva are given on the Figure 8 8.

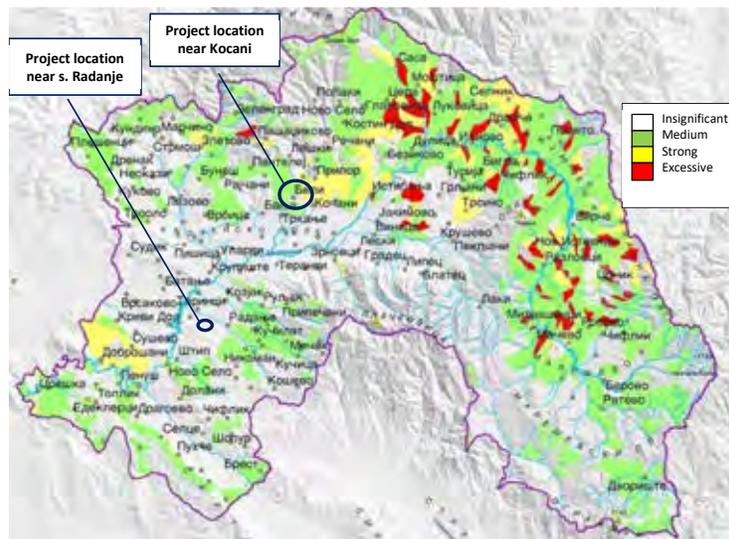


Figure 8 Photos from the inside and outside of the mountain lodge Ponikva

## GEOLOGY

Geologically, the eastern part of Macedonia, including the Kochani region (basin of Bregalnica) belongs to Rhodope system (Serbian-Macedonian massif) consisting of crystallized shale and granite. The formation of these mountains occurred in the paleozoic, with faults formed later in the tertiary. Today, the basin is characterized by a varied relief structure, which consists of flat valleys and hilly mountainous areas.

The aspect of geological formations for municipality of Kochani contains precambrian metamorphic rocks, paleozoic metamorphic sediments and tertiary volcanic rocks and quaternary sediments. Alluvial deposits are represented by gravel, sands and muscovite clays and are located along the river flow of River Bregalnica.



Source: Spatial plan of East Planning Region in RM

Figure 9 Erosion level of project locations within the East Planning Region in RM

## HYDROLOGY

The terrain around the mount bike trails is hilly, and the area is poor with aquifers. Lack of springs, short and small watercourses, and expressive flows, includes the municipality among the hydrologic poor areas in Republic of Macedonia. The greatest water potential in the region is the river Bregalnica, which is collecting all small rivers around. Near the existing trails are passing Kochanska River, as well as, Mala River and Golema River.

## BIODIVERSITY IN CLOSE SURROUNDING OF THE SUB-PROJECTS

Osogovo Mountains, as well as the largest part of Eastern Macedonia, are a part of the continental European biogeographical region, in the province of high Balkan Mountains. According to the organization of the climate-vegetation-soil zones, the area Ponikva located at Osogovo Mountains is classified in the continental mountainous area (1.300 до 1.650 m).

The forest association Ass. Orno-quercetum petrae is developed along the flow of r. Mala Reka from Gratche to Ponikva. The association is composed of sessile oak (*Quercus petraea*) and manna ash (*Fraxinus ornus*).

At lower altitudes the trail runs through a landscape of low-stemmed deciduous forests (arid). The topographical relief has tilted and moderate slopes, as well as a lot of steep slopes. The characteristic types of soil of the area are chromic luvisol on saprolite and cambisol, however lithosols and regosol on rocks are also found. This landscape is present at altitudes between 700-1000 m.

The vegetation present at the project area consists of thermophilous forests of hornbeams and oak, Quercetum frainetto-cerris, fragments of European hop-hornbeam (*Ostrya carpinifolia*) on the southern slopes. The valleys of the northern slopes are populated with beech forests (Festuco heterophylae-Fagetum). The matrix is composed of forests mainly thermophilous forests of hornbeams and oak, and Quercetum frainetto-cerris with patches of abandoned meadows.

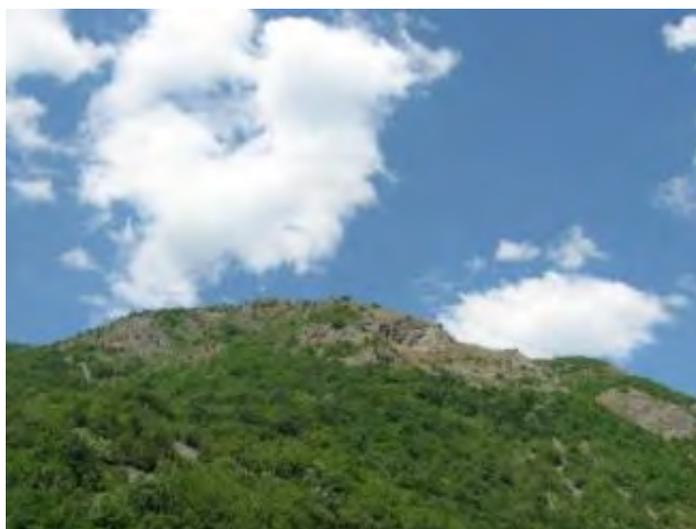


Figure 10 A landscape of low-growing deciduous forests

**The plant associations** of the subalpine and alpine belt: Thymo-Poetum violaceae, Jasioni-Festucetum supinae and Lino-Seslerietum grow on large areas at Ponkva area, on silica substrate topped with acid soil.

**The characteristic plant species** that can be found in the project area are the following: *Fagus sylvatica*, *Fraxinus excelsior* (IUCN Status: Least Concern), *Carpinus betulus* (IUCN Status: Least Concern), *Corylus avellana* (IUCN Status: Least Concern), *Quercus petraea* *Quercus* (IUCN Status: Least Concern), *Berberis vulgaris*, *Sorbus aucuparia* (IUCN Status: Vulnerable), *Evonymus europaea* (IUCN Status: Least Concern), *Acer campestre* (IUCN Status: Least Concern), *Acer pseudoplatanus* (IUCN Status: Least Concern), *Sorbus torminalis* (IUCN Status: Least Concern), *Tilia platyphyllos* (IUCN Status: Least Concern), *Ligustrum vulgare*, *Prunus cerasu* (IUCN Status: Least Concern), *Prunus spinosa* (IUCN Status: Least Concern).

**Fish:** The following fish species are found in the Lake Gradce:

*Rutilus rutilus* Kar. (IUCN Status: Least Concern), *Rutilus macedonicus* Steind., *Leuciscus cephalus vardarensis*, Kar., *Chondrostoma nasus vardarensis* Kar., *Barbus barbus macedonicus* Kar., *Barbus meridionalis petenyi* Heck., *Gobio gobio* L. (IUCN Status: Least Concern), *Alburnus alburnus macedonicus* Kar. (IUCN Status: Critically Endangered A3c; B1ab(i,ii,iii)+2ab(i,ii,iii), *Vimba vimba melanops* Heck., *Cyprinus carpio* L. (IUCN Status: Vulnerable A2ce) and *Carassius auratus gibelio* Bloch. The European carp (*Cyprinus carpio*) is considered as vulnerable (VU) and it is protected as strictly protected species (according the Lists for determination of strictly protected and protected wild species – List 1 (Official Gazete no.139/11), and *Alburnus alburnus macedonicus* is critically endangered (CR) species according to the global IUCN red list.

#### Ichthyofauna of river Kochanska

Ichthyofauna within the river Kochanska, is represent with several species such as: *Rutilus macedonicus* Steind. (Macedonian Roach - IUCN Status: Data Deficient – needs updating), *Leuciscus cephalus vardarensis* Kar. (European [chubs](#)), *Chondrostoma nasus vardarensis* Kar. (Common nase, IUCN Status: Near Threatened – needs updating), *Barbus barbus macedonicus* Kar. (IUCN Status: Data updating), *Gobio* Deficient – needs *gobio* L. (Gudgeon, IUCN Status: Least Concern) and *Vimba melanops* Heck. (Macedonian vimba, IUCN Status: Data Deficient – needs updating). The information about fish biodiversity in the river Kochanska are obtained from the Study for biodiversity of proposed protected area – landscape “Osogovo Mountains”.

**Reptiles and amphibians:** In the higher parts of the mountain (1300-1800 m) with beech forest the following species can be found: *Lissotriton vulgaris* (IUCN Status: Least Concern), *Salamandra salamandra* (IUCN Status: Least Concern), *Bombina variegata* (IUCN Status: Least Concern), *Rana graeca* (IUCN Status: Least Concern), *R. temporaria* (IUCN Status: Least Concern), *Buffo bufo* (IUCN Status: Least Concern), *Pseudepidax viridis*, and *Testudo graeca* (IUCN Status: Vulnerable A1cd). The following three reptile species are considered to be rare at the Osogovo mountain: *Zootoca vivipara* (IUCN Status: Least Concern), *Typhlops vermicularis* (IUCN Status: Least Concern ) and *Eryx jaculus*.

**Birds:** The most significant area for birds diversity is Ratkova Skala (from Zletovska Reka to Sinkovitsa and Ponikva). This area is enormously significant as it is inhabited by important bird species such as the Egyptian vulture (*Neophron percnopterus*, IUCN Status: Endangered A2bcde+3bcde), and other rare species such as the black stork (*Ciconia nigra*, IUCN Status: Least Concern ). This area (distanced ~5 km from Ponikva) is also very important as it holds globally endangered bird species of international importance such as the lanner falcon (*Falco biarmicus*, IUCN Status: Least Concern) and peregrine falcon (*Falco peregrinus*, IUCN Status: Least Concern). The grey heron (*Ardea cinerea*, IUCN Status: Least Concern) can frequently be found at the shoreline of Kochansko Lake, especially in the reed belt of the littoral zone.

