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منظمة الأمم المتحدة
للتربية والعلم والثقافة

联合国教育、
科学及文化组织

Culture Sector World Heritage Centre

H.E. Ms Tea Katukia
Ambassador Extraordinary and
Plenipotentiary of Georgia to France
Permanent Delegate of Georgia to
UNESCO
UNESCO House

Ref.: CLT/WHC/EUR/21/13270

14 April 2021

Subject: State of conservation of the World Heritage property 'Gelati Monastery'

Dear Ambassador,

I acknowledge with thanks the receipt of your letter dated 8 April last, by which you transmitted information from Mr Kaha Sikharulidze, First Deputy Minister of Culture, Sport and Youth of Georgia, concerning the state of conservation of the World Heritage property 'Gelati Monastery' to the World Heritage Centre.

I wish to express my sincerest gratitude to the Deputy Minister for the fruitful online meeting, held on 1 April last, and his confidence in the World Heritage Centre. The World Heritage Centre and the Advisory Body ICOMOS International consider it equally necessary to continue the urgent measures for the protection and conservation of the World Heritage property 'Gelati Monastery'.

Therefore, we kindly suggest that the State Party directly connect with specialists in the field of conservation and structural engineering.


The World Heritage Centre and ICOMOS international will continue to closely follow the state of conservation of this property in cooperation and contact with you and your national authorities.

Furthermore, I have the pleasure to transmit herewith the ICOMOS Technical Review on the 'Temporary roofing arrangement for the Church of the Virgin and St. George's church in the World Heritage property of Gelati Monastery, Georgia'.

We would appreciate if you would share the enclosed ICOMOS Technical Review (see Annex) with your relevant authorities for their consideration and keep the World Heritage Centre informed of ways by which these recommendations are being taken into account.

Thanking you for your continuous collaboration and support in the implementation of the *World Heritage Convention*, I remain,

Yours sincerely,

A handwritten signature in black ink, appearing to read "M. Rössler". The signature is fluid and cursive, with a prominent flourish at the end.

Mechtild Rössler
Director

Enc.

cc: Georgian National Commission for UNESCO
National Focal Point for World Heritage
ICOMOS International

ICOMOS Technical Review 'Temporary roofing arrangement for the Church of the Virgin and St. George's church in the World Heritage property of Gelati Monastery, Georgia'

ICOMOS Technical Review

Property	Gelati Monastery
State Party	Georgia
Property ID	710
Date of inscription	1994
Criteria	(iv)
Project	Temporary roofing arrangement for the Church of the Virgin and St. George's church in the World Heritage property of Gelati Monastery, Georgia

Background

Following the transmission of ICOMOS' December 2020 Technical Review on the temporary roofing arrangement for the Church of the Virgin and St. George's Church, a meeting was held between representatives of the State Party, the World Heritage Centre and ICOMOS on 12 January 2021.

On 28 January 2021 and on 5 February 2021, ICOMOS received additional information submitted by the State Party, comprising an information report on the state of conservation of the Church of the Virgin and St. George's Church, and the proposed project documentation for the temporary scaffolding of the Church of the Virgin.

A. Findings and comments during previous Advisory missions

The report of the joint ICOMOS/World Bank Advisory mission to the World Heritage property of Bagrati Cathedral and Gelati Monastery (21-25 January 2015) evaluated the placement of a reinforced concrete ring at the base of the dome of the Church of the Virgin, as well as the cornice conservation of the monuments of the property. In the same report, supplementary remarks referred to specific guidelines for further research to obtain additional measures to enhance the static adequacy of the dome during future seismic stresses. Additionally, worrying findings of damage to the surfaces of the building blocks of the church, open construction joints and disconnection of the building blocks, as well as moisture phenomena, were pointed out. These findings were particularly detected at the base of the church dome and at the west arm of the church, where the walls meet the roof surfaces, exactly where the current problems are located in the submitted reports.

During the previous joint World Heritage Centre/ICOMOS/ICCROM Reactive Monitoring mission (11-17 March 2010), several conservation issues were identified, among them the issue of descending and rising damp on the basement of the masonry of the monuments. No information has been provided since then on the impacts of this humidity on the church interior, nor whether and how this phenomenon has been assessed, nor whether the old drainage system around the monuments has been re-used for this purpose (cf. Fig. 1, 2).

