



Gelati Monastery
Complex
Wall Painting
Conservation Programme

Remedial treatments

Phase 2

**Development of treatment
strategy and methodologies;
Stabilisation of critical areas**

**Stakeholder:
Gelati Temporary Rehabilitation
Committee**

2024
July - August

Remedial Treatment Programme

Table of Content

1. Context	3
2. Treatment categories	7
2.1 Treatment of ‘critical areas’	8
2.2 General stabilization treatments	19
2.3 Identification/development of specialist treatments (and related investigations)	36

Appendix: Graphic documentation of the remedial intervention areas



Development Remedial Intervention Methodologies

1. Context



1. Context

Mission background

In March 2024, as part of the Gelati Wall Painting Conservation Programme, the development of a wall painting treatment strategy and methodologies and stabilisation of critical areas began by the head of the programme Stephen Rickerby and Lisa Shekede with Georgian wall painting conservation team.

The remedial treatment programme continued

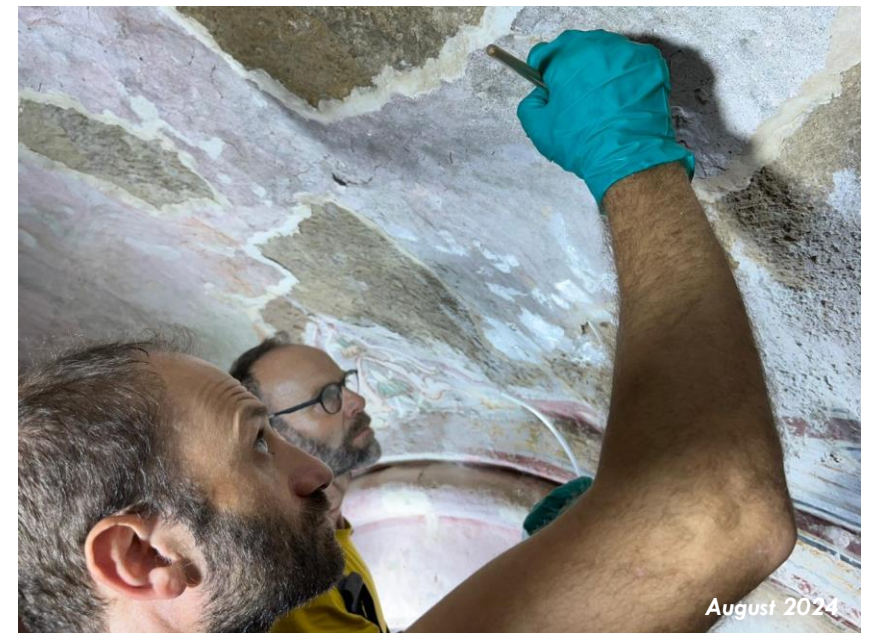
In July – August 2024, the second phase of remedial treatment programme was undertaken.

The remedial treatment programme (Phase 2) for the Gelati wall paintings proceeded on three parallel tracks, as follows:

- treatment of ‘critical areas’
- general stabilization treatments
- identification/development of specialist treatments (and related investigations)



Above: In-situ lab-based analysis and testing of the conservation materials.



Above: Remedial intervention addressing a painted plaster separation from stone support to prevent from imminent loss.

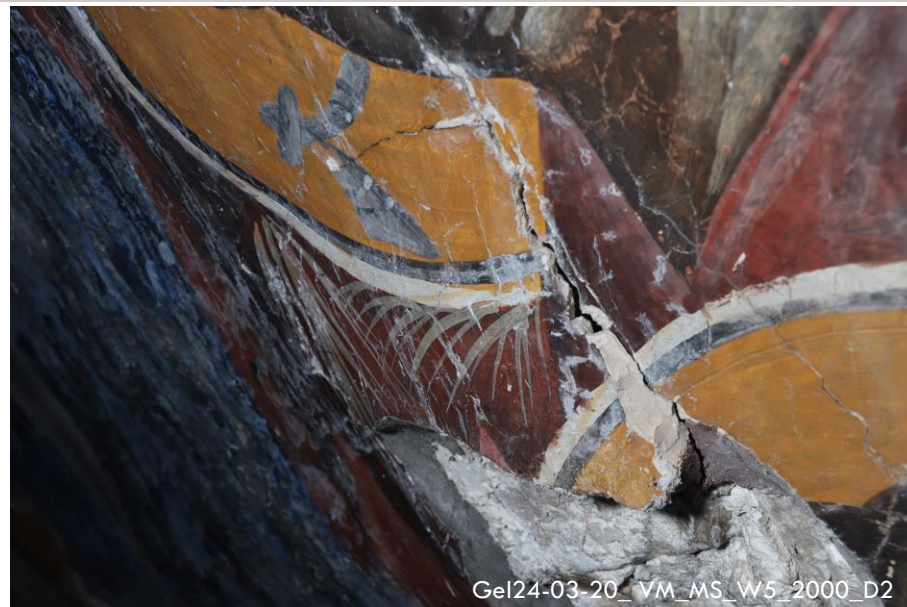
1. Context

Summary of condition and deterioration context

Multiple types of deterioration have undermined the condition of the Gelati paintings over a long time-period, probably on an almost continual basis since the building of the monastery church. The size and complexity of the structure present an intrinsic risk of rainwater infiltration, and there is evidence that this has occurred repeatedly. The widespread presence, deliquescence and crystallization of complex salt mixtures are among the most prevalent and serious problems. Extensive and diverse forms of biological deterioration and their effects are also serious concerns. In consequence, large expanses of painting exist in altered and highly vulnerable states and many areas are at risk of loss. Collected environmental data indicate highly variable and unstable conditions, with probably few options for mitigation. The conservation history demonstrates the persistent failure of most previous interventions.

Image (Upper right): The Church of the Virgin, main space, south arm, vault level, west wall (W5); Plaster delamination (separation from primary support) and cracks on the original and previous repairs (XX c).

Image (Right): : The Church of the Virgin, main space, west arm, vault level, south wall (S8); paint flaking and salt efflorescence. The area was consolidated in 2022.



1. Context

In this context the wall painting conservation programme incorporates the following:

- It recognizes that irremovable and inexorable deterioration factors place considerable limitations on both the implementation and efficacy and remedial interventions;
- It limits remedial treatments to essential stabilization measures, carried out within a framework that privileges compatibility and minimal intervention; and
- It integrates the planning and implementation of remedial treatments with diagnostic, analytical and environmental investigations and outcomes.



Image (Upper right): The Church of the Virgin, main space, north arm, vault level, east wall; sampling process.

Image (Right): The Church of the Virgin, main space, north arm, vault level, north wall; sampling process

Development Remedial Intervention Methodologies

2. Treatment categories

2.1 Treatment of 'critical areas'



2.1 Treatment of 'critical areas'

Areas of critical plaster separation are numerous and cannot be treated all at once. Areas of concern are therefore prioritized based on an assessment of various risk factors, as follows:

- **nature of separation:** including considerations of the location, size and state of deformation of the plaster separation. For example, large areas of plaster separation on vaults may be judged at greater risk than those on wall surfaces, due to added effects of gravity and greater risks of sudden collapse;
- **presence of other destabilizing conditions:** the presence of conditions such as interconnected plaster cracking which might increase risks of collapse are taken into account in sequencing the order and priority of injection grouting in the overall conservation programme;
- **presence of inhibiting conditions:** conditions that might inhibit grouting or introduce additional risk factors – such as the presence of salts – may mean that grouting interventions are delayed until a wider set of precautions and measures are set in place.



Image above: The Church of the Virgin, narthex, vault. High risk of plaster loss due to the plaster separation from the stone. Undertaken emergency intervention and installation of the press.

2.1 Treatment of 'critical areas'

To offset the risks involved in phasing injection grouting over time, temporary stabilization measures are sometimes instigated, again depending on specific conditions and the options available.

During the treatment campaign the following **critical areas of plaster separation** were stabilized by injection grouting:

- **south arm, tympanum above south door (XVI):** painted plaster is delaminated from stone, plasters have cracks. Previous repairs are also separated from primary support.



Images above and right: The Church of the Virgin, main space, south arm, tympanum (S24). High risk of plaster loss due to the plaster separation from the stone. Plaster has cracks and previous repairs, which also failed.



2.1 Treatment of 'critical areas'

To offset the risks involved in phasing injection grouting over time, temporary stabilization measures are sometimes instigated, again depending on specific conditions and the options available.

