Conservation of
PULHAMITE ARTIFICIAL ROCKWORK
Ramsgate, Kent

EAST CLIFF CHINE
STAGE TWO REPORT

for

Ramsgate Heritage Action Zone (HAZ) Partnership

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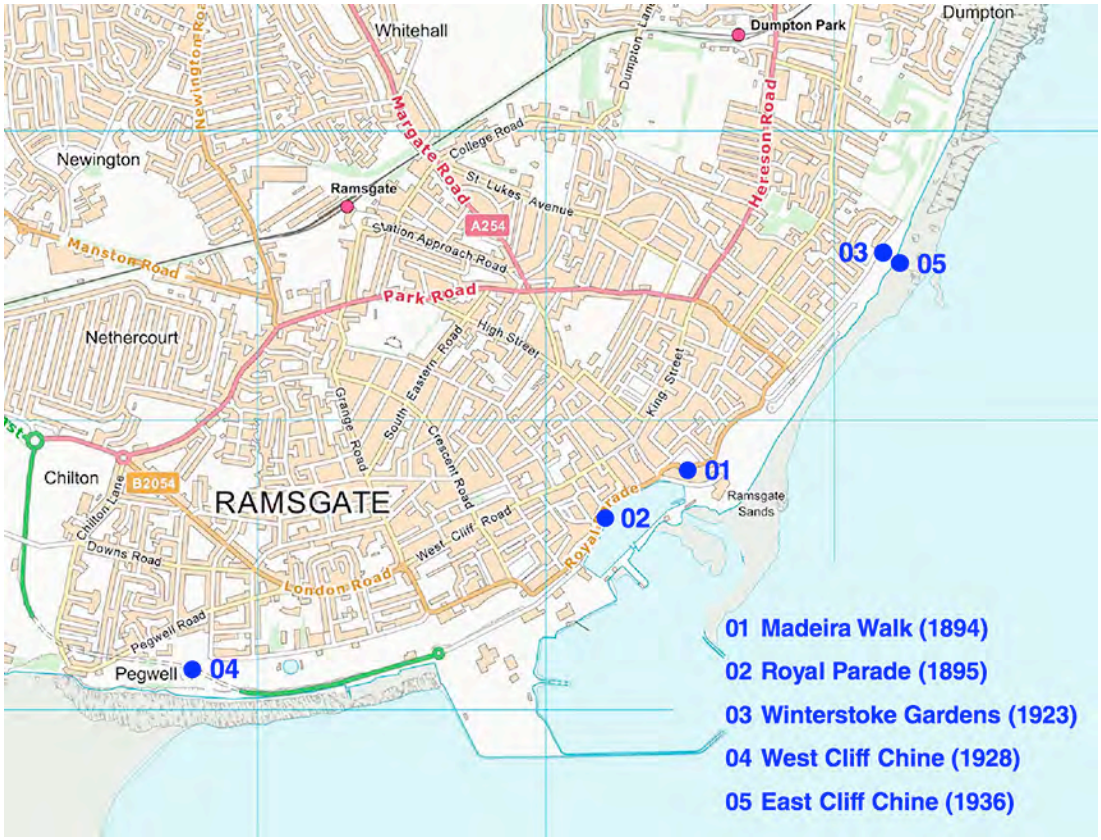
1. INTRODUCTION



1.01: RAMSGATE'S PULHAMITE ARTIFICIAL ROCKWORK SITES IN CONTEXT (MAP BASED ON OS OPEN DATA)

1.1 Background

1.1.01 Launched in March 2017, the Ramsgate Heritage Action Zone ('HAZ') is a five year, government–funded project which aims to support the regeneration of Ramsgate by harnessing its historic environment as a catalyst for economic growth. Coupled with new investment and development, heritage–related programmes of engagement and conservation are seen as key to strengthening the local economy for the benefit of the community. A grant from the MHCLG Coastal Revival Fund enabled the HAZ Partnership — Thanet District Council ('TDC'), Historic England ('HE'), Ramsgate Town Council ('RTC'), Ramsgate Community Coastal Team (who in 2018 successful bid for the grant) and community representatives — to fund a survey of the Pulhamite Artificial Rockwork that is a unique part of the late 19th century and interwar heritage of the town. RTC acting on behalf of TDC (the accountable body) comissioned The Morton Partnership ('TMP') to undertake the survey with CHRISTOPHER GARRAND BSc BArch GraDipCons(AA) RIBA AABC IHBC, the author of this report, invited to lead due to his knowledge and understanding of PAR. IRENE SEIJO BA (Hons) MA Public Art & Design was also appointed by TMP, her role being to assess the landscape element of the rockwork, and advise on vegetation and planting. Structural engineering advice was provided by Ed Morton BEng (Hons) CEng FICE IHBC CARE Accredited.

1.02: MADEIRA WALK (1894)

1.03: ROYAL PARADE (1895)

1.04: WINTERSTOKE GARDENS (1923)

1.05: WEST CLIFF CHINE (1928)

1.06: EAST CLIFF CHINE (1936)

1.07: ELLINGTON PARK (1893)

1.1.02 There are five Pulhamite Artificial Rockwork ('PAR') sites in Ramsgate:

01 Either side of Madeira Walk, a snaking road that rises from the Harbour to Wellington Crescent, the eastern part of a massive harbourside road improvement scheme of 1891–5; the PAR dates from 1894.

02 Within the brick arches that rise above Royal Parade, the inclined middle tier of the western part of the harbourside road scheme; the PAR followed–on from that of Madeira Walk and was completed in 1895.

03 Winterstoke Gardens at the northern end of Victoria Parade, opened in 1923.

04 Dating from 1926–8, a winding roadway in a gorge (chine) down through the cliff at the western end of Royal Esplanade Gardens; the PAR dates from 1928.

05 A chine down from Winterstoke Gardens to the base of the (east) cliff promenade and beach below, opened in 1936.

All sites were in February 1988 statutorily listed Grade II and are within (in one case next to) a designated conservation area. Madeira Walk is also part of the Grade II Registered Albion Place Gardens, first listed in July 1998.

1.1.03 Northwest of the Royal Harbour and Ramsgate town centre is Ellington Park, opened in 1893. A small formation of rockwork within the park has all the characteristics of near contemporary Pulhamite Artificial Rockwork, though its provenance as such is unproven; further research is needed. The site is not statutorily listed.

1.2 Purpose

1.2.01 The aim of the survey was to provide an assessment of the condition of Ramsgate's PAR, with a focus on defects that threaten its significance — defined in the National Planning Policy Framework ('NPPF') as its "value … to this and future generations because of its heritage interest" — and the resultant need for conservation ("The process of maintaining and managing change to a heritage asset in a way that sustains and, where appropriate, enhances its significance"). Prioritised maintenance and repair strategies to be implemented 'as and when' by volunteers, conservators and local contractors were (subject to detailed survey) required. The outcome would also inform an overarching conservation management plan for the HAZ, and possibly the revision of the Historic England ('HE') guidance *Durability Guaranteed: Pulhamite rockwork — its conservation and repair*, published in 2008.

1.3 Brief

1.3.01 In terms of the resources available for the survey, the order of priority was:

(a) Madeira Walk.

(b) Winterstoke Gardens.

(c) East Cliff Chine.

(d) West Cliff Chine.

(e) Royal Parade.

Initially, Madeira Walk, Winterstoke Gardens and the East Cliff Chine were surveyed in detail, with the West Cliff Chine and Royal Parade deferred pending funding.

1.3.02 Fundamental to the survey is the notion of 'informed conservation', a philosophy which requires decision on intervention — including maintenance and repair — to be based on evidence and justified need, i.e. 'understanding'. Hence the staged, methodical approach advocated in *Durability Guaranteed*, the basis of the brief:

A Drawing on a review of existing literature — including: a survey report on the Madeira Walk PAR prepared in 2000 by Simon Swann (1956–2018); a 1992 study of Royal Parade prepared by Donald W. Insall and Associates; and primary

and secondary historic research — investigate and survey in outline the five sites culminating in Stage One (overview) reports on PAR generally, Royal Parade and the West Cliff Chine.

B Revisit and update the 2000 Madeira Walk survey — and where necessary and appropriate — its scope and format in light of subsequent work by Simon Swann and others on the conservation of Pulhamite Artificial Rockwork.

C Using the Madeira Walk methodology and format (as perhaps modified), survey in detail the PAR of Winterstoke Gardens and the East Cliff Chine.

D Bring together the outcome of each of the detailed surveys into a (Stage Two) report on the condition of the PAR and conservation issues to be addressed along with prioritised schedules of works; the latter to be clearly referenced to marked–up plans and photographic records that enable the location and nature of repairs (including site–specific constraints) to be easily identified.

E Following–on from the survey and schedules, produce cross–referenced generic specifications that describe the necessary types of repair, and the parameters under which they are to be executed, noting also site–specific constraints.

F Provide general and specific guidance on the maintenance and management of PAR including vegetation control, and the removal of graffiti and other soiling.

G If required, help arrange for the collection and analysis of further samples, and the execution of trial repairs (exemplars) to guide future repair. NOT REQUIRED.

H Assist in developing and supporting the training of volunteers (including as part of the survey), local contractors and others in the conservation of Pulhamite Artificial Rockwork.

Specialist advice on landscape and ecology was an integral part of the survey, as was collaboration with Ramsgate Town Council, HE and other interested parties.

1.3.03 Following–on from the review and update of the Madeira Walk survey of 2000, this (detailed) Stage Two report on the East Cliff Chine PAR is the outcome of paragraphs 1.3.02C to F and — in terms of volunteers — part of H. It provides a record and assessment of the rockwork as of the dates of survey (5.1.02) along with prioritised guidance on maintenance and repair, a ‘baseline’ for the ongoing management of the Grade II listed East Cliff Chine.

1.4 Methodology

BASIS

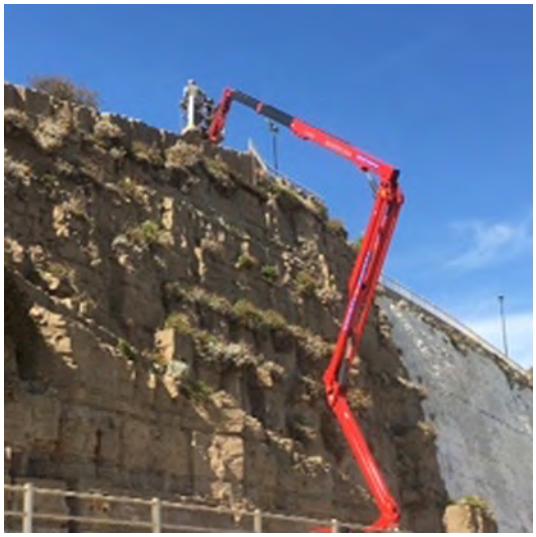
1.4.01 Adapting the approach employed by Simon Swann for the 2000 Madeira Walk survey, the rockwork of Winterstoke Gardens was first divided into small, manageable survey zones (refer 5.1.01), each with a unique identifier referenced on key drawings based on a topographical survey prepared in June 2019 (revised August 2019) by James Brennan Associates. Demarcation of zones as far as possible made use of fissures, setbacks and other distinctive features that form logical breaks in the runs of PAR.

PREPARATION

1.4.02 Using the categories of deterioration set out in Section 7 of the Overview: Stage One Report (soiling and discoloration; erosion and loss of coatings; defects in backings; cracks and fractures; previous repairs) — which are a development of those used by Simon Swann in 2000 — a proforma survey sheet was designed, an example of which is provided as Appendix A.

1.4.03 A set of elevational 'base' photos (non–rectified) was also prepared, one image per zone. Each was selected on the basis of its coverage with in some cases a suitable image created by 'merging' two or more separate images using Adobe Photoshop. In order to be usable on site (for marking–up), shadows were removed or lessened, titles added and the (A3) photo sheets turned to greyscale (monochrome). An example is provided as part of Appendix B. High level base photos were taken with a zoom lens and were by necessity low resolution

SURVEY



1.08 & 1.09: SURVEYING THE EAST CLIFF CHINE (SEPTEMBER 2019)

1.4.04 Over a period of ten days (refer 5.1.02 for dates) — three of which made use of a mobile elevated platform — each survey zone was, subject to the qualifications and limitations set out in 1.6.01, carefully inspected. Deterioration and damage was recorded on a zone–specific survey sheet and base photo, along with a detailed photographic record (digital photos are typically 6,000 x 4,000 pixels resolution). The latter included general as well as close–up shots with large, pre–printed labels being used to relate images to survey zones. Inspections were primarily visual albeit metal tools — lightly dragged across surfaces — were used to test for hollowness, while cracks and fractures were probed (gauged) and in some instances measured. An example of a marked–up base photo is also provided as part of Appendix B.

1.4.05 Fully briefed volunteers — up to four at a time — provided assistance throughout the survey, including fielding questions from the general public, with many copies of a

leaflet explaining the survey handed out. All those involved showed considerable interest in PAR and a willingness to learn about its history and conservation.

POST SURVEY

1.4.06 Survey sheets were collated and photographs batch re–named and sorted on a daily basis, the former being eventually (in the office) transferred to a 'report' version of the proforma and the latter organised into zone–referenced and numbered sets. The finalised survey sheets form the basis of this report, to which end a full set is included as Appendix D (the key drawing is Appendix C). A digital copy of the photo archive (nearly 4,800 images) is provided separately.

