

REPORT  
ON  
THE WALL FABRIC  
OF  
'THE MAIN GUARD'  
13, JOHN MACKINTOSH SQUARE,  
GIBRALTAR.  
HEADQUARTERS OF THE GIBRALTAR HERITAGE TRUST

by

Pablo Fernandez Trujillo Nuñez



In collaboration with  
J. S. Langdon B.Arch

Cádiz, 8th August 2007.

CONTENTS	page
BACKGROUND	1
HISTORICAL DEVELOPMENTS OF THE BUILDING	1
THE SURVEY	3
ANALYSIS OF THE PAINT LAYERS AND BACKGROUNDS	3
CONCLUSION	4
APPENDIX 1: New Portland Cement	i
APPENDIX 2: Paint and Background Layers	ii
APPENDIX 3: Photographs	v
APPENDIX 4: Early Colour Schemes	xi
APPENDIX 5: Maintenance	xiii

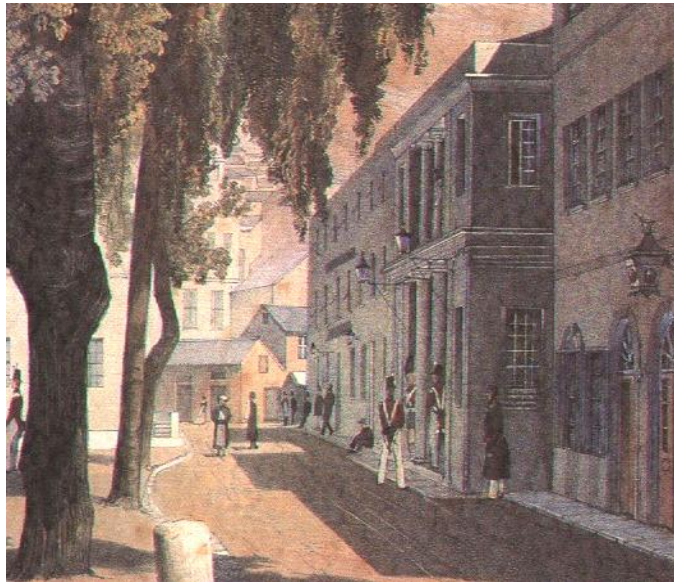
## **BACKGROUND**

This study has been commissioned by the Gibraltar Heritage Trust and involves a survey of the build-up of the finishes and the backgrounds on the interior and exterior walls of the building known as 'The Main' Guard in order to better understand its make up and colours and decide on the repair works required to be done.

The survey was carried out over a period of two days 26<sup>th</sup> and 27<sup>th</sup> July 2007.

## **HISTORICAL DEVELOPMENTS OF THE BUILDING**

In the middle of the 18<sup>th</sup> century the Main Guard, then known as the Grand Guard House, is first mentioned and described as a single storey building. It is rebuilt with the additional floor after the Great Siege of 1779 – 1783 probably by the newly formed Soldier Artificer Company under Chief Engineer William Green.



The Carter Print of 1830 shows the newly built Main Guard, a two storey Military building of Classical design in the Tuscan order, with colonnaded verandas on the two floors, and a tiled pitched roof behind a parapet wall.



In 1922 the building has changed use to become a Military Fire Station. The space between the ground floor central columns has been increased and the raised timber ground floor replaced with a solid concrete ground slab to allow for housing of the new fire engine.

1920 also saw the arrival of new Portland cement. This was extensively used in the alterations and repairs carried out on the building during this refurbishment. See Appendix 1: New Portland Cement

In 1938 the 'Main Guard' ceased to be a Military Fire Station and became a Civilian office building, having served as a payment office for rates and public utility bills, and until recently occupied temporarily by the Licensing Department. The upper floor became the headquarters of the Gibraltar Heritage Trust in February 2001 and is still so. The Lower floor is now vacant.



The Building ultimately takes on its present look with the enclosed veranda on the ground floor. Maintenance generally has been poor with unsympathetic extensions and bad repairs and the consequent loss of crisp detail. Blocked rain water pipes and a build up of water proof plastics paint layers is causing damp problems. The upper floor was refurbished when the Gibraltar Heritage Trust moved in.

