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Investigation of Paint Failure at Brunswick Estate Hove Brighton

August 2013

BRUNSWICK ESTATE
HOVE

The following document discusses the results of architectural paint research of the Regency properties forming the Brunswick Estate. All results are based on interpretation through research of currently available archive documentation and investigation of paint archaeology and may be superseded should further evidence become available.

Summary

Project	To survey, sample and analyse the external paint-system to the stucco-work at Brunswick Estate in order to determine the mechanisms and causes of failure, and to subsequently advise on the paint-specification for the 2015 redecoration programme
Name and address of client	Lesley Johnston Senior Planning Officer (Conservation) Heritage Team Brighton & Hove City Council, Hove Town Hall, Norton Road, Hove, BN3 3BQ
Date of project:	August 2013 - November 2013
Methods employed:	Visual and photographic external survey of 108 Regency properties; Collation of results followed by strategic sampling of paint layers; Analysis of samples at magnification under reflected and ultraviolet light and production of photomicrographs; Micro-chemical analysis of samples; Consideration of environmental factors; Limited archival research; Full documentation of methods employed, including photographic record.

Contents

1. Introduction

The following document investigates the failure of the external paint-system at Brunswick Estate, Hove based on research carried out by Elizabeth Hirst and Rachel Morley of Hirst Conservation between August and November 2013. The work was commissioned by Brighton & Hove City Council.

The purpose of the commission was to determine the causes of failure of the paint-system to the Grade I and II listed Regency properties following concerns from residents that the latest redecoration appeared to be failing prematurely.

To this end, an external survey, complete with extensive photographic records, of all 108 properties was carried out. Results were collated and compared with previous surveys. A number of paint samples were analysed for stratigraphy and defects which may contribute to the failure of the system. The building plan and orientation of the estate, times of redecoration and average temperature data was studied to evaluate the effect of environmental factors.

This comprehensive analysis led to a number of conclusions and potential sources of failure, all of which informed recommendations for the 2015 redecoration cycle.

2. Aims, Objectives & Methodology

2.1 Aims and Objectives of Paint Research

Although referred to as architectural paint research, the investigation encompasses a much wider range of disciplines. The architecture and development must be considered as well as the impact of other associated decorative finishes.

Architectural paint research is more than a tool for establishing the original décor of a building. It can provide information on the development and use of a building, changes to the structure, the changing decoration and the significance of the decorative schemes. Paint analysis is often sought only for the re-instatement of a particular decorative scheme, but the information can be used to better understand the building and develop a management plan of the structure e.g. whether to redecorate, strip, preserve etc.

To develop a complete picture and to aid thorough analysis, samples were taken from a range of buildings, from different architectural features, finishes and different stages of deterioration.

The combined aims of the research are to:

- Establish and record the paint archaeology;
- Identify any defects which may contribute to the failure of the paint system;
- Inform future redecoration.

2.2 Methodology of Research

2.2.1 Archival Research

Archival research was limited to data provided by Brighton and Hove City Council.

2.2.2 Collection of Paint Samples

Samples were collected on-site using a scalpel and Dremel® and fine, sharp wood and stone chisels.[1] The location of each sample was given a unique label and recorded photographically. Samples were between 1-10mm^2.

Any sample locations exhibiting failure could be easily lifted using a scalpel or small tool.

2.2.3 Microscopic Assessment of Samples

The samples were mounted in clear casting resin and polished to provide a cross section through the paint layers. Assessment at 40× or 100× magnification in reflected visible light allowed the layer structure to be assessed, and 200× magnification was used for more detailed evaluation of specific layers. In addition, UV light was employed to identify basic stratigraphy of paint schemes (for example, differentiation between numerous white paint films) and to establish basic composition of paint films. *Photomicrographs included within the report were photographed at 100× magnification in diffuse, visible light unless otherwise stated.*

2.2.4 Micro-chemical Analysis of Paint Films

Further investigation of key layers was achieved by stain tests and simple chemical techniques.[2] These were undertaken in order to assess the presence of certain elements and compounds to assist with identification of binding media within the paint layers.

[1] A Dremel™ is a hand-held rotary tool
[2] Plester, Joyce, Tables for identification of pigments

3. Description and Historic Background

Brunswick Estate was designed by the architect, Charles Busby and built between 1824 and 1834. It consists of 108 properties forming Brunswick Square, Brunswick Terrace and Brunswick Place, which are Grade I and II listed.

The properties bear much lavish ornamentation typical of the Regency period, included balustrade parapets, stepped cornices, giant Corinthian and Ionic columns with deep entablatures and wide, columned porches.

The architectural impact and integrity of these buildings is maintained by the uniform paint system. The 1976 Hove Borough Council Act was issued to protect this uniformity; under this, it is required that the properties are repainted every five years with a paint of type and colour specified by the Council.

Records regarding the paint specification have not been readily available. It is understood (via unconfirmed sources i.e. verbal communication) that prior to 1976 the buildings were painted every three years; the act introduced in 1976 raised this to every five years and stipulated a gloss finish. Since then, lead-oil and alkyd paint systems have been used. In 2000 a new water-borne acrylic paint was introduced, this appeared to be performing well until 2010, when failures were experienced shortly after redecoration.

Outline of possible changes to the paint systems used:

1976: Lead-oil
1980: Lead-oil
1985: Lead-oil
1990: Johnstone's Jonsil Silicon Alkyd
1995: Johnstone's Jonsil Silicon Alkyd
2000: Sandtex Masonry Gloss Acrylic
2005: Sandtex Masonry Gloss Acrylic
2010: Sandtex Masonry Gloss Acrylic

4. Survey Results

4.1 1 Brunswick Square

Condition

1. Generally the façade appears to be in reasonably good condition;
2. Localised paint flaking on cornice below the third floor;
3. Localised flaking and fine cracks to underside of the entablature between the central columns (first and second floor);
4. Localised paint flaking on the two central columns (first and second floor);
5. Staining on the cornice beneath balcony;
6. Masonry repairs to triglyph decoration on the frieze above the doorway;
7. Localised paint flaking between the triglyph decoration on the frieze above ground floor window;
8. Localised paint flaking on frieze above the doorway possibly as a result of salts and moisture;
9. Localised paint flaking on sloping flat surface beneath the ground floor hall window;
10. Paint has been retouched on the exterior basement wall and appears patchy (darker in colour);
11. Failing paint on the masonry below the railings adjacent to pavement and entrance path;
12. Generally the painted timber work appears to be in reasonably good condition.

2 Brunswick Square

Condition

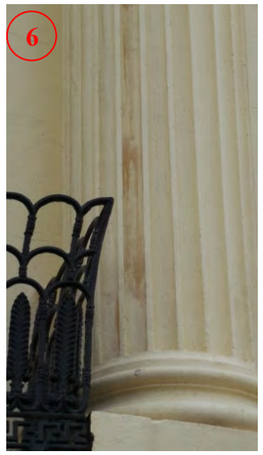
1. Generally the façade appears to be in reasonably good condition;
2. Localised paint flaking on tapering pilasters and adjacent wall at third floor level;
3. Localised paint flaking on cornice at third floor level;
4. Localised flaking and fine cracks to underside of entablature between central columns (first and second floor);
5. Localised paint flaking on frieze above doorway possibly as a result of salts and moisture;
6. Ferrous staining and failing paint on the masonry below the railings adjacent the pavement and front door path;
7. There appears to be different surface finishes (paint/render) on the basement wall which suggests historic paint finishes remain in localised areas;
8. The painted timber generally appears to be in a reasonable condition although the timber at basement level is in poor condition.

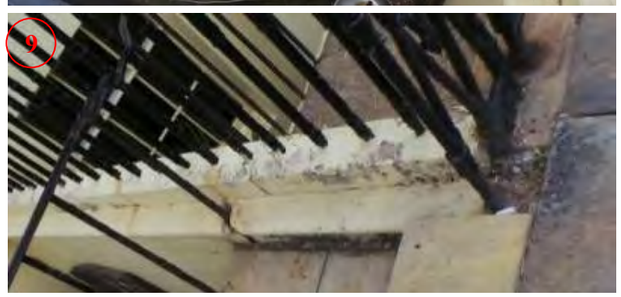
3 Brunswick Square

Condition

1. Generally the façade appears to be in reasonably good condition;
2. Localised paint flaking on window ledge at ground floor level;
3. Localised paint flaking where paint has been applied over historic paint finishes at basement level. This is prevalent around windows, the doorway and ground floor level;
4. Failing paint on the masonry below the railings adjacent the pavement and front door path;
5. Generally the painted timber work appears to be in reasonably good condition.

4 Brunswick Square





Condition

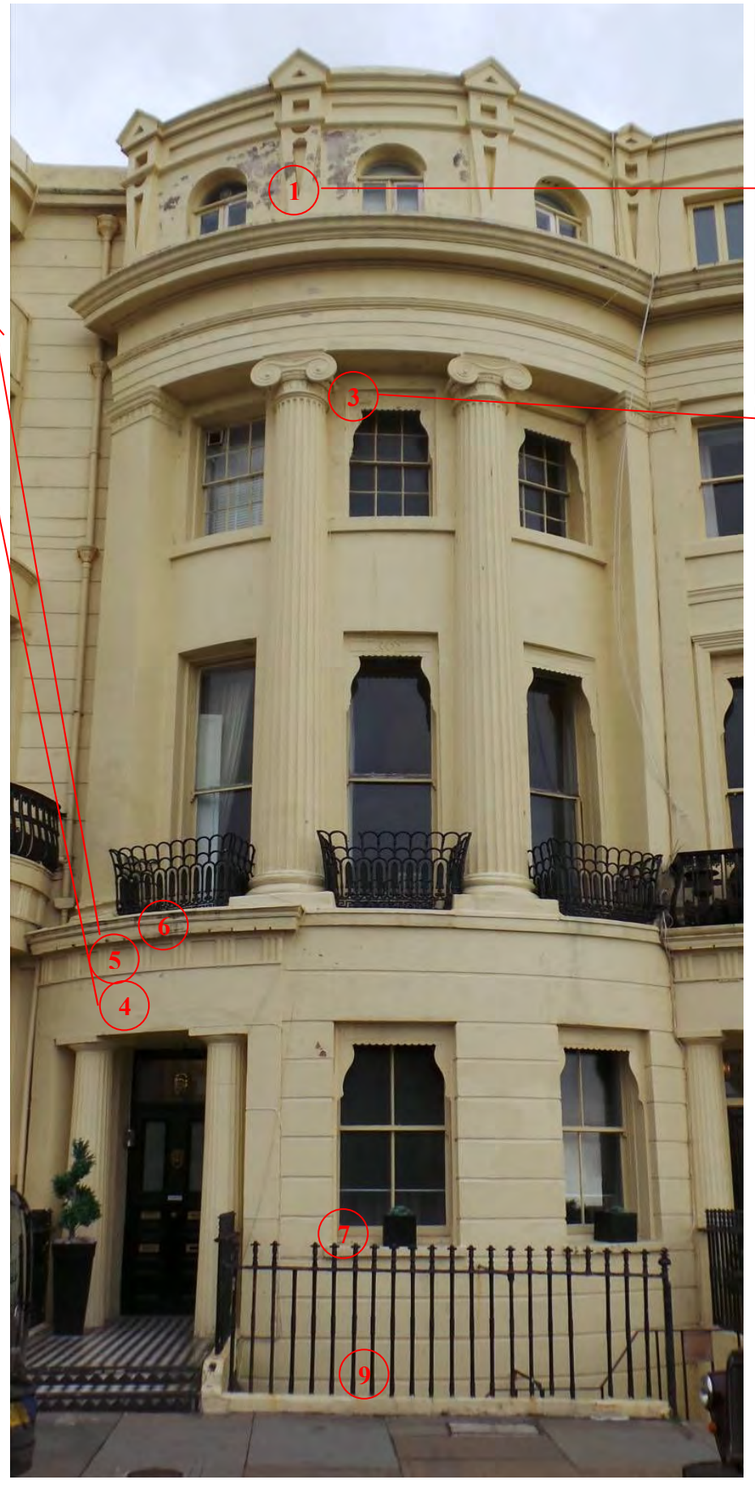
1. Extensive paint flaking to parapet;
2. Vegetation growth (moss) on top of the parapet indicating excessive moisture within the substrate;
3. Extensive paint flaking on the cornice below the third floor level;
4. Localised salt deliquescence and paint flaking beneath the left hand side window (second floor) ;
5. Localised paint flaking above left-hand side window (first floor);
6. Localised staining and flaking on the right-hand column (first floor level);
7. Localised staining and paint flaking as a result of fracture in the masonry between the ground floor windows;
8. Generally painted timber work appears to be in reasonably good condition although there is localised paint flaking on the timber window frame at basement level;
9. Failing paint on the masonry below the railings adjacent the pavement.

5 Brunswick Square

Condition

1. Localised paint flaking to parapet;
2. Localised paint flaking to cornice;
3. Staining and paint failure on cornice beneath balcony;
4. Localised paint flaking on right-hand column and adjacent wall where paint has been applied over historic paint finishes (ground floor level);
5. In areas of historic and recent paint loss there is evidence of salts and moisture damage. Salt deliquescence may occur in these areas because there are fewer paint systems resulting in greater permeability;
6. Localised paint flaking where paint has been applied over historic paint finishes at basement level possibly as a result of salts and moisture. The historic paint system (dark beige) may be seen beneath the modern paint layers;
7. Localised paint flaking on the sloping flat surface beneath the ground floor hall window;
8. Ferrous staining and failing paint on the masonry below the railings adjacent the pavement;
9. Generally painted timber work appears to be in good condition.

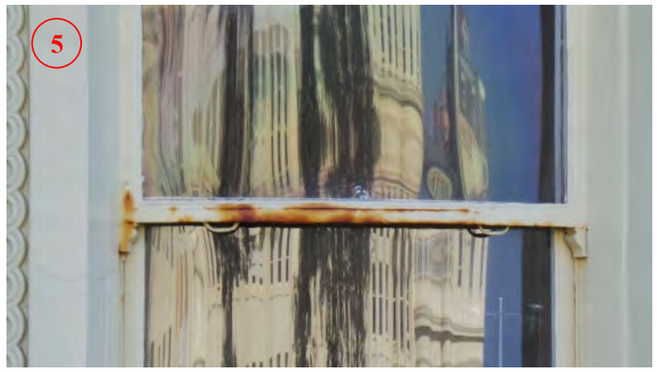
6 Brunswick Square



Condition

1. Extensive paint flaking to parapet;
2. Localised paint flaking to cornice. This may be due to the lead capping above the cornice has been removed causing moisture damage;
3. Localised flaking and fine cracks above the windows at second floor level;
4. Localised paint flaking on frieze above the doorway possibly as a result of salts and moisture;
5. Masonry repairs to the triglyph decoration on frieze above the doorway;
6. Staining on the cornice beneath balcony;
7. Localised paint flaking on window ledge (ground floor level);
8. The render substrate has been ‘patched-in’ with an inappropriate repair material and the paint has been retouched around the ground floor windows;
9. Vegetation growth (mould and algae) at basement level indicates excessive moisture and insufficient drying-out of substrate. Extensive paint flaking at basement level.

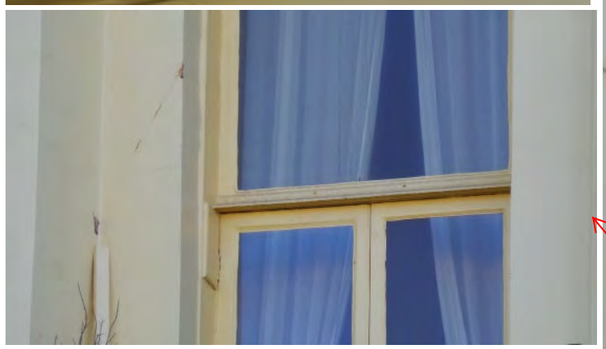
7 Brunswick Square



Condition

1. Paint flaking to right of parapet above the water hopper;
2. Localised paint flaking and staining beneath the second-floor and above first-floor bow windows;
3. Staining on cornice beneath balcony;
4. Localised paint flaking on frieze between front door and bow window;
5. Ferrous staining on central sash of the ground floor bow window;
6. Fracture running vertically beneath the ground floor bow window to the basement window;
7. Localised paint flaking above basement door;
8. Failing paint on the masonry below the railings adjacent the pavement and front door path;
9. Generally the painted timber work appears to be in reasonably good condition.

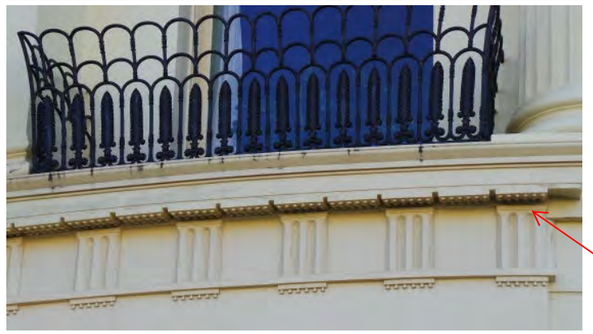
8 Brunswick Square

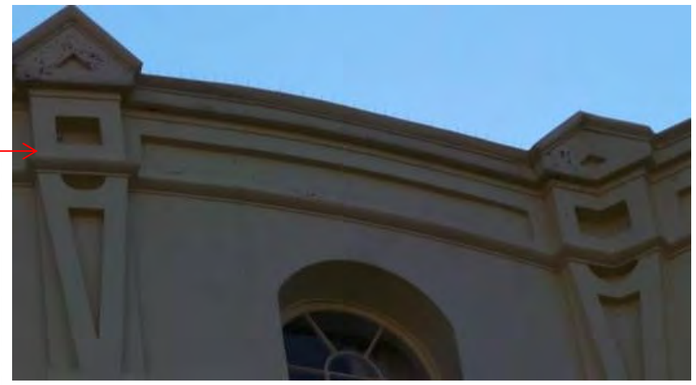


Condition

1. Extensive paint flaking to cornice
2. Localised flaking and fine cracks between the two central columns (between first and second floor levels);
3. Fracture running vertically on the left hand side of the left window (first floor level);
4. Staining on the cornice beneath the three wrought iron balconies (first floor level);
5. Fracture running vertically from the left hand corner of the right hand window sill (ground floor level) to the top of the right hand basement window beneath;
6. Failing paint on the masonry below the railings adjacent the pavement and front door path;
7. Generally the painted timber work appears to be in reasonably good condition.

9 Brunswick Square





Condition

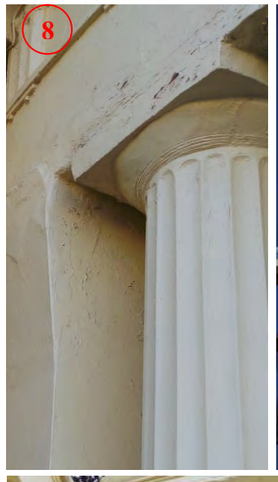
1. Generally there are historic fractures in the masonry substrate which may have an adverse effect on any painted decoration because of moisture within the substrate;
2. Localised paint flaking on the right hand pediment and the adjacent pediment at parapet level;
3. Localised paint flaking on the left hand side of the central panelling between the pediments at parapet level;
4. Localised flaking and blistering above the central window (second floor level);
5. Staining on the cornice beneath the three balconies;
6. Localised flaking and fine cracks on the left hand side of the left balcony and above the front door;
7. Failing paint on the masonry below the railings adjacent the pavement and front door path;
8. Generally the painted timber work appears to be in reasonably good condition.

10 Brunswick Square

Condition

1. Fracture and localised paint flaking on panelling between the central pediments at parapet level;
2. Extensive paint flaking and blistering on the cornice below the third floor;
3. Staining on the left hand side of the cornice below the third floor;
4. Staining on the cornice beneath balcony;
5. Localised paint flaking on the left hand window sill (ground floor level);
6. Localised paint flaking around the windows at basement level;
7. Ferrous staining on the painted iron saddle bars on the basement windows;
8. Biological growth (mould and algae) and salts on the basement walls indicating excessive moisture within the substrate;
9. Ferrous staining and failing paint on the masonry below the railings adjacent the pavement and front door path.

11 Brunswick Square

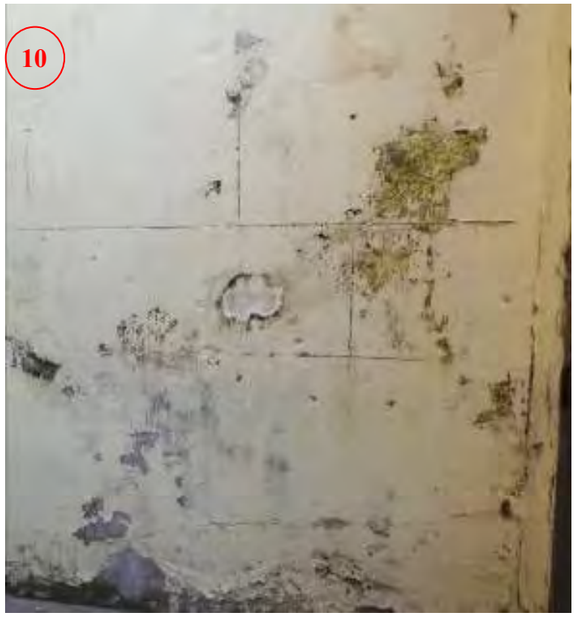


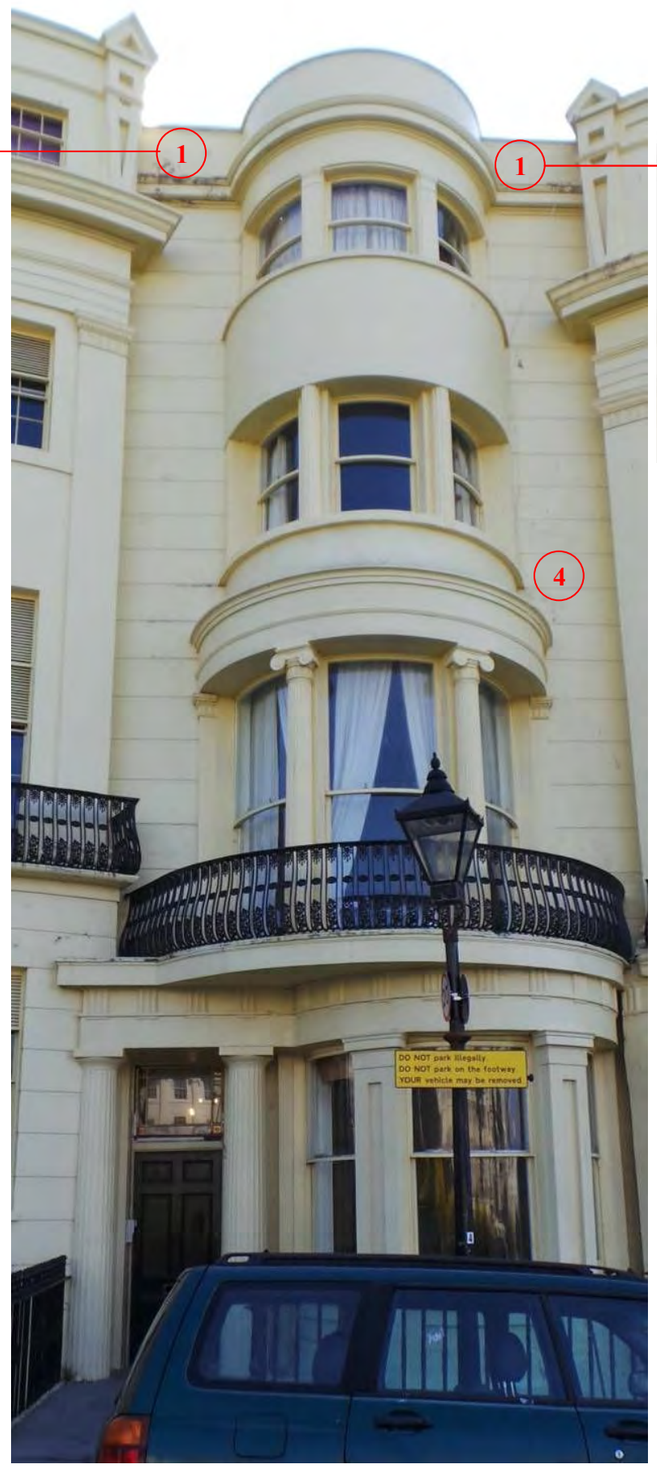
Condition

1. Localised paint flaking on the panelling on the left hand side above left window at parapet level;
2. Localised paint flaking on the right hand pediment at parapet level;
3. Extensive paint flaking and fine cracks to cornice;
4. Localised flaking and blistering above each of the windows on the underside of the cornice;
5. Fracture and localised paint flaking on the left hand column at first floor level;
6. Staining on the cornice beneath balcony;
7. Triglyph decoration to frieze above the doorway has been lost;
8. Localised paint flaking on the column on the left hand side of the front door;
9. Localised paint flaking on the underside of the porch;
10. Failing paint on the masonry below the railings adjacent the pavement and front door path;
11. Biological growth (mould and algae) and localised paint flaking on the basement walls indicating excessive moisture within the substrate

The tenant stated that he had painted the exterior 6 times in 3 months between October and December. The area above the porch is particularly problematic.

12 Brunswick Square





Condition

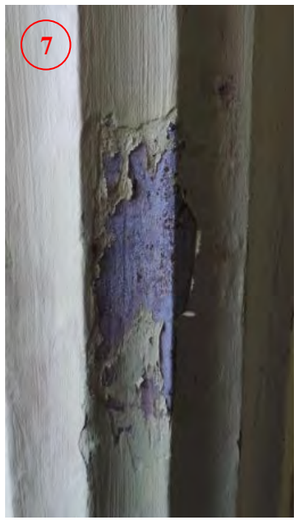
1. Extensive paint flaking on the flat wall and cornice either side of the bow at parapet level.This is particularly bad on the left hand side;
2. Localised paint flaking above the right hand window within the bow (second floor level);
3. Staining on the cornice between the first and second floor bow windows;
4. Localised paint flaking on the flat wall on the upper right hand side of the bow window (between the first and second floor);
5. Localised paint flaking on the flat wall on the left hand side of the bow window above the balcony;
6. Staining on the cornice beneath balcony;
7. Extensive paint flaking on the door frame and windows sills at ground floor level;
8. Localised staining on the cornice above the square pilaster on the right hand side of the ground floor window;
9. Localised paint flaking and blistering beneath the triglyph decoration on the frieze above the doorway;
10. Biological growth (mould and algae) and salt deliquescence causing extensive paint flaking at basement level (the paint is blistering exposing the substrate) indicating excessive moisture within the substrate;
11. Ferrous staining and failing paint on the masonry below the railings adjacent the pavement

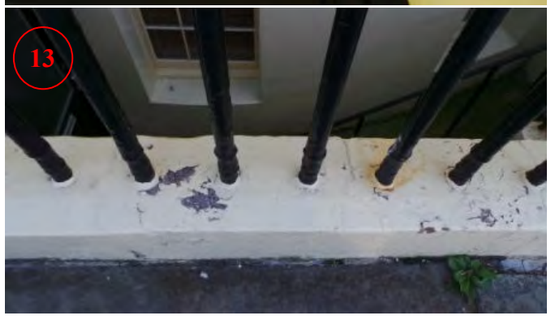
The tenant of No 12 also owns No 11. The owner has attempted to strip the basement walls to expose the substrate using a scraper and torch burner. The paint has not been evenly removed giving a very uneven appearance (leaving islands of paint). This is also unadvisable as earlier paint schemes are likely to contain lead.

13 Brunswick Square

Condition

1. Localised paint flaking on the left hand side of the central window within the arched recess (third floor);
2. Localised paint flaking beneath the central window and on the cornice (third floor);
3. Staining on the cornice beneath balcony (first floor level);
4. Localised paint flaking above doorway;
5. Localised paint flaking and salt deliquescence above the right hand window at ground floor level;
6. Extensive paint flaking and cracking at basement level (walls and timber windows) due to biological growth (mould and algae) and salt deliquescence (the paint is blistering exposing the substrate) indicating excessive moisture within the substrate;
7. Failing paint on the masonry below the railings adjacent the pavement.

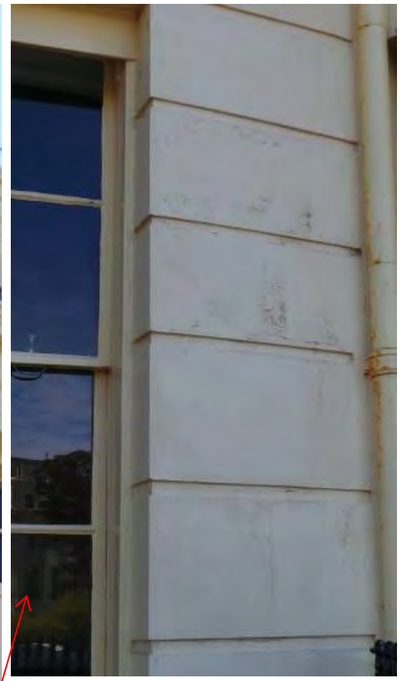


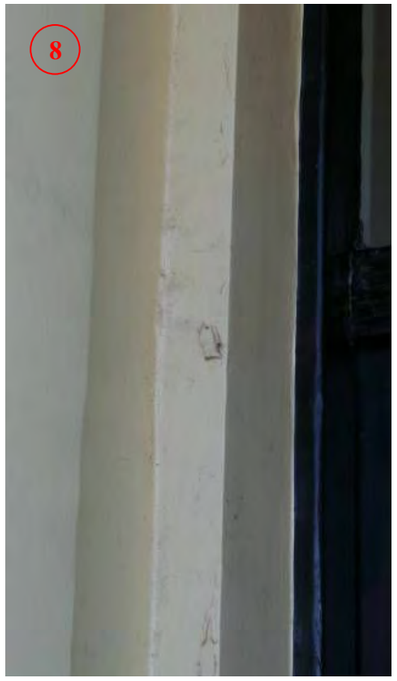


Condition

1. Localised paint flaking and salt effervescence top right hand corner of the left window at parapet level;
2. Localised paint flaking and salt deliquescence on the right hand side of the central window
3. Localised paint flaking on the cornice beneath the third floor central window;
4. Salt deliquescence beneath the cornice (above the second floor);
5. Salt deliquescence underneath and on the right hand side of the central window (second floor);
6. Staining on the cornice beneath the wrought iron balcony (first floor level);
7. Localised paint flaking on the top of the columns either side of the doorway (ground floor level);
8. Localised paint flaking on the right hand side of the door (within the porch);
9. Localised paint flaking and cracks on the underside of the porch;
10. Localised paint flaking and salt deliquescence on the frieze above the doorway;
11. Salt deliquescence on the right hand side of the right column flanking the doorway;
12. Localised paint flaking within the recesses of the ground floor windows;
13. Ferrous staining and failing paint on the masonry below the railings adjacent the pavement;
14. Biological growth (mould and algae) on the basement walls indicating excessive moisture within the substrate.

15 Brunswick Square

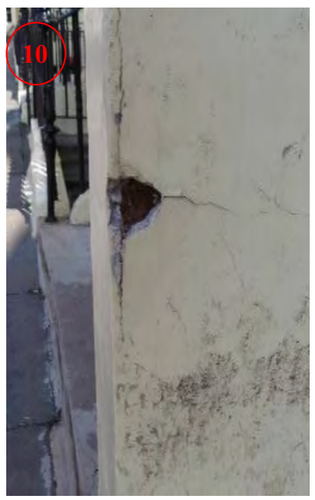


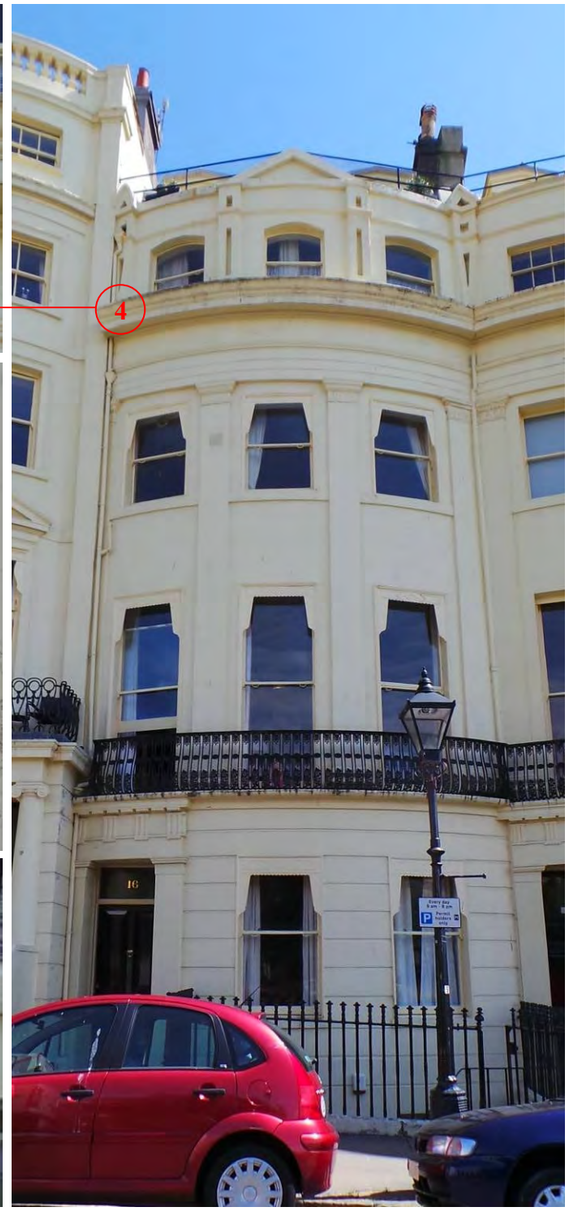


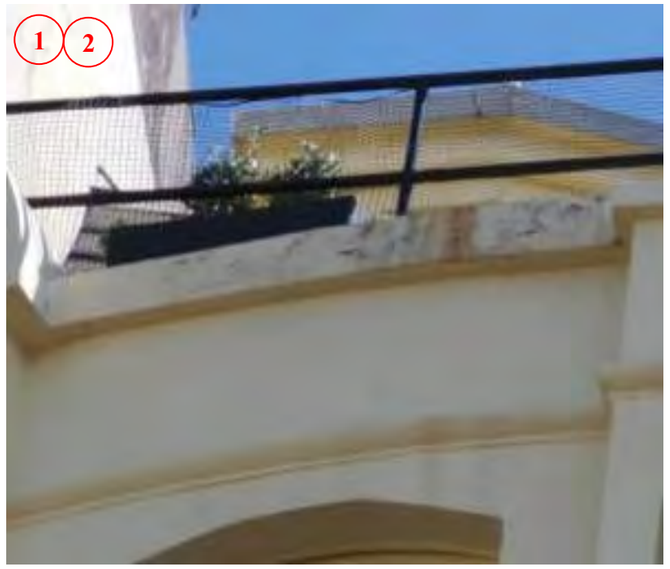
Condition

1. Staining and localised paint flaking on the cornice below the third floor (particularly on the left hand side);
2. Localised paint flaking beneath the cornice below the third floor;
3. Ferrous staining on the right hand of the building due to the downpipe which may be leaking or trapping moisture within the substrate;
4. Localised paint flaking and cracks to second-floor window recesses;
5. Localised paint flaking and cracks on the right hand side of the right window (ground floor);
6. Staining on the cornice beneath balcony;
7. Localised paint flaking on the triglyph decoration on the frieze above the doorway;
8. Localised paint flaking on the column on the left hand side of the doorway. The paint has blistered and there is evidence of salt effervesce beneath;
9. Salt deliquescence, staining and flaking paint above the left hand window (ground floor);
10. Salt deliquescence, blistering and flaking paint under the left hand window (ground floor level);
11. Failing paint on the masonry below the railings adjacent the pavement;
12. Salt deliquescence and flaking paint under the left hand window (second floor level).

16 Brunswick Square







Condition

1. Localised paint flaking on the central pediment at parapet level;
2. Ferrous staining on the pediment and flaking panelling at parapet level;
3. Localised paint flaking on the underside of the arched recess of the central window (third floor);
4. Staining and localised paint flaking on the cornice below the third floor;
5. Vertical fracture running through the cornice to the left hand side of the central window (second floor);
6. Extensive paint flaking, cracking and salt deliquescence under the cornice above second floor level related to salts and moisture retention;
7. Vertical fracture and paint flaking above the right hand window (first floor);
8. Staining and paint flaking on the cornice beneath balcony;
9. Localised paint flaking on the left hand side of the porch;
10. The adjacent building on the left hand side (No. 17) projects forward. The adjoining wall between the two properties is badly damaged as a result of salt deliquescence. The paint has blistered and there is evidence of salt effervesce beneath the blistering paint;
11. Localised paint flaking and fractures on and beneath the ground floor window sills;
12. Ferrous staining and flaking paint on the masonry below the railings adjacent the pavement and the front door path. There are also some losses and fractures in the masonry wall;
13. Salt deliquescence, blistering, cracking and flaking paint in the basement (first floor and basement level). This is particularly prevalent around the basement windows;
14. Biological growth (algae and mould) at basement level indicating moisture within the substrate.

17 Brunswick Square

Condition

1. Localised paint flaking on left hand side of the square pilaster (fourth floor level);
2. Extensive paint flaking to fourth floor window sills and recesses, particularly to left hand window;
3. Staining and localised paint flaking on the cornice below fourth floor;
4. Localised paint flaking under the window recesses on each window on the third floor;
5. Localised paint flaking to pediment over central first floor window;
6. Staining to cornice over doorway;
7. Localised paint flaking to left hand side of porch;
8. This property projects forward. The wall which joins this property with No. 16 is badly damaged due to salt deliquescence. The paint has blistered and a white residue is visible underneath.

18 Brunswick Square

Condition

1. Staining and localised paint flaking to cornice below fourth floor;
2. Staining and paint flaking to cornice under balcony;
3. Localised paint flaking to underside of the porch between capitals;
4. Salt deliquescence and flaking paint to basement walls;
5. Staining to plinth wall.

19 Brunswick Square

Condition

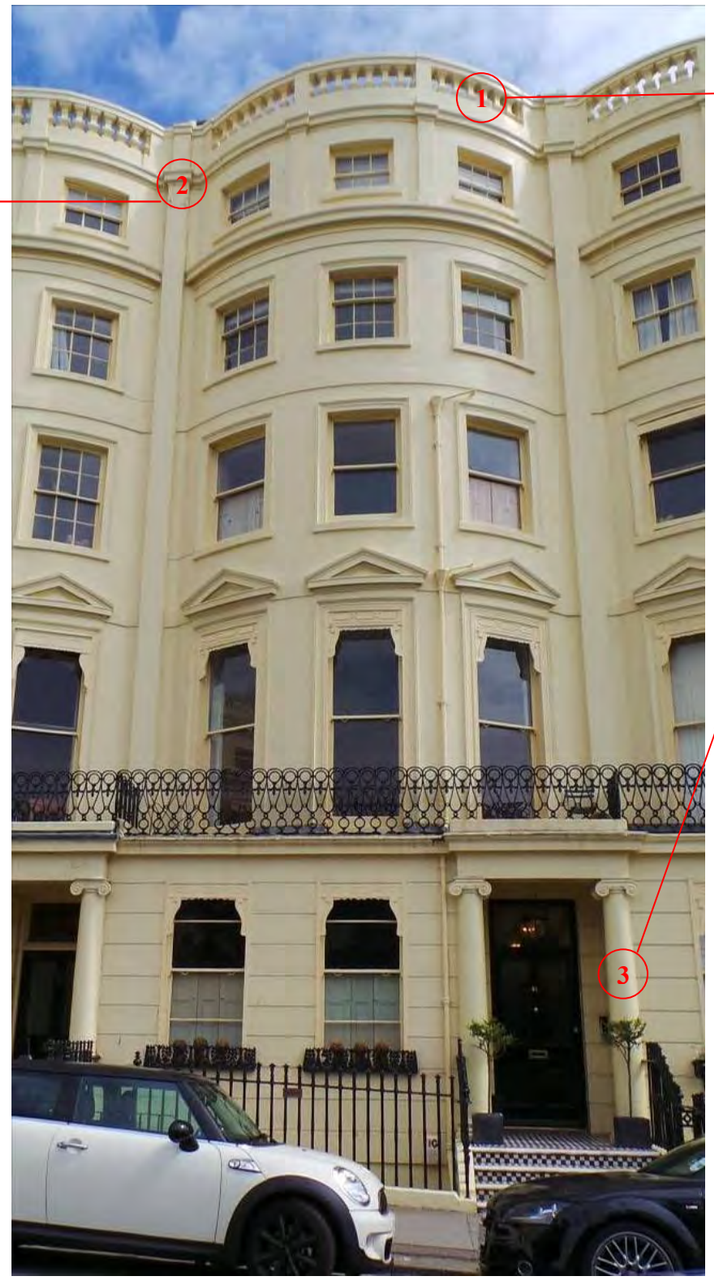
1. Localised paint flaking to right hand side of the first floor window;
2. Localised paint flaking to pediment above the left hand first floor window;
3. Localised paint flaking to right hand side of the central pediment over first-floor window;
4. Localised ferrous staining and paint flaking along downpipe at first floor level;
5. Staining and paint flaking on the cornice beneath balcony;
6. Localised paint flaking to left of porch.

20 Brunswick Square

Condition

1. Localised paint flaking to parapet balustrade;
2. Staining, fractures and localised paint flaking to down pipe casing (first floor level);
3. Staining and localised paint flaking to cornice;
4. Localised paint flaking above first floor windows;
5. Staining and paint flaking to cornice beneath balcony;
6. Localised paint flaking to frieze above porch between the capitals;
7. Localised paint flaking to entrance columns;
8. Staining to plinth wall.

21 Brunswick Square



Condition

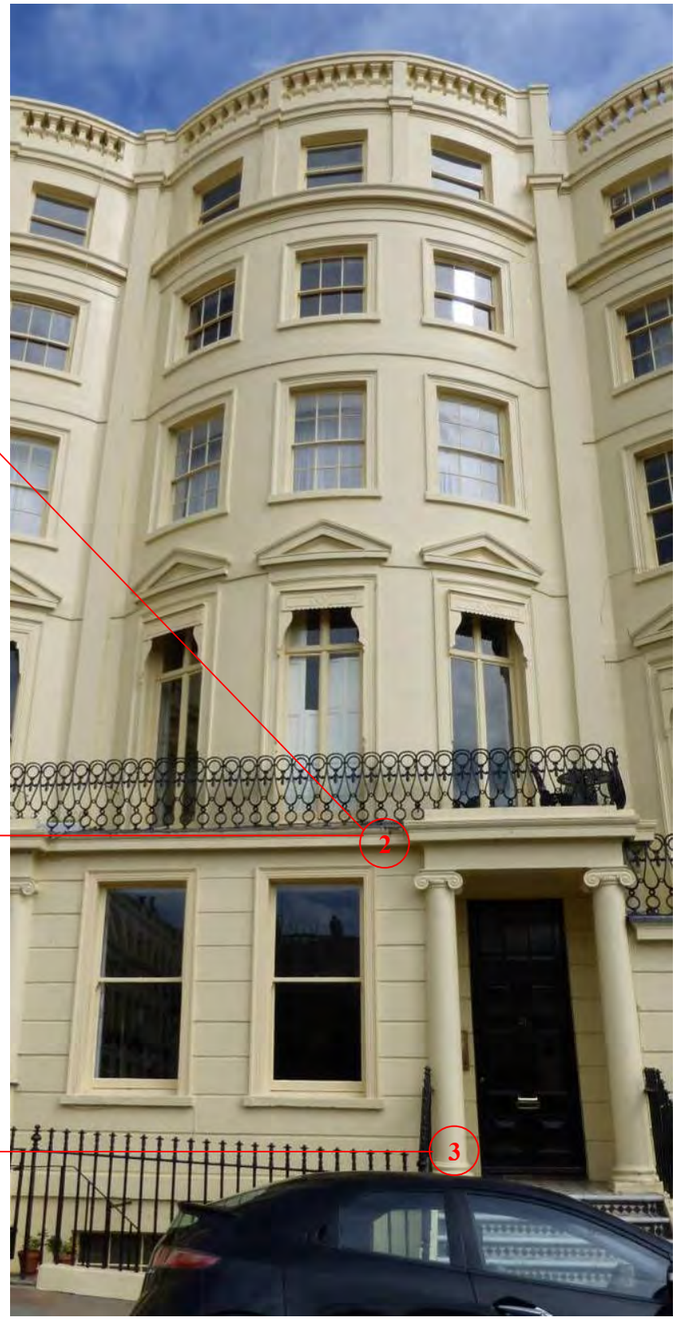
1. Localised paint flaking to balustraded parapet;
2. Localised paint flaking to downpipe-casing on the left;
3. Salt deliquescence and flaking paint on right hand entrance column;
4. Staining and paint flaking to cornice under balcony;
5. Salt deliquescence and flaking paint to basement walls;
6. Staining to plinth wall.

22 Brunswick Square

Condition

1. Localised paint flaking to right of balustraded parapet and to downpipe casing;
2. Extensive paint flaking to entrance columns;
3. Localised paint flaking to porch – underside and frieze;
4. Failing paint to plinth wall;
5. Salt deliquescence and flaking paint to basement walls.

23 Brunswick Square



Condition

1. Generally the façade appears to be in reasonably good condition;
2. Staining and paint flaking the cornice beneath balcony;
3. Localised paint flaking to base of the column on right hand side of the doorway;
4. Localised paint flaking to underside of the porch.

24 Brunswick Square

Condition

1. Generally the façade appears to be in reasonably good condition;
2. Staining and localised flaking to cornice beneath balcony. This is particularly prevalent on the on the left;
3. Localised paint flaking to underside of porch;
4. Biological growth (algae and mould) at basement level indicating moisture within the substrate.

25 Brunswick Square

Condition

1. Generally the façade appears to be in good condition;
2. Localised paint flaking to underside of the porch;
3. Localised paint flaking to left hand side capital.

26 Brunswick Square

Condition

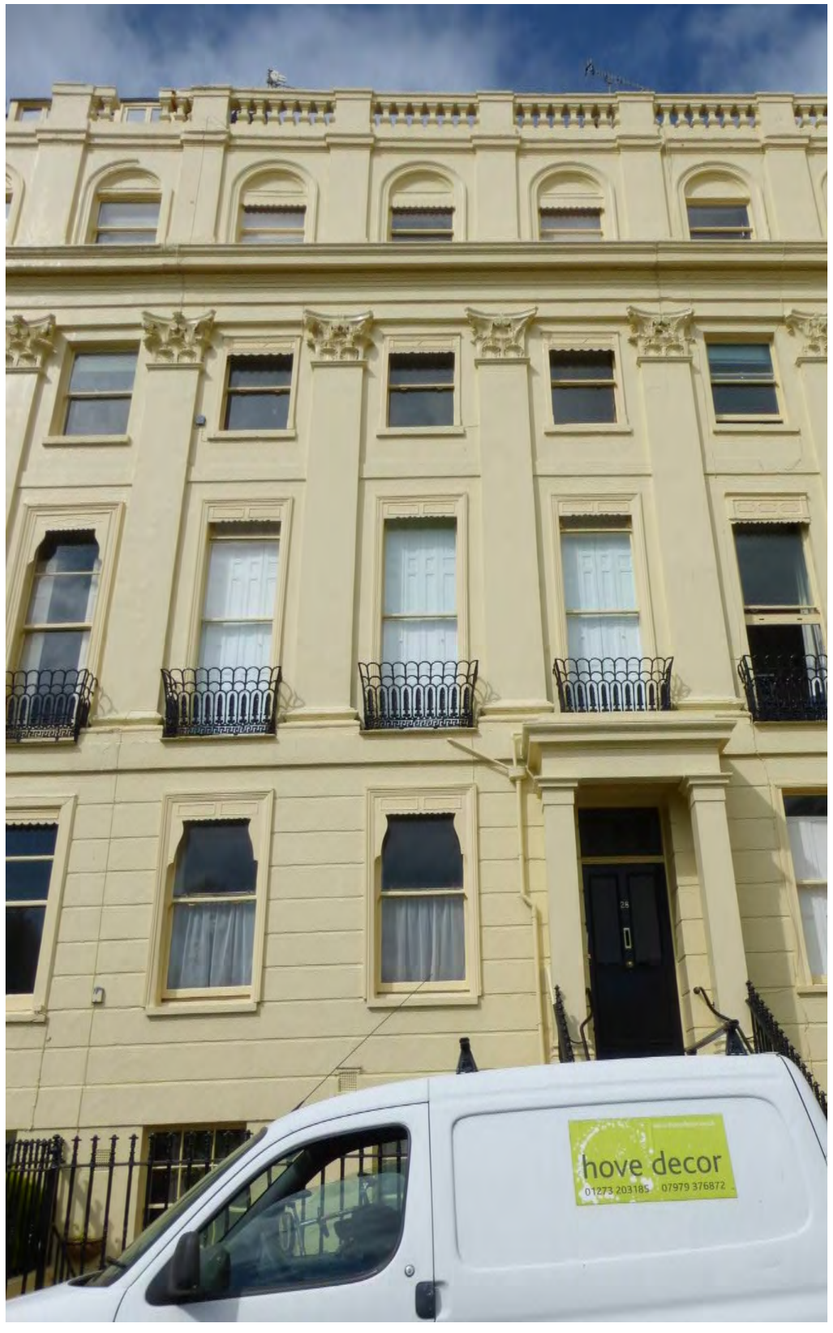
1. Generally the façade appears to be in reasonably good condition;
2. Localised paint flaking to right hand square pilaster at parapet level;
3. Localised paint flaking to underside of the porch. The paint has blistered and there is evidence of salt effervesce beneath the blistering paint;
4. Localised paint flaking on the column bases either side of doorway;
5. Failing paint to plinth wall;
6. Salt deliquescence and flaking paint to basement.

27 Brunswick Square

Condition

1. Generally the façade appears to be in reasonably good condition;
2. Localised paint flaking to cornice below balustraded parapet;
3. Staining to right hand side of the frieze beneath balcony;
4. Localised paint flaking to underside of the porch;
5. Failing paint to plinth wall.

28 Brunswick Square



Condition

1. Generally the façade appears to be in reasonably good condition;
2. Localised paint flaking to square column to the right hand side of doorway.

29 Brunswick Square

Condition

1. Localised ferrous staining to top-level cornice;
2. Localised paint flaking to columns (beneath the capitals) flanking third floor windows
3. Localised paint flaking to base of columns flanking balconies at second floor level;
4. Localised paint flaking and damage to cornice beneath third floor level;
5. Localised paint flaking at basement level particularly in areas where render is smooth;
6. Staining and paint flaking to plinth wall;
7. Generally painted timber work appears in reasonably good condition.

Condition

1. Localised paint flaking to cornice beneath parapet;
2. Localised paint flaking to cornice below the fourth floor;
3. Localised paint flaking to pilasters either side of the fourth floor windows;
4. Localised paint flaking to flat band beneath the third floor windows;
5. Localised paint flaking to bases of the square pilasters (second floor level);
6. Localised salt deliquescence and paint flaking to rusticated wall between the first floor and basement level;
7. Failing paint to plinth wall.

31 Brunswick Square

Condition

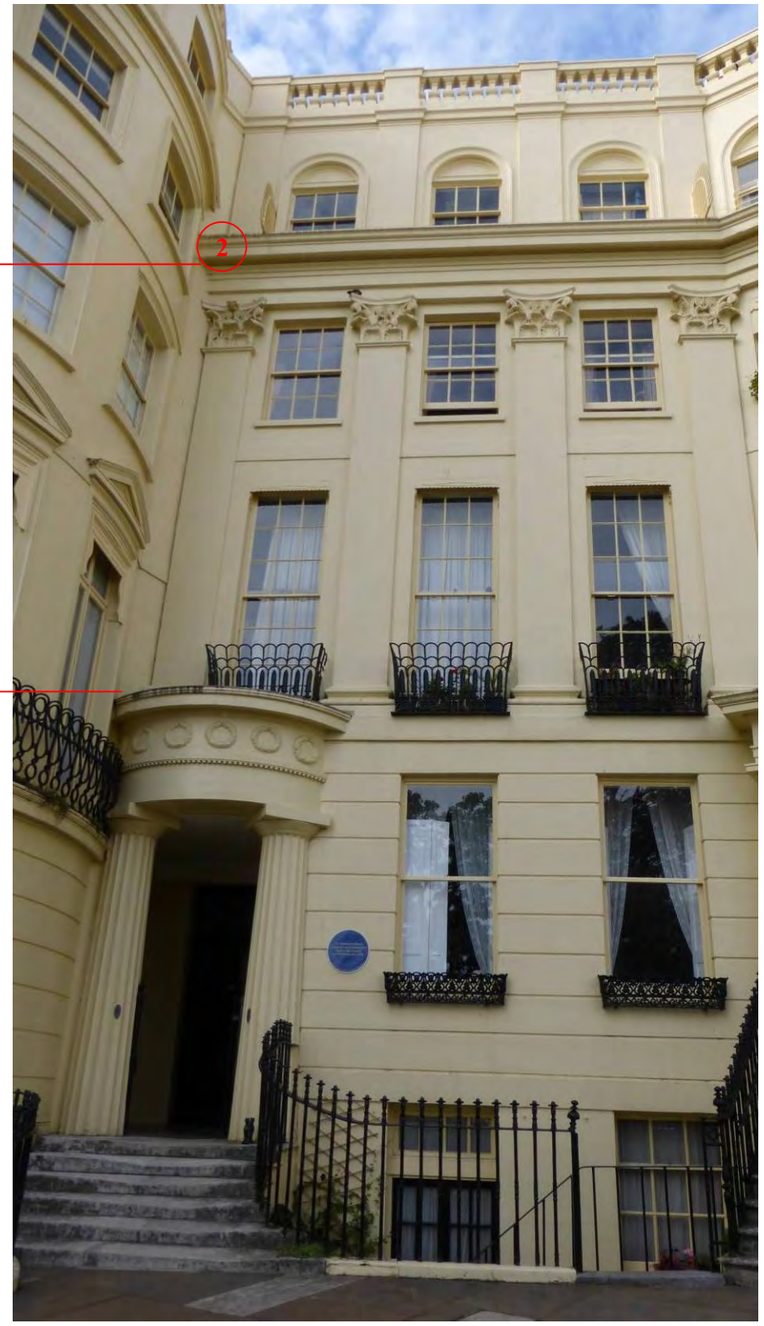
1. Extensive paint flaking to cornice below parapet;
2. Extensive paint flaking to cornice below the fourth floor;
3. Localised paint flaking to bases of the square pilasters (second floor level) flanking the balconies;
4. Localised paint flaking to cornice of porch;
5. Localised staining on the frieze above the doorway (right hand side);
6. Localised paint flaking to bases of entrance columns.

32 Brunswick Square

Condition

1. Localised paint flaking to cornice below parapet level;
2. Staining on the cornice above the porch;
3. Localised paint flaking toflat frieze between entrance columns;
4. Localised paint flaking to upper left hand corner inside the porch;
5. Localised salt deliquescence and paint flaking to right hand column flanking the doorway.

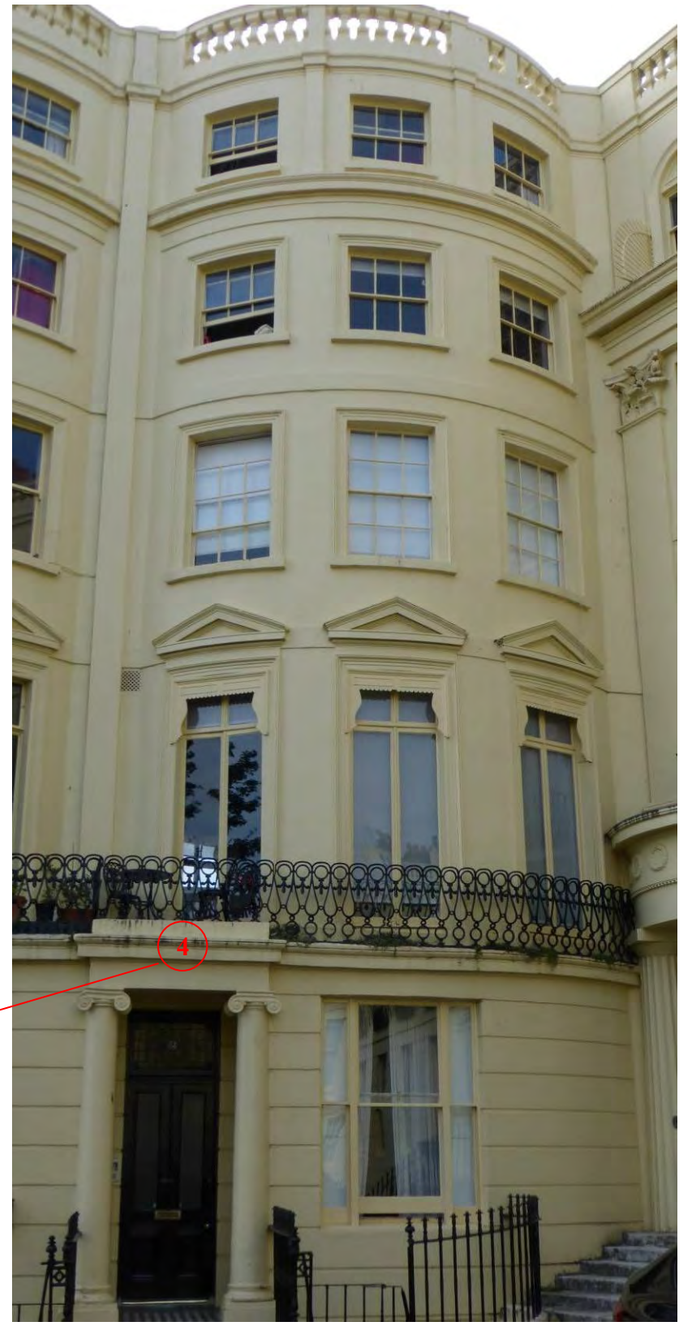
33 Brunswick Square

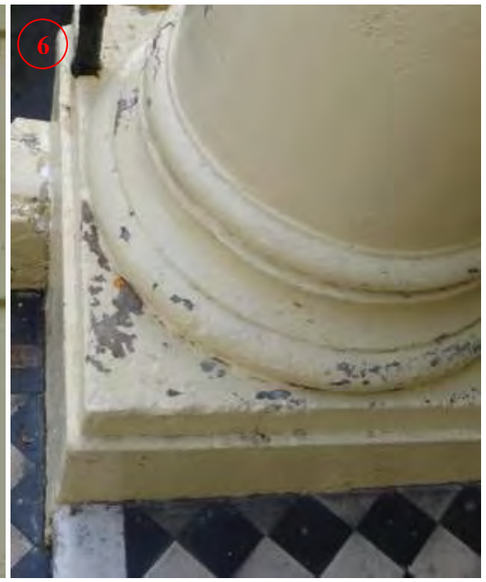


Condition

1. Generally the façade appears to be in reasonably good condition.
2. Staining to left hand side of the cornice below the third floor;
3. Staining to cornice above porch;
4. Failing paint to plinth wall.

34 Brunswick Square





Condition

1. Generally the façade appears to be in reasonably good condition;
2. Paint flaking to parapet;
3. Localised paint flaking above the second floor bow window;
4. Extensive staining to cornice beneath balcony;
5. Localised salt deliquescence and paint flaking entrance columns;
6. Localised paint flaking to base of entrance columns;
7. Paint flaking to plinth wall.

35 Brunswick Square

Condition

1. Generally the façade appears to be in reasonably good condition;
2. Paint flaking to the left hand side of the cornice and around the hopper and down pipe at parapet level;
3. Extensive staining to cornice beneath balcony and over porch;
4. Localised salt deliquescence to entrance columns;
5. Salt deliquescence and paint flaking within the porch;
6. Paint flaking to plinth wall.

36 Brunswick Square

Condition

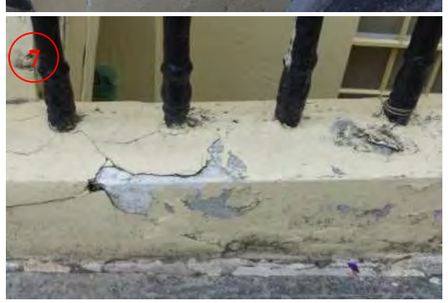
1. Generally the facades appears to be in good condition;
2. Paint flaking on the left hand side of parapet;
3. Paint flaking to left hand side of the cornice at parapet level;
4. Localised staining to cornice beneath balcony;
5. Localised salt deliquescence and paint flaking inside the porch;
6. Localised paint flaking on the base of entrance columns;
7. Localised salt deliquescence and paint flaking to left hand side recess of the left basement window;
8. Paint flaking to plinth wall.

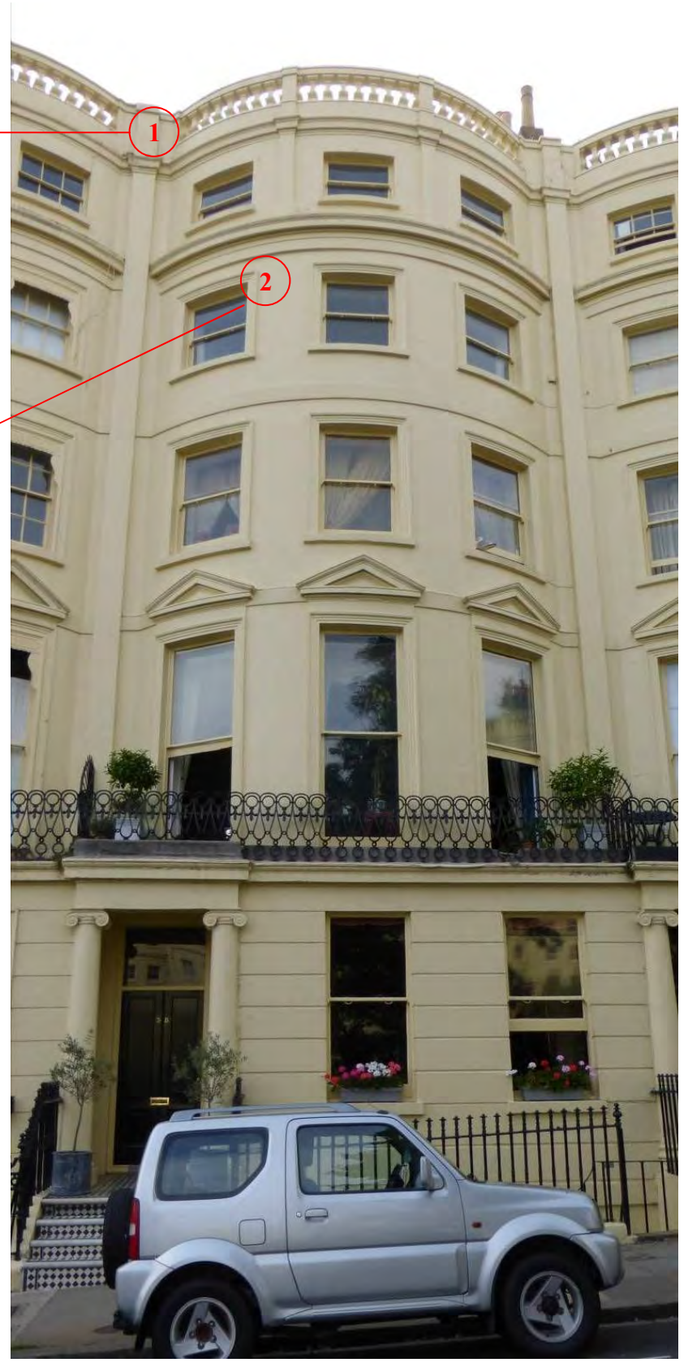
37 Brunswick Square

Condition

1. Paint flaking to left hand side of parapet;
2. Paint flaking to centre of the cornice at parapet level;
3. Localised paint flaking to flat of right hand side of left pediment (first floor level);
4. Localised staining and paint flaking to cornice and under balcony;
5. Localised paint flaking to right hand side of the right window (ground floor level);
6. Extensive salt deliquescence and paint flaking to entrance columns;
7. Localised paint flaking to base of entrance columns;
8. Extensive salt deliquescence and staining to walls and window ledge at basement level;
9. Paint flaking to plinth wall.

38 Brunswick Square





Condition

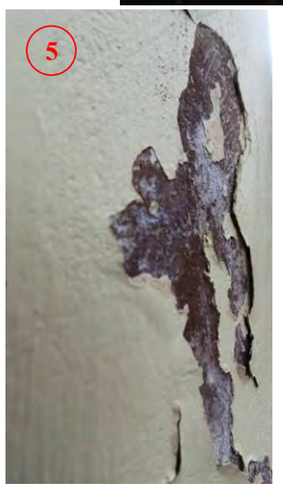
1. Paint flaking on the left and right hand side of parapet;
2. Paint flaking and salt deliquescence above the left hand window (right side) at third floor level;
3. Localised staining, vegetation and paint flaking on the cornice beneath balcony;
4. Salt deliquescence and paint flaking to interior porch wall (left hand side);
5. Localised paint flaking to base of entrance columns;
6. Extensive salt deliquescence on the basement walls;
7. Paint flaking to plinth wall.

39 Brunswick Square

Condition

1. Paint flaking to centre of cornice at parapet level;
2. Localised staining, paint flaking and vegetation on the cornice beneath balcony;
3. Localised paint flaking to wall between the ground floor windows;
4. Extensive salt deliquescence and paint flaking to entrance columns and adjacent wall beneath the wrought iron window box;
5. Extensive paint flaking to base of entrance columns;
6. Paint flaking to plinth wall.

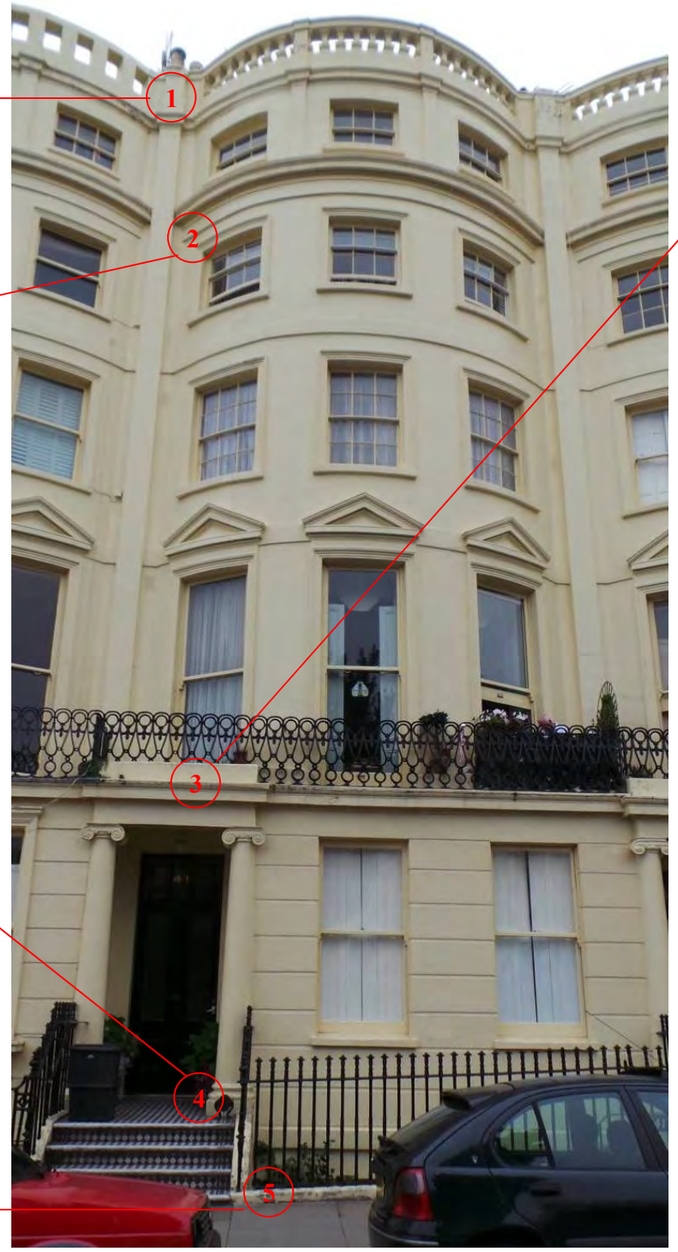
40 Brunswick Square



Condition

1. Paint flaking on the left hand side of parapet;
2. Paint flaking to right hand side of the cornice at parapet level;
3. Localised staining and paint flaking to cornice beneath balcony;
4. Extensive paint flaking to right hand side of the right column;
5. Extensive salt deliquescence and paint flaking to entrance columns;
6. Localised paint flaking to base of entrance columns.

