

RED MONASTERY AUTUMN 2018

**ARCHITECTURAL CONSERVATION
&
SITE MANAGEMENT WORKS**

AMERICAN RESEARCH CENTER IN EGYPT



TECHNICAL REPORT

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FOREWORD

The autumn season of the architectural conservation project at the Red Monastery commenced on 1 November 2018 and was completed on 11 December 2018. The project was directed by Dr. Nicholas Warner and implemented by Mahmud al-Taiyyib. Inspector Marwa Ahmed Mohamed Salah and Inspector Karam Murad Gad [conservation] from the Sohag Taftish of the Ministry of Antiquities supervised the work. Mr. Ali Ahmed [Director of Islamic and Coptic Antiquities, Sohag Inspectorate], Mr. Essam Rushdi [Director of Conservation, Islamic and Coptic Antiquities, Sohag Inspectorate] and Mr. Nur ed-Din Mustafa Ahmed [Director, Foreign Missions in Sohag] provided monitoring. The work was carried out in accordance with the Permanent Committee approval of 9 May 2018, and subsequent approvals given by Mohandas Waadallah Abu al-Ayla [Director, Projects Sector]. Mr. Mustafa Ahmed Mahmud, the Regional Director of the Coptic and Islamic Sector based in Nag Hammadi visited the project on the 22nd of November. Dr. Gamal Mustafa (Section Head of Islamic & Coptic Antiquities) and Mohandas Waadallah also visited the site on the 5th December accompanied by John Shearman of ARCE. Mr Essam Rushdi, Mr. Ali Ahmed, and Mr. Mustafa Ahmed were also present at this meeting. The following report concerns the interventions that took place with respect to the interior of the nave and the external landscaping works including anti-termite protection measures.

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1 EXTERIOR

1.1 Cornice block re-installation (refer to fig. 01)

A total of seven original cornice blocks that had fallen from the cornice of the external wall of the church were re-installed on the top of the east wall using an external scaffolding and electric winch. There are no remaining blocks on the ground.

1.2 Anti-termite works (refer to figs. 02-04)

The ring of subsurface pipes around the church that was installed on the east side of the building in May-June 2018, was extended on the north, west, and south sides of the church to complete the termite protection works.

The method employed was sub-surface saturation of liquid chemical deterrent. At a distance of one metre from the wall, a line of vertical 5 cm diameter one-metre-long perforated PVC pipes was installed at intervals of 2.5 metres using an auger drill to minimise the possible damage to archaeological remains in the vicinity of the church. A total of 80 pipes were installed around the perimeter of the church. Each pipe was perforated along the lower 70 cm of its length, with a bottom cap to prevent the injected liquid from draining directly into the ground and to encourage its horizontal dispersal. The installation was designed to be capable of repeat applications of insecticide in the future, on a recommended cycle of five years. The pipes were divided into separate groups of five pipes, each of which was connected horizontally by a welded 5 cm diameter PVC feeder pipe with a single insertion point for the insecticide. This will also facilitate repeat applications as only fewer insertion points for the insecticide are required. The insertion points are identified by limestone or sandstone paving slabs with circular holes drilled through them that protect the tops of the pipes. The slabs are either located in sandstone pavement around the church (on the east side) or within the 60 cm-wide perimeter mortar screed at the base of the external walls of the church (on the north, south, and west sides). After the application of the chemical deterrent, the caps on the tops of the pipes were buried in a soft lime mortar that can easily be removed prior to repeat applications.

A single application of chemical deterrent was made through the pipes. The chemical compound used as the deterrent was a chemical compound with the trade name “Coach 20% SC” (+/- 5 amino – 1-2,6-dichloro-trifluoro-p-tolyl-4-trifluoromethylsulfinylpyrazole-3-carbonitrile) which has as a constituent the PERSUAP approved chemical “Fibronil” – a broad-spectrum insecticide with no health side effects on mammals. The “Coach 20% SC” was used in a dilute solution with water and diesel in the proportion 50 cl deterrent to 80 litres of water and 20 litres of diesel. A total of 400 litres of deterrent was inserted into the pipes manually using a funnel. This volume was divided between the different lines around the perimeter of the church, as required by surface absorption rates.

Following discussion with Mr. Essam Rushdi, Director of Conservation, it was agreed that the proposed one-metre-deep trenches around the perimeter of the church would be omitted on the grounds that they might seriously disturb any subsurface archaeology. Prior to external paving being installed, the ground was sprayed with chemical deterrent. The Monastery has recently removed the kitchen function from the ground floor of the resthouse to the east of the church, and it is hoped that this will

reduce the volume of organic remains in this area. A tap located to the south of the tower was also cancelled to prevent leakage saturating the ground beside the tower.

1.3 Installation of toilet and associated plumbing (refer to figs. 05-07)

In order to prevent a possible inappropriately executed installation of a toilet in the tower by the monastery, a completely freestanding toilet cabin was installed on the roof of the tower in an area that had already been reinforced structurally to accommodate the weight of this element. This cabin is completely, and easily, de-mountable and contains a sink with cold water supply and a flushing toilet. The water supply is through a 1" polypropylene supply pipe connected to a pump adjacent to the incoming monastery water supply from the street. The supply pipe is externally mounted on the northeast corner of the tower at its junction with the south wall of the church. A 12 cm diameter ventilated soil waste pipe, made of high-grade PVC runs vertically in the same corner. Both supply and waste pipes are fixed to the exterior brickwork of the tower using galvanised metal clamp fixings and a minimal number of screws.

At the base of the tower, soil waste enters a sealed PVC trap, from where it passes into a 15 cm diameter pipe, laid to fall, that connects with an existing septic tank to the northeast of the church, next to the eastern entrance gate to the monastery. Along the route of the pipe are five completely sealed PVC inspection chambers with screw down covers. The position of these inspection chambers is marked in the paving by white limestone slabs that can be easily removed for access if required. Prior to final connection, a waste extract tanker emptied the destination septic tank.

Two additional surface water drains with dust traps were also installed along the path of the drain to allow for the drainage of any unusual volumes of rainwater. One of these is on the south side of the church, and the other is on the east side in the entrance area of the rest house. The drain pipe from the baptismal basis inside the south domed side chamber of the church was retained, as it had its own dedicated dispersal tank in front of the entrance to the old resthouse and is only very rarely used.