During the treatment campaign the following **critical areas of plaster separation** were stabilized by injection grouting:

- **south arm, tympanum above south door:** a patch of painted plaster to the right of Christ's head was at great risk of collapse and loss. Vibration from use of the door increased the jeopardy. The physical evidence suggested that the plaster patch had probably separated during its original application and setting processes, leaving it in an historically vulnerable state. Previous attempts to secure the separated patch with plaster 'plugs' had failed. Grouting was undertaken from 8th of August for several days. Gradually, 1,256 litre of grout was injected.



2.1 Treatment of 'critical areas'

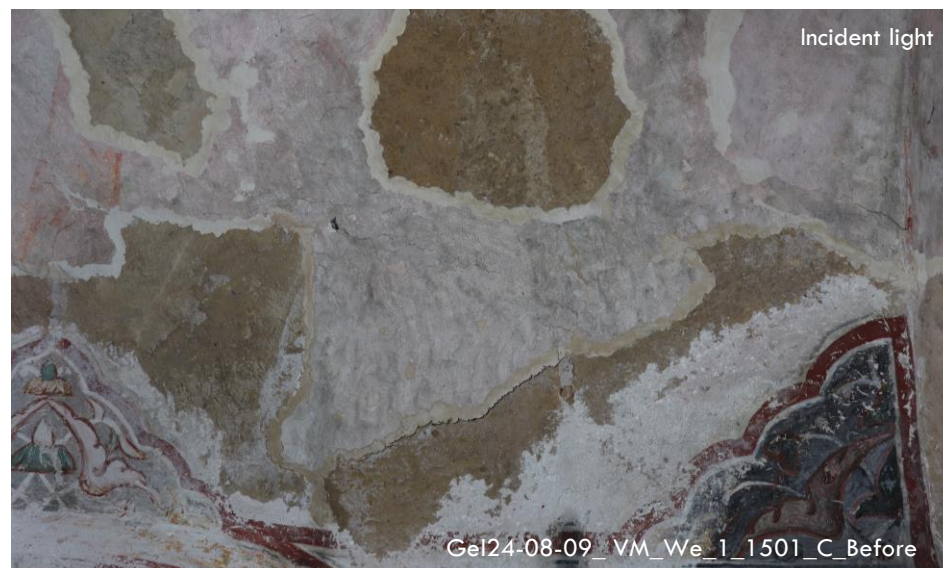
During the treatment campaign the following **critical areas of plaster separation** were stabilized by injection grouting:

- **narthex, vault above main west door:** painted plaster (XII c) is delaminated from stone, plasters have cracks. Previous repairs are also separated from primary support.



Images above and right: The Church of the Virgin, Narthex, vault east side, above the entrance in the main space (scene 1). High risk of plaster loss due to the plaster separation from the stone.

Plaster has deformation, cracks and previous repairs, which have also failed. The area has salt activity (samples has been sent for analysis).



2.1 Treatment of 'critical areas'

During the treatment campaign the following **critical areas of plaster separation** were stabilized by injection grouting:

- **narthex, vault above main west door:** a patch of painted plaster (12th century) on the vault directly above the main west door was cracked and separated. Monitoring indicated a worrying increase in the separation gap along the bottom edge of the patch. Imminent collapse was considered a great risk. Grouting was undertaken from the 12th of August for 2 days. Gradually, 378 ml of grout was injected.



August 2024



August 2024

Images above: Treatment process (Stage 1): 1. Temporary facing using CDD and inserting cotton for securing the voids. 2. Creating access points through previous repairs for catheters 3. Injecting grout through catheters. 4. Removal of catheters 5. Installation of presses before setting the grout 6. Removal of presses 7. Letting CDD to sublime

Images below: Condition after temporary stabilisation and grouting (before CDD sublimation)



Incident light

Gel24-08-09_VM_We_1_1501_D4_After



Raking light

Gel24-08-09_VM_We_1_1501_D4r_After

2.1 Treatment of 'critical areas'

Although both areas (Narthex and Tympanum) of plaster separation were relatively small (under 1 m square), circumstances associated with their location and condition indicated that they were at high risk and required prioritised treatment. In both cases, temporary protection/support was provided by the application of cyclododecane (CDD), a wax-like material ($C_{12}H_{24}$). After a brief period, this sublimes from a solid to a gaseous state, leaving no residue.



Image above and left: Prior to the grouting previous gypsum repairs and original plaster, which are detached from stone, were temporarily reinforced with cyclododecane and Japanese paper strips. After securely injection of grout, cyclododecane is left for sublimation, which will allow Japanese tissue to fall off safely without further mechanical action.

2.1 Treatment of 'critical areas'

Three additional 'critical areas' were also addressed, as follows: 1. north-west pendentive 2. south arm, west side of vault 3. west arm, west wall, niche;

Below is presented condition of the wall paintings in the **north-west pendentive**



Image left and right: The Church of the Virgin, main space, north-west pendentive. The delaminated plaster has collapsed in June 2024, rest of the plaster was hanging.



Image left (before treatment) and right (after treatment): The Church of the Virgin, main space, north-west pendentive. The delaminated, powdered plaster, and paint flakes, along with salt efflorescence has been treated as an emergency intervention.



2.1 Treatment of 'critical areas'

Treatment descriptions:

1. **north-west pendentive:** an area of recent collapse of bulging and thin plasterwork was stabilized and secured, first by facing with lens tissue and Paraloid B72®, followed by injection/repair with the light-weight lime-based grout mixture;

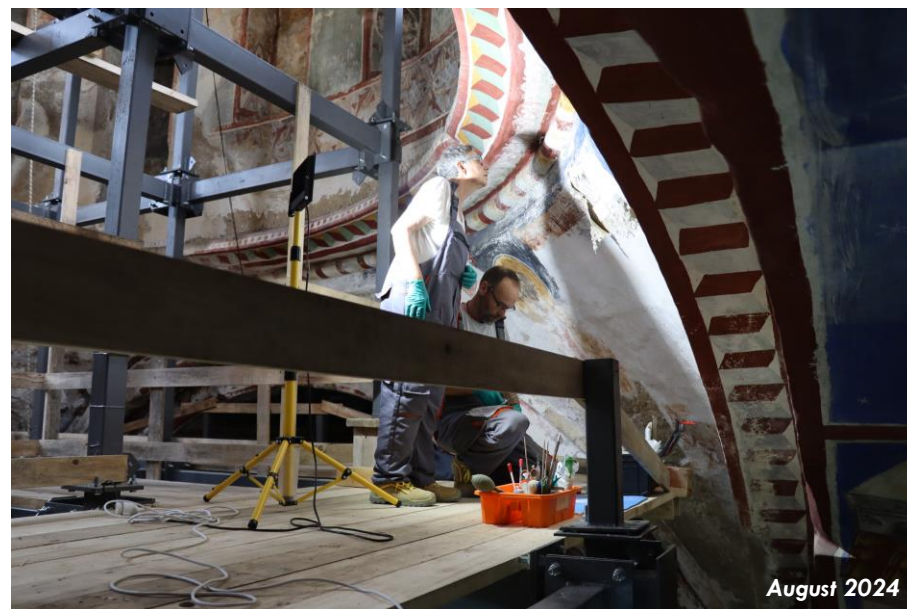


Image left:
Process of the
development of the
treatment strategy.



Images above: The Church of the Virgin, main space, north-west pendentive. Treatment processes: facing with lens tissue and Paraloid B72®, grouting and reinforced with pressed.

2.1 Treatment of 'critical areas'

Treatment descriptions:

2. south arm, west side of vault: an area of cracked and separated painted plaster which is at risk of collapse was faced with tissue bandages and Paraloid B72®. This area will be injection grouted in November 2024;



Images (Right and below): The Church of the Virgin, main space, south arm, vault level, west wall; Condition after temporary stabilisation.