## **THE SURVEY**

The survey involved the examination, by layers, of the paint deposits and the supporting plasters, renders and wall fabric in selected areas of the walls, cornices, pilasters, metalwork and wood work externally on the main façade, the inner courtyard at the rear and internally. See Appendix 2: Paint and Background Layers. See Appendix 3: Photographs

## **ANALYSIS OF THE PAINT LAYERS AND BACKGROUNDS**

### **The Main Façade**

The walls facing John Mackintosh Square on the ground and 1<sup>st</sup> floors have various top coats of modern plastic/rubber paints over a coat of bituminous paint over multiple layers of lime paints, the original coats having fine aggregate and known as 'jabelga'. Up to sixteen layers can be seen in the older parts.

The walls are of random rubble masonry construction of stone and brick bedded in lime mortar with a smooth rendered finish. There is no noticeable difference between the upper and the lower floors. The pilasters and the quoins on all the corners on the ground floor are of dressed stone up to 1.7m from the ground and render finish above including the moulded capitals. The cornices at 1<sup>st</sup> floor level and at roof level and the capitals of the 1<sup>st</sup> floor pilasters are made out of a 'sepia' coloured lime based stucco with a very fine finish. The renders generally, originally of lime mortar, have been largely replaced by Portland cement mortar in repairs.

### **The Rear Courtyard**

The walls to the rear courtyard, both the boundary walls and the building walls on the lower floor at the rear, have a thin coat of paint on a Portland cement render (1920s) applied over a variety of ochres and white lime paint layers on an un-rendered random rubble masonry of stone and brick.

The quoins at the corners are dressed limestone with a build up of lime paints but are not rendered in the 1920s.

The upper floor walls are similar to the lower level up to the Portland cement render but the background was not examined.

### **The Interior**

The interior walls on the upper floor and staircase were re-plastered recently in lime mortar when the Heritage Trust first moved into the premises.

On the lower floor the walls are predominantly plastered in Portland cement with original lime plaster and paints remaining only on the North West corner where there is no evidence of any Marshams or Regnaults wall paintings.

## CONCLUSION

### Age of the building

Underneath the Portland cement renders, there is no noticeable difference between the make up of the walls of the upper and the lower floors of the main façade which suggests that the building was rebuilt from foundation level after the Great Siege with no obvious remains of the original single storey building.

The paint layers on the limestone columns on the upper floor are completely different to those on the rest of the building with only the 'sepia' in common. It is possible that these were recycled from another building or simply treated differently to the rest of the building.

The walls in the rear courtyard are not of the same characteristics as the main façade, having been un-rendered originally and painted directly onto the random rubble wall with deep coloured ochre lime washes which do not appear on the main façade.

**Colour Schemes** See APPENDIX 4: Early Colour Schemes.

The dressed limestone found on the main façade, at all corners and standing only 1700mm high, suggests that its function was to protect the architectural detail against damage by wear and tear and would have been painted from the start.

### Original Colour Scheme

There is a wide range of colours in the earlier layers where the original could have been as follows:

Main façade:

Walls:	White.
Pilasters/columns, capitals and cornices:	Sepia.
Wood/metal work:	Green.

It is also possible as an alternative that the pilasters, capitals and cornices were ochre coloured giving a white and ochre colour scheme.

Rear Courtyard Walls:

Walls and quoins:	Ochre.
-------------------	--------

Interiors:

Walls:	White.
--------	--------

### Other Later Colour Schemes

Other later colour schemes to the main façade are:

- Ochre walls with sepia detail
- White walls with ochre detail
- Lilac walls and detail
- Grey walls and detail

The green found in the upper cornice area was identified chemically as organic growth and not an applied pigment.

The rear courtyard walls were painted in a range of ochres initially and white lime wash on the last coats before they were rendered in Portland cement.

Internally the walls change from whites to greys to whites to ochres with the added green dado at the later stages with red green and grey woodwork.

### **Recommendations**

The transition from Military Guard House to Military Fire Station in the early 20th century also saw an important transformation to the building fabric. Apart from the need to widen the entrance and internal openings for the fire engines, the original timber floor was replaced by a solid concrete ground slab (ventilation air bricks for the raised timber ground floor are still there) Considering that the period coincided with the availability of the improved cement, ordinary Portland cement the opportunity seems to have been taken to try to better the exterior envelope by replacing defective renders and rendering over random rubble walls with ordinary Portland cement mortar.