1.4 External landscaping (refer to figs. 08-15)

The hard landscaping around the church was executed using sandstone, limestone, granite, and areas of white cement screed defined by painted steel frames. A total of 720 m² of paving plus 160 m² screed was used. The main intention of the project was to prevent vehicles from driving around the church as well as to stop them parking next to the church. With this objective, a sandstone kerb (50 x 30 x 17cm), with a height varying from 18cm to 25cm above the external compacted sand surface, was installed over a minimal concrete footing. The sandstone and limestone pavers (60 x 30 x 7cm) were laid over a sand base. The granite (solid steps of 100 x 18 x 30cm and pavers of 60 x 30 x 4cm) was flame finished throughout to prevent slippage and was employed in areas of maximal wear. A single large block of granite (200 x 12 x 60cm) was placed in front of the main entrance to the church from the tower. The perimeter of church was surrounded by a raised border of white cement screed set within a 5 x 5cm painted steel angle frame, set to a slight fall to the exterior. This border is designed not only to shed water away from the face of the walls, but also to discourage people from placing chairs against the walls. It also provides the base of

the walls with a visual frame. Two pharaonic blocks built into the walls at their base – on the southeast corner of the tower and midway along the length of the east wall – required special protection measures. The blocks (which have been recorded in past seasons), were covered with a geotextile fibre before being protected by new limestone walls and pavers within areas infilled with clean sand. A geotextile fibre was also used to protect the perimeter of the enclosure wall of the church on its northeastern corner where the original, and unrestored, condition of the brickwork of this wall survives.

The northeast corner of the church required special treatment owing to presence of a large amount of concrete in this area. A limestone cladding wall was constructed to obscure this, with the choice of stone dictated by the proximity to the original limestone quoins of the corner of the church. Disabled ramps were provided at key points to provide full access by the handicapped to all levels of the exterior, and painted steel handrails were installed in all locations with a change in level of 36cm or more.

1.5 Electrical works (refer to figs. 16-18)

A new electricity network was installed to provide power to all external lighting. Power was obtained from the lamppost immediately adjacent to the northwest corner of the old monastery resthouse, and a new distribution board placed on the wall of the resthouse. Output is controlled by a photocell, which is also capable of being overridden if desired. The new circuits are only for the provision of lighting, as follows:

Perimeter of pavement: 40 no. floor recessed waterproof kerb lights (Fumagalli LED 3 watt, code number CECI 120-3L GX53)

Step lighting to northeast corner: 4 no. recessed stair lights (3 Brothers LED 4 watt code number 71516-PL)

North door exterior: 2 no. floor recessed waterproof GU-10 uplights

South and east perimeter wall, low level: 10 no. bulkhead type lights

South and east perimeter wall, high level: 6 no. Phillips 50 watt LED floodlights

All cabling was carried out with thermoplastic cables within subsurface plastic conduits.

A new lighting system was introduced over the main entrance door. This was a metal plate with a laser-cut cross mounted on a wooden frame. Three internal LED lights provided illumination of the cross as well as the threshold of the door below.

During the course of the works it was possible to entirely remove one lamppost from the area to the southeast of the church and relocate one other lamppost away from the east wall of the church. This makes it possible now to walk around the building without passing directly under any overhead cables.

In addition to these works, a new stabiliser unit was installed inside the sanctuary area dedicated to the lighting circuits only in order to prevent future failures in lighting units due to extreme fluctuations in supply.

2 INTERIOR

2.1 New door in Comité Wall (refer to fig. 19)

A new opening for a door was made on the north side of the Comité wall, constructed of limestone rubble in lime mortar in 1912, underneath the north window in this wall. The design of the door matched the design of the existing door on the south side of the wall. All timber was treated prior to installation to discourage termite attack, and the plaster surfaces were made good on both the inside and outside of the door.

2.2 New handrails in the nave (refer to figs. 20-21)

New steel handrails were installed on the line of the change in level between the nave of the church and the south hall, and in the northwest corner of the nave. They were painted with a beige matt finish [Jotun code number: S2010-Y3OR, as with all other steelwork on site].

The handrails on the south of the nave follow the original line of the missing wall separating the nave from the south hall, and are broken by two openings located in the positions of original openings identified by the 1962 Darmstadt Survey of the church. The central opening, on the axis between the north and south portals, as further defined by a simple steel section frame that delineated the approximate size of the door that once stood in this position.

The handrails in the northwest corner of the nave are positioned 1.2 metres away from the walls in order to prevent visitors from touching any painted surfaces within reach. An internal gate in the railing provides access for cleaning the enclosed area.

2.3 Visitor information panels (refer to figs. 22-26)

The existing visitor information panel relating to the church was re-located to the south side of the south door into the church to be more easily viewed. A total of six new visitor panels were also installed, in different locations around the complex, with the following themes:

- 1 Dedication panel for donors and partners in the project
- 2 The Tower of St. Helena
- 3 The Nave
- 4 The Sanctuary
- 5 The Paintings in the Sanctuary

6 The Traditions of the Church and Monastic Life. Owing to an undetected error in the text of this panel it was rejected and not installed on this occasion. A replacement panel will be fabricated and installed at a later date.

Owing to USAID branding requirements, an add-on plate with logos was mounted at the bottom of panels 2-5.

In addition, two prohibitional signs on acrylic (30 x 60 cm) were mounted on the sanctuary façade.

2.4 Furnishings (refer to fig. 26)

A new ventilated timber cupboard with a marble top was installed immediately to the right of the south entrance to the church to house a new electricity stabiliser unit dedicated to the lighting circuits within the church only. The sound system control unit was also installed in the same cupboard.

In the East Lobe of the sanctuary a new projecting treated timber bracket was installed at the centre of the lower cornice as a hanging position for a light that had been badly installed recently by the Monastery.

RECOMMENDATIONS

Termite treatment: it is recommended that anti-termite treatment be repeated on an biennial basis, especially on the east side of the church owing to the prevalence of termites in this area. This can be easily carried out by removed the lime mortar fill inside the circular cut-outs indicating the position of the refill pipes and unscrewing their caps.

Electrical network: The present electrical provision to the church, and all buildings to its south, east, and northeast should be reconsidered. It is recommended that a new subsurface cable be installed leading to the area of the recently installed external distribution board, with further subsurface feeds made to the church, old resthouse and new resthouse under construction. The buildings to the south and southwest of the church should be supplied directly from the substation that is located nearby.