41 Brunswick Square



Condition

1. Paint flaking on the balustrade at parapet level;
2. Localised paint flaking to right hand side of left window (third floor level);
3. Localised staining and paint flaking to cornice beneath balcony;
4. Extensive paint flaking to base of entrance columns;
5. Paint flaking to plinth wall.

42 Brunswick Square

Condition

1. Paint flaking on the left and right hand side of parapet;
2. Paint flaking to cornice at parapet level;
3. Localised paint flaking to left hand side of the central pediment (first floor);
4. Localised paint flaking to ground floor window ledges;
5. Localised paint flaking to base of entrance columns;
6. Paint flaking on the masonry below the railings adjacent the front door and the pavement;

43 Brunswick Square

Condition

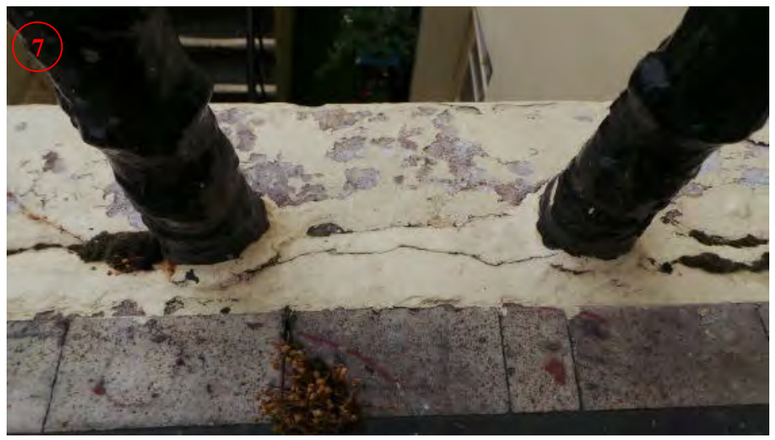
1. Paint flaking to right hand side of parapet;
2. Paint flaking to cornice at parapet level;
3. Localised paint flaking to base of the right hand side column (first floor level);
4. Localised staining to cornice beneath balcony;
5. Localised salt deliquescence and paint flaking on frieze between the triglyph decoration;
6. Localised paint flaking to ground floor wall next to the downpipe on the left hand side of the doorway;
7. Localised paint flaking to underside of the porch;
8. Paint flaking on the masonry below the railings adjacent the front door and the pavement.

44 Brunswick Square

Condition

1. Generally the façade appears to be in reasonably good condition;
2. Paint flaking to right hand side of right pediment at parapet level;
3. Extensive staining to cornice beneath the balconies;
4. Localised salt deliquescence to base of right hand column (first floor level);
5. Salt deliquescence around right hand window next to the porch;
6. Extensive biological growth (mould and algae) and vegetation at basement level);
7. Paint flaking on the masonry below the railings adjacent the front door and the pavement

45 Brunswick Square



Condition

1. Generally the façade appears to be in reasonably good condition;
2. Extensive paint flaking to centre panel at parapet level;
3. Staining and paint flaking to cornice beneath balconies;
4. Localised salt deliquescence tobase of right hand column (first floor level);
5. Paint flaking to underside of porch;
6. Salt deliquescence above the basement right hand window;
7. Paint flaking on the masonry below the railings adjacent the front door and the pavement

46 Brunswick Square

Condition

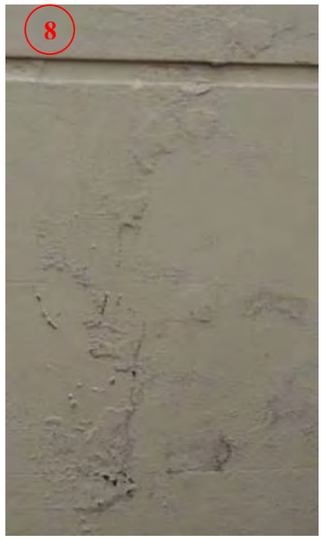
1. Extensive paint flaking to panelling at parapet level;
2. Extensive paint flaking to cornice at parapet level;
3. Staining and paint flaking to cornice beneath balconies;
4. Localised salt deliquescence tobase of left hand column (first floor level);
5. Paint flaking underneath the porch frieze;
6. Paint flaking to right hand side of entrance column;
7. Paint flaking to ground floor window ledge;
8. Paint flaking on the masonry below the railings adjacent the front door and the pavement.

47 Brunswick Square

Condition

1. Generally the façade appears to be in reasonably good condition;
2. Extensive staining to cornice beneath balcony;
3. Localised salt deliquescence and paint flaking to panelling beneath the bay window (ground floor level).

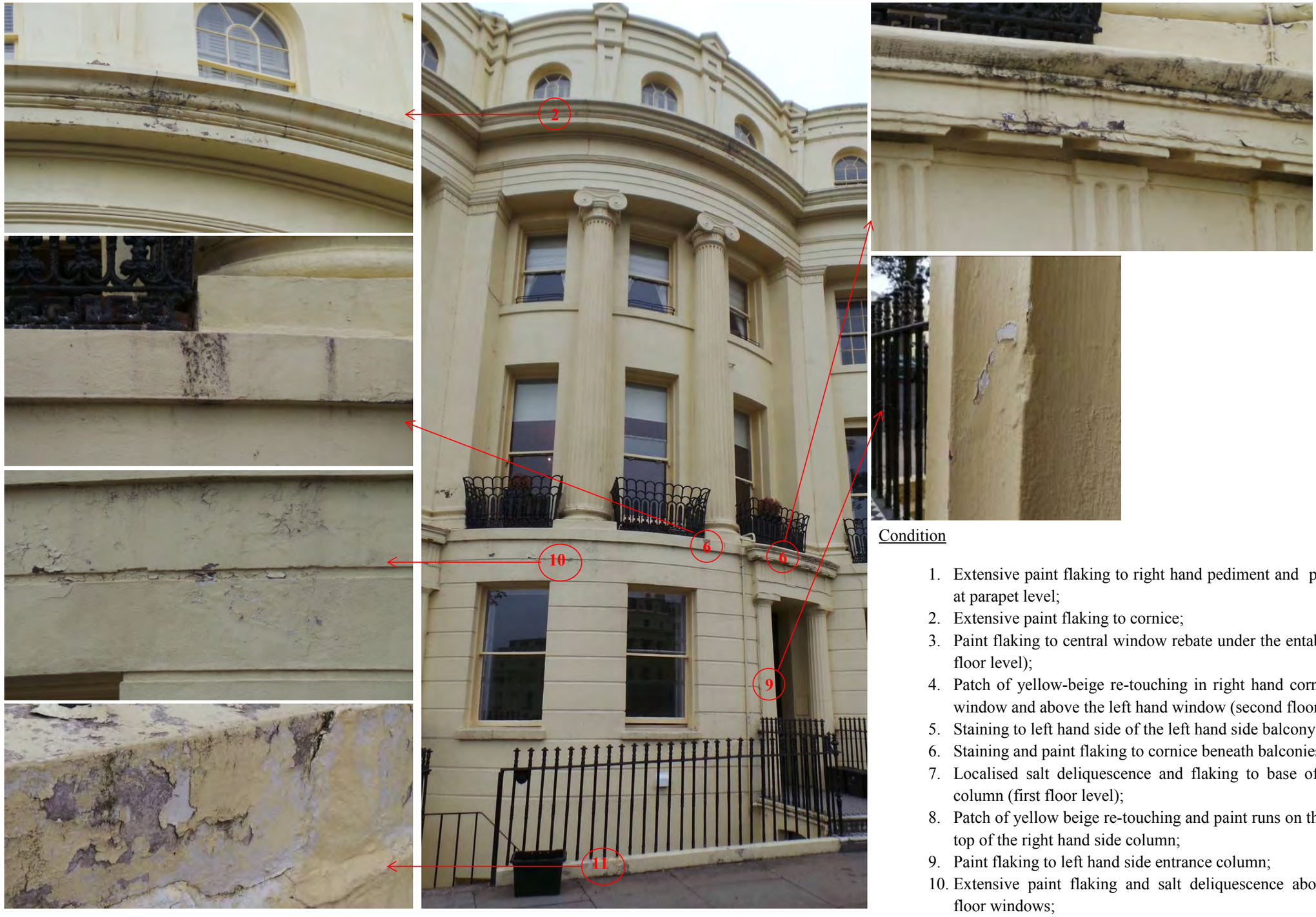
48 Brunswick Square



Condition

1. Extensive paint flaking to panelling at parapet level;
2. Extensive paint flaking to cornice at parapet level;
3. Staining and paint flaking to cornice beneath balconies;
4. Localised salt deliquescence and paint flaking to base of the right hand column (first floor level);
5. Paint flaking underneath the entablature above the second floor central window;
6. Paint flaking to entrance columns and adjacent wall;
7. Paint flaking and salt deliquescence above the ground floor windows;
8. Paint flaking and salt deliquescence to walls at basement and ground floor level.

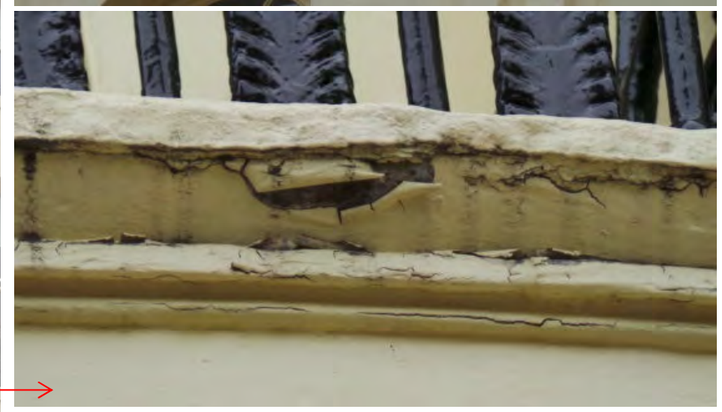
49 Brunswick Square



Condition

1. Extensive paint flaking to right hand pediment and panelling below at parapet level;
2. Extensive paint flaking to cornice;
3. Paint flaking to central window rebate under the entablature (second floor level);
4. Patch of yellow-beige re-touching in right hand corner of the right window and above the left hand window (second floor level);
5. Staining to left hand side of the left hand side balcony;
6. Staining and paint flaking to cornice beneath balconies;
7. Localised salt deliquescence and flaking to base of the left hand column (first floor level);
8. Patch of yellow beige re-touching and paint runs on the capital at the top of the right hand side column;
9. Paint flaking to left hand side entrance column;
10. Extensive paint flaking and salt deliquescence above the ground floor windows;
11. Paint flaking to plinth wall.

50 Brunswick Square



Condition

1. Localised paint flaking on the panelling at parapet level;
2. Extensive paint flaking and salt deliquescence to square pilaster on the left hand side (third floor level);
3. Staining and paint flaking to cornice beneath balconies;
4. Paint flaking to plinth wall.

51 Brunswick Square

Condition

1. Paint flaking to left hand side panelling at parapet level;
2. Paint flaking to base of the right hand side of column of parapet;
3. Paint flaking to front and underside of right hand side cornice;
4. Paint flaking to cornice beneath balconies;
5. Paint flaking to underside of porch;
6. Localised paint flaking to right hand window ledge (ground floor level);
7. Paint flaking and salt deliquescence at basement level;
8. Paint flaking to plinth wall.

52 Brunswick Square

Condition

1. Paint flaking to left and right hand side of the cornice either side of the bowed window at third floor level;
2. Staining and paint flaking to bowed window ledge (second floor level);
3. Localised salt deliquescence and paint flaking to underside of the entablature between the first and second floor ;
4. Staining and paint flaking to cornice beneath balcony;
5. Salt deliquescence to right hand side of first floor window;
6. Extensive paint flaking and salt deliquescence at basement level;
7. Paint flaking to plinth.

53Brunswick Square

Condition

1. Generally the façade appears to be in reasonably good condition;
2. Paint flaking to right hand side panelling at parapet level (third floor level);
3. Salt deliquescence to centre of the cornice;
4. Damaged and partly missing scroll detail on the right hand side of the left ionic capital (second floor level);
5. Localised salt deliquescence on the wall beneath the ground floor windows (first floor level);

54Brunswick Square

Condition

1. Paint flaking to left and right hand side of the panelling at parapet level;
2. Localised staining and paint flaking to cornice;
3. Extensive staining beneath balcony;
4. Salt deliquescence on the wall between the ground floor and basement levels.

55Brunswick Square

Condition

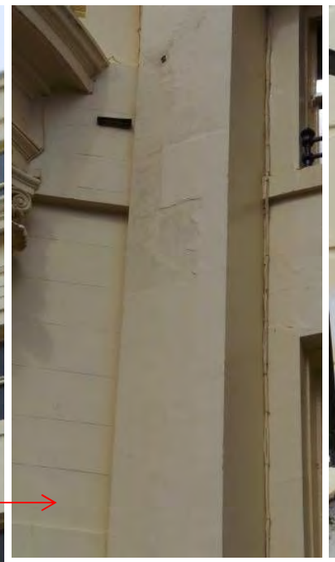
1. Paint flaking to panelling at parapet level;
2. Paint flaking to wall adjacent the right hand side of the left hand column (second floor level);
3. Paint flaking to cornice and under the entablature (second floor level);
4. Staining and paint flaking to cornice beneath balconies;
5. Localised salt deliquescence and paint flaking to underside of the porch;
6. Paint flaking to entrance columns;
7. Salt deliquescence on the wall above the ground floor windows ;
8. Paint flaking on the masonry below the railings adjacent the front door and the pavement.

56 Brunswick Square

Condition

1. Generally the façade appears to be in reasonably good condition;
2. Paint flaking on the bottom of the left hand side of the pediment at parapet level;
3. Staining to cornice beneath balcony;
4. Salt deliquescence and paint flaking on the interior of the porch;
5. Ferrous staining and paint flaking on the masonry below the railings adjacent the front door and the pavement.

57Brunswick Square



Condition

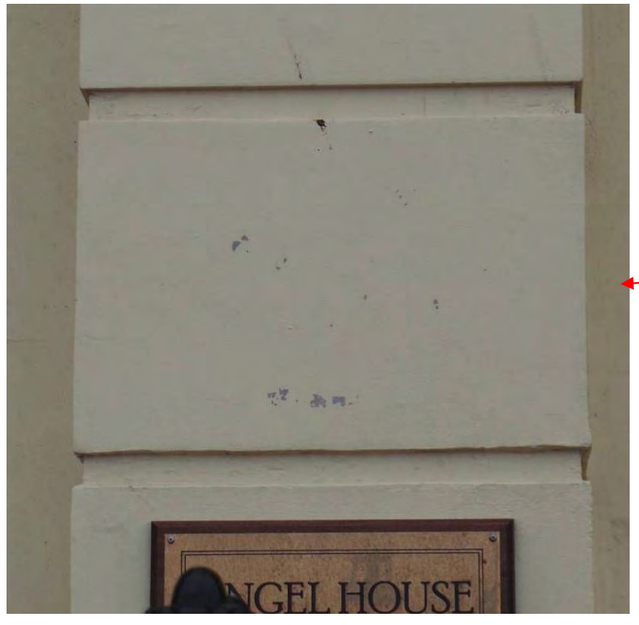
1. Staining and paint flaking on the cornice;
2. Salt deliquescence on the wall beneath the second floor window and on the adjacent square column on left hand side;
3. Staining on the cornice beneath balconies;
4. The ground floor walls and columns have been primed in areas possibly in preparation for an over paint.

58Brunswick Square

Condition

1. Generally the façade appears to be in reasonably good condition.
2. Ferrous staining under the central and flanking left hand side window beneath balconies;
3. Paint flaking on the masonry below the railings adjacent the front door and the pavement;
4. Paint flaking on the basement window ledges.

4.2 1 Brunswick Terrace



Condition

1. Minor losses and flaking to cornice moulding;
2. Localised flaking and discoloration, evidence of previous repairs;
3. Minor losses around doorway;
4. Basement and plinth wall generally in good order.

2 Brunswick Terrace

Condition

Good condition overall;

1. Staining, possibly run-off from balustrading;
2. Minor flaking to cornice moulding;
3. Minor flaking to left-hand wall, i.e. side wall of no. 3;
4. Flaking to basement;
5. Plinth generally good.

3 Brunswick Terrace

Condition

1. Small, localised losses along parapet moulding;
2. Failure to recess of pediment and cornice over second floor;
3. Localised losses to columns, with base to far right column significantly worse;
4. Losses, salt blistering and flaking across ground and basement levels;
5. Losses, flaking and ferrous staining to plinth wall.

4 Brunswick Terrace

Condition

1. Minor losses along top edge of parapet moulding;
2. Minor, localised losses and flaking in recesses of pediment and cornice over second floor;
3. Flaking to column bases;
4. Replacement concrete lintel/render installed over entrance;
5. Significant losses to entrance and basement with some evidence of salting;
6. Moderate losses, ferrous staining and flaking to plinth wall.

5 Brunswick Terrace

Condition

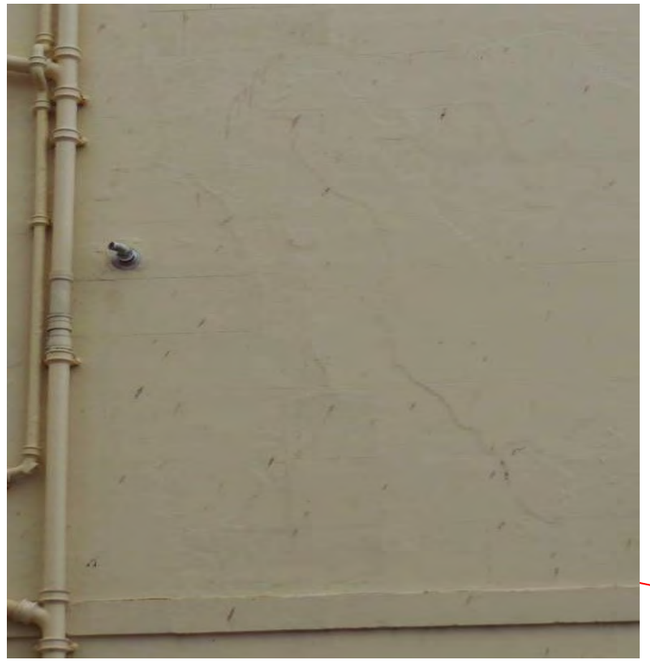
1. Minor losses to uppermost parapet detail;
2. Staining and minor losses to moulded cornice;
3. Cracking and staining to canopy recess over first-floor;
4. Ferrous staining around downpipe to right-hand side;
5. Substrate cracking and ferrous staining to plinth wall;
6. Porch appears to be painted/retouched in a different shade.

6 Brunswick Terrace

Condition

1. Damaged drip detail to projecting cornice detail;
2. Minor flaking and losses to cornice recess over right-hand window to second storey;
3. Minor, localised loss at second-storey level to left-hand ionic column and at rustication indent to left of ground-floor window
4. Some blistering of paint surface to right-hand flat column;
5. Losses along balcony edge and column bases to first-floor;
6. Localised flaking and ferrous staining to plinth wall;
7. Blistering at basement level.

6 Brunswick Terrace (Waterloo Street Elevation)



Condition

1. Drain-pipe and wiring systems exhibiting failure to surrounding areas;
2. Evidence of previous repairs to flat surface of first-floor;
3. Blistering and minor losses to projecting rusticated column base;
4. Slight ferrous staining to plinth wall.

6 Brunswick Terrace – (Waterloo Street Elevation contd.)

Condition

1. Failure above windows and in reveals to all top three storeys, with evidence of previous repairs;
2. Flaking under balcony, bow and entrance areas;
3. Peeling and salting to entire porch area;
4. Flaking to bow-window sill;
5. Basement generally poor with extensive flaking and blistering

6 Brunswick Terrace (Waterloo Street Elevation contd.)

Condition

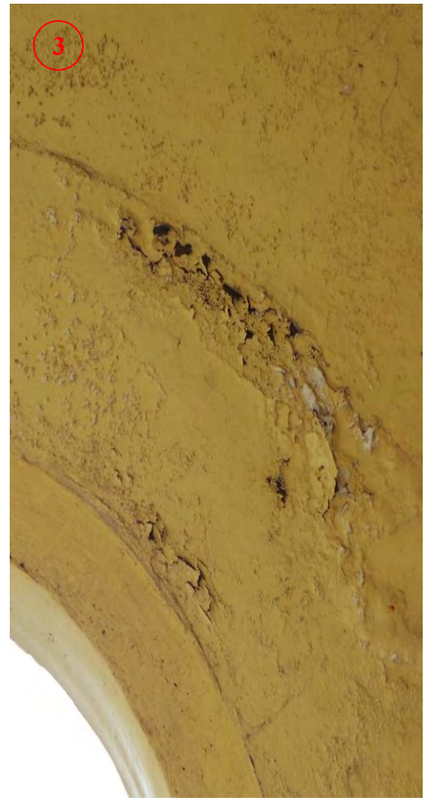
1. Minor failure along length of cornice;
2. Localised failure along string-course and down-pipe to far right first-floor window;
3. Localised failure to window reveals;
4. Localised failure to flat section of bow under second-storey sill;
5. Failure to rustication around ground-floor bow;
6. Rusticated boundary wall failing with thicker islands of historic paint schemes.

7 Brunswick Terrace (Brunswick Terrace Elevation)

Condition

1. Slight ferrous staining from balustrade and cracking to first floor balcony areas;
2. Minor ferrous staining and losses to low plinth wall;
3. Basement generally good.

7 Brunswick Terrace (Waterloo Road Elevation)



Condition

1. Localised losses along stepped, projecting string-course;
2. Minor ferrous staining to second-floor windows;
3. Flaking, cracking and blistering to internal and external porch area, likely due to salt action;
4. Ferrous staining to plinth wall;
5. Salt blistering to basement level, particularly around downpipe.

7 Brunswick Terrace (Waterloo Road Elevation contd).

Condition

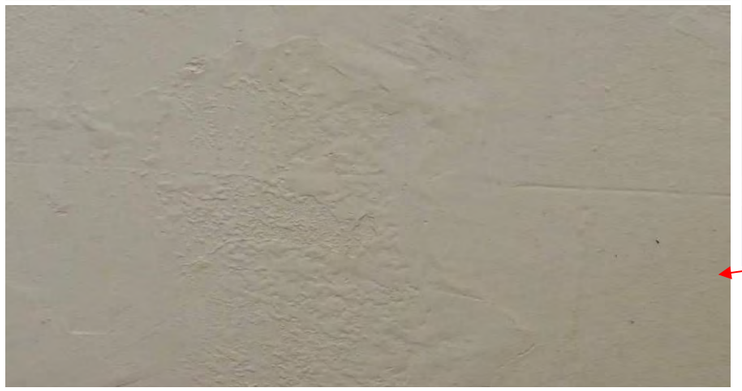
1. Large patch of rough finish flat roof extension;
2. Occasional fractures, but paint adhering well overall;
3. Plinth and railings significantly better to right of door – less exposed to sea environment;
4. Basement generally good.

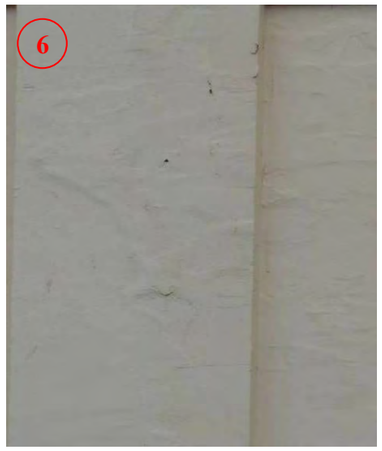
8 Brunswick Terrace

Condition

1. Localised defects and losses to stepped cornice under parapet;
2. Blisters and losses to column decoration;
3. Fractures between second-floor and first-floor windows;
4. Failure possibly associated with downpipe to right-hand side;
5. Failure and staining to rustication under balustrade;
5. Ferrous staining and losses to plinth wall;
6. Salt blistering and losses to basement.

9 Brunswick Terrace





Condition

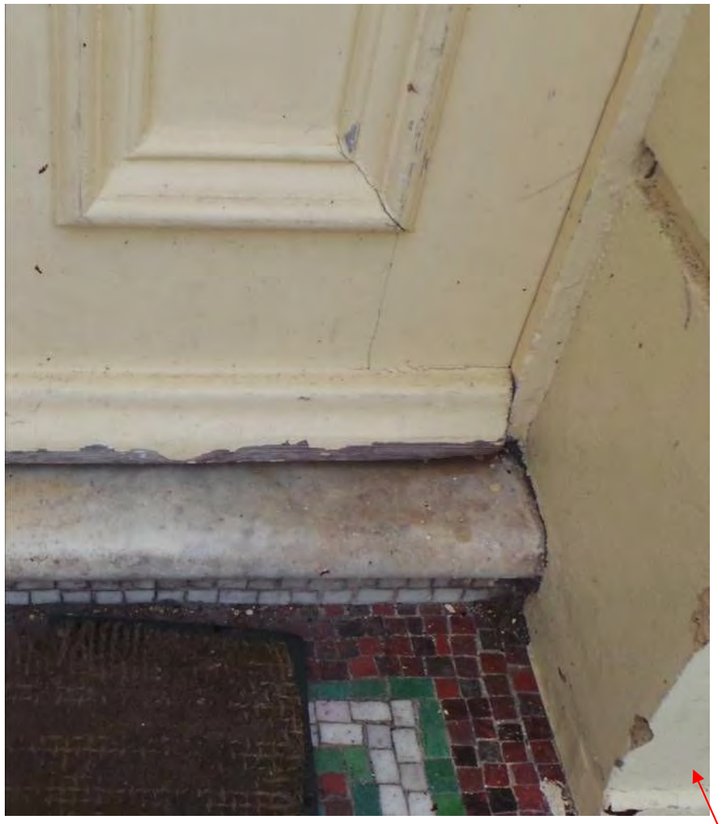
1. Some fracturing and loss to stepped eaves feature;
2. Large, singular loss to central column;;
3. Long vertical fracture to far right column;
4. Staining and minor blistering to rustication immediately under balcony;
5. Localised losses around doorway;
6. Patches of uneven surface across facade;
7. Localised deterioration to plinth walls;
7. Salt blistering to basement level.

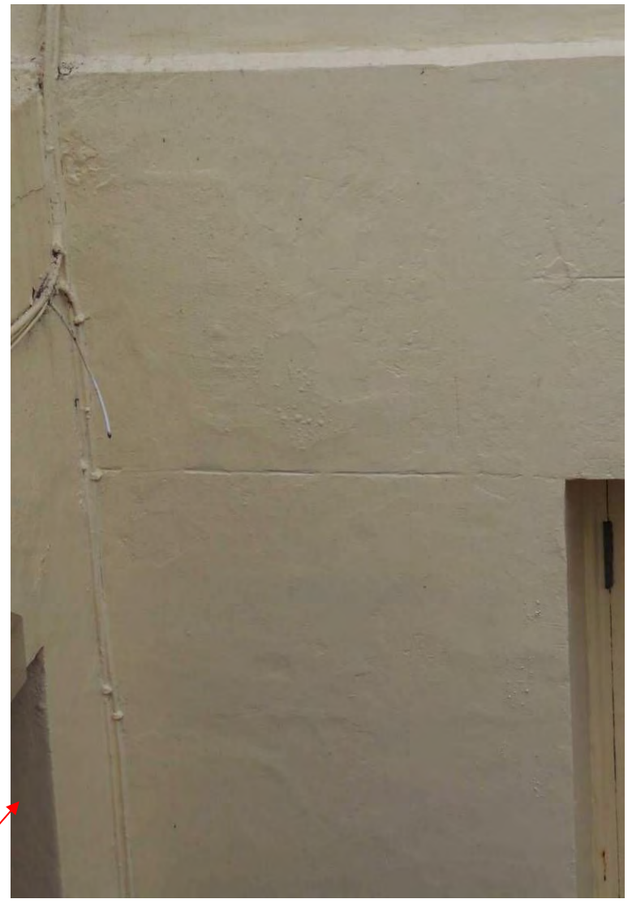
10 Brunswick Terrace

Condition

1. Patchy colouring to flat section immediately above columns and along centre right column;
1. Ferrous staining and losses to plinth wall;

11 Brunswick Terrace

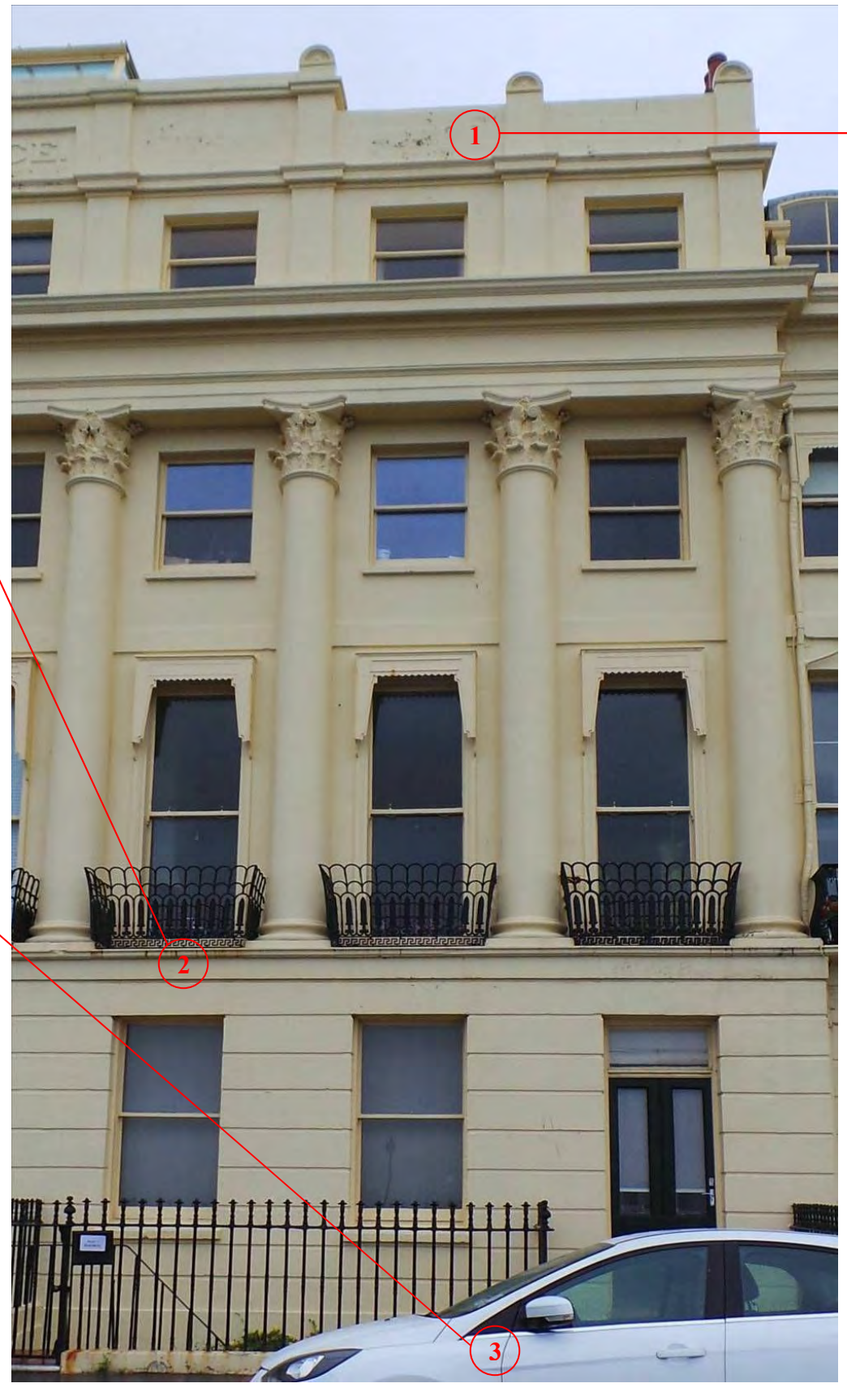




Condition

2. Losses due to wear to base of door – to be expected;
3. Ferrous staining and losses to plinth wall;
4. Salts blistering through at basement level.

12 Brunswick Terrace



Condition

1. Clusters of minor losses to parapet;
2. Flaking to rustication above ground-floor windows;
3. Ferrous staining and losses to plinth wall.

13 Brunswick Terrace

Condition

1. Flaking to flat and detailed areas at high level;
2. Minor losses and blistering, possibly due to salt action, over ground-floor windows and around doorway;
3. Small losses and ferrous staining to plinth wall;
4. Localised salt blistering to basement level.

14 Brunswick Terrace

Condition

1. Cracking to parapet, possibly due to defects in substrate;
2. Flaking between columns in recesses of cornice;
3. Failure at column bases;
4. Very poor, uneven appearance to ground-floor rustication
5. Localised salt blistering;
6. Localised failure and ferrous staining to plinth.

15 Brunswick Terrace

Condition

1. Flaking to high-level cornice, possibly due to defects in stucco-work;
2. Localised blistering and losses, particularly to entrance;
3. Losses and ferrous staining to plinth wall;
4. Losses at basement level.

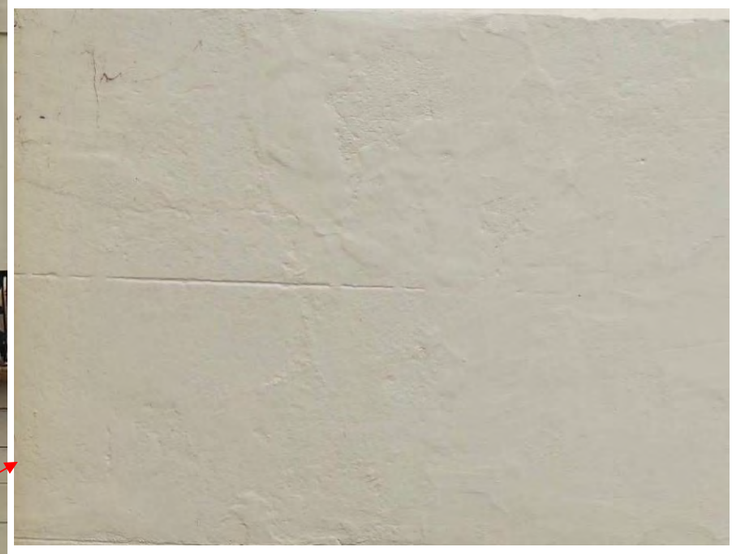
16 Brunswick Terrace

Condition

Geneally good at high level;

1. Isolated loss to centre-left column at second-floor level;
2. Uneven surface across entire first and second floors;
3. Ferrous staining and losses to plinth wall;
4. Losses and blistering ant basement level.

17 Brunswick Terrace



Condition

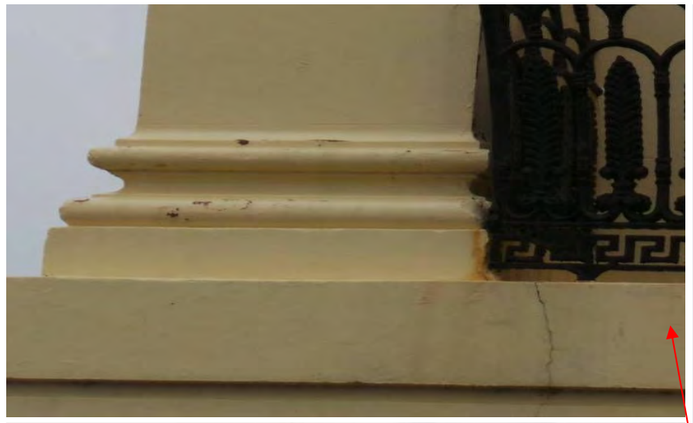
1. Failure to high level cornice, due to cracks within substrate;
2. Peeling to window recesses;
3. Staining and loss to canopy overhang;
4. Losses and ferrous staining to plinth wall;
5. Blistering due to salt action at basement level.

18 Brunswick Terrace

Condition

1. Failure to high level cornice, due to cracks within substrate;
2. Cracking and staining to underside of balcony;
3. Ground floor rustication very uneven appearance;
4. Losses, flaking, salt blistering at ground-floor and basement level – particularly around entrance;
5. Losses and ferrous staining to plinth wall;

19 Brunswick Terrace (Brunswick Terrace Elevation)



Condition

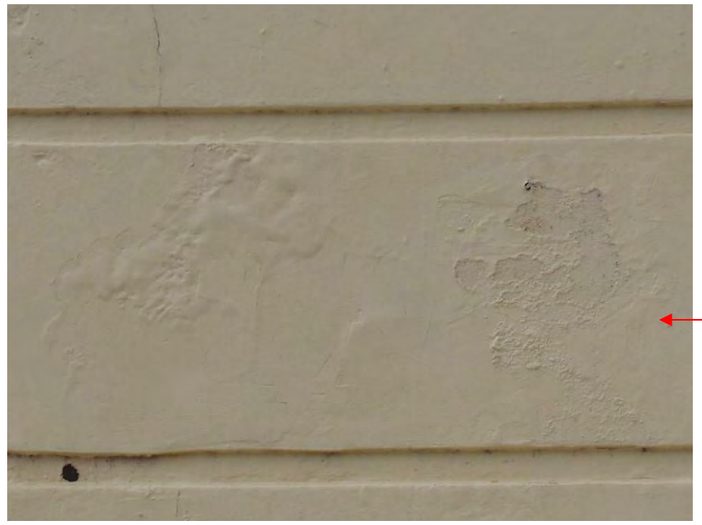
1. Flaking to underside of cornice;
2. Blistered, spalled area to far right column;
3. Ferrous staining and substrate fracturing under balconies;
4. Minor losses to far left column base;
5. Localised losses and substrate fracturing to ground floor;
6. Moderate losses and ferrous staining to plinth wall.

19 Brunswick Terrace (Brunswick Square Elevation)

Condition

1. Localised failure to high level;
2. Cracking and losses to far right column;
3. Localised losses and flaking due to substrate cracking;
4. Blistering surface due to salt action at basement level;
5. Moderate losses and ferrous staining to plinth wall.

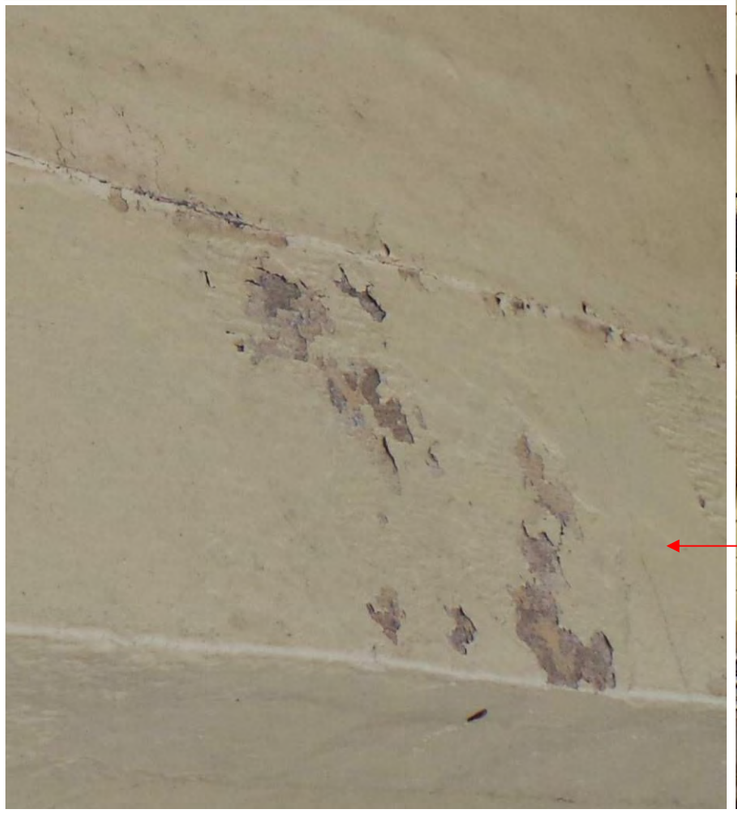
20 Brunswick Terrace (Brunswick Square Elevation)



Condition

1. Losses to cornice and string-course detail due to substrate cracking – evidence of previous repairs;
2. Ground-floor and basement levels riddled with blisters, flaking paint and losses as a result of salt action;
3. Minor losses and ferrous staining to plinth wall.

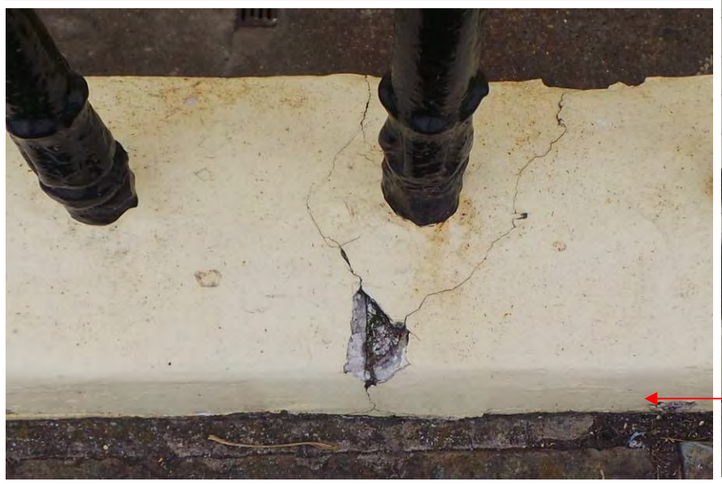
20 Brunswick Terrace (Brunswick Terrace Elevation)



Condition

1. Cracks, fissures and minor flaking to stepped cornice and string-course detail at high levels;
2. Very minor losses to all column bases;
3. Some ferrous staining run-off from iron balcony;
4. Minor losses to ground-floor window cills;
5. Substrate cracking, minor losses and ferrous staining to plinth wall.

21 Brunswick Terrace



Condition

1. Patchy surface to cornice;
2. Flaking and staining to underside of balcony and upper section of ground-floor rustication;
3. Uneven surface, possibly due to salt action, around ground-floor windows, historic losses evident;
4. Very minor losses and substrate cracking to plinth wall.

22 Brunswick Terrace

Condition

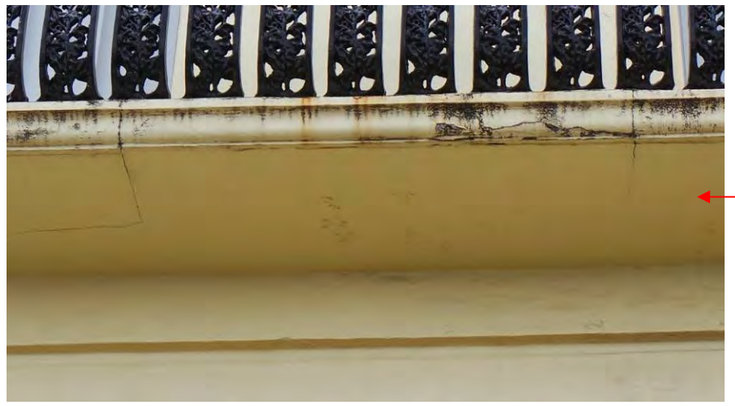
1. Substrate cracking and paint flaking to high-level cornice;
2. Substrate cracking and extensive salt damage – blistering, flaking and losses -across ground-floor rustication;
3. Substrate cracking and ferrous staining to plinth wall.

23 Brunswick Terrace

Condition

1. Localised cracking and flaking to parapet;
2. Staining and flaking to ground-floor rustication immediately under balcony;
3. Salt blistering to basement level;
4. Losses ferrous staining to plinth wall.

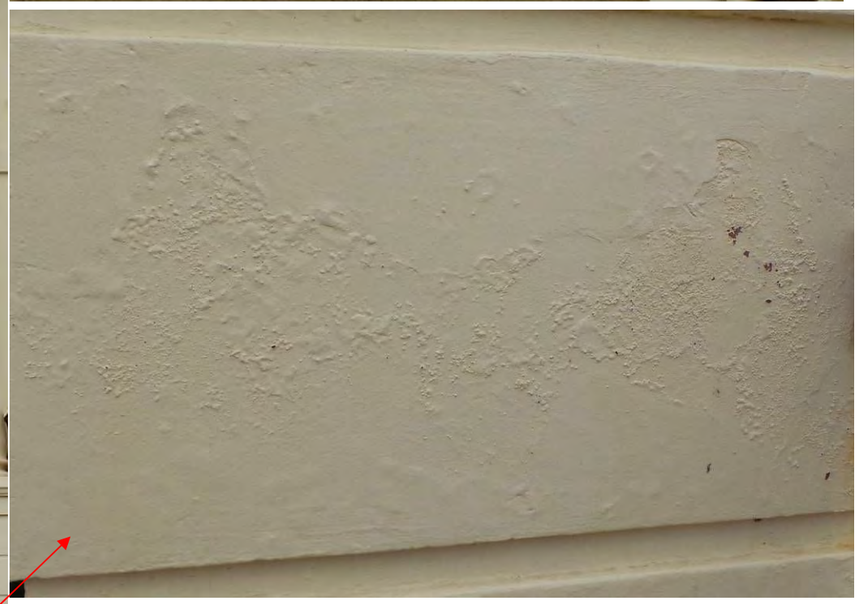
24 Brunswick Terrace



Condition

1. Minor cracking to cornice with subsequent flaking;
2. Patchy, salt-blistered surface to left-hand column;
3. Substrate cracking, staining and flaking to underside of canopy;
4. Substrate cracking, losses and ferrous staining to plinth wall;
5. Cracking and losses to window cill at basement level.

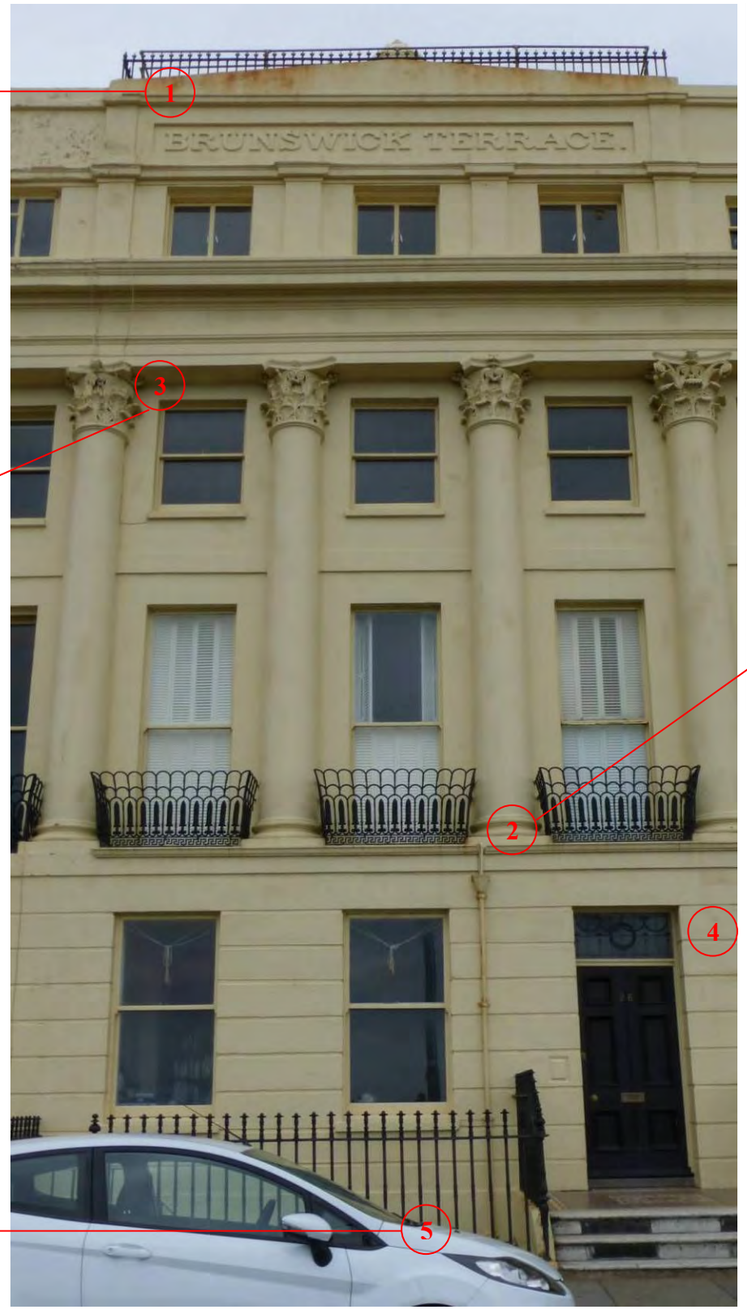
25 Brunswick Terrace

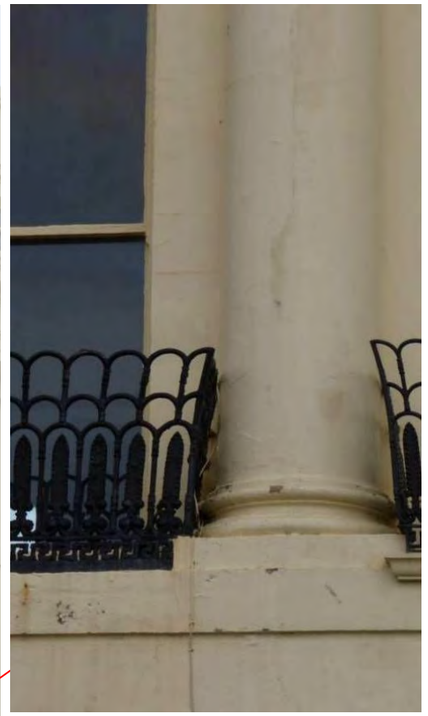


Condition

1. Minor flaking to underside of cornice over second-floor;
2. Salt-staining and localised failure to columns at second-floor level;
3. Substrate cracking, salt eruption and losses to ground-floor level – particularly around doorway;
4. Substrate cracking, uneven surface and salt eruption at basement level;
5. Plinth wall in excellent condition.

26 Brunswick Terrace

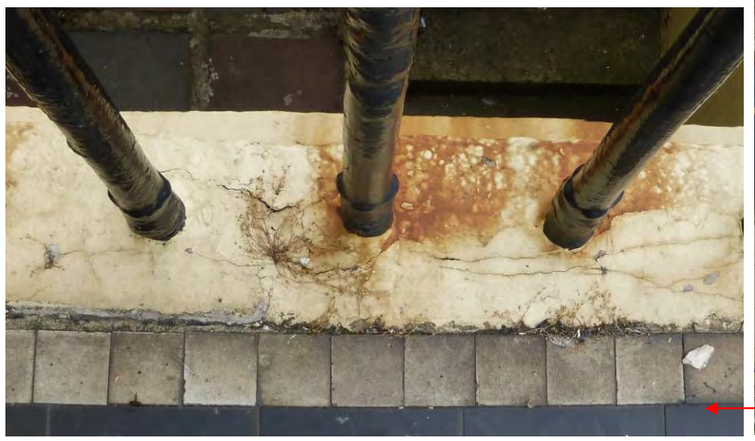




Condition

1. Staining at high-level due to railing behind pediment parapet;
2. Substrate cracking and staining to far right column, with minor losses at base;
3. Flaking and staining to cornice overhang and window reveals to second-floor;
4. Flaking to right of doorway may relate to run-off from column above; generally, patchy, uneven surface due to salt eruptions at ground-floor level;
5. Ferrous staining and losses to plinth wall; worse than others, possibly not painted during last decorative phase.

27 Brunswick Terrace



Condition

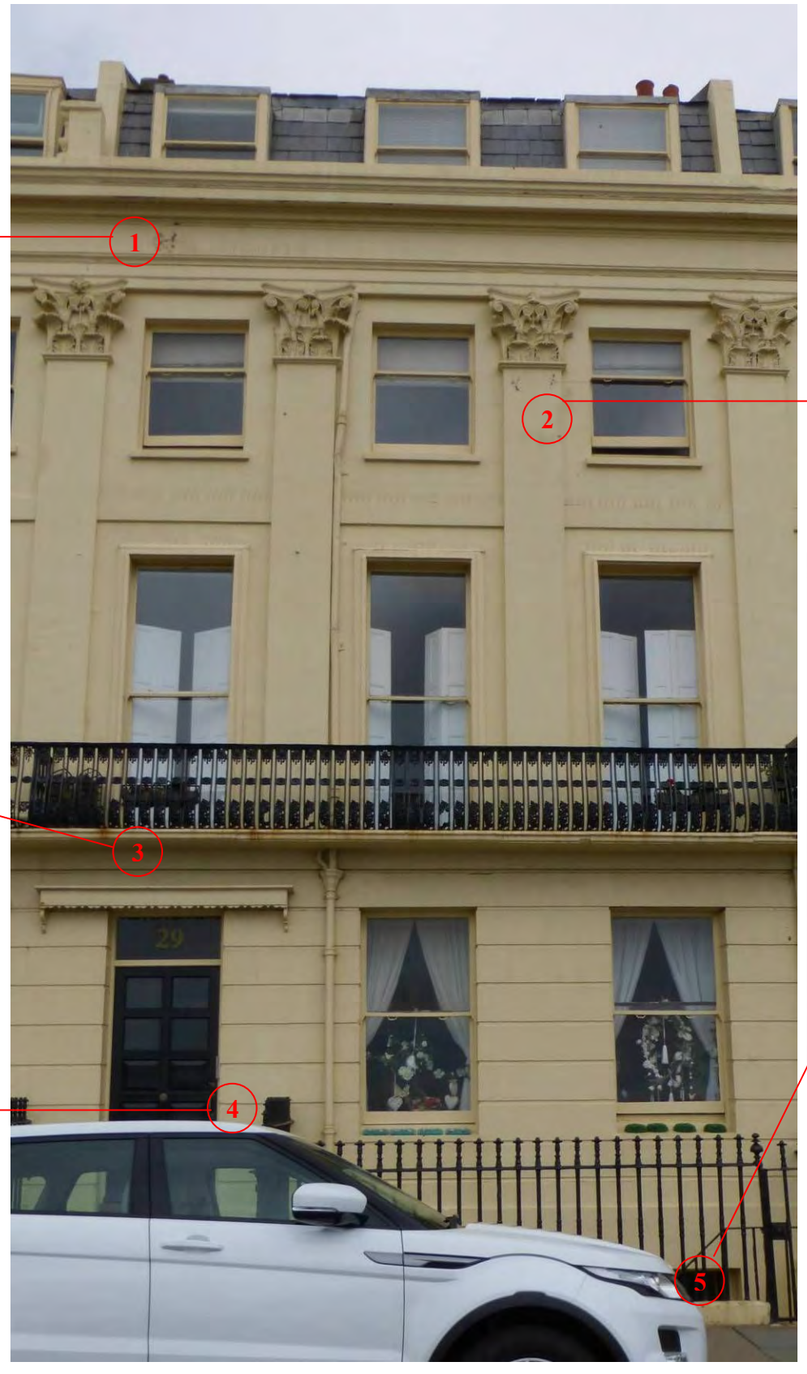
1. Failure generally across parapet and third-floor - possibly exacerbated by substrate cracking to upper cornice and damaged flashing;
2. Localised, minor losses across first and second floors;
3. Extensive losses to column bases and ground-floor rustication;
4. Flaking and salt eruptions to ground-floor and basement levels;
5. Islands of paint appearing to retain earlier layers revealed around entrance, but many areas stripped to substrate – possibly attempted to achieve thick and thin films when painting;
6. Ferrous staining and losses to plinth wall.

28 Brunswick Terrace

Condition

1. Diagonal crack extending from cill of far left window to second-floor to lintel of second-floor window beneath – not causing paint disruption at present;
2. Staining run-off along edge of balcony and over doorway;
3. Ferrous staining from downpipe to right-hand side;
4. Flaking and salt-eruption across basement level;
5. Very slight flaking to plinth wall – generally excellent.

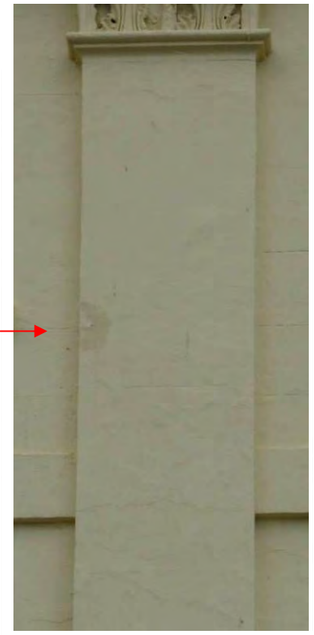
29 Brunswick Terrace



Condition

1. Localised failure and loss from eaves-detail to column capitals at second-floor level;
2. Patchy, salt-erupted surface with localised losses to columns;
3. Ferrous staining and slight substrate fracturing under balconies;
4. Islands of thicker paint around entrance with minor losses to bare substrate;
5. Large patch of flaking and lost paint to under-croft;
6. Slight ferrous run-off from railings to plinth, but generally very good condition.

30 Brunswick Terrace



Condition

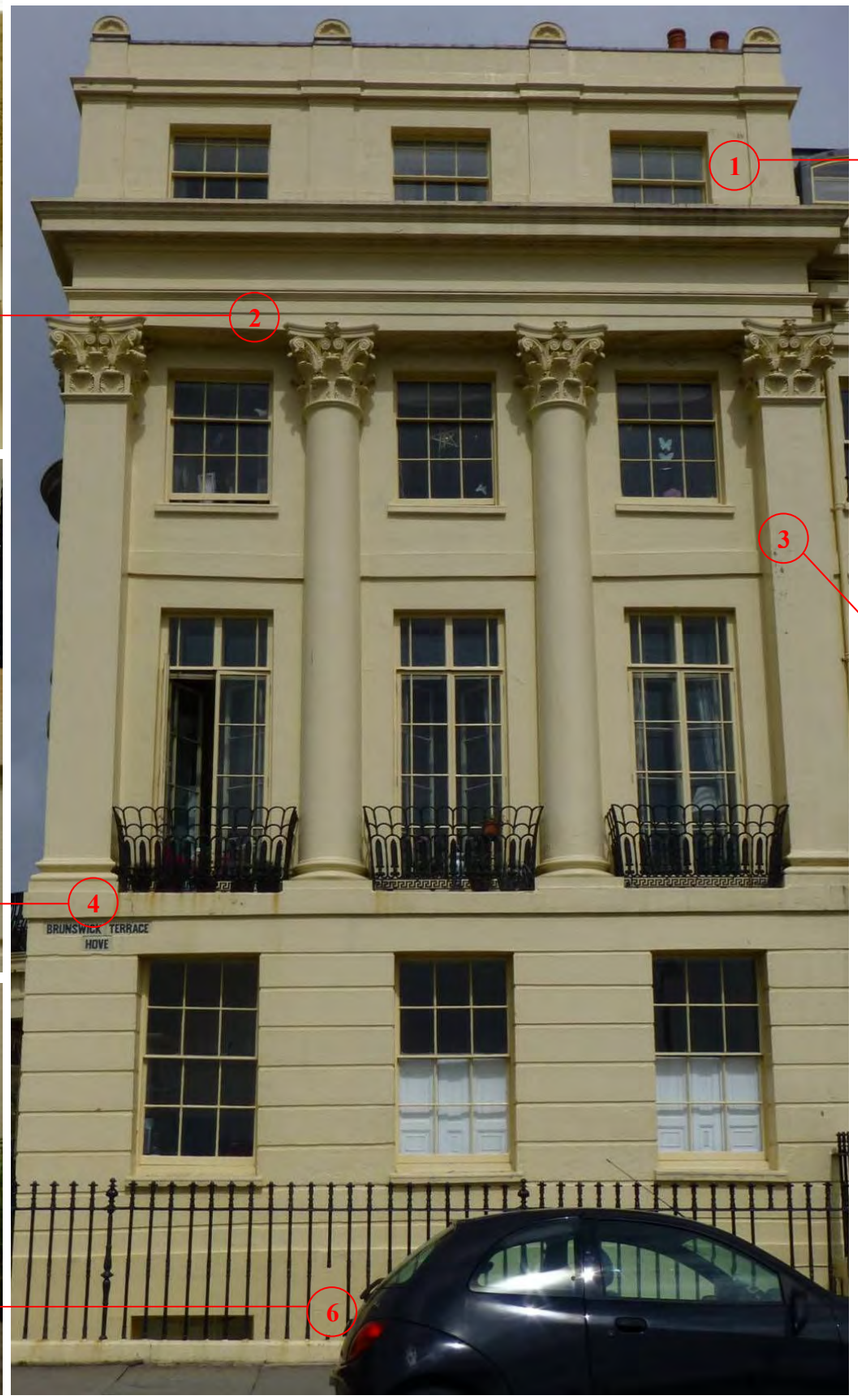
1. Patches of discoloration to columns, with minor losses to far left column;
2. Fracturing, staining and flaking under balcony – nos. 28 and 29 have flashing to underside of balcony, but appears to be missing from this property;
3. Flaking to ground-level generally located around downpipe;
4. Extensive losses to plinth revealing bare substrate.

31 Brunswick Terrace

Condition

1. Very patchy appearance across ground and basement levels – seems to have been touched in with different shades
2. Minor losses and slight ferrous staining to plinth wall.

32 Brunswick Terrace (Brunswick Terrace Elevation)



Condition

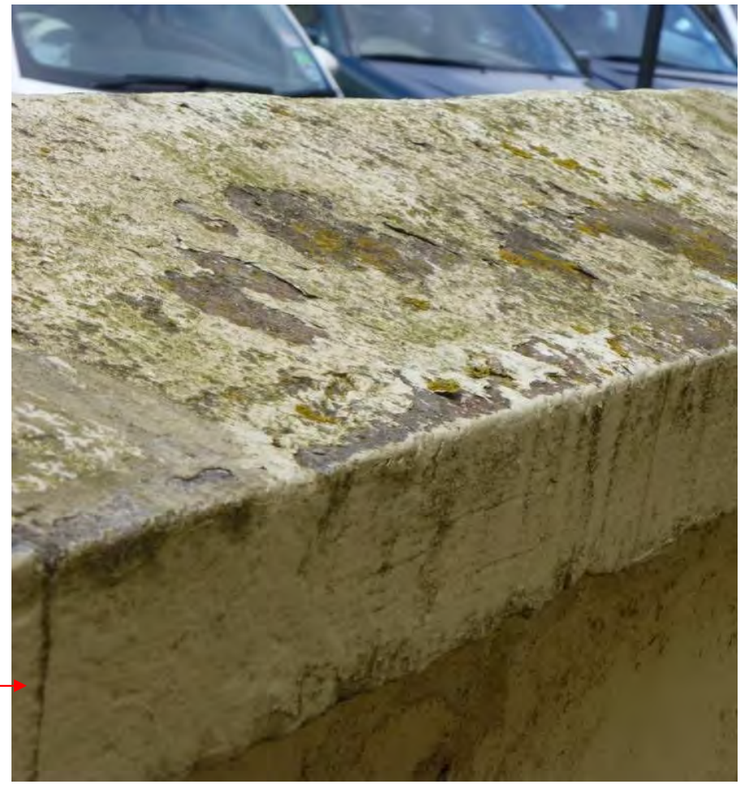
1. Substrate cracking evident at high level with areas of paint loss;
2. Extensive flaking to all recesses of stepped cornice;
3. Uneven surface and losses to far right column;
4. Fractures, minor losses and ferrous staining to balcony;
5. Substrate fractures and flaking to ground-floor level;
6. Localised flaking to basement area;
7. Slight ferrous staining and losses to plinth wall, but generally quite good.

32 Brunswick Terrace (Lansdowne Place Elevation)

Condition

1. Flaking to underside of cornice wrapping around from Brunswick Terrace elevation;
2. Extensive failure and loss to entire bow porch entrance, this is presumably due to water ingress from balcony above and salt action;
3. Minor flaking and staining to plinth wall.

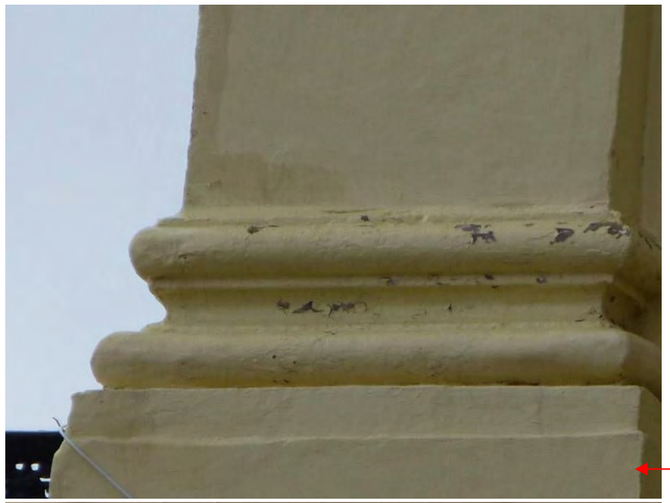
32 Brunswick Terrace (Lansdowne Place Elevation contd.)

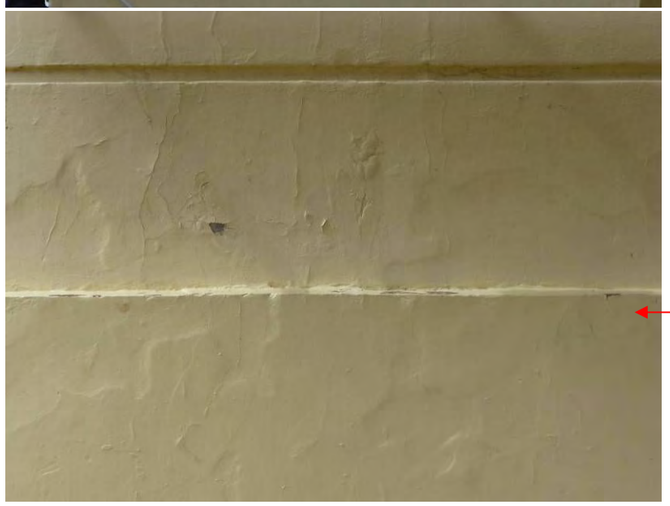


Condition

1. Boundary wall to lower level extension exhibiting extensive cracking, flaking, loss and algae growth;
2. Vast patches of salt eruption at basement level.

33 Brunswick Terrace (Lansdowne Place Elevation)





Condition

1. Scaffolding inhibited inspection, but cracking and losses were noted to parapet and third-floor;
2. Localised failure across facade;
3. Historic patching to walls at ground and basement level;
4. Failure due to salt action around entrance;
5. Areas of underlying disruption, not affecting paint system at present.