RESEARCH

1.4.07 HE provided a copy of the most recent listing report for the East Cliff Chine (updated in 2019 as part of the HAZ programme) as well as images and catalogue entries from the Historic England Archive. Internet searches resulted in a large number of additional historic images, the most fruitful sources being the Thanet Online website maintained by the owner of Michael's Bookshop in Ramsgate, whose self–published collections of old postcards provided an even wider range of material. Use of the British Newspaper Archive website to explore back copies of *The Thanet Advertiser* (from 1930–44 the *Advertiser and Echo*) pinpointed articles relevant to the history and development of the East Cliff Chine.

1.5 Structure and content

1.5.01 Following this Introduction:

- **Form and fabric** (Section 2) describes the PAR in terms of its location and setting, design, materials and construction.
- **Planting** (Section 3) comprises a brief overview of how the PAR was at the time of the survey planted.
- **History and significance** (Section 4) outlines the origins and development of the East Cliff Chine and identifies the significance of its PAR.
- **Assessment** (Section 5) presents and discusses a synopsis of the condition of the PAR as recorded on the survey sheets, and identifies any need for works.
- **Maintenance and repair plan** (Section 6) provides a practical strategy for the ongoing conservation of the East Cliff Chine PAR. Covering inspection, routine and reactive maintenance, it ends with a prioritised schedule of repairs with reference to Outline Repair Specifications (Appendix D), with introductory notes on: procurement; health and safety; the implications of designation (listing and conservation area location) and records.

The report ends with **Bibliography** (Section 7) and a series of **Appendices** (A to E as referred to within the text of the report).

1.6 Qualifications and limitations

1.6.01 THIS REPORT MUST BE READ IN CONJUNCTION WITH OVERVIEW: STAGE ONE REPORT, IN WHICH CAN BE FOUND IN–DEPTH INFORMATION ON THE NATURE, HISTORY, DESIGN, MATERIALS AND CONSTRUCTION, AND PLANTING OF PULHAMITE ARTIFICIAL ROCKWORK ALONG WITH DETAILED BACKGROUND INFORMATION ON ITS DETERIORATION AND AN OVERARCHING APPROACH TO ITS CONSERVATION.

1.6.02 The following limitations also apply:

- The mobile elevated platform was unable to get close to the highest, furthest parts of the rockwork face, i.e. that immediately below the southwest end of the clifftop promenade — which as a result was not inspected close.
- No inspection could be made of any area of PAR obscured by vegetation.
- The shelter at the base of the cliff, fixed seating, steps, paving and railings are excluded; other than where they directly impact on the PAR.
- Ecological considerations (including disturbance of protected wildlife) are as the March 2019 Scoping Survey Report prepared by Kent Wildlife Trust.

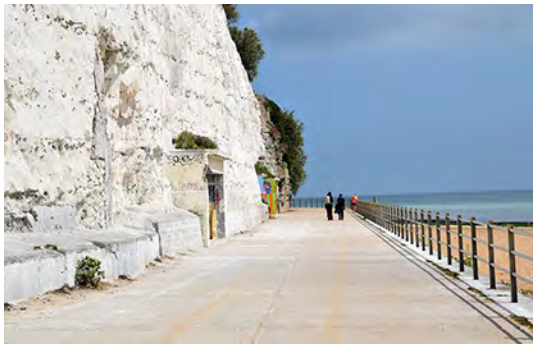
Planting and vegetation are only considered where of direct relevance to the condition of the PAR. WHERE NECESSARY, REFERENCE SHOULD BE MADE TO THE SEPARATE REPORT, SUPPORTING INFORMATION AND GUIDANCE ON PLANTING (MAINTENANCE AND MANAGEMENT) PREPARED BY IRENE SEIJO.

2. FORM & FABRIC

2.01: THE EAST CLIFF CHINE FROM THE BEACH (LOW TIDE)

2.1 Location and setting

2.1.01 The East Cliff Chine lies a kilometre northeast of the Royal Harbour, immediately below Winterstoke Gardens (Figure 1.01) — a continuation of its plan — and above the East Cliff Promenade. Barely visible from the clifftop, the massive expanse of PAR is best appreciated from below. Its setting is windswept and dramatic: sea; golden sands (covered at high tide); the undercliff promenade with its simple concrete shelters; and the white–grey chalk cliffs that frame the rockwork. The Chine itself has an airy, exposed feel with long views out over the English Channel.



2.02: SOUTHWEST APPROACH TO THE CHINE FROM EAST CLIFF PROMENADE

2.03: NORTHEAST APPROACH TO THE CHINE FROM EAST CLIFF PROMENADE

2.2 Design

2.2.01 The East Cliff Chine is a colossal dogleg staircase of two flights with a rise of 18.5± metres. It links the near sea level undercliff with the clifftop promenade in front of Winterstoke Gardens, its upper landing set axially on the sun shelter that is the centrepiece of Winterstoke Gardens. Cut into the chalk of the cliff, the entirety of the Chine is accommodated within a space of approximately 71 m x 12 m in (a gently curved) plan, the two flights being roughly 41.5 m (lower) and 35 m (upper) in length. Both flights are 2.5± m wide and broken into groups of four risers — 15 to the lower flight (10.2± m rise), 13 to the upper (8.3± m rise) — separated by deep landings, with a half landing at the return.

2.04: FULL ELEVATION OF THE CHINE ILLUSTRATING LOWER, UPPER & MIDDLE FACES

2.05: FOOT OF THE CHINE RISING FROM THE LOWER PROMENADE

2.06: HEAD OF THE CHINE EMERGING ONTO THE UPPER (WINERSTOKE) PROMENADE

2.2.02 Constrained by the relatively shallow depth of the plan, the PAR of the East Cliff Chine is characterised by a strong horizontal emphasis created by the rigid stacking of alternating thin and thick strata. Relief comes in the form of the shadow lines of deep fissures, the judicious use of pinnacles and pillars, and a mix of flat and angular modelling to which folds and 'false' cracks add yet more visual interest. Strata do not slope as on other sites and all faces are noticeably battered (leaning backwards). The overall impression is of an 'ordered' geology that differs from most examples of the work of James Pulham & Son, notwithstanding a design that is an apt reflection of the horizontality of the adjacent cliffs. Although often wide, plant pockets tend to be shallow and arranged in ordered tiers within the framework of the beds with — in relation to the scale of the Chine — relatively few overhangs, and no evident use of colour; the overall mass of PAR appears as a uniform grey–yellowish beige. The staircase breaks the Chine into three distinct, roughly triangular faces which meld (blend) into the adjacent chalk, notable for the regular array of small, almost square, evenly spread holes: the putlogs that supported the ends of scaffolding that would have been necessary to erect the PAR. The incised 'crazy' paving of the concrete landings and its integration with the steps and margins is part of a unified design.

2.07: LEVEL STRATA + DEEP FISSURES

2.08: TIERS OF PLANT POCKETS

2.09: CLOSE–UP SHOWING PUTLOGS

2.10: CRAZING PAVING, MARGINS & STEPS

2.2.03 At the lowest level, the rockwork rises from the undercliff promenade to the top of the balustrade (parapet) of the bottom flight of steps. Raised–up on a base of concrete blocks, the face is split by the bottom landing of the Chine, its northern part stepping forward as a blocky mass of rockwork topped by very large plant pockets. Set into the base of the main part of the face is a 2.3± m high x 6.1± m wide reinforced concrete

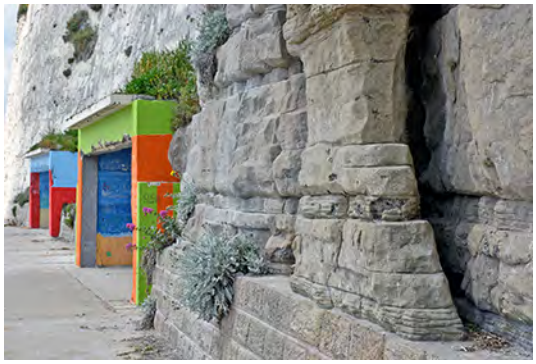
shelter, its roof supporting the PAR above. Plant pockets are concentrated near the rising top of the face with some incorporated within the parapet. The lower strata are generally plain and simple, the main point of interest being a small pillar of detached rockwork forming a thin ‘sea arch’. The top of the face returns to form a seating alcove off the half landing. A plaque commemorating the opening of the Chine is missing.

2.11: GENERAL VIEW OF LOWER FACE

2.12: ROCKWORK AT NORTHERN END

2.13: REINFORCED CONCRETE SHELTER

2.14: PLANT POCKETS AS BALUSTRADE



2.15: PILLAR OF DETACHED ROCK (RIGHT)

2.16: LOCATION OF MISSING PLAQUE

2.2.04 The middle face rises from the lower flight of stairs up to the balustrade of the top flight. At the bottom, the rockwork incorporates an L–shaped shelter (‘cave’), the flat roof of which contains two large but low (flat) plant pockets; within is a wooden–slatted seat on concrete bearers. Ascending, there are two more shelters off the ninth and twelfth landings. Plant pockets are concentrated in the middle of the face with a continuous run immediately below the balustrade, which for most of its length reads

as a parapet. The lowest part of the face terminates at the half landing and a final planter, the latter returning to mark the start of the ascent of the upper stair.

2.17: MIDDLE FACE OF THE CHINE

2.18: SHELTER AT BASE OF MIDDLE FACE

2.19: SHELTER NEAR END OF MIDDLE FACE

2.20: TERMINATION OF MIDDLE FACE

2.2.05 Between the upper stair and the clifftop promenade is the upper face. At its southern end, a 45 degree return extends to meet the parapet of the lower face and thereby the half landing; this part of the face is the highest, its strata rising in tiers of plant pockets and incorporating at its base another cave–like shelter. The beds are level and diminish in number as the face reduces in height until its termination with a single, square planter. A concrete coping provides a base for metal railings above. Seating alcoves open off the first, fourth, sixth and eight landings up the stair.

2.21: VIEW WEST ALONG THE UPPER FACE

2.22: UPPER FLIGHT OF THE CHINE

2.3 Materials and construction

2.3.01 While the East Cliff Chine rockwork has some affinity with the work of James Pulham & Son as promoted by their brochure *Picturesque Ferneries and Rock–Garden Scenery* (Pulham, 1877), its construction is in other respects atypical with only some of the characteristics described in Section 4 of the Overview: Stage One Report. The principal backing material is a rough, precast concrete block laid in mortar and toothed to the chalk of the cliff. Brick is used for plant pockets and stone slabs for overhangs with flints packed into fissures and left exposed as part of the design; burrs also. At the base of the rockwork are four courses of concrete block. While the composition of coatings and mortars is unknown, visual inspection reveals a range of aggregates and the absence of pigments; decay mechanisms (sulfate attack) suggest a true Portland cement binder; this can only be confirmed by sampling and analysis.

2.23: CONCRETE BLOCK BACKING

2.24: EVIDENCE OF BRICK BACKING

2.25: BURRS PACKED INTO FISSUE

2.26: VEINS SUGGEST SULFATE ATTACK

3. PLANTING

3.01: TYPICAL PLANTING OF ROCKWORK FACES

3.1.01 Moving down the upper steps of the Chine, there are many *Tamarix* growing above with several self–sown sycamore and *Quercus ilex* seedings. Otherwise, the almost vertical rock faces are dominated by *Valeriana officinalis* and *Senecio maritima* with a few *Hebes* and *Santolinas,* and the odd *Fuchsia sp*. There is a lot of common ivy and *Hebe sp* with common red poppies growing in the landing pockets. The rockwork above the lower staircase is largely covered with *Senecio maritima* and *Valeriana officinalis* which, although self–sown, do not look incongruous; again, there is a large amount of ivy. *Parietaria judaica* also grows freely in cracks and fissures.

3.02: COMMON IVY, HEBE SP & TAMARIX SP

3.03: VALERIANA & SENECIO MARITIMA

4. HISTORY & SIGNIFICANCE

4.1.01 The East Cliff Chine was built and opened in 1936. It was part of a £23,000 Ramsgate Borough Council project for a new undercliff promenade along the east cliff, linking the newly opened (1st July 1935) Marina Bathing Pool and Boating Lake (closed 1980s, now a car park and waste ground) with the clifftop Wintestoke Gardens that — funded by Dame Janet Stancomb–Wills (1854–1932) — were completed in 1923.

4.1.02 It was reported in *The Thanet Advertiser and Echo* of 23rd April 1935 that the Ministry of Health had sanctioned the borrowing by the Council of just under £20,000 for "sea defences", provided the work be competitively tendered (the use direct labour had been intended). Tenders — which required that 90% of the workforce should be recruited locally — were called, with receipt on the 10th May (press report of 24th May). The lowest was submitted by Holborn Construction Co. Ltd. of London, whose price of £18,785 was accepted on the advice of Alec Adlington (1896–1985), Borough Engineer from April 1934 to October 1936. Separate from this was the contract of James Pulham & Son to build the Chine which — after an interview with Mr. J. R. Pulham — had already been approved in the sum of £3,350 plus £1,000 for the excavation of the cliff. It had also been agreed that this £4,350 would be defrayed from a £10,000 bequest of Dame Janet for sea front improvements.