Taking into the consideration that the falcons and vultures are very rare and vulnerable within the Republic of Macedonia, with national legislation for nature protection they are protected species on the whole territory (Lists for determination of strictly protected and protected wild species (Official Gazete no.139/11)).

**Mammals:** the most common large mammals that can be found in the project area are wolf (*IUCN Status: Least Concern*), fox, badger, beech marten (*IUCN Status: Least Concern*), least weasel (*IUCN Status: Least Concern*), wild boar, European roe deer (*IUCN Status: Least Concern*), and hare. Around the locality “Ponikva” the greater horseshoe bat (*Rhinolophus ferrumequinum IUCN Status: Least Concern*) can be found, which is classified as near threatened in the European red list of species.

**Fungi:** The most important species that can be found in the project area are the following: *Agaricus campestris*, *A.macrosporus*, *Amanita rubescens*, *Armillaria mellea*, *Boletus aestivalis*, *B.edulis*, *Bovista plumbea*, *Cantharellus cibarius*, *Diatrype disciformis*, *Diatrype stigma*, *Laccaria laccata*, *Lactarius piperatus*, *Lepista nuda*, *Lycoperdon perlatum*, *Marasmius oreades*, *Mycena pura*.

**Dragonflies:** *Caliaeschna microstigma (IUCN Status: Least Concern)* can be found around the rivers Mala Reka and Golema Reka. This two rivers flow near the path lake Gradche- Ponikva (already existing path where additional cutting of vegetation is not expected). The presence of *Ophiogomphus cecilia (IUCN Status: Least Concern)* and *Cordulegaster heros (IUCN Status: Near Threatened)* indicates that the riparian habitats around the rivers are in well conserved. *Cordulegaster heros* is near threatened (NT) species.

**Butterflies:** In the project area the following species can be seen (not listed in the Catalog of life): *Anthocharis cardamines*, *Maniola jurtina*, *Melanargia galathea*, *Pararge aegeria*, *Apanthopus hyperantus*, *Coenonympha pamphilus*, *Leptidea sinapis*, *Vanessa atalanta*, *Thymelicus sylvestris*. Butterflies of greater conservation importance that can be found in the project area are the following: *Minois dryas*, *Phengaris arion (IUCN Status: Lower Risk/near threatened)*, *Plebejus sephirus*, *Euphydryas aurinia* and others.

**Ground beetles:** the following species can be predominantly found at the project area: *Carabus convexus dilatatus*, *Carabus coriaceus cerisyi*, *Harpalus rubripes*, *Laemostenus punctatus* and *Notiophilus substriatus*. These species are widely distributed in Europe and the Balkans.

According to the Chobanov (2009, separate study), the ornithofauna (grasshoppers species) that can be found and also that are significant within the proposed protected area – Protected Landscape “Osogovo Mountains” are: *Phaneroptera falcate (IUCN Status: Least Concern (Regional assessment))*, *Metrioptera domogledi (IUCN Status: Vulnerable)*, *Pholidoptera rhodopensis (IUCN Status: Least Concern)*, *Pholidoptera frivaldskyi (IUCN Status: Least Concern)*, *Myrmecophilus nonveillieri (IUCN Status: Least Concern)*, *Chorthippus oschei (IUCN Status: Least Concern)* and *subspecies - Psorodonotus fieberi fieberi*. The most abundant habitats with grasshoppers species in Osogovo Mountain are thermophilic and mesophilic habitats (grassland and shrubs), as well as ruderal habitats. The least abundant habitats with this ornithofauna are mountain pastures.

### ***Important and protected areas***

The proposed project activities are located in the frame of the proposed protected area – Protected Landscape “Osogovo Mountains”. In 2012, Study on valuation with proposal to establish protected landscape Osogovo Mountains was prepared. This Study was represent starting step for proposal

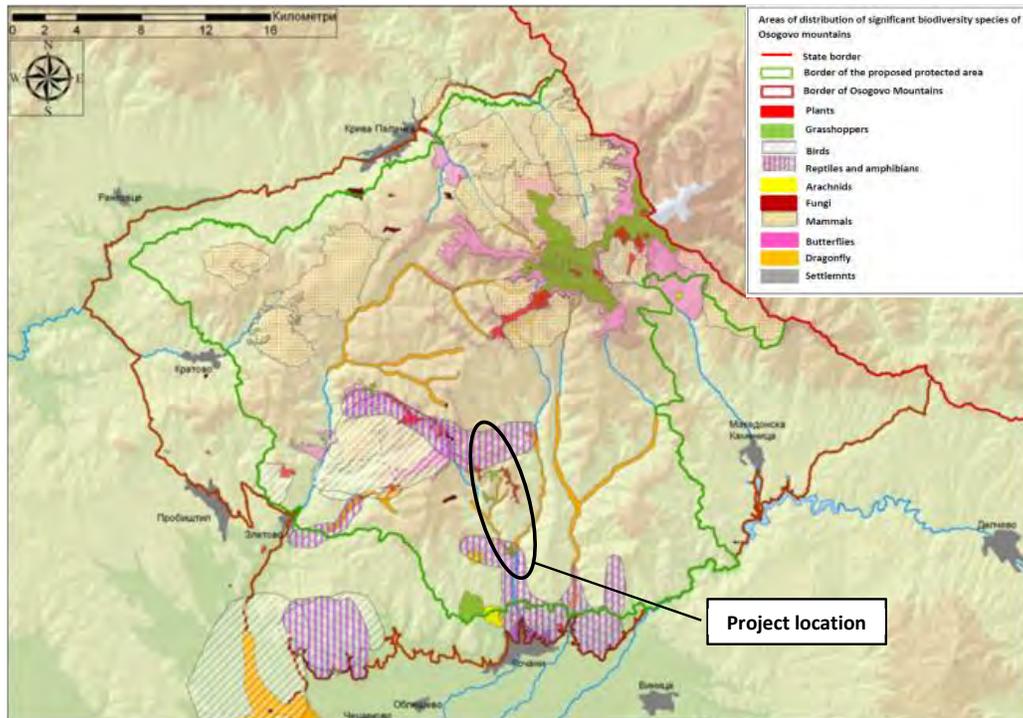
Osogovo Mountains as protected landscape (V category of protected area). The Study consist description of natural, cultural and social values of the region. Also, the expert analysis was conducted and communication with stakeholders: local self-governments in the region and national institutions (Ministry of Environment and Physical Planning of the Republic of Macedonia, Ministry of Agriculture, Forestry and Water Economy of the Republic of Macedonia). Until now, the Osogovo Mountains are not protected area.

The locality “Ratkova Skala” is distanced at 5 km from the locality Ponikva and the planned trails, and it is proposed for protection in the category Nature Monument.

At the end of 2009, the Government of Republic of Macedonia adopted a Decision for acceptability of the proposal for the proclamation of the Ratkova skala, (as part of the Osogovo Mountains) for protected area as (Monument of Nature with total area of 11 500 ha) according to Law on Nature Protection. The process of proclamation of this Monument of Nature (III category of protected area) has not been yet finished until the detailed analysis of the areas with significant (endemic and rare) flora and fauna and identification of the characteristics of the landscape are fully completed.

Ratkova Skala is located in the south-western part of Osogovo Mountans, between vil. Ratkovitsa and vil. Sinkovitsa. The valleys around vil. Ratkovitsa are composed of 200 m high rocks that are steeply cut in the shape of stairs, hence the name of the locality Ratkova Skala. In addition to the steeply cut rocks, other interesting geological forms are the screes and denudation formations that originate from decomposition of quartzite, as well as the fast flowing streams and small waterfalls of the r. Shtalovishka Reka. Moreover, at this locality is present significant biodiversity such as important bird species, rare reptile species (*Ablepharus kitaibelii* IUCN Status: *Least Concern* and *Typhlops vermicularis*, IUCN Status: *Least Concern*), and this area where trails are located represent zone of significant reptiles and amphibians (Figure 11), important butterfly species and rare plants (*Sempervivum erythreum*).

At the locality Ratkova Skala the roe deer (*Capreolus capreolus* IUCN Status: *Least Concern*) is also present, which is protected with the Bern Convention. In the vicinity of the vil. Beli, the Nature Monument “Oak Trunk” is found, which represents a trunk of the pubescent oak (*Quercus pubescens*). This proposed Nature Monument is distanced at ~3 km from the trails.



\*Source: Report for the state of the protected areas in the r. Bregalnitsa watershed for 2015

**Figure 11; Distribution of significant species on Osogovo mountains (relevant for the project mount bike trails on Osogovo Mountain)**

From the Figure 11 it can be concluded that the project area is overlapping with some habitats areas or significant species (reptiles, amphibians, plants and grasshoppers). Beside this fact, the project activities will not have adverse environmental impact such as *habitat fragmentation or destruction*. Along the trails will not be performed activities that will cause disturbance of the local biodiversity species and habitats and there will not be cutting trees along the trails (only low vegetation up to 40 cm). Also, construction works will not be performed during the reproduction period of grasshoppers from middle of July till the end of August. The same will apply in the areas significant for reptiles and amphibians. Overall, the implementation of project will preserve the authenticity of the surrounding landscape and will be used mainly natural materials for the urban equipment (viewpoints, gazebos, benches, road signs, etc.) along the trails.