Portland cement render may be a very good water-proof material. Unfortunately, it also act as a water-proof membrane from the inside out, so that when the moisture reaches the inside of the building fabric it is not allowed back out. The random rubble wall construction with the intrinsic lack of damp proof membranes on the ground and roof and its natural absorption will always allow moisture in, which needs to be allowed out.

Plastic/rubber paints and bitumen paints have only aggravated the damp conditions of the interiors seen today.

In order to reinstate the building it will be necessary first of all to remove all the Portland cement renders and all the bitumen/plastics/rubber paints from the original lime mortar renders and dressed limestone which are to be retained on all exterior and interior walls.

On the main façade, the 'sepia' coloured stucco on the cornices and upper level capitals are to be carefully cleaned of all lime washes and repaired with matching stucco.

Walls, pilasters and the capitals on the lower level where Portland cement repairs or defective lime mortar renders have been removed are to be rendered in a lime mortar including running the mouldings on the defective capitals.

The complete façade should be painted in lime paints in one of the early colour schemes and preferably the white and sepia combination with green wood and metalwork.

The rear courtyard walls should be retained as un-rendered random rubble walls and painted with lime paints in the deep ochres of the early coats.

The interior walls will require re plastering in lime mortar with a colour scheme of the original whites, greys or ochres.

The rain water gutter and hopper heads which were found to be full of accumulations of rubbish and rubble See Appendix 5, explains the damp condition of the interior walls of the Gibraltar Heritage Trusts offices a makes a point of the need to regularly maintain the building after this refurbishment.

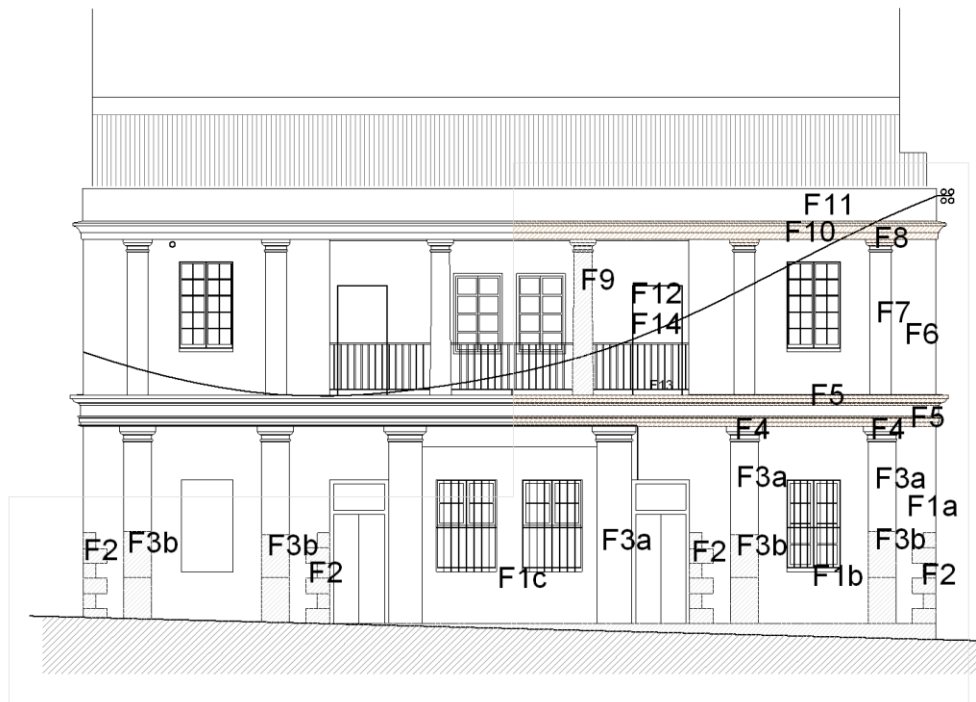
## APPENDIX 1: NEW PORTLAND CEMENT

From the 1820s to the 1880s there existed thousands of small factories producing different types of natural cement, artificial Portland cement and limes, each with its own characteristics of strength, setting time and colour.

In the 1860s there was landmark change in the history of cement. Instead of using the traditional vertical kilns of the lime industry, manufacturers began using a new rotating horizontal kiln, which enabled higher burning temperatures and a consistent product. The cement produced using this method was much stronger and faster-setting than its predecessors, and could be produced to much tighter quality standards. It also required a much greater capital investment, a circumstance which mitigated against many small traditional family firms in favour of larger companies. By the 1920s this new Ordinary Portland Cement had by far the greater part of the market, and is the root of the modern family of materials that we blithely call cement, manufactured, almost exclusively, by giant multi-national corporations. As a result the use of lime was lost from then on.