4.01: UNDER CONSTRUCTION 1936
(NOTE CHUTE NEAR CENTRE RIGHT)

4.02: UNDER CONSTRUCTION 1936
(NOTE CONCRETE BLOCK BACKING)

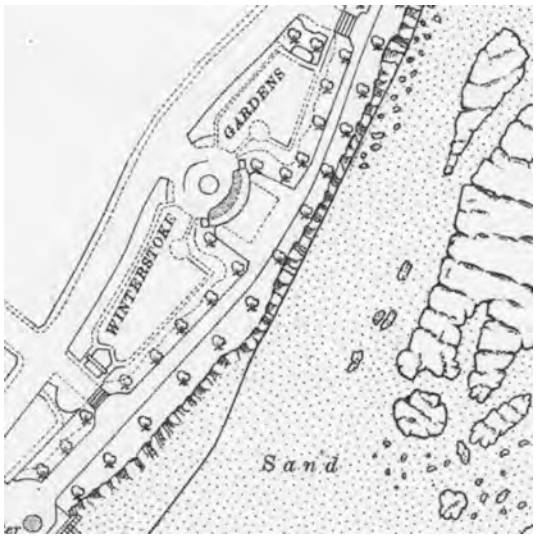
4.1.03 A detailed account of the works is provided by *The Thanet Advertiser and Echo* of 11th July 1936. Works on the foundations of the promenade began in August 1935, the sea wall being seven foot thick at the base and made of concrete faced with blocks made (cast) on the top of the cliff and lowered down with a 5 ton derrick. Lorry loads of concrete were delivered to the esplanade above and tipped down a chute burrowed up through the chalk of the cliff — a likely explanation for the (blocked) square hole visible towards the centre of the middle face of the rockwork (the upper flight of the chine is cut into the cliff while the lower flight is built–out beyond).

4.03: FLINT–FACED SEA WALL & CONCRETE SHELTER

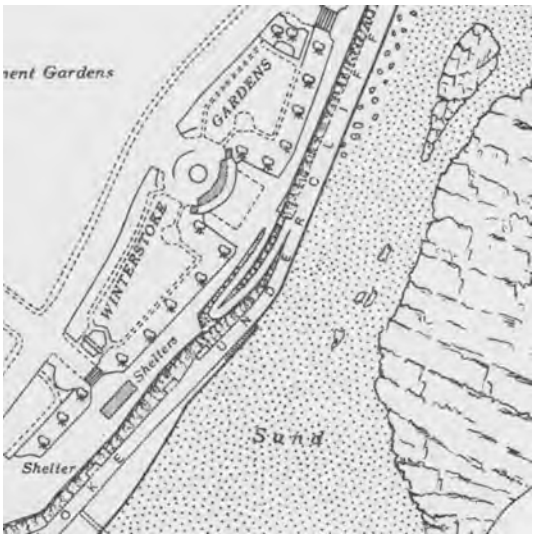
4.04: ASSUMED EXIT OF CHUTE FOR DELIVERY OF CONCRETE

4.05: UNDERCLIFF PROMENADE PRE WW2 (COURTESY MICHAEL'S BOOKSHOP)

4.1.04 The cliff was then scarped back to its current line, it being reported that 8,000 tons of chalk was "chiselled away" so as to fall to where — with the aid of a miniature railway and an excavator — it was dispersed and rammed to form the base of the new promenade. Concrete shelters were cast at the base of the cliff, the latter "faced with a wall of blocks made from the reddish hued Maidstone sand." New iron railings to the edge of the cliff were sub–contracted to R. Millett & Sons of Ramsgate.



4.06: OS MAP 1933 (REV. 1931)
SHOWING LINE OF CLIFF BEFORE ECC



4.07: OS MAP 1946 (REV. 1939)
SHOWING LINE OF CLIFF AFTER ECC

4.08: EAST CLIFF CHINE SOON AFTER OPENING (NOTE LACK OF PLANTING)

4.1.05 The Chine is described as “a great mass of rockery … towering like a miniature Cheddar Gorge” with the man in charge of the works (foreman), Mr. J. W. Hitching, claiming “it to be the largest of its kind on the coast”. John Hitching is also identified as having directed the construction of Madeira Walk, Winterstoke Gardens and the West Cliff Chine, and as resident in Ramsgate (listed as a retired landscape gardener in the 1939 England & Wales Register). After noting the 200 yard walk up the Chine and extolling the virtues of its nine shelters (with “comfortable teak seats”), the effusive reporter concludes that “So ingeniously has the rock been formed by expert workers that it is difficult to convince oneself that it is artificial. In reality it consists of rough cast blocks faced with cement.”

4.09: LOOKING DOWN ONTO TOP FLIGHT OF THE CHINE SHOWING ROWS OF PLANTERS (ASSUMED — ON BASIS OF CONCRETE LAMP POST — 1950s or 1960s)

4.1.06 At the opening ceremony on 10th July, Alderman Smith — chairman of the Works Committee of the Corporation — is quoted as saying that "Ramsgate had made a feature for nearly fifty years of her artificial rock gardens. They did not pretend that the new rock gardens resembled the 'Hanging Gardens of Babylon' but he had no doubt they would ultimately be made very attractive by their Pleasure Grounds Superintendent". Before cutting the ribbon, the Mayor added that the Corporation had since WW1 spend nearly £500,000 on seafront improvements. The East Cliff Chine was the last of Ramsgate's interwar cliff projects, and the last known rockwork of James Pulham & Son. High up on the Chine — and in one case lower down — can be found the initials of the (presumably) last of their rock workers: CF, TK (x2), SP, JT and CW; the name J. Todd is visible in one of the lower plant pockets.

4.10: UPPER FLIGHT OF CHINE c.1936 (COURTESY MICHAEL'S BOOKSHOP)

4.11: AIR VIEW OF CHINE (RIGHT) IN 1947 (EXTRACT BFA ref. EAW009013)

4.1.07 Examination of historic photos reveals little change since the completion of the Chine, other than in the nature and density of planting. Some timber seating has been lost to vandalism, and the iron railings to the upper promenade have been replaced by a modern steel balustrade (standards have been drilled into the PAR).

SIGNIFICANCE

4.1.08 The stepped, dogleg path of the East Cliff Chine is the most visually striking part of a large civil engineering project that in less than a year extended the undercliff promenade by over half a kilometre (about 600 yards). It is a towering, stratified wall of PAR that follows the scarped curve and horizontal beds of the chalk cliff, and which in its design unifies a number of 'geological' features including buttresses, pinnacles, caves (shelters), alcoves, ledges and plant pockets; the result is an awe–inspiring composition of much architectural interest. In terms of the work of James Pulham & Son, the East Cliff Chine is PAR on a gigantic scale, albeit perhaps not as closely aligned with the ideas set out in *Picturesque Ferneries and Rock Garden Scenery* as other sites and unusual in its use of concrete blocks. It is also the last of a series of architecturally impressive cliff paths that — starting with the Newgate Gap in Margate (1901) — are characteristic of the later work of the firm. The East Cliff Chine also extends the design of Winterstoke Gardens and is a key element of the Ramsgate Conservation Area as well as a part of Ramsgate's nationally important group of PAR structures, a record of the Pulham rock–building business over its last 42 years.

5. CONDITION

5.1 Introduction

5.1.01 Set out in this section is a detailed summary of the condition of the PAR of the East Cliff Chine as recorded in 2019, noting the limitations on access (refer 1.6.02). Its arrangement reflects the sequential description of deterioration used in Section 7 of the Overview: Stage One Report (which must be read in conjunction):

- Soiling and discolouration.
- Erosion and loss of coatings.
- Defects in backings.
- Cracks and fractures.
- Previous repairs.

Presented and discussed under each of these headings is what was observed, along with an assessment of the need for maintenance and repair. A concluding summary precedes the Works Plan set out in Section 6. REFERENCE SHOULD ALSO BE MADE TO THE REPORT, SUPPORTING INFORMATION AND GUIDANCE ON PLANTING (MAINTENANCE AND MANAGEMENT) PREPARED BY IRENE SEIJO, LANDSCAPE ARCHITECT.

5.1.02 Where attention needs to be drawn to specific locations, observation and discussion refer to the survey zones (key plans are provided as Appendix C). As noted in 1.4.06, a full set of survey sheets and related photo archive — sorted and labelled in terms of zone references — is provided separately in digital format. Surveys were carried out on: 3rd September (zones A13 to A26); 4th September (A28 to A38, B36 to B39, B42 & B43, and B46); 5th September (B11 to B35, B40 & B41, B44 & B45; highest part of zone C); 6th September (A01 to A03); 9th October (A04 to A11A); 10th October (A11B to A12 and B04 to B10); 11th October (B01 to B03); 2nd December (C01 to C08); 3rd December (C09 to C15); and 4th December (balustrades).

5.1.03 Underpinning the survey (refer 1.3.02) — and therefore all advice on the maintenance and repair of the East Cliff Chine PAR — is the PHILOSOPHY of 'informed conservation', the basis of which is understanding and justified need. This leads to a 'minimalist' way of thinking which aims to make the best use of resources, accepting things 'as found' and that — in the context of the rockwork — it is neither desirable or realistic to make good all instances of deterioration, i.e. the 'patina of age' is integral to special interest and no attempt should be made to present the PAR 'as new'. The aim is to preserve — and perhaps enhance — significance in the face of loss or damage due to lack of maintenance or want of repair, while avoiding needless renewal or restoration. It presumes that as much of the existing rockwork as possible (backing and coatings) should be retained, other than where removal is necessary to mitigate a threat to significance. Hence the reason why in many cases it is acceptable to 'leave alone' and simply maintain rather than attempt repair.

5.2 Soiling and discoloration

OBSERVATIONS

5.2.01 Notwithstanding some fading (loss) of colour due to surface erosion — the norm for Ramsgate's collection of PAR, especially in an exposed sea–facing location — the rockwork of the East Cliff Chine is only lightly soiled:

- **Lichen** coverage was moderate, though mainly on surfaces sheltered from sea spray, albeit not in areas where efflorescence and sulfates are present.
- **Airborne dirt** was often present where lichens are absent, albeit soiling is in the main light to imperceptible. It is most notable to areas of low–level rockwork that are less 'washed' than those above. Dirt has also built up within seating alcoves.
- **Surface efflorescence** beneath overhangs and in other sheltered areas was observed generally, and in some a instances had converted to a **sulfate** crust albeit — due to a lack of pollution — these are often white only sometimes grey or black. There were also areas where the PAR has been bleached by run–off, notably at the PAR–chalk interface (A01, A12, A13, A28 B20, B22 & B28).
- **Biological deposits** in the form of concentrations of dog urine were present at corner locations (A10, A11A, A11B, B01, B02, B03, B04, B07, C04, C07, C08, C12 & C15) & D01). Bird fouling was minor and generally limited to high level rockwork near where sea gulls are nesting in putlogs (refer 2.2.02).
- **Graffiti** was extensive. Chalk was the most common marker, though spray paint — often faded — was also present, the most visible instances being in zones A20, A21, A27C, A35, B04, B05, B07–B10, B22, C03, C05 & C11. Felt tip pen were also noted (B07 & C09). Most graffiti was at low level save where the 'artist' had bravely scaled the rockwork to leave their 'tag' (e.g. B22).

Isolated cases of metal staining included around the missing plaque (refer 2.2.03).

5.01: LICHENS IN A LOCATION SHELTERED FROM THE PREVAILING WIND (A27C)

5.02: MINIMAL RAIN WASHING PERMITS BUILD–UP OF AIRBORNE DIRT (A10)

5.03: EFFLORESCENCE + LICHENS (B05)

5.04: SULFATE CRUST (B01)

5.05: IMPACT OF CANINE URINE (B01)

5.06: CHALK & SPRAY PAINT GRAFFITI (B10)

DISCUSSION

5.2.02 Lichens and the relative lack of airborne dirt are indicative of the good condition of the PAR coating generally, the result of it being remoted from historically polluted urban areas, along with a high degree of exposure to driving rain. i.e. rain washing.

5.2.03 Conversely, efflorescence and sulfate crusts (due to chemical action) are always associated with the undersides of overhangs and other sheltered areas where salts — from the sea air and to an extent the chalk behind the PAR — are not readily washed away; while the crusts (which are almost certainly 'cross–liked' with the render coating and hence hard to remove) may eventually play a role in surface erosion (refer 5.3.03), the white blooms and crystals and in the main benign and should be accepted as part of the historic aging of the rockwork. Urine is also a source of salts with the observed concentrations having caused permanent staining and now

threatening surface damage, aside from the unpleasant smell and possible heath implications; control needs to be considered.

5.2.04 Graffiti in and around shelters — especially those with seats — and at low level generally, is almost impossible to control though chalk that is exposed to the rain will eventually wash away; while rubbing chalk too early can lead to permanent staining, light sponging may be employed in sheltered areas. Although no instances of spray painting were offensive and most were unobtrusive, removal of the most prominent and accessible examples (A20, A21, B04, B05, B07–B10, C03, C05 & C11) would be prudent, lest others should be tempted to add their tag. However, graffiti removal (refer D3.08 of Appendix D) can be damaging; old spray paint is best left to fade.