Entrance area: The present entrance to the monastery has a timber guard hut adjacent to the tower. This is extremely unsightly, and should be removed entirely or redesigned to a higher standard.

Protective shelter in the nave: The proposed shelter to the paintings on the north and west walls of the church was discussed at the site meeting on the 5th of December with Mohandas Waadallah, Dr. Gamal Mustafa and local representatives of the MoA. Mohandas Waad raised strong objections to the proposed position of the shelter at gallery level in the nave and it was agreed that the design of an alternative shelter at roof level would be investigated further from a technical and practical viewpoint. Computer modelling with sun angles throughout the year is required in order to show if the shade cast by a shelter in this location would be sufficient to protect the paintings.

RED MONASTERY FALL 2018 FINAL REPORT FIGURES

1.1 Cornice block re-installation

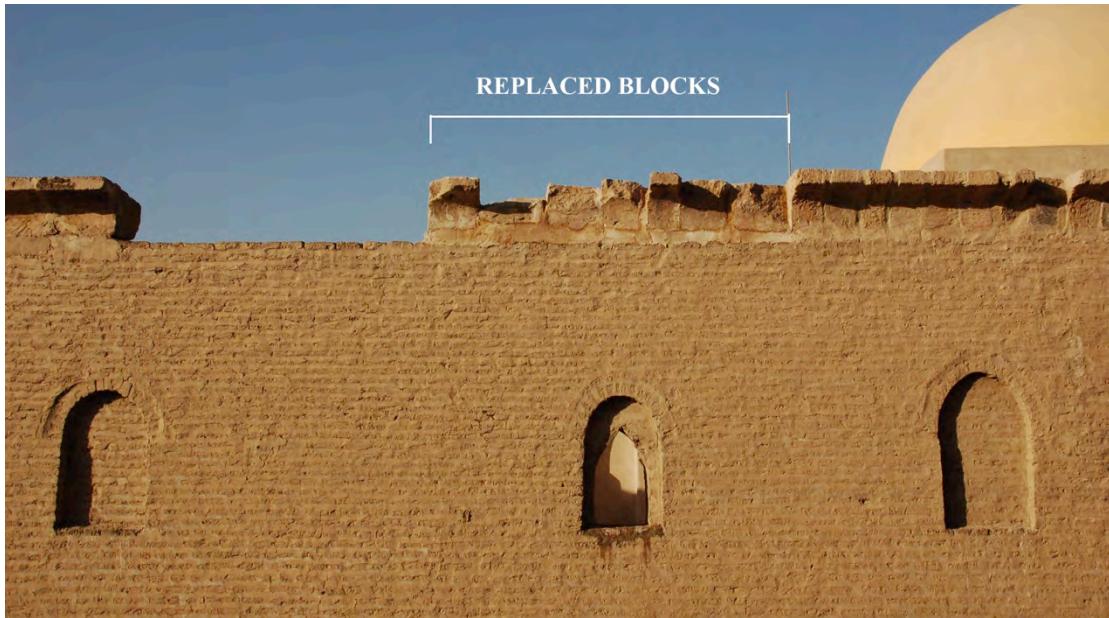


Fig 1. Seven replacement cornice blocks after re-installation on the east wall of the church

1.2 Anti-termite works



Fig 2. Termite protection system during installation showing auger drill (left) and line of insertion points through connected PVC pipes running parallel to the west wall of the church (right)