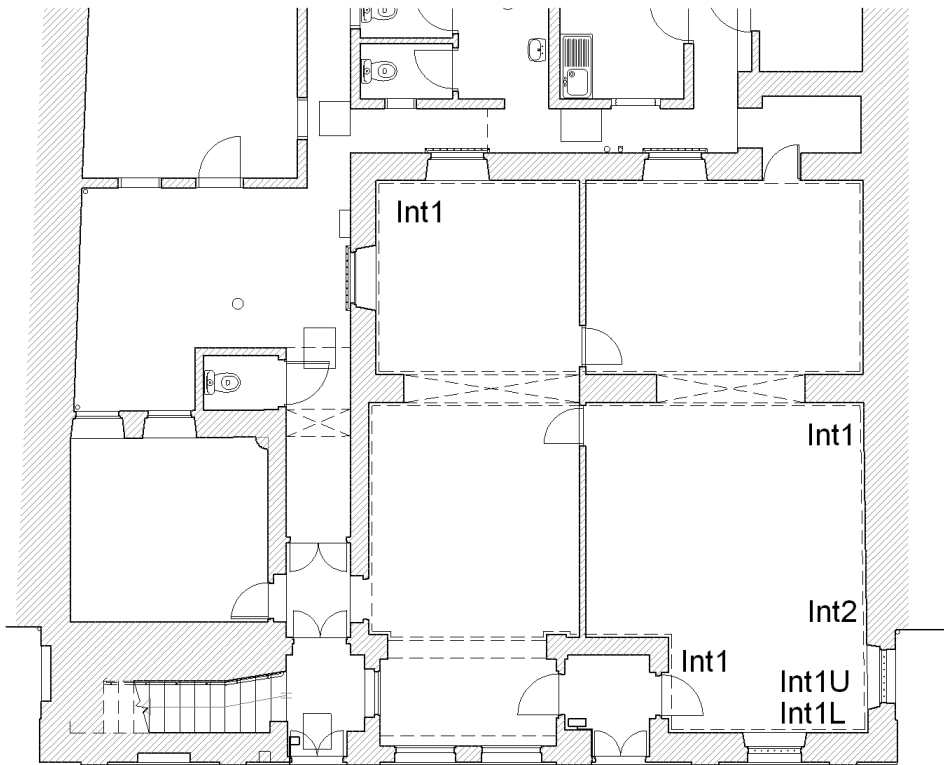
## APPENDIX 2: PAINT AND BACKGROUND LAYERS