NEED FOR MAINTENANCE & REPAIR (CLEANING)

5.2.05 Soiling and discolouration of the East Cliff Chine rockwork is a minor issue and there is no pressing need for cleaning, notwithstanding the need for some graffiti removal with subsequent control being an essential part of routine maintenance (refer 6.3.06 & 6.3.07). Preventing dogs from urinating on the PAR is a difficult issue, one that can probably only be controlled via a programme of public information and education, albeit the possibility of repellents could be explored.

5.3 Erosion and loss of coatings

5.07: TYPICAL EXAMPLE OF MINOR LOSS OF PAR COATING (B01)

5.08: EXTENSIVE LOSS OF SURFACE WITH HOLLOWNESS & GRANULATION (A03)

OBSERVATIONS

5.3.01 Despite widespread — and fairly evenly distributed — isolated areas of minor loss (often with the backing grinning–through), the coatings of the East Cliff Chine PAR are generally in good condition, especially at high level. However, areas of more intensive pitting mixed with hollowness and granulation leading to more extensive areas of surface loss were noted at low level, especially in zones A01 to A04, A06

(A05 is the concrete shelter), A08 & A09, B03, B09, C09 and C13; loss and hollowness were particularly severe in A03 and A04. In most of these areas the (mainly) concrete backing was exposed. Blistering and surface loss to the undersides and leading edges of stone–slab overhangs was extensive; almost all cantilevered plant pockets and other features are affected, notably the roofs of the shelters. Hollowness and surface loss adjacent fractures was also evident (e.g. C08 & C12).

5.09: UNDERSIDE LOSS (B10)

5.10: LOSS OF SURFACE AT FRACTURE (A32)

DISCUSSION

5.3.02 The degree to which the surfaces of the rockwork been eroded generally is consistent with its exposed, coastal environment and over 80 years of weathering. Likewise minor pitting and loss, sometimes where vulnerable arises have been chipped. While edges have in a few cases been exposed so as to potentially increase wetting (e.g. C09), most areas of minor loss have weathered–in and unlikely to deteriorate further, noting that due to the need for safe high level access, isolated surface repairs above paving level are unlikely to be economic. However, the sheer scale of the Chine means that instances of pitting or minor loss are barely visible and hence do not intrude on significance. Losses near the base of the rockwork in zones A08, A10, A11A & B01 are good examples of impact damage, the PAR having most likely been hit by service vehicles driving along the Promenade.

5.3.03 As with surface effloresce and sulfate crusts (refer 5.2.03), the observed instances of more widespread pitting, hollowness, granulation and surface loss (A01 to A04, A06, A08 & A09, B03, B09, C09 and C13) are all in areas where the build–up of salts has reached the point where the render coating has been weakened by chemical action (refer 7.3.03/05 of the Overview: Stage One Report). In the case of the East Cliff Chine, orientation and elevation are the key factors. All of the most seriously decayed (or lost) areas of surface face southwest and are low down. They are directly exposed to the prevailing wind which — coming in off the sea and nearby beaches — will often be laden with high levels of salt (sea spray) and fine grains of sand; add to which they

are also subject to salt–laden run–off from the high rockwork faces above. Salt levels and abrasion will therefore be intensified making detached or friable surfaces more prone to deep erosion and loss. Hence the extensive 'preferential' weathering of the southwest facing coating in zones A03 and A04. The influence of the plan of the Chine (refer 2.2.01) on the weathering of the PAR is subtle — the condition of its surfaces is notably improved as the cliff face curves north, away from the prevailing wind. Salts will also have exacerbated the loss of surface from the undersides of overhangs.

5.3.04 Given the close proximity of a large mass of chalk and hence calcium carbonate, white crystalline veins that align with mortar joints in the blockwork backing (especially towards the bottom of the lower face, above the fair–faced concrete block plinth) are most probably the mineral thaumasite, indicating as noted in 2.3.01 the use of modern OPC. Expanding crystals have resulted in cracking (refer also 5.5.03) that has broken–up the surface of the PAR and encouraged detachment. Frost action will also be a factor in underside loss; also the detachment of render adjacent fractures, albeit the differential movement of detached and dislodged portions of rockwork will be a contributory factor (refer 5.5.01, third bullet point).

NEED FOR MAINTENANCE & REPAIR

5.3.05 The general pitting and loss of rendered surfaces is a minor issue that warrants no more than regular inspection (refer 6.3.02 to 6.3.05), save perhaps occasionally work to mitigate the few exposed edges and backings that might be vulnerable to further water decay due to water penetration. Dressing (careful trimming) the render to remove loose material and water traps would be a practical short to medium–term option. Beyond which, the skilfully–matched restoration of missing areas of coating would be the preferred method of repair, albeit the economics of working at height (refer 5.3.02) would suggest that any necessary works to surfaces are combined with repairs to fractures as scheduled in 6.4.02; sound surfaces can be re–attached by micro—grouting and maybe pinning with lost areas repaired to match the original.

5.3.06 Renewal and restoration of the hollowed, granulated and lost areas of surface as considered in 5.3.03 is also a possibility. However, as the high exposure to salts and southwest orientation — key agents of decay — cannot be changed, the deterioration would in time be repeated unless a sulfate–resisting cement were used for the new coating; which raises issues over the authenticity of historic fabric, although any decision on repair must stem from further investigation (D1.01 of Appendix D). There is also a need to consider the interaction between coatings and the concrete block backing, the latter quite possibly being more of a reservoir of salts that would be the case with brick or stone. In which context it would be prudent to continue to monitor and — in line with the philosophy set out in 5.1.03 — accept the localised surface loss evident in zones A01 to A04, etc. as part of the historic 'weathering' of the PAR, subject to review as part of the next quinquennial (five–yearly) survey update.

5.3.07 Underside loss does not visually detract from the East Cliff Chine rockwork as a whole and is best accepted, given the inherent difficulty in ensuring that render coatings adhere to the edges and soffits of the stone slabs. Veins of sulfate attack (refer 5.3.03) should be monitored as part of the inspection regime outlined in 6.3.03.

5.4 Defects in backings

5.4.01 A few instances of impact damage to backings (that also affect coatings — refer 5.3.02) were observed: A08, A10, A11A & B01. There were also areas where the backing has been lost but due to location cannot have been caused by impact, e.g. C08). Many of these seem to relate to fractures, though frost may have played a part, noting that the tight chemical bond between coating and backing means that in the main one cannot fail without the other. The decay (powdering and delamination) of stone slab overhangs was also generally evident. Making good impact damage will by necessity be a precursor to the repair of the sort of vulnerable areas noted in 5.3.05. As in the case of coatings (refer 5.3.07), underside decay of stonework is best accepted, though ongoing loss should be monitored and if necessary pinning or consolidation might be considered. Defects in backings as a result of fracture and displacement are covered by 5.5.01 to 5.5.05 below.

5.11: DEEP LOSS OF CONCRETE BACKING (C08) — POSSIBLY FROST DAMAGE.

5.12: BREAK–DOWN & DELAMINATION OF STONE SLAB FORMING OVERHANG (B04B)

5.5 Cracks and fractures

OBSERVATIONS

5.5.01 Fine surface cracking is almost universally present, sometimes manifest as isolated occurrences but generally evident as crazing; much of the cracking is weathered and overlain with dirt. Although less extensive, fractures (cracks that penetrate backings — refer 7.5.03 of the Overview: Stage One Report) were present across much of the rockwork, though with a greater concentration (about 45%) on the lower face:

- Significant hairline fractures up 1–3 mm in width were present in zones: A03, A06, A08 (2 no), A09, A11A, A11C, A15, A16, A18, A22, A23 (2 no), A27B, A30, A35, A37, A38, B01 (2 no), B03 (2 no), B04 (2 no), B06 (2 no), B07, B08, B23, B24, B26, B33, B41(2 no), C06 (2 no), C08 (2 no), C09, C10 (5 no), C11, C13, C14 and C15. Most were (near) vertical; horizontal fractures were also noted.

- Major fractures — mainly vertical but with associated diagonal and horizontal components — were present in zones: A01 (2 no), A03 (3 no), A06, A16, A18, A31, A33 (2 no), A35, B22, B32, B35, C01 (3 no), C10 (3 no) and C12 to C14.
- Wholesale displacement involving fractures was present in zones: A03, A16, A17, A22, A32, A34, B31, C01, C07, C08, C10 and C14; and although at the time of the obscured by vegetation, it is suspect A19.

Fractures (B31) had resulted in a small plant pocket becoming dislodged, i.e. it was loose when touched. Since the Chine was at that time closed, the decision was taken — on the grounds of public safety — to deliberately topple and let fall a precariously balanced piece of PAR. Otherwise, no fractures seriously threatened the collapse of any other plant pockets or features, save there is some concern over the situation in A17, A18, (possibly) A19, and A32 & A34 immediately above (refer 5.5.04).

5.13: FINE SURFACE CRACKING (C12)

5.14: HAIRLINE FRACTURE (A11A)

5.15: MAJOR FRACTURE (B22)

5.16: FRACTURE + DISPLACEMENT (C07)

DISCUSSION

5.5.02 Weathering and dirt means that much of the fine cracking is historic and, given that it is generally sound and does not appear to be worsening, probably dates back to soon after the application of the coating, i.e. the majority is due to overworking or initial drying shrinkage (refer 7.5.02 of the Overview: Stage One Report) and does not present a problem. Some of the coarser cracking is associated with friable surfaces and deterioration due to chemical agents (refer 5.3.03).

5.5.03 While some hairline fractures — mainly horizontal and especially near the bases of plant pockets — are likely to a consequence of the expansion of crystalline veins, i.e. sulfate attack (refer 5.3.03), the majority of fractures and associated displacement are due to unmanaged, woody vegetation, the greatest threat to the ongoing conservation of the East Cliff Chine PAR. Also ivy and other invasive plants that have self–sown in fissures and sometimes fake cracks.

5.17: CRACKING — CHEMICAL AGENTS (A01)

5.18: CRYSTALLINE VEINS + CRACK (A05)

5.19: CRACKING DUE TO VEGETATION (A16)

5.20: FAILURE DUE TO ROOT DAMAGE (B31)

5.5.04 Due to its shallow depth and close proximity to the relatively hard, alkaline chalk of the natural cliff, there is no soil behind plant pockets into which shrubs, etc. can expand their roots. It is probably for this reason that historic images of the Chine show it to have been only lightly planted (see figure 4.09). As well as boles outgrowing and bursting plant pockets, the roots of shrubs such as tamarisk (which appears to be self–sown) and ivy seem to have spread downward behind the concrete block backing of the PAR, putting it under pressure and causing fractures in the faces of rockwork *below* plant pockets. This mode of fracture (and displacement) is most prevalent in the lower face, above and to the left (as facing) the concrete shelter, i.e. zones A17, A18, A19, A32, A33 & A34. At least two large plant pockets in this area (A16 and A17 + A32) exhibit two vertical fractures, meaning that large pieces of PAR are no longer tied–back into the main structure of the Chine. They are standing by virtue of their weight and perhaps the 'knitting' effect of the mat of roots behind; they also sit some 3–5 metres above the East Cliff Promenade. Roots behind the PAR also seem to be a factor in the fracturing of parts of the upper face, e.g. C07 and C08.

5.21: FRACTURE OF PLANT POCKET (A32)

5.22: FRACTURE + DISPLACEMENT (A34)

NEED FOR MAINTENANCE & REPAIR

5.5.05 Although often highly visible and in some cases involving considerable displacement, there are no instances where cracks or fractures are of immediate (short term) need of repair PROVIDED VEGETATION IS BROUGHT UNDER CONTROL AND MANAGED BY WAY OF ROUTINE MAINTENANCE, and that monitoring (especially of the area of the lower face discussed in 5.5.04) is an integral part of the inspection regime described over paragraphs 6.3.02 to 6.3.05. Following–on, the repair of all but the most minor fractures should — by 'closing' the rockwork to the ingress of self–sown vegetation — arrest the ongoing penetration of roots and woody stems:

- **Hairline fractures** can in the main be left and monitored albeit micro–grouting would be a good way of filling the widest (up to about 3 mm).

- Depending on width, **major fractures** should be repaired by grouting or filling with a weak, lime mortar. All filling should be set back so as to avoid the need to cut into and match otherwise sound surfaces. Maintaining the 'shadow' of the fracture will also ensure an 'honest' repair; a 'matching' repair would — by obscuring the fact that the repaired rockwork has a subtly different shape as compared to the original — distort the intention of the rock builders.
- Where fractures have led to wholesale **displacement**, the rockwork will need to be recorded, carefully taken down and rebuilt with original fabric eased back into position and where necessary surfaces skilfully repaired to match existing. Also the reinstalment of the detached plant pocket to B31, its salvaged fabric now resting within planting at the base of the middle face.

Filling and rebuilding will in all cases require localised clearance of all vegetation and soil, and — in order to 'stitch' historic fabric — the introduction of short lengths of helical, stainless steel bar to the 'earth' side of the fracture. SAVE CUTTING BACK, ON NO ACCOUNT MUST VEGETATION BE REMOVED FROM ANY OF THE PLANT POCKETS WITHIN ZONES A17, A18, A19, A32, A33 & A34 OTHER THAN AS PART OF A PLANNED PROGRAMME OF REPAIR THAT INCLUDES SAFE ACCESS AND CLOSURE OF THE PROMENADE.