#### **MAIN ENVIRONMENTAL IMPACTS, SENSITIVE RECEPTORS AND GENERAL MITIGATION MEASURES**

Project activities will take part within the Municipality of Kochani . Project locations mainly represent rural areas, but some project location is settled at SRC Ponikva. The whole land of the project locations is owned by the Republic of Macedonia. Only for the mountain lodge on Ponikva, the owner is Municipality of Kochani.

The realization of the project activities will have positive social impacts in terms of enriching the tourist offer in this region, providing opportunities for sports recreational activities for the local

population. Also, the project will enable attracting tourists from the region and abroad, who will enjoy the beauties of the region and will use the services of the accommodation facilities there.

Taking in consideration that all project activities will be implemented on existing objects (trails, mountain lodge and bicycle path), there is no need for resettlement and land acquisition.

Significant adverse environmental impacts from project realization are not expected because activities are intended for reconstruction/ upgrading of the existing tourism infrastructure/ facility and there is no need for heavy construction machinery. On the other hand this project will contribute for development of tourism infrastructure in the Municipality of Kochani.

For performing of the project activities on location Kocani – lake Gratche – Ponikva, would be used following construction equipment: excavator for digging and loading; truck for transportation of waste material; mixer with pump for the laying of concrete; construction work equipment (circular, scaffolding).

However, possible environmental impacts can occur regarding to air quality, water (ground and underground), biodiversity and habitats, landscape, Health and Safety of workers and local population (H&S) and soil and generating of different waste streams.

Before the start of the project general public must be informed about planned activities. Constructor must prepare *Information/ Announce* and publish it on the web site of the Municipality of Kochani (<http://www.kocani.gov.mk/>). Information from the Constructor must contain data about sub-project location, time for startup and duration of the project activities. Start time for the project activities should be organized in order minimization of the impacts for the local population and tourists. The best practice is the construction activities to be performed when there are not large number of visitors (during the working days of the week – from Monday to Friday) to the Sport recreation center Ponikva and the Osogovo Mountains. Providing access paths, safety passages and signalization signs are also necessary for easy communication and safety of the local population within the project locations.

Contractor must comply with all OH&S requirements in order elimination of injure possibility for workers, local population and tourists. All reconstruction activities must be done by trained workers.

Mitigation measures described in this section are the general ones, detailed mandatory mitigation measures are provided in the table in the Mitigation and Monitoring Plan chapter.

### ***Air Quality***

During the transportation of construction and waste materials, excavation of soil, demolition of the internal part and roof of the mountain lodge Ponikva, transportation of waste to the landfills and etc. are expected air emission from dust and other air pollutions. Additionally from the

construction machinery work (trucks, bulldozers, excavator, mixer and other equipment) are expected exhausting gases (CO<sub>2</sub>, NO<sub>x</sub>, PAH, SO<sub>2</sub>, etc.).

In the operational phase from the installed boiler for pellets in the basement in the mountain lodge Ponikva will occur air emission from smoke, while from the circulation of the vehicle around the public parking are expected gases from the motor vehicles that will passing by and will use the public parking.

### ***Noise and vibration***

In the construction phase as result of the working and usage of the construction machinery and equipment and workers presented on the sites increased noise level and vibration will occur. Project locations belong in different categories of sensitive noise protection areas according the Rulebook of the location of the measuring station and measuring points (Official Gazette of the RM No. 120/08). The limit values are defined in accordance with the Rulebook for limit values of the noise level in the environment (Official Gazette of RM No. 147/08). In Table 1 are given project areas and noise level limits according their locations.

**Table 1 Sensitive noise protection areas according sub - project locations**

<b>Location of the sub- project</b>	<b>Sensitive noise protection areas</b>	<b>Limit values</b>
<b><i>Mount bike trails on Osogovo Mountain</i></b>	Area with I degree of noise protection	40dBA for night and 50dBA for evening and day
<b><i>Mountain lodge on tourist locality of Ponikva</i></b>	Area with II degree of noise protection	45dBA for night and 55dBA for evening and day

There will be no night works.

### ***Waste***

Generally during the construction phase different waste streams (mainly construction and demolition waste) will be generated such as: excavated soil, vegetation from clearing of the trails, inert waste (wood, glass, tails, and concrete), communal waste, possible small quantities of oils and fuels. According to the Main Design for “Construction, reconstruction and upgrading of mount bike trails on Osogovo Mountain (Ponikva –Lake Gratche – Kochani)”, the concrete waste stream will be generated as result of the removal of the existing concrete tiles in estimated quantity of 265m<sup>2</sup> on the pedestrian and mount path Hotel Gratche-Dam Gratche (Activity no.1 - Path no.2). This information is presented in Table 2 with estimated quantities of the generated waste from the project activities. All national legislation for waste management must be complied. Constructor must prepare Waste management Programme with information about waste type, waste codes according List of waste (Official Gazette of RM No. 100/05), waste characteristic, and temporary

storage locations and landfills for final disposal. This Programme must be approved by the Municipal Council and must be implemented during the construction phase. Keeping records for the generated and transported waste is obligatory. For elimination of the environmental impacts on soil, water and air the Contractor must sign Contracts with responsible legal entities for collecting, transportation and final deposition of the different waste streams to the municipal landfill. Burning of the waste, or it's deposition near the rivers on Ponikva (Eshterichka, Stara Reka, Mala Reka, Golema Reka) and Kochanska Reka .

Municipality of Kochani has its own public communal enterprise (PCE „Vodovod“ Kochani) which is responsible for collection and transportation of communal and inert waste. The waste collector must be licensed. These CE make transportation of communal and inert waste to legal landfills.

Estimated quantities of the generated waste from the project activities in Municipality of Kochani are given in Table 2.

Table 2: Estimated quantities of generated waste according the Main projects

<i>Sub-project</i>	<i>Type of waste</i>			
	<i>Excavated soil 17 05 06 (m<sup>3</sup>)</i>	<i>Concrete 10 13 14 (m<sup>2</sup>)</i>	<i>Biodegradable waste (from clearing of the trails 20 02 01 (m<sup>2</sup>)</i>	<i>Wastes of liquid fuels fuel oil and diesel petrol other fuels (including mixtures) 13 07 13 07 01* 13 07 02* 13 07 03* (l)</i>
1. <i>Construction, reconstruction and upgrading of mount bike trails on Osogovo Mountain (Ponikva –Lake Gratche – Kochani)</i>	502,5	265	21.000	0,5
2. <i>Reconstruction of mountain lodge on Ponikva including providing of equipment</i>	65	/	/	1

Generation of different waste streams, including small quantities of hazardous wastes is expected in the operational phase of the public parking such as communal, biodegradable, packaging waste, liquid waste from the vehicles (oil, lubricants). On the month bikes will be found communal waste from the cyclists and tourists. There is no possibility of generation of asbestos waste or CFLs.

## ***Water and Soil***

Lake Gratche represents accumulation at Kochanska River and is located on 6 km north of the City of Kochani. Accumulation Gratche has length of 2,1 km and width of 0.35 km. Kochanska River and Lake Gratche are formed by Mala River and Golema River. According to Regulation on Classification of waterways, lakes, reservoirs and groundwater (Official Gazette of RM” No. 18/99) Lake Gratche and Kochanska River belong to II class. These indicate that Mala River and Golema River are watercourses with good quality. Water from the accumulation is used for irrigation and for industrial purposes. Kochanska River and the accumulation are located in the close vicinity of the bike paths.

Impacts on waters (underground and ground waters) are possible during the construction/reconstruction phase and concrete reinforcement activities, transportation of construction materials and equipment, in the case of leakage of fuel or motor oils from the construction machinery, or disposal of generated waste from project activities. The project activities will be conducted on existing trails (new trails are not planned to be constructed) where, during the preparatory activities clearing up and removal of the small steam vegetation (low vegetation up to 40 cm – grass, shrubs, etc.) will be performed.

During the construction phase of the two sub-projects activities, the concrete reinforcement activities will include:

- Reconstruction/construction of the ground floor and first floor of the mountain lodge Ponikva – excavation of the basement, construction of concrete walls, floors, stairs, etc. The detailed specification of the concrete reinforcement activities are described in the construction project as part of the Main Design for reconstruction of the mountain lodge Ponikva;
- Installation of urban equipment – viewpoints, concrete stairs, etc. (straightening, cutting, bending, tying and installation of reinforcing bar; embedding concrete MB30, etc.)

Possible impact on soil can cause the erosion of the land as a result of loss of upper soil layer from implementation of the construction activities. According to Figure 9, the level of soil erosion within the project location near Kochani, is mixed: insignificant to medium level of erosion. The risk of soil erosion will be short term, local and can occur during the construction activities of the project.

By applying good construction practice and proposed mitigation measures, the impacts will be minimized, short term and with local significance.

During the construction phase water emission are possible as a result of discharge of the communal waste generated by the tourists near the water courses around the projects or near the Gratche Lake.

Soil erosion can occur during the earth works.

## ***Biodiversity***

The project impacts on the sensitive receptors (water bodies and biodiversity) are considered to be of small to medium intensity in the construction and operative project phase. As a result of the present mechanization in the construction/reconstruction phase, compaction of the soil is expected, but also the removal of small quantity of natural vegetation for the upgrade of the bike trails (on Osogovo) and parking on Ponikva can cause soil loss, as well as can contribute to increased local erosion, which can negatively impact the quality of the adjacent water bodies. The project will not cause additional habitat fragmentation as the bike trails are existent and no additional green field land will be seized. In the construction and operative phase can be expected disturbance of local wildlife. In the operative phase local soil erosion can occur from lack of maintenance of the bike trails during intensive rain that can degrade the quality of the adjacent water bodies. Impact on population of endangered grasshoppers is possible, therefore from middle of July till the end of August (the breeding period) there will be no works.