Main Façade: Sample Areas

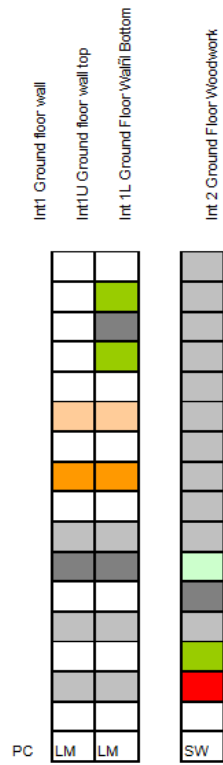
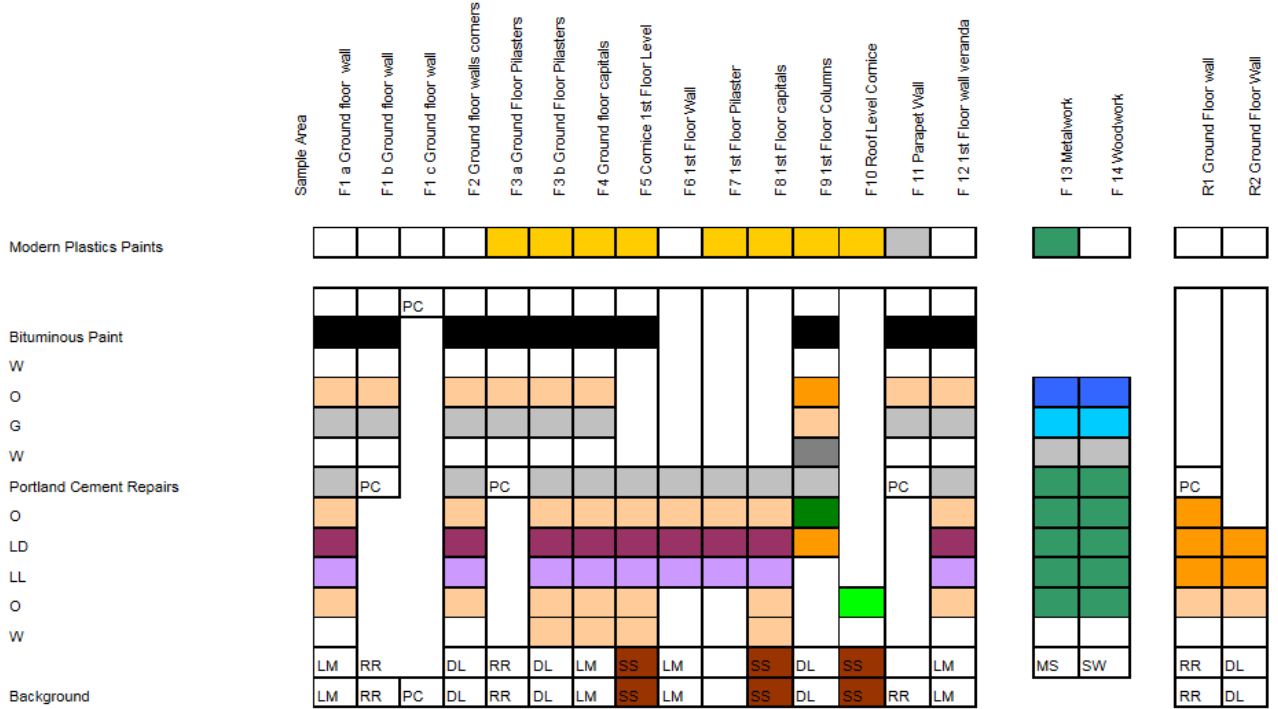


Rear Elevation: Sample Areas



Floor Plan: Sample areas Interior

# Table of Paint and Background Layers by Sample Areas



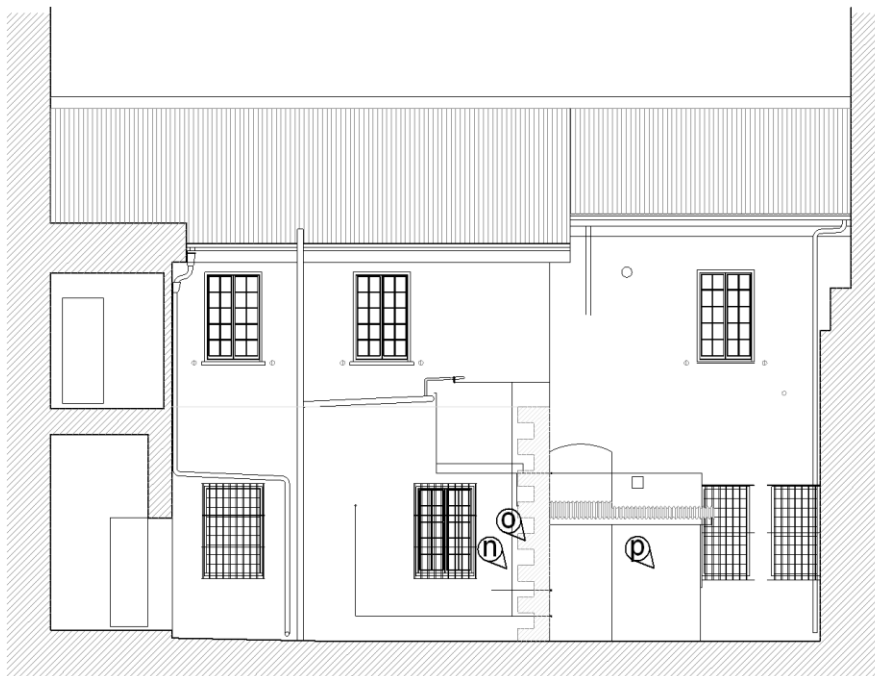
**KEY**

Black	Bituminous paint
Green	Verdin
LM	Lime Mortar Render
PC	Portland Cement Render
DL	Dressed Limestone
SS	Sepia coloured Stucco
MS	Mild Steel
SW	Softwood
RR	Random Rubble