33 Brunswick Terrace (Brunswick Terrace Elevation)

Condition

1. Minor localised loss to third-floor;
2. Cracking through cornice – very minor losses at present;
3. Flaking, fissures and salt-eruption to upper section of ground-floor rustication – particularly to window reveals;

34 Brunswick Terrace

Condition

1. Uneven, salt-disrupted surface to central-right column with minor losses;
2. Salt-eruption, flaking and losses to entrance.

35 Brunswick Terrace

Condition

1. High level good with localised failures only;
2. Some failure to left-hand window to ground-floor;
3. Minor salting at mid-wall level between ground-floor and basement – paints appear thinner here.

36 Brunswick Terrace

Condition

1. Slight patchy appearance to upper levels;
2. Peeling to entrance area;
3. Discoloration under balcony.

37 Brunswick Terrace

Condition

1. Localised failure to cornice over third and second-floor windows, relating to cracks within substrate;
2. Two large blisters to mid-wall on first floor – failure imminent;
3. Minor failing to underside of balcony.

38 Brunswick Terrace

1. Failure at high-level cornice below balustrade and extending to wall below;
2. Very minor staining and substrate cracking to underside of balcony;
3. Isolated salt-eruption to top right-hand corner of entrance.

39 Brunswick Terrace

Condition

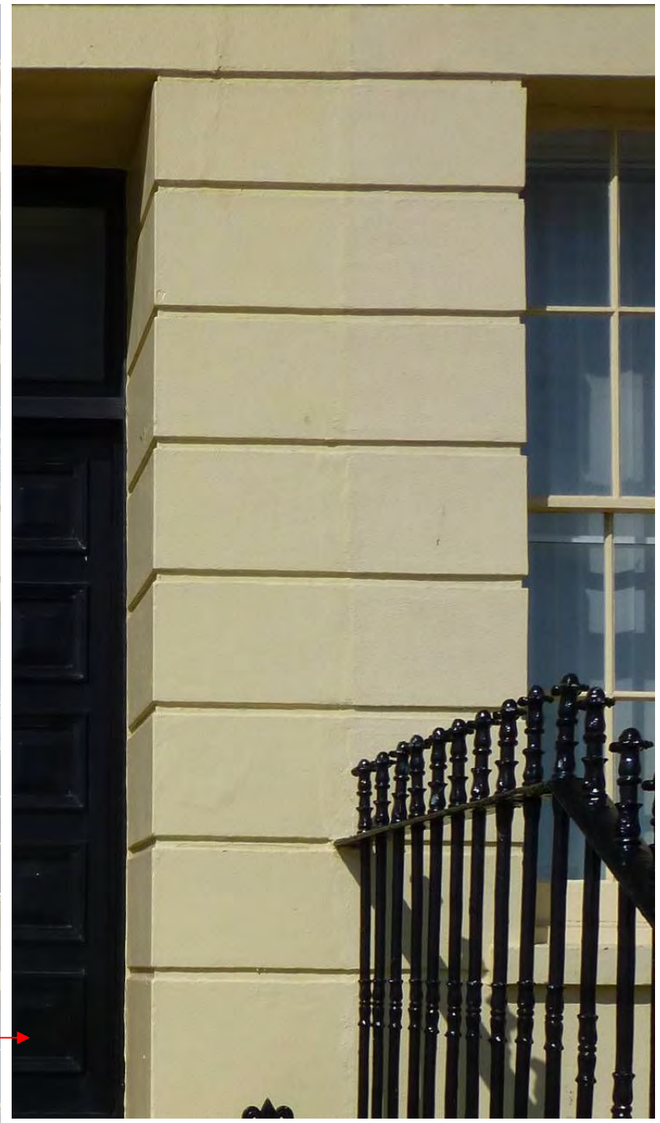
1. Localised failure at high-level within balustrade;
2. Large area of rust staining due to fixing within balustrade;
3. Noticeable fractures within cornice;
4. Salt blistering and flaking to underside of doorway;
5. Some salt eruptions to basement level.

40 Brunswick Terrace

Condition

1. Different colour and finish to adjacent property 39;
2. Localised failure at high-level;
3. Salt-disrupted surface and flaking to ground-floor rustications;
4. Paint has delaminated to underside of doorway.

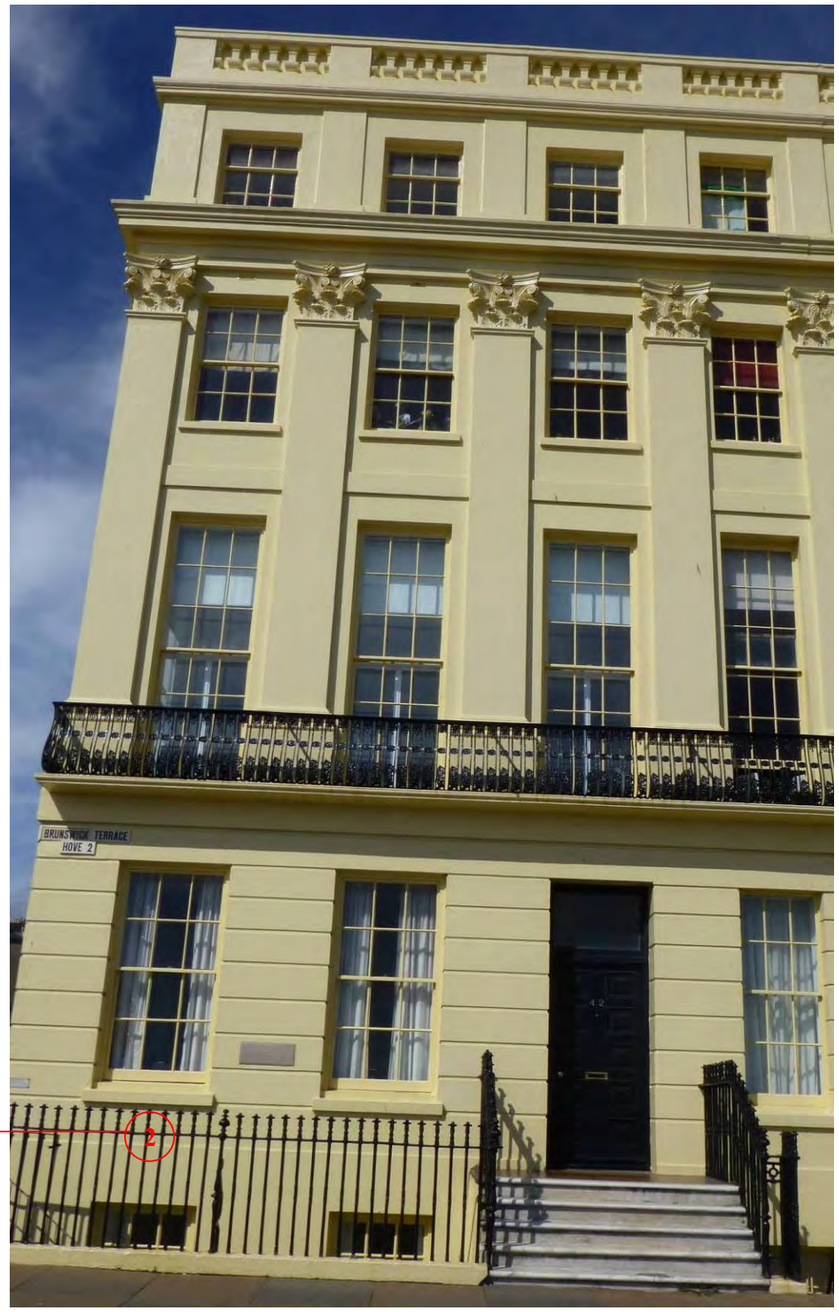
41 Brunswick Terrace



Condition

1. Possibly painted recently, excellent condition overall;
2. Different colour and finish to adjacent property 40;
3. Localised areas of uneven surface.

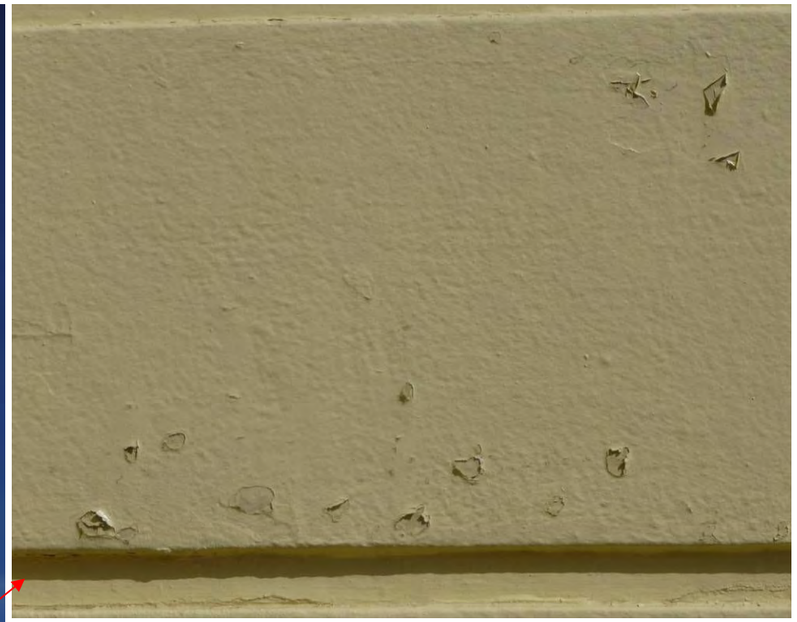
42 Brunswick Terrace (Brunswick Terrace Elevation)



Condition

1. Possibly recently decorated, excellent condition overall;
2. One isolated area of flaking to ground-floor rustication.

42 Brunswick Terrace (Holland Road Elevation)



Condition

1. Possibly recently decorated, generally excellent condition;
2. Localised areas of flaking, particularly to window reveals;
3. Ferrous staining to plinth wall.

42 Brunswick Terrace (Holland Road Elevation contd.)

Condition

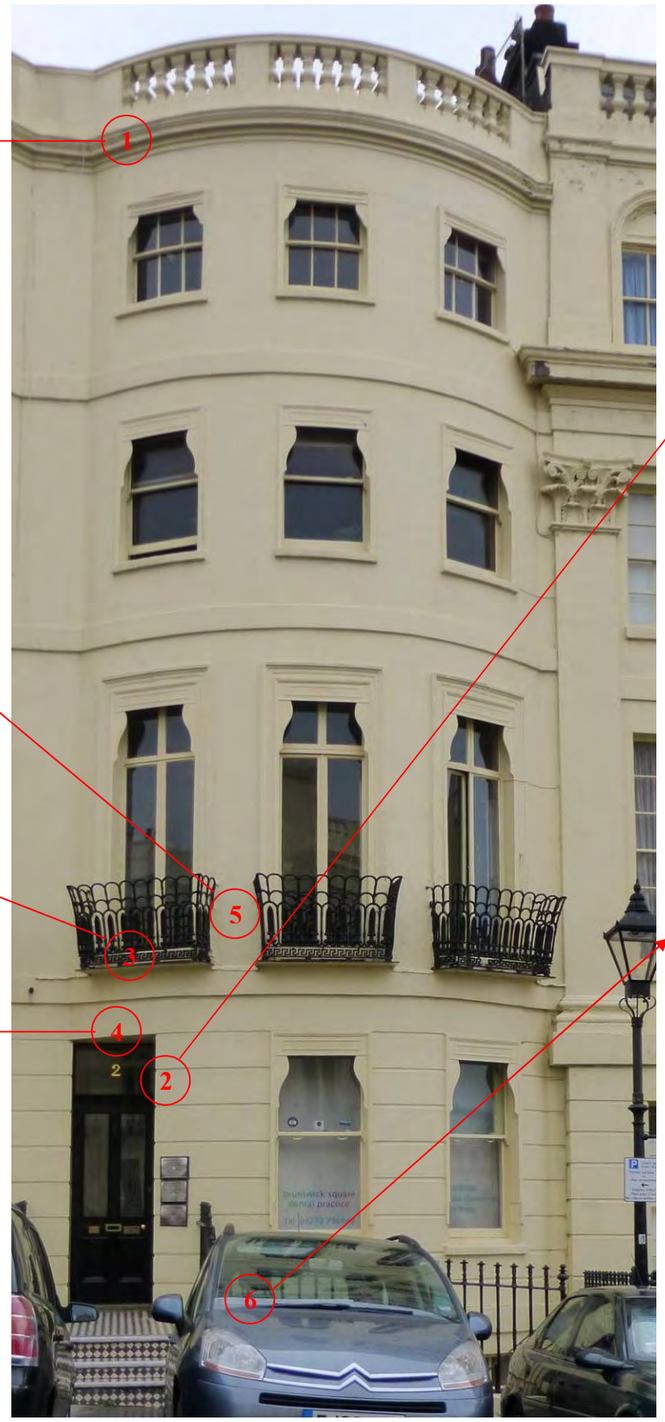
1. Salt eruption between third-floor windows to bow; further failure imminent;
2. Loss of sill to right-hand window of second-floor may cause on-going failure;
3. Small area of flaking to flat area above door;
4. Flaking to window reveals;
5. Inevitable failure to street side of basements.

4.3 1 Brunswick Place

Condition

1. Balustrade to parapet generally good;
2. Flat areas above and around third floor windows failing;
3. Some failure to lower parapet edge – generally related to cracks;
4. Disruption in overall paint finish (though not severe at present);
5. Localised failure to lower right of balcony
6. Some modern finishes indicating earlier defects;
7. Flaking to plinth wall.

2 Brunswick Place



Condition

Generally good;

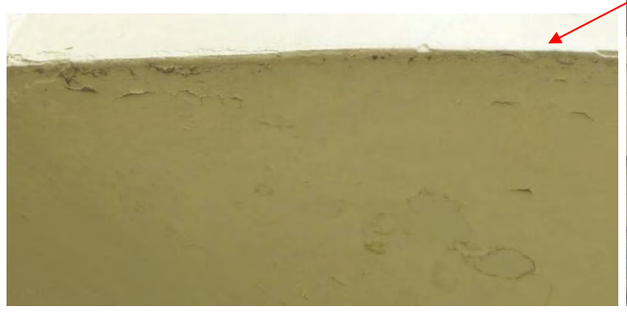
1. Some defects to high-level cornice below balustrade
   - usually affected by fractures and substrate;
2. Impact from adjacent wires;
3. Flaking to underside of balcony;
3. Localised flaking to right of door;
4. Flaking to entrance area walls;
5. Remains of earlier paint system flaking;
6. Cracking and flaking to plinth wall.

3 Brunswick Place

Condition

1. Localised failure to high-level cornice
   – particularly near wires and right-hand corner;
2. Failure and losses to banding below terrace and balcony
   - affecting high-level rustication;
3. Staining from far right balcony over doorway;
4. Excessive losses and flaking to plinth wall;
5. Some salt eruption at basement level, but generally good.

4 Brunswick Place



Condition

1. Failure at high level – some relate to cracks, but mostly general spalling;
2. Failure around downpipe at ground-floor level;
3. Flaking to underside balcony - expected;
4. Flaking to higher rustications possibly due to run-off from balconies;
5. Minor losses to doorway;
6. Excessive losses and flaking of plinth wall;
7. Basement level generally good – minor failing to window reveal.

5 Brunswick Place

Condition

1. Parapet balustrade in good order;
2. Minor, localised damage to cornice and string-courses– possibly due to substrate damage/ineffective drip detailing;
3. Some flaking to ground-floor level revealing smooth substrate;
4. Column to left of doorway exhibiting blistering from salts, but not disrupting paint at present;
5. Salt eruptions around doorway;
6. Failure to column bases and plinth wall to railings;
7. Basement level generally good.

6 Brunswick Place

Condition

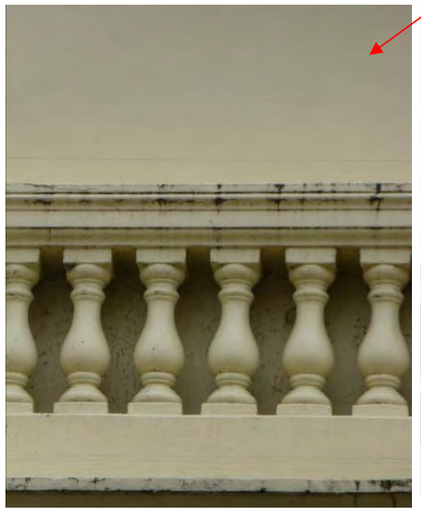
1. Losses and damage to parapet – fractures to cornice accelerating flaking;
2. Failure to upper section of ground-floor rustications;
3. Islands of delaminated render across this section;
4. Severe cracking, loss and vegetation growth to plinth wall.

7 Brunswick Place (Brunswick Place Elevation)

Condition

1. Some flaking to high-level cornice;
2. Area of loss above right-hand window to third-floor revealing smooth earlier stucco;
3. Flaking to upper right of doorway;
4. Peeling to window reveal at ground-floor level;
5. Small losses in rustication indentations;
6. Flaking, loss of paint and substrate, and vegetation growth to plinth wall;

7 Brunswick Place (Western Road Elevation)



Condition

1. Overall discoloured, flaking elevation;
2. Flaking to cornice return from Brunswick Place elevation;
3. Failure and losses, particularly to right, and along downpipes;
4. Fissures and staining to across and under length of dentil cornice;
5. Similar to lower level moulded cornice over right-hand entrance;
6. Large sheet peeling to balustrade pillar of two-storey building;
7. Minor staining and losses at ground-level.

8 Brunswick Place (Brunswick Place Elevation)

Condition

1. Failure across balustraded parapet;
2. Accelerated cracking to length of left-hand corner due to cracking;
3. Failure across cornice, impacting area directly beneath;
4. Previous plaster repair to far left, poorer substrate where failure is occurring;
5. Lining out and more porous stucco below an area of failure, abutting banding below balcony;
6. At ground-level, failure below all balconies;
7. Failure to left-hand side due to salt issues, probably exacerbated by street impact;
8. Serious salt disruption to basement;
7. Damage and contamination to plinth wall detrimental to paint.

8 Brunswick Place (Western Road Elevation)

Condition

1. Minor losses and staining across high level;
2. Large blister to right-hand edge;
3. Patchy, stained appearance to smaller left-hand structure;
4. Overall ok, just dirty.

4.4 Compilation of Results of all Surveys Taken to Date

Property	2009 Condition	2010 Condition	2012 Condition	2013 Condition
1 Brunswick Square	Excellent overall		Excellent overall, staining across balcony, flaking and ferrous staining to plinth wall	Good overall, localised flaking through entablature, ferrous staining and losses to plinth wall
2 Brunswick Square	Excellent overall, staining from balcony run-off		Excellent overall, some flaking to underside of cornice and entablature, minor failure over doorway (balcony run-off0, slight flaking and ferrous staining to plinth	Good overall, localised losses at high level and to entablature, flaking beginning over porch under balcony, uneven, fractured substrate to basement
3 Brunswick Square	Damaged substrate at high level with paint failure; failure under balconies		Excellent overall	Excellent overall, uneven ground-floor substrate surface, localised loss of uppermost layer to one window cill
4 Brunswick Square	Fractured and filled substrate with failure following these lines; some ferrous staining	Failure along fractures	Uneven substrate leading to failure to third-floor level, across cornice, failure and tide-marks to underside of porch, staining and flaking at ground-floor level (in line with column plinth above), slight flaking to window recess at ground-floor level, flaking and staining to plinth wall	Very uneven substrate and disrupted paint finish to third-floor, losses to entablature, staining and flaking surround render fracture at ground-floor level, losses to basement level and plinth wall
5 Brunswick Square	Fractures along cornice with failure	Failure around cornice and upper ground-floor rustication	Good overall, slight failure at third-floor level and to plinth wall	Small, localised failures to parapet level and entrance area, losses across entablature, salt efflorescence in basement
6 Brunswick Square	Fracturing, staining and failing around cornice and upper ground-floor rustication; failing to column base.	Failure around cornice and upper ground-floor rustication	Flaking and loss to LHS of third-floor, flaking to recesses of entablature and columns, uneven surface over doorway and to ground-floor level – filled? – with isolated loss	Severe losses to LHS of third-floor, failure to underside of entablature, uneven surface across ground-floor level with losses over doorway and to window cill
7 Brunswick Square	Localised, severe ferrous staining		Good overall, flaking to underside of balcony and minor losses to plinth wall	Flaking to upper RHS of parapet, small loss over first-floor window bow (filler revealed?), localised failure to plinth wall
8 Brunswick Square	Severe ferrous staining from balcony run-off; cracks in substrate visible	Severe ferrous staining from balcony run-off	Slight failure to underside of entablature; excessive failure to plinth wall (repaired?)	Flaking along and under entablature and balcony platform, losses to plinth wall
9 Brunswick Square	Good overall, fracture in cornice		Excellent overall, slight flaking, losses and ferrous staining to plinth wall	Very slight flaking to high-level, staining from balcony water run-off, losses and ferrous staining to plinth wall
10 Brunswick Square	Excellent overall		Excellent overall, slight flaking to upper most rail of parapet and to entablature, cracking and flaking to plinth wall	Minor flaking to projecting parapet and entablature detail, flaking to plinth wall and ferrous staining to basement window
11 Brunswick Square	Failure and staining under balconies and minor losses to ionic column		Inconsistent, uneven surface, fracture to entablature with flaking and similar to porch area	Slight flaking to entablature, fracture in substrate visible to underside, minor isolated flaking to ionic columns, flaking to porch columns and recess
12 Brunswick Square	Failure and staining under balconies, disrupted surface		Inconsistent surface – filled areas at second-floor visible as paint has failed at these sites, failure to parapet string detail, similar smaller losses around doorway and to basement area	Flaking and losses to high level string detail, uneven, patchy surface either side of second-floor window, flaking and ferrous staining to plinth wall, algae growth and flaking to basement
13 Brunswick Square	Losses very clearly following line of fracture		Excellent above ground-floor, minor losses to doorway, excessive peeling at basement level, disrupted surface and losses over ground-floor RHS window (where two balconies and porch meet – water	Very slight failure to underside of entablature, patchy surface over ground-floor RHS window, peeling at basement level

			issue?)	
14 Brunswick Square	Minor losses to cornice; losses confined to left-hand side of entrance (adjacent downpipe)	Structural issues at left-hand side of entrance (adjacent downpipe)	Excellent overall, slightly uneven substrate to porch column	Small, isolated loss to third-floor window, flaking and losses to entrance area and to plinth wall
15 Brunswick Square	Excellent overall		Good overall, isolated, minor flaking and loss under sill of second-floor window with adjacent downpipe, in similar line flaking to ground-floor area, losses to plinth wall	A number of isolated losses, uneven surface to far right rustication, flaking to plinth wall
16 Brunswick Square	Cracking and staining to cornice		Okay overall, failure to cornice, patches of peeling to adjoining wall at porch, street level railings in poor ordering	Localised flaking and ferrous staining to parapet, slight flaking to cornice, very disrupted surface to LHS entrance wall adjacent to no.17, significant losses, flaking to plinth wall
17 Brunswick Square	Localised ferrous stains	Failure along line through ground floor and basement (in line with downpipe?)	Good overall, slight failure to cornice and first-floor window decoration, patches of peeling to adjoining wall at porch	Minor flaking to window recesses and cornice, flaking over central first-floor window and base of entrance column
18 Brunswick Square	Failure around rainwater goods; ferrous staining evident		Good overall, patches of peeling beneath balcony, entrance porch and basement porch	Some flaking to porch area and basement level
19 Brunswick Square	Generally good, any losses close to rainwater goods		Good overall, poor at downpipe areas, balcony platform and entrance recess	Flaking along RHS along downpipe, isolated loss by central first-floor window, flaking under balcony and to entrance area
20 Brunswick Square	Failure and staining around cornice and balcony overhang		Excellent overall, minor peel to porch entablature	Flaking at high level and to cornice, flaking around entrance
21 Brunswick Square	Failure along cornice		Excellent overall, poor at basement level and plinth wall	Some flaking at third-floor level, isolated losses to entrance columns, poor at basement level at plinth wall
22 Brunswick Square	Excellent overall		Excellent overall, poor to balcony overhang, porch entablature and column bases	Flaking to porch area and basement level
23 Brunswick Square	Failure at base of entrance column	Failure at entrance column bases and along ground-floor rustication	Excellent overall	Flaking at entrance column base
24 Brunswick Square	Excellent overall		Excellent overall	Very slight flaking to underside of porch entablature; algae-ridden basement area
25 Brunswick Square	Isolated ferrous staining		Excellent overall	Spot of flaking paint to underside of porch
26 Brunswick Square	Staining and losses to base of entrance column and to projecting porch detail		Excellent overall, minor flaking in high level window recess and to entrance column base	Localised patch of slight flaking to third-floor, flaking and losses to entrance column base, flaking to basement and plinth
27 Brunswick Square	Excellent overall		Excellent overall	Tiny area of flaking at third-floor level, small area of flaking to underside of porch
28 Brunswick Square			Excellent overall	Isolated spot of flaking at entrance recess
29 Brunswick Square	Uneven surface – disrupted substrate, sloppy repairs, ferrous stains, losses across facade	Localised failure across entire facade	Brunswick Square elevation: excellent overall, minor flaking to base of corner column; Brunswick Place elevation: Inconsistent surface, peeling at downpipe areas, filled windows, base of column mouldings and top right-hand corner	Slight flaking across entablature, and to Corinthian column bases, to plinth wall
30 Brunswick Square	Failure to column base, substrate fractures, very uneven surface, paint and fill islands, failure across these		Brunswick Place elevation: Inconsistent to LHS– poor surface preparation, excellent to RHS; Brunswick Square elevation: Good overall, localised flaking beneath second-floor window, to Corinhtian column base and to rustication immediately over basement level	Localised flaking to far right third-floor window, beneath second-floor window and to column bases

	areas, especially at high level			
31 Brunswick Square	Minor losses to Corinthian column base		Inconsistent surface, failure to projecting details – parapet, entablature, column bases and porch entablature	Some flaking to projecting details of parapet, entablature, column bases and porch entablature
32 Brunswick Square	Disrupted surface to cornice		Excellent overall	Minor flaking at parapet and to porch area
33 Brunswick Square	Excellent overall		Excellent overall	Water run-off stains from entablature and balconies
34 Brunswick Square	Excellent overall		Excellent overall	Very slight flaking to cornice and window recess below, patchy finish to entrance column, flaking and losses to column base and plinth wall
35 Brunswick Square	Defective rainwater goods with vegetation and failure adjacent, uneven surface to parapet and cornice with losses		Excellent overall	Flaking around cornice and near rainwater goods, uneven surface to columns, patch of flaking to porch area and plinth wall
36 Brunswick Square	Failure at high level, substrate fractures visible		Excellent overall	Very slight patch of flaking at high level, isolated flaking to column base and basement level
37 Brunswick Square	Excellent overall		Good to upper levels, some flaking to ground floor level – porch, rustication	Slight patch of flaking at high level, some patches of flaking at ground floor level – particularly around entrance
38 Brunswick Square	Uneven surface at high level, losses along service wire line	Localised delamination of layers – current and previous	Good surface overall, poor at balcony platform and plinth wall	Very disrupted substrate at high-level, patch of peeling under cornice, minor flaking to entrance column base and plinth wall, salt issues at basement level
39 Brunswick Square	Failure to plinth wall, vegetation along balcony edge – holding moisture, defective lead-work		Good surface overall – poor at balcony platform, fracturing and flaking to ionic entrance columns	Tiny areas of flaking at high level, fractured, uneven surface to entrance column with losses at base, similar to plinth wall
40 Brunswick Square	Excellent overall	Failure to one small area above and below balcony	Good surface overall, poor at balcony platforms and ionic entrance columns, porch walls and basement walls	Damaged substrate at high level, flaking and losses to RHS entrance column and adjacent rustication
41 Brunswick Square	Minor losses along edge of balcony		Good overall, poor at balcony platforms and at railings and basement porch	Disrupted substrate surface at high level, minor losses to entrance column base, flaking to plinth wall
42 Brunswick Square	Severe issues at ground-floor level, messy rainwater goods network at higher level	Severe issues at ground-floor – cracks in exposed substrate visible	Good overall, slight flaking to entrance column bases and plinth wall	Slight flaking to projecting details to high level and cornice, similar to entrance column base and plinth wall
43 Brunswick Square	Uneven, fractured surface, losses to porch with defective downpipe over and at parapet level	Failure to entrance column adjacent to 42	Good overall, uneven substrate surface at high level, failure to entablature, column bases and plinth wall	Slight flaking to cornice, flaking around entrance following line of downpipe, flaking to plinth wall
44 Brunswick Square	Failure along downpipe and to projecting porch where downpipe terminates, vegetation growing in this at high level		Excellent overall	Uneven finish, substrate failure to plinth wall
45 Brunswick Square	Isolated failure over high level window		Good overall, slight flaking to parapet detail, substrate damage and losses to plinth wall	Flaking and losses to parapet, cracking to underside of porch, uneven substrate finish visible, flaking to plinth wall
46 Brunswick Square	Failure to cornice and balcony overhangs and surrounding area	Failure to cornice and balcony overhangs and surrounding area	Failure at site of fill repair to parapet, failure along cornice and balcony area, substrate cracking and losses to plinth wall	Flaking to projecting details at parapet, cornice, balconies, window cills, isolated loss to entrance column, flaking to plinth wall

47 Brunswick Square	Excellent overall		Excellent overall	Uneven finish at ground-floor and basement level
48 Brunswick Square	Good overall, very minor losses at high level		Good overall, some flaking to parapet and entrance entablature under balcony, localised flaking to ground-floor rustication under column	Some flaking to parapet, entablature, column bases and balcony ledges, slight flaking to entrance column base, uneven, flaking finish to ground-floor rustication under column and patchy surface to basement
49 Brunswick Square	Small losses and fractures to cornice		Adequate finish overall, flaking along and under high-level entablature, and to entrance entablature under balcony, localised flaking to ground-floor rustication under column	Flaking along projecting details at parapet, entablature, balconies and porch entablature, isolated patch of flaking to entrance column, localised flaking to ground-floor rustication under column, flaking to plinth wall
50 Brunswick Square	Uneven paint and substrate surfaces, vegetation growth at balcony level		Excellent overall	Very slight flaking to high level detail and to far-left column and to balcony ledge
51 Brunswick Square	Isolated failure at high level, where deep fractures in render are visible		Under scaffold but appears excellent overall	Very slight patch of flaking at high-level and to underside of porch, failure to plinth wall
52 Brunswick Square	Very uneven, filled and repair surface at ground-floor level		Good finish overall, isolated peeling to high-level cornice detail, to underside of entablature at first-floor level and to plinth wall	Patches of flaking to projecting details at parapet and first-floor window entablature, flaking to far right column at first-floor bow and to basement level
53 Brunswick Square	Staining from under balcony		Currently under maintenance	Uneven finish
54 Brunswick Square	Minor, isolated losses at high level		Excellent overall	Very slight areas of flaking to parapet and entablature, uneven surface to ground-floor with evidence of substrate fracture repair
55 Brunswick Square	Minor, isolated losses at high level		Good overall, peeling to underside of entablature	Very slight patches of flaking to parapet and underside of entablature, uneven surface to ground-floor rustication under column, isolated loss to entrance column
56 Brunswick Square	Minor, isolated losses at high level, issues with rainwater goods as severe ferrous staining		Good overall, poorer to basement level	Very minor area of flaking to parapet detail, patch of flaking to porch recess, flaking and ferrous staining to plinth wall
57 Brunswick Square	Ferrous staining at high level		Inconsistent finish, flaking across high-level entablature, to porch area and to ground-floor rustication	Slight staining and flaking to entablature, uneven finish, patch repairs underway
58 Brunswick Square	Some fracturing through cornice		Excellent overall	Flaking to plinth wall

Property	2009 Condition	2010 Condition	2012 Condition	2013 Condition
1 Brunswick Terrace	Fractured and failing surface high-level and along column; losses to ionic column base		Good overall, rough appearance at ground-floor level	Very good overall, patchy appearance (filled) at ground-floor level
2 Brunswick Terrace	Staining and fracturing to balcony		Ok but film seems thin, fracture at ground-floor balcony, ferrous staining and failure to plinth wall	Some flaking to cornice and to LHS wall along line of ferrous-stained downpipe
3 Brunswick Terrace	Minor loss to column base		Localised failure to second-floor recesses, column bases, ferrous staining to plinth wall	Localised flaking at high level, under entablature, to ground-floor and basement area
4 Brunswick Terrace	Minor loss to column base, minor blistering to entrance		Failure to column bases, repair over doorway, damaged substrate at ground-floor level, failure at basement level and to plinth wall	Localised flaking at projecting details – cornice, pediment to entablature, column base, issues to doorway
5 Brunswick Terrace	Staining, fracturing, ferrous staining and uneven surface to balcony recess		Ferrous staining along downpipe, fractured substrate and losses to doorcase	Generally good – slight flaking to parapet, damaged substrate to balcony underside, some failure along ferrous-stained downpipe
6 Brunswick Terrace	Damaged substrate, losses at high level, historic repairs, ferrous staining		Brunswick Terrace facade: minor localised fractures; Waterloo Street facade: uneven surface, poor finish	Brunswick Terrace facade: damaged substrate, uneven finish throughout; Waterloo Street facade: uneven substrate finish, with small localised losses
7 Brunswick Terrace	Failure around porch and at high level, point of render failure back to brick, sheet paint failure exposing more recent repair		Waterloo Street facade: losses around porch and rainwater goods, ferrous staining to basement and plinth wall; Brunswick Terrace facade: good overall, issues with ferrous staining	Waterloo Street facade: uneven finishes, flaking – particularly to doorway, substrate fractures evident; Brunswick Terrace facade: very good overall
8 Brunswick Terrace	Failure at point in cornice where fracture is noted and rusting downpipe runs		Failure along downpipe, ferrous staining at disconnected service outlet, isolated blister to Corinthian column losses and ferrous staining to plinth wall	Some failure to underside of balcony and along downpipe, singular isolated loss to topcoat on column
9 Brunswick Terrace	Uneven, fractured surface particularly at high level, isolated loss adjacent to downpipe		Rough and fractured substrate, isolated loss, ferrous staining and losses to plinth wall	Uneven surface, some small isolated losses, fracture in substrate evident
10 Brunswick Terrace	Issues at parapet level with fracturing and failing, and at column bases, where surface is uneven		Excellent overall	Patchy appearance at high-level – fill repairs?
11 Brunswick Terrace	Generally good, some ferrous staining		Very good overall; door painted cream, while rest in row are black, and exhibits failure at bottom rail	Uneven surface at ground-floor – basement level, door painted cream with losses to bottom rail
12 Brunswick Terrace	Some ferrous staining, very uneven surface to columns and losses along (painted uPVC?)		Okay overall, minor losses under balconies	Localised patch of flaking to high-level and to underside of balcony

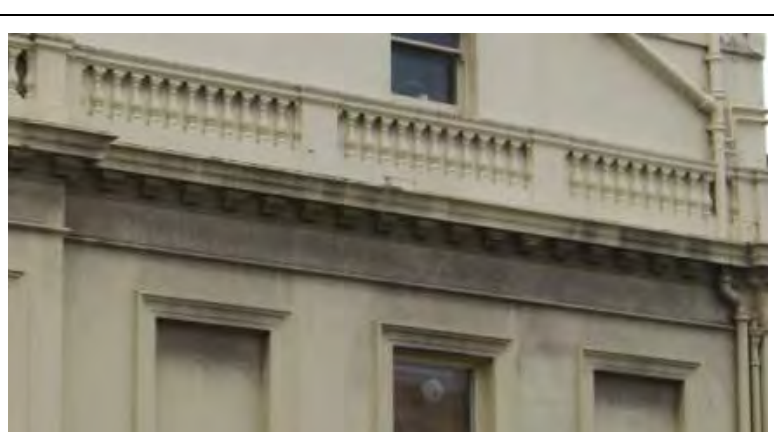
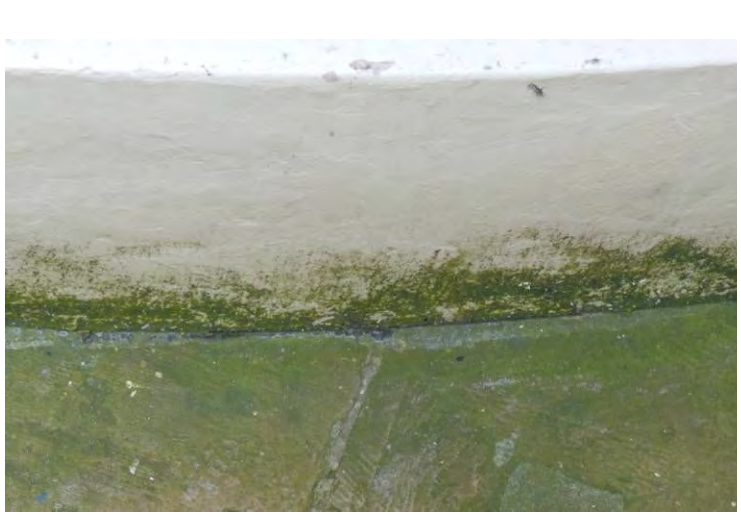
	downpipe			
13 Brunswick Terrace	Surface uneven but ok overall		Good overall, flaking and ferrous staining to plinth wall	Slight flaking to high-level, disrupted surface over ground-floor window, uneven, blistered surface around doorway
14 Brunswick Terrace	Surface uneven and discoloration to column		Good condition overall	Small area of loss to Corinthian column, peeling to underside of entablature, uneven, blistering surface to ground-floor
15 Brunswick Terrace	Losses at second-floor level, basement and plinth walls severely stained and damaged		Good overall, slight failure under balcony, plinth wall substrate badly fractured and ferrous-stained	Some failure to entablature, some localised losses around doorway and to basement level
16 Brunswick Terrace	Losses at parapet level		Good overall, some losses to plinth wall	Very uneven finish throughout, isolated loss, losses at basement level
17 Brunswick Terrace	Some ferrous staining where window cill is missing		Good overall, failure to underside of balcony and losses and ferrous staining to plinth wall	Uneven finish throughout, minor flaking at high-level, localised patches of failure to window recess, underside of balcony,
18 Brunswick Terrace	Fracturing and losses at high level and to balcony overhang		Losses, flaking and staining to underside of balcony and entrance area	Flaking to entablature and large loss at parapet level, substrate fracture, salt efflorescence and losses to entrance area
19 Brunswick Terrace	Tiny losses on column, ferrous stain over porch with fracture evident also		Brunswick Terrace elevation: good overall, uneven, failing surface to RHS Corinthian column (downpipe adjacent), slight cracking and ferrous staining to plinth; Brunswick Square elevation: good overall, localised patch of failure over ground-floor window	Brunswick Terrace elevation: Fractured substrate, uneven surface to Corinthian column on RHS, localised losses; Brunswick Square elevation: Fractured substrate, uneven surface and some patches of loss and flaking
20 Brunswick Terrace	Uneven surface, salt eruption; losses and damaged substrate to cornice		Brunswick Square elevation: good overall, flaking to one ground-floor window recess, and at basement level; Brunswick Terrace elevation: good overall, damaged substrate at high level, slight failure to underside of entablature, ferrous staining to plinth wall	Brunswick Square elevation: damaged substrate, particularly at high level, uneven surface, areas of blistering paint and salt efflorescence, flaking and losses; Brunswick Terrace elevation: Minor areas of loss – to underside of entablature, column base and ground-floor window sill
21 Brunswick Terrace	Defective downpipe, localised staining at ground-floor level		Good overall, failure to underside of balcony, slight losses and ferrous staining to plinth wall	Patchy appearance at high-level, peeling to underside of balcony, area of uneven finish to ground-floor rustication
22 Brunswick Terrace	Under scaffolding		Very disrupted surface at ground-floor level – flaking, blistering and losses	Issues to ground-floor level and around doorway – salt efflorescence, peeling, blistering and losses
23 Brunswick Terrace	Failure to window decoration		Good overall, slight failure to underside of balcony	Patch flaking to parapet, peeling to underside of balcony and salt eruptions to basement walls
24 Brunswick Terrace	Fractures in substrate, paint ok overall		Excellent overall, slight run-off staining, fracturing and flaking to balcony ledge	Uneven surface to LHS column, very slight peeling to underside of balcony, minor losses to basement window-cill
25 Brunswick Terrace	Two isolated, large losses		Poor surface overall, failure to underside of entablature and along columns; bubbling and flaking at door opening	Some peeling and staining around entablature and column capitals, uneven finish round doorway with salt efflorescence, fractures evident in ground-floor rustication
26 Brunswick Terrace	Ferrous staining		Ferrous staining at high level, failure to underside of entablature, very uneven surface around doorway, slight ferrous staining to plinth wall	Patchy, slightly failing surface to Corinthian column and to ground-floor rustication immediately under
27 Brunswick Terrace	Damaged substrate at high level, uneven surface, isolated losses	Issues with substrate at high-level, localised failure to Corinthian column bases and ground-floor	Uneven render surface across third-floor and entablature with some losses, very disrupted surface around doorway with excessive losses	Extensive failure and losses to third-floor and parapet and to ground floor area – particularly around doorway. Very uneven finish here with salt efflorescence

	to column and ground-floor	rustication. Uneven surface throughout.		
28 Brunswick Terrace	Network of wide render fractures		Excellent condition overall	Diagonal fracture between first and second-floor windows, large peel to basement
29 Brunswick Terrace	Uneven surface and ferrous staining		Good overall localised failure at cornice and to underside of balcony, render surface uneven in places	Small, localised failure to high-level detail, to column (with staining), to doorway and basement wall
30 Brunswick Terrace	Salt eruptions under paint, uneven surfaces and staining		Good overall, failure to underside of balcony and around downpipe	Patch of peeling to LHS column and to underside of balcony
31 Brunswick Terrace	Excellent overall		Excellent overall	Surface patch painted with different colour paint
32 Brunswick Terrace	Losses at high level and ground-floor, ferrous staining		Brunswick Terrace elevation: failure to underside of entablature; Lansdowne Place elevation: failure under entablature continues, flaking and losses around porch area and to adjacent wall	Brunswick Terrace elevation: localised losses and flaking to RHS of building, large peel to basement with algae growth; Lansdowne Place elevation: extensive flaking, peeling and losses
33 Brunswick Terrace	Extensive render fracturing		Lansdowne Place elevation: good overall, some flaking to second-floor window recess and at basement level; Brunswick Terrace elevation: under scaffold, isolated patch of flaking visible to third-floor window	Lansdowne Place elevation: uneven surface, localised losses – under scaffold, fractures in substrate visible; Brunswick Terrace elevation: some minor, isolated losses, patchy appearance to area under balcony
34 Brunswick Terrace	Excellent overall		Very good overall	Uneven finish to column, salt eruptions and flaking around doorway
35 Brunswick Terrace	Very minor, isolated loss		Very good overall, couple of very minor isolated flaking/losses to entablature and in ground-floor rustication	A couple of very slight, isolated losses – same as previous
36 Brunswick Terrace	Excellent overall		Excellent overall	Discoloured patches to parapet, some peeling around doorway
37 Brunswick Terrace	Excellent overall		Under scaffold but appears excellent overall	A couple of very large blisters to Corinthian columns
38 Brunswick Terrace	Excellent overall		Excellent overall	Slight flaking at high level, some discolouration under balcony
39 Brunswick Terrace	Excellent overall		Excellent overall, some slight flaking across entablature	Minor losses at high-level, blistering paint to doorway, salt eruption to basement
40 Brunswick Terrace	Excellent overall		Excellent overall	Minor, localised areas of peeling
41 Brunswick Terrace	Fractures in render		Excellent overall	Excellent overall
42 Brunswick Terrace	Uneven surface		Brunswick Terrace elevation: excellent overall; Holland Road elevation: under scaffold – inspection limited	Brunswick Terrace elevation: excellent overall – two insignificant losses to ground-floor rustication; Holland Road elevation: small, localised areas of peeling, failing patch to high-level bow window, uneven, salt-affected surface

Property	2009 Condition	2010 Condition	2012 Condition	2013 Condition
1 Brunswick Place	Good overall, uneven surface		Good overall, failure to parapet and plinth	Slight flaking to parapet – uneven surface, small isolated loss under balcony
2 Brunswick Place	Failure to third-floor	Failure at high level	Uneven surface at first-floor, flaking to porch ceiling and basement area	Fracture to parapet detail and some flaking to surrounding area, patch of uneven surface to first-floor, peeling to underside of balcony and entrance recess
3 Brunswick Place	Excellent overall		Flaking under balcony and first-floor area under, failure to plinth	Section of failure and loss to parapet, small peeling and loss to ground-floor rustication under balcony
4 Brunswick Place	Excellent over all, paint and render fracturing along service pipe		Flaking under balcony and first-floor area under, failure to plinth wall	Very uneven surface to section of parapet, some peeling and discolouration along line of downpipe, peeling to underside of porch
5 Brunswick Place	Failure under projecting balconies, surface uneven	Failure around projecting detailing	Okay overall, some flaking under balcony and failure to plinth wall	Section of peeling above second-floor window; uneven surface, salt efflorescence, flaking and loss around entrance
6 Brunswick Place	Good overall, surface uneven		Failure at parapet, under balcony, to porch recess and to plinth wall	Failure at parapet level and under balcony, patches of uneven finish to ground-floor
7 Brunswick Place	Evidence of substrate fracturing, excessive staining, losses at high level and under balustrade cornice detail		Good overall but dirty appearance, some failure at high level and to plinth wall	Failure at high level, large section of peeling,
8 Brunswick Place	Evidence of large, repair; Failure mostly at high level and under balconies	Failure around projecting detailing; excessive crazing	Western Road facade: good overall but dirty appearance; Brunswick Place: poor overall, failure at high level, ground-floor recesses and basement	Failure at high level and along LHS of Brunswick Place elevation; patchy surface to Western Road elevation with large blister to RHS

4.5 Defects Recorded

Defect	Possible Causes	Example
Blistering	Damp substrate; Trapped moisture	
Flaking	Aging underlying layers become brittle and crack (blind-cleavage)	 (Cracking to underlying layers (blind-cleavage) visible)
Peeling	Poor adhesion as molecules failed to coalesce due to insufficient temperature	

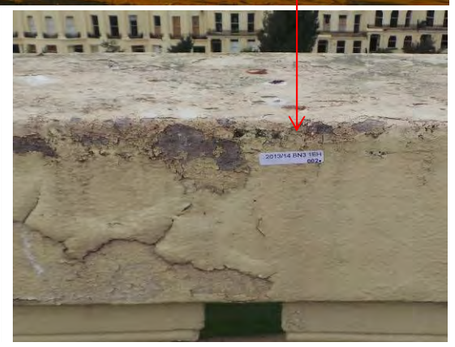
Defect	Possible Causes	Example
Cratering	Incorrect applicator; Applied too quickly (bubbling); Painting unprimed porous substrate	
Staining	Environmental factors	
Mud-cracking	Applied in too cool conditions; Paint has become viscous	
Biological Growth	Substrate holding moisture; Poor air circulation/little sunlight; Painting over existing growth; Poor preparation	

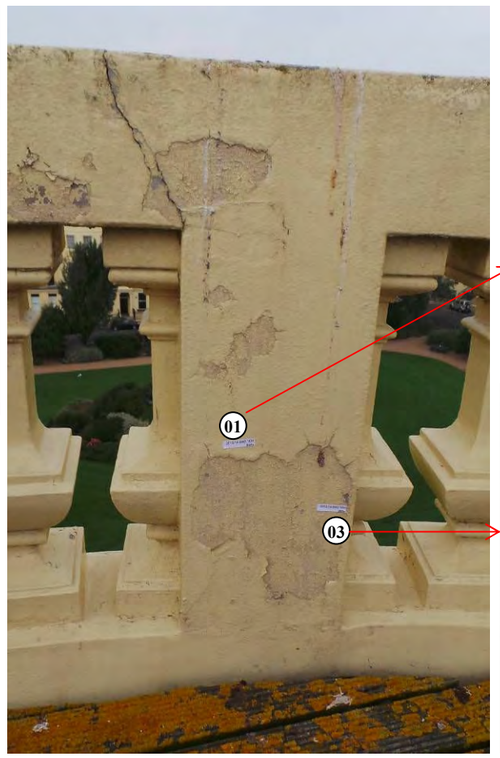
Defect	Possible Causes	Example
Failure along fractures	Moisture ingress through weak point; Paint incompatible with filler	
Salt-efflorescence		

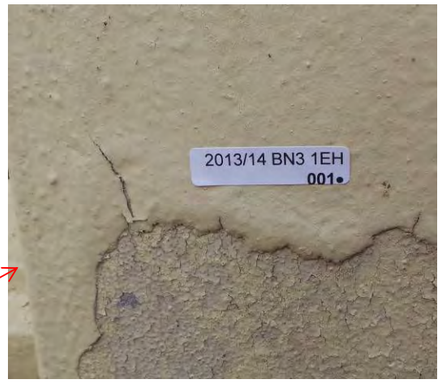
5. Paint Sampling

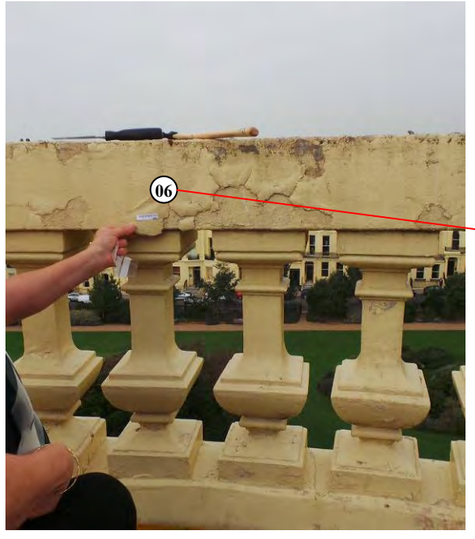
5.1 17 Brunswick Square

5.1.1 Sample Locations: Balustraded Parapet



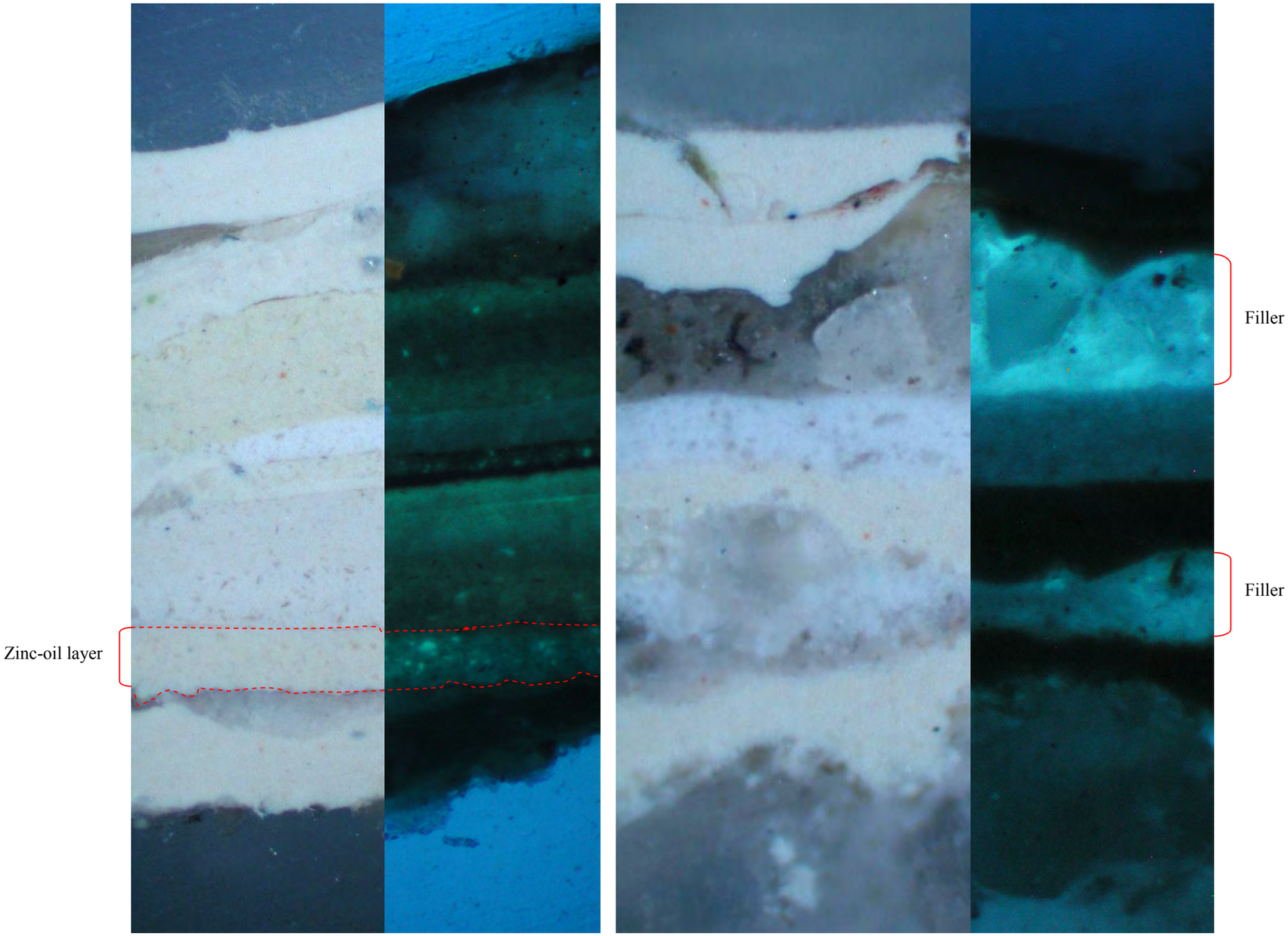






5.1.2 Sample Locations: Fourth Floor Window Cill

5.1.3 Stratigraphy



Sample 06
(Delaminated layer to balustrade)

Sample 09
(Failed surface to window cill)

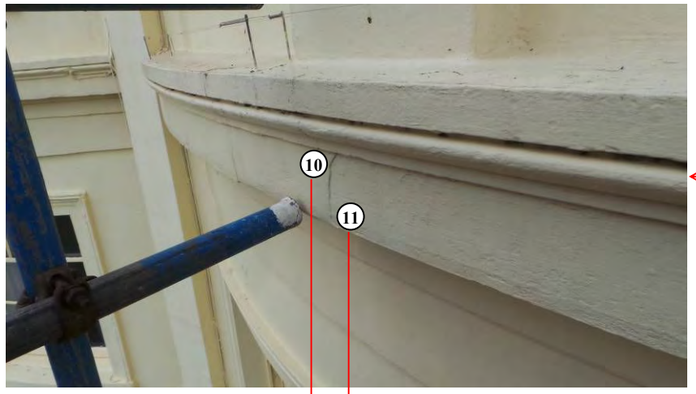
Samples 06 and 09 are taken from different features of the same building and highlight the difference in treatment.

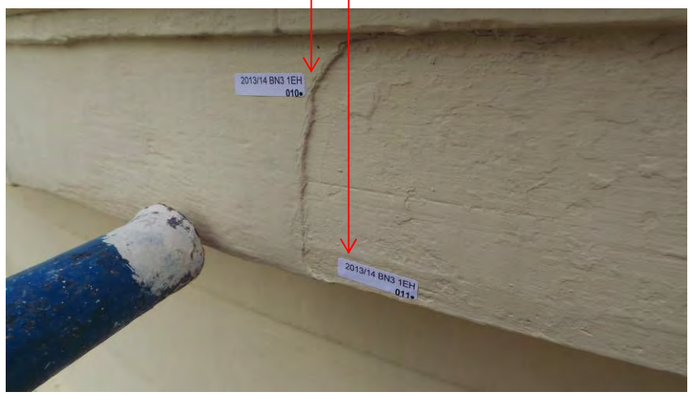
Sample 06 has well-defined strata of more modern paints and failure appears to occur along a zinc layer interface.

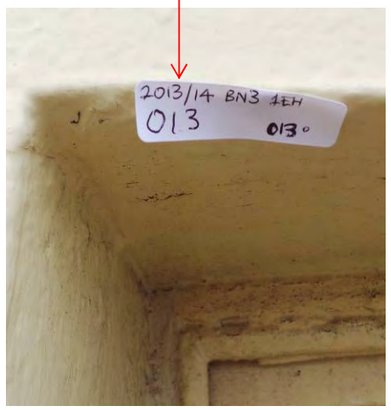
Sample 09 has fewer layers. Filler has been applied over the lower layers and the most recent paint-system over this is failing.

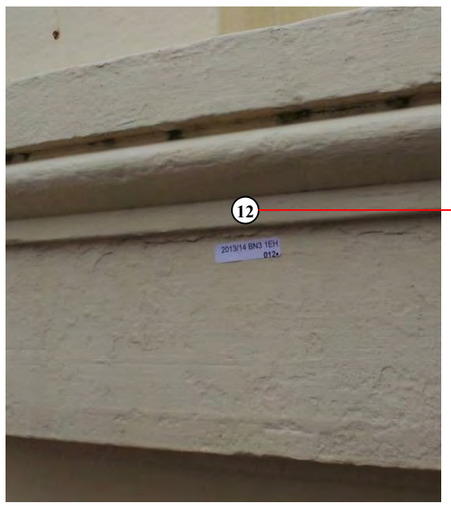
5.2 21 Brunswick Square

5.2.1 Sample Locations: Cornice detail and window reveal

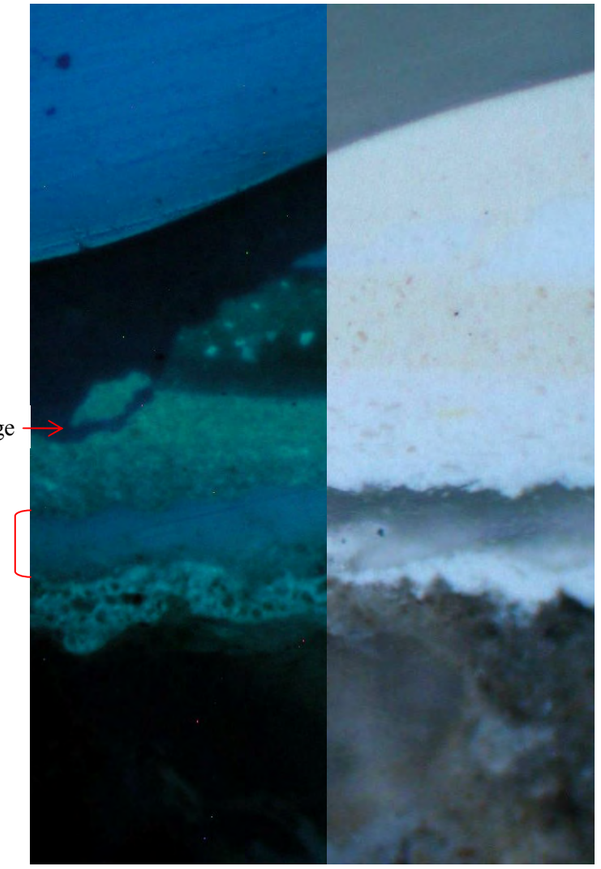








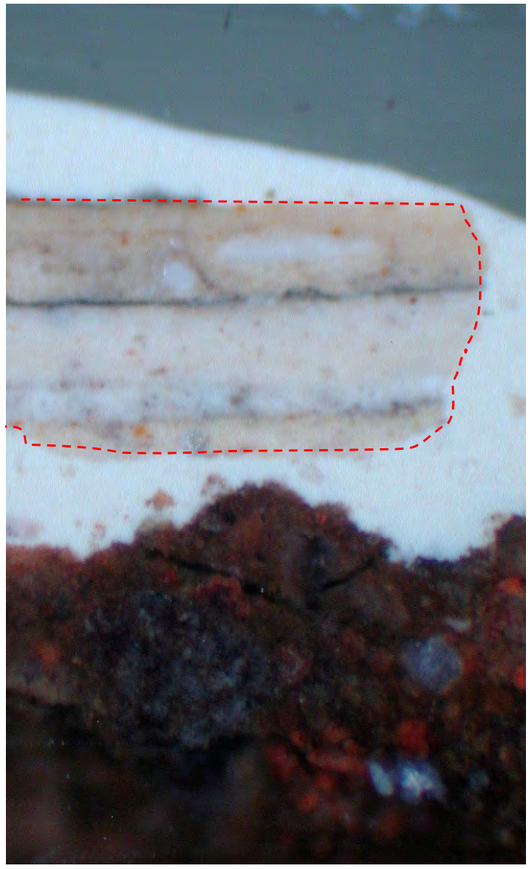
5.2.2 Stratigraphy



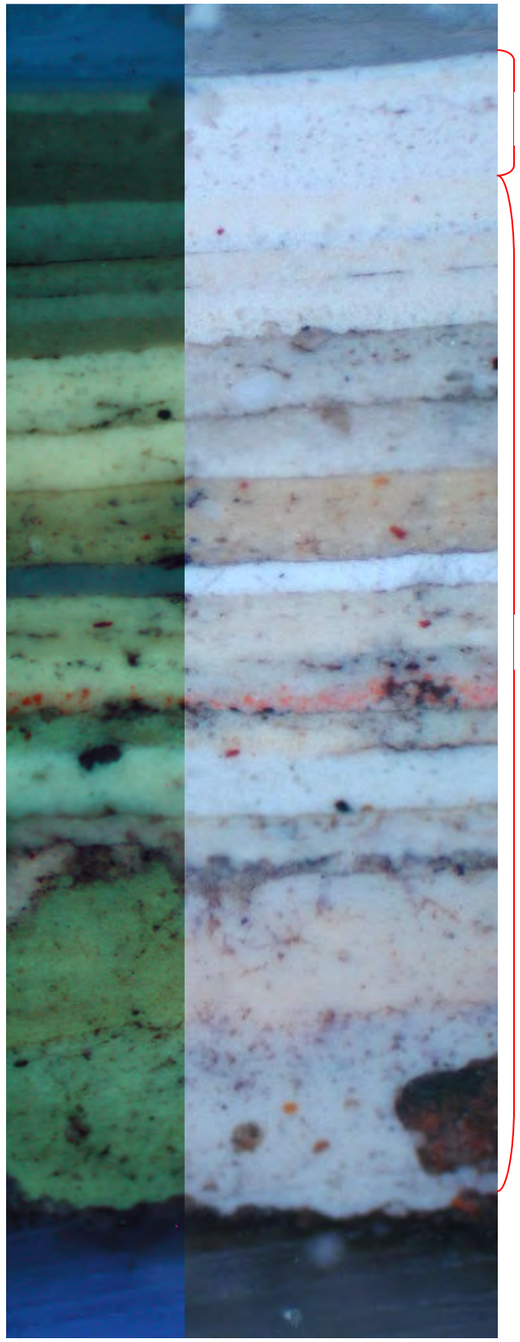
Blind-cleavage

Separation at lower level

Sample 10
(Intact layer to filled surface)



Sample 11
(Intact layer over original stucco)



Resin paint layers

Lead-oil paint layers

Sample 12
(Intact layer to cornice detail)

Samples 10, 11 and 12 are from the same area of intact, sound surface to a cornice.

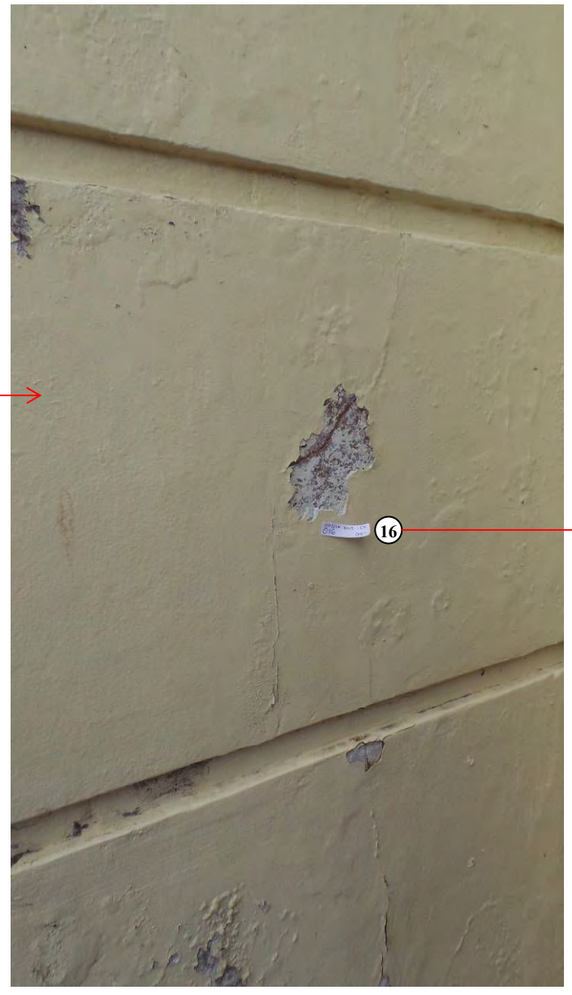
Sample 10 shows delamination of earlier oil-paint layers at the substrate level, along with blind-cleavage through subsequent layers.

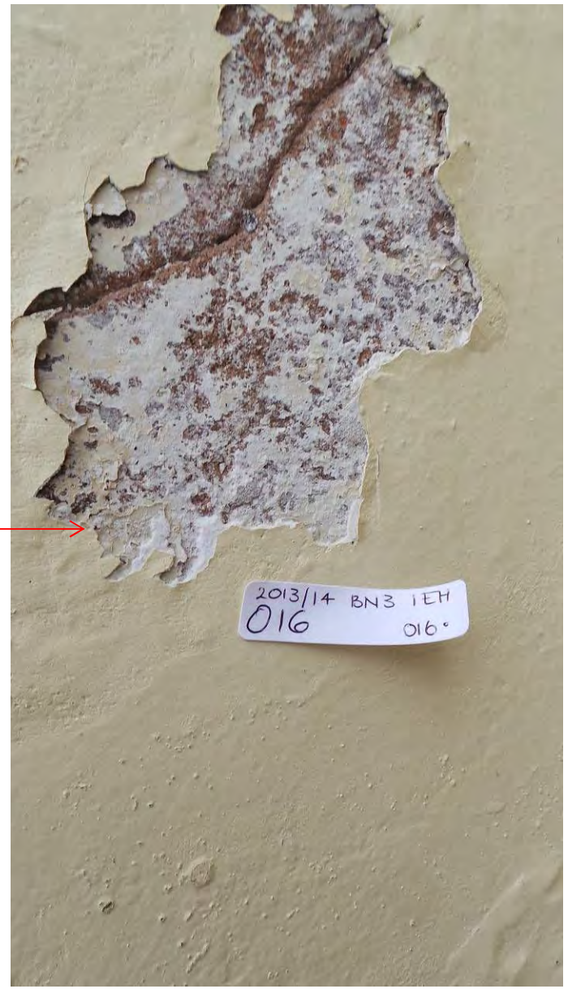
Sample 11 illustrates poor surface preparation, as traces of earlier films, highlighted by the dashed red line, have become ingrained into the most recent coating.

Sample 12 illustrates inconsistent removal, as a great deal more historic strata survive.