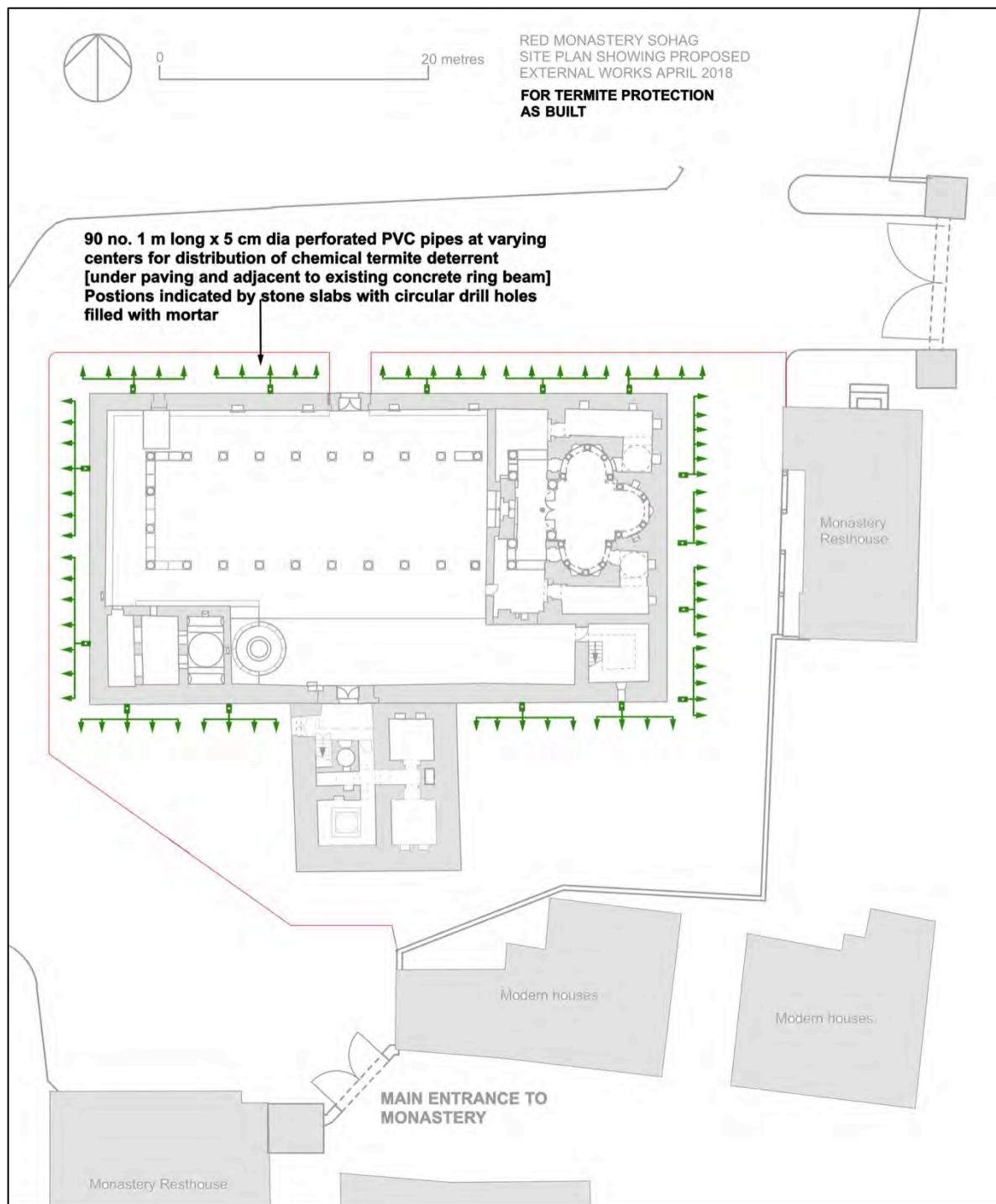


Fig 3. Plan of the church showing anti-termite system



Fig 4. Preparing and applying chemical deterrent

1.3 Installation of toilet and associated plumbing

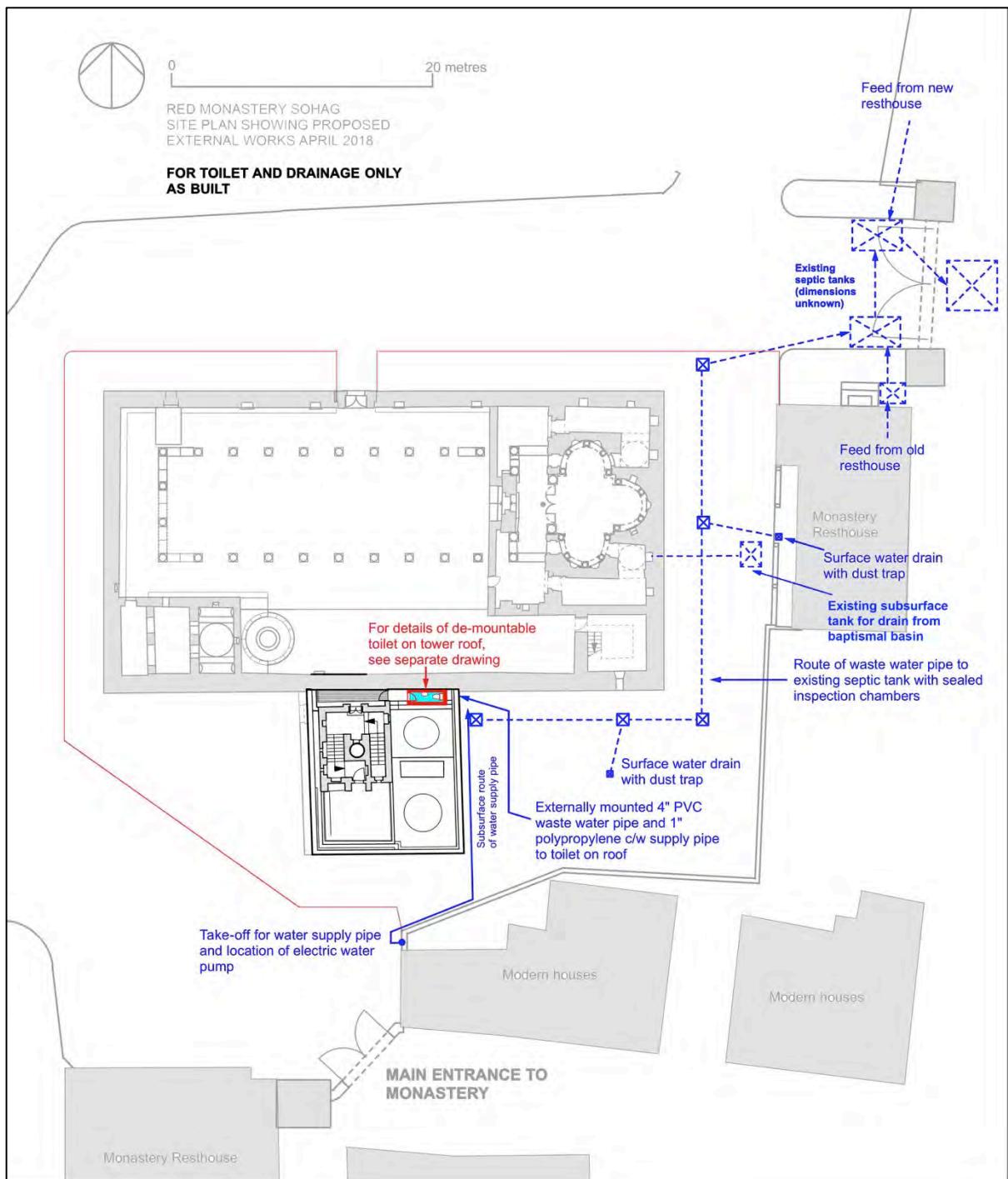


Fig 5. Plan of the church showing as built drainage systems now in use



Fig. 6 Sequence of installation of enclosed toilet on roof of tower and final external appearance



Fig. 7 Sequence of installation of subsurface waste pipes and inspection chambers (top) and final external appearance of toilet and external waste pipe on east face of tower (bottom)

