**EMERGENCY CONSOLIDATION OF THE NORTHERN WALL PORTION OF THE CASTLE OF LEZHA**

**Design Brief**

*29 of March 2023*

Date: 29 March 2023

Project Number: 22644

* **Background**

On 26 November 2019, Albania was hit by its most deadly earthquake in the last 50 years. The earthquake measured 6.3 on the Richter scale and caused significant casualties and property damage, resulting in 51 deaths, over 1000 injured, and nearly 17,000 people displaced. As a result of the disaster, a total of 202,291 people were affected in the country, 47,263 directly, and 155,029 indirectly. It caused extensive damage in 11 municipalities, including the two most populous, urbanized and developed municipalities (Tirana and Durres). The worst affected municipalities were: Shijak, Durres, Kruja, Tirana, Kamza, Kavaja, Kurbin, and Lezha.

The Government of Albania requested support from the European Union, the United Nations, and the World Bank to undertake a full and comprehensive Post-Disaster Needs Assessment (PDNA) to identify the damage, losses, and recovery needs arising from the earthquake. The tripartite partners provided financial and technical support to conduct the assessment in addition to the resources the government made available. To measure and assess the economic damage, a Post Disaster Needs Assessment (PDNA) was conducted, estimating the total economic losses at nearly EUR 1Billion.

The PDNA documented the destruction of public and private infrastructure. Of particular concern was the destruction of cultural heritage monuments and property, as 53 cultural heritage properties were significantly damaged by the earthquake. UNOPS, through ECR VIEMCO, is partnering with the Government of Albania and the European Union, to facilitate the post-earthquake revitalization and upgrade of economic and tourism infrastructure of a large number of key cultural heritage sites, museums, and cultural hubs. The overall aim of the project will be to assist Albania with economic development and recovery with a focus on tourism development with cultural heritage as its key component. This project seeks to remediate the effect of the earthquake on Albania’s cultural heritage through the rehabilitation of monuments, as well as contribute to Albania’s socio-economic recovery through the construction and upgrade of these sites. It will be important also to support improvements in the capacity of institutions responsible for the management of these cultural monuments and sites to better accommodate tourism.

* **General Project Objectives**

The final outcomes of the project are:

1) The rehabilitation of significant cultural heritage sites damaged by the earthquake.

2) Support to local economic development and the capacity of the Ministry of Culture in the safeguarding, management, and promotion of cultural heritage sites.

3) Improving awareness of the importance of cultural heritage sites amongst the Albanian public

The castle of Lezha is a cultural monument, category I, announced by the Order of the Ministry of Education and Culture with No. 1886, dated 10.06.1973. Lezha Castle, bares traces of constructions of different periods spanning from antiquity to the Middle Ages and is one of the most important archaeological centers of the country.

The earliest structures are from the 4th century BC, while the latest are from 15th century AD. What we see today is the representation of many layers of building, mostly evident in the curtain walls of the fortification. Various archeological works have discovered 10 gates that served to connect the inner territory of the fortification with the external environment. For the important archeological values, the perfect wall techniques and the history of this center, the restoration works that started in 1968, have identified more than 70% of the walls, turning the Castle into a visitable center. Systematic study and documentary work, as well as many years of restoration work, have created a somewhat stabilized state of archaeological ruins.

The portion of the northern wall including the angled tower in the northern portion of the curtain walls has sustained damages in the past. It’s not yet fully clear why the crack occurred, however the information from the site managers includes the explanation of an archeological survey being conducted in the foot of the angled tower, which included removal of some of the building material which then resulted in the tower cracking. Currently the tower is held with an iron tie anchored in the inner surface of the tower.

* **Site Location**

Latitude: 41.783

Longitude: 19.650

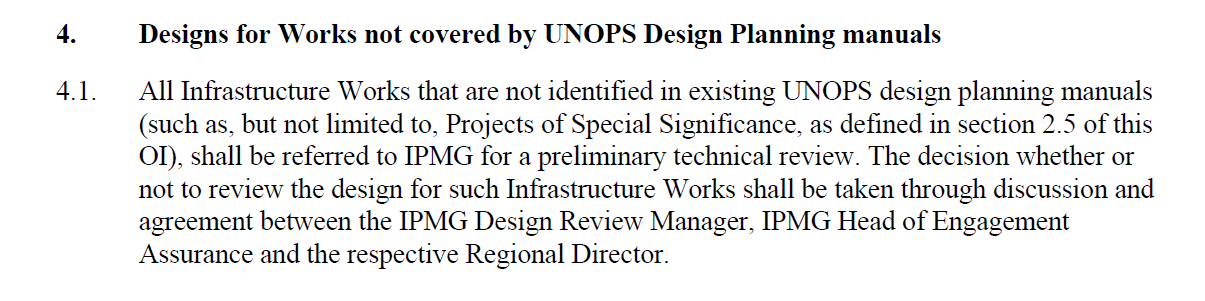
Sea level: 186 m

The castle rises on top of a hill 186 meters high, east of the city. From the Castle you can see a very beautiful view of the city of Lezha plain and the Adriatic Sea. The castle built on the hill has a strategic position that controls the Drini valley up to St. John's Bay in the Adriatic Sea. The castle is 1.5km from the city center, and is easily accessible to the national road. There is a very good but narrow asphalt road which connects the castle to the city. However the access is difficult only at the entrance of the castle, where there is a damaged lightweight-bridge.

# 

# 

* **Risk Assessment**

****

Following this instruction we consider this emergency intervention as **medium risk** infrastructure.