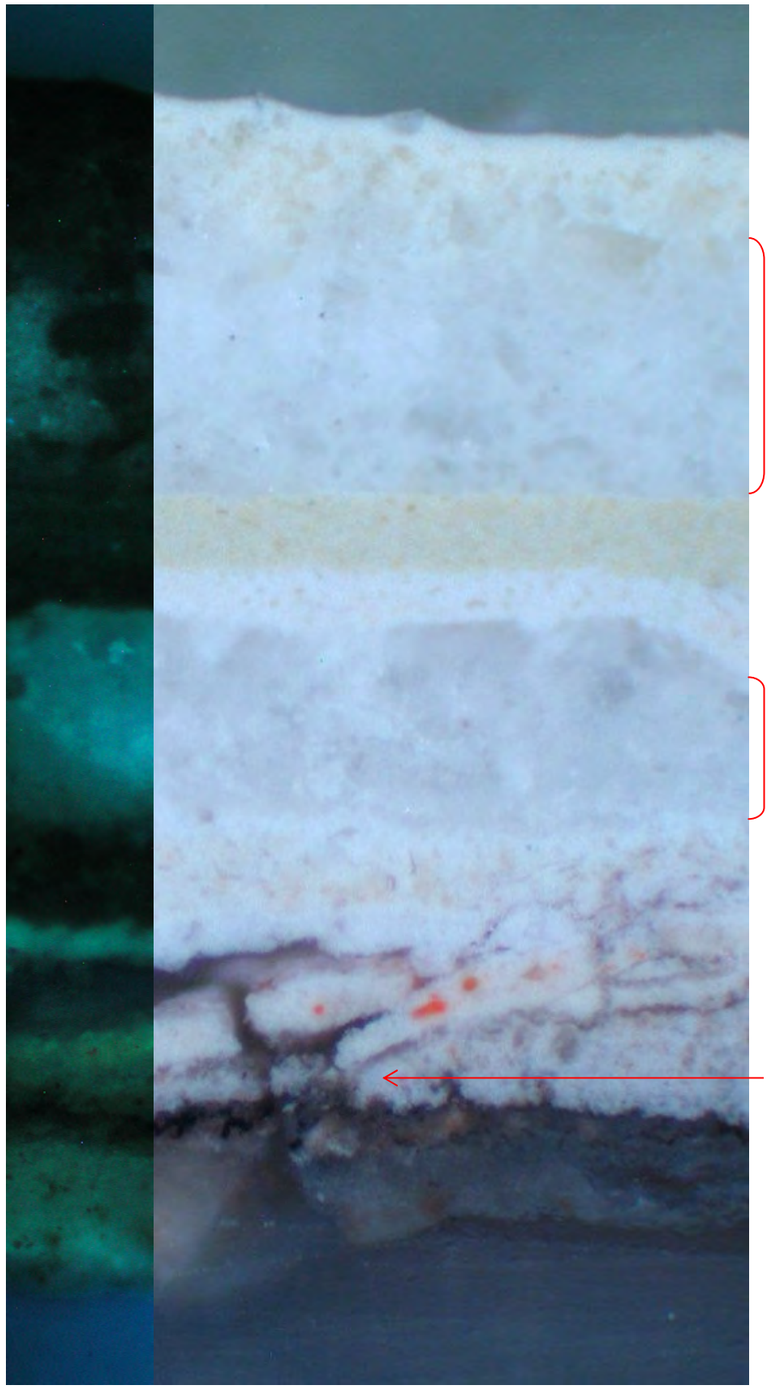
5.3 16 Brunswick Square

5.3.1 Sample Locations: Entrance pillar adjacent to 17 Brunswick Square





5.3.2 Stratigraphy



Sample 16
(Failed surface to entrance wall)

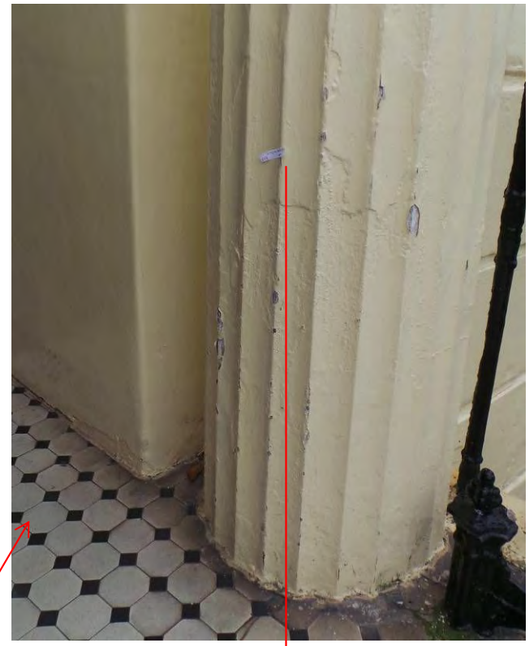
Sample 16 was collected from the very disrupted surface to the entrance wall rustication.

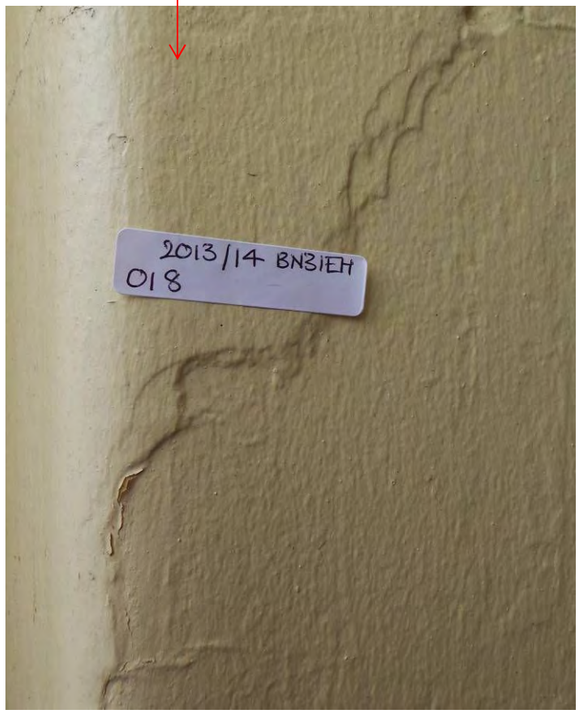
Analysis revealed this surface has been filled twice indicating a recurring issue. Both fills have been over existing layers. However, failure is occurring at substrate level, with delamination between and blind-cleavage through existing layers plainly visible. Failure of uppermost layers may be due to the powdering of fillers.

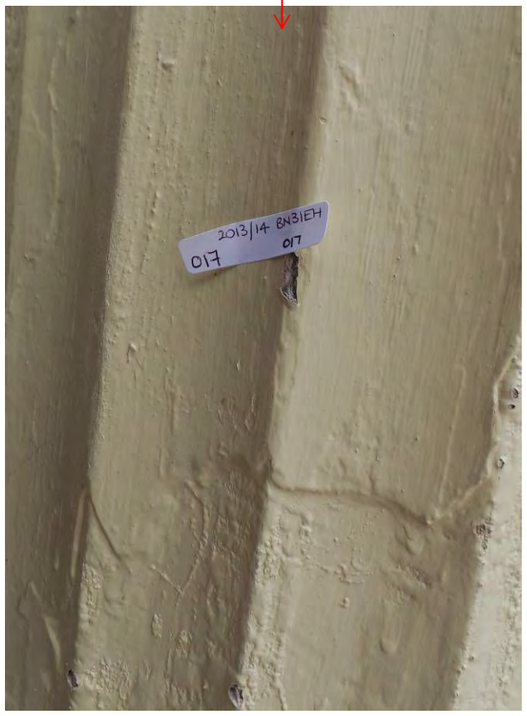
Furthermore, referring to the sample location images in the previous section reveals fracturing (unfilled) to the stucco substrate.

5.4 5 Brunswick Square

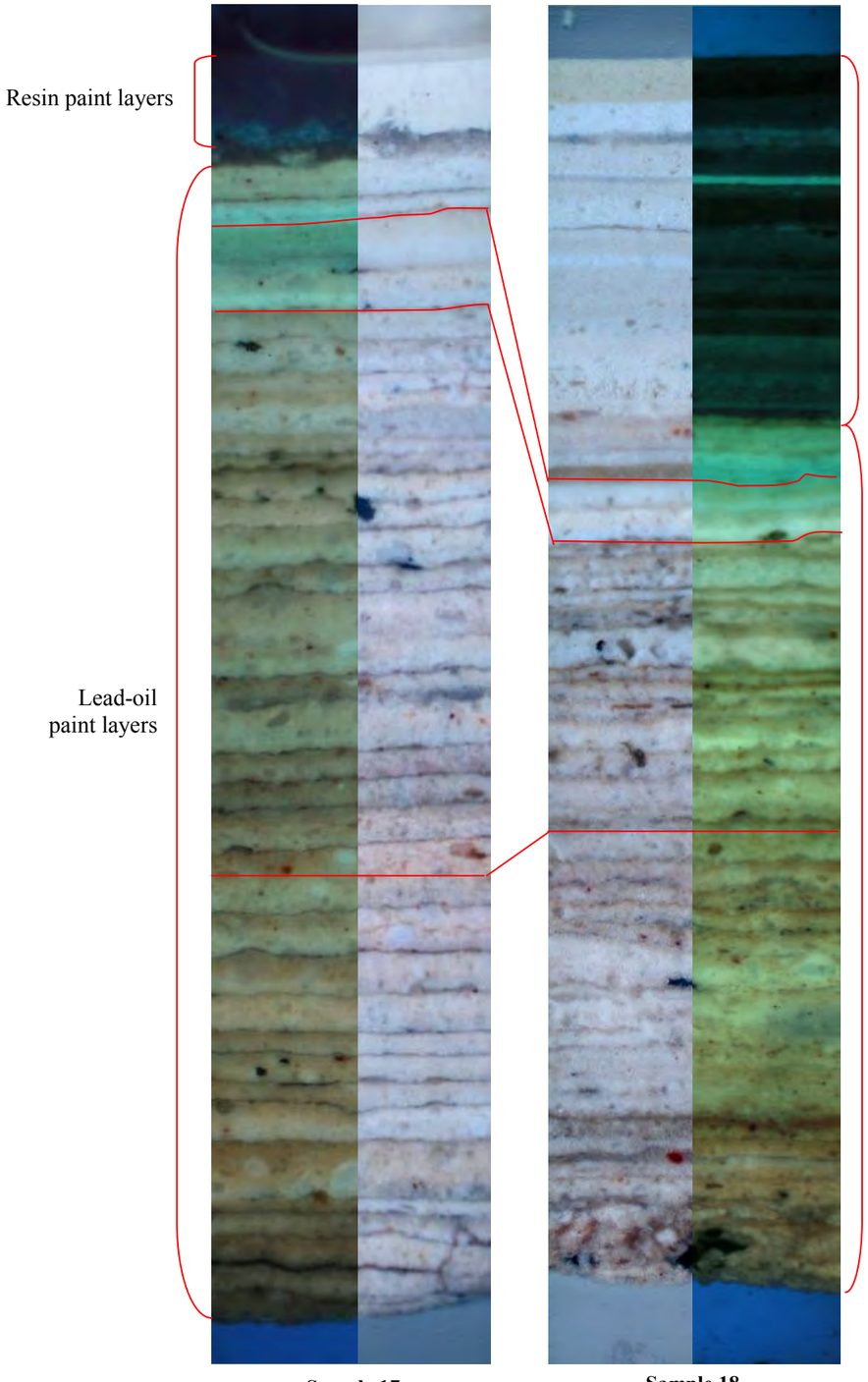
5.4.1 Sample Locations: Doorway and entrance column





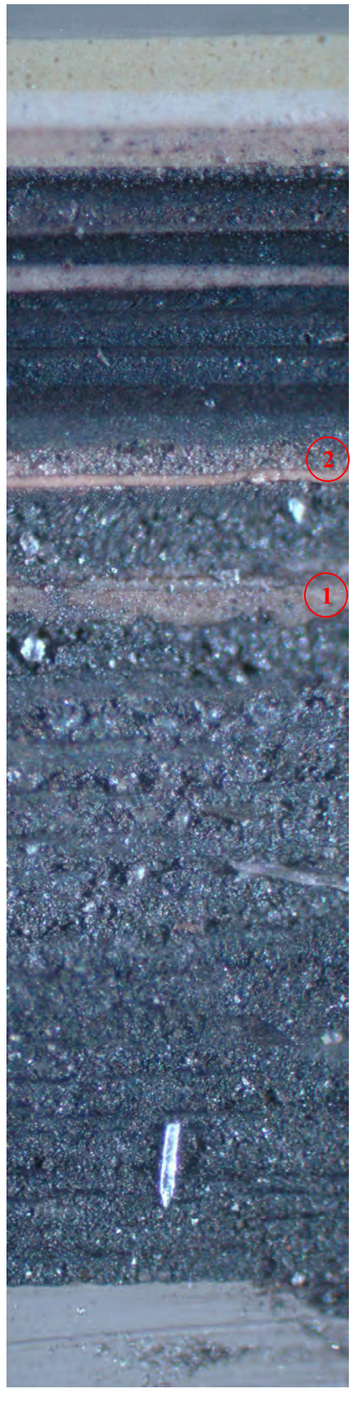


5.4.2 Stratigraphy



Sample 17
(Intact but uneven finish to entrance column)

Sample 18
(Intact but uneven finish to porch)



Sample 18
(Following micro-chemical test)

Samples 17 and 18 are taken from different architectural features of a porch and highlight the different treatment received by each.

Some layers between both marry together, as indicated by the solid red line, but one element has been stripped back or not painted as routinely as the other.

Interestingly, there is a difference in colour between the most recent schemes. Furthermore, delamination of these layers is visible in both. An explanation for this may be gained by referring to the sample location photographs; here, it is clear that stripping has not been consistent, resulting in an uneven surface. The existing layers ought to have been feather-edged (as specified); clearly this has not been carried through. The forces exerted between layers by differential thermal movement can become focused at these discontinuous, jagged edges, which may result in the shearing of this upper layer, which is attempting to join the two sites together.

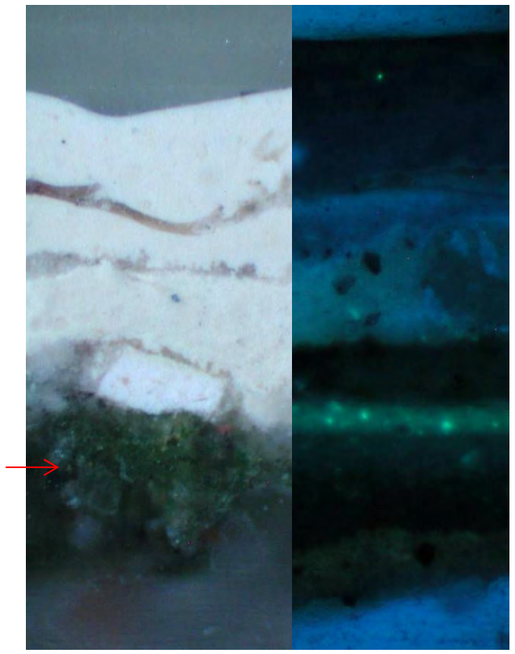
Finally, in sample 17 fracturing is visible in some of the earlier layers. While not an issue at present, should the critical loading of the paint-film be reached, this could result in failure.

Sample 18 stained with sodium sulphide tested positive for lead paints; sodium sulphide dyes lead black. The unstained layers number 1 and 2 are lead/zinc-oil and zinc-oil paints respectively. The earlier modern resin paints have stained moderately positive for lead, as they may contain lead driers – the use of lead driers added to alkyd and modern synthetic resin paints continued up until the 1970s. Further micro-chemical analysis is required to confirm this.

5.5 48 Brunswick Square

5.5.1 Sample Locations: Entrance Column

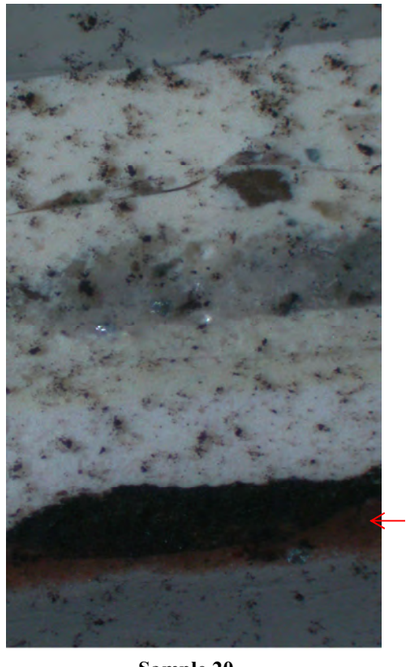
5.5.2 Stratigraphy



Sample 19
(Flaking finish to entrance column)

Sample 20
(Flaking finish to entrance column, higher than previous sample)

Sample 21
(Intact surface to recess behind column)



Sample 20
(Photographed in reflected light following stain test)

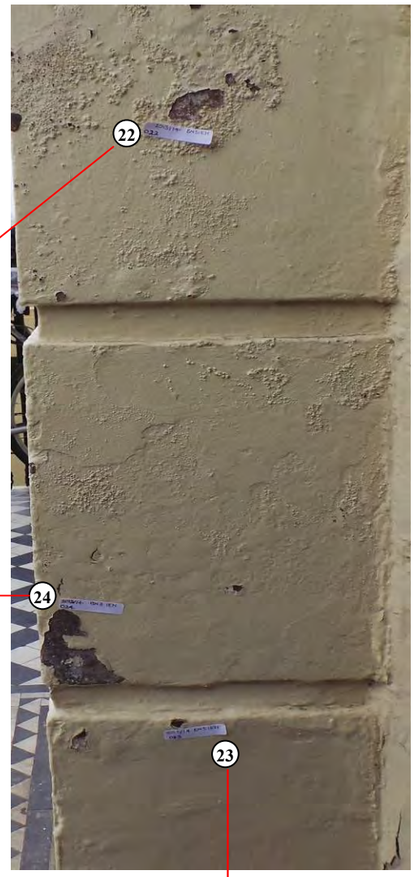
Sample 19 shows many distorted and unadhered layers with thick algal growth at substrate level. This indicates poor surface preparation and moisture-holding within the substrate which may account for the failure between layers – as in damp conditions molecules struggle to coalesce and form a sound, well-adhered film.

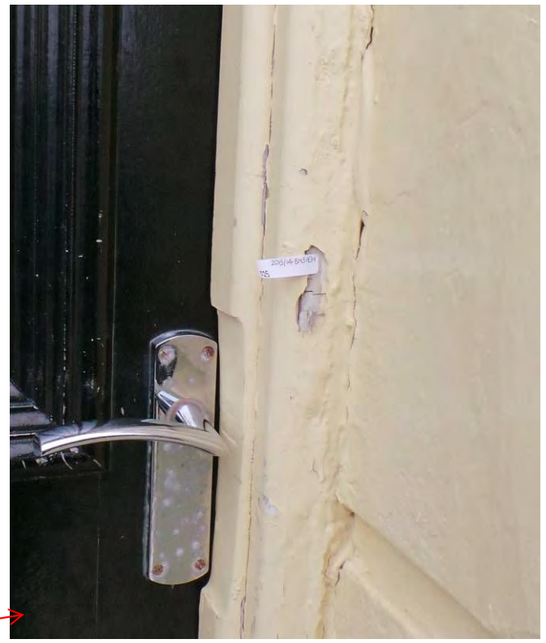
Sample 20 was taken from the same column yet reveals very different treatment. Micro-chemical stain tests reveal that the red layer, which is seen in a number of samples, is an iron-oxide primer. A layer of filler has been applied over existing paint-layers.

Sample 21, taken from the recess behind the column escaped stripping and a greater number of historic schemes exist. This surface was largely intact.

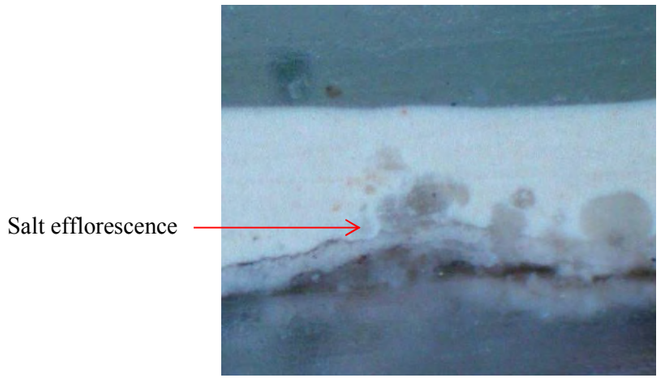
5.6 27 Brunswick Square

5.6.1 Sample Locations: Entrance Stuccowork

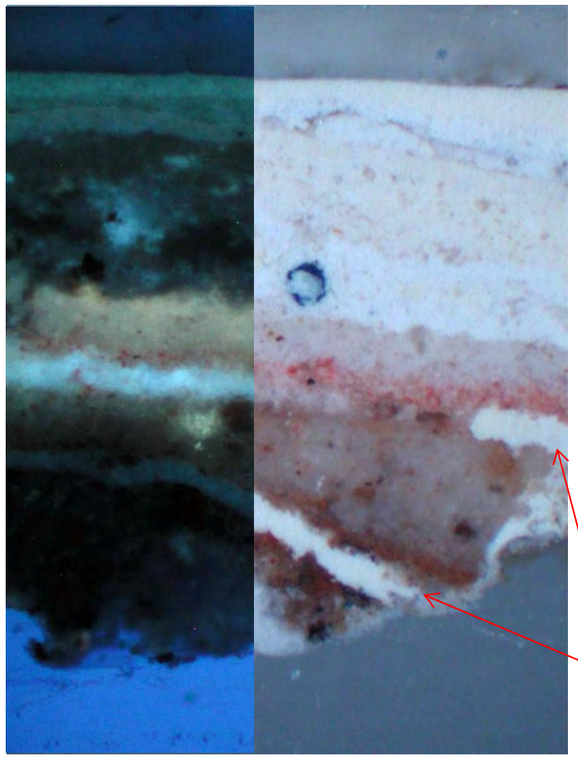




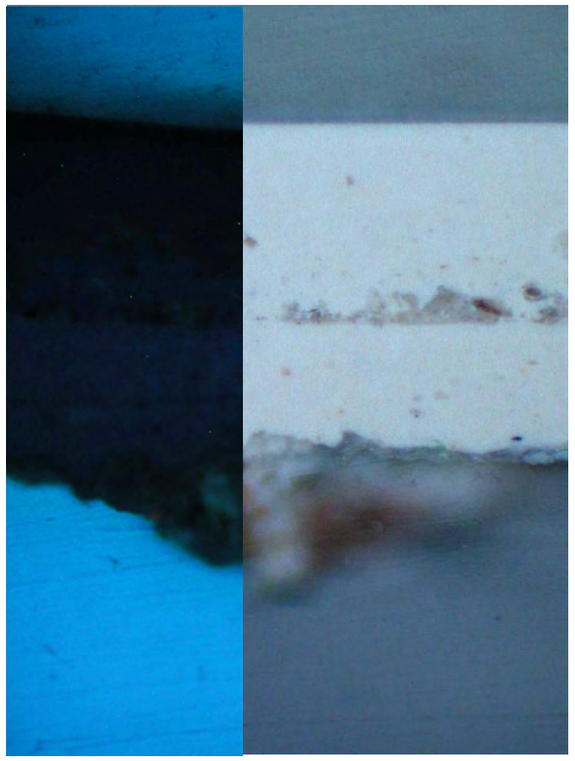
5.6.2 Stratigraphy



Sample 22
(Salt disrupted layer)



Sample 23
(Thinner finish to flaking area)



Sample 24
(Thicker finish to flaking area)

Samples 22, 23 and 24 are all taken from the same entrance jamb, which exhibits severe failure.

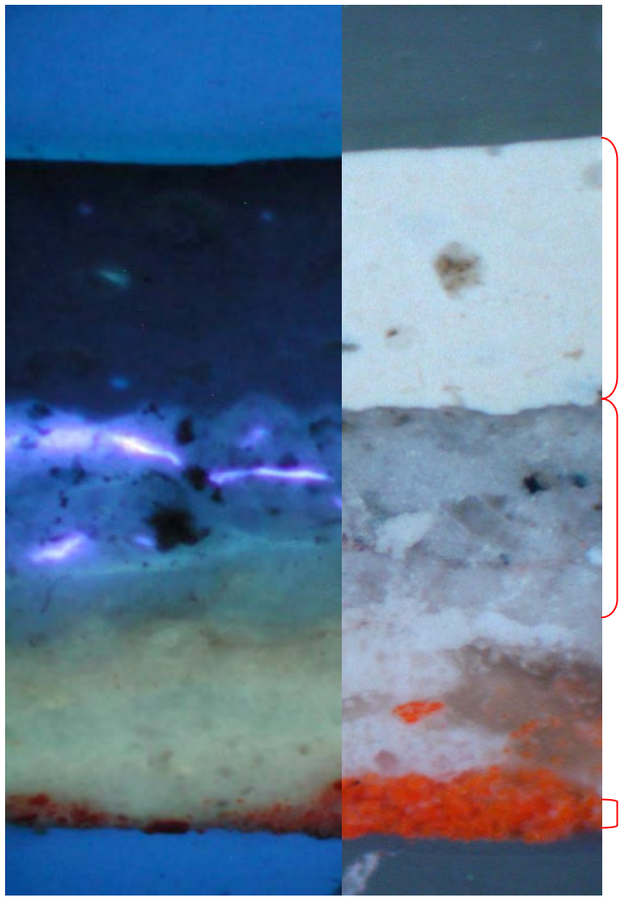
Each sample reveals an entirely different stratigraphy, indicating different levels of surface treatment.

Sample 22 shows salt efflorescence through the paint layer. Sample 23 shows disruption, with modern paints under remnants of older films. Sample 24 contains modern layers only.

5.7 28 Brunswick Square

5.7.1 Sample Locations: Entrance Stuccowork

5.7.2 Stratigraphy

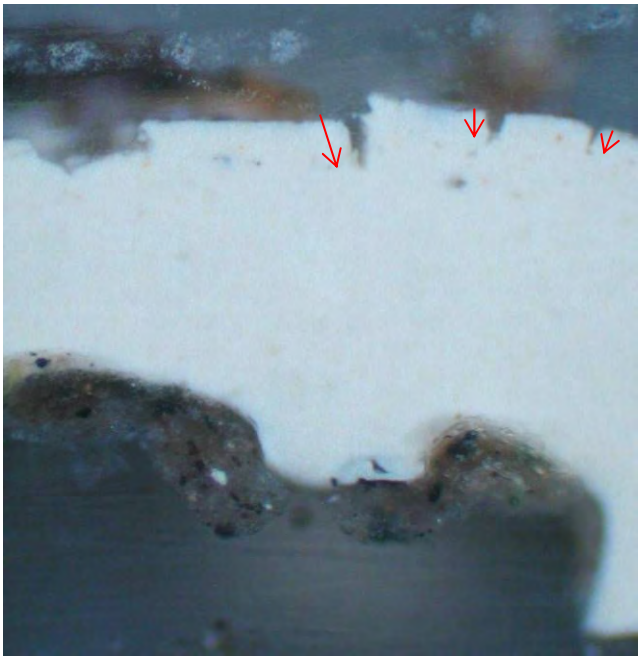


Sample 26
(Thicker finish to flaking area)

Sample 26 is taken from entrance jamb experiencing localised failure. The modern layers appear well intact and with good adhesion. There is evidence of filler spread over older old-based layers, indicating previous failure.

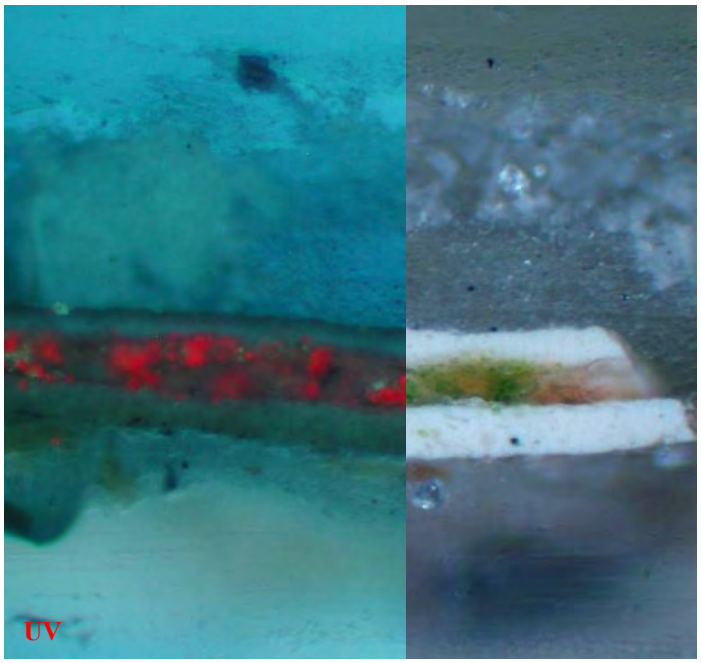
6. Defect Diagnosis

Paint analysis was carried out in order to quantify and qualify modes of failure. The results were as follows:



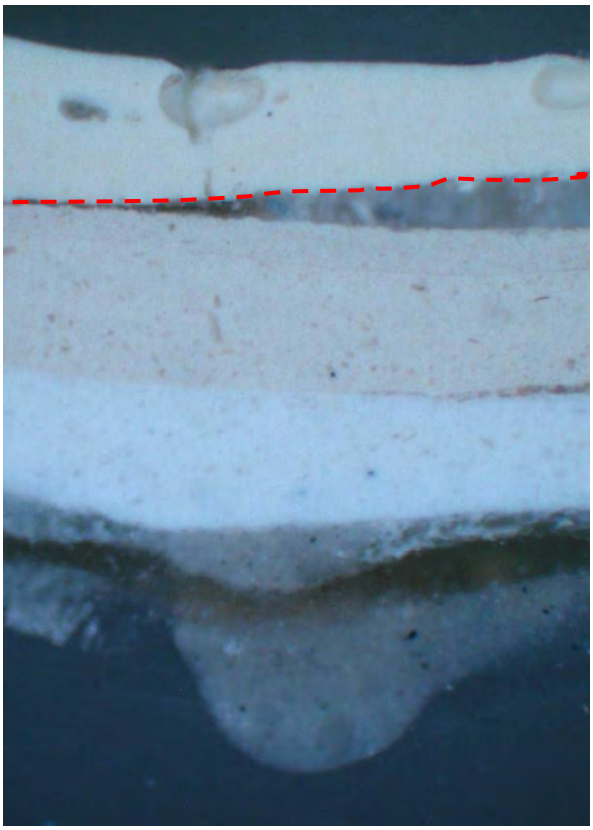
Sample 01

Vertical ‘mud’ cracking: indicating painted below minimum film forming temperature (MFFT);

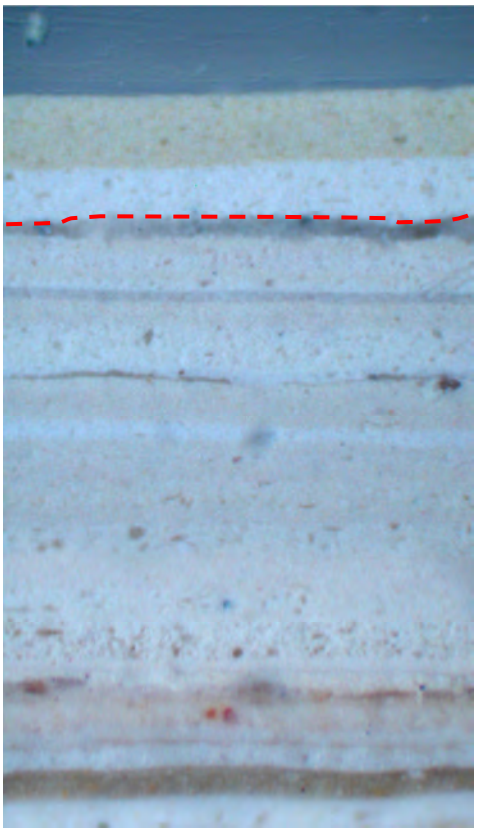


Sample 02

Algae: denoted by red in UV and green in reflected light, indicates moisture holding in substrate; in this instance, growth between layers suggests poor surface preparation;

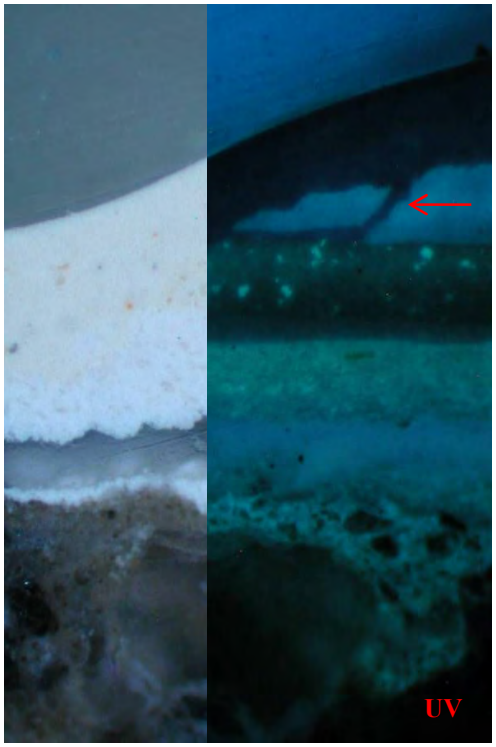


Sample 19

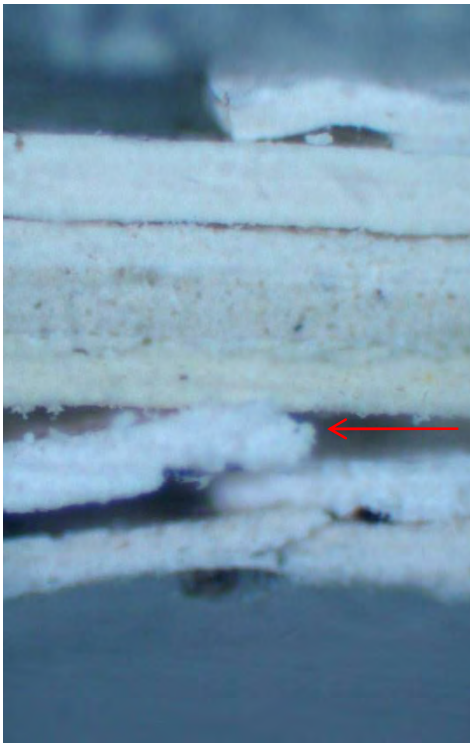


Sample 18

Failure at a specific interface: suggesting issues of critical loading, due to build up of layers, or impaired paint layer adhesion due to poor preparation;



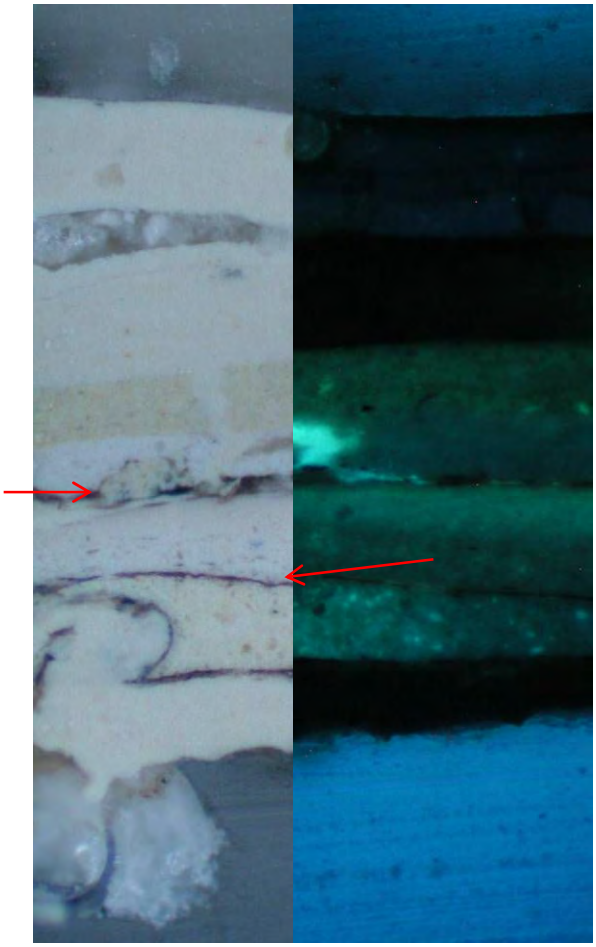
Sample 10



Sample 03

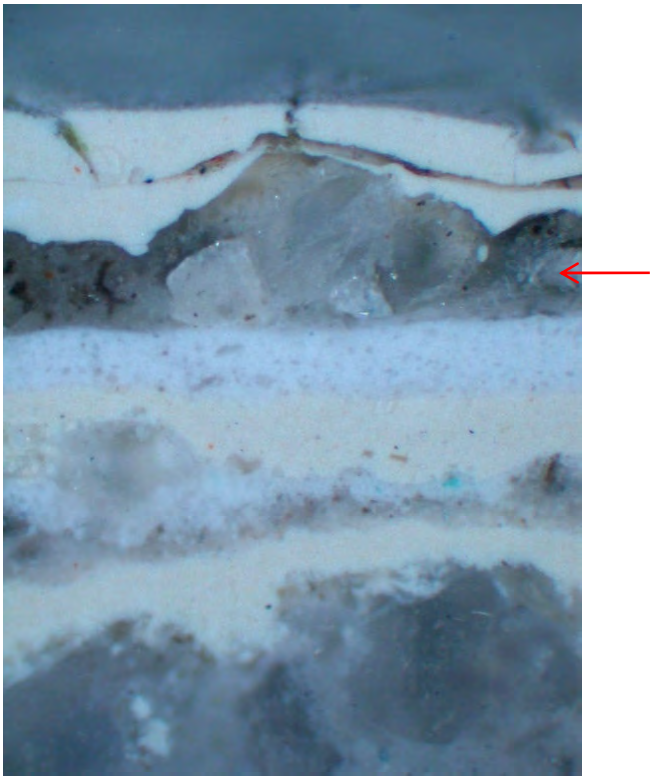
Sample 02

Blind cleavage: cracking of underlying, degraded layers providing unstable substrate for newer system;



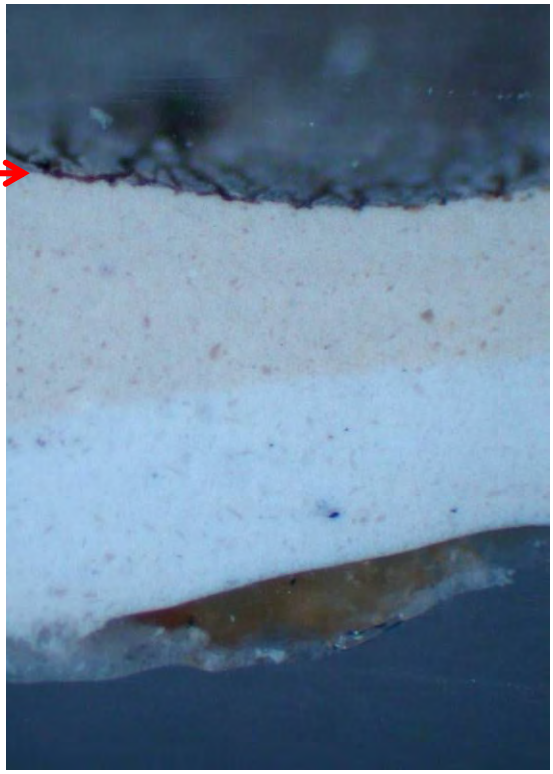
Sample 06

Aggregate grains/dirt between layers: indicating poor surface preparation;

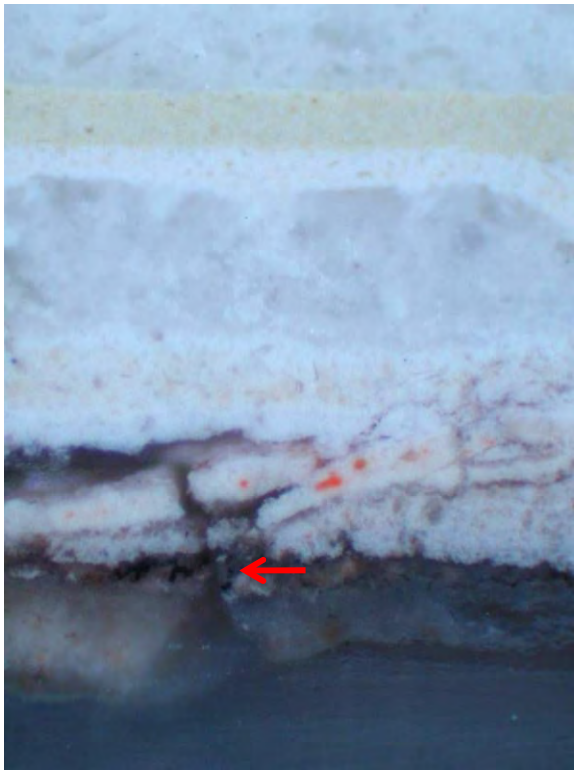


Sample 09

Fillers spread between paints: poor practice, issues with adhesion;

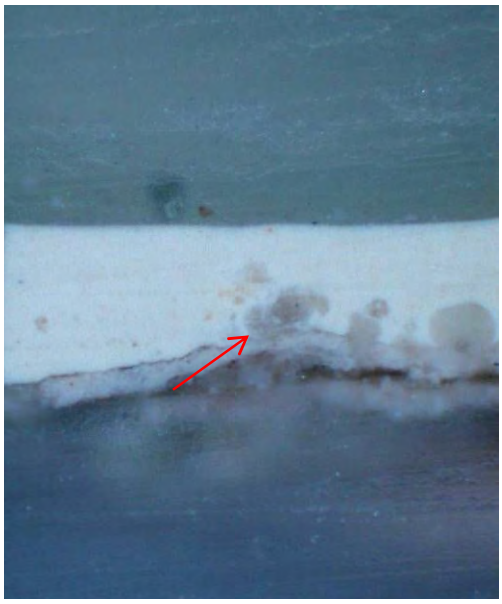


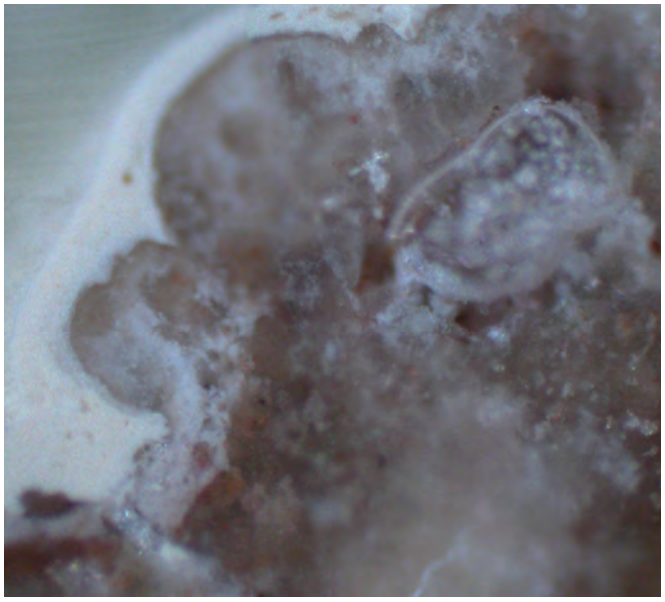
Sample 01



Sample 16

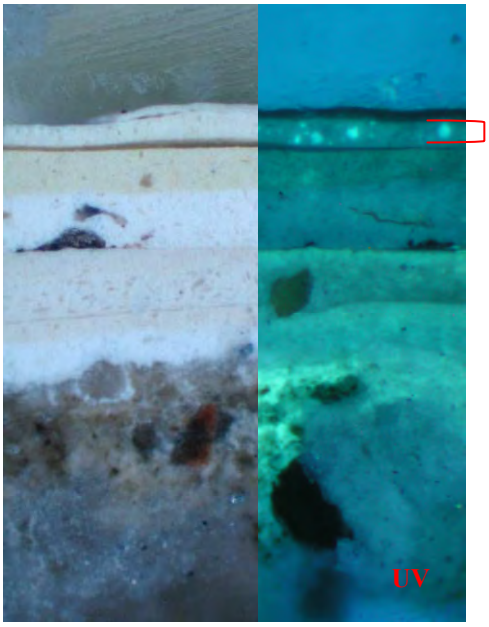
Organic cilia: indicating moisture from substrate or penetration through micro-cracked surface, or poor surface preparation;



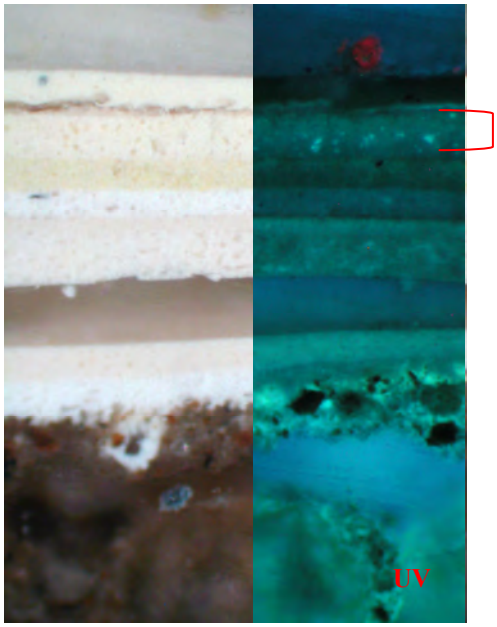


Sample 22

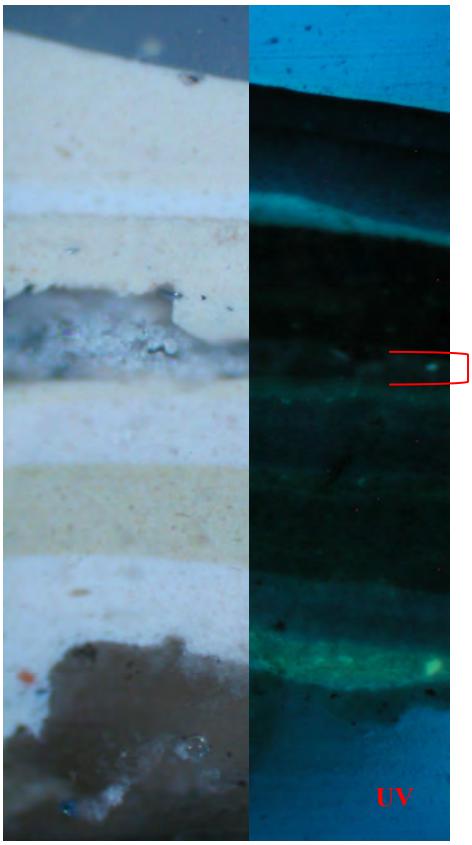
Salt efflorescence from substrate disrupting paint layer;



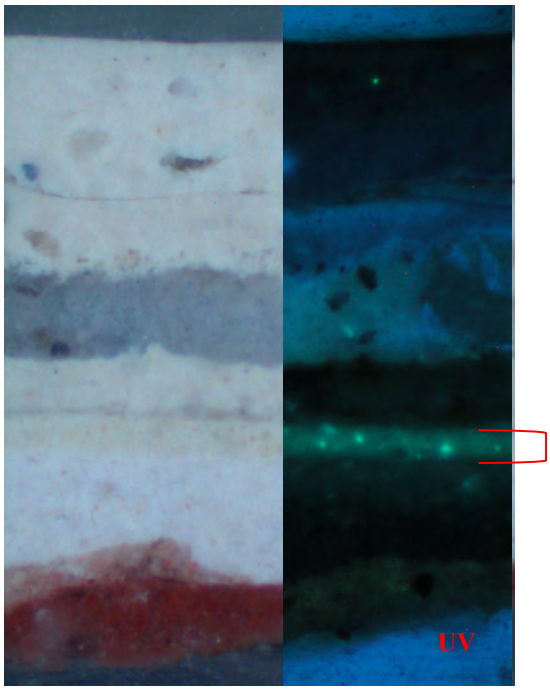
Sample 04A



Sample 04B



Sample 13



Sample 20

Aged zinc-oil paint: zinc paint has a higher oil demand and dries to a rather brittle film. In several samples, failure was noted at the junction of a zinc-oil paint-film. Above, zinc is denoted by the 'sparkling' layer in the UV photomicrograph and is highlighted by the red bracket.

7. Evaluation of Environmental Factors

The failure of the paint system was assessed from a number of different aspects in order to identify any pattern to the failure; these included building location and orientation, time of redecoration and average temperature and rainfall data.

Properties were mapped and the extent of failure colour co-ordinated. This did not reveal a definite pattern; Brunswick Terrace recorded a high percentage (48%) of failures, which could be accounted for by its exposed, south-facing position, fronting both a busy main road and the sea. However, this is not a definitive point, as while properties in the strip numbered 20 to 32 are showing significant failure, those to the strip immediately adjacent, nos. 33-42, are all in excellent condition. To Brunswick Place, 50% of properties are suffering paint failure, the extent of this may be accounted for by the architectural plan: Brunswick place is formed of a narrow (relatively) channel at the top of the far wider Brunswick Square, considering the wind blows from the south, such a configuration could create a wind-tunnel through Brunswick Place, resulting in accelerated deterioration. §5.1 plots the deterioration of the estate.

The specification recommends that the properties be redecorated between the months of May and October. From the documents provided by Brighton & Hove City Council it was clear that quite a number were repainted outside of this period. In some cases broad date ranges were provided, which made statistical interpretation ambiguous.
§5.2 relates property condition with time of redecoration. To begin, in the broadest terms, failure is related to the time of the year and no differentiation is made between in 2010 and 2011; from this, we find that quite a significant proportion of properties did not adhere to the specified redecoration time-range. For these months in 2010 average temperatures ranged between 1.4°C and 4°C; all of which are well below the minimum filming forming temperature of 10°C. Of these a significant fraction are, understandably, exhibiting failure. These results are presented in Table 1 below.

Area	Painted outside recommended range (A)	Percentage of (A) failing	Total failure
Brunswick Square	28%	63%	39%
Brunswick Terrace	19%	50%	48%
Brunswick Place	25%	100%	50%

Table 1: Percentages of Failure

This data was interpreted further, splitting the properties into the separate years and whether they were painted within the specified time-frame, to investigate any correlation; no significant discrepancies were highlighted between the years and higher failure was recorded in those painted outside the specified time period.

For the 2010 and 2005 redecoration cycles, average monthly temperature data, rainfall and sun-hours for the region was interpreted. On the whole, cooler temperatures, greater rainfall and less sun-hours was experienced in 2010. The overall implication of this is that the buildings were generally wetter, and, owing to lower air temperatures and less sunlight, they would remain damp for longer. Furthermore, if washed-down they may have taken longer to dry to an acceptable level.

From Graph 1, it is clear that occasionally, the average temperature was above that directed by the specification, but below the minimum temperature specified in the product data sheet (8°C) and well below the minimum film forming temperature (MFFT), 10°C. These figures do not take relative humidity or sea-spray into account. Graphs 1 to 5 illustrate this data.

7.1 Building Plan: Deterioration Map

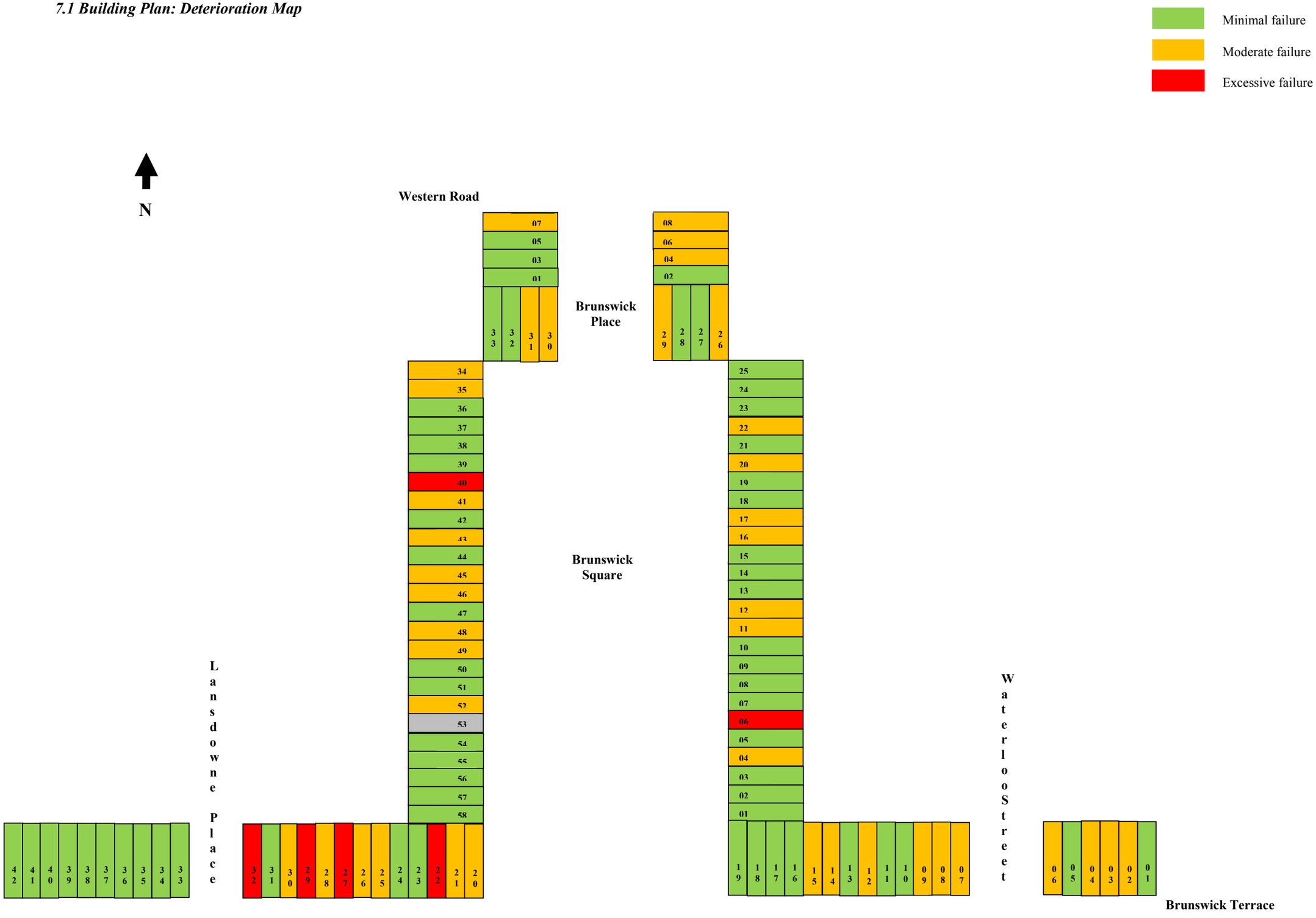


Fig. 1 Map of Paint Deterioration for Brunswick Estate

7.2 Painting Times: Failure Pattern

Property	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1 Brunswick Square												
2 Brunswick Square												
3 Brunswick Square												
4 Brunswick Square												
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6 Brunswick Square												
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57 Brunswick Square												
58 Brunswick Square												

Table 2: Relating Failure to Time of Redecoration, Brunswick Square

Minimal failure

Moderate failure

Excessive failure

Property	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1 Brunswick Place												
2 Brunswick Place												
3 Brunswick Place												
4 Brunswick Place												
5 Brunswick Place												
6 Brunswick Place												
7 Brunswick Place												
8 Brunswick Place												

Table 3: Relating Failure to Time of Redecoration, Brunswick Place

Property	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1 Brunswick Terrace												
2 Brunswick Terrace												
3 Brunswick Terrace												
4 Brunswick Terrace												
5 Brunswick Terrace												
6 Brunswick Terrace												
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40 Brunswick Terrace												
41 Brunswick Terrace												
42 Brunswick Terrace												

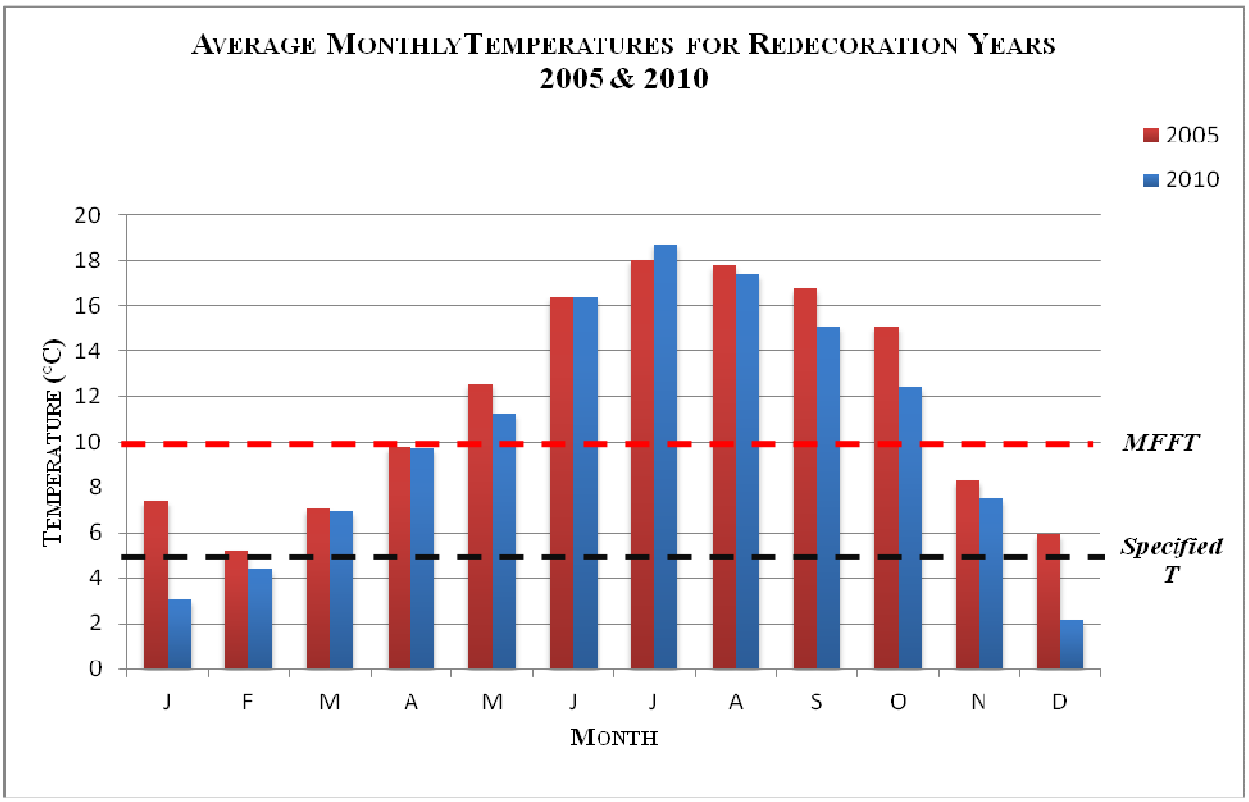
Table 4: Relating Failure to Time of Redecoration, Brunswick Terrace

Minimal failure

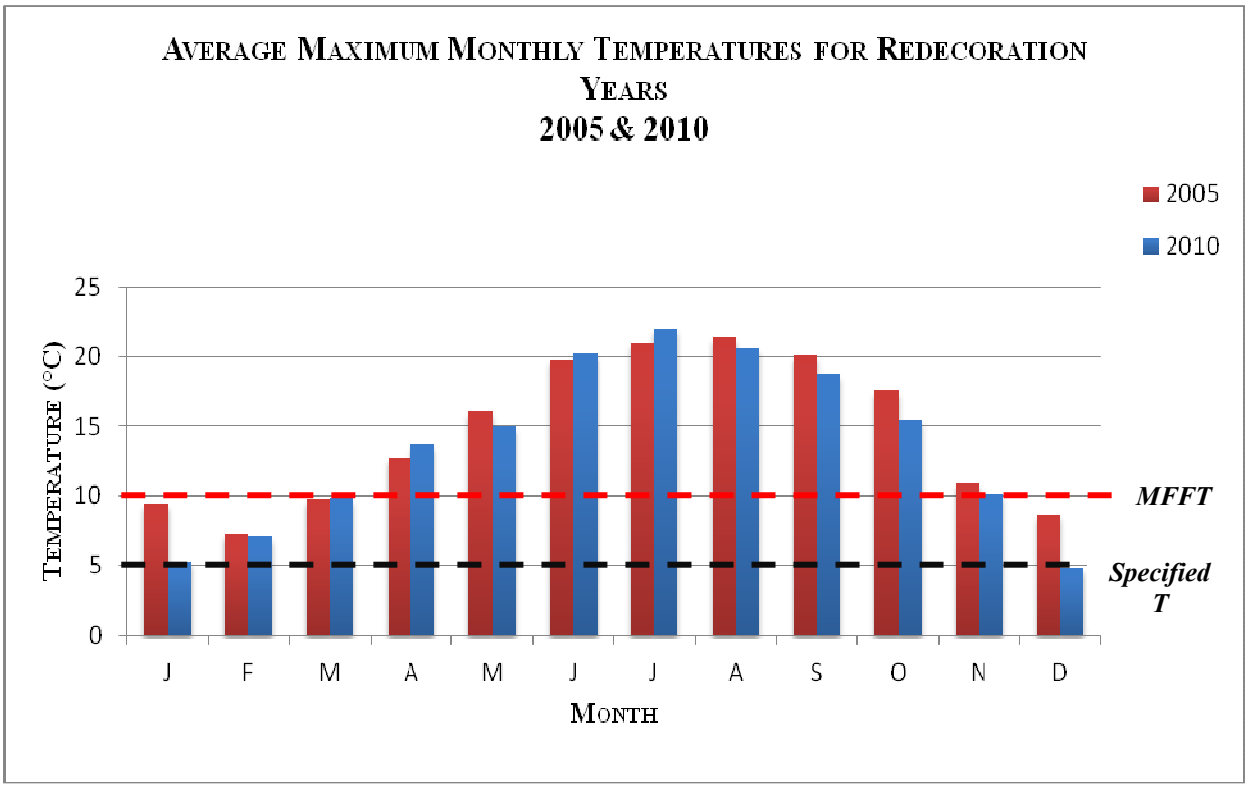
Moderate failure

Excessive failure

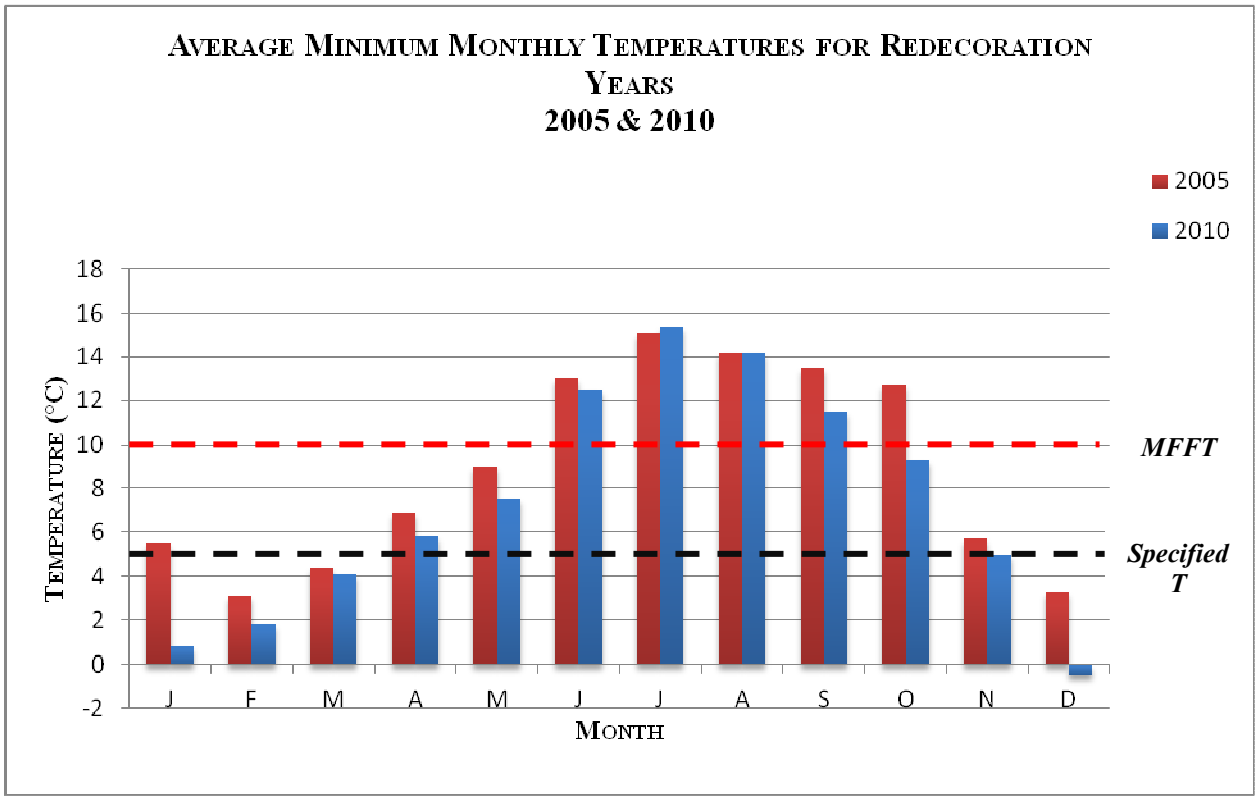
7.3Weather Data



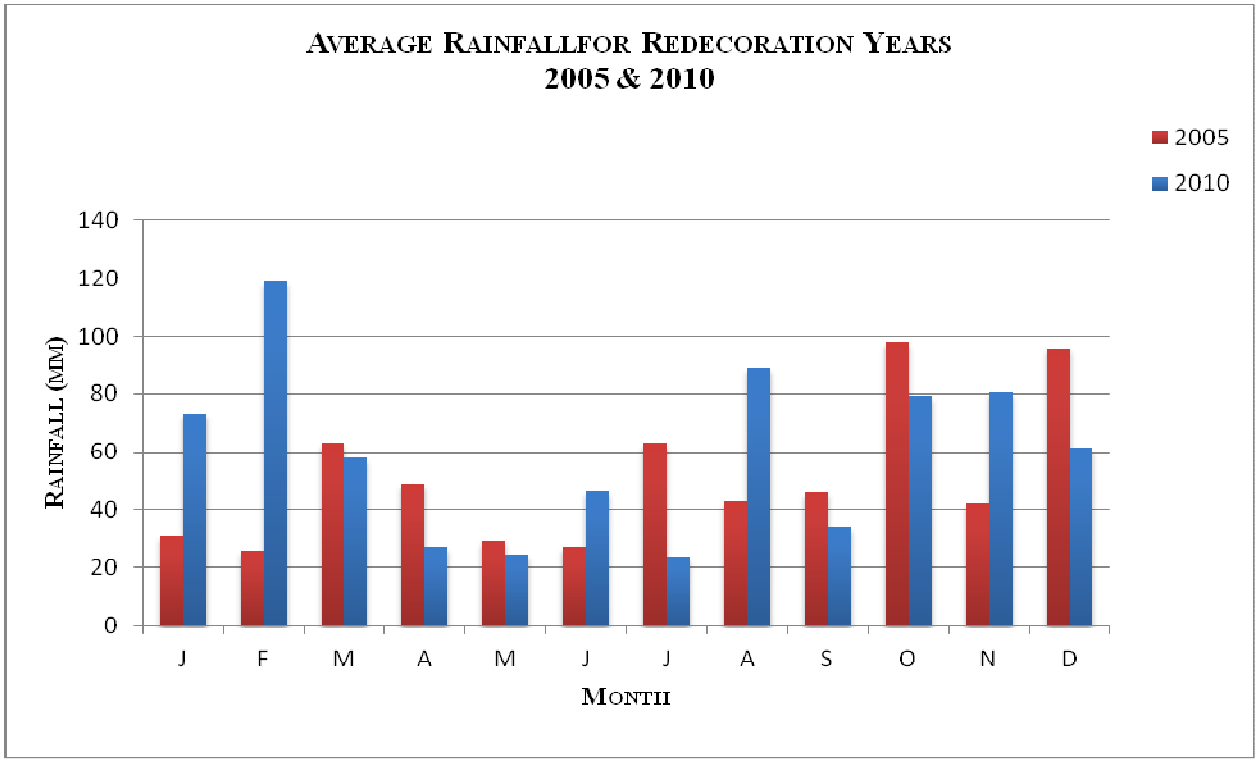
Graph 1: Average Monthly Temperatures for Redecoration Years 2005 & 2010



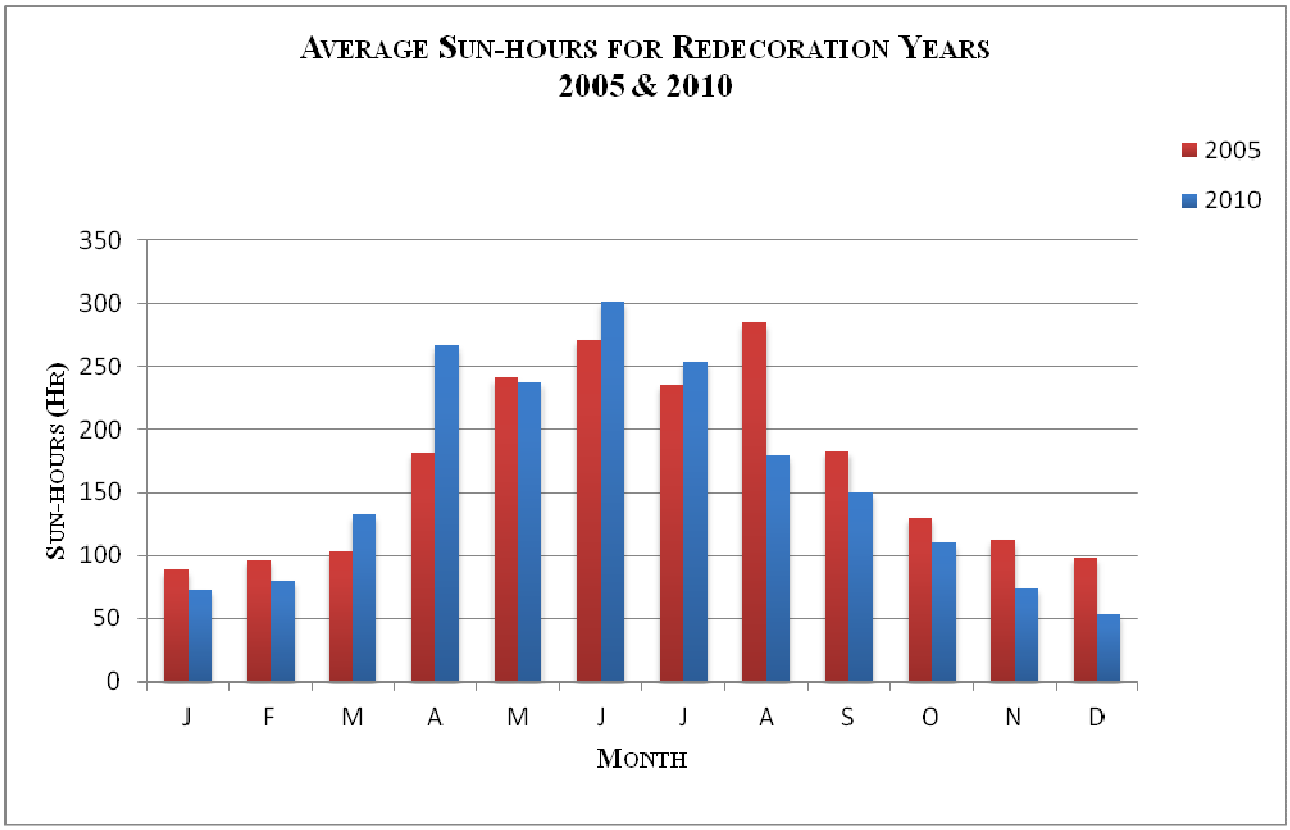
Graph 2: Average Maximum Monthly Temperatures for Redecoration Years 2005 & 2010



Graph 3: Average Minimum Monthly Temperatures for Redecoration Years 2005 & 2010



Graph 4: Average Rainfall in Redecoration Years 2005 & 2010



Graph 5: Average Sun-hours in Redecoration Years 2005 & 2010

All temperature data sourced from,
http://www.metoffice.gov.uk/climate/uk/stationdata/eastbournedata.txt

8. Sources of Failure

Following survey, paint analysis, discussion with residents and contractors, and consideration of architectural and environmental factors, the failure of the paint system at the Brunswick Estate has been attributed to a number of sources. These are:

Preparation

- Inconsistent paint removal creates sacrificial zones, moisture will travel through the path of least resistance; this can also create a potentially unstable substrate (blind-cleavage, where underlying paint has cracked and detached from its support layer/substrate);

- Surfaces were not abraded prior to application, as this is not specified; however, it is specified on the product technical data sheet. This would improve adhesion and increase the life-expectancy of the film;

- Insufficient washing-down of surface; dirt and algae visible between some layers; poor cleaning/drying leads to inadequate inter-coat adhesion;

- If sufficiently washed back, the substrate will require ample time to dry out before redecorating; otherwise the new paint layers will trap moisture, causing blistering, lack of adhesion and ultimately, failure. Analysis of temperature data indicated that 2010 experienced greater rainfall, lower temperatures and less sunshine than 2005, when the previous cycle was carried out, in which case greater drying time may have been necessary.