5.6 Previous repairs

5.6.01 There is no visible evidence of any significance previous repair to the East Cliff Chine PAR, save minor instances of the render coating having been made good around the built–in ends of timber slats that have been renewed when repairing seats.

5.7 Ancillary elements

5.7.01 Considering those ancillary elements that directly impact on the PAR:

(a) The concrete shelter (A05) — which appears to support the rockwork above — is in poor condition with reinforcement exposed by loss of cover. A structural survey with a view to repairs is needed.

(b) Also at Promenade level, the blockwork base to the PAR is in need of extensive repointing and some surface repair, add to which there is in places an open joint along its head that is vulnerable to rain penetration and needs to be filled; grouting behind the blockwork may also need to be considered.

(c) Gullies within the paving of the Chine were sometimes blocked with sand, add to which. It is suspected that some of the metal staining noted in 5.2.01 might be emanating from broken cast iron below–paving drains; clearance and a CCTV survey is recommended.

The railings that have in some cases been driven into the top of the rockwork (refer) do not appear to be causing any problems; nor the concrete coping that caps the upper face of the Chine (refer 2.2.05 and 4.1.07). Likewise seats and paving, albeit both are sometimes in need of repair.

5.23: CONCRETE TO SHELTER (A05)

5.24: FAILED CEMENT POINTING (A06)

5.25: OPEN JOINT TO BLOCK PLINTH (A08)

5.26: INTENSIVE METAL STAINING (A23)

5.8 Summary and conclusion

5.8.01 Overall, the East Cliff Chine PAR is — with the exception of fractures due to unmanaged vegetation — in good condition. Soiling and discolouration are minor concerns, notwithstanding the dog urine issue. The deterioration of coatings is little more than the 'patina of age' and although widespread, underside loss is also best accepted as an integral part of the history of the rockwork, albeit veins of sulfate attack must be monitored. Where the weathering of southwest facing surfaces has led to breakdown and areas of lost coating, skilfully–matched surface repair may be considered. Hollowed or lost surfaces adjacent fractures should be stabilised and similarly repaired. Structurally sound with no major issues with the backing or surface cracking, the only serious deterioration of the PAR is the fracturing of the rockwork due to unmanaged vegetation, with repair a serious medium–term necessity.

6. MAINTENANCE & REPAIR PLAN

6.1 Introduction

6.1.01 Set out in this section of the report is a prioritised maintenance and repair plan for the East Cliff Chine PAR that — on the basis of its condition — identifies work that needs to be carried out to:

(a) mitigate (as far as possible prevent) the further deterioration of its fabric;

(b) where necessary, put it in a state where it is structurally stable; and

(c) ensure its long–term conservation.

Its purpose is to provide the HAZ Partnership — especially Thanet District Council, which owns the rockwork — with a practical conservation strategy that can be implemented as and when funds and resources permit, as well as the confidence to (where appropriate) 'do nothing'. While going into detail for the purposes of ensuring high standards of maintenance and repair — and to provide a basis for discussions with the local planning authority (Thanet District Council) and other interested parties — THE STRATEGY (ESPECIALLY APPENDIX D) IS NOT A SPECIFICATION OR SCHEDULE FOR THE IMPLEMENTATION OF THE RECOMMENDED WORKS AND MUST NOT BE USED AS SUCH. Other than maintenance (where the report can be used a basis for action), the strategy is merely a starting point for a fully–specified and scheduled programme of works.

6.2 Preamble

PROCUREMENT

6.2.01 It is assumed that maintenance will continue to be carried out by a mix of volunteers and Council staff or contractors. Repairs should generally be undertaken by conservators experienced in the treatment of PAR or similar surfaces (e.g. stonework, stucco and plasterwork) with some understanding of early and modern artificial cements. Building contractors specialising in historic buildings may also have access to the necessary skills. Some types of repair may be within the capabilities of general contractors subject to hands–on training aimed at widening the skills base.

HEALTH & SAFETY

6.2.02 Attention is drawn to the fact that future works of all types (including maintenance) are likely to fall within the remit of the *Construction (Design and Management) Regulations 2015*. These impose on those commissioning building works (Clients) a duty to make suitable arrangements for managing projects including: allowing sufficient time and resources; making sure that relevant information is provided by others duty holders; that designers and contractors carry out their duties; that welfare facilities are provided; and a Health & Safety File is kept. The main risks associated with any work to the East Cliff Chine PAR are (i) the close proximity of members of the public; and (ii) access to maintain or repair rockwork at height.

IMPLICATIONS OF HERITAGE STATUS

6.2.03 It is assumed that — after further investigation, samples and trials as outlined in D1.01 & D1.02 of Appendix D — minor repairs will be carried out using the same materials and techniques as the existing fabric, and hence will not affect the significance of the East Cliff Chine PAR as an integral part of a designated heritage asset (Grade II listed building in a conservation area). Likewise routine maintenance. It is therefore unlikely that listed building consent will be required albeit if certainty is needed, a Certificate of Lawful Proposed Works could be applied for (refer paragraph 9 of *Historic England Advice Note 2: Making Changes to Heritage Assets* published in February 2016). Anything other than minor repair should be discussed with the local conservation officer and agreement sought on any need for consents. If works are to be carried out piecemeal over a period of time, as and when funds permit, the possibility of Listed Building Heritage Partnership Agreement could be explored, essentially a 'term' consent for routine works that removes the need or successive consent applications.

RECORDS

6.2.04 The dates and a brief description of all maintenance and repair activities should be formally recorded in a dedicated register (which may be electronic); references to more detailed records and information should were appropriate be included.

6.3 Maintenance

DEFINITION

6.3.01 Regardless of any future repairs, the maintenance of the East Cliff Chine PAR should always be considered a **high** priority (refer 6.4.02). The Historic England (formally English Heritage) document *Conservation Principles* published in April 2008 defines maintenance as "routine work regularly necessary to keep the fabric of a place in good order" which is distinct from periodic renewal, repair (refer 6.4.01) or restoration.

INSPECTION

6.3.02 The key to the maintenance of any building or structure — including those which are statutorily listed — is a planned inspection regime, tailored to circumstances and proportional to size, form, fabric, usage and significance. In which context, condition surveys are crucial, as is made clear in BS 7913:2013 *Guide to the conservation of historic buildings* and the *Conservation Basics* volume of the English Heritage (Historic England) *Practical Building Conservation* series.

6.3.03 Using this Stage Two survey, and the associated survey sheets and photos (refer 1.4.06) as a baseline and with reference to the key plans provide as Appendix C:

- An **initial** familiarisation inspection should be made, the aim being to ensure that those responsible for monitoring, etc. are able to readily spot new damage and other changes. The process will need to be repeated when anyone new becomes involved in the inspection regime. Due to the inaccessibly of the higher parts of the Chine, binoculars and high resolution digital photos should be used.

- The condition of the East Cliff Chine PAR should be monitored by way of a brief — albeit structured — **weekly** inspection.
- **Additional** inspections should be made out after any exceptionally heavy wind or rain, vandalism (including graffiti), vehicular impact or other unforeseen potentially damaging event.
- More detailed check should be made **twice a year**, after die–back of planting in late autumn or early winter and before spring–summer regrowth.
- **Localised** inspections should follow any clearance of vegetation that reveals rockwork that hitherto has been concealed.

The baseline survey should be revisited and if necessary updated every **five years**, albeit the focus should be on that which has changed and not a resurvey. High level access will require a mobile elevated platform.

6.3.04 Key points to note during inspections of the East Cliff Chine PAR are:

- Early evidence of self–sown vegetation in cracks (real and fake), fractures, crevices and fissures.
- New instances of soiling especially graffiti or biological deposits; the effectiveness of any campaign to reduce the impact of dog urine should be monitored.
- The lengths and widths of cracks and fractures, especially if new or recent (distinguished by sharp, clean edges). If there is any suspicion that cracks or fractures are propagating (getting longer and wider), simple monitoring should be put in place as Appendix D5.01.
- Impact damage, especially after vehicles have been driven close.

Notes and digital photographs should be dated and labelled by survey zone (the first image in each baseline photo set shows the zone boundaries) with use made of tablets and smart phones (useful when comparing ‘now’ and ‘then’). Full backups of all data must be kept on at least two desktop or laptop PCs which, along with any information in hard copy and the landscape guidance (refer 6.3.07), are accessible to all involved in caring for the East Cliff Chine; an archive should be established.

6.3.05 Information obtained via inspections should be used to inform and keep under review the need for maintenance or repair. New cases of deterioration should be assessed and classified as maintenance (6.3.06 & 6.3.07) or repair (6.4.01 to 6.4.03, as far as possible avoiding the expense of reactive maintenance (6.3.08).

ROUTINE MAINTENANCE

6.3.06 Beyond inspection, the primary focus of maintenance that is to be ‘carried out with forethought and control’ (planned maintenance) is vegetation control. As noted in 5.5.03, this is the biggest conservation challenge faced by those charged with caring for the East Cliff Chine rockwork. Unmanaged vegetation is the principal cause of cracks and fractures, the greatest threats to the long–term survival of PAR generally (refer paragraphs 7.5.03 and 7.5.04 of the Overview: Stage One Report).

6.3.07 Aside from any clearance required to permit fracture repairs (refer 5.5.05), the first step in managing the planting of the East Cliff Chine rockwork is to IMPLEMENT THE PROGRAMME OF REMOVAL **AND** SUBSEQUENT CONTROL AS RECOMMENDED IN THE SEPARATE REPORT AND SUPPORTING INFORMATION BY IRENE SEIJO, noting that any new planting should accord with landscape architect's advice. Removal should also be in accordance with the guidance provided in Section D2 of Appendix D, it being essential that vegetation is not pulled or uprooted in a way that further damages the PAR (root systems may be holding the rockwork together — refer 5.5.04 & 5.5.05); in many cases 'removal' will mean no more than cutting down and allowing roots to compost naturally. Ongoing management of planting is essential, and must include the early removal of self–sown growths from cracks (including fake), fractures and fissures.

6.01: VOLUNTEERS MAINTAINING THE PLANTING OF THE EAST CLIFF CHINE

REACTIVE MAINTENANCE

6.3.08 Allowance should also be made for unplanned (reactive) maintenance, i.e. the need to respond to unforeseen events such as fresh graffiti or vehicular impact. While graffiti should always be removed as a matter of priority (as D3.08 of Appendix D) 'reactive' works may be deferred, provided no further threat to historic fabric.

6.4 Repair

6.4.01 Historic England's *Conservation Principles* (refer 6.3.01) defines repair as "Work beyond the scope of maintenance, to remedy defects caused by decay, damage or use, including minor adaptation to achieve a sustainable outcome, but not involving restoration or alteration". For the purposes of this report, surface renewal (refer 5.3.05) and rebuilding (refer 5.5.05) are classed as repair and not restoration.

6.4.02 In order to assist the HAZ Partnership and Thanet District Council with future planning for the East Cliff Chine PAR, recommended works are prioritised:

- **High:** to be carried out as soon as possible — work to mitigate an immediate threat to historic fabric; also threats to the health and safety of persons.
- **Medium:** to be undertaken when resources permit — work which should be carried out as a matter of good practice in order to conserve PAR.
- **Low:** to be planned for long term — work to recover or enhance significance (including justifiable restoration) which can be deferred.

Prioritisation will help ensure that funds are targeted to greatest effect. However, these priorities are not rigid and works may be brought forward if funds are available, or if combining works is more efficient e.g. to make best use of temporary works.

Priority	Work(s) + survey zone(s) as identified in Section 5	Appendix D refs.
High	Public information campaign on dog urine	n/a
	Monitoring of fractures to A17 to A19, & A32 to A34	n/a
	Graffiti removal (aerosol paint): A20, A21, B04, B05, B07 to B10, C03, C05 & C11	D3.08
Medium	Surveys of concrete shelter (A05) and drains	n/a
	Repointing + localised sealing of blockwork base	n/a
	If needed, local (as + when) redressing of surfaces	D4.01
	Hairline fracture monitoring + repair: A03, A06, A08 (2 no), A09, A11A, A11C, A14 (3 no), A15, A16, A18, A22, A23 (2 no), A27B, A30, A35, A37, A38, B01 (2 no), B02 (2 no), B04 (2 no), B06 (2 no), B07, B08, B23, B24, B26, B33, B41 (2 no), C06 (2 no), C08 (2 no), C09, C10 (5 no), C11, C13, C14 & C15	D5.01 or D5.02 and D5.06 + maybe D4.02 and D4.03
	Major fracture repair: A01 (2 no), A03 (3 no), A06, A16, A18, A22, A28, A31, A33 (2 no), A35, B22, B32, B35, C01 (3 no), C10 (3 no), C12, C13 & C14	D5.03 or D5.04 and D5.06 + maybe D4.02 and D4.03
	Rebuilding: A17, A32, A34, B31, B32, C07, C08 & C12	D5.05; D5.06 + maybe D4.03
Low	Surface renewal: A01 to A04, A06, A08 & A09, B03, B09, C09 & C13	D4.02

6.4.03 This table can be expanded in terms of detail and — along with the key drawings (Appendix C) and Appendix D — form the basis of cost planning and thence action.