1.4 External landscaping

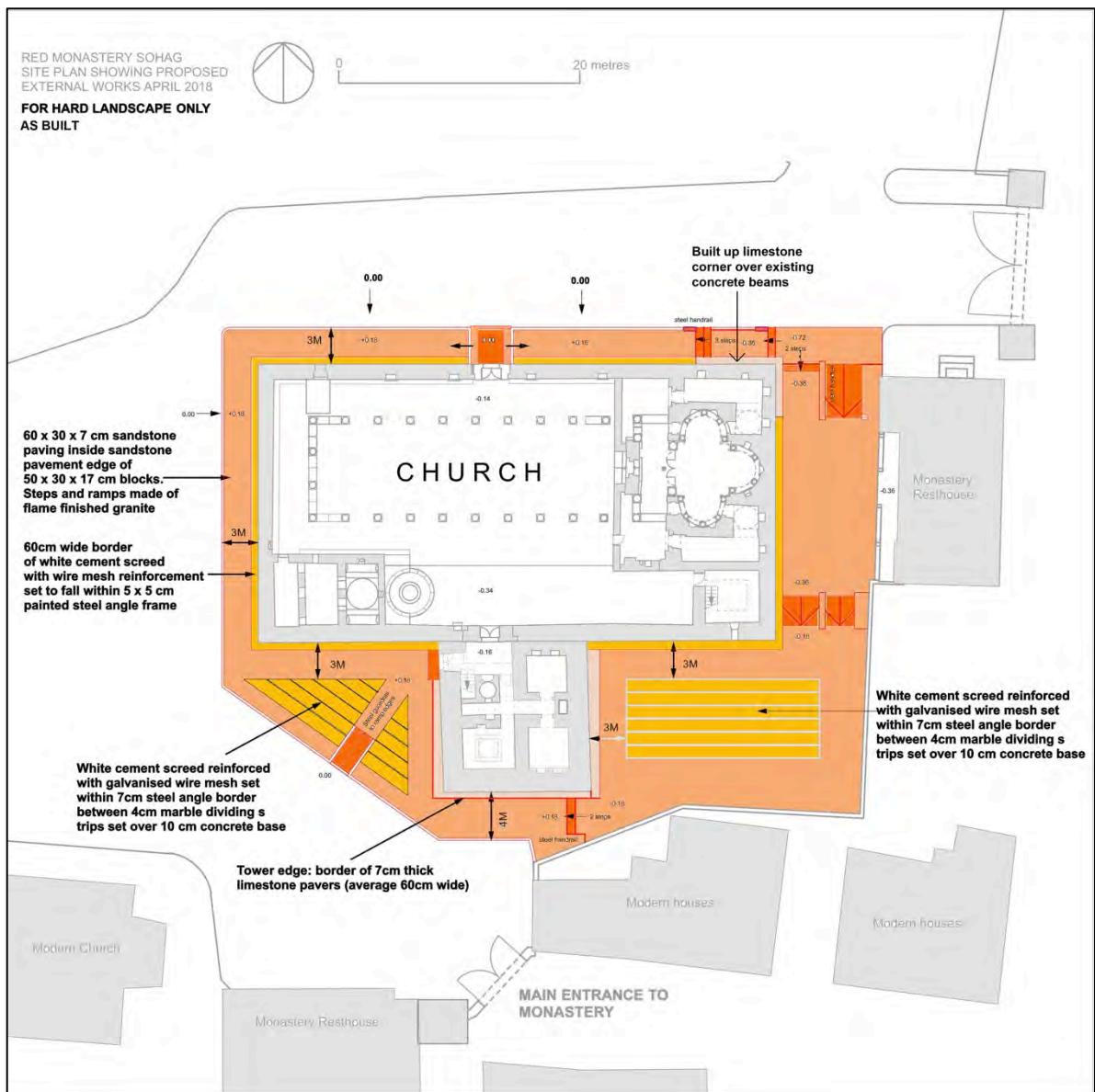


Fig 8. Plan of the church showing as built hard landscaping



Fig 9. Installation of steps and paving in process



Fig 10. Installation of white cement screed in progress with geotextile separation to critical edges of external wall (bottom left)



Fig 11. Sequence of protecting the pharaonic relief block on the southeast corner of the tower



Fig 12. Limestone wall protecting the pharaonic relief block on the southeast corner of the tower during (top) and after works (bottom)



Fig 13. Completed paving around the church from west (top) and southwest (center and bottom)



Fig 14. Completed paving around the church from west showing north façade (top left) and southwest area (top right and bottom)