The 2010 mission report noted the following:

Regarding the exterior of the Church of the Virgin: *"The monument suffers from serious problems of moisture, resulting from the unsatisfactory condition of the roof, rain gutters, window frames, drain pipes, and, also, rising damp. The stone fabric faces serious structural problems and needs partial reconstruction (also, the roofing cornices on St. George church) and restoration (dome and northern part of the Catholicon church) – flaking, corrosion, cracks, loss of stone parts, open joints etc. There are improvised interventions in a number of places with Portland cement."*

Regarding the wall-paintings: “Absence of any conservation measures, colour loss, absence of consolidation of the substructure in cases of destruction of the coloured surface (in some cases this has been covered with Portland cement). The strong contradiction of the existing condition between the safe parts (with brilliant colours as if they had been recently painted) and the parts suffering from the consequences of humidity (which are disappearing) prove that the wall-paintings have been without any protection or conservation care for a long time. There are cases where even the substructure has fallen off and the stone fabric is now exposed (internal parts of the windows on the south cross arm wall). The wall-paintings of the north and south cross arm walls suffered in the past from rain water infiltration through the broken windows (visible water falling traces).”

Regarding the quarter-spherical surface of the altar apse: “On the upper part – the darkish mosaic surface (1130) has not been cleaned for a long time. The additional wall-paintings on the lower part are in a bad state of preservation.”

St. George’s Church: “The same problems appear in St. George’s church, but it should be noted that the state of preservation of the wall-paintings (16th c.) is worse and, therefore, the need of urgent intervention is higher. More and more extensive interventions have been made with Portland cement on the damaged surfaces of the wall-paintings. Almost 60% of the plaster is detached from the wall. Extensive surfaces of the wall-paintings have already disappeared forever. Some places bear traces that show that rain water has run down the wall-paintings for a long time in the past. New icons have been nailed to the stone columns and on the wall-painting surfaces. Even wooden frames have been nailed on the stone columns of the original altar screen. The rising damp has already destroyed most of the lower part of the painted decoration of the walls. The whole stone vaulting surface of the exonarthex has been covered in an unacceptable way with white Portland cement.”

(pages 4 and 5 of the report of the joint World Heritage Centre/ICOMOS/ICCROM Reactive Monitoring mission (11-17 March 2010))



Fig.1. Descending and rising damp identified in the basement of the masonry of the Church of the Virgin (2010 World Heritage Centre/ICOMOS/ICCROM mission)



Fig.2. The *crepidoma* of the Church of the Virgin with the old drainage system around it (2015 joint ICOMOS/World Bank Advisory mission, fig.10)

B. General remarks and suggested recommendations regarding the temporary roofing to the Church of the Virgin

Temporary roofing currently in place

General remark 1:

- a) The temporary roofing does not cover all the roofs of the church – only the cross arms, excluding the roofs of the in-between-arms.
- b) The temporary roofing is applied exactly onto the existing roofs, covered with tiles, so any kind of repair work presupposes its previous removal. Therefore, its role is completely temporary, as pointed out in the National Agency for Cultural Heritage Preservation of Georgia’s report: *“the arrangement of temporary roofs was an urgent preventive measure”* (page 4 of the ppt. presentation text).
- c) Even as a temporary construction, it is capable of dealing only with surface vertical rainwater. It does not address side rainwater falling onto the vulnerable extended walls surfaces, leaving them completely uncovered.
As evidenced in the National Agency’s report, the moisture that appeared on the murals on the south side of the west wall, as well as on the south side of the west cross arm, has been stabilized. ICOMOS notes that even if the moisture has been stabilized, it has not decreased, and this is due to the winter period and because the walls with the open joints between the ashlar are completely unprotected from the rain.
- d) The temporary roofing does not deal with water infiltration in the meeting areas of the vertical surfaces with the roofs, exactly where strong moisture phenomena have been identified outside and particularly inside the church and on the murals.
As it is noted in the National Agency report: *“Another important issue was identified on the west arm, where the damages are mainly related to the lime mortar fillings made on the joints of horizontal and vertical surfaces. This phenomenon has led to the water infiltration and the damage of the wall-paintings.”* (ppt. – page7)

Additionally, it can be anticipated that the humidity on the south side of the west cross arm might not be limited to the lower part of the wall, but might have risen high, starting to create salts on the outer surface of the walls that are exposed to rain.

- e) The ceramic tiles used for roofing that are made of white clay and are to be replaced cover areas on the roofs of the eastern arches, the chapels (north-south) and the narthex (ppt. – page 6), i.e. roofs that are not covered by the temporary roofing. Additionally, extra work would need to be undertaken on the other half of the tiles, which are made of red clay and which are temporarily covered – they have not cracked, but water infiltration is still evident underneath them, too. The nails used for fixing the high-quality ceramic tiles made of red clay are also to be replaced with new, stainless steel ones.
- f) It would seem that further study is necessary to identify the specific reasons of water infiltration in the interior of the monument.

Suggested recommendation 1:

For all the above reasons, ICOMOS considers that the temporary partial roofing is inappropriate to remain in place throughout the above described works and should be changed as soon as weather conditions permit. A new, more solid temporary scaffolding structure is necessary to cover the whole roofing system of the church and, in parallel, to provide adequate protection to its side walls.