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APPENDICES

A SURVEY PROFORMA

B BASE PHOTO EXAMPLES

C KEY DRAWINGS

D OUTLINE REPAIR SPECIFICATIONS

E LIST ENTRY

APPENDIX A

SURVEY PROFORMA

Christopher Garrand Consultancy **Sheet Number: _____**

_____September/October/December 2019

Ramsgate: East Cliff Chine PAR Survey

SOILING + DISCOLOURATION

☐ Algae + Lichens ☐ Mosses, etc. ☐ Airborne dirt ☐ Efflorescence

☐ Sulfate crusts ☐ Metal staining ☐ Biological deposits ☐ Graffiti

Comments+ cross reference to photos

EROSION + LOSS OF COATINGS

☐ Generally ☐ Hollowness ☐ Blistering ☐ Total loss

Comments including extent, likely cause + cross reference to photos

DEFECTS IN BACKING

Description + comments including extent, likely cause + cross reference to photos

CRACKS + FRACTURES

☐ Fine surface ☐ Fractures ☐ Displacement ☐ Collapse

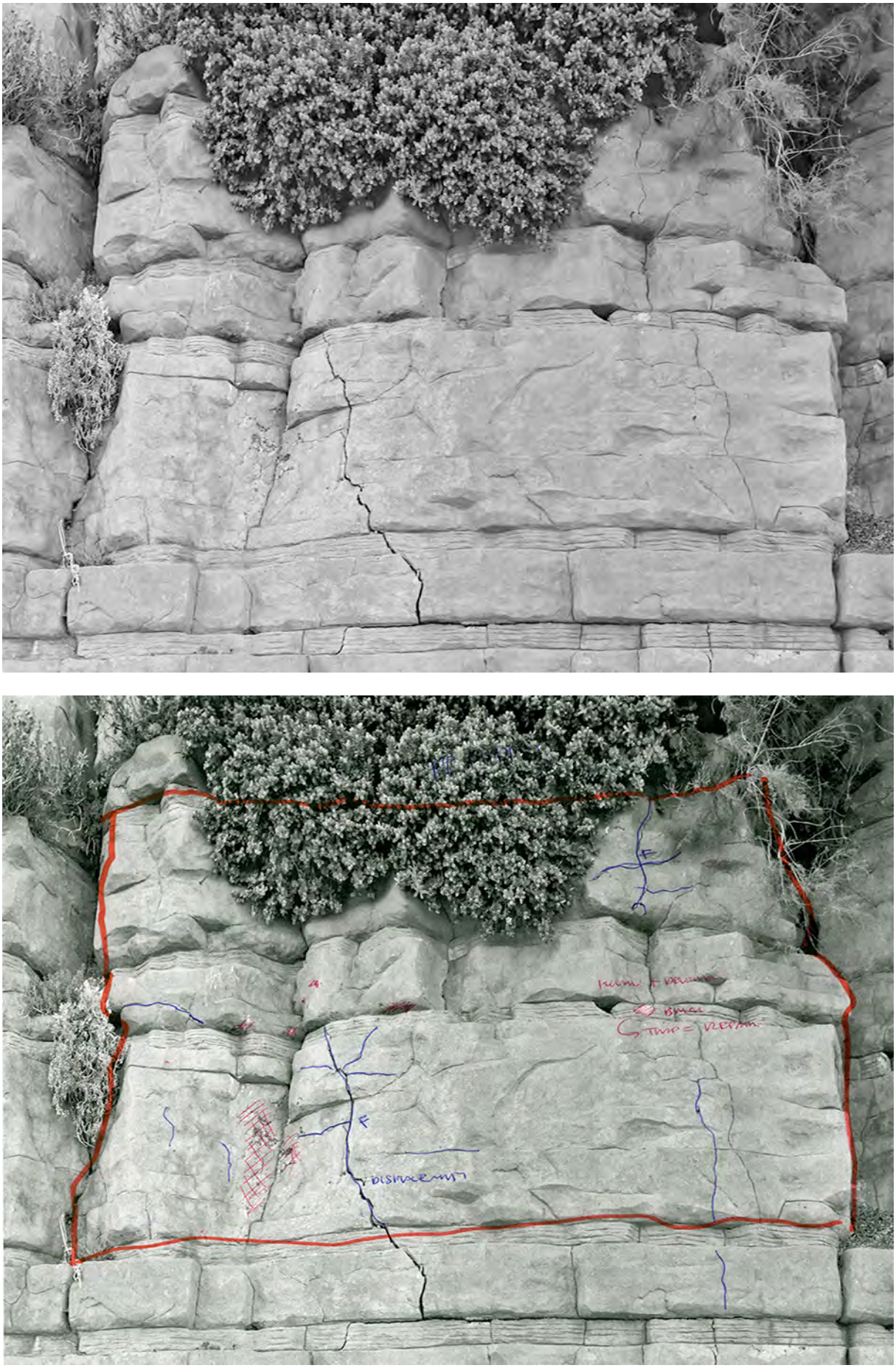
Comments including extent, likely cause + cross reference to photos

PREVIOUS REPAIRS

Description + comments including extent + cross reference to photos

APPENDIX B

BASE PHOTO EXAMPLES



BASE SURVEY PHOTO (TOP) & MARKED–UP COPY (BOTTOM)

APPENDIX C

KEY DRAWINGS

Insert C
(3 x A3 pages)
here

APPENDIX D

OUTLINE REPAIR SPECIFICATIONS

D1 Preamble

D2 Vegetation removal

D3 Cleaning

D4 Surface repair

D5 Fracture repair

D1 Preamble

INTRODUCTION

Set out in this Appendix is technical information to guide the specification of repairs to Pulhamite Artificial Rockwork (PAR) of East Cliff Chine. The approach is 'conservative' in that it presumes the maximum retention of historic fabric, and repair methods which are compatible with original materials and construction. It covers:

- Vegetation removal.
- Cleaning.
- Surface repair.
- Fracture repair.

SPECIFICATIONS ARE PROVIDED FOR GUIDANCE ONLY AND SHOULD NOT BE USED TO PROCURE ANY WORKS; THEIR PURPOSE IS TO INFORM THE SPECIFICATIONS OF OTHERS, TO WHICH END THEY SHOULD BE ADAPTED AND DEVELOPED TO SUIT THE CIRCUMSTANCES OF A SPECIFIC PACKAGE OF WORKS.

D1.01 FURTHER INVESTIGATION

Given the need to understand the chemical mechanisms that appear to be largely responsible for effloresce, sulfate curst and loss of surface — AND TO ENABLE THE DESIGN OF COATING MIXES FOR REPAIR — samples of PAR from a variety of locations should be submitted for petrographic (thin section) analysis by a UKAS accredited laboratory. The purpose of the analysis is to identify the:

- composition of the coating including binder to aggregate ratio, mineralogical content; grain size and shape; and
- the presence of salts and any chemical reactions that have caused the break down of coatings.

Pigment (electron microscope) analysis should also be undertaken. Exposed concrete backings should also be tested and, if rebuilding, brickwork mortars.

D1.02 SAMPLES & TRIALS

For all types of repair, allowance should be made for samples and trials, with particular attention paid to cleaning and the quality of surface repairs. See also the introductions to Sections D3 an D4.

D1.03 RECORDING

All trials should be written up, and repairs should be fully recorded 'before' and 'after' with allowance included for written reporting by conservators and others. See also paragraphs 6.2.04 and 6.3.04 of the main body of the report.

D2 Vegetation removal

INTRODUCTION

Other than where removal is required to enable repairs, it is assumed that works to vegetation generally will be as set out in the SEPARATE REPORT, SUPPORTING INFORMATION AND GUIDANCE PREPARED BY IRENE SEIJO to which the guidance provided in this section is supplementary.

D2.01 YOUNG & SOFT ROOT GROWTHS

First shoots and soft–rooted plants can be carefully hand–plucked from cracks and open fissures, perhaps with the help of tools. Vegetation with soft roots may be carefully uprooted albeit cutting down to ground level and leaving the roots to decay (compost) into the ground is generally preferable.

D2.02 IVY & WOODY SHRUBS

Ground–rooted ivy and woody shrubs should be cut back to ground level, root balls loosened and as much bark as possible stripped, leaving the stumps to die as the roots decay. It may in some instance be necessary to also treat stumps with a suitable herbicide (e.g. Roundup Tough Ready by Monsanto UK Ltd.):

(a) Cut back stumps to expose a fresh surface immediate prior to treatment, and treat with herbicide brushed direct onto the freshly cut face.

(b) Do not apply herbicide on a windy or wet day, immediately after frost, or when the PAR is saturated following heavy rain noting that HERBICIDES ARE TOXIC.

Deeply–rooted ivy and woody shrubs to be removed from open fractures, fissures, etc. should also be cut back and if necessary treated with — in the case of ivy — a systemic herbicide applied to the leaves before cutting. Decayed roots, etc. should be carefully removed by hand, using a hook to reach deeply–embedded material; on no account should roots be pulled or jerked. In the case of large stumps, arboricultural advice should be sought.

D2.03 TREES

Full removal of trees should only ever be on the advice of an arboriculturalist (not a tree surgeon). Stumps should be treated to prevent regrowth and left to decay (compost) and not ground–out. Refer paragraph 6.3.08 of main body of the report for information on the PROTECTION OF TREES IN CONSERVATION AREAS.

D2.04 CLEARANCE OF PLANT POCKETS

Vegetation should be removed or cut–down to ground level as D2.01 to D2.03. The soil surrounding woody boles should be excavated by hand so as to expose the root ball, which must then be systematically cut into sections and removed piecemeal along with all additional soil. Roots that extend beyond the plant pocket should be cut, treated as D2.02 and left insitu; dismantling as D5.05 will ease clearance.

D3 Cleaning

INTRODUCTION

While cleaning of the East Cliff Chine is not generally required (paragraph 5.2.05 of the main body of the report), there are instances when removal of soiling may be beneficial, e.g. when undertaking surface repair (refer D4.02) or when removing fresh graffiti. CLEANING SHOULD ONLY BE CARRIED OUT ON THE BASIS OF SUCCESSFUL, FULL DOCUMENTED TRIALS THAT CAN EASILY BE REPLICATED NOTING THAT UNDER NO CIRCUMSTANCES MUST 'JET WASHING' OR 'SAND BLASTING' BE USED; BOTH ARE LIKELY TO CAUSE IRREPARABLE DAMAGE WHILE BEING OF LIMITED EFFICACY.

When cleaning the PAR, it is important to provide all necessary protection to prevent water running–off over the surfaces of the rockwork generally. If it becomes necessary to use chemicals, avoid contact between chemical agents and any material or element other than that being cleaned, and ensure that chemicals are not flushed away via rainwater gullies, or allowed to pollute the ground or nearby water courses. PERSONS UNDERTAKING CLEANING MUST BE WEARING ALL NECESSARY PERSONAL PROTECTION.

D3.01 LICHENS

For small areas and the exposure of tinted surfaces, hand–brushing combined with a fine water spray will generally be sufficient. BRUSHES MUST BE NON–FERROUS; BRISTLE IS PREFERRED. An initial clean with an industrial vacuum cleaner can be useful for removing any loose material. Larger areas can be cleaned using the DOFF or THERMATECH systems of superheated water (steam):

(a) To activate the soiling, two complete passes of all surfaces to be cleaned, typically at a temperature of 130 degrees centigrade + 110 bar pressure.

(b) A final pass to remove soiling from specific working areas.

(c) Superheated water (steam) cleaning only should be carried out by trained and experienced operatives.

Treatment with biocides is not recommended as these may inhibit lichens from returning to (recolonise) surfaces following repair.

D3.02 MOSS

Other than where it can be simply lifted, moss should be gently removed using a wooden or plastic spatula, followed hand–brushing as D3.01.

D3.03 AIRBORNE DIRT

Generally, the same cleaning methods as for lichens can be used (refer D3.01) save that stubborn areas of soiling — especially build–ups of hydrocarbon — can be locally treated using an ammonium carbonate clay or paper based poultice applied strictly in accordance with the manufacture's instructions, with particular attention paid to dwell times, neutralisation and disposal.

D3.04 SURFACE EFFLORESCENCE

Removal of surface efflorescence is best achieved with DRY brushing or for large areas perhaps an industrial vacuum cleaner with soft brush attachment. UNDER NO CIRCUMSTANCES MUST WATER IN ANY FORM BE USED. Due to the permanent exposure of the rockwork to salts (refer paragraphs 5.2.03, 5.3.03 and 5.3.04 of the main body of the report), efflorescence will almost certainly reoccur.

D3.05 SULFATE CRUSTS

The cleaning of sulfate crusts from PAR is a difficult issue as the formations to be removed may well have cross–bonded (interlinked) with the binder–aggregate matrix of the render coating, meaning that removal brings with it a high risk of irreversible loss of historic surface. Methods to be considered would include:

(a) TORC (formerly JOS) or VORTECH which are wet, swirling air abrasive systems with a high degree of variability and control, ALBEIT ONLY WHEN USED BY TRAINED AND EXPERIENCED OPERATIVES.