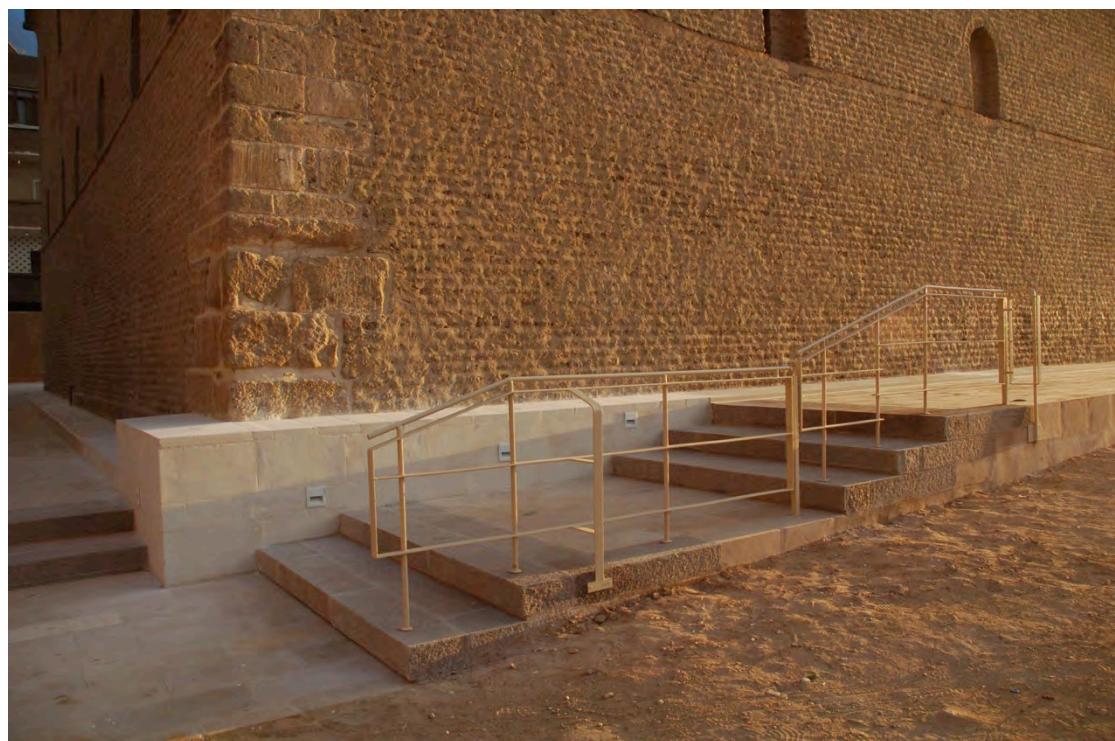


Fig 15. Completed paving around the church showing northeast corner

1.5 Electrical works

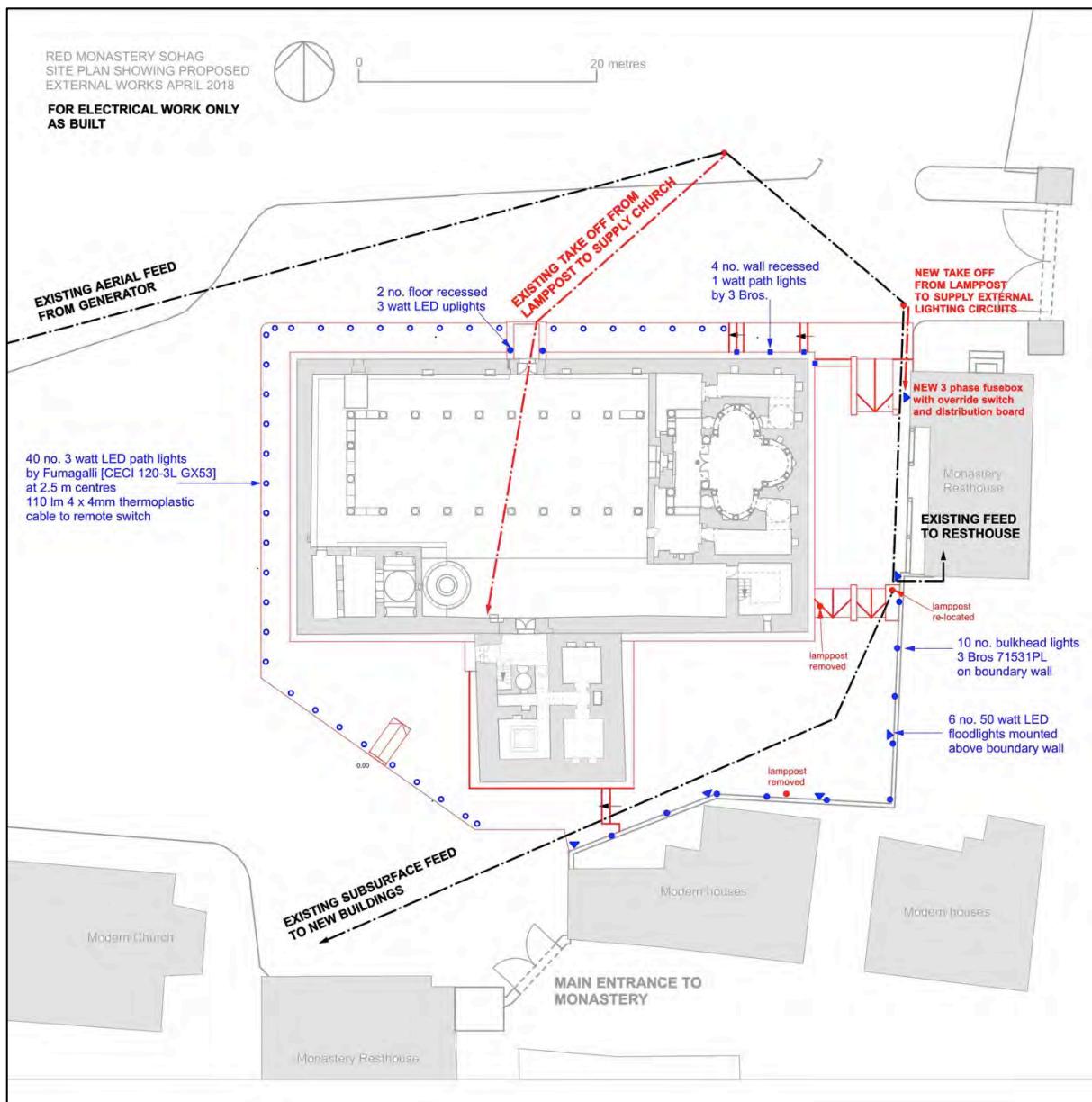


Fig 16. Plan of the church showing as built electrical provision and existing network



Fig 17. Lighting over the main entrance (top) and to the north portal (bottom)

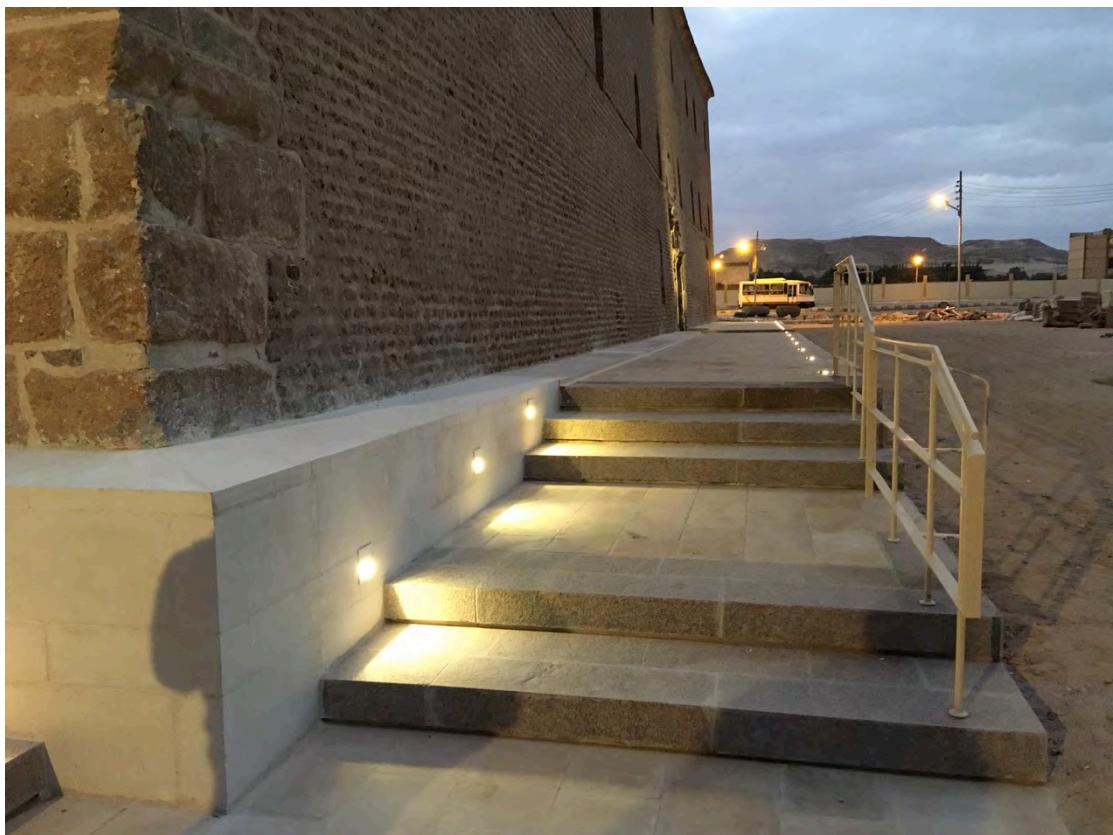


Fig 18. Lighting on northeast corner (top) and southeast area (bottom)