During the implementation of the project activities, the adverse impact to forests, plant communities or significant flora species are not expected. Along the route of the project location, as characteristic dendroflora species appears following: *Corylus avellana* (hazelnut- *IUCN Status: Least Concern*), *Carpinus betulis* (hornbeams - *IUCN Status: Least Concern*), *Fraxinus excelsior* (European ash), *Quercus petraea* (sessile oak), *Fagus sylvatica* (European beech), *Pinus sylvestris* (white pine - *IUCN Status: Least Concern*), *Pinus nigra* (black pine - *IUCN Status: Least Concern*), *Abies alba* (European silver fir - *IUCN Status: Least Concern*) and *Juniperus communis* (common juniper - *IUCN Status: Least Concern*). It can be concluded that along the route of the trails are not located endangered/significant dendroflora and plant species which can be affected from the construction/reconstruction phase of the project.

For reduction/ elimination of the environmental impact, mitigation measures will be proposed and these measures must be implemented in accordance with the proposed monitoring plan.

## ***Forest and landscape***

Taking into consideration that the trails on Osogovo and mountain lodge on Ponikva are existing and logging or cutting of existing trees will not take place under the project, degradation or fragmentation of plant and animal habitats along and around the project locations are not expected. The project activities will include preserving of the route of the existing trail in order to keep the authenticity of the landscape. In order to achieve that, along the trail will be installed urban equipment from natural wood materials: benches, info boards, wooden viewpoints, rest areas, garbage bins, children's playgrounds, etc.

Will be performed cleanup of the existing trails of eventual residues of low small branches, leaves, plant roots and low stem vegetation (with high of max. 40cm). For the sub – project 1,

approximately 21.000 m<sup>2</sup> of low vegetation will be cleared along all the trails on Osogovo. With the project activities will not be cutting of the trees.

The paving of some part of the existing trail with bechaton tiles (area of 775m<sup>2</sup> from the Hotel Gratche to the dam of the Gratche Lake) will not have an adverse environmental impact on surrounding landscape.

#### **PUBLIC CONSULTATION ABOUT THE ENVIRONMENTAL MANAGEMENT PLAN FOR THE PROJECT “MOUNTAIN BIKE PARADISE”**

The aim of the Environmental Management Plan for the Project “Mountain Bike Paradise” is identification of the expected environmental impacts from the project before they may appear, proposing of mitigation measures for environmental protection, period of implementation of the mitigation measures with responsible body for supervising of the Plan and cost associated with implementation of mitigation measure.

In line with the ESMF, this ESMP must be publicly consulted prior to final approval of the sub-grant. Once the draft ESMP is approved by PIU Environmental Expert and WB Environmental Specialist it will be published, in English, Macedonian and Albanian language, on the web site of CDMPEA, The Agency for Promotion and Support of Tourism and web site of the Municipality of Kochani where it will remain available to the public for at least 14 days. A hard copy will be available at CDPMEA and in the municipality of Kochani. A call for comments and call for participation in the public consultation meeting (with time and venue) will accompany ESMP. The public consultation meeting will take place in the municipality of Kochani near the end of consultation period. Proactively, the Applicant will inform and invite major project stakeholders including local NGOs and impacted communities directly and by appropriate means.

The public will be included in the procedure for impacts assessment during the public meetings in the Municipality of Kochani. The submitted comments will be included in the Report from the public meeting which will be part of the Plan. This way all comments from the public will be available to the applicant and they will take all relevant comments and will include the answers and remarks into the final ESMP.

The implementation of the Environmental Management Plan will ensure timely undertaking of the proposed measures and will contribute for realization of the project activities without significant environmental impacts.

#### **MONITORING AND REPORTING**

The prepared Environmental and Social Management Plan for these sub-projects will be part of the bidding and contracting documentation for all project activities. The Contractor will be obliged to implementation of the envisaged measures according to the Mitigation Plan. The Supervising

engineer has an obligation to monitor and evaluate the implementation of the proposed measures within the Monitoring Plan and to inform the investors and the Project Office (Municipality of Kochani).

The Applicant is responsible for environmental compliance of the project preparation, implementation and operation with the national legislation, this ESMP and the measures it defines as well as ESMF of the overall project. Monitoring of environmental and social compliance, as defined in the Monitoring Plan is a responsibility of the Applicant (or Applicant appointed person, e.g. supervising engineer). The Applicant will report the environmental compliance and environmental measures and monitoring implementation progress to the PIU in the regular project progress reports as well as quarterly during the implementation period.

Main projects and Environmental Elaborate are prepared for planned sub-projects. Environmental Elaborates are approved by the authorities. Avoidance and mitigation measures required in the Environmental Elaborates are considered an integral part of ESMP Mitigation Plan and as such their implementation is mandatory and will be monitored and reported on.

## MITIGATION AND MONITORING PLAN

### Mitigation Plan

Activity	Expected Environmental Impact	Proposed Measure for Mitigation	Responsibility for Implementing Mitigation Measure	Period of Implementing Mitigation Measure	Cost associated with implementation of mitigation measure
<b>Construction/reconstruction/upgrading phase</b>					
Appropriate marking of the existing project locations for bike trails in Osogovo mountains and mountain lodge Ponikva,	Possible adverse social and health impacts for the workers and local population/tourists as a result of non-compliance with the safety measures	<ul style="list-style-type: none"> <li>- All permits, decisions, authorization and other legally required documents are obtained prior to works; Works are announced to public and competent authorities (e.g. Ministry of Environmental Protection, etc.)</li> <li>- Planning of the time for startup of the project activities (during the working days when number of tourists and local population on/near the project locations is low),</li> <li>- Implementation of Good construction practices during the construction/reconstruction phase including:               <ul style="list-style-type: none"> <li>- Ensure proper marking of the project locations with tapes, fences and warning signs for construction activities;</li> <li>- Set up an Information Board on the project locations with general data about the project, and name of the Contractor and the Supervisor;</li> <li>- Installation of signs for reducing / limiting of the vehicle speeds near the project location on Ponikva and local road around the lake Gratche;</li> <li>- Access of non-authorized personnel within the project locations is not allowed;</li> <li>- Mobile toilets should be placed and regularly maintained by the authorized legal entity,</li> <li>- Construction machinery and equipment should be handled only by experienced and trained personnel in order to reducing the risk of accidents;</li> <li>- The presence of fire protection equipment is mandatory;</li> <li>- All workers must be familiar with the of the possibilities of fire, must apply fire protection measures and should be capable of handling fire extinguishers;</li> </ul> </li> </ul>	Contractor  Supervisor  Municipal staff (Communal Inspector/Environmental Inspector from Municipality of Kochani)	Before starting of the construction/reconstruction/upgrading phase	1500 €

Activity	Expected Environmental Impact	Proposed Measure for Mitigation	Responsibility for Implementing Mitigation Measure	Period of Implementing Mitigation Measure	Cost associated with implementation of mitigation measure
		<ul style="list-style-type: none"> <li>- All urban equipment and playgrounds are produced and installed by registered and experienced companies in line with the national safety regulation and international safety standards and best practices.</li> <li>- Appropriate warning signs are installed in all phases of the project.</li> <li>- Dangerous places/locations are clearly marked and fenced off when not worked on in all sub-project phases.</li> <li>- Ensure safety of cyclists and pedestrians in all phases of the project (construction, operation, etc.) and at all points, including changes of terrain (e.g. stairs transecting cycling path).</li> </ul>			
<p>Preparatory activities (excavation of soil, demolition of roof and internal part (walls, windows, doors and roof) in Mountain Lodge on Ponikva,</p> <p>Reconstruction of bike paths and mountain lodge Ponikva</p>	<p>Air (gases emissions of dust-suspended particulates emissions from the mobile sources (vehicles and construction/reconstruction machinery) of CO<sub>2</sub>, NO<sub>x</sub>, PAH, SO<sub>2</sub>)</p>	<ul style="list-style-type: none"> <li>- Vehicles and construction machinery will be required to be properly maintained and to comply with relevant emission</li> <li>- Vehicle loads likely to emit dust need to be covered;</li> <li>- Suppliers for building materials (sand, concrete, asphalt, paving elements, stone, etc.) should have an IPPC permit / EIA Report issued by the competent authority for the activity they perform in order to be in accordance with a national legislation as well as valid concession (if e.g. exploit sand)</li> <li>-Regular maintenance of the vehicles in order to reduce the leakages of motor oils, emissions and dispersion of pollution;</li> <li>- Construction materials, excavated soil and other dust prone material should be stored in appropriate places covered to minimize dust;</li> <li>-Reconstruction sites, transportation routes and materials handling sites should be water-sprayed on dry and windy days;</li> <li>- Use dust fences or water sprays in dry conditions when appropriate;</li> </ul>	<p>Contractor</p> <p>Supervisor</p> <p>Municipal staff (Communal Inspector/Environmental Inspector from Municipality of Kochani</p>	<p>During the construction/reconstruction activities</p>	<p>500 €</p>