(b) Clay or paper–based poultices.

(c) Softening (by wetting) and gradual removal, possibly using superheated water as described in D3.01 and light chiselling.

If removal is contemplated, then trials — ideally by a conservator specialising in stone and plaster surfaces — are especially critical. Attempts to remove sulfate crusts must be abandoned if trials prove unsuccessful.

D3.06 METAL STAINING

Ferrous and non–ferrous metal stains are best removed with a stain remover poultice used strictly in accordance with manufacturer's instructions:

(a) Trowel–apply a heavy coating approximately 6–7mm thick to stained area.

(b) Allow poultice to remain on surface for 8–10 hours or until dry.

(c) Carefully lift the dried poultice from the treated surface using a trowel.

(d) Wash residual poultice from treated surfaces with fresh water and a stiff–fibred masonry brush.

(e) Allow surfaces to dry and repeat as necessary.

The required number of applications of the poultice to be established by controlled trials. Multiple applications may be needed albeit the complete removal of staining cannot be guaranteed as the repeated cleaning process will draw deep–seated salts to the surface. POULTICES DESIGNED TO REMOVE METAL STAINING ARE STRONG ALKALINE COMPOUNDS THAT CAN CAUSE IRRITATION, NECESSITATING SUITABLE GOGGLES, FACE SHIELD, PROTECTIVE CLOTHING GLOVES WHICH AVOID CONTACT WITH SKIN OR EYES AND POSSIBLY RESPIRATORY EQUIPMENT, DEPENDING ON WORKING CONDITIONS.

D3.07 BIOLOGICAL DEPOSITS

Other than lichens, mosses, etc. (refer D3.01 & D3.02), the principal type of biological deposit that is likely to need cleaning is guano, i.e. bird droppings. Light deposits can be left to be washed away by the rain. Heavy build–ups can be removed by judicious softening with water (soaking should be kept to the minimum) interspersed with rinsing, NOTING THAT GUANO IS HAZARDOUS TO HUMANS (it can cause respiratory diseases, especially when dry) and hence removal and disposal must be in accordance with current health and safety legislation and guidance. Contamination of the PAR by urine is a problem best dealt with my management (refer paragraph 5.2.06 of the main body of the report). Canine and other — including human — faeces should be immediately washed away using clean water; no reliance should be placed on dried faces being rapidly dispersed by rain.

D3.08 GRAFFITI

The two types of graffiti present on the East Cliff Chine rockwork are chalk and aerosol paint, albeit future disfigurement by way of brush–applied paint, felt tip marker, ballpoint pen, wax crayon or lipstick cannot be discounted; also the possibly of fly posters and adhesive labels. Notwithstanding chalk — which will eventually wash away, other than in sheltered areas where light sponging may be employed (early rubbing can permanently stain, especially if 'blackboard' chalk, which is mainly of gypsum) — chemical treatment is the most effective way of cleaning graffiti, especially where on porous surfaces like the render coating of PAR. Chemical removes are generally of two types:

- **Alkaline** which break down oil–based films by means of 'saponification" (the conversion of a fat to a soap), following which they must be rinsed from the surface with hot water then neutralised with a weak acetic product, e.g. (vinegar) or a dilute hydrofluoric–acid based (use of which is by law restricted).
- **Solvent** which soften and swell binding media (paint strippers are solvent–based clearers) and dissolve soluble dyes. They are especially useful for removing felt tip markers. MUST ONLY BE USED ON DRY SURFACES.

There are many types of chemical cleaner on the market, available in a variety of forms including sprays, liquids, gels and poultices. Initially, the advice of specialist suppliers should be sought e.g. Tensid UK Ltd. (https://tensiduk.com) or Restorative Techniques Ltd. (https://www.restorative–products.com). A variety of products should then be trialled leading to a list of what may be used in which situation, noting that old and fresh graffiti may require differences in approach. Generally, gels and poultices will give more control, and are most effective if repeated applications are used.

Anti–graffiti coatings are not advised and rarely acceptable for historic buildings and structures. In–depth guidance on graffiti removal can be found in the Historic England advice note *Graffiti on historic buildings and monuments* published in October 1999 (https://historicengland.org.uk/images–books/publications/graffiti–on–historic–buildings–and–monuments/graffiti–historic–buildings–and–monuments).

D4 Surface repair

INTRODUCTION

Surface repair is the aspect of the PAR conservation that requires the most skilful 'design' and execution. It should only be undertaken by accredited conservators or other practitioners who can — by way of trials and exemplars — demonstrate they have the ability to carry out repairs that, as well as being technically sound, accurately match the texture and colour of the original rockwork. Offsite and insitu mortar trials based on analysis (refer D1.01) are an essential precursor to surface repair, and should include:

- Assessments of colour and colour range (to reflect varying 'tints'), surface aggregate types, the suitability and workability of mortar, and setting times.
- Sample boards that comparatively display varying textures and colours.
- Insitu trials which show the intended surface finish and detailing, and which may be used as exemplars.
- All samples and trials should be examined and matched to historic coatings in 'wet' and 'dry' states.
- Depending on the outcome of further investigation, a variety of binders may be used including natural hydraulic limes (perhaps blended with natural cement) and hydrated lime–OPC mixes.

In designing mortars for surface repair, it is important to check suitability for in–use conditions: an exposed environment and high sulfate content backgrounds should be assumed. Colour is likely to require the addition of high quality, natural pigments.

D4.01 DRESSING

The purpose of 'dressing' is to locally — and lightly — cut–back and stabilise exposed edges resulting from lost areas of coating, and which may trap water or encourage further detachment. It is an approach to 'repair' that demands fine judgement:

(a) With the utmost care and with the gentlest touch, carefully remove loose and friable material using if necessary a fine, sharp mason's chisel.

(b) Rub down by hand using a carborundum stone before finally using a stiff brush to remove all loose material and to ensure the removal of all pockets or ledges that might trap water.

(c) Edges are to be left as smooth as is practicable without any cutting back.

(d) Hollow but otherwise sound material adjacent the missing areas of coating can be re–adhered using grouting techniques as D4.03 and D5.02.

Eventually, the area of missing surface may need to be renewed as D4.02.

D4.02 RENEWAL

The renewal (or restoration) of PAR surfaces is a sequential process that should only be carried out in between spring and autumn (low temperatures will impede the set and result in premature failure):

(a) Preparatory work:

- All vegetation that may obstruct the repair must be removed, and surfaces brushed clean of soil and other organic deposits; treatment with a herbicide may be necessary, subject to discussion with the volunteer group and others involved in plant maintenance and management.
- Before any trials or repairs commence, some areas of PAR — including around areas to be repaired and as far back as the nearest fissure or other natural 'lines' in the rockwork — should be fully cleaned as D1. The purpose of cleaning is to reveal the true colour and texture (and any variation) of the surfaces to be renewed or restored, and to mitigate the tendency for repairs to create a 'patchy' appearance.
- Failing existing repairs (loose and friable material) must be entirely removed, using if necessary a chisel to ease from the surface.

(b) Background repair and preparation:

- Inspect exposed masonry or concrete backing and repoint, pack, pin, consolidated or otherwise repair so as to ensure a firm base.
- Using fine, sharp chisels make a neat cut to frame the area of coating to be repaired, cut back full depth with edges slightly undercut so as to avoid the subsequent 'feathering' of the coating.
- In order to provide a key for the new mortar, scabble ('roughen') the exposed surface of the backing with randomly drilled holes, peck marks, raked–out joints (in brickwork) etc.
- Use a water spray to clean all dust and debris from the area to be repaired
- Control suction of background by pre–wetting with water so brick, concrete, etc. is damp (not saturated) when mortar is applied.

(c) Mortar mixes:

- To be finalised following trials, etc. as above.

(d) Application:

- Repair (restoration) mortar is to be applied in two coats.
- Pack the backing repair mortar into the area to be repaired (restored), working from the edges of the cavity into the centre to ensure that the undercuts are entirely filled with no feather edges.
- Bring the mortar to an even distance of 3–4 mm from the face of the finished repair, taking care not to overwork. Score and leave to allow a preliminary

set, wetting the surrounding rockwork and protecting with plastic to control water loss and shrinkage and ENSURING THAT THE FACING MORTAR IS APPLIED AT AN EARLY STAGE — 'GREEN–ON–GREEN'.

- Similarly place the facing mortar, slightly overfilling (i.e. mortar slightly proud of the face of the adjacent surfaces). Re–compact by pressing after two hours if required. Wet the surrounding PAR and protecting with plastic or damp hessian to control water loss and shrinkage.

(e) Finishing:

- After surface hardening has commenced though while the mortar is still 'green', scrape back the surface to the finished line.
- Further compact using a still bristle brush, or similar, working the surface so as to bring out the aggregate to match the PAR, if needed modelling with fine tools to ensure a smooth transition between original surface and repair.

(f) Protection:

- Protect mortar from direct sunlight, wind and rain with damp hessian or plastic sheeting in close contact for at least one week after placing so as to assist surface curing and — where pigments are part of the mix — to ensure consistency of colour. In hot weather, prevent rapid drying out by wetting with a fine mist spray two or three times a day.

D4.03 CONSOLIDATION OF LOOSE SURFACES

Loose but sound PAR surfaces can in some cases be grouted in situ:

(a) Thoroughly flush the void behind surfaces with clean water to ensure removal of all loose materials.

(b) Undertake trials to establish the best method of delivering the grout.

(c) Ideally, most work will be gravity grouting, i.e. injected from above.

(d) Inject grout at holes provided at suitable centres, allow grout to flow through weep holes initially and then block holes. Build up grout levels gradually, without causing water pressure to force surface off.

(e) On vertical surfaces, consider applying grouts via temporary clay 'cups'.

(f) A natural hydraulic lime grout as D5.03 or a proprietary product may be used.

(g) For very fine interfaces nanolime grout as D5.02 may be considered.

(h) Protect the repair — which should initially be kept damp (not wet) using a hand spray — with damp hessian or plastic sheeting until the grout is cured.

D5 Fracture repair

INTRODUCTION

The Overview: Stage One Report (paragraph 7.5.04) identifies fractures due to unmanaged wood vegetation as the greatest threat to the ongoing conservation of PAR. Set out below are repair techniques that can be used to fill and stabilise fractures, depending on the extent of displacement, i.e. crack width or collapse.

D5.01 MONITORING

Fractures can be easily monitored by a number of simple methods including the routine inspection of grouting and filling as D5.02, D5.03 and D5.04 — opening–up at the edges or cracks forming in mortar parallel to the fracture are good indicators of possible further movement, save that allowance must be made for the possibility of the initial shrinkage. Photographic records (refer paragraph 6.3.04 of the main body of the report) can in this context be invaluable. A more sophisticated way of monitoring open fractures would be to adhesive–fix three small metal disks (e.g. one pence pieces) spot–marked with a centre punch, two one side of the fracture and one the other so as to form a triangle. The lengths of the sides can be measured at intervals with a simple, digital calliper: changes in dimension will indicate if the fracture is opening, and in which direction.

D5.02 MICRO GROUTING

Hairline fractures of up to 2 mm in width should be filled with grout comprising an isopropyl–based nanolime with a concentration of 5–10 g/litre such as CaLoSil IP5 by IBZ–Salzchemie GmbH & Co.KG (distributed in the UK by Hirst Conservation: http://www.hirst–conservation.com) blended with fine fillers (aggregates) such as crushed stone sand, and stone or marble dusts:

(a) Plant pocket to be cleared as D2.04 and stitched as D5.06.

(b) Fractures to be cleared of dust and debris using an industrial vacuum cleaner or other means of aspiration then rinsed with water until it runs clear.

(c) Bottom ends of all vertical fractures to be stopped externally with cotton wool (to prevent grout running–off over the face of the PAR); likewise the grout holes to horizongal fractures.

(d) On external faces, fractures to be temporarily stopped with clay (so as to retain grout while it develops an initial set) and internally backed–up with tape, clay or other temporary stopping that prevents loss of grout into the plant pocket.

(e) Fractures to be pre–wetted with alcohol (isopropyl) directly before grouting.

(f) Grout to be progressively applied with a syringe working sequentially from the bottom of the crack upwards so as to fill entirely the fracture, using a sponge to ensure that grout does not leach or dribble from grout holes.

D5.03 GROUTING

Fractures of 2–5 mm in width should be filled with natural hydraulic lime (NHL3.5) grout. Assuming gravity fill, the binder (lime) should be blended with a well washed sand at an approximate ratio of 1:2 and mixed with enough clean water to make a fluid paste (fluidity which can be improved by the addition of casein equal to about 1% of the weight of the lime which will also reduce the amount of water needed). Sand must be graded (sieved) to ensure grains are no larger than about 1/3 of the width of the fracture to be filled, with trials used to establish the optimum balance between sharp and soft sand. A proprietary ground may be used in lieu:

(a) Plant pocket to be cleared as D2.04 and stitched as D5.06.

(b) Fractures to be cleared of dust and debris using an industrial vacuum cleaner or other means of aspiration then rinsed using a hand sprayer with a fine jet of water until it runs clear.

(c) Grouting to be raised in maximum 300 mm 'lifts'. Do not continue until previous lift is set and can support additional grout above.

