



# Southsea Castle Portsea Island, Hampshire

GI Works Archaeological Watching Brief



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## Summary

Wessex Archaeology was commissioned by the Eastern Solent Coastal Partnership to carry out archaeological monitoring of geotechnical investigations as part of design work for the Southsea Coastal Defence Scheme (centred on National Grid reference 464327, 97976). These additional GI works are within or adjacent to the Scheduled Monument Boundary of Southsea Castle (list entry 1001869) and as such required Scheduled Monument Consent. The monitored works consisted of thirteen trial pits and four rotary core boreholes. The watching brief was undertaken between 13-16 July 2020 with additional coring undertaken 21-22 September 2020.

The ground investigations, though limited in their extent, were able to provide information relating to the survival of areas of an earlier promenade surface, and information on the outer construction of the counterscarp tunnels. These investigations suggest that the tunnels are encased in a substantial masonry superstructure which includes the seaward side and roof of the feature. This is situated within redeposited storm beach deposits which are likely to form part of the basis of the redesigned sea defences which were constructed at the same time. Several areas of limestone cobbling beneath the current surfacing were located and considered to be the remains of the 19th-century promenade. Both the trial pits and GPR survey highlight that the degree of preservation of this surface is varied.

## Acknowledgements

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# Southsea Castle, Portsea Island Hampshire

## GI Works Archaeological Watching Brief

### 1 INTRODUCTION

#### 1.1 Project and planning background

- 1.1.1 Wessex Archaeology was commissioned by the Eastern Solent Coastal Partnership to carry out archaeological monitoring of geotechnical investigations (GI) as part of design work for the Southsea Coastal Defence Scheme (National Grid reference 464327, 97976. The scheme, for flood and coastal defences along a 4.5 km frontage, was granted full planning permission in December 2019 (19/01097/FUL).
- 1.1.2 These GI works are in addition to a wider series of GI works undertaken in 2018 and 2019 as supplementary ground investigations adjacent to existing structures such as walls, steps, coping stones, kerbs and revetments to investigate their foundations (depth, dimensions and condition) and to inform the detailed design of handrailing, retaining wall foundations and tie in details.
- 1.1.3 These additional GI works are within or adjacent to the Scheduled Monument Boundary of Southsea Castle (list entry 1001869) within Frontage 4 of the scheme (**Figure 1**).
- 1.1.4 A Written Scheme of Investigation (WSI; Wessex Archaeology 2020a) was provided as an addendum to the *Statement of Significance and Written Scheme of Investigation for Geotechnical Site Investigations* (Wessex Archaeology 2018a) produced prior to those investigations and was used to support a variation (S00182998) of the existing Scheduled Monument Consent.
- 1.1.5 The variation was granted on 1st July 2020, subject to the following conditions:
- a) An addendum to the existing WSI detailing the additional works shall be submitted to and approved by Historic England prior to commencement of works
  - b) Significant archaeological remains, deposits and historic fabric related to the monument shall be preserved in situ and not be disturbed without the express permission of Historic England.
  - c) Should the location of any of the ground investigation works need to be changed, or if any additional investigations are deemed necessary, Historic England are to be notified in advance for approval.
- 1.1.6 The watching brief was undertaken in accordance with this WSI which detailed the aims, methodologies and standards to be employed. The Inspector of Ancient Monuments for Surrey, Hampshire & the Isle of Wight approved the WSI, on behalf of Historic England, prior to fieldwork commencing. Additional investigations required during the works were also approved by the inspector, prior to their excavation.
- 1.1.7 The watching brief was undertaken between 13-16 July 2020.



1.1.8 The preliminary results from these investigations indicated that some additional coring was required to definitely establish the location and depth of the counterscarp tunnel roof associated with Southsea Castle in order to be able to sufficiently account for its protection within the final design. Another addendum WSI was therefore produced to support these works to be undertaken under the existing Scheduled Monument Consent variation (Wessex Archaeology 2020b).

1.1.9 The additional coring was undertaken 21-22 September 2020, under further watching brief conditions.

## **1.2 Scope of the report**

1.2.1 The purpose of this report is to provide the results of the watching brief, to interpret the results within their local context, and to assess their potential to address the aims outlined in the WSI, thereby making available information about the archaeological resource (a preservation by record).

## **1.3 Location, topography and geology**

1.3.1 Southsea Castle is situated on the coastline of Portsea Island in Hampshire and on the southern edge of modern Portsmouth.

1.3.2 The site is within the low-lying coastal zone at a height of between 0-3 m above Ordnance Datum.

1.3.3 The underlying bedrock geology is mapped as the Earnley Sand Formation and Marsh Farm Formation (undifferentiated) with superficial deposits of storm beach gravels (British Geological Survey). Previous GI investigations undertaken as part of this scheme encountered made ground overlying storm beach deposits and bedrock (Wessex Archaeology 2018b).