2 INTERIOR

2.1 New door in Comité Wall



Fig. 19. The new door in the Comité wall during and after installation

2.2 New handrails in the nave



Fig. 20. Protective painted steel handrail at the west end of the nave



Fig. 21. Painted steel handrail separating south hall from nave of the church to prevent accidental falling of visitors

2.3 Visitor information panels

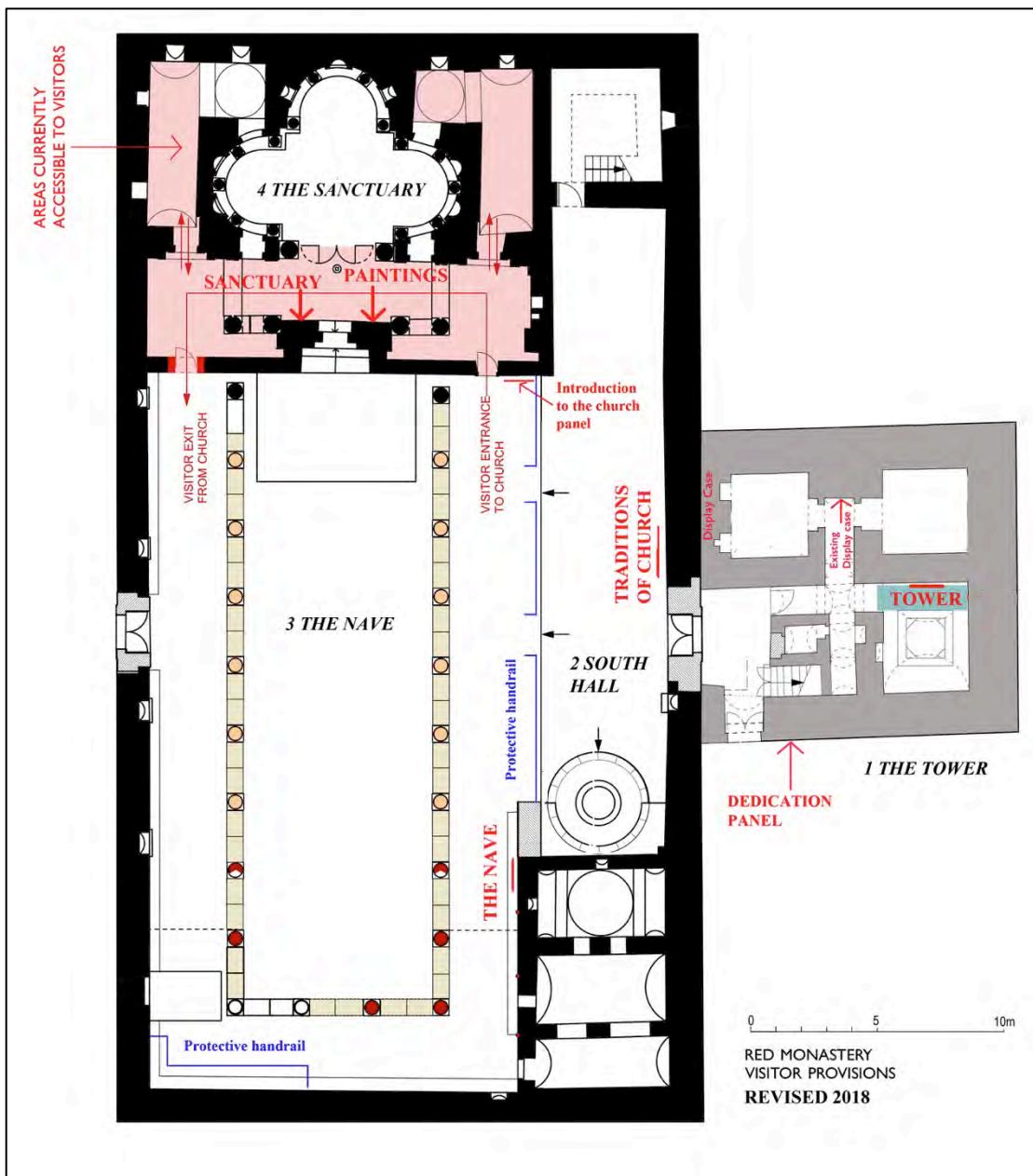


Fig. 22. Plan showing location of visitor panels and protective handrails



كنيسة الدير الأحمر

THE RED MONASTERY CHURCH

Between 2003 and 2018 the American Research Center in Egypt, with funding from the United States Agency for International Development and in collaboration with the Ministry of Antiquities and the Coptic Orthodox Church, conserved and restored the sanctuary, nave, tower and walls of this historic church. The project included the cleaning of centuries of soot and dirt from the wall paintings that decorate the building and the partial reconstruction of the collapsed nave.

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برج القديسة هيلانة

The tower, or keep, of the monastery immediately abuts the church to its south. According to Church tradition, it was originally founded by Saint Helena in the 4th century as a fort. The present structure most likely dates to the late 13th century. When it was built, it concealed the original carved limestone entrance to the church dating to circa AD 500.

The tower is constructed of fired brick on a square plan with walls up to two meters thick. It has two floors connected by a staircase that winds around a circular well. Arched windows giving access to the well on different levels were used to draw water using a pulley system. In one room on the ground floor is a square brick tank set into the floor. This may have been intended for baptisms, and might be a survival from an earlier building phase. Other rooms at ground level were probably used for storage, while those on the second floor were used as monastic cells. By the 19th century the tower became an extension to a village that was constructed inside the ruined nave of the church, and houses were added to the top floor. These houses were removed in the early 20th century, together with part of the wall of the tower on its north side, thus revealing the original entrance to the church.

فوق: صورة للجزء الخارجي للكنيسة والبرج من الجنوب الشرقي في عام ١٩٠٩-١٩٥٠ على يد صور غير معروف.
أسفل: الواجهة الغربية للكنيسة والبرج في عام ١٩١٠. تصوير كيريتزي.
الصوري إهاء من جامعة أكسفورد، معهد جريفيث، أرشيف سومر كارلتون.
Top: exterior of the church and tower from the southeast in 1909-1905. Unknown photographer.
Bottom: western facade of the church and tower in 1910. Photograph by Kyritzi.
Both images courtesy University of Oxford, Griffith Institute, Somers Clarke archive.