- The specification requires the edges of layers of existing paint be feathered; this has not been carried out in many areas. The forces exerted between layers by differential thermal movement can become focused at these discontinuous, jagged edges, which may result in the shearing of the uppermost layer(s), which is attempting to join the two sites together.

Materials

- Anecdotal evidence suggests that not all decorators followed the Council's specification, in particular using cheaper, inferior paint-systems or diluting the paint. To a degree, this was confirmed by the survey, which highlighted a number of buildings with obviously different colour;

- Incompatibility between new and existing paint systems will lead to loss of adhesion and subsequent flaking and failure. As oil-based paint systems age, in particular oil-alkyds, they become brittle; the new acrylic polymer water-borne system is inherently a more flexible material. Applying a film with a greater Modulus of Elasticity over a more brittle, rigid substrate will result in the moveable top coat pulling away from the layer beneath. Furthermore, as the underlying oil-based film ages, it is prone to cracking; when over-painted with an acrylic polymer film, these cracks can grow to

the surface, exacerbated by the differential in elasticity between layers and resulting in, seemingly, accelerated deterioration;

- To further this, zinc oil paints have a higher oil demand than lead paints and dry to a brittle film. Several samples containing a zinc-oil paint layer did exhibit failure at this interface;

- If previous layers are not removed, the overall thickness of the paint-film may reach a critical level and induce excessive stresses between strata resulting in loss of adhesion. In particular, increased loading on areas of blind cleavage or poor adhesion, may result in flaking, as surface tension forces created as the paint dries can crack earlier and more brittle layers. Considering this, it may reach a point where paint-stripping is necessary; however, detailed paint research is necessary before wholesale stripping.

Inherent Defects (Building)

- Issues with damp were noted. The substrate holding is moisture: algae observed at basement level and paint-analysis revealed algae between layers and micro-organism filaments at substrate. A damp substrate will result in lack of adhesion, leading to inevitable failure;

- In many areas, fractures in the Roman cement stucco were noted, these weakened zones become sites of potential moisture ingress leading to issues much as above;

- Salt efflorescence, that is, inherent salts leaching from the substrate, was visible across many surfaces; this will disrupt paint layers. Furthermore, repeated wetting-drying cycles will encourage crystallisation, exacerbating the issue further;

- The ornate architectural details of these properties don't always help matters. The many overhanging, shaded areas such as stepped cornices, entablatures, columns and capitals, deep window recesses, porches and balconies are not washed by rainwater, and, as such are dirtier and damper. If they are washed back in accordance with the specification, they will require more drying time, as they are more shaded and cooler. In addition, these lower temperature zones could make the underlying substrate more brittle and prone to failure. As such, failure was almost uniformly noted to these areas;

- Following interpretation, the configuration of the estate may be a contributing factor. As the prevailing wind from the south blows through the relatively narrow channel of Brunswick Place, the formation of a wind-tunnel may result in accelerated deterioration and help understand why 50% of properties are exhibiting failure. Furthermore, the south-facing Brunswick Terrace takes the brunt of sea and traffic exposure and again, could explain the high failure rate in this area;

- Unresolved building defects as well as inappropriate repairs, such as failing to rake out fractures and dovetail fills, will continue to result in failure. This was noted in the survey summary of 4.4.

Fillers

- A cocktail of fillers is specified: NHL for uneven surfaces, acrylic filler for cracks, resin for friable areas, metal sealant. Considering the application of all of these and the paint and filler archaeology underneath (particularly in "problem" areas getting multiple, cyclical applications), questions over compatibility, operating to specification (anecdotal evidence to contrary) and of course, paint-film loading will be significant contributors to the system failure;

- Paint-analysis showed filler had been applied over existing paint layers, which is inappropriate and unlikely to successfully remedy the underlying defect. Furthermore, the specification provided stipulates that skimming over an uneven surface is not acceptable.

Application

- It is impossible to know if the specification was followed, in terms of materials, recommended time-window and surface preparation, all of which will affect the success of the application. Analysis of data provided by the Council indicated that approximately one quarter of the estate was decorated outside of the specified season, with a failure level of over 60% in these buildings – as is to be expected;

- If the paint is applied in temperatures that are too cool, the film will take longer to form and to reach its full exposure resistance. In addition, paint can become too viscous, leading to mud-cracking, which would allow moisture ingress and lead to subsequent delamination of layers;

- Bonding between paint molecules may never occur properly in cold weather, generally the minimum filming formation temperature (MFFT) for acrylic resin paints is 10°C, the product specification recommends 8°C, while the specification provided to the Council recommends 5°C. This is a critical point in the formation of a successful film;

- If previous layers are not removed, the increased load and surface tension of these layers could reach critical point, leading failure;

Environmental

- Sea-spray and proximity to ocean means buildings here never dry out fully and sea-salts ingressing substrates can result in salt crystallisation, which can put pressures behind paint-films;

- Comparison of temperature data for redecoration years 2010 and 2005 revealed that, on the whole, 2010 was a cooler, wetter year with less hours of sun-light. This may have meant that buildings were damper and film formation took longer, and hence the paint-system was more vulnerable during this cycle.

9. Recommendations for 2015 Redecoration Scheme

Considering the findings of our investigation, the current paint-system does not show any inherent weakness and therefore, we cannot find sufficient grounds to recommend changing from the current paint-system at the Brunswick Estate. The paint system has worked well on some facades and others exhibit failure which can be related to preparation, materials, inherent defects, fillers, application and environmental conditions.

Further to this, we have compared various specifications for exterior water-based masonry gloss paints and many formulations bear equal merits and should perform similarly.

From archival and anecdotal research, it is clear that these issues have been ongoing for many years, with several studies commissioned coming to much the same conclusions.

In addition, as five years is a typical serviceable life-span of such modern resin formulations, we cannot recommend an extension to the redecoration cycle at present.

Many newer water-based systems are in their infancy and improved systems can be expected as modern paint technology advances. Consideration can then be given to trialling different paints in the future.

At present, Akzonobel have provided an alternative specification which is used on a number of listed properties around the country. Examples of these properties can be seen in London on the Crown and Grosvenor Estates. It is a water based system which can have either a Gloss or Matt finish and both systems are included in their specification (see appendix). It is also a water based system which should allow a greater evaporation of moisture which can be retained in the walls of period properties. Consideration could be given to trialling this paint in the next 2015 decoration, although we remain cautious about applying a different paint, potentially complicating an already complex issue of compatibility.

It may be better to remain using the Crown specification until a change can be completely justified.

In order to enhance the performance and life-expectancy priority should be given to improved surface preparation and uniform application. Thorough washing back and drying, and abrading and feather-edging are essential for good adhesion and sound film formation. This should be detailed in the specification and a note should be made that shaded “cool zones” may require further drying out time.

There may be the necessity to undertake some stripping of the existing paint-films where lack of adhesion and failure is noted.

Unresolved building defects and maintenance should be of priority.

Low temperatures can lead to impaired film formation with poor exposure resistance. Discrepancies were noted between specifications and these should be discussed with

the supplier and rectified accordingly. While formation at temperatures as low as 5°C may be achievable in certain environments, but this location is particularly aggressive and it is recommended that the minimum temperature be raised to 8°C, in line with the product data sheet. The importance of painting in appropriate conditions should be stressed; particularly that to achieve a long-lasting finish, over the course of the drying time, the temperature must not fall below the recommended temperature.

From the meeting with the Council and residents on 6th November 2013, possibilities of independent survey, issuing of certificates of satisfactory completion and monitoring usage through a paint-tin recycle scheme were discussed. These should be given further consideration as a means of gaining more control over the redecoration and hopefully, seeing improved results.

10. Limitations

While comprehensive, there were a number of limitations to our work. These include:

- Historical records of redecoration were limited; as such these were supplemented by anecdotal evidence;
- Surveys were restricted to visual inspection of front elevations from ground level only;
- There is an element of subjectivity to the surveys, this is particularly relevant in the comparison of previous survey results undertaken by other surveyors;
- It was not possible to inspect those parts of the property which were covered or unexposed at the time of inspection and therefore we are unable to guarantee that some parts are free from defects. Whilst a schedule of photographs is provided to compliment the report, it should be noted that any defects may not be restricted to those identified within the photographs;
- Given the number and scale of the buildings, the number of paint samples taken was very limited and as such, does not represent every aspect of failure at the estate.

Appendix A: Current Crown Specification

Brunswick Estate
Repainting Year 2010

Paint Specification
Sandtex Classic Stone Gloss

Brighton & Hove
City Council

TECHNICAL SPECIFICATION

PROJECT: Exterior Redecoration,
Brunswick Estate, Hove

Repainting Programme for Year 2010

SITE:
1 - 58 Brunswick Square
1 - 42 Brunswick Terrace and
1 - 8 Brunswick Place
Hove
East Sussex

PREPARED BY: John Carlyle
Technical Manager - Specification

INTRODUCTION

The Hove Borough Council Act 1976 requires owners of properties on the Brunswick Estate to repaint the front façades of their properties every five years with an approved paint system and colour as directed by the Brighton and Hove City Council. This is required to preserve the architectural unity and uniform appearance.

This Technical Specification has been prepared by the paint manufacturer Crown Paints to assist owners in meeting their obligations to repaint in year 2010. Further copies are available from the City Councils Conservation Team, telephone 01273 292271.

Listed Building Issues

Owners are reminded that these are Grade 1 listed buildings, and that any alterations including the fixing of cables and aerials, satellite dishes, burglar alarm boxes and flues, pipes and vents on to the front façade will require listed building consent. You should check with the council's conservation team to verify that any cables, flues, alarm boxes etc that might already exist have the necessary consent. If not they should be removed or repositioned to the satisfaction of the Conservation Officer.

Defect Analysis

Prior to repainting the opportunity should be taken to reappraise the general condition of each property. The central issue is one of providing adequate protection to ageing substrates. The cause of any premature paint detachment should be investigated to determine the necessary remedial action to reduce future paint detachment during the expected life cycle from the maintenance painting. Adequate supervision is required for the duration of work.

Causes of early paint failure to areas of masonry are often:

- **application of paint to defective and/or damp stucco**

  You are advised to inspect and make repairs to party walls, parapet walls, back gutters and any projecting ledges, where fractures or hairline cracking is evident. The junction between balcony and façade and joints around the main entrance steps should also be inspected for evidence of water ingress. Lead cover flashings should be examined for splits or other defects. All rainwater goods and external waste pipes should be inspected for leaks or blockages. Fractured or corroded pipes should be renewed and blockages cleared.

- **loss of adhesion between old paint coatings or between old paint coatings and the stucco substrate**

  You are encouraged to remove old paint coatings where they have become detached from the roman cement substrate. Areas of render, which have been damaged by prolonged water saturation, should be renewed.

- **poor preparation**

  This might include failure to repair cracks in the roman cement render or the use of inappropriate fillers for surface and crack filling. It is also important to wash down all surfaces to remove all grime and salts prior to application of each coat of paint. The seafront is a tough environment requiring very thorough preparation of render, joinery and ironwork. It is essential that all metalwork is prepared and coated in full accordance with the paint manufacturer's specification in order to provide optimum performance. Premature paint failures and sub film corrosion will otherwise continue to result in the unsightly 'rust stain' contamination of adjacent surfaces.

- **the paint manufacturer's specification**

  The appointed Contractor must adhere to the specified preparation of surfaces and sequence of work as specified. All materials must be used in accordance with the manufacturer's instructions and current Codes of Practice.

  Coatings must not be allowed to stand exposed for long periods, prior to the application of the finishing coat; or applied under extreme weather conditions such as temperatures below 5° Centigrade or during rain, sea mist, or if the relative humidity is above 80%, or when such conditions are expected.

Professional day to day supervision of the painting / repairs contract is strongly recommended.

Regular adjustment of any scaffolding abutting the façade is also recommended, to ensure satisfactory paint coatings throughout.

Adequate time should be allowed for the preparation and drying of damp rendered surfaces and those exhibiting micro blisters / bubbles, before washing down and final decoration in accordance with the specification.

In order to avoid the difficulties and problems associated with adverse weather conditions, painting during the period May to October is recommended.

TECHNICAL SPECIFICATION

CONTENTS

Substrates:

MASONRY SURFACES: PREVIOUSLY PAINTED
Includes all render, stucco and concrete substrates.

SURVEY

Localised adhesion failures and 'rust staining' from adjacent metalwork is evident in some areas.

SURFACE PREPARATION

Fixtures and fittings

Remove all redundant fixtures and fittings and make good to match existing. Allow to dry. Refix any loose cables.

Loose and failing paint coatings - manual removal

All surfaces must be clean, suitably dry and free from anything that will interfere with the adhesion of the materials to be applied. Particular care should be taken with the surface preparation of horizontal surfaces. Remove all loose and failing material by thorough scraping and stiff bristle brushing (not wire) back to a sound, firm edge. Feather edges of sound paintwork (see Note below).

Some areas of severe localised adhesion failures are occurring due to the presence of high levels of residual moisture and soluble salts (efflorescence), these areas should be completely stripped back to a bare surface and allowed to dry for at least 48 hours, and possibly longer, before over painting, to ensure satisfactory long term adhesion and performance.

Note:
The existing paint coatings are often very thick and can result in unsightly sharp ragged paint edges after preparation. Skimming over old pitted surfaces or thick paint edges with filler is not a durable solution. Stripping the paint back further to an appropriate straight joint line or to the edge of a window or projecting architectural feature / detail is a more satisfactory solution than feathering edges.

Rust staining & surface contamination

Wash with hot water and liquid detergent solution to remove any contaminants, frequently changing the water. Lightly 'wet abrade' if required, to assist in the removal of any 'stubborn' areas of surface contamination. Rinse thoroughly with clean water to remove all residues. Allow to dry.

Organic growth - manual removal
Sandtex Trade Fungicide

All visible signs of organic growth must be removed by scraping or brushing with a stiff bristle brush (not wire). The spores must then be killed by an application of Sandtex Trade Fungicide in accordance with the manufacturer's instructions.

Loose and defective render
Hydraulic Lime Render

Under the terms of the Hove Borough Council Act 1976 the front of these listed historic buildings shall be maintained unaltered. Repairs should therefore be carried out in the traditional manner, matching existing materials, method of construction and detail. All cracks and badly weathered render should be repaired to prevent moisture ingress. A natural hydraulic lime render mix is recommended, of a suitable strength appropriate to the location and substrate. Adequate time for curing and drying must be allowed. A render mix comprising of natural hydraulic lime, clean well graded sand and stone dust mixed to a strength of 1:2:1 is recommended for general use or a similar proprietary hydraulic lime mortar mix as supplied.

Coping stone joints, cornices and ledges

Ensure that all coping stone joints, cornices and ledges are sound or repaired to prevent moisture ingress into the structure below.

Random cracks large enough to fill
Sandtex Trade Ready Mixed Filler

Rake out random cracks and make good with Sandtex Trade Ready Mixed Filler in accordance with the manufacturer's instructions. Surplus filler surrounding the crack should be removed. Allow to harden and dry.

Ferrous / non ferrous metal (wall mounted) fixtures and fittings
Patch priming - Crown Trade Protective Coatings: High Build Metal Primer

All surfaces must be clean and free from anything that will interfere with the adhesion of the materials to be applied. Remove all loose paint and surface rust by scraping, chipping and wire brushing. Feather edges of sound paint with abrasive paper. Remove all dust. Wash with hot water and liquid detergent solution to remove all oil/grease and any other contaminants, frequently changing the water. Rinse thoroughly with clean water to remove all residues. Allow to dry. Patch prime all bare metal with one full coat of Crown Trade Protective Coatings: High Build Metal Primer. The wet film thickness must not be less than 100 micrometres. Allow a minimum drying time of 16 hours in normal drying conditions.

Ferrous / non ferrous metal (wall mounted) fixtures and fittings
Bring forward - Crown Trade Protective Coatings: High Build Micaceous Iron Oxide

Bring forward all patch primed areas with one full coat of Crown Trade Protective Coatings: High Build Micaceous Iron Oxide in accordance with the manufacturer's instructions. The wet film thickness must not be less than 165 micrometres. Allow a minimum drying time of 16 hours in normal drying conditions.

Note: All wall mounted metalwork, (fixtures and fittings) to be finished as described in 'Woodwork' schedule, see page 10.

Patch stabilising
Sandtex Trade Stabilising Solution

Stabilise all bare, repaired and chalking areas with a liberal application of Sandtex Trade Stabilising Solution. Allow a minimum drying time of 16 hours in normal drying conditions.

Note: Sandtex Trade Stabilising Solution must not be applied over surfaces treated with bitumens.

Graffiti, rust stained surfaces
Crown Trade Alkali Resisting Sealer

All surfaces must be clean, dry and free from anything that will interfere with the adhesion of the materials to be applied. Wash with hot water and liquid detergent solution to remove any contaminants, frequently changing the water. Rinse thoroughly with clean water to remove all residues. Allow to dry. Apply one full coat of Crown Trade Alkali Resisting Sealer in accordance with the manufacturer's instructions to all offending areas. Allow a minimum drying time of 16 hours in normal drying conditions.

Remaining sound painted surfaces

Wash with hot water and liquid detergent solution to remove all surface contaminants, frequently changing the water. Rinse thoroughly with clean water to remove all residues. Allow to dry.

Bring forward
Sandtex Trade Classic Stone Gloss masonry paint

Bring forward all patch stabilised areas with one full coat of Sandtex Classic Stone Gloss. Allow a minimum drying time of 6 hours in normal drying conditions before proceeding with the two top coat decoration.

DECORATION

Prepared sound clean surfaces
Sandtex Classic Stone Gloss decoration - two coats

Decorate with two full-bodied coats of Sandtex Classic Stone Gloss in accordance with the manufacturer's instructions. Allow a minimum drying time of 6 hours between coats in normal drying conditions.

Note: Sandtex Classic Stone Gloss must not be applied over surfaces treated with bitumens.

WOODWORK: PREVIOUSLY PAINTED

SURVEY

The condition of all windows should be assessed and overhauled as necessary. Sash cords should be checked and putty glazing inspected as defective putties are the major source of water ingress into window frames and bottom rails in particular.

SURFACE PREPARATION

Exterior Doors

Ensure the tops and bottoms of all exterior doors are fully coated to reduce water ingress.

Defective timber
Proprietary timber preservative and two-pack proprietary wood filler

All defective timber must be removed and replaced to matching profile. To any non-preservative treated bare or replacement timber deemed to be Durability Class 4 (slightly durable) or Class 5 (not durable) reference BS EN350-2:1994, brush apply a proprietary timber preservative, such as Sadolin Wood Preserver, to all exposed surfaces and end grain in accordance with the manufacturer's instructions. Allow adequate time to dry. Replacement timber should be fixed with a two-pack proprietary wood filler in accordance with the manufacturer's instructions. Rub down with a suitable grade abrasive paper. Remove all dust. Allow to dry.

Notes:
For optimum performance the filler should only be used on bare timber.
The end grains of preservative treated timbers which are subsequently cut / sawn should be retreated with preservative prior to installation. In order to achieve satisfactory penetration, dipping for a minimum of one minute is recommended.
All concealed faces and end grains of replacement joinery not fixed using a two pack proprietary wood filler should be fully primed prior to installation.

Organic growth
Sandtex Trade Fungicide

Remove all visible signs of organic growth and treat the areas with Sandtex Trade Fungicide in accordance with the manufacturer's instructions. Allow to dry.

Grey denatured timber, unsound loose and failing paint

All surfaces must be clean and free from anything that will interfere with the adhesion of the materials to be applied. Remove all loose and failing paint back to bare timber, where breakdown is extensive the complete element should be stripped, by scraping and/or the use of a hot air paint stripper or a proprietary paint remover used in accordance with the manufacturer's instructions. Prior to painting, the moisture content should not exceed 18%. Remove grey denatured surfaces by rubbing down with abrasive paper or by mechanical means. Feather edges of sound paint. Remove all dust.

Notes:
Where breakdowns are extensive, the complete section of joinery should be stripped back to a natural joint.
All joint areas should be thoroughly abraded in order to ensure all loose coatings are taken back to a firm edge.

Sharp edges

Round all sharp edges to a 1-3mm radius. Remove all dust.

Knots / resinous areas

Remove excess resin from knots and other resinous areas by the use of a hot air paint stripper. Wipe immediately with methylated spirit to remove residue. Apply two thin coats of fresh knotting to all exposed knots. Allow to dry.

Note: If knots are removed fill with a two-pack proprietary wood filler.

Putty Glazing
Priming - Sandtex Trade Flexible Primer-Undercoat

Remove any loose, suspect and cracked putty. Gaps between glazing putties and glass must be filled during surface preparation. Glazing rebates must be cleaned and primed with one full coat of Sandtex Trade Flexible Primer-Undercoat. Allow a minimum drying time of 16 hours in normal drying conditions. Modified non-setting compounds are preferred. Linseed oil putty must be allowed to form a hard skin before overcoating.

Note: Make good all defective non-setting mastic or putty glazing to prevent water ingress.

Surface defects
Sadolin Stainable Woodfiller, (two-pack wood filler)

Rake out any defective filler. Fill, including any knots that have been removed, with Sadolin Stainable Woodfiller in accordance with the manufacturer's instructions. Any surplus should be removed whilst still wet. Allow to cure. Rub down with a suitable grade abrasive paper. Remove all dust. Allow to dry.

Note: For optimum performance the filler should only be used on bare timber.

Open joints in window / door frames or doors
Sadolin Stainable Woodfiller, (two-pack wood filler)

Rake out any defective filler. Fill open joints with Sadolin Stainable Woodfiller using a filling knife in accordance with the manufacturer's instructions. Allow to cure. Rub down with a suitable grade abrasive paper. Remove all dust. Allow to dry.

Note: For optimum performance the filler should only be used on bare timber.

Ferrous / non-ferrous metal fixings and hinges
Patch priming - Sandtex Trade Rust Inhibiting Primer. Bring forward

Remove all loose paint and rust. Feather edges of sound paint. Remove all dust. Wash with hot water and liquid detergent solution to remove all oil/grease and any other contaminants, frequently changing the water. Rinse thoroughly with clean water to remove all residues. Allow to dry. Patch prime all bare metal with one coat of Sandtex Trade Rust Inhibiting Primer in accordance with the manufacturer's instructions. The wet film thickness must not be less than 83 micrometres. Allow a minimum drying time of 16 hours in normal drying conditions. Bring forward patch primed areas with one coat of Sandtex Trade Flexible Primer-Undercoat. Allow to dry.

Patch priming
Sandtex Trade Flexible Primer-Undercoat

Patch prime all bare timber and filled areas with one full coat of Sandtex Trade Flexible Primer-Undercoat. Ensure end grain is well coated. Allow minimum drying time of 16 hours in normal drying conditions.

Shop primed (replacement) joinery

Priming which is in poor condition should be thoroughly abraded and treated as bare timber. Following thorough surface preparation, reprime with one full coat of Sandtex Trade Flexible Primer-Undercoat. Allow a minimum drying time of 16 hours in normal drying conditions.

Remaining sound paint

Wash with hot water and liquid detergent solution to remove any contaminants, frequently changing the water. Wet abrade sound paint to provide a key. Rinse thoroughly with clean water to remove all residues. Allow to dry.

Bring forward
Sandtex Trade Flexible Primer-Undercoat

Bring forward spot primed areas with one full coat of Sandtex Trade Flexible Primer-Undercoat. Ensure end grain is well coated. Allow a minimum drying time of 16 hours in normal drying conditions.

Undercoat (all woodwork & wall mounted metal fixtures & fittings)
Sandtex Trade Flexible Primer-Undercoat

Apply one full coat of Sandtex Trade Flexible Primer-Undercoat to all surfaces to be decorated. Ensure end grain is well coated. The wet film thickness must not be less than 63 micrometres. Allow minimum drying time of 16 hours in normal drying conditions.

Denib

Denib using a fine grade Scotch Brite Pad (grey) or a fine grade abrasive paper. Do not break the surface of the coating. Remove all dust.

DECORATION

Prepared sound clean surfaces (all woodwork & wall mounted metal fixtures & fittings)
Sandtex Trade Flexigloss X-tra decoration

Decorate with one full coat of Sandtex Trade Flexigloss X-tra in accordance with the manufacturer's instructions. Ensure end grain is well coated. The wet film thickness must not be less than 59 micrometres.

METALWORK: PREVIOUSLY PAINTED

SURVEY

Within The Brunswick Estate, metalwork requiring redecoration will include rainwater and waste water goods, railings both cast iron and steel, metal window boxes, boot scrapers and alarm boxes. The condition of these should be assessed and any necessary repairs agreed with the contractor prior to redecoration. It is essential that all metalwork is prepared and coated in full accordance with the paint manufacturer's specification in order to provide optimum performance. Premature paint failures and sub film corrosion will otherwise continue to result in the unsightly 'rust stain' contamination of adjacent surfaces.

SURFACE PREPARATION

Broken or severely corroded metals

Remove and replace broken or severely corroded metal sections to match existing detail in like material.

Organic growth
Sandtex Trade Fungicide

Remove all visible signs of organic growth and treat the areas with Sandtex Trade Fungicide in accordance with the manufacturer's instructions. Allow to dry.

Ferrous metal gutters and hopper heads
Black Bituminous Paint

Remove all accumulated debris. Replace all broken brackets and fixings. Repair any leaking joints. Remove from inside faces, surface rust and any loose previous treatments by thorough wire brushing. Apply one coat of Black Bituminous Paint. Ensure exterior faces are kept free from contamination with the bituminous paint.

Bright, new galvanised metal
Pre-treatment - Passivating Wash

All surfaces must be clean and free from anything that will interfere with the adhesion of the materials to be applied. Wash with hot water and liquid detergent solution to remove all oil/grease and any other contaminants, frequently changing the water. Rinse thoroughly with clean water to remove all residues. Allow to dry. Pre-treat all areas to be decorated with an application of Decorators Choice Passivating Wash in accordance with the manufacturer's instructions. The pre-treatment will blacken the galvanising and confirm satisfactory surface preparation. Allow a minimum drying time of 2 hours in normal drying conditions. Wash with clean water and allow to dry. Apply overall, one coat of Crown Trade Universal Metal Primer which must be applied within 48 hours.

Ferrous & non ferrous metals: rusting, unsound, loose and failing paint
Patch priming - Crown Trade Protective Coatings: High Build Metal Primer

All surfaces must be clean and free from anything that will interfere with the adhesion of the materials to be applied. Remove all loose and failing paint by scraping and/or the use of a proprietary paint remover used in accordance with the manufacturer's instructions. Remove all surface rust and scale by thorough chipping, scraping and wire brushing. Feather edges of sound paint with abrasive paper. Remove all dust. Wash with hot water and liquid detergent solution to remove all oil/grease and any other contaminants, frequently changing the water. Rinse thoroughly with clean water to remove all residues. Allow to dry. Spot prime all bare metal within the working day with one full coat of Crown Trade Protective Coatings: High Build Metal Primer. The wet film thickness must not be less than 100 micrometres. Allow a minimum drying time of 16 hours in normal drying conditions.

Lead flashings
Crown Trade Universal Metal Primer

All surfaces must be clean and free from anything that will interfere with the adhesion of the materials to be applied. Wash with hot water and liquid detergent solution to remove all oil/grease and any other contaminants, frequently changing the water. Lightly wet abrade bare metal to a bright metallic (not polished) surface. Rinse thoroughly with clean water to remove all residues. Allow to dry. Remove all loose and failing paint by scraping and/or the use of a proprietary paint remover used in accordance with the manufacturer's instructions. Feather edges of sound paint with abrasive paper. Remove all dust. Bare metal must be free from condensation and spot primed with one coat of Crown Trade Universal Metal Primer in accordance with the manufacturer's instructions. The wet film thickness must not be less than 83 micrometres. Allow a minimum drying time of 16 hours in normal drying conditions.

Remaining sound paint

Wash with hot water and liquid detergent solution to remove any contaminants, frequently changing the water. Wet abrade sound paint to provide a key. Rinse thoroughly with clean water to remove all residues. Allow to dry.

Bring forward
Crown Trade Protective Coatings: High Build Micaceous Iron Oxide

Bring forward all patch primed areas with one full coat of Crown Trade Protective Coatings: High Build Micaceous Iron Oxide in accordance with the manufacturer's instructions. The wet film thickness must not be less than 165 micrometres. Allow a minimum drying time of 16 hours in normal drying conditions.

Intermediate coat
Crown Trade Protective Coatings: High Build Micaceous Iron Oxide

Apply one full coat of Crown Trade Protective Coatings: High Build Micaceous Iron Oxide to all surfaces to be decorated. The wet film thickness must not be less than 165 micrometres. Allow minimum drying time of 16 hours in normal drying conditions.

Denib

Denib using a fine grade Scotch Brite Pad (grey) or a fine grade abrasive paper. Do not break the surface of the coating. Remove all dust.

DECORATION

Prepared sound clean surfaces
Sandtex Trade Flexigloss X-tra decoration

Decorate with one full coat of Sandtex Trade Flexigloss X-tra in accordance with the manufacturer's instructions. The wet film thickness must not be less than 59 micrometres.

PVC - U COMPONENTS: PREVIOUSLY PAINTED
Rain and waste water goods.

SURFACE PREPARATION

PVC-U
Spot priming - Crown Trade Alkali Resisting Sealer

Remove all loose and failing paint. Feather edges of sound paint. Remove all dust. Clean all surfaces using Sandtex Trade PVC-u Cleaner in accordance with the manufacturer's instructions and allow to dry. Spot prime all bare areas with one coat of Crown Trade Alkali Resisting Sealer, thinned with clean, dearomatised white spirit in accordance with the manufacturer's instructions. Allow a minimum drying time of 16 hours in normal drying conditions.

Remaining sound paint

Wash with hot water and liquid detergent solution to remove any contaminants, frequently changing the water. Wet abrade sound paint to provide a key. Rinse thoroughly with clean water to remove all residues. Allow to dry.

Bring forward
Sandtex Trade Flexible Primer-Undercoat

Bring forward spot primed areas with one full coat of Sandtex Trade Flexible Primer-Undercoat. Allow a minimum drying time of 16 hours in normal drying conditions.

Undercoat
Sandtex Trade Flexible Primer-Undercoat

Apply one full coat of Sandtex Trade Flexible Primer-Undercoat to all surfaces to be decorated. The wet film thickness must not be less than 63 micrometres. Allow minimum drying time of 16 hours in normal drying conditions.

Denib

Denib using a fine grade Scotch Brite Pad (grey) or a fine grade abrasive paper. Do not break the surface of the coating. Remove all dust.

DECORATION

Prepared sound clean surfaces
Sandtex Trade Flexigloss X-tra decoration

Decorate with one full coat of Sandtex Trade Flexigloss X-tra in accordance with the manufacturer's instructions. The wet film thickness must not be less than 59 micrometres.

IMPORTANT NOTES

Apply all products in accordance with BS 6150:2006 Code of practice for painting buildings and BS 8000:Part 12:1989 Code of practice for decorative wallcoverings and painting.

All products should be applied in accordance with the manufacturer's instructions / Product Data Sheets.

If there is any doubt whatsoever with any aspect of this Specification it must be brought to the attention of the Specifying Authority before pricing.

Special precautions should be taken during surface preparation of pre – 1990's paint surfaces as they may contain harmful lead. For further information contact Crown Paints Customer Relations Team on 0845 389 9583

In order to ensure colour uniformity of masonry surfaces throughout the Estate, only Sandtex Trade Classic Stone Gloss (Hove Cream) should be used for each of the two finishing coats. Alternative first coat colours must not be used. Any variation in colour that is detected may be attributed to failure in applying the specified coatings in accordance with the manufacturer's instructions / specification. Should this situation be suspected or experienced during the progress of these works, application of the product should cease immediately and instructions from the Contract Administrator obtained before continuing.

Please contact your Local Crown Paints representative via our Specification Support Team on 01254 870249 quoting the specification reference no. 09-001-jc should you have any enquiry regarding this Specification.

Every care is taken to ensure the information provided in this Specification is accurate at the time of issue. Final results cannot be guaranteed by the manufacturer since it has no control over the conditions under which its products are applied.

COLOUR SCHEDULE

All previously painted masonry.

Sandtex Classic Stone Gloss – **Hove Cream**

All previously painted joinery (except doors)

Sandtex Trade Flexigloss X-tra – **Hove Cream**
Windows, alarm boxes, pipes and pipe work against masonry surfaces.

All previously painted metalwork and doors

Sandtex Trade Flexigloss X-tra **- Black**
Doors (unless agreed otherwise in writing with Brighton and Hove City Council), balconies, railings, and all other previously painted decorative metalwork.

Stockists

Large stocks of the specified materials are held by C Brewer and Sons Limited at:

Albany House
New England Street
Brighton
East Sussex
BN1 4GQ
Telephone: 01273 570243

Portland Business Park
Portland Road
Hove
East Sussex
BN3 5RY
Telephone: 01273 705555

Appendix B: Akzonobel Specification

Elizabeth Hirst
Hirst Conservation
Laughton
Sleaford
NG34 0HE
United Kingdom

ICI Paints AkzoNobel
Wexham Road

Berkshire
SL2 5DS
United Kingdom

18 October 2013
ICI Reference: GB-037949

Dear Liz,

re.: External of Properties to the Brunswick Square Estate

Following your recent request, it is my pleasure to enclose the systems that I have prepared for External of Properties to the Brunswick Square Estate. I trust that the systems are self-explanatory and fully cover the areas and substrates requested.

Important Notes

In order to achieve the optimum results it is extremely important to adhere to the systems and Site Work Instructions v5 quoted. Please note that ICI Paints AkzoNobel will not accept responsibility for any amendments to or unauthorised usage of the wording contained in the system sheets or in the Site Work Instructions v5. Prior to the start of the painting contract, Client & Contractor must agree arrangements with regard to the Site Work Instructions v5 clauses below.

1. Section 2: Conditions of Use — Building Repairs/Prior to Paint work
2. Section 2: Conditions of Use — Responsibility to Confirm Surface as Specified
3. Section 6: Colour — All Clauses

To ensure the smooth implementation of the project, I would be grateful if you would contact me once you have appointed a Main Contractor and/or Contract Partner on the contact details below.
If I can be of any further help, I can be contacted through any details listed below.
Yours Sincerely,

Tony Westgarth

Specifier Account Manager
ICI Paints Akzo Nobel
Telephone: +44 07802243625
E-mail: tony.westgarth@akzonobel.com

made without the express prior written permission of ICI Paints AkzoNobel. ICI Paints AkzoNobel will not accept responsibility for any unauthorised amendments or usage of the systems or Site Work Instructions contained in “PaintSpec”.

Project Notification

From:
To: Tony Westgarth
Company: ICI Paints Akzo Nobel
E-mail: tony.westgarth@akzonobel.com
Date:

Address: Laughton
Sleaford
NG34 0HE
United Kingdom

Please note that I have specified ICI Paints AkzoNobel Dulux Trade / Glidden / Sikkens *(please delete as appropriate)* on the project listed below. In order to ensure the smooth implementation of this specification will you please inform your local AkzoNobel representative in order that they can provide commercial and technical assistance as appropriate.

Project Title and Address:

External of Properties to the Brunswick Square Estate

Hove
BN2
United Kingdom

ICI Paints AkzoNobel Ref.

GB-037949

Main Contractor for External of Properties to the Brunswick Square Estate

Contact Name:

Address:

Laughton
Sleaford
NG34 0HE
United Kingdom

Painting Sub-Contractor (if known) for External of Properties to the Brunswick Square Estate

Contact Name:

Address:

Contract Start Date:

Painting Start Date:

Painting Finish Date:

Comments:

Painting Specification

Painting Systems

For

Hirst Conservation

External of Properties to the Brunswick Square Estate

Project Ref: GB-037949

Paint Schedule

The information below is to identify individual Systems for building areas to be painted.

In order to achieve the optimum results it is extremely important to adhere to the systems and Site Work Instructions v5 quoted. Please note that ICI Paints AkzoNobel will not accept responsibility for any amendments to or unauthorised usage of the wording contained in the system sheets or in the Site Work Instructions v5.

regard to the Site Work Instructions v5 clauses listed below.

From May 2011, Dulux cans, lids and handles started to become grey (from the current white) meaning they are made from 25% recycled content. Communication of the can 25% recycled content also appears on the lid of each container. The cans have been subjected to highly robust technical and logistics tests by the AkzoNobel packaging team, in conjunction with the can supplier.

Our vision is to lead the paint industry into a more sustainable future and have a positive impact on the planet and on society. Our ambitions set a new benchmark we hope others will try to follow.

Our aim is to provide market-leading solutions that enable our customers and partners to work more sustainably, without compromising performance of the quality of the finish.

As a manufacturer we would like you also to recycle the cans used on this project, to do this you can contact your local Dulux Decorator Centre who will be happy to recycle the cans on your behalf, or you can recycle them via your own recycling expert

1. Section 2: Conditions of Use — Building Repairs/Prior to Paint work
2. Section 2: Conditions of Use — Responsibility to Confirm Surface as Specified
3. Section 6: Colour — All Clauses

Project External of Properties to the Brunswick Square Estate, GB-037949

Paintable Surface	PS Code	Finish Product	Colour	Coats	Notes
External Masorny requiring a Gloss finish					
External masonry to painted with a gloss finish	D3064W	Dulux Trade Weathershield Smooth Masonry Gloss		2	
External masonry to be painted with a matt finish					
External masonry to be painted with a matt finish	D3041	Dulux Trade Weathershield Smooth Masonry Paint		2	
External previously painted wood					
All previously painted wood to include windows, doors etc	D4038WC+G	Dulux Trade Weathershield Exterior High Gloss		2	
External Metal					
All previously painted metal work to include railings, rainwater goods	M2334ALK	Dulux Trade Metalshield Gloss Finish		2	

etc					
External Painted Plastic					
All previously painted plastic to include rainwater goods etc	D7710	Dulux Trade Weathershield Exterior High Gloss		1	

IMPORTANT NOTES

Due to the potential deterioration of the existing coatings and/or the potential deterioration of the existing substrates referred to within this project, the use of these specific project documents are limited to 24 months from their date of origination to the completion of the painting contract. It is recommended that this documentation be reviewed with ICI Paints AkzoNobel when completion of the project is greater than 24 months from the date of document origination. The origination date is on the front/title page of the specification.

I would draw your attention to the legal declaration below. It is important to remember that these specifications provided by ***ICI Paints AkzoNobel*** *are protected by copyright and database right and are dependent in performance terms on the use of* ***ICI Paints AkzoNobel*** *and colour defining references cannot be converted to what* ***appears*** *to be an equivalent system from another paint manufacturer without subsequent potential loss of performance*

System Code	D3064W
Building Part	General Wall Areas,Chimney Stack,Quoin Stones,String Course,Lintel, Cills etc

Surface Substrate:	Walls - Exterior Plaster / Render
Previous Coating :	Paint (Water Based)
Surface Condition :	Defective - partial failure / breakdown (<50%)
Durability Performance :	Normal
Finish Type :	Water Based
Sheen:	High (Gloss)
Brand :	Dulux

Required Finish Coat:	Dulux Trade Weathershield Smooth Masonry Gloss
No. of Finish System Coats:	2
Data Sheet Number:	518

- Comply at all times with BS 6150: 2006 Code of Practice for Painting of Buildings (or as amended) and BS EN ISO 12944: 1998 Paints and Varnishes - Corrosion Protection of Steel Structures by Protective Paint Systems (or as amended).
- AkzoNobel Decorative Paints will not accept responsibility for any unauthorised amendments or usage of the wording contained in this System sheet and in Paint's Site Work Instructions v5.
- In order to achieve the optimum results, it is extremely important to adhere to the systems and AkzoNobel Decorative Paint's Site Work Instructions v5 quoted.
- Products supplied for the carrying out of this specification are compliant with Statutory Instrument 2005 No. 2773 (Environmental Protection) - The Volatile Organic Compounds in Paints, Varnishes and Vehicle Refinishing Products Regulations 2005

Preparation

The amount of preparatory work required on a Previously Coated Surface can vary considerably due to a variety of circumstances. This System is for Preparation up to and including partial failure/breakdown <50%. (See ICI Trade Paints Site Work Instructions v5 Condition of Surface Tables for further information.)

External Vegetable, Mould or Algae growth

Algae, moss, lichen and mould growths must be removed as far as is practicable by thorough scraping, followed by brushing with stiff fibre brushes. (Do not use wire brushes as strands can detach and could appear after re-painting as rust stains). To kill any residual growth, the affected surface should then be treated with **'Dulux' Weathershield Multi-Surface Fungicidal Wash.** After 24 hours rinse off and allow to dry. A second treatment is sometimes required. Ensure all surfaces are fully dry before proceeding. Do not apply in wet weather.

Caution

'Dulux' Weathershield Multi-Surface Fungicidal Wash contains Disodium Octaborate and Benzalkonium Chloride. Read the label before you buy. Use pesticides safely. Fungicidal Wash should not be allowed to come into contact with foodstuffs.

Thoroughly clean down the surfaces to remove all dirt grease and surface contaminants.
Allow to dry. Remove all blistered, poorly adhering or otherwise defective coatings. Remove all loose or powdery material by vigorously brushing down with suitable stiff brushes and *dust off. (Do not use wire brushes) Where appropriate (not applicable to textured surfaces) rub down sound areas to produce the necessary 'key' for good adhesion. *Dust off.
Note
*When rubbing down dry and/or dusting off wear a suitable face mask to avoid the inhalation of dust.
(See ICI Trade Paints Site Work Instructions v5 Clause SW4.20 for further information.)

Making Good

Cut out and make good cracks, holes and other imperfections with a *suitable material.
Allow to set and dry out thoroughly. Where appropriate, rub down the surface. **Dust off.
Note
*Use only good quality/compatible materials and follow the manufacturers' recommendations for use, even if at variance with this system.
Note
**When rubbing down dry and/or dusting off wear a suitable face mask to avoid the inhalation of dust.
(See ICI Trade Paints Site Work Instructions v5 Clause SW4.20 for further information.)

Priming

If surfaces remain powdery and friable after thorough preparation, they must be sealed with: **1** coat of **Dulux Trade Weathershield Stabilising Primer** to penetrate the surface and avoid leaving a glossy film.

Prime all sound bare areas and areas exposed by the removal of coatings with: **1** coat of **Dulux Trade Weathershield Smooth Masonry Gloss**

of appropriate shade thinned up to 1 part **Water** to **5** parts of product as appropriate.

Bring Forward

Bring forward all areas which, during preparation, were either taken back to bare substrate or disfigured/exposed by the removal of the previous coating with: **1** coat of **Dulux Trade Weathershield Smooth Masonry Gloss** of selected shade.

Finishing System

2 coats of **Dulux Trade Weathershield Smooth Masonry Gloss** of selected shade.

System Code	D3041
Building Part	General Wall Areas,Chimney Stack,Quoin Stones,String Course,Lintel, Cills etc

Surface Substrate:	Walls - Exterior Plaster / Render
Previous Coating :	Paint (Water Based)
Surface Condition :	Defective - partial failure / breakdown (<50%)
Durability Performance :	Normal
Finish Type :	Water Based
Sheen:	Low (Flat / Matt)
Brand :	Dulux

Required Finish Coat:	Dulux Trade Weathershield Smooth Masonry Paint
No. of Finish System Coats:	2
Data Sheet Number:	418

- Comply at all times with BS 6150: 2006 Code of Practice for Painting of Buildings (or as amended) and BS EN ISO 12944: 1998 Paints and Varnishes - Corrosion Protection of Steel Structures by Protective Paint Systems (or as amended).
- AkzoNobel Decorative Paints will not accept responsibility for any unauthorised amendments or usage of the wording contained in this System sheet and in Paint's Site Work Instructions v5.
- In order to achieve the optimum results, it is extremely important to adhere to the systems and AkzoNobel Decorative Paint's Site Work Instructions v5 quoted.
- Products supplied for the carrying out of this specification are compliant with Statutory Instrument 2005 No. 2773 (Environmental Protection) - The Volatile Organic Compounds in Paints, Varnishes and Vehicle Refinishing Products Regulations 2005

Preparation

The amount of preparatory work required on a Previously Coated Surface can vary considerably due to a variety of circumstances. This System is for Preparation up to and including partial failure/breakdown <50%. (See ICI Trade Paints Site Work Instructions v5 Condition of Surface Tables for further information.)

External Vegetable, Mould or Algae growth

Algae, moss, lichen and mould growths must be removed as far as is practicable by thorough scraping, followed by brushing with stiff fibre brushes. (Do not use wire brushes as strands can detach and could appear after re-painting as rust stains).
To kill any residual growth, the affected surface should then be treated with **'Dulux' Weathershield Multi-Surface Fungicidal Wash.** After 24 hours rinse off and allow to dry. A second treatment is sometimes required. Ensure all surfaces are fully dry before proceeding. Do not apply in wet weather.

Caution

'Dulux' Weathershield Multi-Surface Fungicidal Wash contains Disodium Octaborate and Benzalkonium Chloride. Read the label before you buy. Use pesticides safely. Fungicidal Wash should not be allowed to come into contact with foodstuffs.

Thoroughly clean down the surfaces to remove all dirt grease and surface contaminants.
Allow to dry. Remove all blistered, poorly adhering or otherwise defective coatings. Remove all loose or powdery material by vigorously brushing down with suitable stiff brushes and *dust off. (Do not use wire brushes) Where appropriate (not applicable to textured surfaces) rub down sound areas to produce the necessary 'key' for good adhesion. *Dust off.
Note
*When rubbing down dry and/or dusting off wear a suitable face mask to avoid the inhalation of dust.
(See ICI Trade Paints Site Work Instructions v5 Clause SW4.20 for further information.)

Making Good

Cut out and make good cracks, holes and other imperfections with a *suitable material.
Allow to set and dry out thoroughly. Where appropriate, rub down the surface. **Dust off.
Note
*Use only good quality/compatible materials and follow the manufacturers' recommendations for use, even if at variance with this system.
Note
**When rubbing down dry and/or dusting off wear a suitable face mask to avoid the inhalation of dust.
(See ICI Trade Paints Site Work Instructions v5 Clause SW4.20 for further information.)

Priming

If surfaces remain powdery and friable after thorough preparation, they must be sealed with: **1** coat of **Dulux Trade Weathershield Stabilising Primer** to penetrate the surface and avoid leaving a glossy film.

Prime all sound bare areas and areas exposed by the removal of coatings with: **1** coat of **Dulux Trade Weathershield Smooth Masonry Paint** of appropriate shade thinned up to 1 part **Water** to **5** parts of product as appropriate.

Bring Forward

Bring forward all areas which, during preparation, were either taken back to bare substrate or disfigured/exposed by the removal of the previous coating with: **1** coat of **Dulux Trade Weathershield Smooth Masonry Paint** of selected shade.

Finishing System

2 coats of **Dulux Trade Weathershield Smooth Masonry Paint** of selected shade.

System Code	D4038WC+G
Building Part	Fascias,Soffit,Eaves,Barge Boards,Cladding,Surrounds,Glazing Bars,Doors,Facing,Screens etc

Surface Substrate:	Wood - Exterior Non Resinous Softwood / Hardwood
Previous Coating :	Paint (Solvent Based)
Surface Condition :	Defective - Light Failure / Breakdown (<20%) Defective - partial failure / breakdown (<50%)
Durability Performance :	Normal
Finish Type :	Solvent Based
Sheen:	High (Gloss)
Brand :	Dulux

Required Finish Coat:	Dulux Trade Weathershield Exterior High Gloss
No. of Finish System Coats:	2
Data Sheet Number:	401

- Comply at all times with BS 6150: 2006 Code of Practice for Painting of Buildings (or as amended) and BS EN ISO 12944: 1998 Paints and Varnishes - Corrosion Protection of Steel Structures by Protective Paint Systems (or as amended).
- AkzoNobel Decorative Paints will not accept responsibility for any unauthorised amendments or usage of the wording contained in this System sheet and in Paint's Site Work Instructions v5.
- In order to achieve the optimum results, it is extremely important to adhere to the systems and AkzoNobel Decorative Paint's Site Work Instructions v5 quoted.
- Products supplied for the carrying out of this specification are compliant with Statutory Instrument 2005 No. 2773 (Environmental Protection) - The Volatile Organic Compounds in Paints, Varnishes and Vehicle Refinishing Products Regulations 2005

Preparation

The amount of preparatory work required on a Previously Coated Surface can vary considerably due to a variety of circumstances. This System is for Preparation up to and including partial failure/breakdown <50%. (See ICI Trade Paints Site Work Instructions v5 Condition of Surface Tables for further information.)

Cut out and replace areas of decayed wood and/or seal any open joints using the appropriate Window Care Systems repair method. For further information or to arrange training contact Repair Care International Ltd. (see clause SW 1.04.).
Thoroughly clean down all surfaces with soap and water, detergent solution or suitable solvent, to remove all dirt, grease and surface contaminants. Remove all blistered, poorly adhering or otherwise defective coatings. Where flaking has occurred or coatings are defective, the entire member or section must be stripped back to the nearest joint. Open-up all joints which are not tight fitting and rake out thoroughly. Rub down to 'feather' broken edges and *dust off. Abrade overall in the direction of the grain to remove any grey denatured timber, raised grain and round sharp edges (a radius of 1 mm to 2 mm for timber other than sills and thresholds; 3mm for sills and thresholds) and*dust off.
Note
*When rubbing down dry and/or dusting off wear a suitable face mask to avoid the inhalation of dust.
(See ICI Trade Paints Site Work Instructions v5 Clause SW4.20 for further information.)

Apply two thin coats of an appropriate knotting solution to all knots and resinous areas and allow to harden. Ensure all surfaces are fully dry before proceeding.

Glazing

All glazing compounds and glazing repairs must comply with BS8000: Part 7: 1990 (Code of practice for glazing).
Renew or replace defective glazing compounds or glazing beads using the appropriate Window Care Systems repair method. Further information is available from Repair Care International Ltd. (see clause SW 1.04).
All bare rebates and replacement beading are to be primed with: **2** coats of **Dulux Trade Weathershield Preservative Primer + (BP)**.

Priming

Spot prime any bare metal, metal fixings nail heads etc with: **1** coat of **Dulux Trade Metal Primer**.

Prime all sound bare areas and areas exposed by the removal of coatings with: **2** coats of **Dulux Trade Weathershield Preservative Primer + (BP)**.

NOTE
Do not apply **Dulux Trade Weathershield Preservative Primer + (BP)** over existing surfaces that are in good condition or any areas repaired with Window Care Systems resin replacement products. All areas that have been spliced in or replaced should be basecoated in the normal way. Any excess basecoat should be wiped away using a clean lint free cloth.

Making Good

Make good all cracks, nail-holes, open joints and other imperfections with Dulux Trade Weathershield Exterior Flexible Filler. When set carefully rub down and *dust off.
Note
*When rubbing down dry and/or dusting off wear a suitable face mask to avoid the inhalation of dust.
(See ICI Trade Paints Site Work Instructions v5 Clause SW4.20 for further information.)

Bring Forward

Bring forward all primed and/or filled areas to match existing system build with: **1** coat of **Dulux Trade Weathershield Exterior Flexible Undercoat** of appropriate shade.

Finishing System

1 coat of **Dulux Trade Weathershield Exterior Flexible Undercoat** of selected shade.

1 coat of **Dulux Trade Weathershield Exterior High Gloss** of selected shade.

*Caution
Dulux Trade Weathershield Preservative Primer + (BP) contains: 3-iodo-2 propynyl-butyl carbamate and propiconazole. Use Biocides Safely. Always read the label and product information before use.

System Code	M2334ALK
Building Part	General Metalwork.

Surface Substrate:	Metal - Ferrous (Iron & Steel) (External)
Previous Coating :	Paint (Solvent Based)
Surface Condition :	Defective - partial failure / breakdown (<50%)
Durability Performance :	Normal
Finish Type :	Solvent Based
Sheen:	High (Gloss)
Brand :	Dulux

Required Finish Coat:	Dulux Trade Metalshield Gloss Finish
No. of Finish System Coats:	2
Data Sheet Number:	512

- Comply at all times with BS 6150: 2006 Code of Practice for Painting of Buildings (or as amended) and BS EN ISO 12944: 1998 Paints and Varnishes - Corrosion Protection of Steel Structures by Protective Paint Systems (or as amended).
- AkzoNobel Decorative Paints will not accept responsibility for any unauthorised amendments or usage of the wording contained in this System sheet and in Paint's Site Work Instructions v5.
- In order to achieve the optimum results, it is extremely important to adhere to the systems and AkzoNobel Decorative Paint's Site Work Instructions v5 quoted.
- Products supplied for the carrying out of this specification are compliant with Statutory Instrument 2005 No. 2773 (Environmental Protection) - The Volatile Organic Compounds in Paints, Varnishes and Vehicle Refinishing Products Regulations 2005

Preparation

The amount of preparatory work required on a Previously Coated Surface can vary considerably due to a variety of circumstances. This System is for Preparation up to and including partial failure/breakdown <50%. (See ICI Trade Paints Site Work Instructions v5 Condition of Surface Tables for further information.)

Thoroughly clean down to remove all surface contamination. Carefully scrape back to a firm edge all areas of defective paint coatings and rub down to 'feather' the broken edges. Scrape and wire brush corroded steel to produce a clean metal surface. Rub down with a suitable abrasive and *dust off. All manually prepared surfaces should be prepared to a minimum standard of St3. BS EN ISO 8501-1: 2007 at the time of coating.
Note
*When rubbing down dry and/or dusting off wear a suitable face mask to avoid the inhalation of dust.
(See ICI Trade Paints Site Work Instructions v5 Clause SW4.20 for further information.)

Priming

Prime all bare metal with: **1** coat of **Dulux Trade Metalshield Zinc Phosphate Primer** applied to give a minimum wet film thickness of **150** microns giving a minimum dry film thickness of **65** microns.

Bring Forward

Bring forward all primed areas with: **1** coat of **Dulux Trade Metalshield Gloss Finish** applied to give a minimum wet film thickness of **80** microns giving a minimum dry film thickness of **40** microns.

Finishing System

2 coats of **Dulux Trade Metalshield Gloss Finish** each applied to give a minimum wet film thickness of **80** microns per coat, giving a minimum dry film thickness of **40** microns per coat.

System Code	D7710
Building Part	General Plastic.

Surface Substrate:	Plastic - General (External)
Previous Coating :	Paint (Solvent Based)
Surface Condition :	Defective - partial failure / breakdown (<50%)
Durability Performance :	Normal
Finish Type :	Solvent Based
Sheen:	High (Gloss)
Brand :	Dulux

Required Finish Coat:	Dulux Trade Weathershield Exterior High Gloss
No. of Finish System Coats:	1
Data Sheet Number:	401

- Comply at all times with BS 6150: 2006 Code of Practice for Painting of Buildings (or as amended) and BS EN ISO 12944: 1998 Paints and Varnishes - Corrosion Protection of Steel Structures by Protective Paint Systems (or as amended).
- AkzoNobel Decorative Paints will not accept responsibility for any unauthorised amendments or usage of the wording contained in this System sheet and in Paint's Site Work Instructions v5.
- In order to achieve the optimum results, it is extremely important to adhere to the systems and AkzoNobel Decorative Paint's Site Work Instructions v5 quoted.
- Products supplied for the carrying out of this specification are compliant with Statutory Instrument 2005 No. 2773 (Environmental Protection) - The Volatile Organic Compounds in Paints, Varnishes and Vehicle Refinishing Products Regulations 2005

Preparation

The amount of preparatory work required on a Previously Coated Surface can vary considerably due to a variety of circumstances. This System is for Preparation up to and including partial failure/breakdown <50%. (See ICI Trade Paints Site Work Instructions v5 Condition of Surface Tables for further information.)

Remove all blistered, poorly adhering or otherwise defective coatings. Rub down to 'feather' broken paint edges and *dust off. Wash down the surfaces to remove all dirt, grease and other surface contaminants and, whilst wet, rub down the surfaces with a suitable abrasive. Rinse down and allow to dry.
Note
*When rubbing down dry and/or dusting off wear a suitable face mask to avoid the inhalation of dust.
(See ICI Trade Paints Site Work Instructions v5 Clause SW4.20 for further information.)

Priming

Prime all bare areas with:**1** coat of **Dulux Trade Weathershield Exterior High Gloss** of selected shade.

Bring Forward

Bring forward all primed areas with: **1** coat of **Dulux Trade Weathershield Exterior High Gloss** of selected shade.

Finishing System

1 coat of **Dulux Trade Weathershield Exterior High Gloss** of selected shade.

Note
*See BS 6150 : 2006 Section 38 Plastics, or as amended and ICI Trade Paints Site Work Instructions v5 for information regarding colour and opacity.

Site Work Instruction	ICI Paints AkzoNobel Site Work Instructions v5 - 2013
Clause Reference	**Section 1: Manufacturer and Brand Information**
SW 1.01	**Manufacturer Details** ICI Paints AkzoNobel Wexham Road Slough Berkshire SL2 5DS
SW 1.02	**Materials Specified** The materials specified in our system sheets are from **Dulux Trade, Glidden Trade**, **Cuprinol**, **Hammerite, Sikkens** and **Polycell Trade** Product Information Sheets and Safety Data Sheets are obtainable via www.duluxtrade.co.uk, ICI Paint Distributors or the Technical Advice Centre by telephone on 08444 817818.
SW 1.04	**Repair Care Systems Limited.** Some materials specified in our system sheets are from **Repair Care International Limited.** Product Information Sheets and Safety Data Sheets are obtainable via ICI Paint Distributors, the Technical Advice Centre by telephone on 08444 817818, or by contacting Repair Care International Limited directly on 01827 – 302517. Further information is available via www.window-care.com
SW 1.05	**Wallcoverings – Manufacturer Guidance** ICI Paints AkzoNobel do not manufacture wallcoverings. The wallcovering manufacturers' advice should be sought at all times.
Clause Reference	**Section 2: Information on Conditions of Use**
SW 2.01	**Use of Specified Products** Coating materials to be obtained from the manufacturer and specified brand where indicated. It is not permissible to substitute the indicated brand. It is the responsibility of the painting contractor to familiarise him/her with these materials.
SW 2.02	**ICI Paints AkzoNobel Systems** The '**PaintSpec** Systems are for Professional use only and are offered as a service to Specifiers & Contractors who require access to painting systems and represent the most commonly recommended painting specifications in the U.K. A 'Bespoke' Specification Service is available across the U.K. to Professional Specifiers & Contractors by contacting Dulux Trade Technical Advice Centre, ICI Paints AkzoNobel, Wexham Road, Slough, Berkshire SL2 5DS. Tel: 08444 817818. ICI Paints AkzoNobel will not accept responsibility for any unauthorised amendments or usage of the wording contained in the System sheets or in these Site Work Instructions v5. In order to achieve the optimum results it is important to adhere to the Systems and Site Work Instructions quoted.
SW 2.03	**Relevant Code of Practice** Care and attention must be employed when using the systems and the relevant British Code of Practice must also be complied with. BS 6150: 2006 Code of Practice for Painting of Buildings (or as amended) and BS EN ISO 12944: 1998 Paints and Varnishes - Corrosion Protection of Steel Structures by Protective Paint Systems (or as amended).
SW 2.04	**Relevant Information Sheets and Instructions to be Retained on Site** A copy of all the System sheets, Product Information, Health and Safety Information and Site Work Instructions supplied must be retained on site during the contract period for easy reference by site and visiting personnel.
SW2.05	**Building Repairs / Prior to Paint work** Prior to the start of the painting contract the Client and the Painting Contractor must agree arrangements with regard to repair work. Prior to Painting repairs to substrates which are to be coated must be undertaken by the Clients' choice of Contractor in advance of the expected painting start date. The aforementioned substrates must be dry in depth (where applicable) and have been accepted by both parties as in a suitable condition to paint. The notification procedures when, during the painting contract, a painter discovers damaged or missing substrates requiring replacement, must be in place and be clearly understood. The aforementioned replacement of substrate must be identified as **not** part of the painting contract and must therefore be undertaken by the Clients' choice of Contractor.

	ICI Paints AkzoNobel Site Work Instructions v5 - 2013
Clause Reference	**Section 2: Information on Conditions of Use**
SW2.06	**Responsibility to Confirm Surface as Specified** It is expected of the **Painting Contractor** that he ensures/confirms that the surface to be painted is 'as described' in the System Sheet he is given. If the existing coating is not 'as described' (e.g. the existing coating is Solvent Based and not Water Based or the substrate is Galvanised Metal & not Ferrous Metal) then it is the **Painting Contractor's** responsibility to report back to the Client and to then be instructed which alternative System Sheet to use.
SW 2.07	**Instructions Provided Separately** Any instructions provided separately must be used in conjunction with the documents supplied.
SW 2.08	**Full Extent of Work** Contractors must satisfy themselves as to the full extent of the work to be carried out, whether mentioned in the documents or otherwise.
SW 2.09	**Measurements and Close Inspection** Measurements and close inspection must be made to enable accurate preparation of tenders.
SW 2.10	**Representative Access** ICI Paints AkzoNobel Representatives must be allowed free access to the work and any access equipment (ladders etc.) shall be provided by the Contractor immediately on request. The actual percentage of properties or work inspected and recorded will have been agreed with the client prior to commencement of the contract.
SW 2.20	**COSHH Assessment** The contractor must carry out a full assessment of Risk as required under COSHH Regulations 1994, (or as amended) before commencing work.
SW 2.21	**Preparation of Surfaces / Sequence of Work** The contractor must adhere to the detailed preparation of surfaces and sequence of work as laid down in these documents.
SW 2.22	**Conditions Suitable/Unsuitable for Painting** Most coatings are dependent on the evaporation of the solvent or thinner at the initial drying stage. High or Low Temperature and/or High Humidity will affect coating application and can permanently affect the coating's performance. It is therefore recommended that application is not carried out when the temperature falls below 5 degrees centigrade (Solvent borne) or 8 degrees centigrade (Water borne) or when the relative humidity exceeds 80%. Consideration must also be taken regarding the temperature of the surface to which the coating is to be applied. Refer to **BS 6150: 2006 Code of Practice for Painting of Buildings** (or as amended) for further guidance.
SW 2.23	**Personal Protection** Work in well ventilated areas. Use suitable personal protective equipment (respiratory, eye and skin), as necessary. Treatments for the removal of surface coatings (such as sanding, burning off, use of chemicals) may generate hazardous dust and/or fumes. Manufacturers advice should be followed at all times.
SW 2.24	**Log of Ambient Conditions** Keep a log of ambient conditions during the course of the work in line with BS 6150 and ISO 12944: 1998 Paints and Varnishes - Corrosion Protection of Steel Structures by Protective Paint Systems (or as amended).
SW 2.25	**Storage** Extremes of temperature and humidity during storage must be avoided.
SW 2.26	**Accurate Logs and Records of Materials and Surfaces** Log all batch numbers and deliveries of materials used and the surface to which they are applied.
SW 2.27	**Materials to be Thoroughly Mixed and Stirred** All materials must be thoroughly mixed or stirred before use unless otherwise directed and used in accordance with instructions from ICI Paints AkzoNobel.
SW 2.28	**Inspection of First Coats** First coats must not be applied until the surfaces have been inspected by the client and/or his/her agent.