* **Scope of Works**

The scope of works is providing emergency stabilization of the northern wall portion of the Castle of Lezha, therefore the works will be as follows:

Designing emergency stabilization intervention after an understanding is created on reasons of damage currently observed at the tower. The emergency intervention is planned to be of a temporary nature (props or similar) as to secure the tower against possible collapse. Further to this, the intervention planned is similar to existing solution in place, however improving the condition of soil and foundation support:

1. Site mobilization;
2. Unbanking of a part of the soil that exerts a negative pressure force on the wall;
3. Removing the existing anchor
4. Installation of new anchor with all adjoined support and security in place
5. The creation of a positive horizontal force acting on the wall through the installation of grouted anchors. Installation of tie rods and supporting steel profiles on the wall.
6. Injection of grouting (soil improvement of the soil layer) in the part of the base of the wall that risks collapse. This kind of intervention is done to increase the foundation stability of the wall and to give a positive impact to the bearing capacity of the wall.
7. Removal of the damaged wall in the foundation (bottom) part and its repair.
8. Drainage to lower the pressure of active pressure on the walls.

Note: For the emergency stabilization intervention DNP is not applicable as per agreement with IPMG but the engineering team of UNOPS will monitor the intervention time by time until the project will be operational.

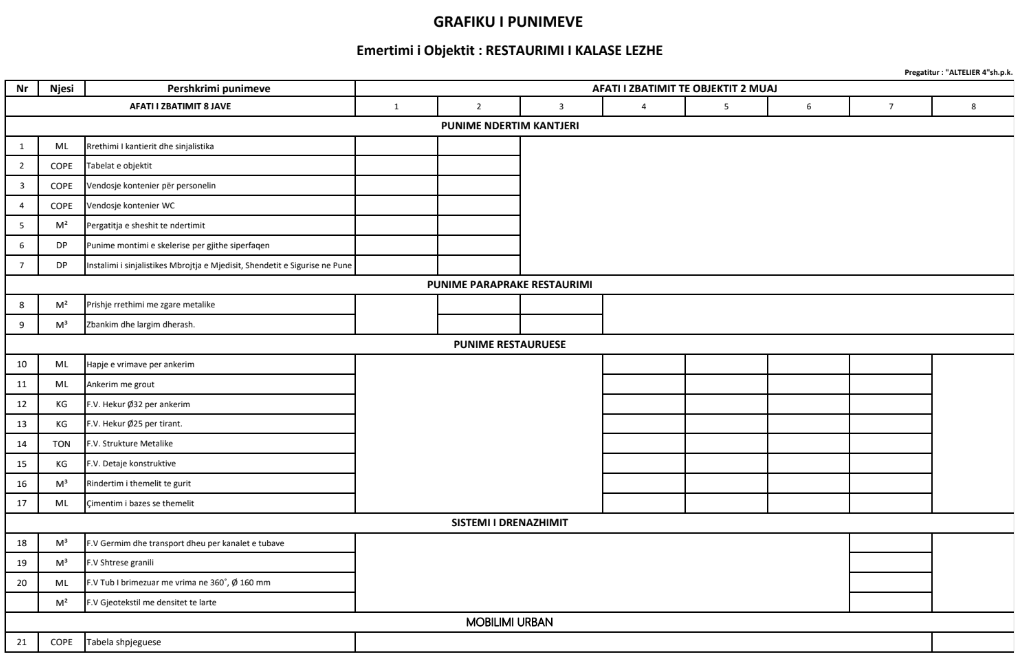
* **Design Considerations**

Material choices;

The materials selected for rehabilitation works is to ensure;

* preservation and sustainability of the monument,
* in line with the use of monument,
* in line with previous experiences in restoration and structural consolidation of built heritage,
* not causing health hazards,
* environment friendly.
* **Project Time Framework**

Time frame for restoration/rehabilitation of the Castle of Lezha is (2) two months (eight weeks in the schedule below).



* **Quality Management**

The following standards and codes are to be met for this project;

* The works are not identified in UNOPS design planning manuals
* Eurocode 0 - Basis of Structural design.
* Eurocode 1 – Actions on structures.
* Eurocode 2 – Design of Concrete Structures.
* Eurocode 3- Design of Steel Structures.
* Eurocode 4- Design of composite steel and concrete structures.
* Eurocode 6 – Design of masonry structures.
* Eurocode 7 - Geotechnical Design.
* Eurocode 8 – Design of structures for earthquake resistance.
* K.T.P- ( Albanian Technical design conditions).

The project’s quality management strategy will be focused on key levels of project implementation as follows:

* Corporate assurance
* Procurement assurance
* Quality assurance of works
* Environmental and social management assurance
* Project performance assurance
* **Project Tolerances**

|  |  |
| --- | --- |
| **Tolerance Area** | **Description** |
| Time | +/- 10 weeks |
| Cost | +/- 20% of planned budget |
| Quality | Certain range of acceptable outcomes on a product or process. |
| Scope | Work to be done according to **SoW** prioritization |
| Risk | Allowed aggregate value |

|  |  |
| --- | --- |
| Benefits |  |

* **Stakeholders**

The stakeholders on this project are:

* EU in Albania
* Ministry of Culture, Albania
* UNOPS
* **Annexes**

Annex 01 Design Brief and Risk Assessment

Annex 02 Detailed Design

Architectural Design Project

Guidance for implementation of works and maintenance program and plan

Work plan for works to be conducted to ensure safety on site

Mechanical Design Project

Structural Detailed Design Project

Technical assessment report and interventions "Partial Northern Wall of Lezha Castle"

Orthophoto

Annex 03 BoQ/

Annex 04 Technical Reports

Archaeological Report

Geological Report

Heritage Impact Assessment

Seismic Report