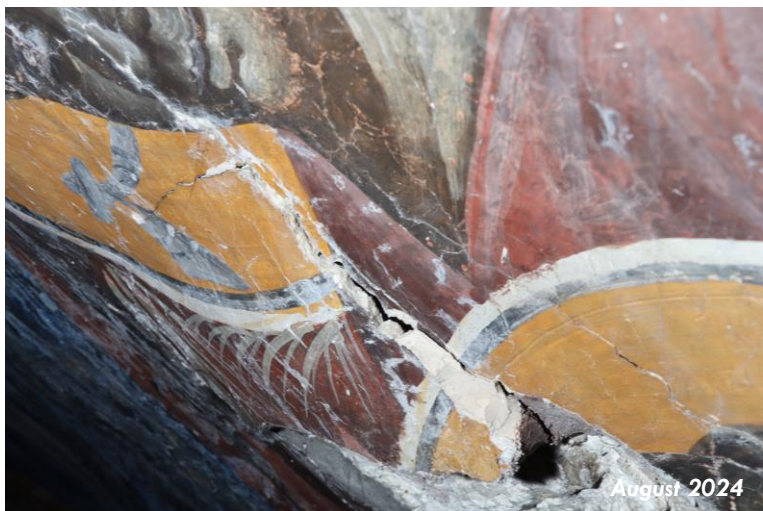
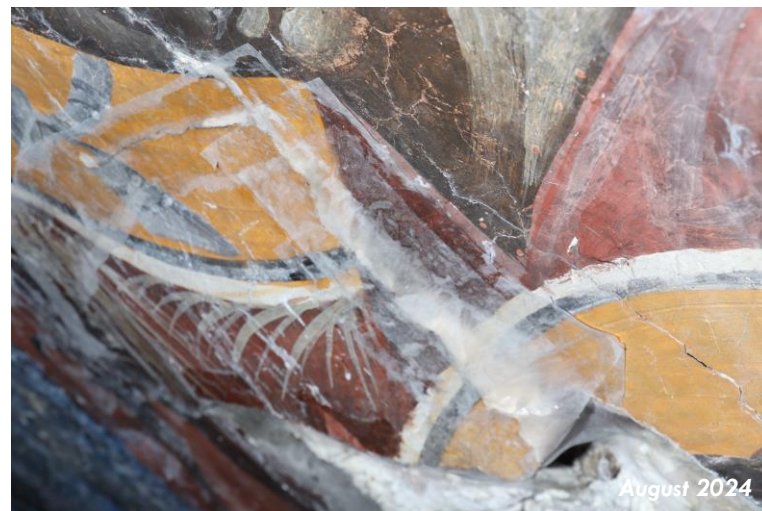


Image (Left): The Church of the Virgin, main space, south arm, vault level, west wall; Condition before after temporary stabilisation. Original plaster has delamination, cracks, salt. Previous repair also reveals cracks and salts. The area is at high risk of loss.



2.1 Treatment of 'critical areas'

Planned treatment descriptions:

3. west arm, west wall, niche another area of recent plaster collapse which is an especially critical condition and heavily contaminated by salts. The affected painting has already been previously faced with tissue and gauze, and is almost completely separated from the primary support. Plans have been made for the additional facing and securing of this area in readiness for its complete detachment and removal for safe storage. This will be done in September 2024.

Image (below): The Church of the Virgin, main space, west niche, W15, before collapse



Development Remedial Intervention Methodologies

2. Treatment categories

2.2 General stabilization treatments



2.2 General stabilization treatments

In the north arm of the main space of the Church of the Nativity of the Virgin Mary (especially on the west and east sides) surviving painting is affected by a range of destabilizing conditions and exists in a highly vulnerable state. Principal conditions include exposed and eroded plaster, plaster decohesion, pockets of plaster bulging and separation, paint flaking and loss, and paint powdering. Salt contamination is a significant exacerbating factor.

Based on lab-based testing and development, and on *in-situ* trials carried out in March 2024, a suite of stabilization treatments is being gradually implemented. These include:

- **consolidation/readhesion:** use of nano-lime dispersed in alcohol (CaLoSil® NP25) to consolidate exposed and decohesive plaster;
- **bridging/protection of exposed plaster edges:** to protect and stabilize damaged and exposed plaster edges, introduction of a customised 'micro-grout' by pipette. An initial formulation trialed in March 2024 comprised 1 part lime, 1 part chalk, 1 part pumice (0–240 m) + added water to desired consistency for effective delivery (all parts by volume). The added water has been substituted by a 1:1 mixture of water : alcohol, both to better facilitate delivery and minimize salt risks;
- **selective paint flake fixing:** based on trials and surveillance of results, CaLoSil® NP25) also provides an effective means of resecuring some areas of paint flaking.

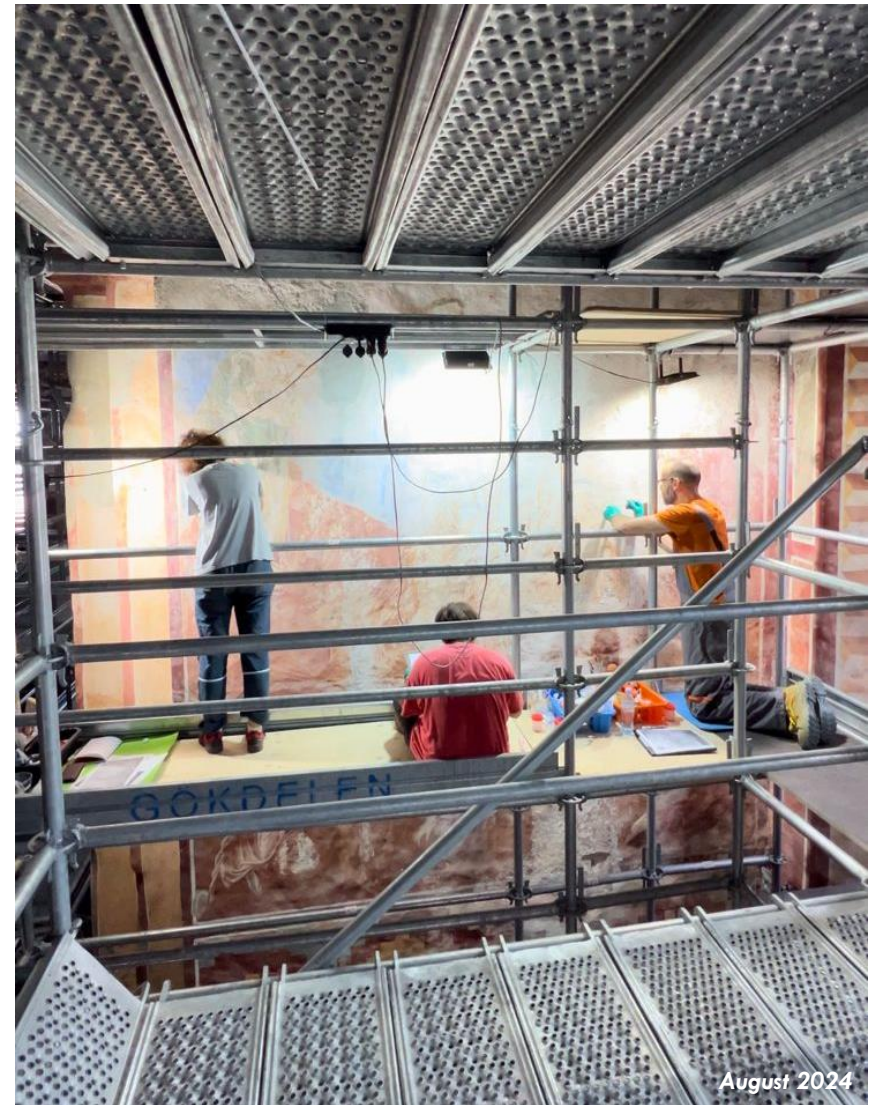


Image (Above): The Church of the Virgin, main space, north arm. Remedial treatment programme in progress.

2.2 General stabilization treatments

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2.2 General stabilization treatments

- consolidation/readhesion and micro-grouting of plaster

Church of the Virgin Mary, main space, north arm, west wall, Scene W11



Left: Condition of wall paintings before intervention in August 2024. Plaster delamination, plaster powdering, exposed plaster edges; salt efflorescence



Left: In August 2024, the 2nd phase of remedial treatment programme was undertaken – development of intervention methodologies continued. Salts have been removed, plaster has been consolidated with nano lime, separated plaster fragments and exposed edges have been stabilised with micro grout.

2.2 General stabilization treatments

- consolidation/readhesion and micro-grouting of plaster

Church of the Virgin Mary, main space, north arm, west wall, Scene W11



Above: Condition of wall paintings before intervention in August 2024. Plaster delamination, plaster powdering, exposed plaster edges;



Above: In August 2024, the 2nd phase of remedial treatment programme was undertaken – development of intervention methodologies continued. Plaster consolidation and micro-grouting for securing the exposed plaster edges.



Above: Condition of wall paintings before intervention in August 2024. Plaster delamination, plaster powdering, exposed plaster edges; salt efflorescence



Above: In August 2024, the 2nd phase of remedial treatment programme was undertaken – development of intervention methodologies continued. Plaster consolidation and micro-grouting for securing the exposed plaster edges.

2.2 General stabilization treatments

- consolidation/readhesion and micro-grouting of plaster

Church of the Virgin Mary, main space, north arm, east wall, Scene E9



Left: Condition of wall paintings before intervention in August 2024. In March 2024 the area was treated with nano-lime to address powdering problem, however the exposed edges of the plasters remained unsecured.