Fig. 23. Dedication panel (top) and Tower panel (bottom)

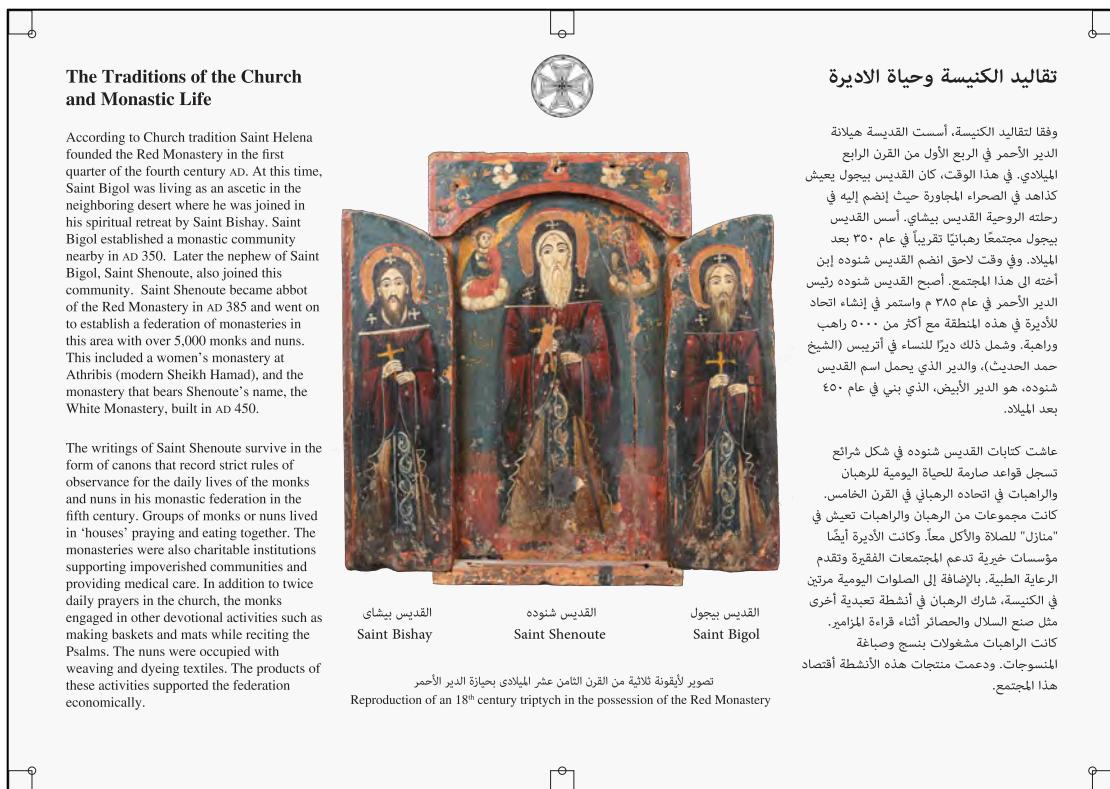


Fig. 24. Traditions of the Church panel (top) and Nave panel (bottom). Note: the 'Traditions of the Church' panel was not installed owing to an undetected textual error.

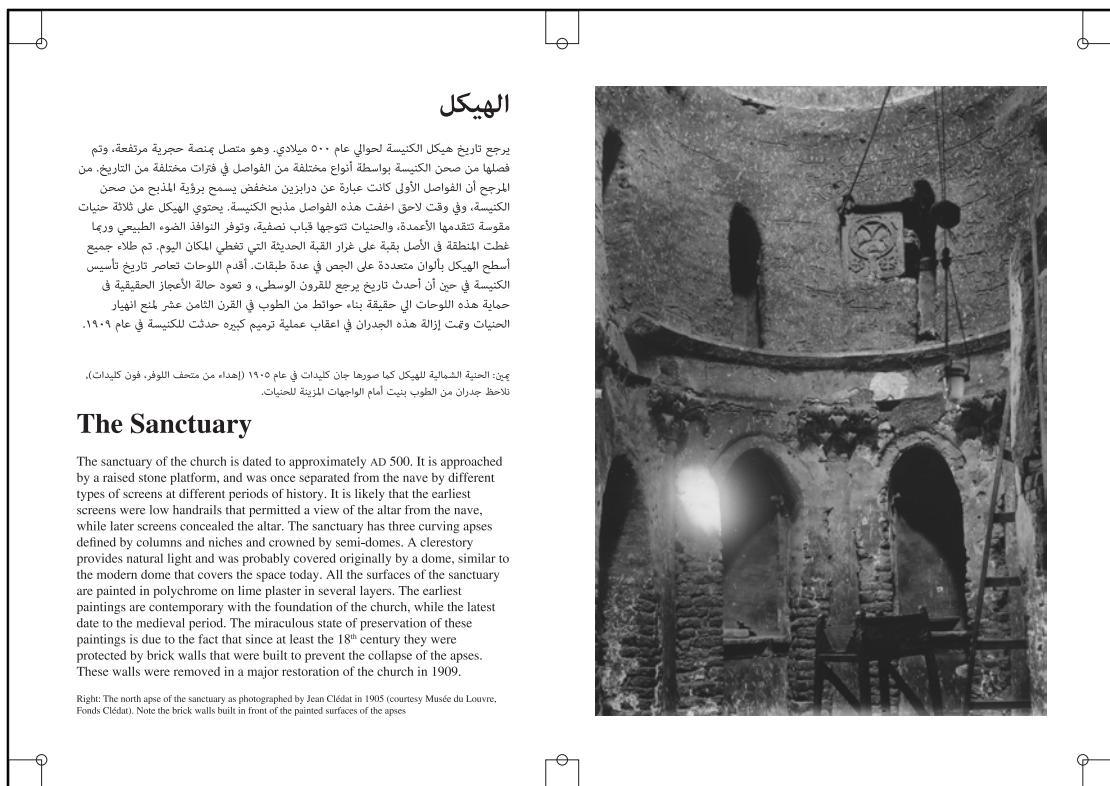


Fig. 25. Sanctuary panel (top) and Paintings in the Church panel (bottom)



Fig. 26. Prohibition sign layout (top left) and installed (bottom). New ventilated electricity cupboard as installed (top right)