Activity	Expected Environmental Impact	Proposed Measure for Mitigation	Responsibility for Implementing Mitigation Measure	Period of Implementing Mitigation Measure	Cost associated with implementation of mitigation measure
		<ul style="list-style-type: none"> <li>- Usage of protective masks for the workers if the dust seems to be appeared;</li> <li>- During the project activities, in order to provide continuous process of photosynthesis, the existing vegetation along the project location that will be exposed to dust, should be occasionally sprayed with water;</li> </ul>			
	Generation of different types of waste and improper handling of waste	<ul style="list-style-type: none"> <li>-Preparation approving and implementation of Waste management plan and identification of different waste streams within the project locations ;</li> <li>- Classification of waste according the national List of Waste (Official Gazette no.100/05), The main waste would be classified under the Waste Chapter 17 “Construction and demolition wastes (including excavated soil)”, Waste Chapter 20 “Communal waste (waste from household and similar waste from commercial, industrial and administrative activities) including fractions of selected waste" and biodegradable waste (from clearing of the trails 20 02 01),</li> <li>- From the sub-project construction, reconstruction and upgrading of mount bike trails on Osogovo Mountain (Ponikva –Lake Gratche – Kochani) are expected the following waste streams 17 05 06- Excavated soil, 17 01 01- Waste from concrete and 20 03 01- mixed communal waste and wastes of liquid fuels, fuel oil and diesel (including mixtures) 13 07, 13 07 01*, 13 07 02* and 13 07 03*</li> <li>- From the sub-project Reconstruction of Mountain Lodge on Ponikva including providing of equipment are expected the following waste streams 17 01 03 –Tails and ceramic, 17 02 01-Wood, 17 01 01- Waste from concrete , 17 02 02-glass, 20 03 01- mixed communal waste, 15 01 10*- waste from packaging of paints, varnishes and solvents.</li> <li>- Signing a Contract with authorized company for collection and transportation of hazardous waste</li> </ul>	<p>Contractor Supervisor PCE,,Vodovod “from Kochani</p> <p>Environmental Inspector of Municipality Kochani</p>	During the preparatory and construction phase	1500 €

Activity	Expected Environmental Impact	Proposed Measure for Mitigation	Responsibility for Implementing Mitigation Measure	Period of Implementing Mitigation Measure	Cost associated with implementation of mitigation measure
		<ul style="list-style-type: none"> <li>-Proper identification, selection, temporary storage and re-use of the waste (if it's possible);</li> <li>- Transportation and final disposal of the inert and communal waste by the Public Utility Enterprises to the licensed landfill determined by the municipality of Kochani;</li> <li>- Transportation and disposal of hazardous wastes to licensed landfills/processing plants by a licensed company, <ul style="list-style-type: none"> <li>- If possible reuse the topsoil;</li> <li>- Excavated mineral waste can be temporarily storage to a location defined by the Municipality;</li> <li>- Discarding waste to the nature, especially watercourses, is strictly forbidden.</li> </ul> </li> </ul>			
	Increased levels of noise and vibrations generated as a result of the use of mechanization at project locations	<p>Because of the different characteristics of the project locations, they are classified in different sensitive noise categories, and as such, the limit noise values are different for each of the project locations.</p> <ul style="list-style-type: none"> <li>- The project location for construction of mountain bike trails on Osogovo Mountains belongs in area of I<sup>st</sup> degree for protection of noise (limit noise values are 40 dBA for night and 50dBA for the day and evening)</li> <li>- Project location for reconstruction of the mountain lodge Ponikva belong in area of II<sup>nd</sup> degree for protection of noise (limit noise values are 45dBA for night and 55dBA for the day and evening)</li> <li>- The determined limit noise values must not be exceeded,</li> <li>- To reduce the impact of the increased noise levels, the construction activities are needed to be performed during days when the flow of tourists is low or no tourists are present,</li> </ul>	Contractor Supervision	Reconstruction phase	300 €

Activity	Expected Environmental Impact	Proposed Measure for Mitigation	Responsibility for Implementing Mitigation Measure	Period of Implementing Mitigation Measure	Cost associated with implementation of mitigation measure
		<ul style="list-style-type: none"> <li>- The machinery and equipment used in this phase should be in accordance with the Rulebook on the more specific types of special noise sources, as well as the conditions that should be fulfilled by the plants, equipment, installations and devices that are used in the open space in relation to the emitted noise and the standards for noise protection ("Official Gazette of the Republic of Macedonia" No.142 /13),</li> <li>- Usage of construction machinery and equipment that emits lower level of noise in order to minimize or to reduce the possible environmental impact on biodiversity;</li> <li>- Avoidance of machinery and equipment idling when construction activities are not performed,</li> <li>- Prohibition of performing construction activities during night periods,</li> <li>- The project activities to be performed from 7.00 to 19.00 h;</li> <li>- The workers should be equipped with hearing protectors (earplugs or safety ear muffs) when working with equipment that produced high levels of noise.</li> </ul>	Municipal Environmental Inspector		
	Impact on the water quality	<ul style="list-style-type: none"> <li>- There will be no works in on in the vicinity of water streams and lakes;</li> <li>- Covering the waste during transportation to avoid accidental spillage near the river streams that could cause degradation of the water quality,</li> <li>- It strongly forbidden, disposal of generated waste near/in river bends of the water streams that are located near/along the project location in order to prevent endangering of wild species that lives in the rivers/streams;</li> <li>- Prevention of hazardous substances spillage (oils, lubricants, fuel) from the construction machinery and vehicles in the groundwater of the project areas by regular technical inspection of the machinery and</li> </ul>	Contractor Supervision PCE „Vodovod“ Kochani Municipal Environmental Inspector	Construction/re construction phase	400 €

Activity	Expected Environmental Impact	Proposed Measure for Mitigation	Responsibility for Implementing Mitigation Measure	Period of Implementing Mitigation Measure	Cost associated with implementation of mitigation measure
		<p>vehicles before starting with the performing of the activities on site,</p> <ul style="list-style-type: none"> <li>- No parking near the watercourses;</li> <li>- In the case of spills, the spill will be stopped and curbed, contaminated soil/water will be removed and treated as hazardous waste.</li> <li>- Prohibition for machinery repairs and refueling at construction/ reconstruction areas, instead doing so on waterproof surfaces equipped by oil and grease separator.</li> <li>- Urban equipment will be painted and protected with agents not toxic for aquatic environments and other nature. No anticorrosive will be applied on site.</li> <li>- Paint and protective coatings will be applied in a manner that will prevent spilling or other spread in to the environment.</li> </ul>			
	<p>Impacts on biodiversity in the localities lake Grathce – Ponikva – Kochani</p>	<ul style="list-style-type: none"> <li>- Use of existing paths only, no changes in dimensions,</li> <li>- Planning the construction activities in order to avoid the fauna mating, nesting and spawning seasons (especially to avoid spawning season of <i>Cyprinus carpio</i> (May-June), which inhabited Gratche Lake and identified as vulnerable (VU) according to global IUCN list, also during the reproduction period of grasshoppers from middle of July till the end of August);</li> <li>- Restriction of the construction vehicles speed within the project location in order to avoid collision with animal species;</li> <li>- disturbance of animals (including dens and nests) or collection of plant material, timber or forest products is strictly prohibited;</li> <li>- Preventing forest fires by avoiding open fires and responsible behavior of workers and tourists;</li> <li>- There will be no open fires or burning of waste or any kind</li> </ul>	<p>Contractor  Municipal Environmental Inspector  Municipality of Kochani</p>	<p>During Construction/re construction Phase</p>	<p>50 €</p>

Activity	Expected Environmental Impact	Proposed Measure for Mitigation	Responsibility for Implementing Mitigation Measure	Period of Implementing Mitigation Measure	Cost associated with implementation of mitigation measure
	Health and Safety of workers and local population	<p>The contractor will ensure the safety of workers during their job on sites and the following procedures:</p> <ul style="list-style-type: none"> <li>- The inhabitants/local people/tourists living close to project location under improvement or rehabilitation will be notified of the works, objectives and temporary expected negative impacts through appropriate communication; public meetings, etc.</li> <li>- All legally required permits will be acquired for construction and/or rehabilitation.</li> <li>- All work will be carried out in a safe and disciplined manner designed to minimize impacts on neighboring residents and environment. Including organization of transport to minimize impacts on neighborhood, and washing of vehicle tires to minimize spreading of debris on the roads.</li> <li>- Workers will comply with international good practice and using/wearing personal protective equipment (always hardhats, as needed masks and safety glasses, harnesses, etc), and contractor must supply PPE in sufficient quantity and quality. Workers will be adequately trained and experienced for the work performing (certified where required by the national legislation and best practices).</li> <li>- Workers also will be contracted respecting Macedonian legislation, and the developer will respect all hygienic and safety rules. Sanitary facilities will be provided.</li> </ul>	Contractor Supervisor	During Construction/re construction Phase	100 €

Activity	Expected Environmental Impact	Proposed Measure for Mitigation	Responsibility for Implementing Mitigation Measure	Period of Implementing Mitigation Measure	Cost associated with implementation of mitigation measure
		<ul style="list-style-type: none"> <li>- Emergency safety kit will be placed close to the working place for intervention in case of accidents. Emergency contacts and numbers will be clearly posted on site.</li> <li>- Appropriate warning signposting of the working sites, visual barriers etc., will be used to prevent accidents.</li> <li>- Traffic management plan will be prepared to ensure traffic regulation and safety.</li> <li>- All the workers will be trained for their safety and for using the PPE, for implementation of this plan, for emergency responses including firefighting trainings.</li> </ul>			