Left: In August 2024, the 2nd phase of remedial treatment programme was undertaken – development of intervention methodologies continued. Plaster losses and exposed edges were secured by micro-grout. The low amount of mixture were selectively applied in small losses, which stabilised the condition of the plaster.

2.2 General stabilization treatments

- consolidation/readhesion and micro-grouting of plaster

Church of the Virgin Mary, main space, north arm, east wall, Scene E7



Left: Condition of wall paintings before intervention in August 2024. The painted plaster is separated from each other, plaster is also powdering and there is a high risk of loss.



Left: In August 2024, the 2nd phase of remedial treatment programme was undertaken. Plaster has been consolidated with nano-lime, then painted loose fragments and exposed edges were secured by micro-grout. The low amount of mixture were selectively applied in small losses, which stabilised the condition of the plaster and a paint.

2.2 General stabilization treatments

- consolidation/readhesion and micro-grouting of plaster and selectively readhesion of paint layer

Church of the Virgin Mary, main space, north arm, east wall, Scene E9



Above: Condition of wall paintings before intervention in March 2024. Paint flaking, plaster delamination, plaster powdering, exposed plaster edges; salt content (revealed through analysis).

Above: Condition of wall paintings after the 1st phase of remedial treatment programme March 2024, which aimed development of intervention methodologies and trial testing of the materials and application methods. On this area, painted plaster flake re-adhesion and micro-grouting of the exposed edges have begun. Small losses has been observed while development of methodology.

Above: In August 2024, the 2nd phase of remedial treatment programme was undertaken – development of intervention methodologies continued. The delivery method of the micro-grout and consolidant have been refined, micro-grout material mixture has been modified by changing ratio of alcohol:water, which improved materials property of flow and gave desirable texture on the surface.

2.2 General stabilization treatments

- consolidation/readhesion and micro-grouting of plaster

Church of the Virgin Mary, main space, north arm, east wall, Scene E5



Left: Condition of wall paintings before intervention in August 2024. The painted plaster is separated from each other, plaster is also powdering and there is a high risk of loss.

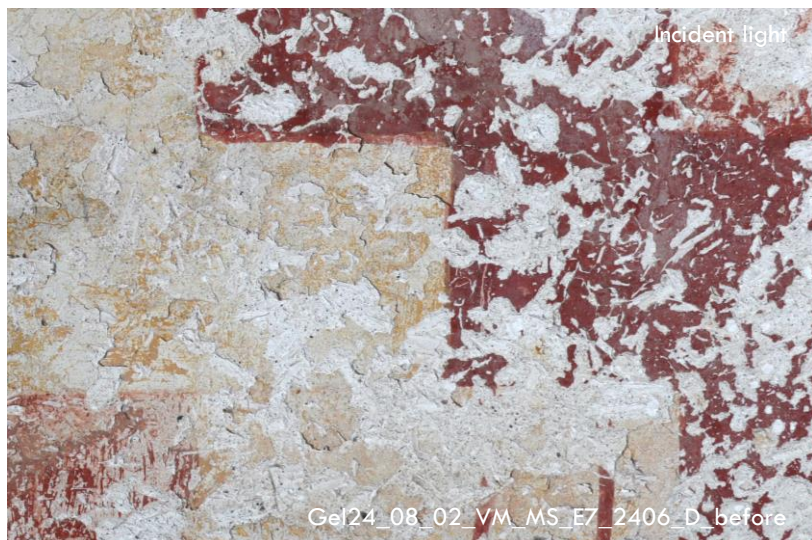


Left: In August 2024, the 2nd phase of remedial treatment programme was undertaken. Plaster has been consolidated with nano-lime, then painted loose fragments and exposed edges were secured by micro-grout. The low amount of mixture were selectively applied in small losses, which stabilised the condition of the plaster and a paint.

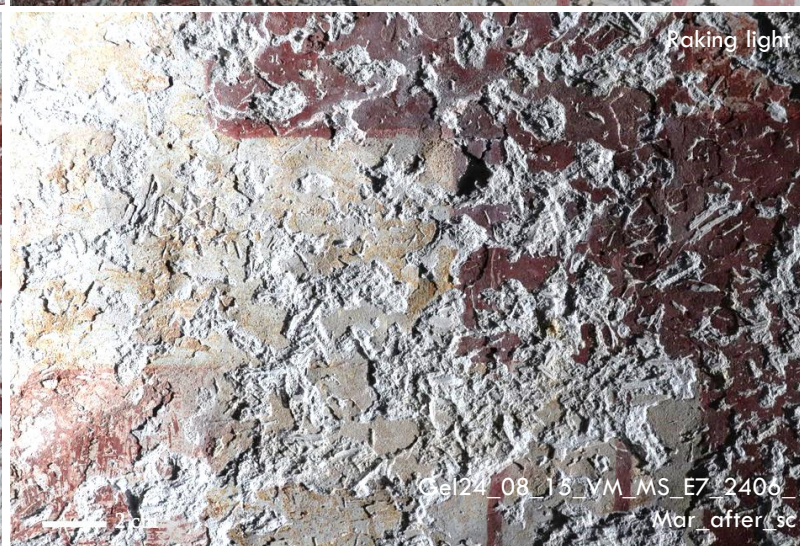
2.2 General stabilization treatments

- consolidation/readhesion and micro-grouting of plaster

Church of the Virgin Mary, main space, north arm, east wall, Scene E7



Left: Condition of wall paintings before intervention in August 2024. The painted plaster is separated from each other, plaster is also powdering and there is a high risk of loss.



Left: In August 2024, the 2nd phase of remedial treatment programme was undertaken. Plaster has been consolidated with nano-lime, then painted loose fragments and exposed edges were secured by micro-grout. The low amount of mixture were selectively applied in small losses, which stabilised the condition of the plaster and a paint.

2.2 General stabilization treatments

- consolidation/readhesion and micro-grouting of plaster

Church of the Virgin Mary, main space, north arm, east wall, Scene E9



Left: Condition of wall paintings before intervention in August 2024. In March 2024 the area was treated with nano-lime to address powdering problem, however the exposed edges of the plasters remained unsecured.

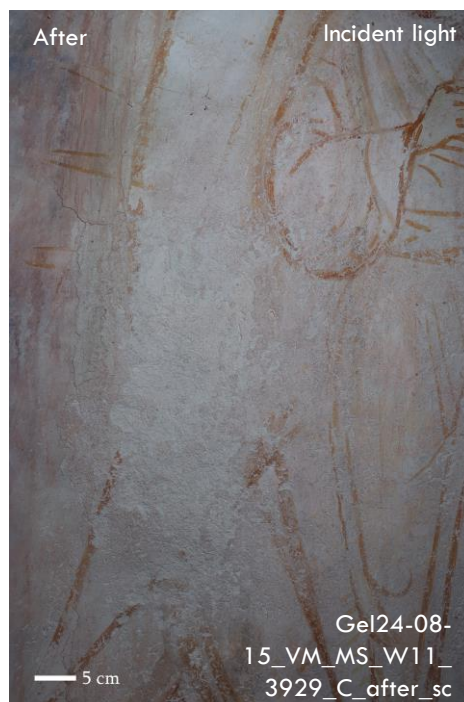


Left: In August 2024, the 2nd phase of remedial treatment programme was undertaken – development of intervention methodologies continued. Plaster losses and exposed edges were secured by micro-grout. The low amount of mixture were selectively applied in small losses, which stabilised the condition of the plaster.

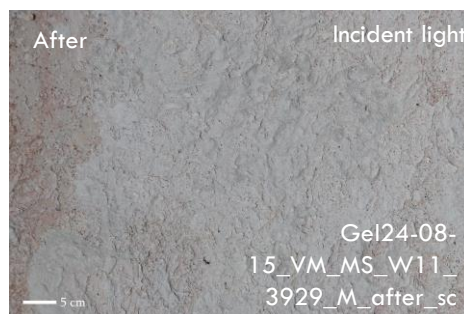
2.2 General stabilization treatments

- consolidation/readhesion and micro-grouting of plaster

Church of the Virgin Mary, main space, north arm, west wall, Scene W11



Above Condition of wall paintings before intervention in August 2024. The painted plaster is separated from each other, plaster is also powdering.



Left and right: In August 2024, the 2nd phase of remedial treatment programme was undertaken. Plaster has been consolidated with nano-lime, then loose plaster fragments and exposed edges were secured by micro-grout. The low amount of mixture were selectively applied in small losses, which stabilised the condition of the plaster.



