METHOD STATEMENT FOR THE RESTORATION OF THE CUPOLA, DRUM AND LANTERN- ZABBAR PARISH CHURCH

Short History

The present church was actually started on 1 May 1641, designed by the well known Maltese architect Tommaso Dingli and finished in 1696, on a plan with the shape of the Latin Cross.

During the French blockade of 1798 and 1800, Zabbar was repeatedly bombarded by the French forces. The dome was hit during one of the bombardments in November 1799. After the blockade was over, the dome had to be completely rebuilt due to the damage it sustained, repairing also the right belfry which also suffered considerable damage, in 1801.

However, in 1926, the dome was rebuilt again and side chapels were constructed to designs of Giuseppe Pace.

The church is a Grade 1 scheduled building that is a building of outstanding architectural and historic interest that must be preserved in its entirety.

The proposed intervention will address the infiltration of rain water from the dome areas, repair of the existing lead sheeting protective coating to the dome, the removal of cement and repointing using lime based mortars. The works will also include the replacement of the obsolete lighting system of the dome.

The church is in a good stat of repair. However, there are some areas which necessitate periodic maintenance and restoration works. The priority is being given to the repair of the waterproofing of the dome with some areas which have become loose and missing. Several damages and cracks in the masonry structural of the octagonal drum supporting the dome were also identified and will be restored.

The lantern, dome and drum

The octagonal drum, the dome and the lantern have been inspected and the following deterioration has been identified. The dome was built on an octagonal shaped drum with eight ribs.

The existing dome and lantern were reconstructed in 1926, and therefore can be considered new construction in relation to the church. The dome, lantern and the drum are in very good condition except for some dark stains of dirt, and some biological growth. There are some areas which have sustained some minor movement mostly due to the existing protective steel windows in front of the stained-glass panels. Moreover, some of the facades are showing a very reddish stains resulting from the percolating water from the cupola.

The current dome is waterproofed by sheet lead between the ribs and then painted over with a reddish paint. In one of the ribs, it is evident that the lowest section of the lead has become loose and is currently missing. Moreover, from close pictures it was also noted that the lead sheeting has exhibited some movement and in some areas the lead has torn.



Condition of the Masonry Elements

The Lantern

The lantern is currently painted over in a white paint directly over the masonry stone. The paint layer seems to be a silica based paint and is currently heavily flaking.



Moreover, the underlying stone in certain areas, shows signs of powdering and flaking. There is area also areas within the cornice above the lantern which have some missing elements.

The Dome

The dome is currently lined with lead sheeting, both on the dome between the ribs and directly on the flat areas of the ribs. The volutes and the mouldings, at the base of the dome are on the other hand only painted over stone. The paint seems to be a silica based paint. The lead sheeting is in turn also painted over. The areas of the dome in a reddish colour whilst the ribs in white coloured paint.

The underlying stonework seems to be in a fairly good condition with only some powdering showing in some areas.

The existing lead sheeting is showing some signs of movement especially on the South facing side of the church, since the areas where the sheeting was overlapping has become loose and also the perforations have become elongated due to the movement.

The reddish paint present on the lead sheeting has leeched and the south facing facades are highly stained in red due to the leeching of the paint.









The drum

The stonework on the drum areas are still in a very good condition with very minimal areas showing signs of powdering.

The sheltered areas underneath the main cornice have black crusts and in certain areas where the black crusts is failing, it is clear that gypsum formation has happened underneath the crust with the result of leaving the stonework underneath powdered and more friable.

At the base of the drum there are areas showing some minor movement through cracking, which might also be related to the movement within the lead sheeting on the dome.









Methodology for Restoration

Due to the nature of the damage it is being suggested that the following restoration works are carried out:

4.1 Removal of metal fixtures

All metal fixtures such as nails, hooks, electricity cables, etc, will be removed from the elevations and surfaces of the drum, and lantern. These will be removed using small chisels to free the stone from the mortars around the metal objects. Otherwise, corers can be used at low speed in order to extract the metal fixtures without the risk of breaking the stone. Then the holes will be plastered over.