(d) The bottom ends of each lift of grouting — which need to be left 'open' to allow the grout to flow — should be stopped with cotton wool to prevent grout running–off over the face of the PAR.

(e) External and internal faces of each lift to be temporarily stopped with clay to retain grout while it develops an initial set.

(f) Fractures to be flushed–through and pre–wetted directly before grouting.

(g) Grout to be progressively applied working sequentially from the bottom of the crack upwards so as to fill entirely the fracture, using a sponge to ensure that grout does not leach or dribble from the base of each lift.

(h) On completion, rake back and compact mortar using fine tools, and stipple with a stiff bristle brush so as to break the surface of the joint which should finish about 5 mm back from the surface of the PAR to as to create a shadow line.

(i) Protect the repair — which should initially be kept damp (not wet) using a hand spray — with damp hessian or plastic sheeting until the grout is cured.

D5.04 MORTAR FILLING

Fractures wider than 5 mm in width should be filled with 1:2–3 natural hydraulic lime (NHL3.5) mortar with a sand–chalk aggregate. Sand must be clean, well–washed and SHARP and conform broadly to Type S of BS 1200:1976 (replaced by BS EN 13139:2013 but still current) with a clay content not exceeding 1–2% and particle sizes between 2.36mm to 150 microns. Dried, crushed hard white chalk to be free from clay and silt and sieved to broadly to the same grading of the sand, though larger particles may be acceptable for wide joints. If necessary, the blended aggregate to be further sieved to ensure that when filling joints less than about 10 mm the largest particle size is a maximum of approximately 1/3 of the width of the joint; allow for

grading on site to account for variations in the joint width. Sieved charcoal may be used to control colour. A premixed mortar be used in lieu:

(a) Plant pocket to be cleared as D2.04 and stitched as D5.06.

(b) Fractures to be cleared of dust and debris using an industrial vacuum cleaner or other means of aspiration then rinsed using a hand sprayer with a fine jet of water until it runs clear. Rinse all debris from surface of PAR.

(c) Wedge firmly against the rear face of the fracture a board or other surface against which mortar can be firmly pressed.

(d) Dampen fracture immediately prior to filling. Starting at the bottom, fill fracture with mortar, pressing well back with a pointing iron of the correct size. Bring joints flush or slightly proud of the surface of the surrounding PAR. Protect as necessary until finishing. DO NOT AT THIS STAGE REMOVE SURPLUS MORTAR.

(e) It may be necessary to fill in more than one application (to avoid slumping of the mortar or excessive shrinkage), pushing the mortar hard back into the joint with a tamping iron or similar tool and building–up in layers, allowing each application to dry (dewater) before applying the next.

(f) Allow the mortar to go off. Do not attempt to scrape fresh mortar from masonry surfaces. Rake out and compact mortar using fine tools, and stipple with a stiff bristle brush so as to break the surface of the joint which should finish about 10 mm back from the surface of the PAR to as to create a shadow line.

(g) Protect mortar from direct sunlight, wind and rain with damp hessian or plastic in close contact for at least one week after placing. In hot weather, prevent rapid drying out by wetting with a fine mist spray two or three times a day.

D5.05 REBUILDING

The purpose of rebuilding is to carefully take down and reconstruct unstable or falling areas of PAR, using as much original material as possible, following — and where necessary recreating — the original pattern of the rockwork, and replicating the texture and colour of existing surfaces:

(a) Clear plant pockets as D2.04.

(b) Allow for all necessary temporary works including any need for propping and provision for safe lifting, noting especially the requirements of *The Manual Handling Operations Regulations 1992* which limit the weight of what can be lifted by a single person to 20 kg.

(c) Before taking down, record the PAR as it stands, assigning a unique number to each fragment. Positions of fragments can be recorded on marked–up photos

(d) Carefully take down the PAR fragment–by–fragment, working sequentially top to bottom, numbering each fragment with chalk and placing registration marks prior to removal. The top, bottom and rear of each fragment must be marked. Store fragments in a systematic manner, laid out in sequence.

(e) Clear all fragments of extraneous mortar, dust and debris.

(f) Wetting fragments as work proceeds, rebuild PAR in the reverse sequence of taking down, working as far as possible in horizontal layers (courses) placing each numbered fragment back in its original location and in the correct orientation, albeit where necessary eased back into place.

(g) Bed fragments in mortar to match existing (mix to be determined following analysis as D1.01) incorporating stitching as D5.06.

(h) Repair and consolidate surfaces as D4.02 and D4.03.

(i) Cover rebuilt PAR at the end of each day, and provide on–going protection generally as for surface repairs, though allowing for the rebuilt work being wetter and hence the possible need to remove protection earlier (to allow any free lime in the mortar to dewater and carbonate).

D5.06 STITCHING

Tie together brickwork either side of fracture using Grade 1.4401 (formerly Type 316) austenitic stainless steel, 6 mm diameter helical bars, e.g. HeliBar Remedial by Helifix Ltd. (https://www.helifix.co.uk/products/remedial–products/helibar–remedial/) held in place with thixotropic epoxy anchor grout such as Webertec EP TAG by Saint–Gobain Weber Ltd. (https://www.uk.weber/webertec–ep–tag):

(a) Following clearance of plant pocket as D2.04 to expose rear face of brickwork, rake out mortar from every third bed joint.

(b) Clean raked joints of dust and debris using an industrial vacuum cleaner or other means of aspiration then rinse using a hand sprayer with a fine jet of water until it runs clear.

(c) by flushing with clean water, allow to dry and brush clear any loose mortar, soil or material.

(d) Set 900 mm long bars into cleared bed joints, taking note of temperature and curing time of epoxy grout.

(e) Repoint (fill) raked joints with natural hydraulic lime (NHL 3.5) mortar.

(f) Protect mortar with damp hessian or plastic sheet for at least a week.

Following completion of stitching, fractures may be grouted or filled as D5.02, D5.03 or D5.04 and the plant pocket eventually re–filled with soil.

APPENDIX E

LIST ENTRY

Rock gardens and cliff stairs about 30 metres south of sunshelter

Overview

Heritage Category:
Listed Building

Grade:
II

List Entry Number:
1336319

Date first listed:
04-Feb-1988

Date of most recent amendment:
22-May-2019

Statutory Address:
Victoria Parade

Map

The above map is for quick reference purposes only and may not be to scale. For a copy of the full scale map, please see the attached PDF - **1336319.pdf**
(http://mapservices.HistoricEngland.org.uk/printwebservicehle/StatutoryPrint.svc/532296/HLE_A4L_Grade|HLE

The PDF will be generated from our live systems and may take a few minutes to download depending on how busy our servers are. We apologise for this delay.

This copy shows the entry on 22-Jun-2020 at 18:28:45.

Location

Statutory Address:
Victoria Parade

The building or site itself may lie within the boundary of more than one authority.
County:
Kent

District:
Thanet (District Authority)

Parish:
Ramsgate

National Grid Reference:
TR3919565551

Summary

A pathway and imitation rockery landscaping leading from Winterstoke Gardens to Winterstoke Undercliff, built in 1936 to the designs of Alec Adlington and Pulham and Sons.

Reasons for Designation

The rock gardens and cliff stairs about 30m south of Sunshelter, Victoria Parade, Ramsgate is listed at Grade II for the following principal reasons:

Architectural interest: * they are comparable in interest to other designated examples of Pulhamite structures and representative of the Pulhams' innovative design and construction of garden and park structures.

Historic interest: * the structure forms part of an important grouping of Pulhamite structures which are spaced along the seafront at Ramsgate and which were built in the period between 1893 and 1936. Group value:

* with the sunshelter, rockery and ponds of Winterstoke Gardens (all listed at Grade II).

History

From the mid-C18 Ramsgate became increasingly popular as a seaside resort, its expansion being accelerated by road improvements and faster sea passage offered by hoys, packets and steamers. An assembly room, warm water baths, subscription libraries and places of worship were joined by new streets such as Effingham Street and speculative crescents and squares on the East and West Cliffs such as Albion Place of about 1791-1798 and Nelson Crescent of about 1800-5. During the Napoleonic Wars Ramsgate became a busy garrison town and a

major port of embarkation. Ramsgate's importance in the 1820s is attested by its patronage by the British and European royal families and the creation of a separate parish by Act of Parliament, served by the large Church of St George (1824-1827). The harbour is the only one in the British Isles which has the designation 'Royal', granted by George IV.

The arrival of the South Eastern Railway's branch line in 1846 opened up Ramsgate to mass tourism and popular culture, bringing a range of inexpensive, lively resort facilities intended for the sorts of middle- and working-class holidaymakers depicted in WP Frith's painting 'Ramsgate Sands' of 1854 (Royal Collection). Wealthier visitors were accommodated at a respectable distance from the town in developments such as EW Pugin's Granville Hotel of 1867-1869. Competition with other Kentish resorts stimulated a series of large-scale improvements in the late-C19 and early-C20 including the construction of Royal Parade and landscaped stairs and pathways at the eastern and western ends of the seafront to join the upper promenades to the Undercliff walks. New schools, hospitals and services were also built. The thriving town attracted diverse faith communities; Moses Montefiore founded a synagogue and a religious college at East Cliff Lodge, while AWN Pugin St Augustine's Church and the Grange as part of an intended Catholic community on the West Cliff.

In 1940 the harbour was the point of return for many of the small boats involved in the evacuation from Dunkirk and war-time precautions included the digging of extensive air raid shelter tunnels in the chalk beneath the town. Ramsgate remained a popular holiday destination until the advent of cheap foreign travel in the post-war decades. Falling visitor numbers were exacerbated by the decline of the town's small trades and industries, fishing and boat-building. However, a ferry and hovercraft port and the large marina created in the inner harbour in the 1970s have continued to bring life to the area.

Rock gardens first seem to have appeared in England from the C17 as a suitable setting for exotic plants. The influential landscape designers Humphry Repton (1752-1818) and John Claudius Loudon (1783-1843) both promoted the idea of naturalistic rock formations in a landscape and this coincided with the importation of new species of plants into England from mountainous areas.

From the 1840s a number of companies began experimenting with cements to cover a base of hard core in imitation of large-scale rock formations. James Pulham and Son of Broxbourne in Hertfordshire were amongst several such makers, and also specialised in terracotta ornaments. The longevity of their company which lasted from about 1845 to 1945 under the leadership of three generations of Pulham, all named James, marked them out, as did the quality of their products. Their work and patrons included relatively modest suburban villas as well as bankers, ship and railway owners and the royal family. Work at Sandringham, Windsor and Buckingham Palace earned the company a royal warrant in 1895. 'Durability Guaranteed' was one of the company's claims, and this has largely proved to be true. Whether real stone or artificial, an aim of designers was to replicate the appearance of genuine rock formations with geological strata. Pulhams' was noted for this and from the 1880s they experimented with different colours and textures of cement. The structure of their designs was a core of over-burnt bricks, waste stone and slag, or other industrial waste that was locally available. Overhangs were of real slate or sandstone and the whole structure was finished with two coats of render, between 6mm and 15mm thick.

The various constructions of rockwork at Ramsgate, realised by Ramsgate Corporation from the 1890s, with the last work on the Winterstoke Chine in 1936, form one of the largest groupings of their designs and provides a good cross-section of their work and the compositional possibilities offered by different locations and gradients.

Winterstoke Gardens, with rockery work by Sir John Burnet and Partners and Pulham and Sons, was laid out in

1923. A gift to the borough from Dame Janet Stancombe-Wills, it cost £10,000. As a continuation of this planned landscape, this case considers the portion of cliff face and the sloping pathway which forms Winterstoke Chine, connecting the Eastcliff to Winterstoke Undercliff, were added in 1936 to the designs of Pulham and Sons with the borough engineer, Alec Adlington at a cost of £23,000.

Details

A pathway and imitation rockery landscaping leading from Winterstoke Gardens to Winterstoke Undercliff, built in 1936 to the designs of Alec Adlington and Pulham and Sons.

DESCRIPTION: chalk cliff face, with inbuilt slatted wooden seats. The central walkway follows a lengthy, dogleg pattern, with Pulhamite forming a rockery setting with textured rockwork surfaces imitating geological strata and irregular planting troughs to both sides. Alcoves for fixed wooden benches are placed at intervals along the route and some are approached by steps.

The construction entirely covers the cliff face and is blended with the natural chalk by irregular edges at either end. The sloping walkway with regularly-spaced, short flights of steps, leads up from the eastern side and then doubles back at the halfway point to rise to the Winterstoke Gardens. The walkway surface is scored in imitation of irregular, crazy paving. At the top there is a generous platform which projects out from the cliff to form the approach to the slope. Alcoves are let into the surface of the cliff along the path and accommodate fixed seats, and rockwork also forms a natural balustrade to allow views on the south side facing the sea.

Legacy

The contents of this record have been generated from a legacy data system.

Legacy System number:
172055

Legacy System:
LBS

Sources

Books and journals

English Heritage, , Durability Guaranteed Pulhamite rockwork - its conservation and repair, (2008), 28
Newman, John, Kent: North East and East, (2013), 506

Legal

This building is listed under the Planning (Listed Buildings and Conservation Areas) Act 1990 as amended for its special architectural or historic interest.