	ICI Paints AkzoNobel Site Work Instructions v5 - 2013
Clause Reference	**Section 2: Information on Conditions of Use**
SW 2.29	**Inspection of Undercoats / Finishing Coats** No undercoats or finishing coats must be applied until the previous coat has been similarly inspected and approved by the client and/or his/her agent.
SW 2.30	**Effects on Foodstuffs / Commencing Food Operations** Where coating systems are quoted, the user must ensure that they have no harmful effects on the operatives or foodstuffs. Before re-starting to use foods or raw food materials, or before commencing any food handling operation, the client or his authorised representative must satisfy himself/herself that the area is thoroughly clean and free from odour and clear of all painting materials.
SW 2.31	**Documentation – Time Limitation** Due to the potential deterioration of the existing coatings and/or the potential deterioration of the existing substrates referred to within this project, the use of these specific project documents are limited to twenty - four months from their date of origination to the completion of the painting contract. It is recommended that this documentation be reviewed with the originator when completion of the project is greater than twenty - four months from the date of document origination. ICI Paints AkzoNobel will not accept responsibility for any documentation relating to a project that exceeds this twenty - four period unless the documentation has been reviewed and approved by an ICI representative.
SW 2.32	**Volatile Organic Compounds** Products supplied for the carrying out of this specification are compliant with Statutory Instrument 2005 No. 2773 (Environmental Protection) - The Volatile Organic Compounds in Paints, Varnishes and Vehicle Refinishing Products Regulations 2005.
Clause Reference	**Section 3: Substrates**
SW 3.01	**Concrete Floors – Moisture** It is important to ensure that the floor has an effective damp-proof membrane, no damp problems and a relative humidity in equilibrium with the surface of 75%. A small sheet of polythene left overnight and sealed flat to the surface will often give an indication that there is any moisture present – this test is indicative and not a guarantee that the substrate is dry.
SW 3.02	**Concrete Floors – Dry in Depth** Do not use on substrates that have not fully dried. e.g. New concrete floors may take up to 12 months to dry in depth depending on method of construction and depth of concrete. A relative humidity in equilibrium with the surface of 75% is required before any painting can be commenced.
SW 3.03	**Concrete Floors – Air Flow & Humidity** In order to dry correctly, the coatings (especially waterbased types) require good air flow at temperatures above 10 degrees centigrade with a relative humidity below 85%. Do not recoat or use the floor until the coating is fully dry.
SW 3.04	**Concrete Floors – Unsuitable areas for use** Some floor paint systems are not suitable for externals or areas subjected to prolonged contact with wet vehicle tyres. We therefore recommend that if you are in any doubt, you should contact Dulux Trade Technical Advice Centre, ICI Paints AkzoNobel, Wexham Road, Slough, Berkshire SL2 5DS. Tel: 08444 817818 for guidance.
SW 3.05	**Concrete Floors – Power Floated Concrete** Power-floated Concrete creates adhesion difficulties and therefore should not be painted without successful preparatory treatment. This can be done by either shot blasting, grinding or using a floor etchant, to the manufacturer's recommendations. Shot blasting is the most successful treatment and should be considered where the concrete is particularly well polished; it can also often be more economic on large areas.
SW 3.10	**Walls –Areas of use** The systems for Walls and Ceilings are suitable for **Internal** Plaster, Render, Block, Approved Brick and Concrete, Plasterboards, Paperfaced boards, Cement boards, Calcium Silicate boards and Fibre Insulation type boards and **External** Render, Pebbledash, Tyrolean, Block, Approved Brick, Concrete, Cement Boards and Calcium Silicate Boards
SW 3.11	**Walls – Cleaning & Repairing** See BS 8221:2000 Code of Practice for Cleaning and Surface Repair of Buildings (or as amended). This gives guidance on cleaning natural stones, brick, terracotta and concrete.

	ICI Paints AkzoNobel Site Work Instructions v5 - 2013
Clause Reference	**Section 3: Substrates**
SW 3.12	**Walls - External Wall Repairs** Building repairs should be carried out in advance of the start of the painting contract. See Clause SW 2.05 for further information. All loose, hollow or defective rendering should be hacked off, and all large cracks cut out and defective or spalling bricks and concrete repaired and renewed with a suitable/matching material. All loose and defective pointing should be raked out and the surface brushed down to remove all dust and sandy material. The cleaned surface should then be prepared as appropriate and repoint with a suitable material. Allow to dry out completely. Remove any salts, loose sand or aggregate etc and *dust off. Cut out and make good cracks, holes and other imperfections with cement and sand and allow to dry out completely. *When rubbing down dry and/or dusting off wear a suitable face mask to prevent the inhalation of dust. See SW 4.20 for further information.
SW 3.20	**Wallcoverings – Surface** All paintable wallcoverings must be firmly adhering to the surface and be free from paste on the face side before painting.
SW 3.21	**Wallcoverings – Standard Types for Painting** Lining papers, Woodchips, Glassfibre Wallcoverings, Duplex Embossed and High or Low Relief - type papers are purposely made for painting and can generally be painted with conventional emulsion type paints.
SW 3.22	**Wallcoverings – Blown Vinyls** Blown Vinyl's can sometimes be painted but will normally require a first coat of a Matt Vinyl emulsion.
SW 3.23	**Wallcoverings – Pulp Type** Pulp papers generally can be painted provided the inks do not cause staining.
SW 3.24	**Wallcoverings – Putty/Hessian Type** Putty - type wallcoverings need to be basecoated with an oil based paint, normally Eggshell. Hessians can be painted with conventional emulsion type paints but this can look unsightly as it tends to raise the fibres.
SW 3.25	**Wallcoverings – Unsuitable Types for painting** Vinyls, Washables, Silks, Handprints, Flocks, Metallics, etc. generally should **not** be painted. Previously painted wallcoverings are suitable for repainting with a similar type of paint provided the paper has been successfully painted before.
SW 3.26	**Wallcoverings - Shaded** All wallcoverings must be shaded before hanging and used in accordance with the specific wallcovering manufacturer's instructions.
SW 3.30	**Wood –Areas of use** For Construction purposes, wood that is deemed non-durable, and untreated, should be preservative impregnated, see BS 8413:2003.
SW 3.31	**Wood – Resin & Knots** When encountering knots and resinous areas to be painted, apply two thin coats of a suitable Knotting Solution and allow to harden. For further guidance re knot content etc please refer to BS EN 942
SW 3.32	**Wood - Arrises** Prior to commencement of work to any window or item of joinery, the contractor may be requested to carry out an inspection of arrises. Allowance will be deemed to have been made within the tender sum for arrises to be created which comply with B.S.6150 Section 2 / 5 (Design, Specification and Organisation) or as amended:- a radius of 1 mm to 2 mm for timber other than sills and thresholds; sills and thresholds might need a 3 mm rounding.
SW 3.33	**Wood - High Risk Joinery Sections** Where instructed to do so, in all cases, completely remove all coatings from sills, lower horizontal members of frames and sashes, adjacent vertical rails to the height of 150 mm, and all weatherbars to doors. For all defective areas, other than those mentioned above, the entire member or section must be stripped back to the nearest joint.
SW 3.34	**Wood - Dimensional Stability** Dimensional stability is a key requirement for doors and windows. Low build stains are therefore not recommended for use on these substrates.
	ICI Paints AkzoNobel Site Work Instructions v5 - 2013
Clause Reference	**Section 3: Substrates**
SW 3.35	**Wood - Failed Joinery Sections** Where instructed to do so, use the appropriate Repair Method from the Repair Care International document

	"A Guide to Specifying Pre-Paint Repairs." See Clause SW 1.04 for further information.
SW 3.36	**Wood - Building Repairs / Replacement of Decayed Timber** Building repairs and the replacement of decayed timber with suitably preservative treated wood should be carried out in advance of the start of the painting contract. See Clause SW 2.05 for further information. Surfaces should then be allowed to dry out completely before painting.
SW 3.37	**Wood - Denatured Woodwork** Failure to remove denatured wood before painting is a common cause of premature paint failure. Ensure that all denatured wood is completely removed by *manual abrasion or by power sanding to produce new clean sound wood. *When rubbing down dry and/or dusting off wear a suitable face mask to avoid the inhalation of dust. (See SW 4.20 for further information.)
SW3.38	**Wood – Moisture Content** The moisture content of the timber should not exceed 18% for exterior use and 14% for interior use.
SW 3.50	**Metals – Complexity** The complexity of Metal as a Substrate is clearly illustrated on the **Condition of Previous Coating Table v2 (see Appendix 1)**. It can be notoriously difficult to identify specific types of metal and, very often, the type of specialist coatings which are commonly used. We therefore recommend that if you are in any doubt, you should contact Dulux Trade Technical Advice Centre, ICI Paints AkzoNobel, Wexham Road, Slough, Berkshire SL2 5DS. Tel: 08444 817818 for guidance.
SW 3.60	**Plastics – Type of Substrate** There are many grades of plastics, not all of which can be painted. We therefore recommend that if you are in any doubt, you should contact Dulux Trade Technical Advice Centre, ICI Paints AkzoNobel, Wexham Road, Slough, Berkshire SL2 5DS. Tel: 08444 817818 for guidance.
SW 3.61	**Plastics – Pipes & Gutters** The plastic most commonly found in the Building Industry is in the form of plastic gutters and pipes. The surface is generally intended to be self- finished and so maintenance free. (See BS 6150:2006 Section 38 Plastics, or as amended, for further information).
SW 3.62	**Plastics – Type of Plastics** Some plastics systems are suitable for ABS and UPVC (plastic fittings and pipes) but refer to BS 6150:2006 Section 38 Plastics, or as amended, for further guidance regarding suitability.
SW 3.70	**Problem Surfaces – Areas of use** The systems quoted for Problem Surfaces are suitable for substrates such as Ceramic Wall Tiles, Laminates, Melamine, Glass, Anodised Aluminium, *Approved Grades of Powder – Coated Steel, and Stove Enamelled surfaces etc. * (some contain silicone oils to make them self cleaning and this could affect performance.)
Clause Reference	**Section 4: Preparation**
SW 4.01	**Painted Finishes / BS Code of Practice** The whole of the painted surfaces shall be finished in accordance with **BS 6150: 2006 Code of Practice for Painting of Buildings** (or as amended) and additional requirements quoted. The surfaces coated should exhibit a fair and even surface of constant colour, substantially free of brushmarks, fatty edges etc. Each coat shall be allowed to harden and rubbed down before the next coat is applied.
SW 4.10	**Dampness** No materials should be applied to surfaces that are structurally or superficially damp. All surfaces must be free from condensation, dirt etc before and during treatment. To prevent the re-occurrence of condensation, ensure that there is suitable ventilation.
SW 4.11	**Efflorescence** Where efflorescence is present, remove fluffy efflorescence deposits by rubbing with dry Hessian sacking at frequent intervals. Check salts do not return within 48 hours, before proceeding. Remove hard shiny efflorescence by careful *manual abrasion taking care not to damage the surface finish of the substrate. On new buildings it is advisable not to use solvent based paints for at least 12 months as this will allow the surface time to dry out thoroughly. *When rubbing down dry and/or dusting off wear a suitable face mask to avoid the inhalation of dust. (See SW 4.20 for further information.)

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Clause Reference	**Section 4: Preparation**
SW 4.12	**Internal Mould Growth** Mould growth on internal surfaces must be treated prior to the application of any subsequent paint coating. Surfaces which are contaminated with mould should be scraped to remove all heavy deposits before being treated with **'Dulux' Weathershield Multi-Surface Fungicidal Wash.** (By brush only). After 24 hours rinse off and allow to dry. A second treatment is sometimes required. Ensure all surfaces are fully dry before proceeding. **Caution** **'Dulux' Weathershield Multi-Surface Fungicidal Wash** contains Disodium Octaborate and Benzalkonium Chloride. Read the label before you buy. Use pesticides safely. Fungicidal Wash should not be allowed to come into contact with foodstuffs.
SW 4.13	**External Vegetable, Mould or Algae growth** Algae, moss, lichen and mould growths must be removed as far as is practicable by thorough scraping, followed by brushing with stiff fibre brushes. (Do not use wire brushes as strands can detach and could appear after re-painting as rust stains). To kill any residual growth, the affected surface should then be treated with **'Dulux' Weathershield Multi-Surface Fungicidal Wash.** After 24 hours rinse off and allow to dry. A second treatment is sometimes required. Ensure all surfaces are fully dry before proceeding. Do not apply in wet weather. **Caution** **'Dulux' Weathershield Multi-Surface Fungicidal Wash** contains Disodium Octaborate and Benzalkonium Chloride. Read the label before you buy. Use pesticides safely. Fungicidal Wash should not be allowed to come into contact with foodstuffs.
SW 4.20	**Rubbing Down & Dusting Off** When rubbing down use a wet flatting process. Where it is not possible or practical to use a wet process, wear a suitable face mask when rubbing down dry and/or dusting off to avoid the inhalation of dust. When it is known or suspected that coatings contain lead refer to Clause SW 4.22 for further information. When preparing wood, wire wool and metallic brushes must not be used.
SW 4.22	**Lead in Previous Coatings** All ICI AkzoNobel paints are free from any added lead. However, the wood and metal surfaces of the building, especially if it is pre-1960, may have been decorated in the past with a paint made with lead pigments. Preparation and removal of such paint can be hazardous. For a free leaflet explaining how the surface should be prepared safely contact: ICI Paints AkzoNobel Technical Group: ICI Paints AkzoNobel, Wexham Road, Slough SL2 5DS. Tel: 08444 817818
SW 4.23	**Fire Protection Systems** Where surfaces have been previously treated with fire retardant, check with the treatment manufacturer that the specified coating materials are compatible, and do not inhibit its performance. Inform the client of any discrepancy in coating system details and obtain instructions before proceeding with application.
SW 4.30	**Friable / Powdery Surfaces** Friable or powdery surfaces must be treated with the primer most suited to the substrate prior to the application of any subsequent compatible coating.
SW 4.31	**Opening edges / Undersides of Sills** Ensure that doors and opening windows, etc., are 'eased' as necessary before coating. All opening edges of doors and windows and undersides of sills are included in the painting work.
SW 4.40	**Glazing – Repair & Replace Where Necessary - Repaircare** All glazing compounds and glazing repairs must comply with BS8000: Part 7: 1990 (Code of practice for glazing). Renew or replace defective glazing compounds or glazing beads using the appropriate Repair Method from the Repair Care Systems document "A Guide to Specifying Pre-Paint Repairs." See Clause **SW** 1.04 for further information.

	ICI Paints AkzoNobel Site Work Instructions v5 - 2013
Clause Reference	**Section 4: Preparation**
SW 4.41	**Glazing – Repair & Replace Where Necessary** All glazing compounds and glazing repairs must comply with BS 8000: Part 7: 1990 (Code of practice for glazing). Hack out all cracked or defective glazing putties. Remove all defective or loose beading. Clean the rebates and apply the appropriate priming product to all bare areas. Similarly, treat beading and any new wood which is to be spliced-in on all faces and edges, i.e. rub down and prime. **REPLACEMENT OF GLAZING COMPOUNDS WHERE NECESSARY:** When dry, re-glaze with appropriate glazing compound and allow to harden before further treatment. The compound manufacturer's recommendations must be adhered to, even if at variance with this system. **REPLACEMENT OF BEADING WHERE NECESSARY:** Bed in suitable external quality mastic in accordance with the manufacturer's instructions and screw down tightly using non-ferrous fixings.
SW 4.42	**Bead Glazing** Joinery to be stained must have the first coat of the staining system applied to rebates and beads before glazing. Joinery to be varnished must have the first coat of the varnish system applied to rebates and beads before glazing. Joinery to be painted, with the exception of both the **'Dulux' Trade Weathershield Exterior Gloss** systems and the **'Dulux' Trade Weathershield Exterior Quick Drying Satin** system, must have the primer applied to rebates and beads before glazing. Both the **'Dulux' Trade Weathershield Exterior Gloss** systems and the **'Dulux' Trade Weathershield Exterior Quick Drying Satin** system, must have the primer and one undercoat applied to rebates and beads before glazing.
SW 4.43	**Putty Glazing/Silicon Products** Allow Putty to set for at least 7 days and, before a further 14 days, seal the putty with an oil based primer. Fully coat and protect the putty with a coating system as soon as it is sufficiently hard. **Silicone - Based products** should only be applied upon completion of the finishing coats.
SW 4.50	**Stoppers / Fillers** Be sure to use fillers specifically designed for the Substrate. Apply oil based stoppers/fillers after priming. Apply water based stoppers/fillers before priming unless recommended otherwise by ICI Paints AkzoNobel.Translucent finishes for Timber are not designed to obscure the substrate, therefore filling and stopping should be avoided wherever possible and should be done with great care. When using translucent coatings for Wood, there is little point to filling fascia board joints and glazing bead joints as the change in grain from one section to the other is often obvious, drawing attention to the filler.
SW 4.51	**Polycell Trade Fillers** For precise application, completion and storage guidance please refer to the product packaging or product data sheet.
SW 4.60	**Off Site Preparation** All off site preparation and coating to be carried out under cover in a suitable environment with adequate lighting.
SW 4.70	**Proper Storage** Store all items, both before and after coating, in a clean, dry area protected from the weather and mechanical damage, properly stacked with spaces to permit air circulation and prevent sticking of surfaces.
SW 4.80	**Oil and Grease Contaminated Surfaces** For surfaces contaminated with dirt, oil and grease, use an appropriate 'Oil & Grease Remover' in accordance with the Manufacturers instructions for use.
SW 4.81	**Power Washing** This is a method of cleaning the surfaces by using High Pressure water washing equipment (i.e. minimum pressure of 2500 psi at a flow of not less than 8 gallons of water per minute) to remove all loose material, residues, dirt, mould, vegetable growths etc. Allow the surfaces to dry out thoroughly for 3-4 days. (See **BS 6150 53.3** for further details)

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Clause Reference	**Section 4: Preparation**
SW4.82	**Concrete Floors - Shot Blasting** This is a method of preparation for a concrete floor that is particularly dense, or for large floor areas to be blast cleaned. Mobile Blast Machines can be hired from most plant hire companies. These electrically powered machines fire steel shot at the surface removing the surface laitance or previous coatings. The shot is recycled but the dirt is extracted from the abrasive by a vacuum dust collector, making the whole process clean and effective. Care must be taken when using this type of equipment as it can damage the concrete. If unfamiliar with such equipment we would recommend that a demonstration from the hire company is requested or, in some instances, the supplier can be employed to carry out this part of the operation. The equipment usually requires a 3 phase electrical supply.
SW 4.83	**Concrete Floors - Etchant** This can be a messy process for a concrete floor and requires a water supply for washing off the acid and a wet vacuum to extract the contaminated water. Ensure that the etchant is applied evenly; a good method is to use a plastic watering can with a rose attachment, and allow the recommended time required to work. Care must be taken when using such products, and strictly adhere to the manufacturer's recommendations on Health and Safety procedures.
SW 4.84	**Metals - Blast Cleaning** Dry blast clean Metal to a minimum standard of BS EN ISO 8501-1: 2001. Sa 2.5. All surface defects including cracks, surface laminations and deep pitting likely to be detrimental to the protective painting system must be removed. All fins at saw cuts, burrs and sharp edges must be similarly removed. Where extensive grinding has been necessary, the dressed areas must be re-blasted to remove all rust and provide an adequate paint key. All welds (and bolted areas, if applicable) must be blast cleaned to the standard laid down above immediately prior to painting. All weld spatters must be removed. After blast cleaning all spent shot or grit must be removed by vacuum cleaner or, if such equipment is not available, by airline and brush. In the event of any shot, grit or blasting debris being found under or embedded in the paint film, the affected area shall be re-blasted and the complete paint system re-applied. The maximum time between commencing blast cleaning and application of the primer must be 4 hours when blasting under cover; on site the prepared surfaces must be primed before they have time to deteriorate below the specified standard.
Clause Reference	**Section 5: Application**
SW 5.01	**Suitability of Primers** All primers must be appropriate for the surface and for subsequent coats.
SW 5.02	**Staining / Suitable Primers** Contaminated areas that are likely to cause staining, must be treated with the primer most suited to the type of stain encountered prior to the application of any subsequent compatible coating. Determine the type of stain and thoroughly clean down the surfaces to remove dirt, grease etc. Rub down with a suitable abrasive and *dust off. *When rubbing down dry and/or dusting off wear a suitable face mask to prevent the inhalation of dust. See Clause SW 4.20 for further information. Prime the affected area with the most appropriate 'sealer' for the staining encountered. **'Dulux' Trade Stain Block Plus** (Water Based) for sealing inks, caffeine, biro and scuffs etc. **'Dulux' Trade Aluminium Wood Primer** (Solvent Based) for sealing aged-creosote, bitumen, soot, tar and smoke etc. **'Dulux' Trade Alkali Resisting Primer** (Solvent Based) for sealing a wide variety of stains, including water staining. **'Glidden' Primecoat Primer Sealer** (Solvent Based) for sealing a wide variety of stains, including water staining.

	ICI Paints AkzoNobel Site Work Instructions v5 - 2013
Clause Reference	**Section 5: Application**
SW 5.22	**Application of Finishing Coat** No coatings shall be left in an exposed or unsuitable situation for an undue period before applying the finishing coat.
SW 5.30	**Two Pack Epoxy Coatings** It is important to remember that water based epoxy coatings will take longer to 'hard cure' than solvent based epoxies. Particular care must be taken during winter months when temperature fluctuations will affect the minimum overcoat time. A drop in temperature from 20 Centigrade to 10 Centigrade will result in the overcoating being delayed from 16 hours to 72 hours. Optimum chemical and abrasion resistance will not be achieved until the final finishing coat is allowed to dry for a **minimum of seven days**. Optimum intercoat

	adhesion properties will only be achieved if subsequent coats are applied **within seven days**. Refer to product data sheets for more information.
SW 5.31	**Application Methods** Refer to **BS 6150: 2006 Code of Practice for Painting of Buildings Section 9.3 Application Methods Page 103** All methods of application are comprehensively dealt with in this Section.

	ICI Paints AkzoNobel Site Work Instructions v5 - 2013
Clause Reference	**Section 6: Colour**
SW 6.01	**Good Working Practice When Using Colour** Before application, ensure that all materials are from the same batch. (See Clause SW 2.26). If mixed batch tins are purchased they should be 'boxed' to avoid potential colour variation. 'Boxing' requires the mixing together of the different batches in a larger container to ensure consistency of colour. Colour variation can occur when purchasing a colour for a project from a variety of sources rather than from one source and/or location. The risk of colour variation, can be reduced by taking the following action: (a) Avoid using a mixture of ready mixed colour and in store tinted colour (b) Avoid using a variety of batch numbers whether ready mixed or in store tinted. For the purpose of in store tinted colour a batch is considered to be materials tinted on one machine at the same time. (c) Purchase sufficient material for the project at one time from the same source of supply tinted on the same tinting machine. Where this is not appropriate due to storage restrictions, the supplying merchant may be able to store sufficient quantities in store for call off when required. It is good working practice to hold back sufficient original material to 'touch up' any areas of damage to the paint film prior to completion. With some paints and / or colours, especially products with mid or high sheen and / or deep colours, it may be necessary to recoat the whole area to avoid noticeable differences in film appearance for example under acute lighting conditions.
SW 6.02	**Selection of Colours and Finishes/Trial Areas/Additional Coats** All colours and finishes to be selected and approved by the client or client's agent. Provision must be made for the execution of patterns or trial areas on site if required. In general, the quantity of finishing coats specified are based on 'as existing' colours and finish types. Allowance must be made for any deviation from the standard specification. Additional coats may need to be applied should the client or client's agent select colours as described in Clause SW 6.04. ICI Paints AkzoNobel will not accept responsibility for the cost of the application of additional coats when the originator of the documentation (for example an ICI Paints AkzoNobel Representative) has not been informed of the colour schedule prior to origination of the project documentation.
SW 6.03	**Specified - "As Existing" Colour** Many specifications are written on the basis of the finish colour being 'As Existing'. Provision must be made by the successful Contactor, with the Client, to confirm and agree the 'actual' colours to be applied before application. Should a change of colour be instructed, then agreement must be reached by all parties as to the possible need for additional coats and the cost significance of such action. (See all other Clauses on Colour for further guidance.)
SW 6.04	**Special Processes Colours** When any colour is to be used on rough surfaces, or where a marked change of colour is to be made, an amended process may be required and the finishing system for that surface amended to include the additional coats necessary. The finishing system for a surface that is to be significantly lighter than the previous colour (e.g. from Black to White) may also need to be amended to include the application of further coats of finish or the use of different colours or products as undercoats prior to finishing. Some strong colours, such as Poppy and Monarch in the revised BS4800 range, NCS colours with a colour intensity of 60 or more and also some Colour Palette colours as detailed below, cannot be made with the same hiding power as ordinary colours if they are to have satisfactory durability and purity of colour and therefore may require extra coats to be applied to achieve full opacity. These strong colours, known as 'Special Process Colours' are identified as such in colour cards from the supplying stockists or the Trade Technical Advice Centre (see below) with specific instruction on how many coats to apply to achieve full opacity. Some of this information will also be given on the can labels. This may involve the application of further coats of finish or the use of different colours or products as undercoats prior to finishing. Refer to **BS 6150: 2006 Code of Practice for Painting of Buildings** Appendix B: Paint Colours (or as amended). See relevant colour card for further guidance. **Colour Guidance** NCS: All colours with a colour intensity of 60 or more. e.g. (10**60**-Y10R). Colour Palette: BB, RB, BG colours with chroma value >350. Colour Palette: YY, YR, GY colours with chroma value >450. Colour Palette: RR, GG colours with chroma value >400. e.g. (45YY 71/**664**).

	ICI Paints AkzoNobel Site Work Instructions v5 - 2013
Clause Reference	**Section 7: Operation and Maintenance**
SW 7.00	**Yellowing/Discolouration of Solvent-borne Finishes** Solvent-borne finishes tend to yellow in situations where direct daylight is excluded.This is more obvious with white and light – coloured finishes. If freedom from yellowing is important, contact: ICI Paints AkzoNobel Technical Group: ICI Paints AkzoNobel, Wexham Road, Slough SL2 5DS. Tel: 08444 817818 for guidance on selection of oil-free coatings.
SW 7.01	**Chemical Resistance** In a coating system each resin, (Alkyds, Acrylated Rubbers, Epoxies, etc.) will behave in a different way when exposed to other chemicals. Care must be taken to ensure that the system selected has the best resistance to the chemicals it will be exposed to once it has been applied.
SW 7.10	**Durability in High Wear Areas** An extra coat of the finishing material is recommended to improve durability in high wear/traffic areas such as doors and handrails.
SW 7.20	**Cleaning Specified Surfaces / Removal of Paint Splashes** Where instructions are given not to paint, and to wash or dust clean, this work must be undertaken prior to painting surrounding areas and should be left clean and free from paint splashes.
SW 7.30	**Cleaning Interior of Rainwater Goods** Clean out interior of all gutters, rainwater heads etc. Thoroughly clean down the surfaces to remove all dirt grease and surface contaminants**.**
SW 7.40	**Cleaning Maintenance for Internal Walls Finished in Conventional Water Based Paints** Where possible the surface should be lightly brushed or dusted to remove dust etc. When more intense cleaning is required, gently wash down the surface using a soft sponge and mild detergent solution to remove dirt and light marking. Heavy pressure should be avoided to reduce the level of polishing or burnishing of the painted surface. Gently clean down with clean water and remove any excess water to avoid staring or streaking. Abrasive Cleaners and coarse cloths should not be used.
SW 7.42	**Cleaning Maintenance for Internal Walls Finished in Diamond Technology Water Based Paints** Common stains can be removed by cleaning promptly with a soft cloth and clean soapy water. Allow to dry. Vigorous scrubbing and the use of abrasive cleaners or scourers may impair the finish. Only apply enough pressure to remove marks. Oil based stains and marks from some pens/felt tips/permanent markers may not be completely removed. Full durability develops 7 days after initial application. For information about removing specific stains, please phone ICI Technical Group on 08444 817818.
SW 7.43	**Cleaning Maintenance for Internal Anti Graffiti Walls** Remove all graffiti and stained areas with an appropriate graffiti removal system. **'Dulux' Trade Anti - Graffiti Prewash** (Data Sheet 811) and **'Dulux' Trade Graffiti Remover** (Data Sheet 815) have been developed specifically for the removal of graffiti from the complete **'Dulux' Trade Anti - Graffiti System.** The successful removal of graffiti from uncoated substrates, or from coatings other than **'Dulux' Anti - Graffiti Paint Finish,** cannot be guaranteed. There can be significant problems relating to the reaction from the chemicals used or permanent damage to the substrate. Advice should be sought from ICI Paints AkzoNobel Technical Group: Wexham Road, Slough SL2 5DS. Tel: 08444 817818 in such cases.

	ICI Paints AkzoNobel Site Work Instructions v5 - 2013
Clause Reference	**Section 7: Operation and Maintenance**
SW 7.50	**Care and Maintenance of Diamond Glaze** Surfaces should be protected from water, steam, spillages and hard stress (e.g. abrasion or polishing) for a minimum of 5 days after application and, with careful occupation, light foot traffic is possible after 24 hours. Carpets and rugs should not be placed on the floor for a minimum of 7 days. Once it has fully hardened you need to begin a maintenance and cleaning schedule using an appropriate flooring emulsion polish. This emulsion polish will act as a sacrificial coating for your floor and therefore must be regularly maintained appropriate to the amount of traffic passing through. In addition, to further care for the floor place large doormats at all outside entrances for people to wipe their shoes on to remove gravel, grit and water. Mats must be cleaned regularly to keep them working effectively. Chairs, tables and other furniture should be fitted with felt pads on their feet to prevent the surface being scratched whilst they are being moved. Refer to can lid brochure for further guidance.
SW 7.51	**Care and Maintenance of Floor Lacquer Systems** Surfaces should be protected from water, steam, spillages and hard stress (e.g. abrasion or polishing) for a minimum of 5 days after application and, with careful occupation, light foot traffic is normally possible after 24 hours. Carpets and rugs should not be placed on the floor for a minimum of 7 days. Once it has fully hardened you need to begin a maintenance and cleaning schedule using an appropriate flooring emulsion polish. This emulsion polish will act as a sacrificial coating for your floor and therefore must be regularly maintained appropriate to the amount of traffic passing through. In addition, to further care for the floor, place large doormats at all outside entrances for people to wipe their shoes on to remove gravel, grit and water. Mats must be cleaned regularly to keep them working effectively. Chairs, tables and other furniture should be fitted with felt pads on their feet to prevent the surface being scratched whilst they are being moved.

Condition of Surfaces to be Coated
Table 1

Walls	Wood	Floors	Plastics

Stage	Surface to be Coated	Description
1	New	New surface requiring cleaning and minimal preparation to receive surface coating application.
2	Uncoated *(Not Applicable to all Substrates)*	Existing uncoated surface having had some degree of exposure to natural conditions but requiring minimal preparation
3	Factory Coated/Primed *(Not Applicable to all Substrates)*	New or existing surface with factory applied coating or factory applied primer, requiring some cleaning and preparation.
4	No Breakdown	Coated surface in excellent condition showing no coating failure, minimal cleaning and preparation required.
5	Light Failure (< 20%)	Coatings showing some breakdown (< 20%) not only in high wear areas, surfaces will require cleaning down, scraping back of failed coatings and some minor surface repairs.
6	Partial Removal (20-50% Failure)	Medium breakdown of existing coatings (20-50%), failed coatings should be removed and substrate repairs carried out where necessary.
7	Heavy Failure/ Incompatible Coatings	All coatings must be completely removed prior to substrate repairs being carried out where necessary.

ICI Paints AkzoNobel Site Work Instructions v5 - 2013

Condition of Surfaces to be Coated
Table 2

Metals		
Stage	**Surface to be Coated**	**Description**
1	New Hot Rolled Steel (Heavy Gauge Structural Steel e.g. RSJ's)	Grade A, B, C, D as described in BS7079 Part A1 1989 (Specialised Factory Coatings Used)
2	Hot Rolled Steel	Weathered (Uncoated)
1 - 2	Cold Rolled Steel (Light Gauge e.g. Sheeting) & Cast/Wrought Iron	New or Weathered (Uncoated)
1 - 2	Hot Dipped Galvanised & Zinc	New or Weathered (Uncoated)
1 - 2	Cast Aluminium	New or Weathered (Uncoated)
1 - 2	Polished Extruded Aluminium	New or Weathered (Uncoated)
1	Copper, Lead & Brass	New
4	Metal - No Breakdown Previously factory primed or fully decorative coated metal	In excellent condition showing no coating failure and no signs of rusting. Minimal cleaning and preparation required.
5	Light Failure (< 20%) Previously factory primed or fully decorative coated metal	Showing some breakdown (< 20%) not only in high wear areas. Corrosion may be evident (0.05%-1.00% failure). Surfaces will require cleaning-down and scraping back of failed coatings etc.
6	Partial Removal (20-50% Failure) Previously factory primed or fully decorative coated metal	Medium breakdown of existing coatings (20-50%). Corrosion may be evident (1%-8%). Surfaces will require cleaning-down and all failed coatings should be removed.
7	Heavy Failure *Significant Rusting Incompatible Coatings Previously factory primed or fully decorative coated metal	Significant coating failure (> 50%) and/or *significant corrosion (>15%) All coatings must be completely removed. *<u>Important Note</u> Irrespective of the coatings condition, where significant corrosion is evident all previous coatings must be removed.

Condition of Surfaces to be Coated
Table 3

Wallcoverings		
Stage	**Surface to be Coated**	**Description**
5	Wallcoverings (good)	Minor breakdown of existing wall coverings. Surfaces should be cleaned down and minor repairs undertaken e.g. poorly adhering joints should be dealt with before paint application.
7	Wallcoverings (poor)	Major breakdown of existing wall coverings. Completely remove existing coverings using a suitable method, repair surfaces as necessary.

Condition of Surfaces to be Coated
Table 4

Specialist Substrates		
Stage	**Surface to be Coated**	**Description**
4	Plastisol Coated Coil Cladding Weathered with No Breakdown	Coated surface in excellent condition showing no coating failure
6	Plastisol Coated Coil Cladding Partial strip of Defective Coatings	Medium breakdown of existing coatings (20-50%), failed coatings should be removed and repairs undertaken.
7	Plastisol Coated Coil Cladding Complete strip of Defective Coatings	All coatings should be completely removed prior to repairs taking place.
4	Problem Surfaces – Difficult Surfaces	Non Decorative Coated
4	Problem Surfaces – Road Marking	Coated & Uncoated

Appendix C: Bournemouth University Report (1994)

REVIEW OF PAINTED STUCCO
BRUNSWICK SQUARE
HOVE, SUSSEX

A Report Prepared for Hove Borough Council

HISTORIC BUILDING AND SITE SERVICES
Department of Conservation Sciences
Bournemouth University
Dorset House, Talbot Campus
Poole, Dorset, BH12 5BB

August 1994

REVIEW OF PAINTED STUCCO
BRUNSWICK SQUARE
HOVE

CONTENTS

HISTORIC BUILDING AND SITE SERVICES
BOURNEMOUTH UNIVERSITY
Dorset House, Talbot Campus, Fern Barrow
Poole, BH12 5BB
Telephone: (0202) 595444

REVIEW OF PAINTED STUCCO BRUNSWICK SQUARE, HOVE

BRIEF

HBSS was commissioned by Hove Borough Council to investigate the reasons for paint failures on the stucco facades of Brunswick Square and to make recommendations on modifications or alterations to current specifications.

The Borough Council's existing specification is Johnstone's Jonsil Silicone Alkyd gloss paint in "Regency Cream" and painting is required every five years. Most of the paint inspected is believed to be about four years old.

Recent painting is identifiable by the colour change which takes place with weathering. Very recent paint has a light "green" tinge compared with more weathered material. (Photograph 1)

The paint is applied to Roman Cement modelled stucco detailed and false jointed in imitation of stone ashlar. The cement thickness is typically 20mm (more on rustication and mouldings) on a brick backing. Much of the fine original detailing is partially obscured by multiple layers of paint.

INSPECTION OF PAINTED SURFACES

An initial inspection of the paint work was carried out on 14 July 1994 by Professor John Ashurst and Catherine Woolfitt of HBSS. A more thorough inspection was carried out by Catherine Woolfitt and Pamela Mackenzie of HBSS on 1 August 1994. A photographic survey of typical paint failures around Brunswick Square and Brunswick Terrace was completed. An assessment was also made of the condition of the substrates. Buildings with typical and relatively severe paint failures were chosen for testing; samples were taken from these sites with the intention of measuring moisture content, and salt content. Samples were taken by drilling powder with a 10mm bit. Powder was collected from the stucco substrate (to a depth of about 2cm) and into the brick behind, generally to a depth of 10-12 cm. A schedule of these samples and the results of analysis will be supplied separately as it was not possible to complete salts analysis before submission of this report. I can be stated, however, on the basis of initial results and observations, that the final results will not alter the conclusions and recommendations contained in this report. Powder samples was collected separately for salts analysis.

TYPICAL PAINT FAILURES

Many of the samples of failure observed and recorded in our photographic survey were caused by moisture build-up on the stucco behind the paint layer.

This is particularly evident in the following types of failure:-

* large cracks in the paint which follow cracks in the stucco beneath where moisture travels (Photographs 2,3,4)

* blistering of the painted surface, whereby bubbles of air and moisture form and the paint is raised in a blister (Photograph 5)

* these blisters may also contain salts which appear as white crystalline efflorescence when the blister breaks (Photograph 6)
  There was not extensive evidence of this sort of salt/moisture damage to the paint but it was noted at Brunswick Square 9, 17 in particular

* large areas of paint may also detach without cracking or breaking from the substrate due to moisture build up. In one case, on 20 Brunswick Square, many layers of paint had been built up and were detaching as a whole from the substrate (Photograph 7)

* large areas of paint failure, where a considerable amount of paint had flaked or peeled away from the substrate in particularly damp locations, mainly below balconies (Photographs 8-11)

In all of the above cases it is clear that the failures can be attributed mainly or entirely to moisture contained in the substrate; as the moisture content of the substrate increases, pressure is applied to the paint film on the surface which is more or less impenetrable to water vapour. The paint responds to this pressure by cracking, splitting, peeling or lifting in the ways illustrated in photographs 1 to 11. These observations are in agreement with the report of Mr Bilyk of Johnstone's Paints regarding failures on No 8 and No 31 Brunswick Terrace.

There are, however, other factors involved in a number of the paint failures at Brunswick Square. Some of the failures relate to poor or inappropriate preparation of the substrate prior to painting. Mr Bilyk's report identified the deterioration of a white filler on property No 42. Photographs 12-14 show failure of paint by cracking and lifting over surfaces covered/treated with a white filler (gypsum or PVA based). In these cases the paint has failed to adhere to the filled surface.

Photographs 15-19 illustrate cases where it is difficult to attribute the paint failure to a single cause. Failure is apparently due to a combination of factors, including poor surface preparation and cleaning, high moisture content in the substrate and the deterioration of filling material beneath the paint film.

The Council's specification for painting outlines how the substrate should be prepared. Areas of loose and flaking paint are to be scraped back, defective rendering cut out and patched with an appropriate mortar and small cracks filled "oil based filler." It is, however, difficult to ensure that specifications are followed on a job site and even in the instructions in the previous line there is considerable latitude for repair methods and materials.

Poor repairs to the render substrate and the lack of uniformity in the substrate can impair adhesion of the paint film. For example, if cracks are improperly filled they will continue to carry water, eventually causing the paint to fail.

On flat wall surfaces it was observed that often old paint has been cleaned off in a haphazard fashion in preparation for new paint, with areas of old paint standing proud and the paint adhering directly to the render in the areas where the old paint layers were readily removed. This has created a visually unsatisfactory appearance in a number of places (Photographs 20,21). This build up of paint layers also obscures the original effect of the rendered surface with the false jointing incised in imitation of stone ashlar construction. (Photographs 22 and 23)

CONCLUSIONS AND RECOMMENDATIONS ON ALTERNATIVE PAINT SYSTEM

All dense stucco buildings are potential victims of water penetration. Roman cement stucco, which is not unlike modern 1:1:6 or 1:2:8 cement:lime-sand in hardness and permeability often suffers from its quick-setting properties because of the development of micro-cracking. This micro-cracking is exploited and enlarged by weathering and water penetration. Further cracks develop as a result of minor building movements, when the brittle nature of the cement comes under tension and fractures. Whilst water can gain access quite readily through projecting features such as balconies, strings, cornices and parapets, egress is more problematical because of the relatively impermeable nature of the cement. The trapping of water is exacerbated by the use of water-repellent coatings. On buildings such as Brunswick Square's a very irregular pattern of permeability can develop through multiple paint applications and partial failures. "Sacrificial zones" can develop in areas of surface breakdown to which moisture migrates and damage is exacerbated.

The original finish to the cement stucco was traditionally a neat Roman cement, sometimes gauged with lime, coloured in imitation of Bath stone. As these original finishes weathered off, a pattern of re-colouring using lead and oil-based paints was established, resulting in the rather impermeable multi-layered surfaces described above. More modern paint systems, such as those based on alkyd resins can only have a limited success on a

varied, partially prepared background to which moisture has access through projections and catchments and is distributed through old crack patterns.

A number of recommendations have been made by the Technical Service Chemist of Johnstone's Paints with most of which HBSS would not disagree. However, the damp substrates referred to in that report will again become wet unless certain building failures are rectified. In particular, the detailing of balconies, intermediate entablatures, cornices, blocking courses and copings must be inspected and, if necessary, modified. Modifications may range from lead flashings to renewal of water repellent cement weatherings on minor projections (which were traditionally treated with tallow). Cracks must be properly opened and filled with a compatible filler. This filler should be based on hydraulic lime (now obtainable from the Telling Lime Company) and well graded sand and stone dust (1:2:1). This material is also suitable for rebuilding damaged detail. All fillers which include gypsum or PVA should be excluded, as should any impermeable resin-bound fillers.

If detailing and preparation are specifically improved, a number of suitable paint systems will have a greatly enhanced life expectancy, including the Johnstone's Jonsil water-based system. However, experience of painted marine stucco over the past twenty years suggests that maintenance periods can be very significantly extended after proper preparation of the silicate paint system produced by Keim Mineral Paints is employed. This system can be seen in a number of closely similar situations, such as the Grand Hotel at Brighton, the Grand Hotel at Eastbourne, the Brighton Pavilion and the Bath Spa Hotel and Russell Cotes Museum at Bournemouth. The attraction of these paints is their excellent durability, water vapour permeability and affinity for alkaline substrates. They are also tolerant of remnants of old paint if these are properly rubbed down and free of soluble salts. If the preparation specification is followed, Keim will typically provide a thirty year warranty. The colours are light fast as they consist of earth pigments and the existing colour, or a modified colour close to the original "Bath", can be matched.

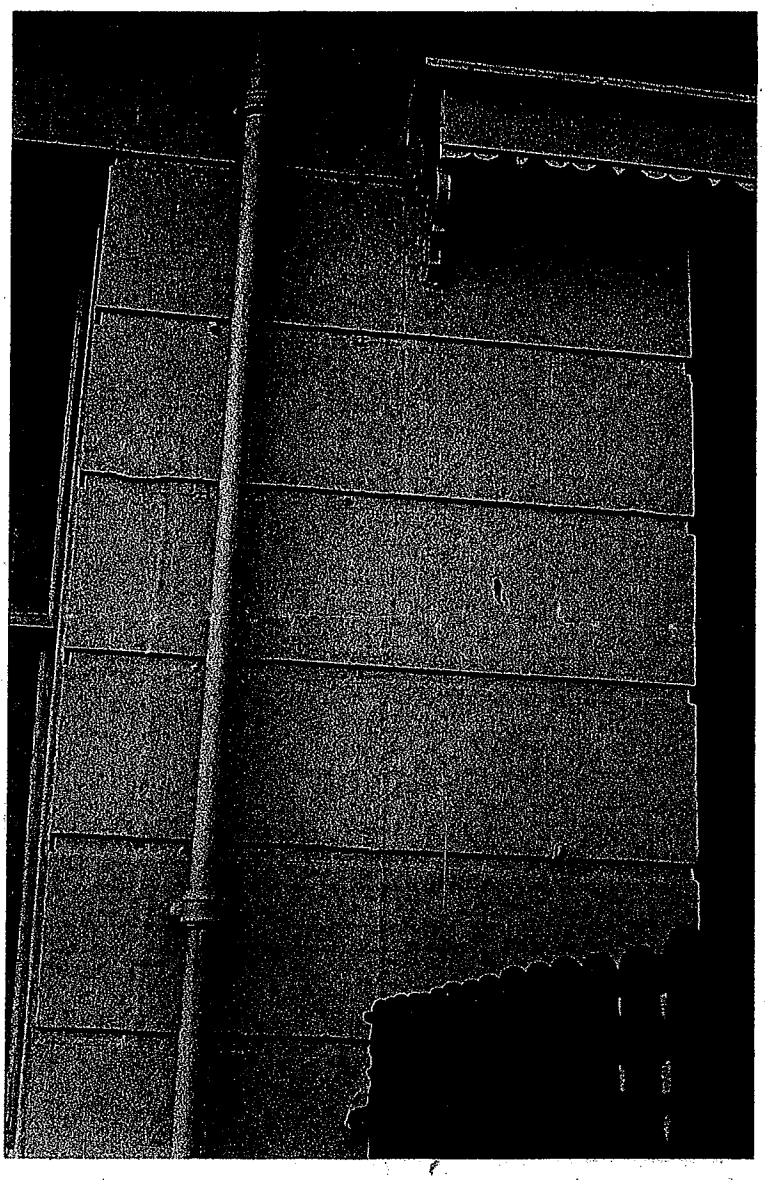
Keim Mineral Paints Limited are at

Muckley Cross
Morville
Nr Bridgnorth
Shropshire, WV16 4R
(074-631-543)
Contact: Gareth Davies

Hydraulic Lime is obtainable from

Telling (Birmingham) Ltd
Strawberry Lane
Willenhall
West Midlands, WV13 3RS
(0902 - 366718)
Contact: Jeff Parmley

Catherine Woolfitt
Historic Building and Site Services
August 1994



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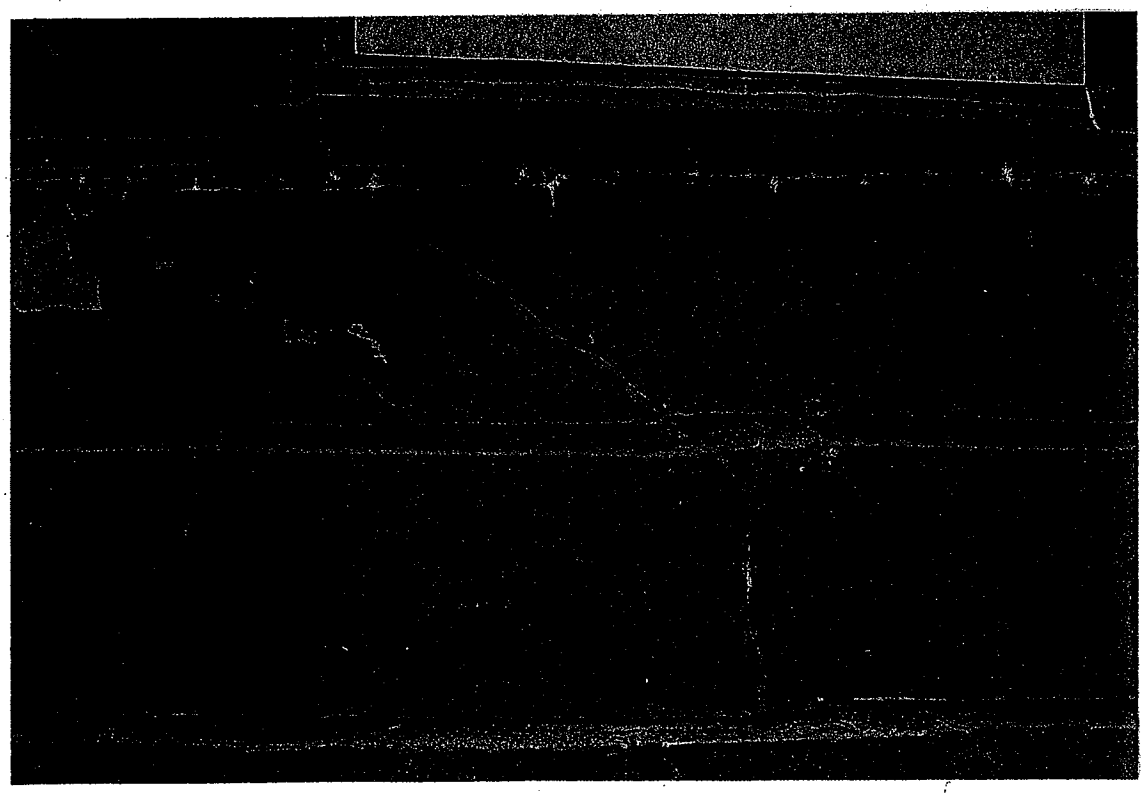

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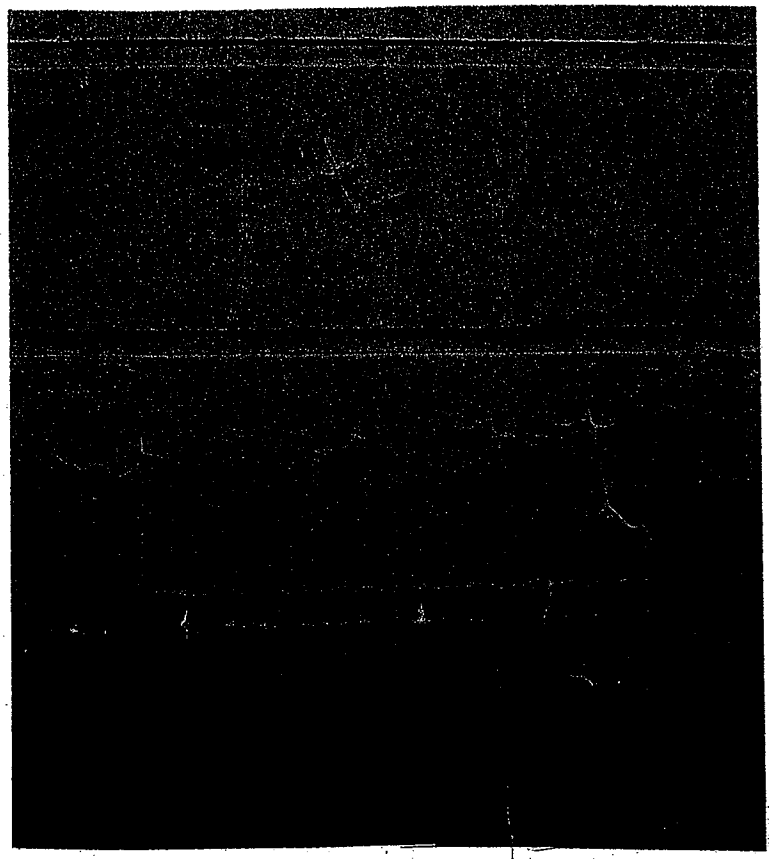

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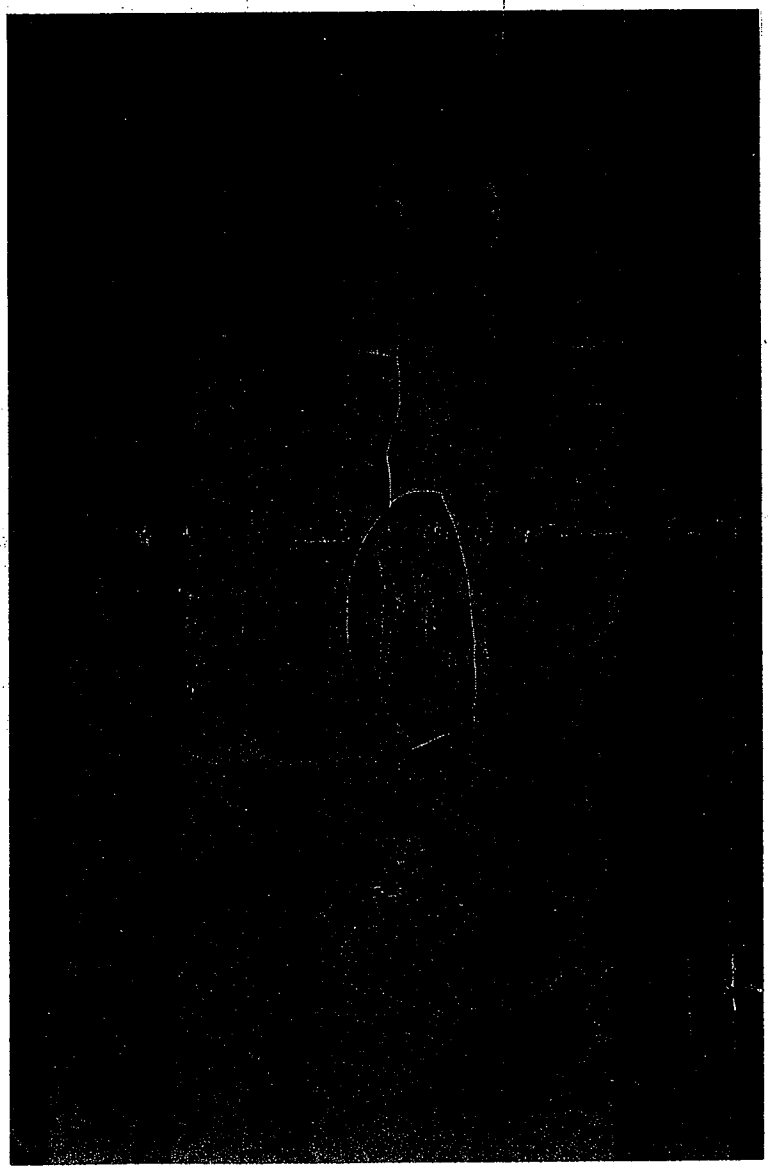

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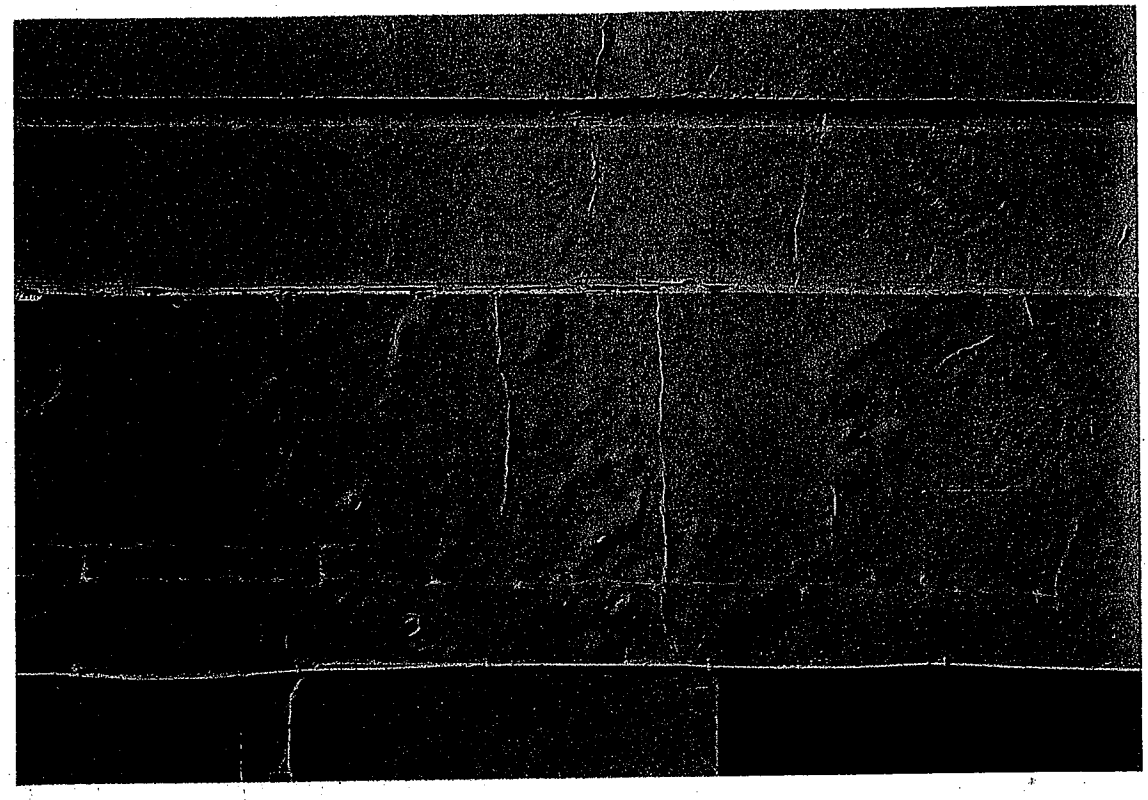

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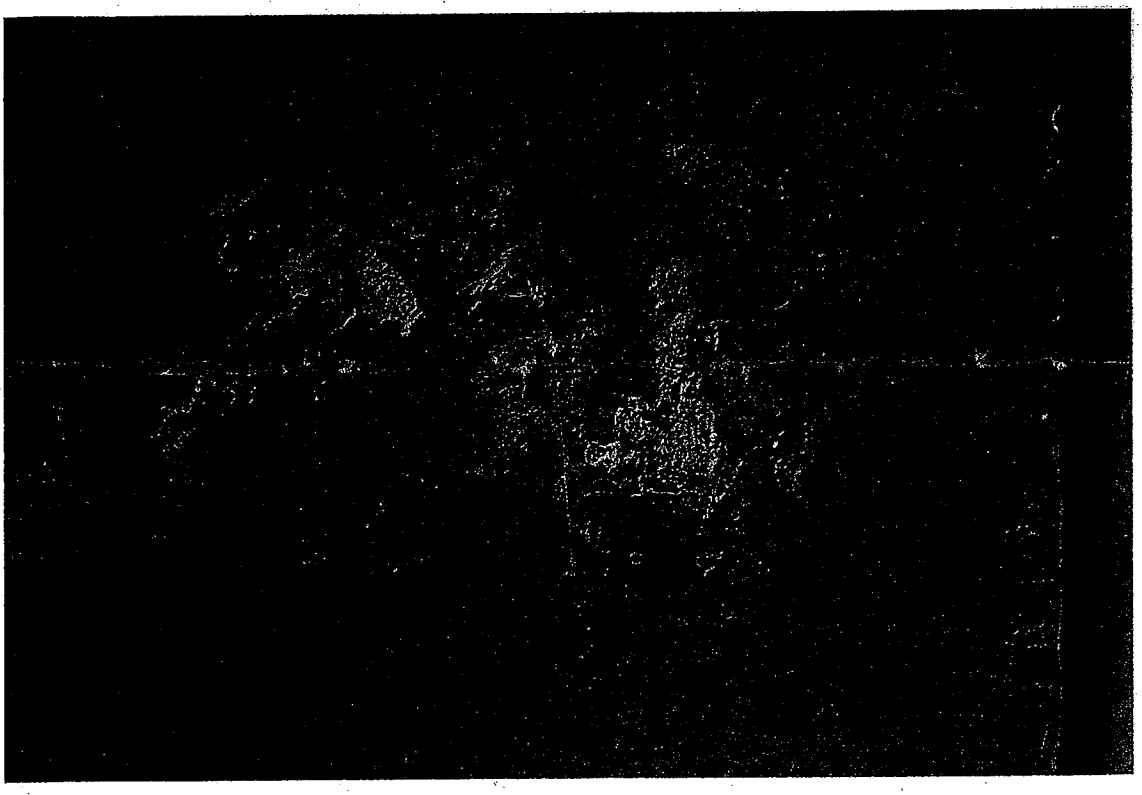

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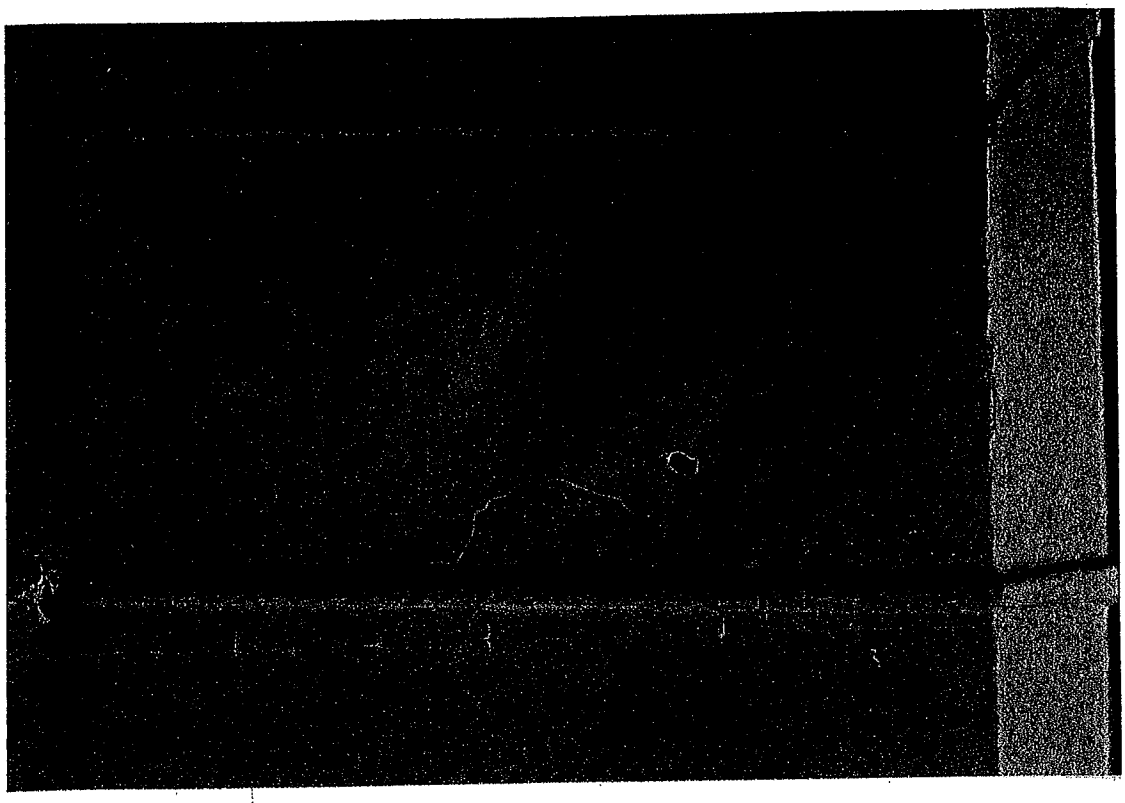

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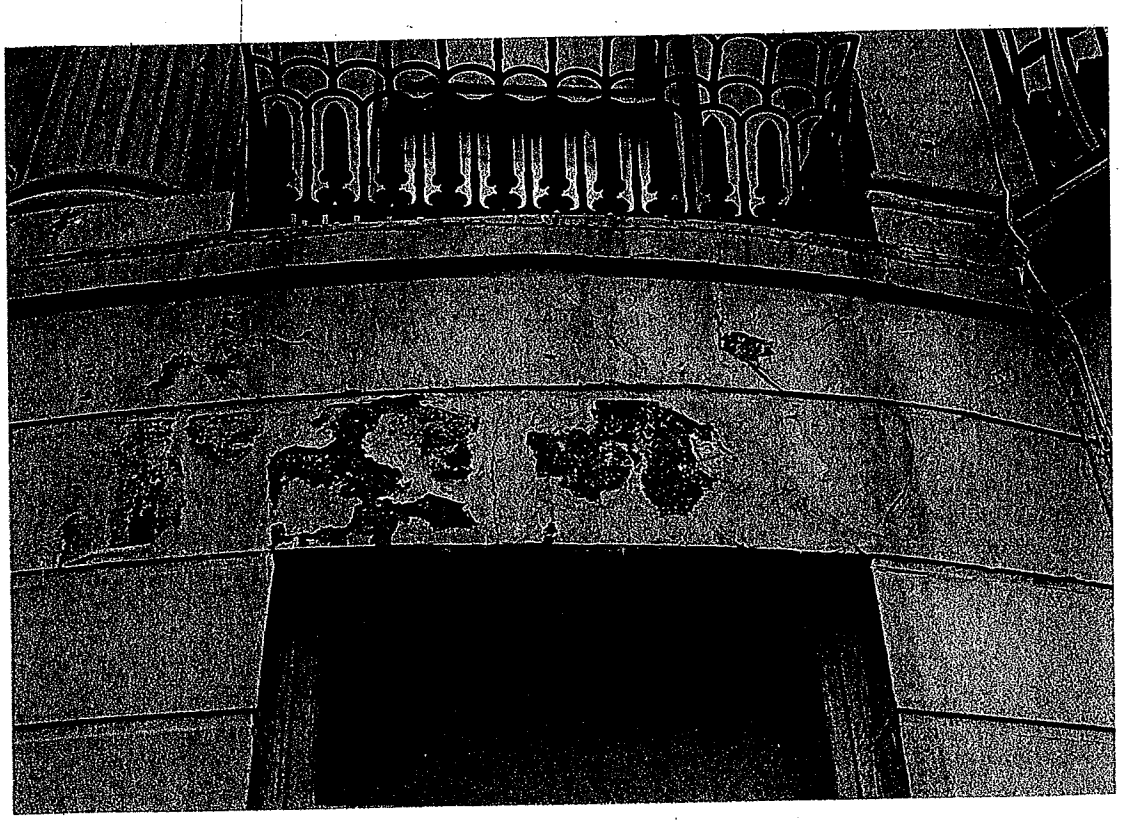