Activity	Expected Environmental Impact	Proposed Measure for Mitigation	Responsibility for Implementing Mitigation Measure	Period of Implementing Mitigation Measure	Cost associated with implementation of mitigation measure
	Possible impacts on landscape and visual aspects	<ul style="list-style-type: none"> <li>- Minimization of the construction area as much as possible (carefully planning and design of the project activities according the Traffic Management Plan for a certain period of time)</li> <li>- All sites that should serve as temporary deposits for topsoil and raw materials have to be proposed by the designer and constructor in advance and approved by the Municipality. Do not temporary deposits raw material near the rivers, lake Gratche and streams:</li> <li>- Fully clean up of the construction site immediately after accomplishment of reconstruction activities section by section on the projects sites;</li> <li>- Only native vegetation will be used in greening.</li> <li>- Collection of the generated waste on daily basis, selection of waste, transportation and final disposal on appropriate places (according the type of waste – more details under Waste management issue)</li> </ul>	Contractor - Bidder Supervisor	During Construction/re construction Phase	1000 €

Activity	Expected Environmental Impact	Proposed Measure for Mitigation	Responsibility for Implementing Mitigation Measure	Period of Implementing Mitigation Measure	Cost associated with implementation of mitigation measure
	Soil erosion and landslides	<ul style="list-style-type: none"> <li>- Areas covered by degraded natural vegetation in upper slopes of the project location are to be afforested with suitable (autochthonous) species;</li> <li>- Existing patches of natural vegetation should be preserved;</li> <li>- No heavy machinery or transportation vehicles will be used for rehabilitation or reconstruction of paths or other works where soil stability may be jeopardized.</li> <li>- Soil will be removed only where necessary and to minimal depth.</li> <li>- Soil stability will be checked and ensured prior to works. If needed, geotechnical studies and works will be carried out.</li> <li>- Where there is a risk of erosion and landslides, expert opinion is required, based on which measures against soil erosion and landslides will be applied. Any project activities initiated in areas with medium or higher risk of soil erosion and landslides within the project location, should be taken up only after risk assessment and slope protection is carried out if deemed necessary by an expert.</li> <li>- During construction of trails, proper care should be taken to avoid blockage of natural drainage;</li> <li>- Avoid activities on or near steep, high risk slopes and avoid modifications that increases the risk of landslides;</li> <li>- Minimization of the construction area as much as possible;</li> </ul>	Contractor - Bidder Supervisor	During Construction/re construction Phase	2000 €

Activity	Expected Environmental Impact	Proposed Measure for Mitigation	Responsibility for Implementing Mitigation Measure	Period of Implementing Mitigation Measure	Cost associated with implementation of mitigation measure
	Cultural Heritage	<ul style="list-style-type: none"> <li>- In the case of chance findings... the works must be stopped immediately and competent authorities, (Ministry of Culture, Directorate for Protection of Cultural Heritage), informed within 24 hours following the national procedures. Works will recommence upon approval of competent authorities.</li> </ul>	Contractor, Supervision engineer	During Construction/re construction Phase	Included to implementation cost

Activity	Expected Environmental Impact	Proposed Measure for Mitigation	Responsibility for Implementing Mitigation Measure	Period of Implementing Mitigation Measure	Cost associated with implementation of mitigation measure
	Biodiversity	<ul style="list-style-type: none"> <li>- No works in July and August in the area with sensitive communities of grasshoppers;</li> <li>- No works in areas near Ratkova skala during the bird nesting period;</li> <li>- Check working site for amphibians and reptiles (e.g. common tortoise) daily before works. If nests and dens are found the works should be stopped and competent authority informed. Follow instructions of the competent authority;</li> <li>- No removal of trees and lower vegetation (higher than 40cm) is allowed</li> <li>- Pouching, disturbance of animals, collection of herbs and forest food is strictly prohibited.</li> <li>- Open fires are strictly forbidden.</li> <li>- There will be no littering.</li> <li>- Minimize the working area and use only what is necessary.</li> <li>- Disturbance and hunt of animals in the area is prohibited. –</li> <li>- No trees will be damaged or removed during works.</li> <li>- Greening is allowed only with native plant species.</li> </ul>			

Activity	Expected Environmental Impact	Proposed Measure for Mitigation	Responsibility for Implementing Mitigation Measure	Period of Implementing Mitigation Measure	Cost associated with implementation of mitigation measure
	Hazardous substances management	<ul style="list-style-type: none"> <li>- Chemicals are managed, handled and stored in accordance to Materials Safety Data Sheet (MSDS)</li> <li>- Chemicals are purchased from authorized dealer</li> <li>- Chemicals are managed and handled only by authorized and adequately trained and experienced personal/staff.</li> <li>- Hazardous substances (including wastes) will be kept in a leak-proof container to prevent spillage and leaking. This container will possess secondary containment system such as bunds (e.g. banded-container), double walls, or similar. Secondary containment system must be free of cracks, able to contain the spill, and be emptied quickly;</li> <li>-The containers with hazardous substances must be kept closed, except when adding or removing materials/waste. They must not be handled, opened, or stored in a manner that may cause them to leak;</li> <li>- The containers holding ignitable or reactive wastes must be located at least 15 meters (50 feet) from the facility's property line. Large amounts of fuel will not be kept at the site;</li> <li>-The wastes are never mixed and are transported by specially licensed carriers and disposed/processed only in a licensed facility;</li> <li>- Paints with toxic ingredients or solvents or lead-based paints will not be used;</li> <li>-Hazardous waste will be transported and handled only by licensed companies in lie with the national regulation;</li> <li>-Hazardous waste will be disposed only to licensed landfills or processing plants.</li> </ul>			

Activity	Expected Environmental Impact	Proposed Measure for Mitigation	Responsibility for Implementing Mitigation Measure	Period of Implementing Mitigation Measure	Cost associated with implementation of mitigation measure
	Materials Management	<ul style="list-style-type: none"> <li>- No new materials containing asbestos or lead-based paint will be used;</li> <li>- Coarse aggregate in concrete applied and used in rehabilitation need to conform to durability and gradation requirements. The aggregate must be virgin (not used previously) and preferably locally produced;</li> <li>- Mineral resources (aggregate, sand, gravel, etc.) are procured only from licensed companies with valid concessions for extraction/exploitation. The companies can prove H&amp;S measures and environmental management is in place.</li> </ul>			
<b>Operational phase</b>					
Regular maintenance of the installed heating system (pellets boilers and accompanying equipment) in the mountain lodge on Ponikva.	<ul style="list-style-type: none"> <li>- Emission of polluting substances in the air from pellets combustion</li> <li>- Waste generation during repairs and/or replacement of parts from the heating system in the maintenance period of the mountain lodge on Ponikva</li> </ul>	<ul style="list-style-type: none"> <li>- Regular maintenance of the installed heating system;</li> <li>- Selection, temporary storage, reuse of waste that is generated during repairs and/or replacement of parts by a licensed company for the corresponding type of waste (or by the servicer company)</li> </ul>	<p>Responsible person from the Municipality of Kochani</p> <p>Municipal Environmental Inspector</p> <p>Licensed company for servicing heating systems</p>	In the operational phase of the mountain lodge Ponikva.	500 € per year
Organization of tourist visits at Ponikva and accommodating	<ul style="list-style-type: none"> <li>- Improper management of the generated waste</li> </ul>	<ul style="list-style-type: none"> <li>- Collection of the generated municipal waste, in the placed waste containers at the mountain lodge, by the licensed company and its disposal at the legal and licensed landfill.</li> </ul>	Municipality Kochani	In the operational phase of the	It can't be exactly estimated According the Price List of

Activity	Expected Environmental Impact	Proposed Measure for Mitigation	Responsibility for Implementing Mitigation Measure	Period of Implementing Mitigation Measure	Cost associated with implementation of mitigation measure
tourists in the mountain lodge.	(mainly municipal waste 20 03 01) - Generation of municipal wastewater from the visitors at the mountain lodge		Responsible person for maintenance of the mountain lodge	mountain lodge on Ponikva	PCE "Vodovod" price for collection of 1m <sup>2</sup> communal waste is 3,5 den (0.05 €)
Maintenance of mountain bike trails on Osogovo	Municipal waste scattering around the trails	-Contracting licensed waste company for collection of the municipal waste from the project locations, - Collected municipal waste will be disposed at licensed landfills; -Regular collection of municipal waste generated from tourists from the placed waste containers and regular cleaning of the trails (vegetation).	PCE "Vododod" Kochani/ with the municipality of Kochani	Regularly during the operational phase	500 €
Raising awareness for biodiversity protection from the project in the Municipality of Kochani	Impacts on biodiversity at project locations	-Use of educational materials to encourage use of existing bike trails (dam Gratche-Ponikva-Kochani) and to discourage trailblazing new additional paths. Limit of the daily use of trail in the eastern part of the lake Gratche by the tourists/ many people in sensitive periods (spring season) for critical habitats (water, riparian and other) for biodiversity	Municipality of Kochani	Regularly in the operational phase	500 €
Use of urban equipment	Safety of visitors	Perform regular checks of urban equipment and playground state and safety, carry out needed repairs.	Municipality of Kochani	Regularly in the operational phase	Included in the yearly budget
Soil erosion	Safety of visitors	Perform regular checks and repairs for safety risks in areas prone to soil erosion and landslides.	Municipality of Kochani	Regularly in the operational phase	Included in the yearly budget