Timeframe for the restoration work

General remark 2:

As mentioned in the National Agency report: *“Taking into consideration the complexity of the related studies and proposed interventions, the international assistance should be provided **for at least 2 years**, that envisages the involvement in all stages of works for ensuring the proper implementation of given recommendations and helping in growing of the professional capacities of the involved specialists.”* (ppt., page 17)

It would seem infeasible to complete the work on the roofs of the Church of the Virgin and St George’s Church at Gelati Monastery within a season and therefore the planned temporary scaffolding structure for the monuments will need to remain in place for a much longer time.

Suggested recommendation 2:

The partial covering installed as a temporary and urgent preventive measure onto the Church of the Virgin roofs should be replaced, when weather conditions allow, with a more solid and comprehensive scaffolding structure that would entirely cover the roofing system of the church, except – perhaps - the dome, where no problems have been observed, according to the assessment of the National Agency. ICOMOS’ assessment of the two alternative scaffolding structures proposed on this issue by the National Agency is presented later.

Works planned at the Church of the Virgin

General remark 3:

The following works are planned for the Church of the Virgin:

- Removal of damaged ceramic roof tiles and replacement with new ones.
- Replacement of rusty iron nails with stainless-steel ones.
- Waterproofing the roofs by installing lead flashing in valleys, joints, edges, roof penetrations and any other gaps to prevent water damage or leaks; alternatively, putting in special pieces of ceramic tiles to form "gutters".

- Care and repair of joints and damaged ashlars on vertical and horizontal surfaces of the masonry.

These works should be carried out in parallel with the implementation of the research and conservation work on the frescoes inside the church and on the ashlars' exterior surface, following the elaboration by the State Party of an Integrated Conservation Management Plan for the Church of the Virgin, as proposed by the *ICOMOS Technical Review on Gelati Monastery (December 2020)*. During the implementation of this work, the absolute protection of the church from rainwater infiltration and moisture is a *condicio sine qua non* (cf. Suggested recommendation 9 of the *ICOMOS Technical Review on Gelati Monastery (December 2020)*).

Suggested recommendation 3 (cf. Suggested recommendation 10 of the *ICOMOS Technical Review on Gelati Monastery (December 2020)*):

For safety reasons, even if the work on the roofs of the church is completed, it is advised that the new scaffolding structure is not removed before the completion of the following:

- the repair works on the ashlars of the wall surfaces and the joints between them, and
- the conservation work on the wall-paintings inside the church.

Considerations on the scaffolding structure

General Remark 4:

Care should be taken with the total load that will be placed around the Church of the Virgin. The expected heavy point loads on the support bases of the vertical columns should be checked in advance in relation to soil composition. Additionally, the existence of any underground drainage channel around the foundation of the Church of the Virgin (such as that detected during the joint ICOMOS/World Bank Advisory mission to the World Heritage property of Bagrati Cathedral and Gelati Monastery (21-25 January 2015), cf. Fig. 1, 2). These factors should be taken into consideration during the determination for the exact placement of the basements of the temporary scaffolding structure, because there is a risk that the ground might recede.

On the basis of the above general remarks, the two proposals for a scaffolding structure that have been brought to the attention of ICOMOS are assessed as follows:

Special Remark 1:

Version 1 consists of prefabricated heavy metal truss structures which accumulate very heavy point loads. This solution absolutely ensures the solidity of the whole construction. It also ensures the unobstructed access to all sides of the church and its roofing, for any kind of work, as well as the protection of the building from side winds and rainwater.

For this version, special attention will be required to cover the area around the cylindrical dome. It is not clear whether the transparent parts will be covered by glass, which is fragile and should be reinforced in this case. An alternative proposal would be to use transparent plastic sheets of sufficient thickness that are practically unbreakable.

In addition, it is observed that a greater inclination will be required for the roof of this temporary scaffolding, so that rain and snow can be removed quickly.

Special Remark 2:

Version 2 does not seem to meet the basic safety principles of such a construction. This is a very light construction which can be useful, but only for a short period of time, such as a summer season, which has already been proved above to not be sufficient to complete the necessary tasks. This solution would also require special attention to properly cover the area around the cylindrical dome.

The key disadvantages of version 2 are the following:

- The height of the roof does not ensure comfortable accessibility for work to the upper parts of the Church of the Virgin roof.
- It leaves the side parts of the church and its problematic walls exposed to the wind and rainwater.
- Therefore, additionally, it does not ensure satisfactory working conditions during the winter months.
- The placement of the vertical supports is unstable - they are not anchored on separate concrete bases, as is the case in version 1.
- It presents serious stability problems in the case of side winds or an earthquake, as there are no metal cross links on the construction frame which could ensure better stability in comparison to the proposed (one) horizontal link. The photo of the last example presented of version 2 represents the coverage of a monument in a place somewhere in Western Europe, where the risk of an earthquake is much lower.