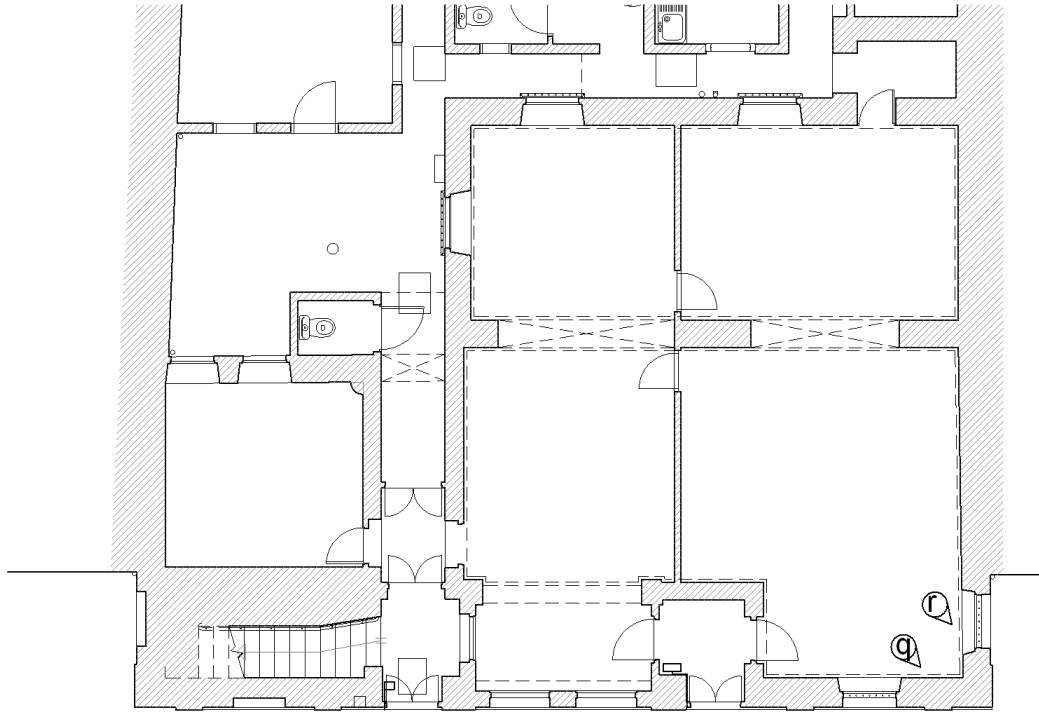
## APPENDIX 3: PHOTOGRAPHS



Main Façade: Photograph Location



Rear Elevation: Photograph Location



Floor Plan Interior: Photograph Location



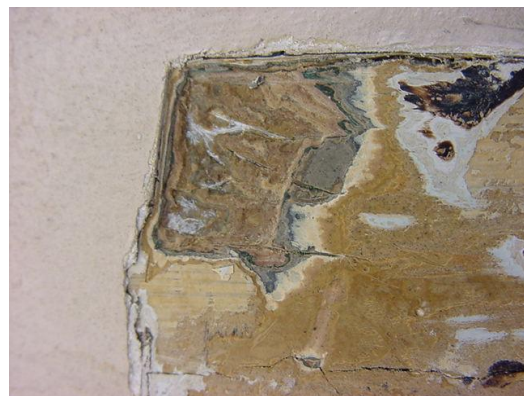
Photograph a



Photograph b



Photograph c



Photograph d



Photograph e 1



Photograph e 2



Photograph f 1



Photograph f 2



Photograph f 3



Photograph g 1



Photograph g 2



Photograph g 3



Photograph h 1



Photograph h 2



Photograph i



Photograph j



Photograph k



Photograph l



Photograph m



Photograph n 1



Photograph n 2



Photograph n 3





Photograph o



Photograph p



Photograph q 1



Photograph q 2



Photograph r 1



Photograph r 2

## APPENDIX 4: Early Colour Schemes



Main Façade: White, Sepia and Green



Main Façade: Ochre, Sepia and Green



Main Façade: White, Ochre and Green



Main Façade: Lilac and Green

## APPENDIX 5: Maintenance

During the survey the rain water gutter and hopper head were found to be full of decades of accumulations of rubbish and rubble.



Public utility cables particularly telephone and public lighting are piled on the façade adding to the loss of crispness of detail.