## Monitoring Plan

<b>Which</b>	<b>Where</b>	<b>How</b>	<b>When</b>	<b>Who</b>	<b>What</b>
<i>Parameter should be monitored?</i>	<i>Should the parameter be monitored?</i>	<i>Should the parameter be monitored (what should be measured and how)?</i>	<i>Should the parameter be monitored (time and frequency)?</i>	<i>Is responsible to monitor the parameter)?</i>	<i>Is the cost for implementation of the monitoring</i>
<b>Construction phase</b>					
Safety measures for workers, local communities and tourists	Around project locations (Kocani – lake Grathce – Ponikva)	Visual inspections and notifying responsible authorities from Municipality of Kochani	At the commencement with construction activities (first day) by starting off with preliminary health and safety measures.	Contractor Supervisor Environmental Inspector from the Municipality of Kochani	/
Identification and primary selection of different types of generated waste (construction/ reconstruction waste, municipal waste, biodegradable, waste of liquid fuels, concrete, etc.)	At project locations (mount bike trails on Osogovo)	Visual inspections and notifying responsible municipal authorities	During preparatory and construction/ reconstruction phase.	Contractor Supervisor Environmental Inspector Municipality of Kochani	/
Collection, temporary storage, labeling and transport of hazardous waste (if it generates in construction/ operational phase)	At safe storage location for hazardous waste within construction/ reconstruction area	Checkup of the transportation list and conditions of the storage area	Before transport of the hazardous waste	Contractor Licensed operator for collection and transport of hazardous waste with whom the Contractor will sign contract	200 €
Selection, transport and final disposal of municipal and inert waste	At project locations (Kocani – lake Gratche – Ponikva)	Visual inspections	After regular and daily collection and transport of municipal waste	Contractor Supervisor Environmental Inspector Municipality of Kochani	100 €

<b>Which</b>	<b>Where</b>	<b>How</b>	<b>When</b>	<b>Who</b>	<b>What</b>
<i>Parameter should be monitored?</i>	<i>Should the parameter be monitored?</i>	<i>Should the parameter be monitored (what should be measured and how)?</i>	<i>Should the parameter be monitored (time and frequency)?</i>	<i>Is responsible to monitor the parameter)?</i>	<i>Is the cost for implementation of the monitoring</i>
Noise level measurement	In the vicinity of the mountain lodge Ponikva and bike trails in Kochani	Measuring the noise levels in dB (A) with appropriate equipment	At construction phase during peak activity of the mechanization (at least once during construction activities)	Contractor Supervisor Environmental Inspector Accredited company for noise measurement	200 €
Waste disposal or fuel/ motor oil leakage in/ near the r. Kochanska Reka, r. Mala Reka, r. Golema Reka, and other smaller streams located in the vicinity of the project locations.	In the vicinity of r. Kochanska Reka which flows close to the trail Kochani-Gratche	Visual inspection of the rivers flowing in the vicinity of the project locations if generated waste is disposal near the rivers.	During preparatory activities (soil excavation, dismantling activities the mountain lodge) and construction activities.	Contractor Supervisor Environmental Inspector	100 €
Waste disposal in the vicinity of mountain lodge and the small artificial lake at Ponikva (distanced at 300 m) from the mountain lodge.	In the vicinity of the mountain lodge Ponikva and the small artificial lake at Ponikva.	Visual inspections for scattered waste around the lake.	During reconstruction of the mountain lodge (weekly).	Contractor Supervisor Environmental Inspector	50 €
Disposition of the construction machinery at project locations.	At all construction areas.	Regular checkup of the disposition of the construction machinery with respect to occupation of additional land.	Before start and during the construction phase.	Contractor	/
Safety standards for urban equipment are being met.	At sub project locations	Visual, testing and documentation inspection of elements at the sub project locations	During the construction activities of the sub-projects	Constructor, Supervising engineer, Environmental Inspector	Planned in the budget for performance

<b>Which</b>	<b>Where</b>	<b>How</b>	<b>When</b>	<b>Who</b>	<b>What</b>
<i>Parameter should be monitored?</i>	<i>Should the parameter be monitored?</i>	<i>Should the parameter be monitored (what should be measured and how)?</i>	<i>Should the parameter be monitored (time and frequency)?</i>	<i>Is responsible to monitor the parameter)?</i>	<i>Is the cost for implementation of the monitoring</i>
<b>Operational phase</b>					
Drinking water safety in the mountain lodge Ponikva	Taking samples from the tap water in the mountain lodge which are connected on the local water supply network.	Laboratory equipment for physical, chemical I microbiological analysis of drinking water quality.	Before putting into operation of mountain lodge Ponikva after connection with the local water supply network (once and if needed).	Municipality of Kochani  Accredited laboratory for water quality analysis.	50 €
Emission of polluting substances from pellets combustion in the heating boiler of the mountain lodge	At the emission points of the stack of the mountain lodge.	Analysis of emission gases (NO <sub>x</sub> , NO, NO <sub>2</sub> , N <sub>2</sub> O, SO <sub>2</sub> , HCl and chlorocarbohydrates) at the emission point of the stack.	At the start of the commission of the pellet boiler.	Accredited laboratory for air quality analysis.	50 €
Maintenance of the mountain bike trails.	Along the trails.	Visual inspection at site.	Regular inspection of the trails (monthly).	Municipal Inspectors  Public Communal Enterprise Vodovod Kochani	100 €
Disturbance of local fauna present at project locations.	At sensitive/critical habitats.	Visual.	During sensitive periods.	Responsible staff from the Municipality of Kochani	200 €
Safety standards for urban equipment are being met. Maintenance is regular	At sub project locations	Visual, testing and documentation inspection of elements at the sub project locations	Regularly (at least every 6 months)	Inspector from the Municipality of Kochani	Planned in the budget for performance

## Annex 1 : Letter from MES



Македонско еколошко друштво  
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Македонско еколошко друштво

Бр. 03 - 32/18  
27.11.2018 год.  
СКОПЈЕ

До  
Г-дин Николчо Илијев,  
Градоначалник на Општина Кочани  
Кочани

**Предмет:** Доставување мислење за можното влијание на проектот „Планински велосипедски рај“ врз скакулците

Почитувани,

Ви благодариме што го консултирате Македонското еколошко друштво за ваши проектни активности на Осоговските Планини за кои се одвива иницијатива за прогласување на заштитено подрачје.

Во врска со репродуктивниот период на скакулците го консултиравме експертот д-р Драган Чобанов од Бугарската академија на науките (Софија, Бугарија) кој беше вклучен во претходните истражувања на Осоговските Планини. Велосипедската патека која е од интерес е на патек од Брана Градче, кон Јастребник до Пониња и се протега во средно-планински заедници (1000-1500 м). Според предложеното зонирање, патеката влегува во зоната за одржливо искористување. Во ова подрачје, најактивен период за репродукција на скакулците е во месеците јули и август.

Би сакале да го изразиме нашето мислење дека целосно поддржуваме проекти за алтернативен туризам на Осоговските Планини за кои сметаме дека имаат незначителни негативни ефекти и всушност значајно ја помагаат заштитата на природата. Ви честитаме на одобрениот проект „Планински велосипедски рај“ и ви пожелуваме негова успешна имплементација.

Со почит,



проф. д-р Славчо Христовски  
Претседател на МЕД

Скопје, 27.11.2018 година



## Општина Кочани

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Тел. +389(0)33/274-001 \* Факс. +389(0)33/273-542  
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Врз основа на член 24 од Законот за животна средина ( сл. Весник на РМ бр. 53/05, 81/05, 24/07, 159/08, 83/09, 48/10, 124/10, 51/11, 123/12, 93/13, 183/13, 42/14, 44/15, 129/2015, 146/15, 192/15 и 39/16 ) односно Прилог 1, Дејност X : Инфраструктурни проекти, точка 1: Локални патишта и улици за кои задолжително се изработува елаборат, а за одобрение е надлежен Градоначалникот на општината, Градоначалникот на градот Скопје и градоначалникот на општините во Градот Скопје ( Сл. Весник на РМ бр 32/12), и Правилникот за формата и содржината на елаборатот за заштита на животната средина (Сл. Весник на РМ бр.44/13 и 111/14) член 5 алинеа 4 , Градоначалникот на Општина Кочани донесе:

УП1 бр. 22-271  
23.06.2017 год.  
КОЧАНИ

### РЕШЕНИЕ

За одобрување на елаборатот за заштита на животната средина за изградба на пешачко велосипедски патеки во Општина Кочани за развој на спортско рекреативниот и езерскиот туризам ( Патека од Кочани - Бавчалук до Езеро Градче )

1. Со ова решение **СЕ ОДОБРУВА** елаборатот за заштита на животната средина за изградба на пешачко велосипедски патеки во Општина Кочани за развој на спортско рекреативниот и езерскиот туризам (Патека од Кочани Бавчалук до Езеро Градче) под бр.22-271 од 21.06.2017 поднесен од правниот субјект Општина Кочани со ЕМБС 5994985. Горе наведениот правен субјект се задолжува во целост да ги следи насоките за работа предвидени во елаборатот како и реализира програмата за заштита на животната средина во елаборатот и овозможи надзор над активностите предвидени во елаборатот.
2. Ова решение стапува во сила од денот на донесувањето.

### ОБРАЗЛОЖЕНИЕ

На ден 21.06.2017 год. горенаведениот правен субјект до Општина Кочани поднесе барање за одобрување на елаборат за заштита на животната средина за за изградба на пешачко велосипедски патеки во Општина Кочани за развој на спортско рекреативниот и езерскиот туризам (Патека од Кочани - Бавчалук до Езеро Градче). По извршениот увид и анализа на доставениот елаборат од страна на општина Кочани надлежна за работите од областа на животна средина се констатира дека елаборатот е во согласност со Законот за животна средина , правилникот и уредбата со кои се регулира овој документ.