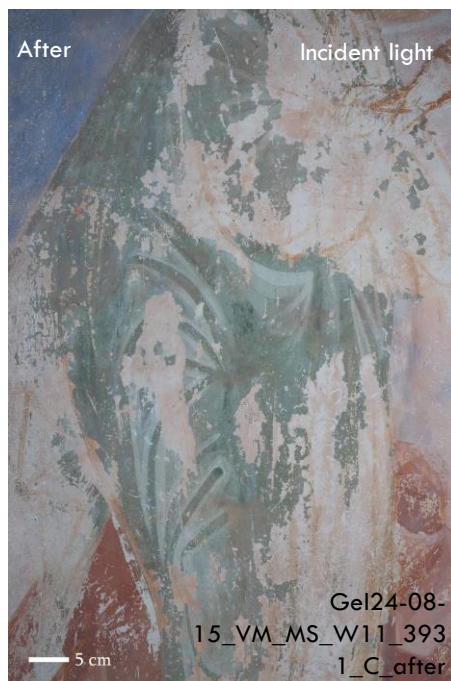
2.2 General stabilization treatments

- readhesion of paint

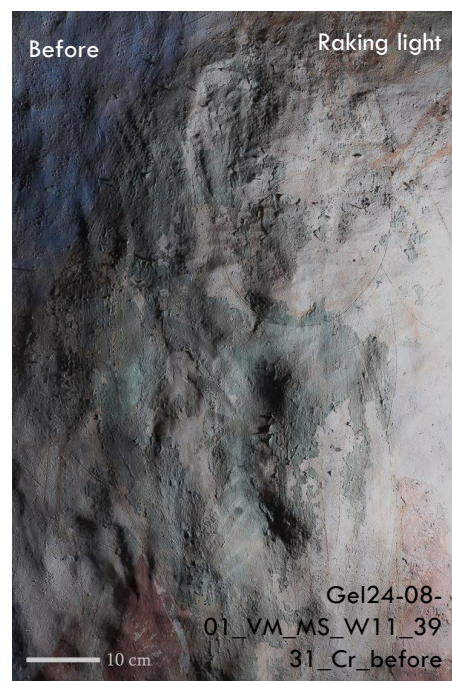
Church of the Virgin Mary, main space, north arm, west wall, Scene W11



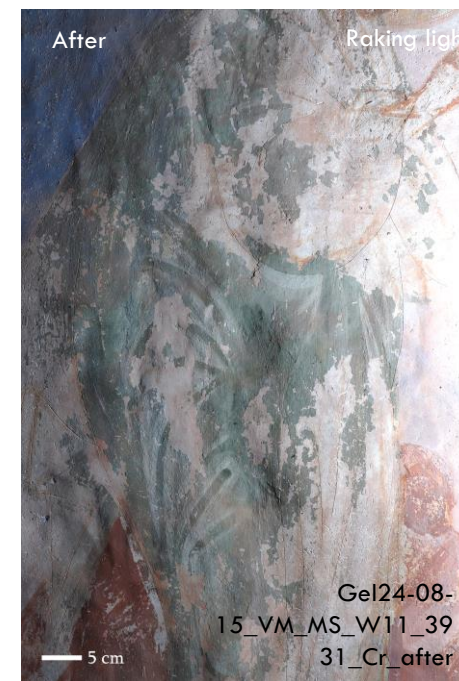
Above: Condition of wall paintings before intervention in August 2024. Paint loss and flaking.



Above: In August 2024, the 2nd phase of remedial treatment programme was undertaken – development of intervention methodologies continued. Paint flakes have been re-adhered to the plaster using nano-limes (Calosil NP25)



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2.2 General stabilization treatments

- readhesion of paint

Church of the Virgin Mary, main space, north arm, east wall, Scene E9



Above Condition of wall paintings before intervention in August 2024. The paint layer is flaking.

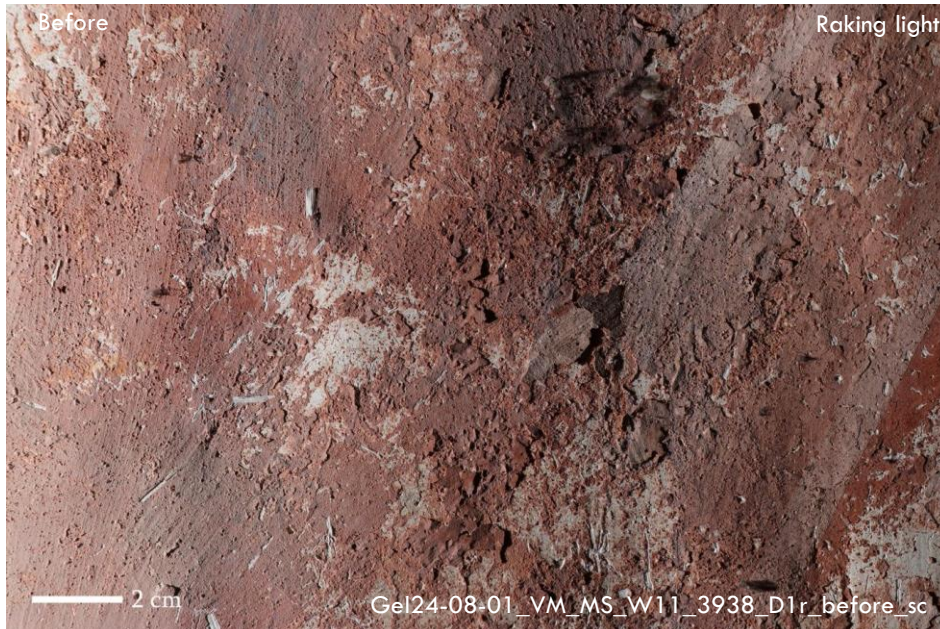


Above: In August 2024, the 2nd phase of remedial treatment programme was undertaken. Paint flakes have been re-adhered using nano-lime consolidant.

2.2 General stabilization treatments

- readhesion of paint

Church of the Virgin Mary, main space, north arm, west wall, Scene W11



Above Condition of wall paintings before intervention in August 2024. The paint layer is flaking.

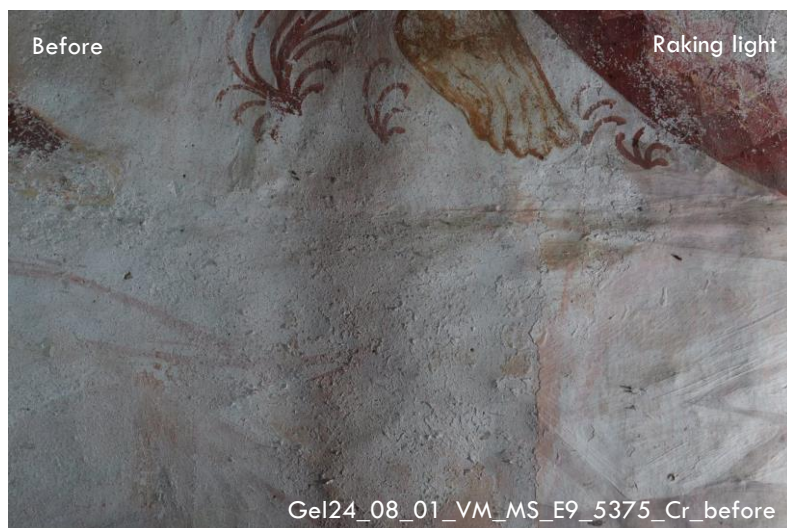


Above: In August 2024, the 2nd phase of remedial treatment programme was undertaken. Paint flakes have been re-adhered using nano-lime consolidant.

2.2 General stabilization treatments

- readhesion of paint

Church of the Virgin Mary, main space, north arm, east wall, Scene E9



Above
Condition of wall paintings before intervention in August 2024. The paint layer is flaking.

Above: In August 2024, the 2nd phase of remedial treatment programme was undertaken. Paint flakes have been re-adhered using nano-lime consolidant.