Suggested recommendation 4:

In the opinion of ICOMOS, a combination of the above two versions would be preferred; that is, a lighter construction (compared to version 1) and a more solid one (compared to version 2). To this direction, it is proposed to follow the solution of a gambrel roof, which will give a sufficient slope to the roofing and practically is easier to be assembled. However, it should be constructed not of prefabricated metal scaffolding, but of reinforced inclined iron beams capable of lifting heavy loads (snow), connected to each other by cross links, and anchored to point bases of concrete. It would be necessary for vertical banners-metallic elements to be placed on the sides, in order to protect the monument and the workers from side winds and rainwater. The solution of strong plastic sheets to cover the luminaires, fixed on a suitable metal frame, is preferable. An idea of the proposed construction is provided by the photographs of the protective scaffolding that was placed over the Protaton Church¹ on the World Heritage property of Mount Athos (Greece), in order to carry out the long-term restoration work of replacing the old roof construction and tile covering (Fig. 3, 4, 5).



Fig.3. Protaton Church – Placement of reinforced inclined iron beams of protective metal scaffolding

¹ Dedicated to the Dormition of the Virgin, the Protaton is a large triple-aisled basilica with narthex, the seat of the “protos”- the head of the self-governing body of the religious community of Mount Athos. Built in the 9th century by the emperor Michael III and extended in 10th century and repaired in end 13th century. The wall-paintings (circa 1300) attributed to Manuel Panselinos have gained world-wide acclaim in our time.



Fig.4. Protaton Church – The protective metal scaffolding.



Fig.5. Protaton Church – The protective metal scaffolding.

C. Comments Regarding the wall-painting damage observed in 2020

As the report of the National Agency notes, *“currently, the process of efflorescence on the wall painting, which is mainly related to drying, is active. As part of the planned monitoring since March 11, 2020, the dry method of mechanical salt reduction in the west arm is regularly undertaken by the wall-painting conservators. In addition, a long-term environmental monitoring system has been arranged. Humidity and temperature monitoring sensors determine the external and internal climatic environment of the church and their possible impact on the wall painting”* (ppt., page 10).

Suggested recommendation 5:

ICOMOS suggests that the measures taken by the State Party relating to the diagnosis and immediate treatment of the current condition of the murals be welcomed. Further and more precise measures should be indicated by the proposed Integrated Conservation Management Plan. Particularly, in relation to what is stated in the National Agency report, ICOMOS would advise the following:

Long-term monitoring

In order to obtain more accurate information about the behaviour of the salt content, monitoring on wall-paintings should be processed for a longer time.

ICOMOS notes that the observations shown in the photo documentation have been detected over a short period of time. The observations must be substantiated for a longer period of time, including the whole winter period, in order to obtain a more complete picture of the behaviour of the murals.

Calculating the moisture content of the walls and murals

In order to determine the degree of possible dehumidification of the walls and murals, a repeated diagnostic examination of the existing moisture on the wall-painting surface, in the supporting render, and inside the walls, using special hygrometers, is advised. The survey should be conducted at predetermined points on the surface, at certain depths in the masonry, and at fixed intervals, in order to accurately determine the process and the rate of possible dehumidification.

D. St. George’s Church

General remark 6

The photos and the description of the condition analysis of monitoring areas in the interior of the monument show that a similarly unstable environmental condition prevails inside St. George Church. This is evidenced by the falling of small particles of murals and by the thick layers of salts that condense on their surfaces, while, as a result of infiltration of rainwater from the historical crack (joint opening) on the south façade, loss of murals was observed on the west part of the south interior wall.

These serious humidity problems both inside and outside the church had been identified in the report of the joint World Heritage Centre/ICOMOS/ICCROM Reactive Monitoring mission (11-17 March 2010), as mentioned above.

Suggested recommendation 6:

Therefore, ICOMOS advises that the proposed Integrated Conservation Management Plan for the property includes the treatment of all the aforementioned issues in St. George Church, as well.

Placing a protective shelter over St. George Church would be advisable, since the conservation process has been slowed down, due to the Covid-19 pandemic, among other issues. An alternative could re-use part of the protective construction of the Church of the Virgin, after the completion of the conservation work there, but this would postpone the interventions to St. George Church. However, if

the National Agency deems that tasks in St. George Church can be scheduled and completed on time during the spring and summer months, then possibly a lighter shelter would facilitate them.

ICOMOS remains at the disposal of the State Party for further clarification on the above or assistance as required.

ICOMOS, Charenton-le-Pont
April 2021