Врз основа на изнесеното, се донесе решение како во диспозитивот.

УПАТСТВО ЗА ПРАВНО СРЕДСТВО: Против ова решение може да се поднесе жалба до државна комисија за одлучување во управна постапка и постапка од работен однос во втор степен во рок од 15 дена од приемот на ова решение

Изработил,  
Раководител на одделение  
Александар Гицов



По овластување на  
Градоначалник на Општина Кочани  
Раководител на сектор  
Зоран Манасиев

# Annex 3 Decision for approval of EIA Report for “Construction of pedestrian and mount bike trail Hotel Gratche to the dam of the lake Gratche” (UP1 no.22-270 from 23.06.2017)



## Општина Кочани

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Врз основа на член 24 од Законот за животна средина ( сл. Весник на РМ бр. 53/05, 81/05, 24/07, 159/08, 83/09, 48/10, 124/10, 51/11, 123/12, 93/13, 183/13, 42/14, 44/15, 129/2015, 146/15, 192/15 и 39/16 ) односно Прилог 1, Дејност X : Инфраструктурни проекти, точка 1: Локални патишта и улици за кои задолжително се изработува елаборат, а за одобрение е надлежен Градоначалникот на општината, Градоначалникот на градот Скопје и градоначалникот на општините во Градот Скопје ( Сл. Весник на РМ бр 32/12), и Правилникот за формата и содржината на елаборатот за заштита на животната средина (Сл. Весник на РМ бр. 40/13, 11/14) член 5 алинеја 4, Градоначалникот на Општина Кочани донесе:

Ур. бр. 22-270  
23.06.2017 год.  
КОЧАНИ

### РЕШЕНИЕ

За одобрување на елаборатот за заштита на животната средина за изградба на пешачко велосипедски патеки во Општина Кочани за развој на спортско рекреативниот и езерскиот туризам (Патека од хотел Градче до круна на брана Градче )

1. Со ова решение **СЕ ОДОБРУВА** елаборатот за заштита на животната средина за изградба на пешачко велосипедски патеки во Општина Кочани за развој на спортско рекреативниот и езерскиот туризам (Патека од хотел Градче до круна на брана Градче) под бр.22-270 од 21.06.2017 поднесен од правниот субјект Општина Кочани со ЕМБС 5994985. Горенаведениот правен субјект се задолжува во целост да ги следи насоките за работа предвидени во елаборатот како и реализира програмата за заштита на животната средина во елаборатот и овозможи надзор над активностите предвидени во елаборатот.
2. Ова решение стапува во сила од денот на донесувањето.

### ОБРАЗЛОЖЕНИЕ

На ден 21.06.2017 год. горенаведениот правен субјект до Општина Кочани поднесе барање за одобрување на елаборат за заштита на животната средина за изградба на пешачко велосипедски патеки во Општина Кочани за развој на спортско рекреативниот и езерскиот туризам (Патека од Хотел Градче до круна на брана Градче). По извршениот увид и анализа на доставениот елаборат од страна на општина Кочани надлежна за работите од областа на животна средина се констатира дека елаборатот е во согласност со Законот за животна средина, правилникот и уредбата со кои се регулира овој документ.

Врз основа на изнесеното, се донесе решение како во диспозитивот.

УПАТСТВО ЗА ПРАВНО СРЕДСТВО: Против ова решение може да се поднесе жалба до државна комисија за одлучување во управна постапка и постапка од работен однос во втор степен во рок од 15 дена од приемот на ова решение

Изработил,  
Раководител на одделение  
Александар Гицов



По овластување на  
Градоначалник на Општина Кочани  
Раководител на сектор  
Зоран Манасиев

**Annex 4 Decision for approval of EIA Report for “Reconstruction of mountain lodge on Ponikva including providing of equipment” (UP1 no.25-2 from 15.01.2016)**



**РЕПУБЛИКА МАКЕДОНИЈА  
ОПШТИНА ПРОБИШТИП**

Одделение за ЛЕР и заштита на животната  
средина

УП1.бр.25-2 од 15.01.2016год.  
Пробиштип

Врз основа на член 24 став 7 од Законот за животна средина (Сл.весник на РМ бр.53/2005, 81/2005,24/2007, 159/2008, 83/2009, 48/2010, 124/2010 и 51/2011) и член 2 од Уредбата за дејностите и активностите за кои задолжително се изработува елаборат, а за чие одобрување е надлежен градоначалникот на општината, градоначалникот на Градот Скопје и градоначалникот на општините на Град Скопје (Службен весник на РМ бр.80/2009, 32/2012), Градоначалникот на општина Пробиштип, постапувајќи по Барањето на Општина Кочани, со седиште на ул. "Раде Кратовче" бр.1 Кочани, поднесено под број УП1.бр.25-2 од 15.01.2016 год за одобрување на Елаборатот за заштита на животната средина за дејноста /проект: Прилог 1  
Поглавје XI. Објекти за сместување и сервисни дејности со храна – точка 2 од Уредбата за елаборати(Сл.Весник бр.32/12) Одмаралишта и останати објекти за пократок престој  
Се работи за Проект, Реконструкцијата на туристичко – информативен центар Пониква, објект кој се наоѓа на СРЦ Пониква, КП. Бр.332/442 КО Јамиште, издава :

**РЕШЕНИЕ**

За одобрување на елаборат

1. Се одобрува Елаборатот за заштита на животната средина за вршење на дејноста/проектот Прилог 1  
Поглавје XI. Објекти за сместување и сервисни дејности со храна – точка 2 од Уредбата за елаборати(Сл.Весник бр.32/12) Одмаралишта и останати објекти за пократок престој
2. Одобрувањето на елаборатот се однесува на фазата заштита на животната средина
3. Ова решение влегува во сила со денот на донесувањето

**Образложение**

Градоначалникот на општина Пробиштип, разгледувајќи го и постапувајќи по Барањето на Општина Кочани, со седиште на ул. "Раде Кратовче" бр.1 Кочани, поднесено под број УП1.бр.25-2 од 15.01.2016 год за одобрување на Елаборатот за заштита на животната средина за дејноста /проект: Прилог 1  
Поглавје XI. Објекти за сместување и сервисни дејности со храна – точка 2 од Уредбата за елаборати(Сл.Весник бр.32/12) Одмаралишта и останати објекти за пократок престој  
Утврди дека, согласно Законот за животна средина (Сл.весник на РМ бр.53/2005, 81/2005,24/2007, 159/2008, 83/2009, 48/2010, 124/2010 и 51/2011) и член 2 од Уредбата за дејностите и активностите за кои задолжително се изработува елаборат, а за чие одобрување е надлежен градоначалникот на општината, градоначалникот на Градот Скопје и градоначалникот на општините на Град Скопје (Службен весник на РМ бр.80/2009, 32/2012), предложениот проект се наоѓа во Прилог 1

Поглавје XI. Објекти за сместување и сервисни дејности со храна – точка 2 од Уредбата за елаборати(Сл.Весник бр.32/12) Одмаралишта и останати објекти за пократок престој од Уредбата и за него решение за одобрување на елаборатот за заштита на животната средина донесува градоначалникот на општината.

Врз основа на горенаведеното, се пристапи кон разгледување на Елаборатот и се утврди дека вршењето на активноста односно дејноста нема значително негативно влијание врз животната средина и не ја загрозува значително истата, земајќи ги во предвид препораките и мерките за заштита на животната средина дадени во Елаборатот и дека со стручно и правилно спроведување на препораките и мерките за заштита на животната средина влијанието врз пределот, воздухот, водата, почвата и биодиверзитетот е мало.

Елаборатот од Јануари 2015 година е составен од технички и графички дел и содржински одговара на барањата и критериумите за изработка на документацијата за оценка на влијанието на објектот врз животната средина . Според анализираните потенцијални извори на загадување за време на обавувањето на дејноста, потенцијалот на објектот за загадување на сите медиуми во зоната на влијание е незначителен.

Врз основа на горенаведеното се издава решение за одобрување на елаборатот со укажување на обврската на инвеститорот во процесите на експлоатација на објектот целосно да ги почитува мерките и решенијата за заштита на животната средина.

Согласно уредбата за дејностите и активностите за кои задолжително се изработува елаборат, а за чие одобрување е надлежен градоначалникот, на општината, градоначалникот на Градот Скопје и градоначалникот на општините на Градот Скопје (Службен весник на РМ број 80/2009, 32/2012), наведениот проект се наоѓа во Прилог 1.

Поглавје XI. Објекти за сместување и сервисни дејности со храна – точка 2 од Уредбата за елаборати(Сл.Весник бр.32/12) Одмаралишта и останати објекти за пократок престој од Уредбата и за него решение за одобрување на елаборатот за заштита на животната средина донесува градоначалникот на општината. Врз основа на горенаведеното се одлучи како во диспозитивот на ова решение.

**УПАТСТВО ЗА ПРАВНО СРЕДСТВО:** Против ова решение инвеститорот, засегнатите правни или физички лица, како и здруженијата на граѓани формирани за заштита и унапредување на животната средина , можат да поднесат жалба до министерот кој раководи со органот на државната управа надлежен за работата од областа на животната средина во рок од 15 дена од денот на приемот на решението.

Доставено до:

-насловот

-архива

Изработил: Тони Геров  
Одобрил: Ирена Бошковска



ОПШТИНА ПРОБИШТИП  
Градоначалник,  
Тони Тоневски