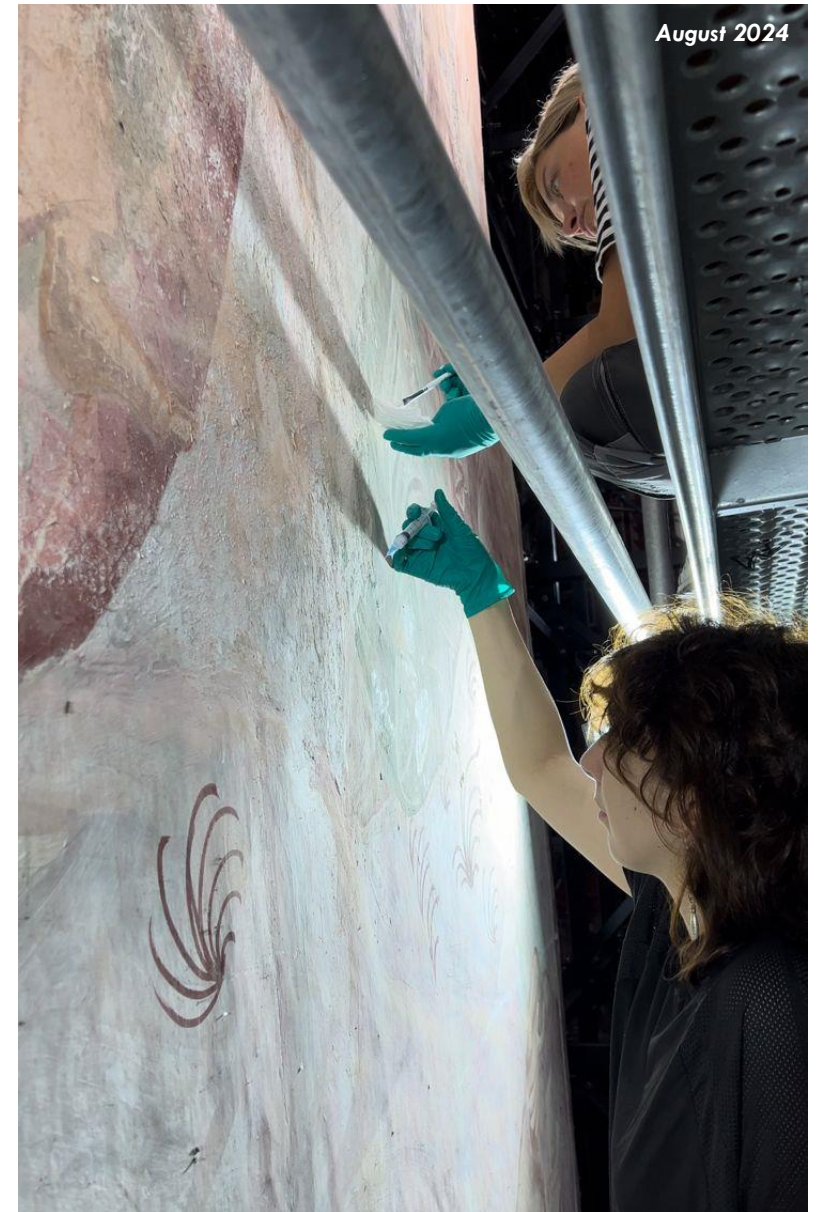


2.2 General stabilization treatments

As salt risks are high, treatment implementation is carefully calibrated and limited, as follows:

- **targeted areas:** treatments are directed only at areas judged to be unstable and at risk of loss (and within safe intervention thresholds regarding salt contamination levels [see **below**]);
- **compatibility:** limiting of principal treatments to compatible lime-based systems and avoidance of film-forming added materials;
- **limiting of added water:** use of alcohol diluted treatment systems to limit salt mobilization risks;
- **surveillance of treatment ‘safety’ thresholds:** although core and surface sampling has determined overall high levels of salt contamination, the outcomes of the treatment programme indicate that intervention thresholds can be safely maintained whereby salt activation is avoided.

The trialled treatments outlined above are to be further implemented in designated areas of the north arm and additionally in the pendentives in the work campaigns between September and November 2024.



Development Remedial Intervention Methodologies

2. Treatment categories

2.3 Identification/development of specialist treatments (and related investigations)

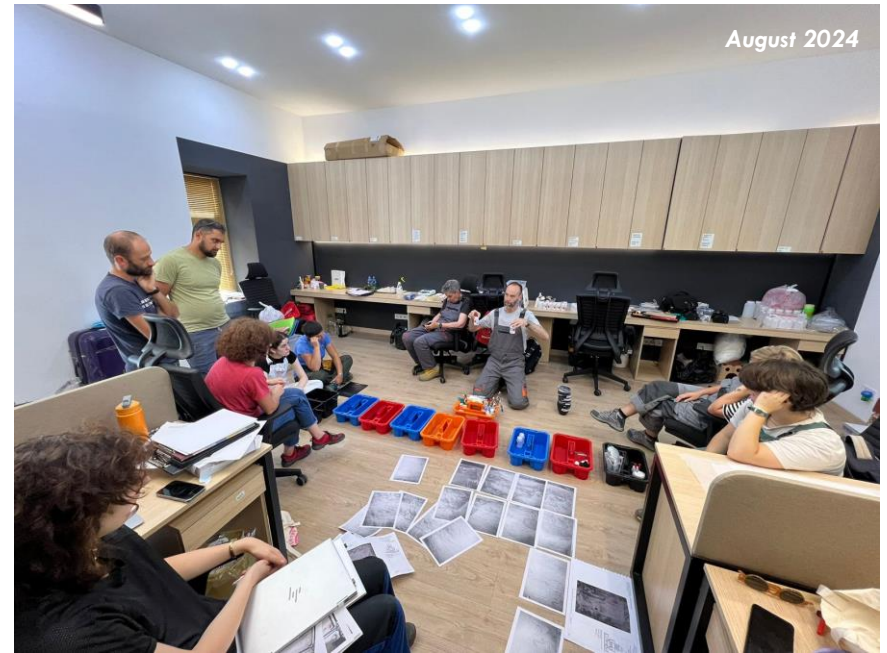


2.2 General stabilization treatments

As the remedial treatment programme progresses, areas for the development of new specialist interventions are being identified. These are:

- **salt reduction procedures:** with the analytical identification that salt contamination is largely limited to the upper plaster stratigraphies, there is the prospect that effective salt reduction measures could be implemented in the remedial ongoing treatment programme. Appropriate materials and procedures need to be identified and researched, and trialled and evaluated;
- **specific flake fixing requirements:** ongoing surveillance of flake fixing treatment using CaLoSil® NP25 indicates that success is not always achieved by this method. Alternative approaches (and materials) are likely to be required;
- **specific areas of paint consolidation/re-adhesion:** although CaLoSil® NP25 has proved an effective material for achieving the consolidation/re-adhesion of disaggregated plaster where painting is now absent, results on surviving painting affected by combined problems of powdering/micro-flaking have been variable. Further research and testing of additional/supplementary materials are required.

These areas of concern will be researched with a view to carrying out further trials and their assessment in November 2024.



Appendix

Graphic documentation of treatment areas



გრაფიკული დოკუმენტაცია / Graphic Documentation

აღმოსავლეთის ზრდილი
East section











გელათის სამონასტრო
ქომაკლასი ღვთისმშობლის
შობის ტაძარი

Church of the Nativity of
Virgin Mary

ფიზიკური საკონსერვაციო ჭარბის მეორე ეტაპი;
საკონსერვაციო სტრატეგიის და მეთოდოლოგიის განვითარება;
კრიტიკული არეების სტაბილიზაცია

Remedial treatment - phase 2;
Development of treatment strategy and methodologies;
Stabilization of critical areas



- | | | | |
|---|---|---|--|
|  Injection
ინექცია |  Salts removal with a brush
მარილის მოხსნა ფაჩხით |  Edge repair
ქიბი |  Removal of previous repairs
წინა საკონსერვაციო შეკეთების მოხსნა |
|  Micro injection
მიკრო ინექცია |  Salts removal with scalpel
მარილის მოხსნა სწალვლით |  Filling
შვსვა |  Removal of superficial deposition
ზედაპირული მბვრის და ნაღების მოხსნა |
|  Consolidation of plaster layer
ნაღის ფენის აკონსოლიდაცია |  Paint layer consolidation
ფერის ფენის გამაგრება | | |