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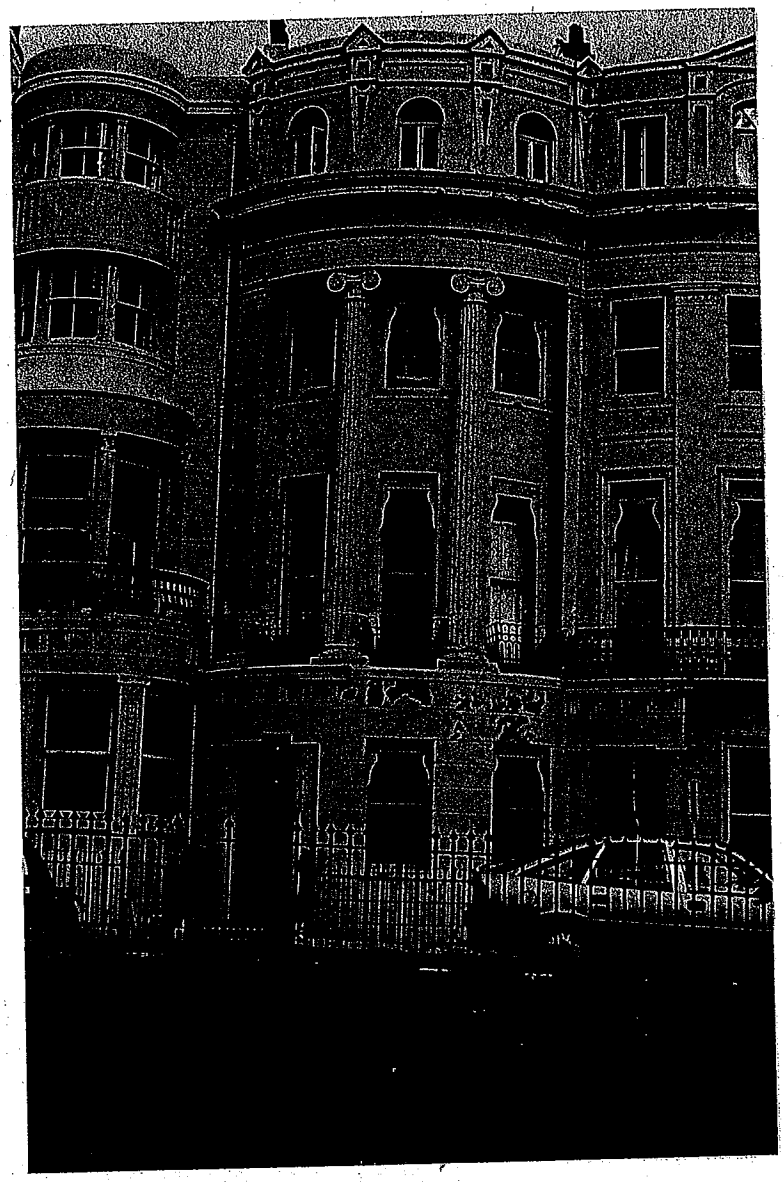

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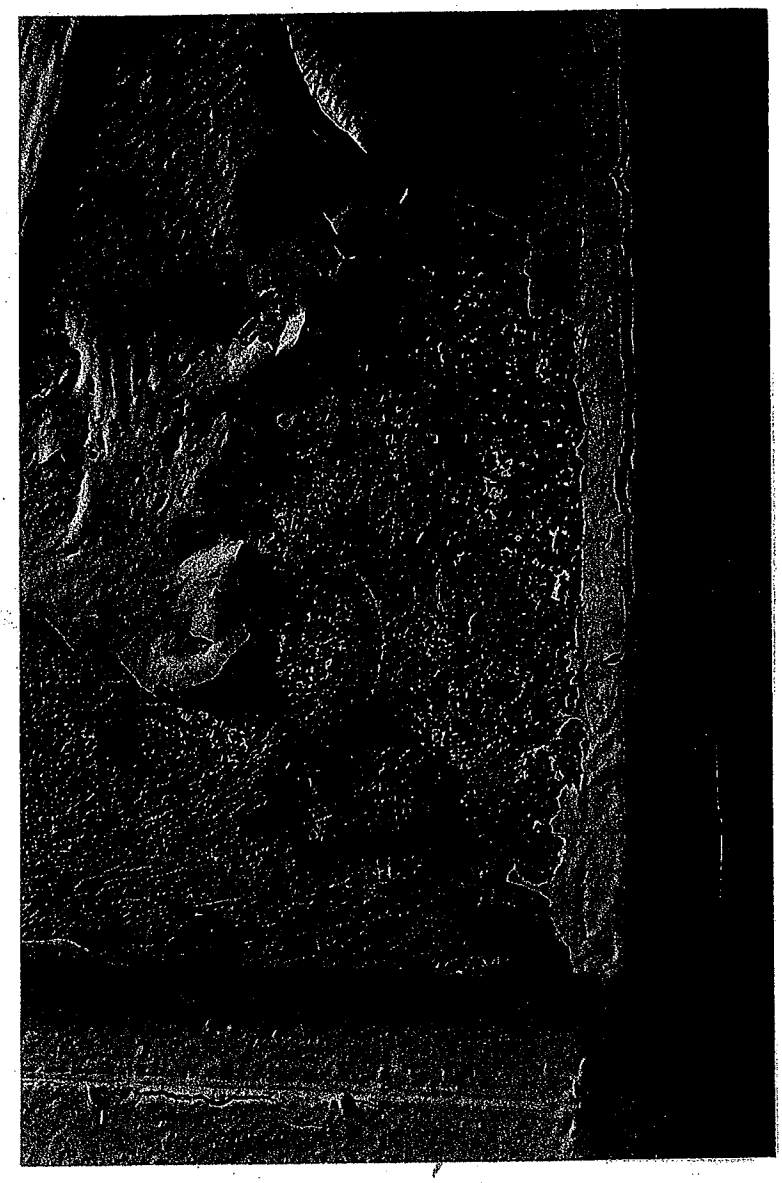

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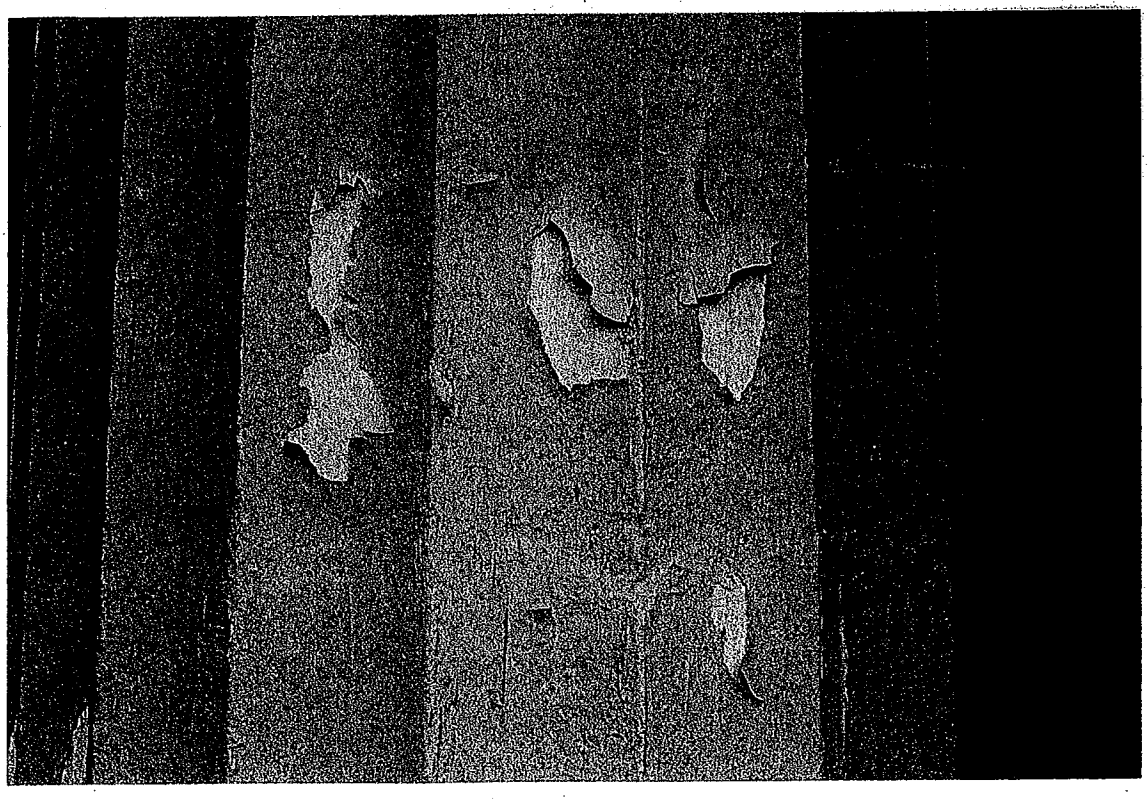

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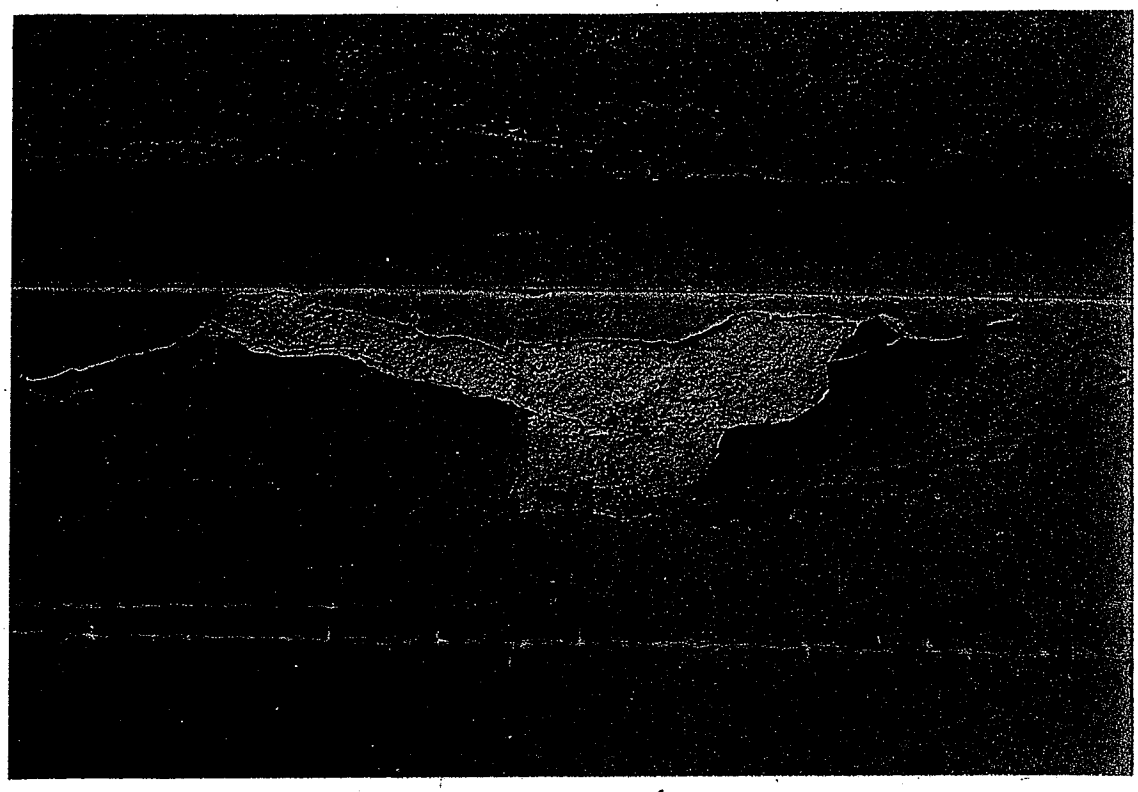

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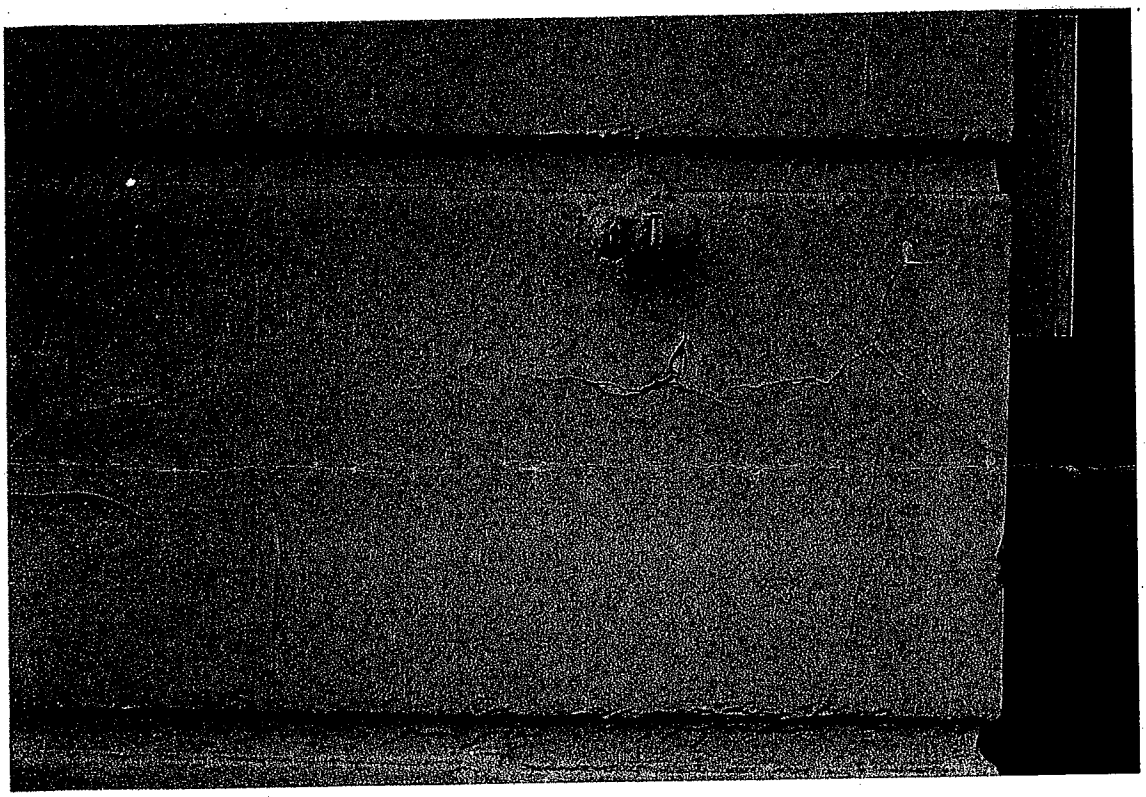

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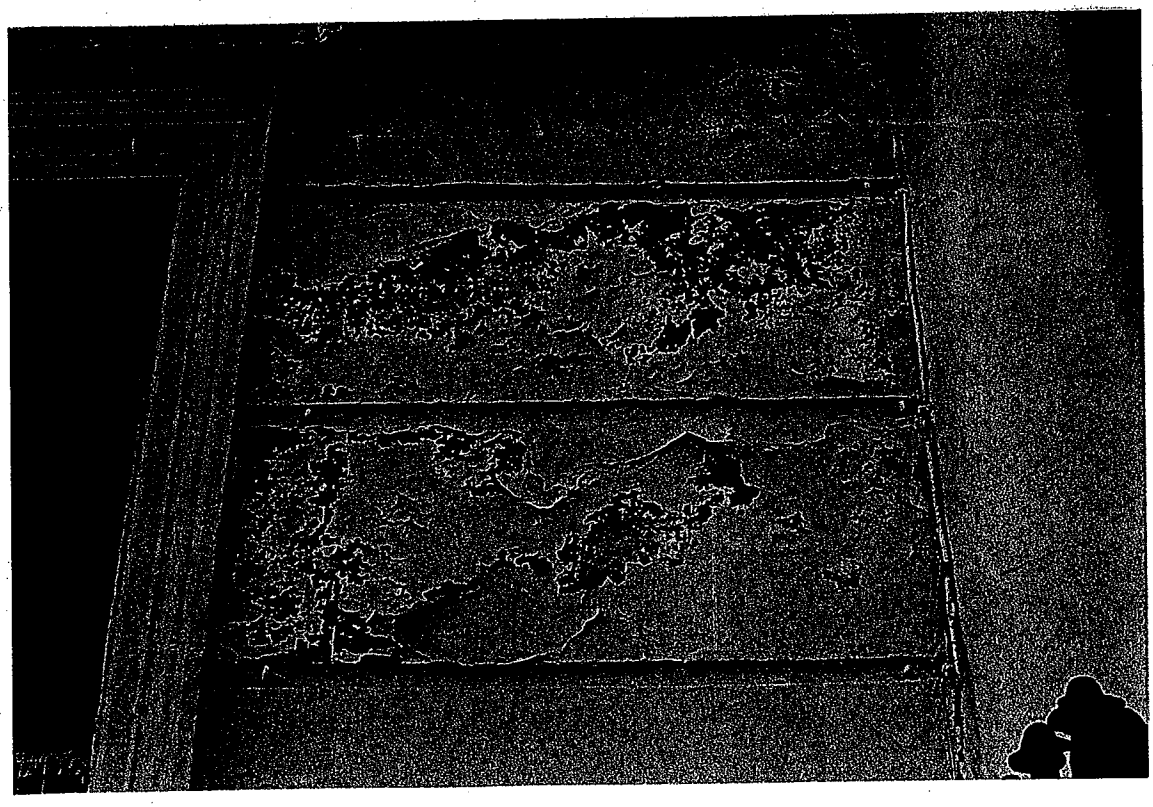

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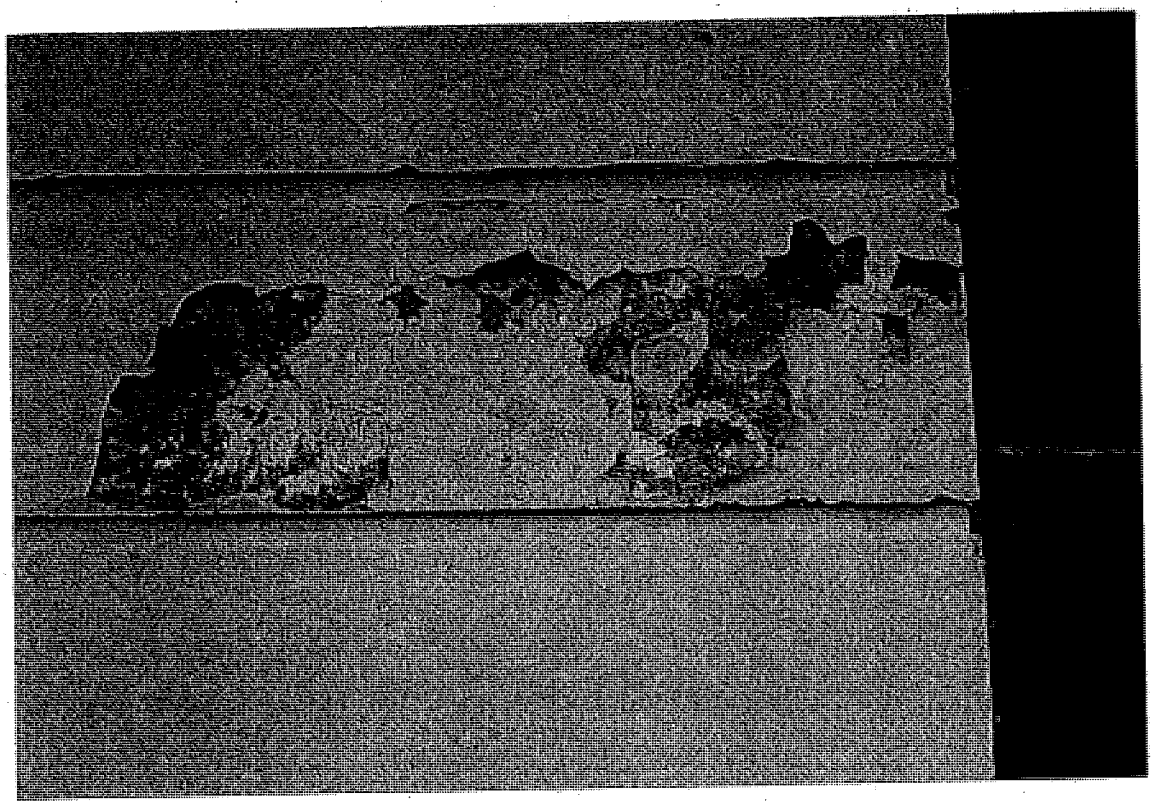

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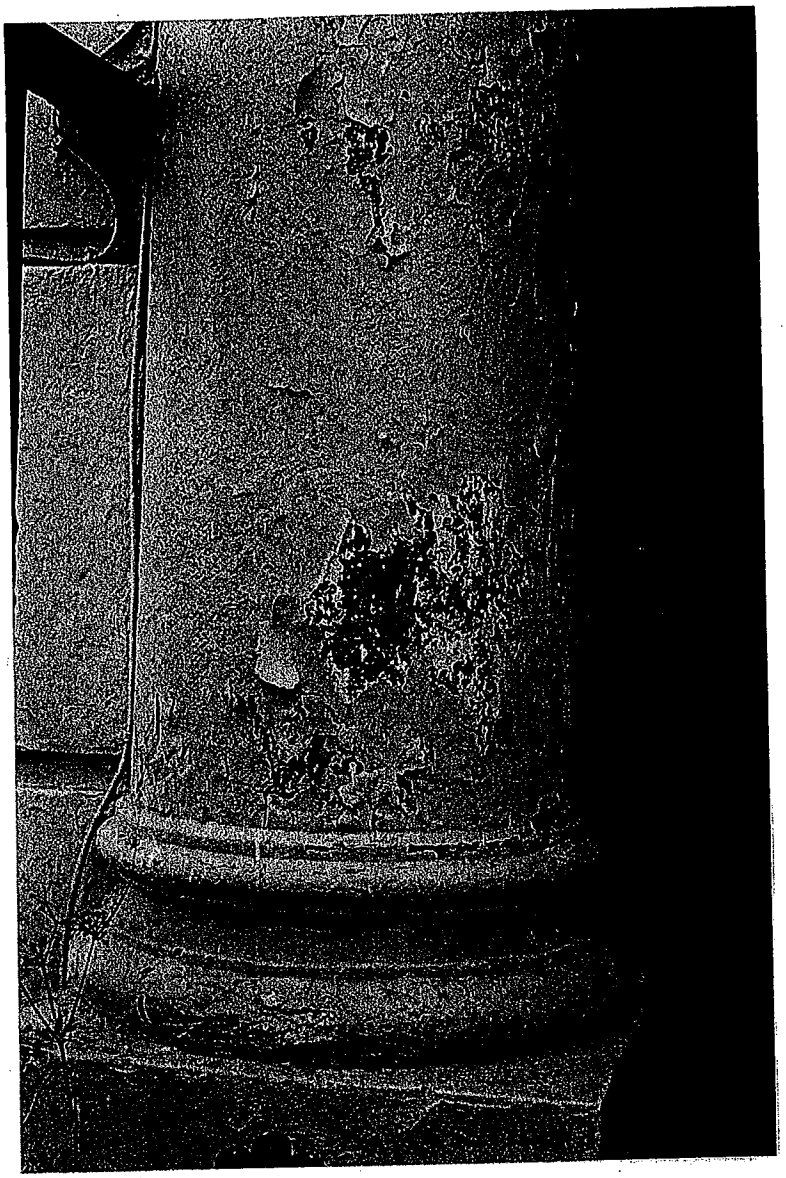

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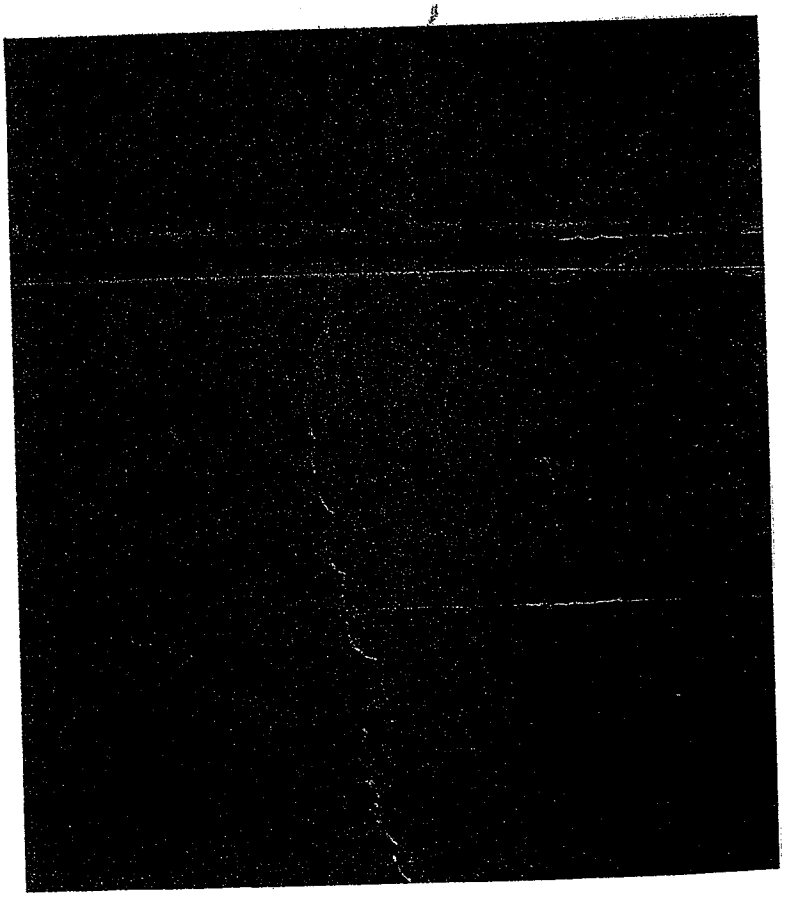

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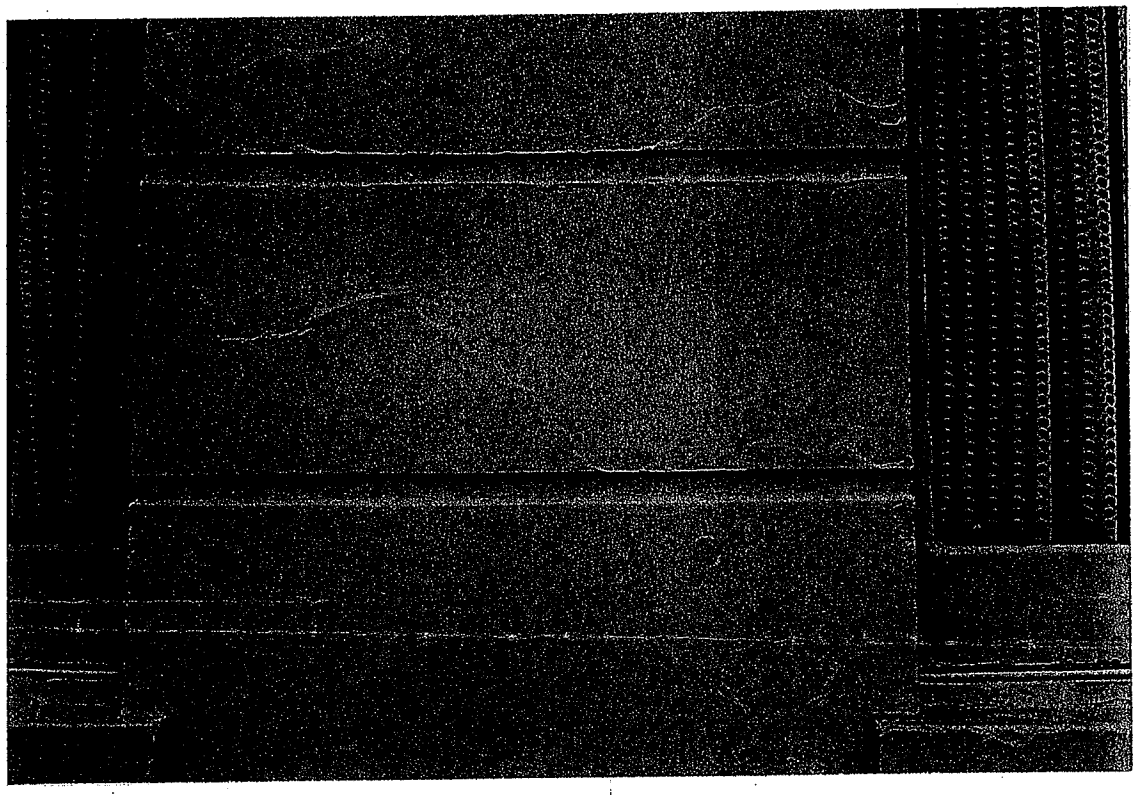

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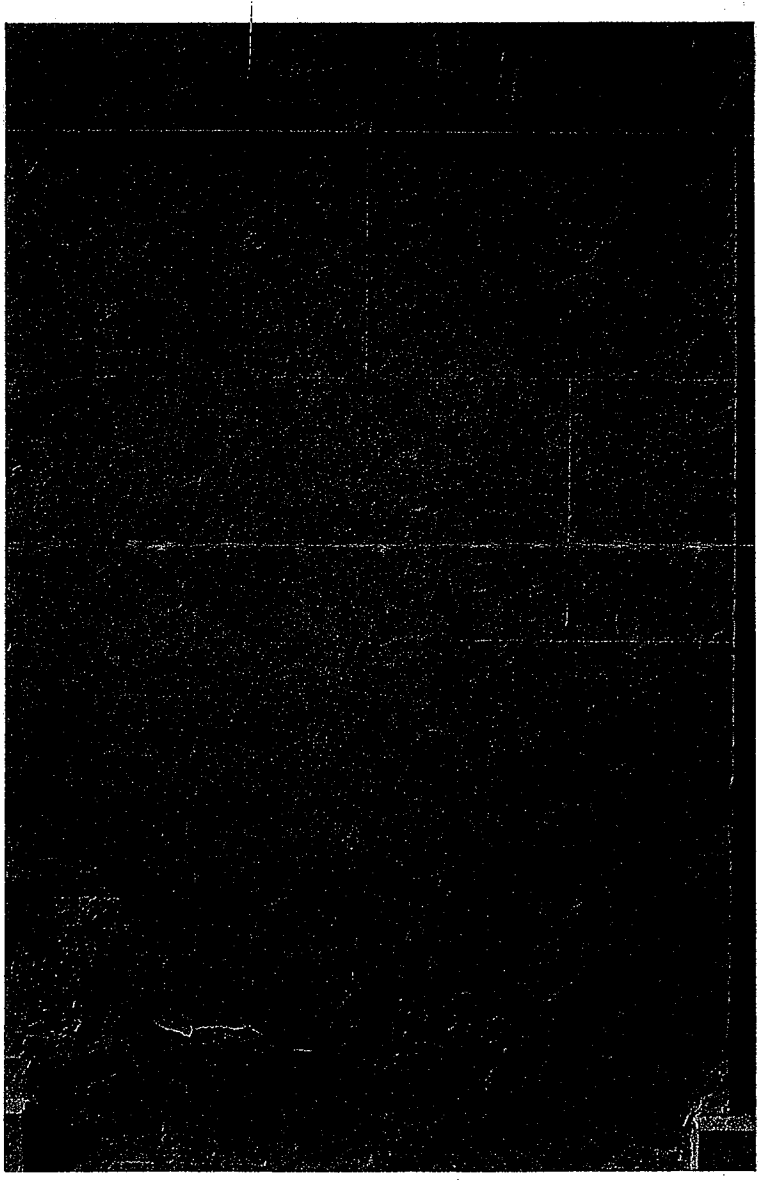

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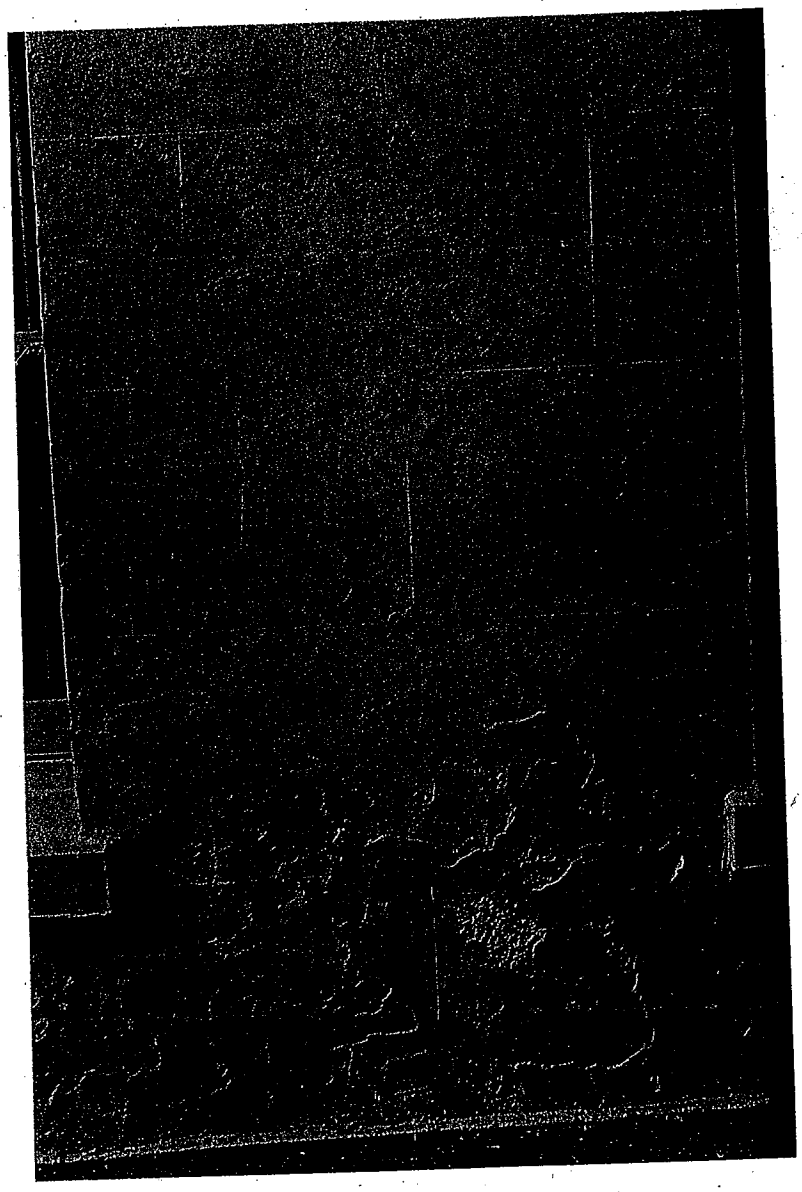

Appendix D: Rickards Survey of Paint Failure (2008)

RICKARDS
Conservation

Hill House
Eynsford Rise
Eynsford
Kent DA4 0HR

t 01732 741677
m 07973 504171

rickardsconservation@mac.com

Stephen Rickards
DiplCons(AA) FRICS IHBC ARPS
Chartered Building Surveyor
RICS Accredited in Conservation

REPORT

BRUNSWICK ESTATE
PAINT REVIEW

FOR: BRIGHTON & HOVE CITY COUNCIL

REF: SR 377

SEPTEMBER 2008

This report comprises 16 pages
including this header page.

CONTENTS **Page**

INSTRUCTIONS AND BRIEF

This report has been written in accordance with the detailed consultant brief dated 9th July 2008. The objective of this report is:

- To provide an overview of the condition of the building fronts, the extent of paint degradation since the last redecoration and the general performance of the paint coatings.

- Provide opinion on the anticipated performance of the existing coatings for the duration of the current cycle ie until 2010.

- Advise on the likely physical and visual consequences for the fabric of the properties and their appearance were the current paint cycle to be extended for a further 1,2 or 3 years, based on the anticipated progressive rate and extent of deterioration.

- Advise on the appropriateness of extending the paint cycle, having regard to the purposes of the Hove Borough Council Act 1976 and its limitations. Presume that the paint specification will in all other respects remain unchanged.

The findings and conclusions of this report are based upon a street inspection and visual assessment of the building fronts and paint coatings and by appreciation of the performance ratings for the existing paint systems.

My inspection was carried out on 5th August 2008 when weather conditions were variable, generally bright with some showers.

I subsequently met with the Conservation Officers, Mr Roger Dowty and Mrs Lesley Johnston at the Council Offices on 17th September.

I met with the representative of the Friends of Brunswick Square and Terrace, Mr Tom Chevasse, in Brunswick Square on 23rd September. Their technical advisor, Mr Hayes, was not able to be present.

It was not possible to meet the paint manufacturer's Technical Director, Mr John Carlisle, within the required timescale. Initially I spoke to Sandtex technical advisors using the 'Sandtex Paintalk' trade technical advice line and subsequently spoke to the Technical Director after his return from holiday on 9th October.

GENERAL BACKGROUND

The general background included with the brief is summarised as follows.

The Brunswick Estate comprises 1-58 Brunswick Square, 1-42 Brunswick Terrace and 1-8 Brunswick Place, built during the 1820's and Listed Grade I as being of architectural and historic interest. The front elevations are finished in painted stucco to a uniform colour scheme.

The Hove Borough Council Act, 1976 includes control to preserve the uniformity of the area. It requires that the street facades and railing are repainted every fifth year ie years 2000, 2005, 2010 and so on with two coats of an approved paint and colour. The Council's control extends to the paint product to be specified by the owners and the frequency of repainting.

Since year 2000 the fronts have been coated with Sandtex Trade paints stipulated in the Brunswick Estate Repainting Specification. This specification is provided to assist owners. The Council can neither enforce strict adherence to the specification not does it supervise the works which are entirely the responsibility of the property owners.

Prior to year 2000, different paint types have been used; in 1990 and 1995 Johnstones Alkyd paint and before this a Magnet lead based paint.

LIMITATIONS

The Limitations which apply to this inspection and report are as follows:

1 In accordance with your instructions my inspection is limited to the front elevations which were inspected from ground level pavings.

2 I was unable to inspect parts of the structure which are covered, unexposed or inaccessible and am therefore unable to report on their condition.

3 My survey was carried out in accordance with your instructions for and on your behalf only and I will accept no responsibility towards any third party for the content thereof.

SITE INSPECTION

Brunswick Terrace faces directly onto the sea and is therefore subject to severe exposure which would include strong salt laden winds and driving rain. The Terrace is south facing meaning that in summer months it receives direct sunlight all day with no shade. South facing elevations receive the full extremes of weather and tend to deteriorate more rapidly than other facing elevations.

Brunswick Square and Place are perpendicular to the sea front, the latter more distant from the shoreline so that the degree of exposure is somewhat less. Both face approximately east or west and are therefore in shade for some of the day. The degree of exposure to both direct heat and degrading ultraviolet light will therefore be less. The direction of the prevailing wind is from the south west meaning that the east side of the Square is exposed while the west side is more sheltered.

In general terms the surface condition of the painted stucco surfaces is good and it is not surprising that in general the condition of the painted surfaces to the fronts of the houses in the Terrace are poorer than the Square and Place.

The general features and style of all of the buildings is very similar and within the scope of this report they all suffer from a number of specific paint problems.

Typically the terraced facades are of four storeys with a parapet in front of an attic level with dormer window structures. Most also have a basement level with a traditional open lightwell area between elevation and pavement. The lightwell areas are protected by iron railings. Most of the elevations have pilasters and more significantly string courses and narrow balconies. The balconies also have iron railings.

The principal defects evident in the paint finishes are broadly in two groups, more serious with decay and possible structural implications:

- Rust staining below first floor balcony iron railings
- Rust staining on copings below pavement railings
- Rust staining on some rainwater downpipes
- Cracked stucco causing cracks in paint coating

and those which are largely cosmetic:

- Flaking masonry paint
- Blistered masonry paint finishes
- Uneven paint finish
- Soiling below string courses and balconies
- Bird faeces marking elevations

INCIDENCE OF PAINT DEFECTS

Table breaking down the incidence of buildings showing paint defects as a percentage of the total number of buildings in the Brunswick Estate.

Significant defects

Rust staining below first floor balcony iron railings Affects 50% of the Terrace and 14% of the east side of the Square	24%
Rust staining on copings below pavement railings Affects all of the Terrace and 60% of the east side of the Square	57%
Rust staining on some rainwater downpipes Random distribution	3%
Cracked stucco causing cracks in paint coating Random distribution throughout	11%

Cosmetic defects

Flaking masonry paint Random distribution in small patches throughout	13%
Blistered masonry paint finishes Random distribution in small patches	7%
Uneven paint finish Isolated fronts in the Terrace and Place	4%
Soiling below string courses and balconies Fairly even distribution throughout	40%
Bird faeces marking elevations Random distribution, largely the east sides of Terrace and Square	5%

EVIDENT PAINT DEFECTS

1 Rust staining below first floor balcony iron railings
2 Rust staining on copings below pavement railings
3 Rust staining on some rainwater downpipes

Rust staining on the paint is a symptom of an underlying problem which could become a more significant structural defect if untreated. Of the identified problems rust staining is the most evident and widespread.

The rust staining is caused by failure of the paint coating on the iron allowing corrosion. Rainwater running off the exposed rust then causes unsightly brown iron staining on surfaces below. The extent of this varies but is already severe in some instances on fronts painted in 2005 and will inevitably worsen. Failure of this paint coating is most likely due to poor pre painting preparation, the main risk being that some rust has not been removed.

The worst staining is along the Terrace with generally lighter staining along most of the east side of Brunswick Square (which is also exposed to the prevailing wind). The west side of Brunswick Square and Brunswick Place are sheltered from the prevailing wind direction and are little affected by this problem. The Terrace is directly exposed to salt laden wind from the coast and the degree of exposure would be classified as severe. Corrosion of ironwork, as well as damage to the paint film, is exacerbated by the presence of salt. If the painting interval is extended the degree of corrosion as well as the extent and density of staining will worsen.

As iron corrodes it also tends to expand significantly. Where iron fixings are embedded in the masonry this expansion would cause the masonry to crack. This could cause significant cracking in the masonry and the need for more costly repairs including replacing corroded iron tips and making good damaged stucco before repainting.

If corrosion on iron rainwater goods becomes excessive they can split and water spills over the elevation causing dampness and consequent decay. Extended repainting periods increase the likelihood and scale of this damage. Corrosion of cast iron downpipes tends to start on the rear surface which is generally close to the wall and difficult to prepare and paint and is often unseen without close inspection until the extent of damage is severe.

Rust staining is already a significant problem on elevations painted only three years ago. Even if some form of monitoring were undertaken it is difficult to predict the further extent of staining in two years time when repainting is due and exactly how this would increase at 1, 2 and 3 additional years.

In some instances the corrosion and staining appears severe and requires attention now and this problem gives cause for concern in terms of an increased painting period.

However the majority of railings causing this problem are located at pavement level and at first floor balcony level. Access to those at paving level is readily available so that treatment can easily be undertaken without the need for costly scaffold. Those at first floor level could be treated from a low level scaffold without the need for full elevation height scaffold. Consideration might need to be given in some instances to making good this corrosion and associated staining before the time for the repainting cycle is due particularly if the cycle is extended.

There is a notable exception at attic level on part of the Terrace where access would require costly full height scaffold.

Whatever the painting cycle efforts should be made to try to reduce the extent of the corrosion. This can only be achieved through more thorough surface preparation. It is essential that all rust is removed back to bare unoxidised iron. In practice I believe this is difficult to achieve without some form of shot blasting which may not be practical and could cause damage to adjacent finishes. Improved preparation would minimise the extent of corrosion and reduce subsequent repainting costs, reduce the need for costly ironwork repairs and risk of consequent masonry and structural damage.

4 Cracked stucco causing cracks in paint coating

There are a number of fine cracks generally evident throughout the stucco finishes. Rainwater penetration is inevitable and will cause the paint to flake from the crack and risk of dampness in the masonry. However at present this does not appear to be a major problem, where the cracking is evident the degree is very fine.

If the repainting period is extended this might become unsightly and lead to further decay. Again this would increase the extent and consequently cost of pre painting preparation.

5 Flaking masonry paint

This appears to be a relatively minor problem occurring in a number of different positions. It is most likely related to inadequate surface preparation or dampness.

Where it has occurred if the repainting interval is extended the flaked paint is likely to peel off causing poor appearance and risking water absorption into masonry. This would increase the extent and consequently cost of pre painting preparation.

Analysis of affected areas may be worthwhile.

6 Blistered masonry finishes

This is also a relatively minor problem, again most likely related to

inadequate surface preparation or dampness. In terms of inspection from pavement level blistered paint is actually evident on very few buildings and it is not a major problem.

Over a longer period of time the extent of the blisters may increase if the cause is dampness and the blisters are likely to crack and peel causing a poor appearance and risk of water absorption. This would increase the extent and consequently cost of pre painting preparation.

Again analysis of affected areas may be worthwhile.

7 Uneven paint finish

Since the same specification has been applied to all of the elevations and the paint colour is exclusive this might be due to differences in substrate where some original stucco has many layers of paint built up over the years while other faces may have been rerendered and will not have different types of underlying paint systems.

This is actually evident on very few buildings, largely confined to a small part of the Terrace, and does not appear to be a major problem.

8 Soiling below string courses and balconies

Water run marking in varying degrees is evident beneath many string courses and balconies. This is caused by rainwater running down the elevation and around the projection. This can be reduced by a drip detail which throws surface water clear of the elevation beneath. (None of these buildings has such drip details.) Although this is widespread affecting the majority of these buildings it is a cosmetic problem.

9 Bird faeces marking elevations

There is some isolated bird soiling. It is interesting to note that paint on 1-6 Brunswick Terrace which I have been told was applied in 2007 and appears new is already soiled by birds. Other older finishes appear little or no worse in this respect suggesting that the effects are either washed off or weather off.

Bird faeces are alkaline in nature and could cause damage to the paint surface. However there is no visual evidence that this is a significant problem. It appears that this can also be considered as a cosmetic problem.

PAINT SYSTEM AND SPECIFICATION

Masonry finishes

The repainting specification allows for repainting over existing prepared painted surfaces.

There is no indication in the Sandtex Trade product Technical Data Sheet relating to 'Classic Stone Gloss' masonry paint of recommended painting intervals or product guarantees.

The Sandtex Trade Technical Service told me that Classic Stone Gloss has not undergone any independent tests and that there is no intention to seek Agrement test approval or anything similar. They only provide time related product guarantees for paint systems which have been subjected to such testing. Thus there is no time related guarantee, or intention to consider one, for this particular paint. I was told that Sandtex recommend repainting cycles of between five and ten years for this paint type depending upon the degree of exposure. In severely exposed situations such as a coastal environment or shaded by trees and subject to moss and algae their suggestion is a five year cycle. The longer cycle would be appropriate for an unexposed situation such as a sheltered urban environment. On this basis a five year cycle would be appropriate for the Brunswick Estate.

However the Technical Director told me that Classic Stone Gloss has been available for nearly 20 years and based on his practical experience has no reservations that it would satisfy Agrement testing standards for a durability of 15 years. He said he is confident that it is suitable for 8-10 years painting cycles notwithstanding the exposure in this instance.

Some competitors systems claim seven year cycles but usually only where the system is first applied to bare surfaces. The 'bare surfaces' qualification means that reliance is not placed on the integrity of or adhesion to previous different and unknown paint types.

The Sandtex 'Classic Stone Gloss' Technical Data Sheet does not say whether the paint is breathable or impervious. The Sandtex Trade Technical Service told me that it is breathable and this was subsequently confirmed by the Technical Director. This breathability means that moisture trapped within the wall fabric can escape by evaporation at the surface through the paint film, provided areas where such problems have occurred have been stripped of all old impervious paint layers. Typically moisture is harboured in cracks and the use of a breathable system will be an advantage where crack repair is required because any entrapped moisture should be able to evaporate through the new paint, provided any crack filler used is not impermeable.

It is not envisaged that the paint system would be changed and it is beyond the scope of this report to consider alternative paint systems. However I note Sandtex Trade also manufacture a masonry paint 'High X-Posure Smooth' which has a British Board of Agrement Certificate for up to 15 years durability.

The performance of a paint system depends on the quality of the workmanship and adherence to manufacturers specifications and recommendations. This is a function of each owners procurement and contract arrangements and is outside Council control. If there are any compromises in time or cost then inevitably quality will suffer.

The performance of a paint system is dependant on application onto a sound substrate, which manufacturers specifications make clear. Paint applied over poor old paint layers is likely to fail prematurely. If the paint system is to be required to last longer quality control of the repainting contract becomes more important.

I am concerned about a basic difference in the preparation required by the Sandtex 'Classic Stone Gloss' Technical Data Sheet and the Brunswick Estate Paint Specification. In regard to sound previously painted surfaces the Sandtex document specifies that wet abrading is required after cleaning whereas the Brunswick Specification specifies cleaning but no abrading.

Paint systems generally require a mechanical key between new and old layers. When I challenged the Crown Technical Service on this point on the basis that the Brunswick Specification calls for washing only of sound surfaces I was told this depends on the age and surface condition of the paint and they confirmed that wet abrading is always required to provide a key.

However I have been told that the Brunswick Paint Specification was developed with Sandtex Paints then Technical Director (Mr Geoff Hayes). Their current Technical Director, Mr John Carlisle explained that it is only necessary to abrade a high gloss finish before painting with Classic Stone Gloss. He said this paint is not high gloss and weathering would reduce the sheen. He is satisfied that abrading is not necessary in this instance to promote adhesion of new paint.

When we met with Mr Tom Chevasse he told me that the rear elevation to number 36 Brunswick Square was painted with the Classic Stone Gloss in 2001. During my subsequent conversation with Mr Carlisle he confirmed that this was painted in accordance with the Brunswick Painting Specification and that he considers this an informal test site, which would be more meaningful than typical accelerated laboratory tests,

We viewed this elevation from Brunswick Street West after our meeting. From the available vantage point the surface condition of the paint and it's colour retention appeared satisfactory. There is some peeling paint at parapet level probably caused by dampness. This type of deterioration would be a risk to parapets on the fronts. Unfortunately it does not have ironwork railings to see the effects of corrosion staining down the elevation. However there is very dark rust staining in a corner caused by corroded straps around the chimney projection. It is possible that these straps were not painted, it might actually be difficult to paint them effectively if they lay flat on the wall. There is shallow string course but little evident soiling beneath. The aspect of this elevation is west and

broadly matches the east side of the Square although it appears more sheltered from the prevailing winds by adjacent rear extensions.

Wood and metalwork finishes

The manufacturers Technical Data Sheet for Flexigloss X-Tra System included in the Brunswick Estate paint specification for woodwork, metalwork and plastics indicates that this paint has been awarded a British Board of Agrement Certificate for up to eight years durability. In principal therefore extending the painting cycle for this part of the fabric should not be cause for concern.

However the major issue discussed earlier is rust staining from corroded ironwork which can only occur because the paint film on some ironwork has failed. On the basis that an Agrement Certificate proves eight year durability I assume this is not a product failure and most likely due to workmanship in preparation. It is often said in regard to painting ironwork that the choice of materials is less important than the preparation and that the primer used on the clean metal is the more important part of the system; it has been argued that the finish coats are there to protect the primer (they must be compatible).

It is essential that all rust is removed back to bare unoxidised iron. In practice I believe this is difficult to achieve without some form of grit or bead blasting which may be impractical and could cause damage to adjacent surfaces. Improved preparation should minimise the extent of corrosion and reduce subsequent repainting costs, reduce the need for costly ironwork repairs and risk of consequent masonry and structural damage. Whatever the painting cycle efforts to reduce the extent of the corrosion would be worthwhile.

Again there is a basic difference in the preparation required by the Sandtex 'Flexigloss X-Tra' Technical Data Sheet and the Brunswick Estate Paint Specification. The former stipulates residues should be removed from clean metal but does not say how, while the latter specifies washing with water and detergent. Both specify to prime within the working day using Crown Trade Universal Primer. Any remaining water on the iron will start 'flash' corrosion. However Mr John Carlisle is confident such flash corrosion would not cause further rusting provided it was painted in accordance with the specification.

My comments about the metalwork assume that the specified paint has been used. While the masonry and woodwork are painted with an exclusive colour making use of other paints unlikely, the ironwork is black and could easily be painted with other paint types which might not have the same durability.

From my pavement level inspection I was unable to determine the condition of the woodwork but the paint finishes generally appeared satisfactory. At our meeting Mr Tom Chevasse informed us that under the Estate leases the tenants have responsibility for windows so that if an extended painting cycle leads to increased decay in window joinery any

additional cost must be met by the tenants. However in this regard the 'Flexigloss X-Tra' paint has an Agrement Certificate for up to eight years durability. Again it would be important that preparation is thorough.

Some of the window joinery to the rear elevation of number 36 Brunswick Square has flaking paint exposing bare timber to more exposed lower parts of the frame. This would be cause for concern if allowed to occur on a large scale to the front elevations.

CONCLUSION

In considering an increase from five up to six, seven or eight years it should be borne in mind that these represent extensions in the time period of 20%, 40% and 60% respectively, not small increases.

Overall the paint surfaces appear satisfactory including the rear elevation at 36 Brunswick Square last painted in 2001 although this is less exposed than most front elevations on the Estate. Mr John Carlisle (the paint manufacturers Technical Director) told me that this elevation was painted in accordance with the Estate Paint Specification with his input. I was only able to inspect this from the access road (Brunswick Street West) which is significantly further away than the footpaths are to the fronts and it merits closer inspection to make a better judgement about the surface condition of the paint.

There is evident deterioration on the facades which were last painted in 2005. The major paint problem is the extent of rust staining from corroded iron railings. In some instances the extent of rust staining is already to such a degree that it now requires attention after only three years.

This problem can only be improved if the measures to prevent ironwork corroding can be improved. The manufacturers paint specification in common with accepted good practice requires that all rust be removed. This is often difficult or impractical and inevitably in site conditions some rust often remains. Manufactures claims in regard to paint longevity will inevitably require that there is no rust present on the substrate.

It may be possible to improve the specification in regard to painting the ironwork to try to reduce susceptibility to corrosion and this merits further investigation.

The second main problem is probably dirt soiling below string courses and balcony projections. However this is essentially cosmetic and could be cleaned off if required.

The paint finish to the rear of number 36 Brunswick Square gives an indication of performance after seven years. Corroded iron straps give an idea of rust staining which is severe, but it is possible though that the straps were not painted. There is little or no evident dirt soiling below the string course but this feature is very shallow.

Other fronts will suffer more severe weather exposure and thus greater paint deterioration is to be expected.

Some parts of the estate are more vulnerable to weather and will therefore deteriorate more rapidly than others. A longer period might be feasible in sheltered parts of the Estate. In particular the Terrace is directly exposed to a coastal climate and subject to severe exposure.

Based upon the current condition of the fronts last painted in 2005 and in particular the extent of ironwork corrosion and associated rust staining I consider an increased time between repainting will have an adverse effect on the appearance and condition of the elevations unless measures are taken to control the corrosion of ironwork and associated rust staining.

Such measures could include further investigation to see if improved preparation is possible and considering the effectiveness of the specified primer. It would also be possible to consider intermediate attention to all ironwork to include a shorter painting cycle than for masonry and woodwork and cleaning of rust staining.

An extended painting cycle will be counterproductive if the extent of deterioration means that more extensive preparation and pre painting repairs are required which could exceed any cost savings over time from the increased period.

I have queried the masonry specification regarding cleaning and abrading. Abrading is labour intensive with relatively high cost. If an extended painting cycle means that some surface deterioration occurs and abrading is then necessary the cost of repainting could increase significantly. The paint manufacturers Technical Director considers this unlikely because the same paint system has been used for two previous cycles so that there should be a thick build up of the same type of paint over the surface.

If the rear elevation of number 36 Brunswick Square is used as a guide I would find it difficult to recommend unconditionally an increase in the painting cycle. Whilst the flat masonry areas appear satisfactory viewed from a distance, problem areas, such as the parapet finishes and lower parts of the joinery show obvious deterioration. The extent of any rust staining could only increase over time with risk of excessive corrosion unchecked. This elevation is probably more sheltered than the Estate fronts which might therefore be expected to have deteriorated further over the same period of time. I was told that this elevation was painted in accordance with the Brunswick Estate Painting Specification with input from the paint manufacturers Technical Director.

The Technical Director told me that Classic Stone Gloss has been available for nearly 20 years and based on his practical experience has no reservations that it would satisfy Agrement testing standards for a durability of 15 years. He said he is confident that it is suitable for 8-10 years painting cycles notwithstanding the exposure in this instance.

It should be borne in mind that the degree of exposure of the Terrace must be greater than for the Square and Place so that the latter would theoretically stand longer painting cycle. However different painting cycles would not maintain a harmonious appearance particularly as time progresses and they become more out of synchronisation. This is not therefore an acceptable solution and the painting cycle should be governed by the needs of the most exposed part of the estate. A more relevant controlled trial would be useful, to involve buildings from the exposed Terrace.

Alternatively subject to discussion with the paint manufacturer's Technical Director, consideration could be given to allowing one cycle to extend to six or seven years and reviewing the condition by survey before repainting so that the future painting cycle can be set from a basis of knowledge.

Signed ..... September 2008

STEPHEN RICKARDS GradDiplCons(AA) FRICS IHBC ARPS
Chartered Building Surveyor, RICS Conservation Accredited

Appendix E: Crown Review of Paint Failure (2011)

CROWN
PAINTS

Brighton & Hove City Council
Design & Conservation
Room 414
Hove Town Hall
Norton Road
Hove
BN3 3BQ
FAO: Mrs L Johnston

Your Ref	Our Ref	Direct Line	Date
	JC/dm/Brunswick001	01254 704951	21st Mar 2011

Dear Mrs Johnston,

Re: Brunswick Estate, 2010 Repainting Programme

I refer to our recent meeting to discuss our observations and investigations into the reported 'problems' evident on some areas of the recently painted masonry façades within Brunswick Square.

As discussed, following our site inspections, laboratory testing and microscopic examination of paint flake samples taken from site, I confirm our observations and conclusions.

On Site Observations
A general inspection of recently painted properties revealed some localised paint failures on some properties. The majority of these failures appear to be occurring on the rendered plinths of railings at pavement level and also in adjacent basement areas. Some small, localised, random failures were also noted on other architectural features and stucco.

These localised paint failures appear in one of the following visual forms,

- Splits, cracks or crazing of the paint coatings/finish.
- Small areas of 'intercoat' adhesion failure.
- Adhesion failure of the recent coating system, exposing the underlying, unidentified filler material and/or 'sealer'.
- Total adhesion failure of the existing coatings, exposing the underlying substrate.

Laboratory Testing - 'Wet Paint Sample'
Laboratory analysis and application tests of the sample of Classic Stone Gloss masonry paint taken from site provided completely satisfactory results in all respects.

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A company registered to ISO 9001

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Sandtex Trade Classic Stone Gloss Masonry Paint – Suitability & Quality Concerns.
I have been forwarded copies of email correspondence between yourself and others relating to these matters, I note, with serious concern suggestions (by other parties) that the Sandtex Trade Classic Stone Gloss, as used on these properties since 2000, is 'faulty' and unsuitable for use on these properties or in these types of coastal locations.

In addition, I have also been informed that the Classic Stone Gloss masonry paint is suspected of being defective due to unsatisfactory storage (frost damaged) prior to its sale and use. I can categorically confirm that is not correct. Our supply and storage network facilities ensure that all stock is fully protected from freezing temperatures. Water based paints that are damaged during storage in frost/freezing conditions would be unusable, this would be clearly apparent on removal of the container lids in preparation for use.

I also confirm that the formulation and performance characteristics of our Sandtex Trade Classic Stone Gloss masonry paint have not changed, and that this coating system is totally suitable for use on the Brunswick Estate properties, and in all exposed coastal environments.

Laboratory Testing - 'Paint Flake Samples'
Microscopic examination of the paint flake samples taken from site provided the following information.

- *"The Classic Stone Gloss is adhering firmly to a thick layer of filler type material. The filler type material is the point of failure and we can only suggest that the filler manufacturer is contacted for an opinion".*
- *"The most recent application is adhering firmly to older paint layers. In addition the reverse side of flakes were seen to be heavily contaminated with a continuous layer of cementitious residue".*
- *"The face of the flakes showing evidence of cold temperature drying causing film to crack, allowing moisture to ingress. The reverse side of the flakes show loose render particles firmly adhering with excessive amounts of fungal growth also evident".*

The above statements are included in our Reports which have been forwarded to the appropriate parties relating to our recent site inspections, investigation and laboratory testing.

As indicated above, these premature breakdowns are clearly due to failures of underlying surfaces/materials.

Exterior Painting - Ambient Conditions
As in years 2000 and 2005, The Brunswick Estate 2010 Repainting Specification recommends that these exterior painting works are undertaken during the period May to October 2010. This recommendation is in order to avoid the difficulties and problems associated with adverse weather and unsuitable conditions that are more frequently encountered during the winter months.

We are aware that the some properties were painted during the winter months, some are currently being painted (March 2011) and painting is yet to commence on some properties.

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The application (and subsequent drying process) of water based paint coatings under low temperature conditions are susceptible to potential problems. These include slow drying, poor film formation / integrity (cohesive strength), impaired adhesion, rain or frost damage.

Water based coatings do not achieve their full weather resistance until complete and satisfactory drying/film formation has been achieved.

Substrates that contain excess moisture will inevitably be over painted before they are sufficiently dry resulting in poor adhesion of the applied coating system.

Poor intercoat adhesion is generally a consequence of inadequate surface preparation and/or some form of surface contamination between paint coats/layers.

A minimum requirement for satisfactory performance of a paint system is, following appropriate surface preparation, is that the surfaces are clean, sound and suitably dry.

Structural factors such as cracks, the consequences of excessive moisture within the substrate due to rising damp or moisture ingress, defective render etc. until rectified, will continue, as in previous years, to result in some localised premature paint or substrate failures.

In order to achieve optimum performance these works should be completed in full accordance with the manufacturer's recommendations and Paint Specification. Non-compliance with the Specification or the use of non-specified or unsuitable products will inevitably adversely affect the long term performance of the coating systems. In addition, this would also compromise the objective of the upgraded specification to extend the frequency of these exterior repainting works.

This is the third cyclical repainting of the Brunswick Estate using our Sandtex Trade Classic Stone Gloss masonry paint , we are most concerned that these recent reported 'problems' are being attributed totally (by some parties) to the (suddenly) unsuitability of the product or because the product is defective. We consider these views are completely unjustified and inaccurate.

As a reputable and responsible manufacturer it is our policy to fully investigate any cause for concern over the quality or performance of any of our paints or products.

I trust the enclosed information is helpful and assure you of our best attention at all times,

Yours sincerely,

J Carlyle

John Carlyle
Technical Manager - Specification

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A company registered to ISO 9001

Lesley Johnston

From: Biddlecombe, Derek [Derek.Biddlecombe@CrownPaints.co.uk]
Sent: 17 March 2011 08:11
To: Lesley Johnston
Subject: RE: Brunswick Place

Lesley,

I haven't passed this onto anyone. My understanding was that all my information would go via yourself.

Regards

Derek Biddlecombe
Specifier Consultant - South West
Crown Paints Ltd
P O Box 37, Hollins Road, Darwen
Lancashire, BB3 0BG, U.K.
e-mail: derek.biddlecombe@crownpaints.co.uk
Mobile: 07798 852623

It's not just paint.
It's personal.