During the process all the lighting system attached to the façade on metal conduit pipe will also be removed.

4.2 Cleaning of Façade

All the façades will all the cleaned with dry brushing and wet brushing if needed in order to remove black deposits and dirt and also to slightly lower the staining from the reddish paint, without damaging the existing patina. Particular attention will be given in order to limit the water trickling marks from the areas that will be washed down.

4.3 Poulticing to remove black crusts

The areas where black crusts are evident and where these will not be removed with wet and dry brushing, a poultice with paper pulp will be applied in order to be able to soften down the crusts and in turn these are removed by means of surgical knives and brushes.

4.4 Removal of Biological Growth

No biocides will be used on the facade.

4.5 Replacing of Stone

The areas which are marked on the drawing will be replaced using new stone. The decayed stone will be cut back not less than 230mm and replaced by the best quality stone from selected quarries. The dimensions of the new stone must be identical to the existing, and will be carefully isolated from adjacent stone by a good waterproofing material. All newly reinstated masonry shall be grouted to the original wall with an appropriate lime based grout.

Stonework replacement will be limited to underneath the cornice.

4.6 Plastic Repair

The areas where there is powdering but no stone replacement will be done, plastic repair will be carried out . All mortar repairs shall be carried out in moist warm conditions. The contractor shall ensure that all repairs are built up in layers not exceeding 10mm in thickness.

Suitable non ferrous reinforcement approved by the architect and civil engineer in charge shall be used for all plastic repair interventions which have a projection of more than 40mm from the stone surface.

The plastic repair mortar shall be based on a lime binder with the addition of approved admixtures and micro fibre strands to enhance bonding and limit cracking.

4.7 Repointing of Joints

On completion of the cleaning and stone repair, repointing works will be taken in hand. The process will involve:

- Removal of existing mortar joints
- Wash down
- Repointing

The existing pointing of all the defective joints will be raked out to a depth of not less than 15mm. Where joints are defective to a greater depth, then all loose mortar will be removed, irrespective of the depth. Once the raking is complete the joints will be flushed with clean water to remove all loose material for pointing. One of the following mixes are recommended for the pointing:

- 1 part hydraulic lime + 3 parts sand with stone dust as colour additive
- 1 part slaked lime + 1 part pozzolana + 3 parts sand with an addition of stone dust

Mixing of pointing mortar will be done by means of gauging vessel to ensure consistency of mix at all times. The pointing will be then completed by introducing the mortar to the joints using mason trowels.

Fresh pointing should be adequately protected from excessive heat and direct sunshine and should be occasionally wetted to avoid cracking. A minimum of 24hrs shall be permitted between the application of each layer of pointing.

The colour of the new mortar joints will be as homogenous as possible in order to blend with the stone patina of the façade.

4.8 Repair of Water proofing

The existing lead sheeting will be checked and the areas where it has become loose will be refixed adequately. Any highly cracked or loose areas will be replaced by means of lead sheeting in a similar manner.

The whole system will again be painted in a reddish colour to the RAL colour as approved by SCH officials.

4.9 Repair of the Steel Protection windows

The steel windows present infront of the stained glass have been in the past installed since with the size of the stained glass windows and the wind conditions, damage was frequently done to the stained glass panels. At that time, it was agreed and it proved right that the positioning of sacrificial steel and glass panels infront of the windows will provide protection to the stained glass. However, some of the glass within these steel panels have failed and need replacement.

It is also being suggested that the way these panels are fixed is changed inorder to reduce the stresses present on individual stones.

4.10 Timber windows within Lantern

Restoration of the timber windows present within the lantern will be carried out including sanding down, and repainting.

Following the recommendations outlined above, the conservation of this historical building will be achieved.

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