გრაფიკული დოკუმენტაცია / Graphic Documentation

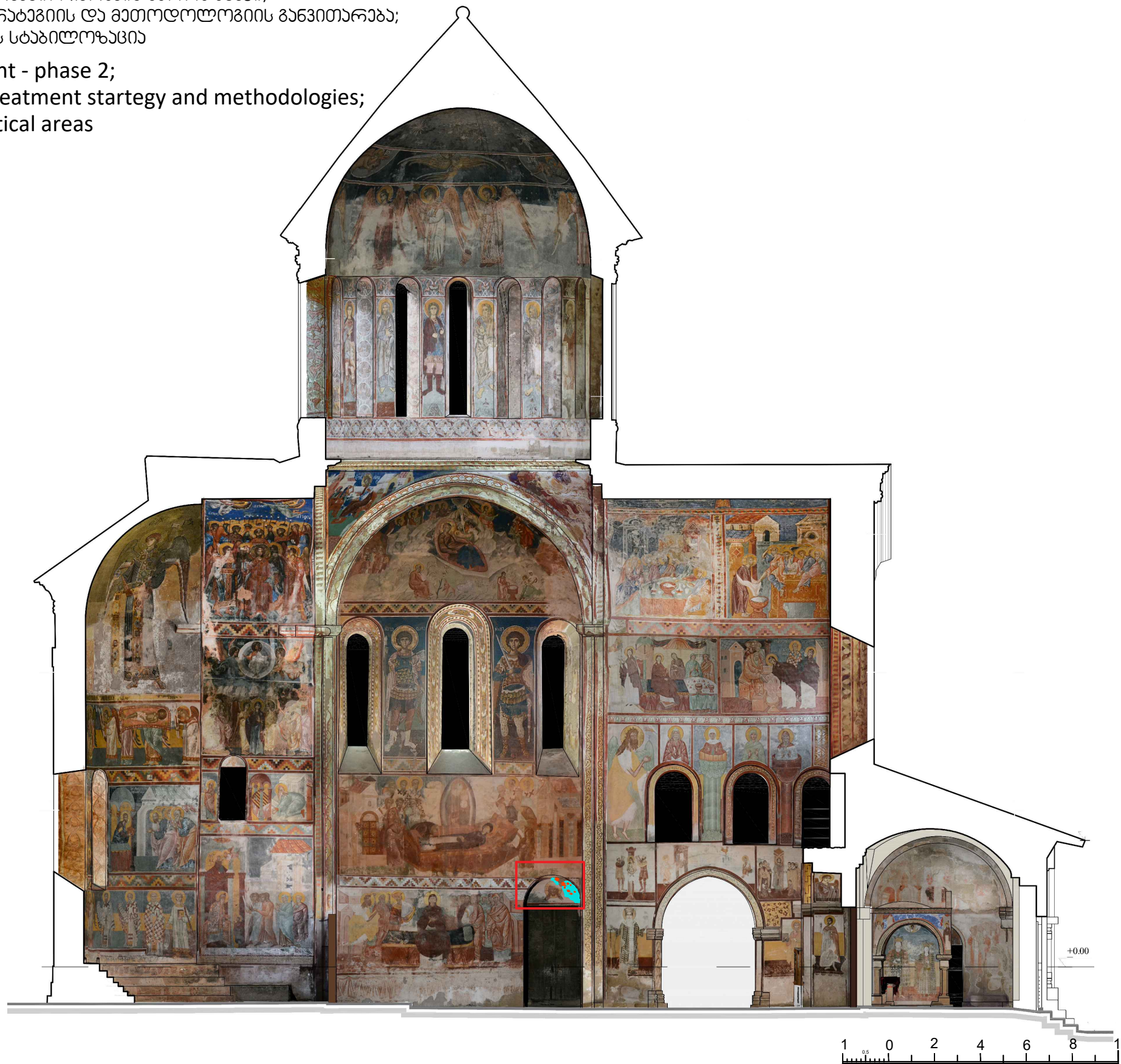
ფიზიკური საოსტორველი ღირებულების მართვა ეტაპი;
 საოსტორველი სტრატეგიის და მეთოდოლოგიის განვითარება;
 კრიტიკული არეალის სტაბილიზაცია











Remedial treatment - phase 2;
 Development of treatment strategy and methodologies;
 Stabilization of critical areas

სამხრეთის ზრდილი
 South section

გელათის სამონასტრო
 კომპლექსის ღვთისმშობლის
 შობის ტაძარი

Church of the Nativity of
 Virgin Mary



- | | | | |
|---|---|---|--|
|  Injection
ინექცია |  Salts removal with a brush
მარილის მოხსნა ფაჩხით |  Edge repair
ქიმი |  Removal of previous repairs
წინა საოსტორველი შეკეთების მოხსნა |
|  Micro injection
მიკრო ინექცია |  Salts removal with scalpel
მარილის მოხსნა სწალჯალით |  Filling
შვსება |  Removal of superficial deposition
ზედაპირული მბზრის და ნაღების მოხსნა |
|  Consolidation of plaster layer
ნაღის ფენის აკონსოლიდაცია |  Paint layer consolidation
ფერადრეალი ფარის გამაგრება | | |