From: Lesley Johnston [mailto:Lesley.Johnston@brighton-hove.gov.uk]
Sent: 15 March 2011 09:29
To: Biddlecombe, Derek
Subject: RE: Brunswick Place

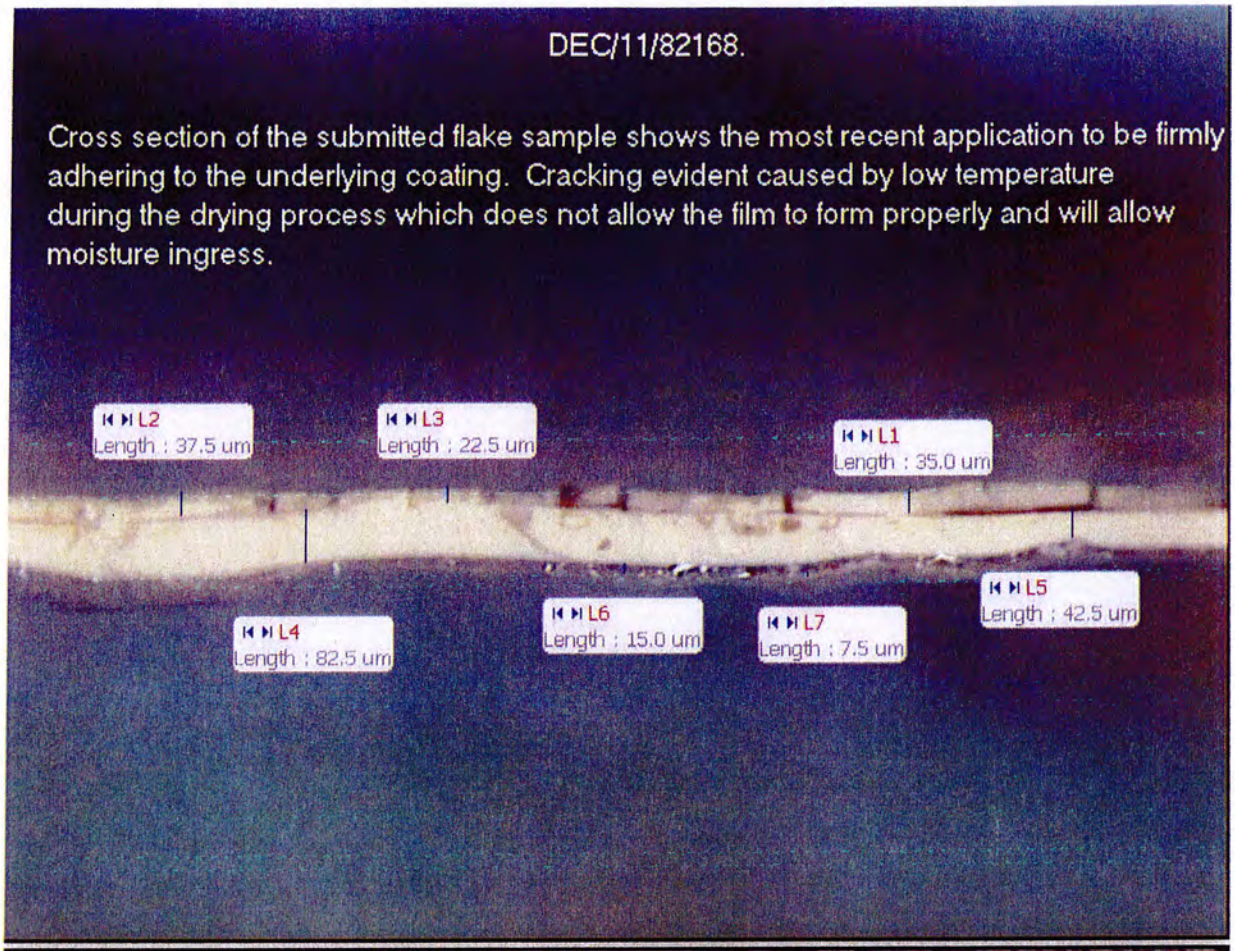
Derek,
Thank you for this. Have you sent these results to the original complainants?
Regards

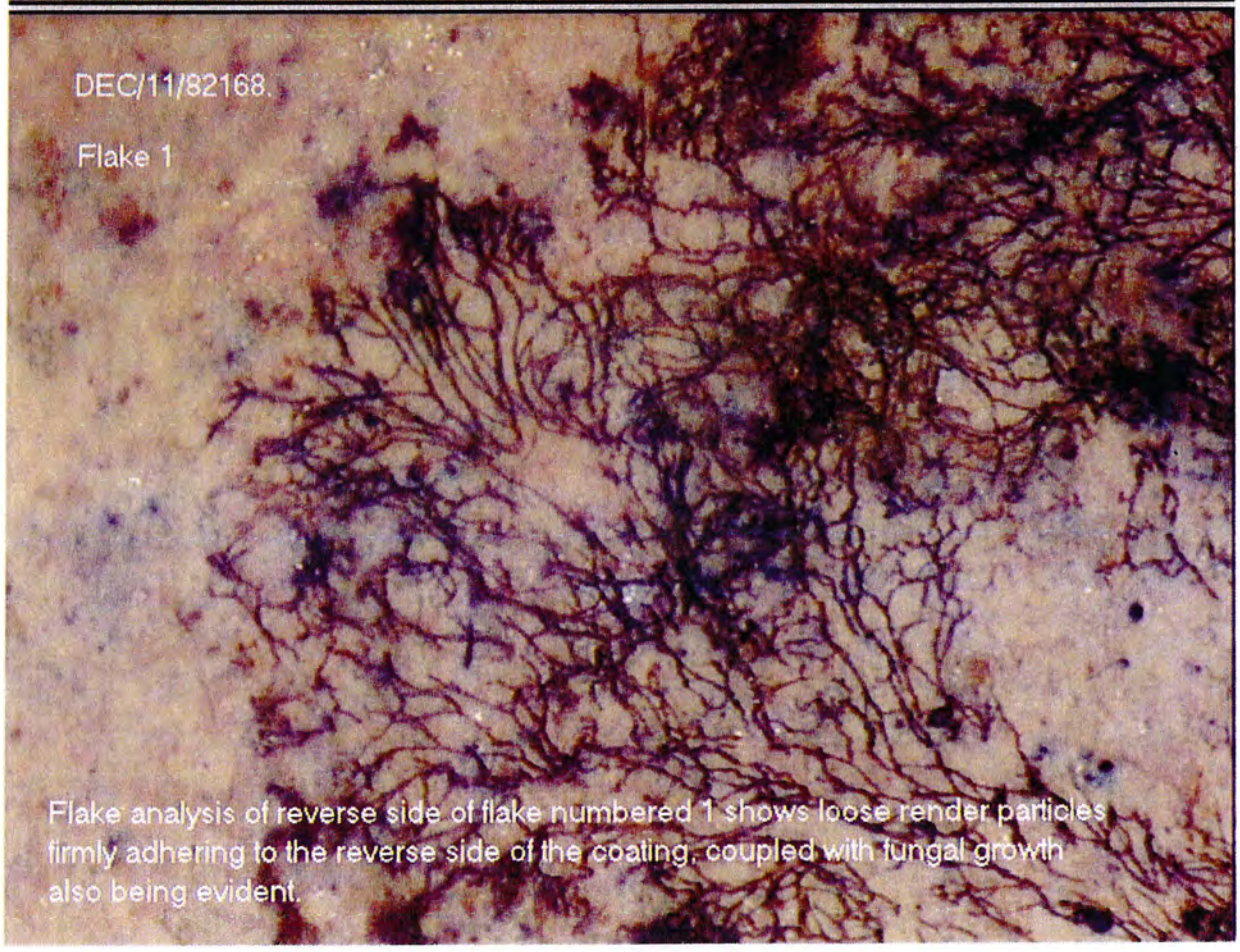
Lesley Johnston
Senior Planning Officer (Conservation)
Design & Conservation
Brighton & Hove City Council
Room 414, Hove Town Hall, Norton Road, Hove, BN3 3BQ
Email: **lesley.johnston@brighton-hove.gov.uk**
Tel: **01273 292104**
www.brighton-hove.gov.uk
9.00 - 3.00 Monday, Tuesday, Wednesday &Friday

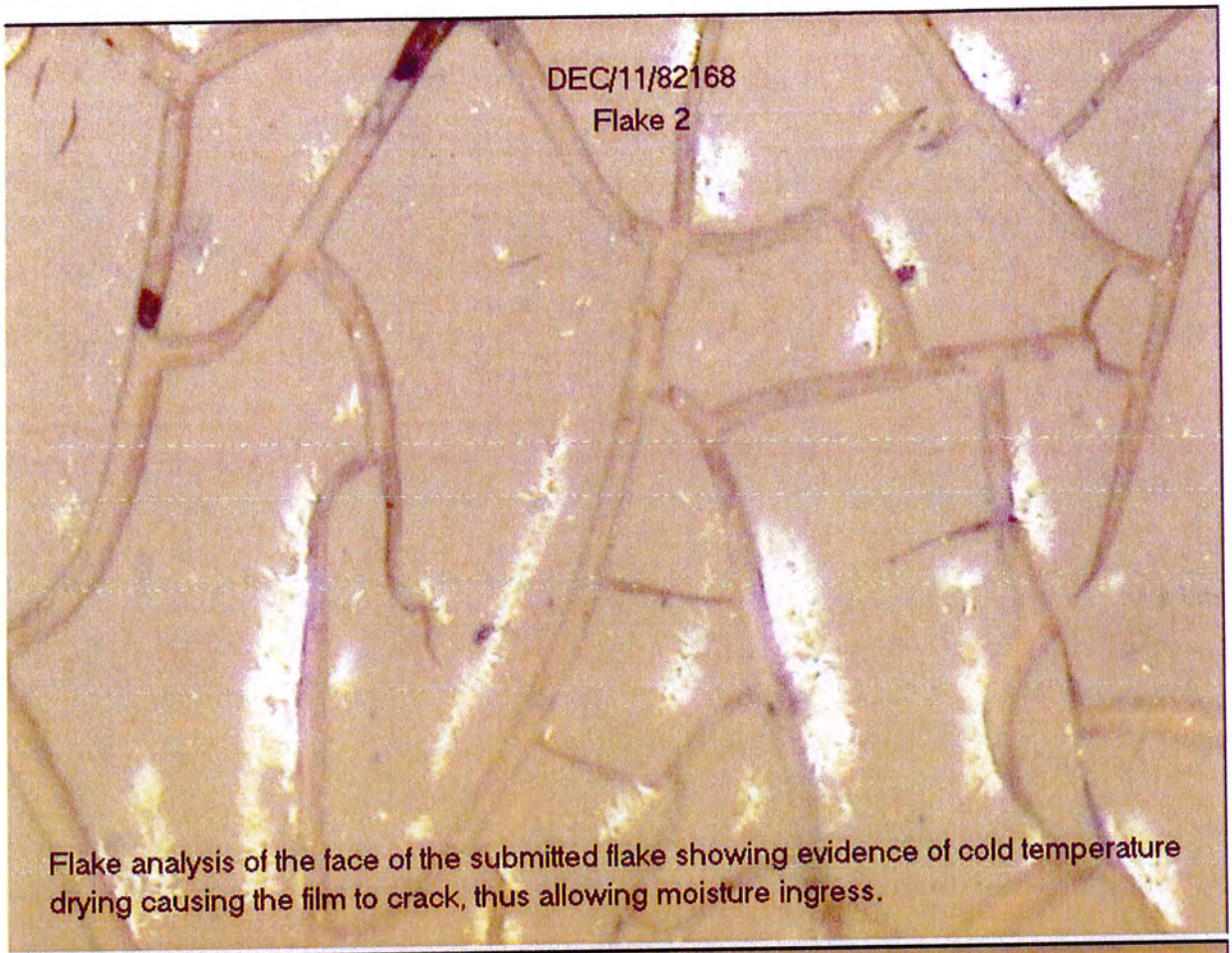
From: Biddlecombe, Derek [mailto:Derek.Biddlecombe@CrownPaints.co.uk]
Sent: 11 March 2011 09:41
To: Lesley Johnston
Subject: Brunswick Place

Lesley,

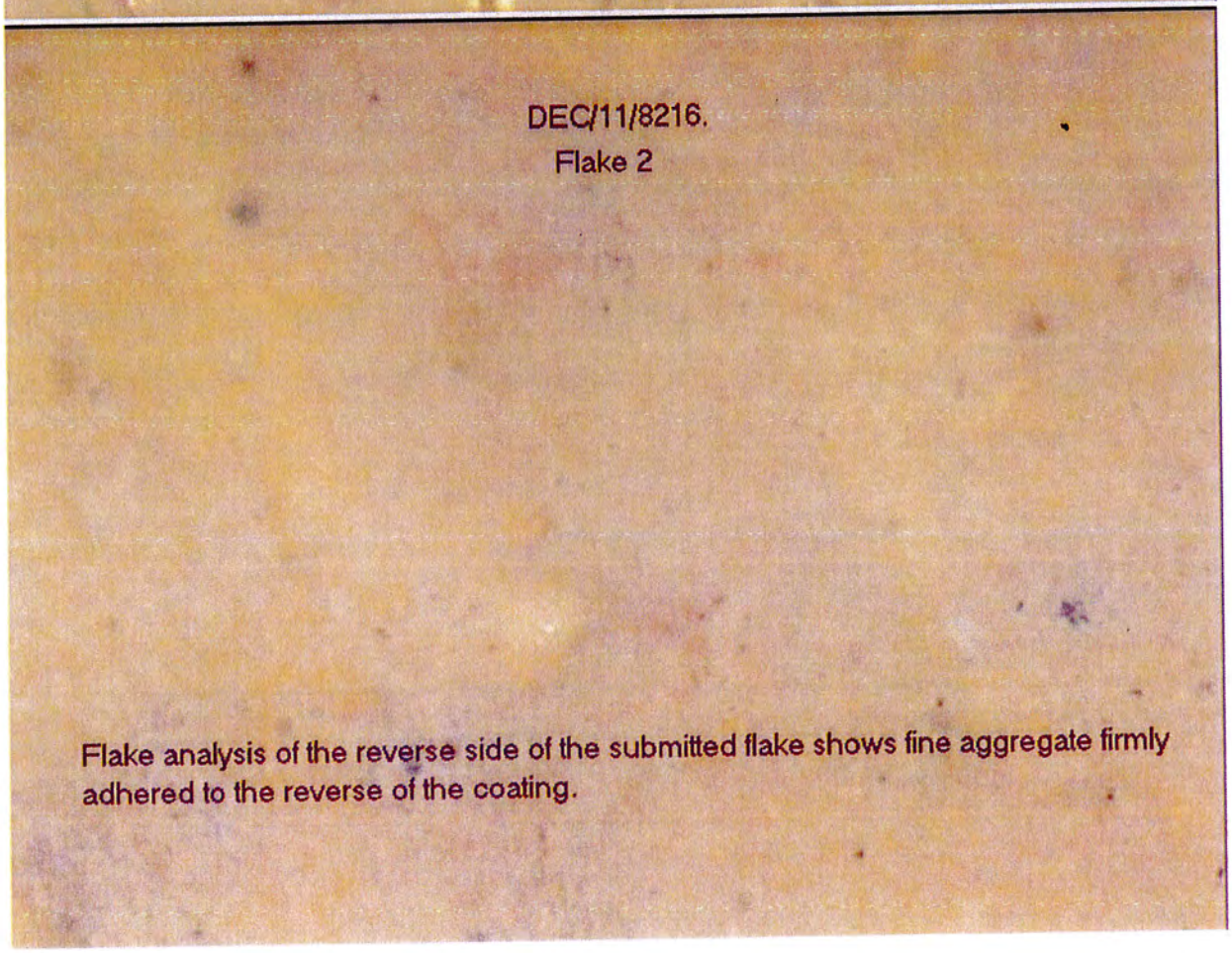
My apologies for the delay. Attached is a copy of the report from the flake samples taken. Also attached are results of the flakes taken from 45 & 46 Brunswick Place.


DEC/11/82168.
Cross section of the submitted flake sample shows the most recent application to be firmly adhering to the underlying coating. Cracking evident caused by low temperature during the drying process which does not allow the film to form properly and will allow moisture ingress.
L2
Length : 37.5 um
L3
Length : 22.5 um
L1
Length : 35.0 um
L5
Length : 42.5 um
L6
Length : 15.0 um
L7
Length : 7.5 um
L4
Length : 82.5 um


DEC/11/82168.
Flake 1
Flake analysis of reverse side of flake numbered 1 shows loose render particles firmly adhering to the reverse side of the coating, coupled with fungal growth also being evident.



Flake analysis of the face of the submitted flake showing evidence of cold temperature drying causing the film to crack, thus allowing moisture ingress.



Flake analysis of the reverse side of the submitted flake shows fine aggregate firmly adhered to the reverse of the coating.

Any questions please don't hesitate to call me.

18/07/2013

Regards

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Appendix F: Purcell Handbook of Repairs for Regents Park

Regent's Park, London: Quadrennial Painting

Handbook of Repairs

December 2009

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THE CROWN ESTATE

Regents Park, London: Quadrennial Painting

Handbook of Repairs

CONTENTS

IMPORTANT NOTE

This handbook is, to the best of our knowledge correct. We should however make it clear that it is being supplied to your for information purposes only and without any duty being owed to you by the people preparing it. No liability can, or will, be accepted by The Crown Estate, or any of its agents, for any failure of the paint or substrate, or any other works that you put in hand as a result of this handbook. We would recommend you appoint your own advisor (possibly in conjunction with your neighbours) before carrying out any works to your property.

SECTION 1: INTRODUCTION AND SUMMARY OF REQUIREMENTS

1.01 Purpose

Whilst The Crown Estate is currently investigating the introduction of a five year painting cycle, as detailed in the letter from Cluttons dated 02 February 2006, the present system of four year redecoration is still in place and your property is due for repainting between May and August 2010. If a transition to a 5 year painting cycle is to be undertaken successfully, the durability of the paint finish applied under the quadrennial painting cycle will need to be improved. As can be seen on various properties around the Park, deterioration of the paint finish varies significantly between individual properties within the four year cycle. This variation arises principally from the condition of the walls that the paint is applied to. It has been observed that the paint deteriorates at an increased rate where there is dampness, movement and the presence of soluble salts in the underlying surfaces. In order for a five year cycle to be adopted the effect of these factors must be reduced and this document comprises a handbook designed to ensure that the properties are suitably prepared for the introduction of a five year painting cycle.

An opportunity exists during the current quadrennial painting cycle to take additional measures in preparing the surfaces to be painted so that they are better suited to provide a background for a paint finish that will present an acceptable appearance by the end of 2010. Generally these measures would be considered necessary under the existing painting guidelines; this additional guidance is intended to explain the importance of thorough preparation where there are particular problems in individual properties that cause the paint to deteriorate prematurely.

The paint finish is the first line of defence against water penetration. If the durability and integrity of the paint finish can be maintained for longer periods this will have overall benefits for the building structures, leading to a decreased frequency of repairs to other elements of the structure.

The durability and integrity of the paint finish is reliant on four factors:

- The stability of the surface the paint is applied to
- The quality of the bond between the paint and the painted surface
- The quality of the paint
- The quality of workmanship used to apply the paint

1.02 Types of work required to ensure the durability and integrity of the paint finish

Following a preliminary survey of various buildings in Regent's Park a number of typical problems have been identified as affecting the durability and integrity of the painted surfaces. They are discussed in more detail later in the handbook.

All of these problems can affect the painted areas in that they permit water to permeate the building envelope.

Advice is also given on the preparation for painting following the implementation of any necessary repairs.

SECTION 2: NOTES ON REPAIRS REQUIRED TO PERMIT THE INTRODUCTION OF A QUINQUENNIAL PAINTING PERIOD

2.01 General

These notes are given for general guidance on works of repair and maintenance that are found to be necessary to prepare the properties for a five year painting cycle starting in 2011 and are supplementary to the notes contained within the Quadrennial Painting 2006: guidelines to lessees.

The following principles should be adhered to in any works undertaken.

- Manufacturer's Recommendations

  Lessees and their advisors should establish that the proposed contractor is familiar with the products that are to be used, and is fully aware of the guidance and specification advice provided by The Crown Estate. In addition the contractor should be made aware of the restrictions on work practices arising from work in Regent's Park and of the need to observe Health & Safety procedures.

  Dulux Paints are willing to provide guidance and model specifications on the preparation of existing surfaces (but not general repairs), contact the Trade Specifier Account Manager (see section 4 - contacts).

- Materials Generally

  All Materials, products and workmanship are to be suitable for the purposes of the Works in accordance with good building practice, including the relevant provisions of current BS/CP documents and the Quadrennial Painting: 'Guidelines to Lessees' dated December 2009.

- Protection of Architectural Features

  In most circumstances original architectural features on the exterior of the building should be repaired in materials which match the composition and physical characteristics of the existing. It may become apparent in the course of investigation prior to repairs, that the features contain materials or additions that are not original and that these additions do not complement the original fabric. Where the lessee considers the previous alterations to the fabric are contributing to the decay of the architectural feature; or that because of the presence of previously introduced additions, the architectural feature is vulnerable to accelerated deterioration; they should consult Purcell Miller Tritton LLP concerning any proposals to remove the additions or provide additional protection of features, prior to carrying out the work.

- Preparation Generally

  In order to carry out the work to a satisfactory standard, contractors will need to have allowed in their tender adequate time to prepare the surfaces to be painted and to deal with any defects that are likely to affect the durability of the paint finish. The lessee and their advisor should ensure that prospective contractors are aware of the need to adequately prepare the surfaces and to repair defects in the existing surfaces prior to applying the paint finish. Information on the condition of the existing surfaces provided to prospective contractors will assist them in allowing adequate time to carry out necessary repairs.

A number of formats could be used for the presentation of the information; for example:

- *A detailed schedule of works and specification provided by the lessee's professional advisor.*
- *A written schedule of defects provided by the lessee.*
- *Annotated copies of photographs of specific defects provided by the lessee.*
- *A list of provisional repairs that are likely to be necessary, presented in a table for pricing by the contractor to form a schedule of rates.*
- *A detailed schedule prepared by a contractor appointed specifically to inspect the structure.*

ACTION

- **Ensure that contractors are aware of restrictions and requirements relating to Crown Estate properties.**
- **Provide all possible information to tendering contractors about the requirements for preparation and applying paint finishes.**

2.02 Damp in Lower storeys

Dampness in the lower storeys of the building envelope can occur through weaknesses in the upper facings of the external envelope or through failure of the systems in the lower storeys of the building that are designed to protect the interior from damp in the adjoining ground.

Water penetration from the ground is commonly referred to as rising damp; however where the property has retaining walls or storeys below the natural ground level, damp penetration can also occur from the side walls where these abut the ground that supports gardens, roads and other external paving. Where existing damp proofing measures have failed the moisture movement can carry soluble salts into adjoining render facings causing deterioration. A long term solution to decorative failure related to rising damp will involve identifying the source of the rising damp, remedial works and replacement of salt damaged render. Specialist advice will be required to identify the source of the damp and a suitable solution.

Rising damp ingress is to be controlled by methods approved by The Crown Estate. A Specialist Company (e.g. a member of the British Chemical Damp-course Association) or a suitably qualified professional should be consulted and their report submitted to The Crown Estate's Managing Agent for approval before any work is undertaken. A separate licence for this work may be required. Once agreed, the work is to be executed in accordance with their recommendations. Copies of any guarantee should be lodged with The Crown Estate's Managing Agent.

ACTION

- **Fully investigate the condition of external walls at lower storeys.**
- **Obtain report from suitably qualified professionals should damp be encountered.**
- **Repair damp proof courses**
- **Replace damp affected render/stucco.**

2.03 Damp in the Upper Storeys

Damp in the upper storeys of properties can occur as a result of a number of causes, but all causes will involve some failure of the surface facings forming the external envelope. The consequences of such a failure can be varied and complex. In addition to resolving the visible failures in the surface envelope, thorough repairs will involve ensuring that penetration of water into the structure has not caused additional problems. Persistent and unattended water penetration of the external envelope can cause dry rot and damage to internal plaster and decorative finishes.

Repair of internal surfaces damaged by damp penetration is outside the scope of this handbook, but lessees should be aware of the need to check the structure thoroughly after problems become apparent. In relation to the external decorative finishes, persistent and unattended failures of the external envelope can cause soluble salts and moisture to migrate through the fabric, weakening adjoining finishes and render.

The principal causes of water penetration of the external envelope are outlined below and solutions to the primary defects are discussed. In order to gain the maximum benefits from the potential for extending the repainting cycle, repairs to failures in the external envelope need to be repaired thoroughly in a way that will prevent a reoccurrence of the problem.

ACTION

- **Fully investigate the condition of render/stucco.**
- **Identify potential sources of damp penetration.**
- **Carry our adequate repairs to avoid reoccurrence of damp penetration.**

2.04 Defective Masonry

Defective brickwork can cause render failure and cracks in brickwork can cause the covering render to crack. The continuity of cracked masonry should be restored by bridging the crack with suitable ties. Solutions will depend on specific circumstances and the lessee's professional advisor will be able to assist in this matter

All replacement bricks (whether to be covered by render/stucco or not) are to be London Stock bricks to match the existing work. Where necessary, brickwork repairs shall be toned down to match the old. Details of the recommended bricks are included in section F10 of Annex A of this guidance.

Fletton (or "common") bricks may contain soluble salts that react with the render in damp conditions causing the render coating to lose bond with the brickwork. Where the removal of defective render exposes Fletton brickwork; lessees are advised to replace the Fletton brickwork with London Stock brickwork to avoid a reoccurrence of the problem.

ACTION

- **Investigate defective render and check for presence of defective brickwork.**
- **Investigate defective render and check for presence of Fletton bricks.**
- **Where Fletton bricks are contributing to the decay of the render replace the bricks with London Stock Bricks.**

2.05 Defective Pointing to Brickwork

A number of the stucco/rendered properties are finished in facing brick on rear or side elevations. In these areas the condition of the pointing of the brickwork is critical to the ability of the wall to reject driving rain.

Deterioration of pointing can occur for many reasons, however once deterioration has occurred the adjacent brickwork becomes vulnerable to increased water absorption. This can lead to damp problems within the building and accelerate decay of render on adjacent walls.

When repointing the building it is important to ensure that the materials used in the new pointing match those of the original bedding mortar of the brickwork. In the past, repointing has sometimes been carried out in a different mortar, and this may have contributed to the general decay of the pointing.

In formulating a mix for new pointing a study should be made of the original bedding mortar and this should be matched carefully to the new pointing mortar ensuring that the proportion of lime and the size of aggregate (sand) used matches the character of the original bedding mortar. The introduction of new pointing mortar containing a high proportion of cement could cause damage to original brickwork adjacent. Guidance on the preparation of mortar and repointing is included in Annex A of this guidance.

The surface treatment of the new pointing should match that of the adjacent original brickwork. If none exists, then consult Purcell Miller Tritton LLP.

ACTION

- **Investigate the condition of facing brick pointing.**
- **Where repointing is necessary, repoint wall in a mortar compatible with the original and of an appropriate appearance.**

2.06 Defective Stone Copings, Cornices etc

Stucco and Render

The horizontal surfaces of copings, cornices and projecting moulding can be a significant source of water penetration to the structure if they are not complete and in good and substantial repair.

The mouldings of cornices, copings and parapets are designed to shed water from horizontal surfaces clear of the vertical surfaces below. If the mouldings are incomplete, water can concentrate and run down vertical rendered faces. It is therefore important to ensure that moulding profiles are complete where there are significant horizontal areas associated with copings, balustrades and cornices.

Cornices, balustrades and copings can suffer extremes of temperature, particularly where they face south; the arrangement of these features does not allow heat to be absorbed into the main structure of the building and so the masonry expands and contracts according to its surface temperature. Where there are weaknesses in the existing construction; for example joints between stones, cracks in the render or cracks in the masonry core; dimensional changes caused by the heat tends to concentrate in these positions of weakness. Where cracking in render is the result of a weakness in the underlying structure, the defects in the underlying structure need to be addressed.

In considering methods of repair to architectural features prone to thermal movement, lessees and their advisors should consider if the visible cracking has been caused by a weakness in the underlying structure or in the rendered coating. Where the problem is related solely to the rendered coating, repairs should seek to re-establish the continuity of the render either side of the original crack over a broad area, to evenly spread the stresses caused by thermal movement. Where the cracking in the render is a result of a combination of thermal movement and a weakness in the underlying structure, the defects in the underlying structure need to be addressed. This will involve (if possible) restoring continuity to the structure across the area of the defect before re-rendering. Solutions will depend on specific circumstances and the lessee's professional advisor will be able to assist in this matter.

In some circumstances it may not be possible to provide continuity around the cracking; for example between two phases of construction. In these circumstances it may be more appropriate to provide additional protection to the coping, cornice or parapet in the form of lead weatherings. The desirability of lead weatherings for certain architectural features is discussed in clause 2.18.

The provision of additional protection in the form of lead to certain features may have a visual impact on the building; early consultation should take place with Purcell Miller Tritton LLP. It may be necessary to consult the conservation officer of the local authority, and in some cases Listed Building Consent may be required.

ACTION

- **Fully investigate the condition of copings and cornices.**
- **Consider the effects of thermal movement.**
- **Ensure there is continuity in the masonry core and render covering to the architectural feature.**
- **Where necessary provide additional protection to horizontal surfaces.**
- **Restore any decayed mouldings to their correct profile.**

<u>Stone</u>

Some properties have parapet, copings and cornices constructed of natural stone. Where natural stone has been used for mouldings on the stucco properties it has been overpainted to match in with the render. On a few properties the stone is exposed in its natural state. Analysis of defects in natural stone parapets, copings and cornices should follow the general principles set for the stucco features. Mouldings should be complete and horizontal surfaces should be free of cracks and other failures that will cause water to concentrate in the building structure. The repairs carried out should maintain the original profile of the moulding and restore continuity to the architectural feature and the structure below. Guidance on the repair of natural stone requires specialist advice and a specialist's report is to be obtained for the repair of stone copings, cornices, mouldings, plinths etc. Work should be executed by a qualified stonemason. Natural stone is to be used to match existing features; precast or in-situ concrete or reconstructed stone components are not acceptable.

ACTION

- **Fully investigate the condition of copings and cornices.**
- **Consider the effects of thermal movement.**
- **Ensure there is continuity in the masonry core and covering to the architectural feature**
- **Where necessary provide additional protection to horizontal surfaces.**
- **Restore any decayed mouldings to their correct profile.**

2.07 Defects in Windows and External Joinery

Windows

The painted coating to wooden joinery provides protection to the wood from ultra - violet light and water saturation. If the protective painted coating breaks down for any length of time, the wood becomes denatured (recognisable by its grey colour). Once denatured the wood will be prone to excessive movement, causing cracking of any new painting coat applied to it.

This process cannot be reversed to achieve a durable base for a gloss finish paint system. Denatured layers of wood must be removed and replaced. The depth of denatured wood will vary according to the length of time it has been exposed. The type of repair carried out will depend of the extent of the decay and the Lessee's professional advisor will be able to provide guidance on this matter.

It is impractical to fully determine the extent of decay in the existing joinery prior to commencement of the repairs. The Lessee should agree with their contractor, a method of identifying areas of denatured wood, a method of repair and means of valuing the repairs prior to commencing the work.

Provision of access scaffolding to carry out the redecoration works provides access to all of the windows, giving the opportunity to carry out general maintenance to the windows that is not always practical from inside the building. All the windows in the properties need to be in good working order both to maintain their function and minimise requirements for future maintenance.

All sash and casement windows to be overhauled should have all damaged or missing members pieced-in, repaired or replaced with new to match existing. Sashes should be eased; broken glass replaced and fixed with putty (in 19th century windows the glass must be an acceptable modern substitute for cylinder or Crown glass) sash cords renewed where necessary; new sash weights provided where missing to leave all in full working order. Timber should be treated and the end-grain of all timber backs of frames, cills, etc, primed before fixing.

ACTION

- **Fully investigate the condition of the joinery**
- **Replace all denatured wood.**
- **Restore all windows to full working order**

2.08 Defects in other External Joinery

High Level Joinery

Some properties have external joinery such as barge boards, fascia boards, dormer window surrounds and other decorative woodwork at roof level. These elements are vulnerable to failure of the painted coating system and denaturing of the wood in the same way as windows. Similar considerations apply in identifying the extent of timber decay and carrying out the necessary repairs to ensure that the new paint finish is applied to a stable and sound joinery surface.

ACTION

- **Fully investigate the condition of external joinery**
- **Replace all denatured wood.**

External Doors

External door cases, doors and their associated glazing should be overhauled as generally described for windows, the doors eased and defective ironmongery replaced. Note that some ironmongery may be original – such rare examples should be carefully preserved. A specialist locksmith may be required to carry out repairs.

Note that front doors should be finished externally in an appropriate colour, preferably black, but a dark primary colour may be traditional for particular properties.

ACTION
- **Fully investigate the condition of door joinery**
- **Replace all denatured wood.**
- **Restore door to full working order**

2.09 Defective Glazing

Cracked and broken glass can accelerate the decay of the surrounding joinery and should be replaced. Defective putties will expose unprotected timber to water penetration and should be replaced.

Glass is generally to be to BS 952 and putty for glazing to softwood to BS 544. Techniques are to be in accordance with BS 6262, Clauses 9.1 – 9.5. See also section 4 part L40 of the Quadrennial Painting Guidelines for guidance concerning historic glass.

ACTION
- **Fully investigate the condition of glazing**
- **Replace all defective glazing**

2.10 External Pipework

The provision of external scaffolding for redecoration provides an opportunity to inspect the condition of external pipework. Cracked, split and perforated rainwater goods can provide a source of damp in the structure. If the defects are in the concealed face of the pipework the problems may go unnoticed for sometime, causing decay in the decorated wall surfaces. Cast iron gutters should be checked for the integrity of their joints and for perforations and cracks.

All defective cast iron rainwater pipes and gutters, soil stacks and waste pipework should be replaced using cast iron components to match existing. Joints in gutters are to be appropriately bedded. The joints of external rainwater downpipes should not be sealed as this makes future maintenance more difficult.

ACTION
- **Fully investigate the condition of external pipework**
- **Replace all defective cast iron pipework and guttering.**

2.11 Defective Iron Railings/Balustrades and Gates

Iron Work

Rusting balustrades and finials attached to the balconies and parapets of the properties can cause decay in the parapets and copings as rusting metalwork expands, splitting the masonry sockets. To avoid damage occurring to the masonry adjacent to the ironwork, the protective paint coating to the ironwork should be kept in good order. Existing ironwork needs to be carefully prepared for painting to remove all existing rust so that the paint finish is on a stable backing. It is preferable to repair the existing historic ironwork wherever possible; however in some cases this may not prove practical because of the extent of decay. Lessees should seek specialist guidance where existing ironwork is severely decayed. Where embedded ironwork has already split the surrounding masonry it will be necessary to withdraw the rusting component and repair it prior to refixing, if further damage to the masonry is to be avoided.

ACTION

- **Fully investigate the condition of the existing decorative ironwork.**
- **Thoroughly repair existing ironwork.**

Plinths beneath Railings and Balustrades

Where rusting embedded ironwork has split masonry, the masonry will need repair. For boundary and garden wall railings, the priority is to restore the integrity of the masonry capping. Defective stone plinths should be repaired or replaced with natural stone to match the existing.

Where ironwork is mounted directly on the house, cracks in masonry caused by rusting may cause other defects to occur in the structure. As part of the repair of the ironwork the supporting masonry should be fully investigated to ensure that the continuity of the masonry and render has not been weakened in a way that makes the element vulnerable to thermal movement cracking. Where thermal movement is a risk, consideration of repairs should be as described for cornices, parapets and copings.

ACTION

- **Fully investigate the condition of masonry bearings to decorative ironwork**
- **Fully repair masonry**

2.12 Defective Chimney Stacks

Liners, Flues and Flaunchings

Chimney stacks are a potential source of water penetration into the building envelope. Where the fireplaces and flues are still in use, combustion gases dry out any water penetrating the chimney pot, however many of the flues are now redundant, allowing damp to accumulate within the upper part of the flue. The chimney stack becomes vulnerable to frost damage when damp. Where the lining to the flue has deteriorated, a chemical reaction can take place between the mortar and soluble salts present in the brickwork and flue lining. This reaction will cause movement in the masonry. Frost attack and any chemical induced movement in masonry of the stack will cause the enclosing render to crack. When preparation work for redecorating rendered chimney stacks is undertaken, any cracking should be analysed to determine its cause. Where render cracking is the result of movement in the masonry, it will be necessary to repair the masonry to avoid further movement. The lessee's technical advisor will be able to give guidance on the extent of repairs necessary to the masonry.

The risk of movement in chimney stacks can be reduced by a number of measures:

- Any flues that are in use for oil or solid fuel appliances should have an adequate liner to prevent damage to the masonry. (Any gas appliance using an existing flue is required to have a liner to comply with gas use regulations.)

- Choice of an appropriate liner where the existing lining is defective is subject to a number of issues and specialist advice should be sought.

- Where the flue is not in use, the opening at the head of the flue should be protected against water penetration, but it is also important to ensure that natural ventilation is maintained along the flue path.

- The chimney pot typically covers only a proportion of the top of any masonry chimney stack. The remaining area is covered with a thin coating of mortar, sloping down to the outer perimeter of the masonry stack. This flaunching is vulnerable to frost attack and cracking caused by the heating of the flue. Periodically the flaunching needs to be replaced to ensure water does not penetrate through the upper surface of the chimney stack around the pot. The condition of the flaunching should be checked while access is available, and where it is defective, replaced with new mortar.

Prior to undertaking any protection works to chimney stacks, lessees should establish the nature of the flues involved. Many of the properties refurbished in the fourth quarter of the 20th century have had the flues protected. A number of properties have false chimney stacks which are not connected to flues. Where a flue is redundant and is connected to habitable parts of the property it is advisable to provide protection at level of the chimney pot. Any methods used should seek to prevent water penetrating the open top of the flue at chimney pot level but *must maintain ventilation to the flue.* The method of protection used will vary according to the character of the existing chimney stack and the visual appearance of the proposed capping solution is of particular importance. Loss of the existing chimney pots must be avoided.

The Crown Estate does not recommend a particular solution, however in some cases it may be appropriate to use terracotta inserts to the existing pots. Various types are available from:

Redbank Manufacturing Company Ltd, 01530 273737
Hepworth Terracotta, 0870 4436 000

ACTION

- **Fully investigate the condition of the chimney stacks, flues and flaunchings.**
- **Replace all defective flaunchings**
- **Repair damaged liners**
- **Ventilate and protect redundant flues.**

Chimney Stack Repairs

In some cases the decay of the masonry core to the chimney stack may have developed to a point where it is necessary to rebuild the stack. The lessee's technical advisor will be able to give guidance on the need for reconstruction of stacks.
Where it is necessary to rebuild a chimney stack due to decay of the masonry, reference should be made to detailed specification F10 in Annex A of this guidance.

ACTION
- **Fully investigate the condition of chimney stack cores**
- **Where necessary rebuild chimney stack masonry.**

2.13 Repairs to Reinforced Concrete

Some of the properties contain external features constructed in reinforced concrete or on a reinforced concrete structure. Water penetration of the concrete can cause the reinforcement to rust, in extreme cases this rusting will cause the concrete covering to break away exposing the reinforcement. If un-repaired, the reinforcement will decay at an accelerated rate and in due course the structural integrity of the building element will be put at risk.

Reinforced concrete can be repaired either by replacing the defective concrete in similar material or proprietary polymer based material. Concrete repair is a highly specialised task and requires detailed investigation of the extent of the failure prior to repair. Any repairs carried out will need the services of a specialist contractor. Where lessees are concerned that defective reinforced concrete may be present in the building fabric, they should consult Purcell Miller Tritton LLP who will provide advice on strategies to deal with the repairs.

ACTION
- **Identify defective reinforced concrete.**
- **Put forward proposals for repair**
- **Repair defective reinforced concrete.**

2.14 Inappropriate Use of Fillers

Proprietary fillers can be appropriate material for repairing hairline cracks in stucco and rendered surfaces, however fillers are not appropriate for long term repairs of cracks in the following circumstances:

- Cracks that relate to active structural movement
- Cracks that relate to thermal movement in the masonry core
- Cracks that relate to sulphate attack of the core masonry
- Cracks that relate to frost damage of the core masonry
- Cracks in render detached from its masonry backing

In these locations repairs carried out with proprietary fillers will have a short life and will not resolve the defect that is the cause of the cracking.

Fillers are not appropriate for repairs to the surface of render that has become contaminated with soluble salts or as a substitute for mortar in flaunchings, stone pointing and lead flashing pointing. In these locations repairs should not be carried out with proprietary fillers.

Some exterior fillers are based on chalk. These fillers are dependent for their durability on a low moisture content of the backing surface. Where the backing surface becomes damp the fillers are likely to break down. If external fillers are used in appropriate locations, they should be of a type suitable to the location and have a compatibility with The Crown Estate approved system (it should be noted that some fillers are recommended for exterior use only in conjunction with the use of solvent based paint. This makes them inappropriate for use with The Crown Estate approved render painting system).

For the current repainting cycle the paint manufacturer has recommended specific types of exterior filler. In preparing the surface there is a possibility that previous applications of chalk based fillers will be encountered. It would be prudent to remove all previous chalk based fillers from repairs; however where the surface has been painted many times over chalk based products there is a limited advantage in removing the fillers unless defects are present in the area. It is recommended that any defective chalk based fillers are removed completely and replaced with a more appropriate material.

ACTION

- **Fully investigate the surface of render and identity defective fillers**
- **Remove defective fillers from the render surface.**
- **Fill hairline cracks in stucco and rendered surfaces in preparation for redecoration with an appropriate filler.**

2.15 Failures in Cantilevered Balconies

Some balconies are formed by the projecting structure of lower floors and in these areas failures in the surface finishes will be require remedial action appropriate to a roof. Other balconies are cantilevered from the main walls of the properties and are often formed by a single layer of stone. Where the stone has cracked, water can concentrate in the crack and cause damage to the surfaces below. If the crack is at the supported end of the slab it provides a route for moisture into the core of the wall breaching the protective layer of render.

Where cracks exist in balconies, the lessee and their advisor should be satisfied that the crack is not related to movement in the adjoining structure or other issues. Where movement and other defects are identified, appropriate repairs should be undertaken prior to sealing cracks in the balcony surface.

It is acknowledged that providing a visually appropriate solution to fractures in cantilevered balconies is problematic. Where the cracks are causing the deterioration of adjoining surfaces, The Crown Estate is willing to consider the use of polysulphide or butyl mastic sealants in vertical cracks provided the method of application is appropriate and related repairs have been undertaken.

Where cracks in balconies are thought to require the addition of a surface sealant, Purcell Miller Tritton LLP should be consulted in advance of the works to agree with the lessee a strategy for repairs.

ACTION

- **Investigate the nature of defects in cantilevered balconies**
- **Agree a strategy for repair with The Crown Estate Consultants.**
- **Adequately repair and seal the surface of the balcony.**

2.16 Stucco/Render Repairs

As explained in the previous guidance notes, significant failures in the stucco/render rarely occur in isolation and repairs are likely to be related to other repairs of the fabric required to maintain the building in good and substantial repair.

Where the existing stucco/render had become detached from its backing, removal of the loose render will allow clear analysis of related problems. The lessee and their advisor should incorporate into proposals for repair any works necessary to adjacent parts of the structures that have contributed to the failure of the render. However in the absence of detached stucco/render the lessee and their advisor will have to consider the extent of investigation to be undertaken to existing cracks in order to undertake a thorough repair. The Crown Estate's advice is that any significant cracks should be investigated together with areas where there are dense groups of cracks on a single element of the structure.

Section 2.06 explains the importance of maintaining the profile of existing moulded work. It should be noted that moulded work should be formed in materials and profiles that match the existing exactly. Any departure from this profile and composition will required Listed Building Consent prior to application.

New render should match the character and composition of the existing original work, section C44 of the quadrennial painting guidelines gives guidance on these matters.

The area of render removed for repair will be initially governed by the extent of the defect that requires repairs. The Lessee and their advisor should also consider the impact of the repair to the render on the appearance of the building. Adequate preparation for painting of new render within an area of existing render with a thick coating of paint is difficult. It is recommended that where existing render is removed, the boundaries of the area to be re-rendered should be related to existing architectural features. The area cut out for repair (which would be greater than the area of the defect) could be related to the following architectural features which are appropriate to the size of the repair:

- For small patches; the area cut out should be to the profiles of individual ashlar blocks where the render has been scribed as ashlar.
- For larger areas cut out: to architectural boundaries marked by string courses, cornices, plinth courses and vertical returns including bays, pilasters and internal angles to walls.

ACTION

- **Fully investigate the cause of cracking in stucco/render repairs.**
- **Adequately repair any building elements contributing to the failure of the stucco/render.**
- **Cut back defective render to an architectural feature to minimise the visual impact of the joint between new and existing render.**
- **Replace the defective render with new render.**

Consultations have been undertaken with Westminster City Council, Camden Borough Council and English Heritage on this issue. Guidance provided by the statutory authorities is that the removal of render to repair defective structure or defective render and its replacement with a render of the same mix, texture and thickness does not normally require Listed Building Consent. The removal of paint from sound rendered surfaces in the immediate area of an area to be repaired, to achieve a durable paint finish will not normally require Listed Building Consent. However the removal of large areas of sound render, significant moulded detail or a proposed change in the composition of render or stucco is likely to require Listed Building Consent. Where there is any doubt lessees are advised to check with the conservation office of their local authority.

2.17 Loose Flashings

Flashings are an important component of the overall weatherproofing system of each property, providing the flexible covering of the joint between masonry and the roof covering.

Where the flashing is incorporated into a south or west facing wall it can be subject to significant thermal movement. Lead should be laid in relatively short bays; guidance on the length of the bays is given by the Lead Sheet Association in their recommendations. To perform satisfactorily the lead flashing has to be built into the wall or under the render above. Because the lead and the masonry have differing expansion coefficients, separation can occur between the lead and the pointing. In extreme cases this will cause the pointing to fail and the flashing will no be longer effective. The Lead Sheet Association details give various methods of forming the joints between flashings and the masonry. Where existing flashing fixing methods have failed, the lessee and their advisor should consider alternative methods of fixing the lead if it is considered likely that the failure has occurred because of thermal movement.

The choice of a particular fixing system will be influenced by factors such as the location of the flashing, the degree of shading, the construction of the roof covering and the thickness of the wall the flashing is formed in.

Four basic methods of fixing are in common use:

- Wedge fixed flashings pointed with mortar.
- Wedge fixed flashings pointed with flexible sealant.
- Screw fixed flashings pointed with mortar.
- Screw fixed flashings pointed with flexible sealant.

In their consideration of a suitable alternative, lessees and their advisors should bear in mind the following points:

- The most common form of flashing fixing is wedge fixed with mortar pointing. If this system has failed in the pas, it is likely it will fail again unless the detailing is modified.
- Screw fixed flashings require a large groove to accommodate the screws and lead rebate. Extensive thermal movement is still likely to make mortar pointing fail but the flashing is less likely to leak after pointing failure than a conventional wedged flashing.
- The application of flexible sealants to flashings in areas subject to thermal movement is a specialised task involving careful preparation of the joint. General decorating contractors are unlikely to have experience of the preparation and types of sealant required.

General guidance on lead and its fixing is contained within section H71 in section 4 of the quadrennial painting guidelines to lessees. General guidance on the use of sealants is included in section Z22 of the Quadrennial Painting Guidelines to lessees. A detailed discussion of the types of flashing fixing available are incorporated into the Lead Sheet Association's publication "Sheet Lead Flashings".

ACTION

- **Check that existing flashing are adequately fixed.**
- **Replace defective fixings to lead flashings.**
- **Replace defective pointing to lead flashings.**

2.18 Lead Coverings & Sheet Lead Weatherings

Weatherings

Sheet lead weatherings are used to provide additional protection to horizontal masonry surfaces, where the masonry is vulnerable to failure of the rendered finish, either as a result of thermal movement or structural movement.

The vulnerability of cornices and parapets to water penetration through the horizontal surface has been recognised on The Crown Estate for many years. It should be noted that many of the terraces have lead weatherings to the cornices and selected parapets. Where installed to current Lead Sheet Association recommendations, the weatherings form a layer of protection to cornices and parapets subject to thermal movement.

Existing cornice weatherings need to be kept in good condition. Old weatherings have often been laid in bays of excessive length and the lead is prone to splitting. The Lead Sheet Association provides guidance on the maximum centres for joints in weatherings.

If the existing weathering is in good condition there is no requirement for further action, however where older weatherings have split they should be replaced or repaired. A lead patch placed over the existing split can provide a medium term solution. In the longer term, lead weatherings that have split should be replaced and re-laid to current Lead Sheet Association recommendations.

In considering the advisability of providing new weatherings, lessees and their advisors should take into account the following:

- The density of cracks in the horizontal surfaces of the existing renders where there is no current lead weathering.
- Repeated cracking (in the same position) of render that does not have a protective lead weathering.
- The presence of weatherings on cornices and parapets on adjoining properties in the same terrace which have contributed to improved durability of the decorative finish.

Where there are other properties in the terrace that have had weatherings fitted, where there is persistent cracking in the horizontal surfaces of stucco/render or repetitive cracking of existing lead flashings to horizontal surfaces, new lead weatherings should be fitted to vulnerable horizontal render/stucco surfaces.

Details of fixing, laying and lining lead weathering are detailed in specification section H71, section 4 of the Quadrennial Painting Guidelines.

ACTION

- **Fully investigate the condition of existing lead weatherings.**
- **Thoroughly repair existing lead weatherings.**
- **Fully investigate the condition of horizontal stucco/render surfaces to parapets and cornices.**
- **Fit new lead weatherings to horizontal stucco/render surfaces that are subject to persistent cracking.**

Leadwork Generally

Defective existing leadwork should be repaired or replaced in accordance with the standards outlined in the Lead Sheet Association's current practice guides. Generally leadwork should not be painted, however where lead cappings to painted cornices and copings are visible from ground level painting should be undertaken. The uniformity of each Terrace, etc, is of paramount importance. Refer to the detailed specification in the quadrennial painting guidance notes.

Mastic, flashband, felt and similar repairs to leadwork are not acceptable.

ACTION

- **Fully investigate the condition of existing leadwork.**
- **Remove existing substandard repairs**
- **Adequately repair existing defective leadwork.**

2.19 Soluble Salts

Defects in the external finishes of the building sometimes cause the concentration ofsoluble salts within the wall surface to the external render. These salts may not be in sufficient concentrations to cause the render to decay but have been sufficient to cause the paint surface to fail. In these areas it will be necessary to remove all the layers of paint back to bare render in order to allow the wall surface to be stabilised. If stabilising solutions are applied on top of existing paint layers there is a risk of continued decay of the paint below the stabilising solution causing further failure in new paint surfaces.

ACTION

- **Adequately prepare wall surfaces ensuring that they are stable before the application of new paint.**
- **Where necessary remove existing paint finishes to provide a stable base for the application of new paint.**

2.20 Inadequate Preparation of the Existing Painted Surface

Satisfactory adhesion of new paint to existing surfaces is reliant on an adequate bond between the paint and a stable surface. Where a surface (which could be existing paint, lead, render, wood or stonework); is covered in an unstable material; an adequate bond will not be achieved. Unstable materials could include fungal growth, oil, grease, powdering paint, powdering fillers, rust, soluble salts and water.

It is therefore vital to ensure that the surface to receive new paint is free of unstable materials and in addition to the repairs previously detailed, the surface of the wall must be prepared to ensure that all unstable materials are removed. Individual contractors will have their own preferred method of achieving this and guidance is available for the lessee in the model specifications that the paint manufacturer will make available on request.

It is advisable that the lessee or his advisors are familiar with the proposed method of cleaning. The method used could have implications for the continued use of the building, for example; during preparation certain forms of cleaning could cause poorly fitting windows to leak, damaging internal furnishings.

Lessees will note the inclusion of water in the list of unstable materials. The presence of water, either as a liquid or as ice on the surface of the wall will prevent adhesion of the paint. Decorating contractors should be made fully aware of the limitations of conditions suitable for applying paint and allow for this in their programme. The timing of the painting programme has been chosen to minimise the likelihood of the contractor being held up by unsuitable conditions for long periods.

ACTION

- **Ensure that unstable materials are removed from surfaces to be painted prior to painting.**
- **Paint only in environmental conditions satisfactory for the application of paint.**
- **Protect new paintwork until it dries.**

2.21 Use of Incompatible Materials

The Quadrennial Painting Guidelines require the use of a specific paint for the painting of stucco/rendered surfaces and makes recommendations about the paints for other surfaces. While The Crown Estate does not require products produced by the manufacturer of the paint for rendered surfaces to be used on other surfaces, it does recommend this course of action. It should be noted that paint systems require compatibility between the individual components (fillers, primers, undercoat and top coats) of the paint system and if alternative manufacturer's products are to be used, the lessee and their advisor should satisfy themselves that the products are compatible with the overall system used and of an adequate quality to provide durability for five years.

The Lessee should discuss with their contractor the materials to be used and the manufacturers involved. Where contractors propose to depart from The Crown Estate's recommendations, lessees are advised to seek assurances concerning the durability of the alternative system proposed.

It should be noted that no substitute is acceptable for the paint finish to be applied to the rendered surfaces to be finished in Dulux Regent's Park Cream Gloss. The detailed specification for the paint is available in the Painting Guidelines and model specifications can be provided by the approved paint manufacturer. See contacts in section 4 of this handbook.

ACTION

- **Ensure that the paint system proposed is compatible with the finish coats prescribed by The Crown Estate.**
- **Ensure that secondary products associated with decoration are compatible with the primary painting system.**

2.22 Post Repair Preparation for Painting

The surfaces produced by the process of repairing the structure may present additional challenges for the decorating contractor. In some cases the continuing cycles of redecoration have produced a considerable thickness of paint on stucco and rendered surfaces. Where repairs to the building envelope are necessary it is likely that the render or stucco finish will be disturbed. The new surface will match the original surface of the existing render, but this may be at a significantly different level to the paint surface on the existing render. To avoid unsightly steps and shadow lines at the junctions between new and existing render it may be possible to relate new render areas existing architectural features (as described at clause 2.16*)* . However this is not always practical on properties which have large areas of unmoulded render.

It is considered undesirable to replace large areas of sound render in order to achieve a satisfactory surface finish for painting. Where it is not reasonable to cut defective render back to a natural architectural boundary, the lessee and their advisor should consider removing the existing paint up to natural architectural boundaries. This will allow the application of an even paint finish to the area and avoid the use of high build fillers on the face of the wall that could alter the characteristics of the surface, making it vulnerable to further movement.

The removal of large areas of existing paint to provide a suitable surface for painting must be treated with caution. Complete removal of paintwork to substantial areas of the properties may require Listed Building Consent and raises conservation issues. Where large areas of paint removal are under consideration lessees are advised to discuss this with their local authority conservation officer prior to proceeding.

Consultations have been undertaken with Westminster City Council, Camden Borough Council and English Heritage on this issue. Guidance provided by the statutory authorities is that the removal of the painted finish to carry out repairs to the stucco surface does not normally require Listed Building Consent and the removal of paint from sound rendered surface in the immediate area of the area to be repaired to achieve a durable paint finish will not normally require Listed Building Consent. However the removal of significant areas of sound paint, (comprising more than 50% of the paint on an individual elevation of a house unit), or paint on significant detailing such as column capitals or pediment friezes are likely to require Listed Building Consent. Where there is any doubt lessees are advised to check with the conservation officer of their local authority. The limitation on methods of removing paint included in section M60 of the quadrennial painting guidelines should be observed. In particular note that cleaning by naked flame or sand blasting will not be permitted.

ACTION

- **Adequately prepare wall and joinery surfaces ensuring that they are stable before the application of new paint.**
- **Where necessary remove existing paint finishes to provide a stable base for the application of new paint.**
- **Where necessary remove existing paint to provide a visually satisfactory transition between new render and previously painted render.**

SECTION 3: LESSEES' RESPONSIBILITIES

3.01 Lessees should refer to the Quadrennial Painting Guidelines to lessees numbered 2.01 to 3.22.

3.02 Every effort should be made to undertake any necessary repairs in good time to permit completion of the painting of the property by the 31 August 2010.

3.03 Supervision

Lessees are advised to employ the services of an Architect, Chartered Building Surveyor or other appropriately qualified person to manage the work on their behalf where the size of the property, complexity of repairs or the requirements of the Construction (design and Management) Regulations make this appropriate.

With listed buildings it is suggested that the architects are experienced in this field of work and they should be registered as accredited in building conservation. Similarly, any building surveyor should be accredited in building conservation by the Royal Institution of Chartered Surveyors.

3.04 Listed Building Consent

Repairs that will alter the appearance of the building may require Listed Building Consent. Where Listed Building Consent is required application should be made to the Planning Department of the local authority concerned and will be subject to a licence

3.05 Complex Repairs

Lessees considering particular repairs to part of the building structure may wish to consult with Purcell Miller Tritton LLP on the method of repair to be adopted. The repairs under consideration could include the provision of protective weatherings, repair and ventilation of chimney stacks, repair of stone balconies and repair of reinforced concrete. Lessees should allow in their programme seven to ten days notice for consultation on these items.

3.06 Alterations

Works of alteration are not dealt with in this document and will be subject to separate specific approval of The Crown Estate. For alterations to buildings, a licence will be required and lessees should, in the first instance, contact The Crown Estate's Managing Agent, Cluttons (see contacts in section 4 of this handbook)

3.07 Completion Certificate

The Certificate sent with the Quadrennial Painting Guidelines should be completed and returned within 14 days of the painting work being completed. It is important that the lessee's contractor is notified of the requirement to complete the Certificate.

SECTION 4: CONTACTS

1.08 Contacts:

Crown Estate Monitoring Consultants

Purcell Miller Tritton LLP
St Mary's Hall
Rawstorn Road
Colchester
Essex CO3 3JH
Contact: Nigel Sunter Tel: 01206 244844 Fax: 01206 244845
E-mail: nigelsunter@pmt.co.uk

Crown Estates Conservation Consultants

Purcell Miller Tritton LLP
St Mary's Hall
Rawstorn Road
Colchester
Essex CO3 3JH
Contact: Chris Betts Tel: 01206 244844 Fax: 01206 244845
E-mail: chrisbetts@pmt.co.uk

Crown Estate Managing Agents

Commercial Property: Cluttons LLP
Portman Street
2 Portman Street
London W1H 6DU
Tel: 0207 408 1010
Fax: 0207 647 7070
Contact: Mark Haldane Tel: 0207 647 7211

Residential Property: Cluttons LLP
Portman Street
2 Portman Street
London W1H 6DU
Tel: 0207 408 1010
Fax: 0207 647 7070
Contact: John Dyer Tel: 0207 647 7035

Paint Manufacturers

ICI Paints
Wexham Road
Slough
Berkshire SL2 5DS
Tel: 01753 550000
Regional Manager: Mike Cobb 01753 550000
Specifying: Chas Argent 01753 550000

Crown Estate Paving Commission

Crown Estate Paving Commission
12 Park Square East
Regents Park
London
NW1 4LG
Tel: 0207 935 8049
Fax: 0207 486 2801

Local Authorities

To contact the conservation officer for the area which your property is located contact your local authority Planning Department.

London Borough of Camden
Conservation & Design Manager
Development Control Planning Services
London Borough of Camden
Town Hall
Argyle Street
London WC1H 8ND
Tel: 0207 278 4444

City of Westminster
Development Planning Services
Department of Planning & city Development
Westminster City Hall
64 Victoria Street
London SW1E 6QP
Tel: 0207 641 6000

ANNEX A

ADDITIONAL MATERIAL SPECIFICATION CLAUSES

GENERAL NOTE:

The materials specification guidance provided in the Quadrennial Painting Guidelines to lessees apply to the Quinquennial preparation works. In addition to the specification sections listed in the Quadrennial Guidelines, two additional sections are included here relating to specific works that may be necessary as part of the preparatory works for the Quinquennial Painting.

Specification clauses are given for guidance only and the professional adviser and contractor must ensure and take responsibility for work that is undertaken in accordance with these clauses. The clause references use the NBS, National Building Specification system, for ease of reference.

F10 BRICK/ BLOCK WALLING

To be read with Preliminaries/ General Conditions.

TYPES OF WALLING

110 NEW CLAY FACING BRICKWORK FOR REPAIRS TO EXISTING BRICKWORK

- Bricks: Smeed Dean London/Antique Multi or Mayfair Yellow
  - Manufacturer: The Brick Business Ltd, Cheadle SK8 5QY Tel. 0161 485 8211
  - Special shapes: As required to match existing
- Mortar: As section Z21 group 2, 3 or 4 as appropriate.
  - Additional requirements: Mix bricks as necessary to achieve good colour match
- Bond: To match existing

115 SALVAGED CLAY FACING BRICKWORK

- Bricks: Salvaged second hand London Stock Bricks to match existing and employer approved sample
- Sizes: Match existing adjacent bricks
- Colour: to match adjacent wall area.
- Mortar: As Section Z21 group 4
- Additional requirements: Bricks to be free of soot, vegetation, plaster, paint and cement mortar
- Bond: To match existing

WORKMANSHIP GENERALLY

431 THE CROWN ESTATE
CONDITIONING OF CLAY BRICKS

- Bricks delivered warm from manufacturing process: Do not use until cold.
- Absorbent bricks in warm weather: Wet to reduce suction. Do not soak.

461 THE CROWN ESTATE
MORTAR GROUPS

- Mix proportions: For a specified group select a mix design from the following:

Group	1	2	3	4
PC*:lime:sand	1:0-0.25:3	1:0.5-4.5	1:1:5-6	1:2:8-9

PC* = Portland cement

- Batching: Mix proportions by volume.
- Mortar type: Continuous throughout any one type of masonry work.
- Note that these proportions are not relevant to repointing work.

491 THE CROWN ESTATE
REPOINTING

- Careful and sympathetic repointing is of the utmost importance in preserving the colour, texture and general character of old brickwork and stonework. Strong cement mortars are dark and harsh in colour; also they shrink and pull away the edges of the bricks. Flush pointing is unsuited to the irregularly shaped edges and faces of olderbrickwork and stonework and any form of struck pointing gives a hard and mechanical appearance to the wall. The following instructions are to be brought to the notice of every bricklayer and mason employed on the work and are to be carefully and fully carried out.
- In areas to be repointed:
- Rake out joints to a depth of at least 20mm or more if the old mortar has perished; remove loose particles to make a good key for the new mortar. Press the new mortar well into the joints to assist adhesion and to ensure that no voids are left. When the joints are filled the mortar is to finish slightly recessed from the general face of the brickwork so that the mortar does not encroach upon the irregular arrisses or spread over any worn or rounded edges of the bricks or stone.
- As soon as the mortar has taken the initial set it is to be stippled with a stiff bristle brush to produce a slightly rough surface in keeping with the old work.
- Mortar: As section Z21/111

496* THE CROWN ESTATE
JOINTING AND REPOINTING

- Unless specified otherwise, all joints in second-hand or repaired brickwork areas, or new work built to match existing.
- Finish joints as the work proceeds.
- Once the mortar has taken its initial set brush over with a Hessian rag, stick or bristle brush to leave slightly recessed joint and to give the mortar a slightly textured surface.

501 THE CROWN ESTATE
LAYING GENERALLY

- Mortar joints: Fill vertical joints. Lay bricks on a full bed.
- Bond where not specified: To match existing.
- Vertical joints in facework: Even widths. Plumb at every fifth cross joint.

535 HEIGHT OF LIFTS IN WALLING USING CEMENT GAUGED OR HYDRAULIC LIME MORTAR

- Quoins and advance work: Rack back.
- Lift height (maximum): 1.2 m above any other part of work at any time.
- Daily lift height (maximum): 1.5 m for any one leaf.

561 COURSING BRICKWORK WITH EXISTING
- Gauge: Line up with existing brick courses.

690 ADVERSE WEATHER
- General: Do not use frozen materials or lay on frozen surfaces.
- Air temperature requirements: Do not lay bricks/ blocks:
  - In cement gauged mortars when at or below 3°C and falling or unless it is at least 1°C and rising.
  - In hydraulic lime:sand mortars when at or below 5°C and falling or below 3°C and rising.
  - In thin joint mortar glue when outside the limits set by the mortar manufacturer.
- Temperature of walling during curing: Above freezing until hardened.
- Newly erected walling: Protect at all times from:
  - Rain and snow.
  - Drying out too rapidly in hot conditions and in drying winds.

ADDITIONAL REQUIREMENTS FOR FACEWORK

760 THE CROWN ESTATE
APPEARANCE
- Brick selection: Do not use units with damaged faces or arrises.
- Cut masonry units: Cut faces or edges with table masonry saw. Do not expose cut faces top view in finished work.
  - Setting out: To produce satisfactory junctions and joints with built-in elements and components.
  - Coursing: Evenly spaced using gauge rods.
- Lifts: Complete in one operation.

790 PUTLOG SCAFFOLDING
- Use: Not permitted in facework.

800 TOOTHED BOND
- New and existing facework in same plane: Bond together at every course to achieve continuity.

830 CLEANLINESS
- Facework: Keep clean.
- Mortar on facework: Allow to dry before removing with stiff bristled brush.
- Removal of marks and stains: Rubbing not permitted.

Z21 MORTARS

CEMENT GAUGED MORTARS

105 WATER
- Clean and uncontaminated. Obtain for other than mains supply. Rest to BS3148 if instructed.

111 THE CROWN ESTATE
MORTAR MIX PROPORTIONS
- Proportions for pointing and bedding mortar used in repairs, should be established by analysis of the existing bedding mortars in the building structures. Match mortar to the existing for texture, colour and proportions of lime, cement and aggregate.
- For tile pointing, flaunchings and structures below ground use a mortar mix appropriate to the location as F10/461.

121 SAND FOR MORTARS
- Standard: To BS 1200 unless otherwise specified
- Where a special colour is required, mix several coloured sands to achieve the desired colour.
- Sand for facework mortar to be from consistent source, different loads to be mixed if necessary to ensure consistency of colour and texture.

123 STONE DUST
- To match the type of stone being used, or as specified in previous work sections.
- Stone dust to be washed before supply and use.

135 SITE PREPARED LIME: SAND FOR CEMENT GAUGED MORTARS
- Permitted use: where a special colour is required.
- Lime: as Z21/331
- Mixing: Thoroughly mix with sand. Add water and mix again. Allow to stand, without drying out, for at least 16 hours before using.

161 CEMENTS FOR MORTARS
- Cement:
- Standard: To BS EN 197-1
- Portland cement; CEM 1
- Strength Class 42.5 or 52.5
- Sulphate resisting cement:
- Standard: To BS 4027
- Strength class 42.5 or 52.5
- Sulphate resisting cement may be used where site conditions make this appropriate.

181 ADMIXTURES
- Do not use in mortar unless specified or approved.
- Do not use calcium chloride or any admixtures containing calcium chloride (if specified to BS 4887).

200 STORAGE OF CEMENT GAUGED MORTAR MATERIALS
- Sands and aggregates: Keep different types/grades in separate stockpiles on hard, clean, free-draining bases.
- Factory produced ready-mixed lime: sand/ready to use retarded mortars: Keep in covered containers to prevent drying out or wetting.
- Bagged cement/hydrated lime: Store raised off the ground in dry conditions.

210 MAKING CEMENT GAUGED MORTARS
- Batching: By volume. Use clean and accurate gauge boxes or buckets.
  - Mix proportions: Based on dry sand. Allow for bulking of damp sand.
- Mixing: Mix materials thoroughly to uniform consistency, free from lumps.
  - Mortars containing air entraining admixtures: Mix mechanically. Do not over mix.
- Working time (maximum): Two hours at normal temperatures.
- Contamination: Prevent intermixing with other materials. Keep plant and banker boards clean.

221 SITE STORAGE
- Store different sands and aggregates in different stockpiles on hard clean bases which allow free drainage and cover to prevent excessive wetting.
- Store premixed lime: sand for mortars in covered containers to prevent excessive drying out or wetting.
- Store bags of cement and hydrated lime in dry conditions, raised off the ground and not touching damp surfaces. Do not use cement of hydrated lime affected by damp.
- Avoid intermixing and contamination between stored materials and other building materials, debris or other deleterious matter.

312 SITE PREAPRED LIME: SAND MIX

- Use lime putty to BS 890 prepared from quicklime
- Thoroughly mix lime putty with sand, store in air tight bins and prevent from drying out.
- Before gauging with other constituents, thoroughly ram, beat and chop the mix
- Incorporate sands of varying colours and grade to achieve required colour/texture.

331 THE CROWN ESTATE
READY PREPARED LIME PUTTY

- Use lime putty slaked directly from CL 90 (high calcium) quicklime to BS 890, using an excess of water and matured in pits/containers that allow excess water to drain away.
  - Density of matured lime putty: 1.3 – 1.4 kg/litre
- Maturation period before use (minimum): Note less than 30 days after slaking.

332 THE CROWN ESTATE
NATURAL HYDRAULIC LIME

- To be mixed in accordance with manufacturer's instructions. Obtain fresh and do not store.
- Hydraulic lime can be obtained from:
  St Astier, obtainable from: Sole importers "Setra Marketing Ltd" Consortium of suppliers. NHL 2 or 3.5 as specified in mortar mix in previous work sections. Refer to the Best Practice Guide for Hydraulic Lime Mortar for Stone, Brock and Block Masonry produced by Foresight Lime Research July 2002 for general guidance on the use of Natural Hydraulic Lime on site.

341 GAUGING ADDITIVES Pozzolanic Additives

- BRICK DUST: Less than 1000 microns and colour to be suitable for final mortar.

351 SITE STORAGE OF LIMES AND MORTAR MATERIALS

- Store different sands and aggregates in different stockpiles on hard clean bases that allow free drainage.
- Store bags of hydrated hydraulic lime powder in dry conditions, raised off the ground and not touching damp surfaces. Do not use hydrated hydraulic lime affected by damp.
- Store ready prepared nonhydraulic lime putting in conditions that prevent drying out and protect from frost.
- Store nonhydraulic lime: sand mortar either on clean bases or in clean containers that allow free drainage. Keep covered to prevent drying out or wetting and protect from frost.
- Avoid intermixing and contamination between stored materials and other building materials, debris or other deleterious matter.

361 MAKING LIME MORTARS GENERALLY

- Lime putty: As clause 331
- Thoroughly mix the lime putty and sand together by compressing, beating and chopping using a roller pan mixer, or other approved mixing method. Do not add water.
- Store mortar in conditions that prevent drying out or wetting. Allow to mature for not less than 60 days before use.

391 KNOCKING UP NONHYDRAULIC LIME: SAND MORTARS

- When required for use, thoroughly knock up mortar to a workable consistency by compressing, beating and chopping using a roller pan mixer, or other approved mixing method. Do not add water.

401 SITE PREPARATION OF HYDRAULIC LIME: SAND MORTARS

- Thoroughly mix hydraulic lime powder with sand, first in the dry state and then with water. Follow the lime manufacturer's recommendations for each stage of the mix. Add only sufficient water to produce a workable mix.
- Use mortar within time limits recommended by the lime manufacturer. Do not use mortar that has begun to stiffen.

402 SITE PREPARATION OF HYDRAULIC LIME: SAND MORTARS

- Using a concrete mixer, thoroughly mix eminently hydraulic lime powder with sand, first in a dry state and then with water. Follow the lime manufacturer's recommendations for each stage of the mix. Add only sufficient water to produce a workable mix.
- Sufficient mortar must be mixed for use within 1-2 hours maximum. Do not use mortar that has begun to stiffen.
- Do not use hydraulic hydrated lime powder which exceeds its shelf-life (approximately one month).
- Carry out a site trial to test initial setting period prior to carrying out the work.

411 MORTAR SAMPLES

- A palette of mortars shall be prepared from the base mixes. Colours can be adjusted as necessary using more or less strongly pigmented aggregate. Artificial pigments must not be used.