გრაფიკული დოკუმენტაცია / Graphic Documentation

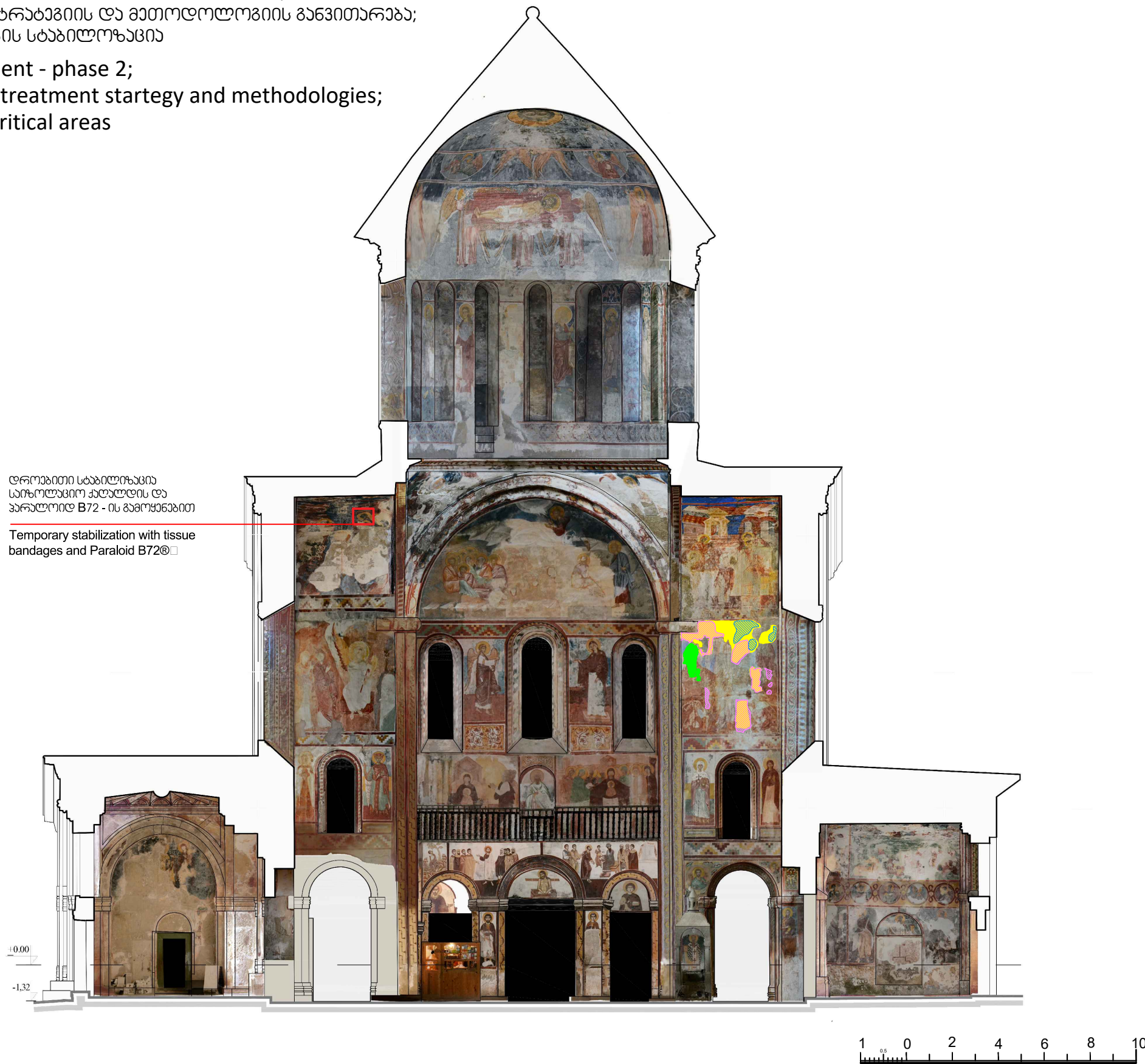
დასავლეთის ზრდი
West section

გელათის სამონასტრო
ხომავლასი ღვთისმშობლის
შობის ტაძარი

Church of the Nativity of
Virgin Mary

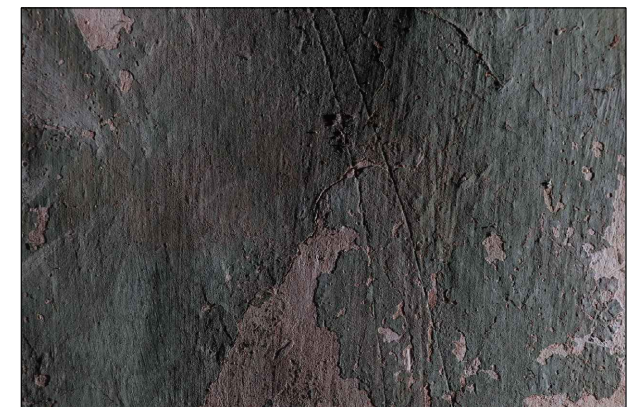
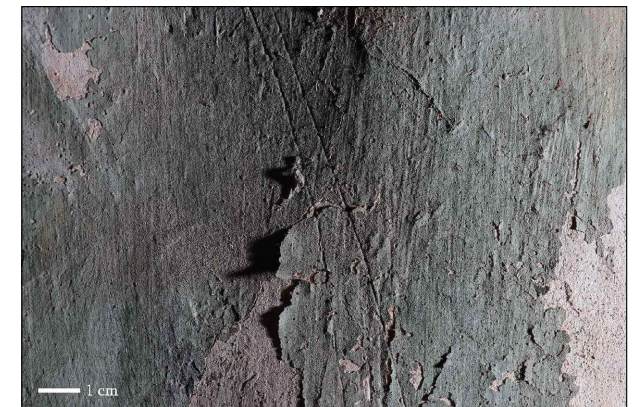
ფიზიკური საონსარკვევო ჭარვის მეორე ეტაპი;
საონსარკვევო სტრატეგიის და მეთოდოლოგიის განვითარება;
ხრიტიკული არეზის სტაბილიზაცია

Remedial treatment - phase 2;
Development of treatment strategy and methodologies;
Stabilization of critical areas



დროებითი სტაბილიზაცია
საინჟინერო კალდის და
პარალოიდ B72 - ის გამოყენებით
Temporary stabilization with tissue
bandages and Paraloid B72®

- | | | | |
|---|---|---------------------|--|
| Injection
ინექცია | Salts removal with a brush
მარილის მოხსნა ფურცლით | Edge repair
ქიბი | Removal of previous repairs
წინა საონსარკვევო შეკეთების მოხსნა |
| Micro injection
მიკრო ინექცია | Salts removal with scalpel
მარილის მოხსნა სალჯალით | Filling
შავსება | Removal of superficial deposition
ზედაპირული მბვრის და ნაღვლის მოხსნა |
| Consolidation of plaster layer
ნაღვლის ფენის გამაგრება | Paint layer consolidation
ფერადრეალი ფენის გამაგრება | | |



გრაფიკული დოკუმენტაცია / Graphic Documentation

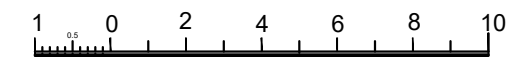
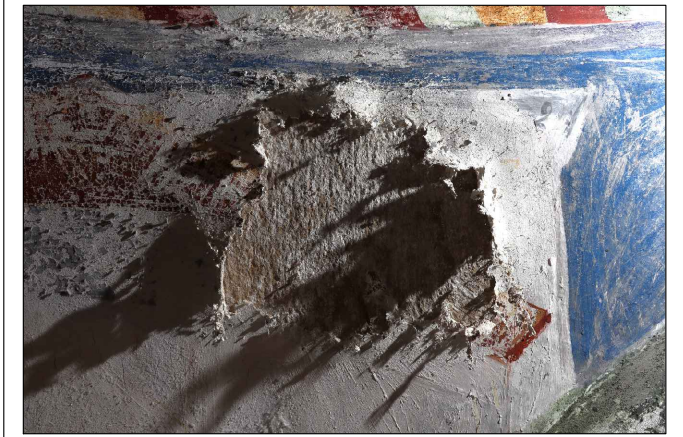
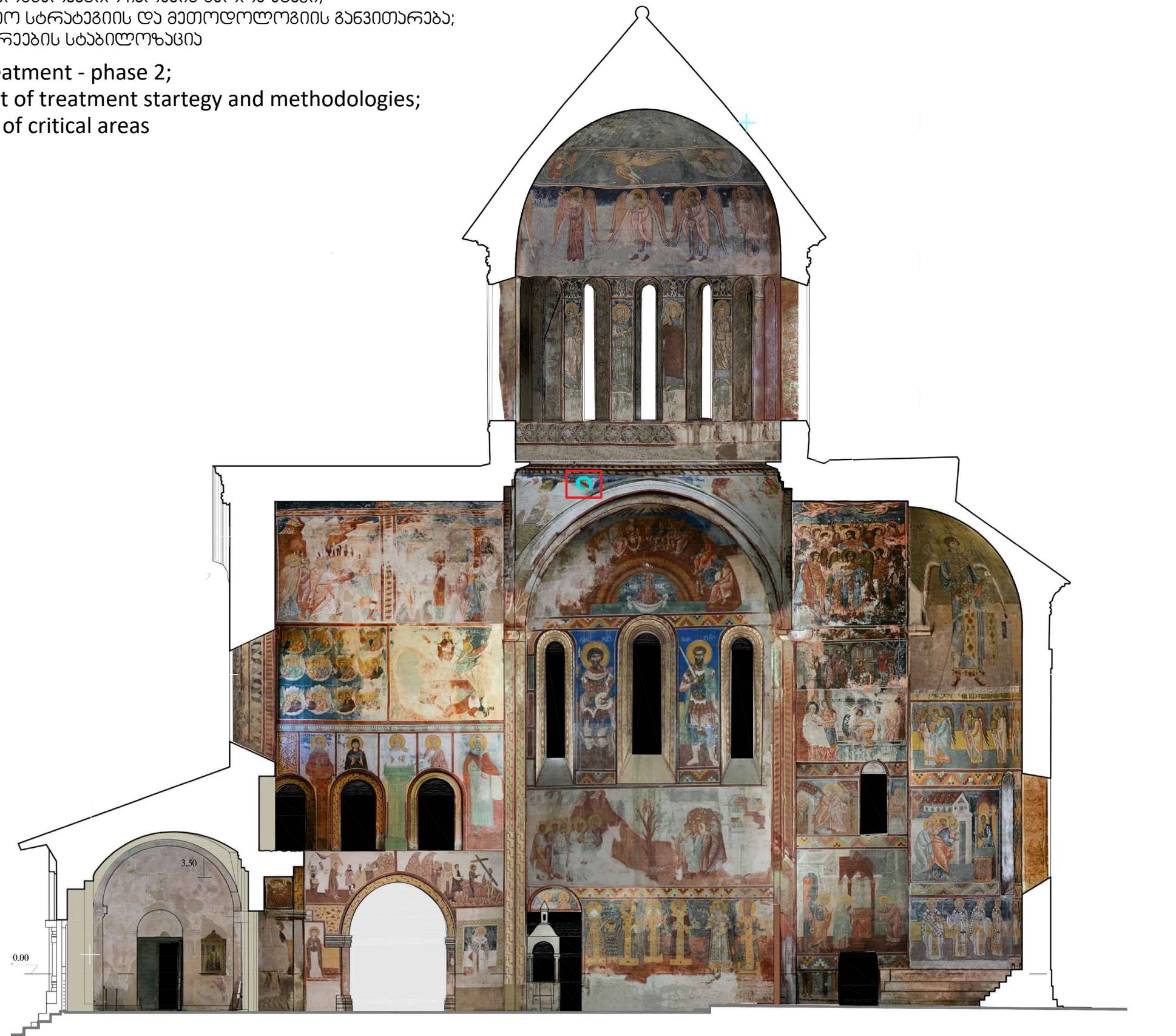
ფიზიკური საკონსერვაციო ღონისძიებების მეთოდიკა;
 საკონსერვაციო სტრატეგიის და მეთოდოლოგიის განვითარება;
 კრიტიკული არეების სტაბილიზაცია

Remedial treatment - phase 2;
 Development of treatment strategy and methodologies;
 Stabilization of critical areas

ჩრდილოეთის ზრდილი
 North section

გელათის სამონასტრო
 კომპლექსის ღვთისმშობლის
 შობის ტაძარი

Church of the Nativity of
 Virgin Mary



- | | | | |
|---|--|---------------------|--|
| Injection
ინექცია | Salts removal with a brush
მარილის მოხსნა ფურცლით | Edge repair
ქიბი | Removal of previous repairs
წინა საკონსერვაციო ღონისძიებების მოხსნა |
| Micro injection
მიკრო ინექცია | Salts removal with scalpel
მარილის მოხსნა სწაღვლით | Filling
შავსება | Removal of superficial deposition
ზედაპირული მბვირის და ნაღვანის მოხსნა |
| Consolidation of plaster layer
ნაღვანის ხონსოლიდაცია | Paint layer consolidation
ფერადონიანი ფენის გამაგრება | | |