## **2 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND**

### **2.1 Introduction**

2.1.1 A full archaeological and historical background can be found in the *Statement of Significance and Written Scheme of Investigation for Geotechnical Site Investigations* (Wessex Archaeology 2018a). A brief summary of the history and development of the castle is provided below:

- Southsea Castle was built on the orders of Henry VIII between 1538-1544 to protect the deep-water approach to Portsmouth Harbour.
- During the English Civil War, the garrison at Southsea Castle consisted of only a dozen men and Parliamentary troops were able to capture the castle in 1642 despite the covering fire of the Portsmouth artillery (Quail 2000, 6). As a result, improvements were made to Southsea Castle by the Dutch engineer Sir Bernard de Gomme in the late 17th century. It is unclear how much of his design was enacted but it was certainly modified into a star fort in 1670 with a glacis and covered walkway on the seaward side.
- In 1759, an explosion was caused by sparks from a fire which ignited gunpowder in the room below. The structure sustained substantial damage and by the 1770s the castle was described as ruinous (Quail 2000, 63-4).





- The outer wall was reconstructed in 1812 and extensive alterations made by Major-General Benjamin Fisher of the Royal Engineers between 1813-1816 (Quail 2000, 64). These included the remodelling of the seaward bastion and the construction of a counterscarp gallery around the outer wall of the moat linked to the castle by a caponier.
- In 1828, the lighthouse was constructed, and the castle was used as a military prison between 1844 and 1850. An 1856 plan shows two small auxiliary batteries either side of the castle as well as a practice battery to the north-east (Moore 2013, 8). Elements of the 17th century glacis appear to survive into the 19th century, including faced sections on the shoreline.
- The *1859 Royal Commission on the Defence of the United Kingdom* report recommended considerable improvements, including the addition of open batteries on each flank and a gorge (rear) wall on the landward side with loopholes for musketry (Hogg 1974, 138). This work was undertaken between 1863-9 (Quail 2000, 64).
- Both coastal batteries were rearmed in the First World War (WWI). The western battery was then disarmed after 1927, but the eastern battery was re-armed in WWII and Southsea Castle became HQ Portsmouth Fixed Defences.
- A coast artillery maintenance battery was stationed in the castle until 1956 (Moore 2013, 18). In 1960, the monument was then acquired by Portsmouth City Council who restored it to its 19th century appearance and in 1967 opened it as a museum.

## 2.2 Previous investigations related to the development

2.2.1 Ground investigation work undertaken to inform the emerging design recorded deposits typical of an active beach environment (Wessex Archaeology 2018b). These comprised bedrock overlain by storm beach deposits that formed a shingle barrier along the 4.5 km stretch of Southsea seafront. This created a sheltered wetland environment conducive of peat formation, with numerous small channel/ palaeochannel systems meeting the coast. Made ground was also encountered, with the thickest deposits located within the areas of the historic fortifications of Long Curtain, King's Bastion and Spur Redoubt and Southsea Castle.

2.2.2 Further ground investigations in 2019 were undertaken in the areas of Long Curtain Moat and Southsea Castle (Wessex Archaeology 2020c). A series of boreholes excavated seaward of Southsea Castle located only modern made ground associated with the current sea defences and seafront promenade situated directly onto storm beach deposits. To the rear of the castle there was evidence of landscaping and truncation within the former parade ground.

## 3 AIMS AND OBJECTIVES

### 3.1 Aims

3.1.1 The aims of the watching brief, as stated in the WSI (Wessex Archaeology 2020b) and as defined in the ClfA *Standard and guidance for an archaeological watching brief* (ClfA 2014a), were to:

- allow, within the resources available, the preservation by record of archaeological deposits, the presence and nature of which could not be established (or established with sufficient accuracy) in advance of the development or other works;



- provide an opportunity, if needed, for the watching archaeologist to signal to all interested parties, before the destruction of the material in question, that an archaeological find has been made for which the resources allocated to the watching brief itself are not sufficient to support treatment to a satisfactory and proper standard; and
- guide, not replace, any requirement for contingent excavation or preservation of possible deposits.

### **3.2 Objectives**

3.2.1 In order to achieve the above aims, the objectives of the watching brief, also defined in the WSI (Wessex Archaeology 2020b), were to:

- determine the presence or absence of archaeological features, deposits, structures, artefacts or ecofacts within the specified works area (including a greater understanding of the depth and location of the counterscarp tunnels);
- record and establish, within the constraints of the works, the extent, character, date, condition and quality of any surviving archaeological remains (a preservation by record);
- place any identified archaeological remains within a wider historical and archaeological context in order to assess their significance; and
- make available information about the archaeological resource on the site by preparing a report on the results of the watching brief.

## **4 METHODS**

### **4.1 Introduction**

4.1.1 All works were undertaken in accordance with the detailed methodology set out within the WSI (Wessex Archaeology 2018a; 2020b) and in general compliance with the standards outlined in ClfA guidance (ClfA 2014a). The methods employed are summarised below.

### **4.2 Fieldwork methods**

#### *General*

- 4.2.1 Thirteen trial pits were monitored as part of the ground investigations situated in or adjacent to the Scheduled Monument boundary. These were generally around 0.50 m<sup>2</sup> and the depth of excavation was dependant on the requirements of the ground investigation. With the agreement of Historic England, several of the trial pits were extended in order to better understand the deposits encountered (TPRH105A, TPRH106B) and an additional trial pit was also excavated (TPRH103A).
- 4.2.2 TPRH104 which was proposed adjacent to the moat wall and over the counterscarp gallery was not excavated. Although TPRH110 was not originally scheduled to be monitored as part of the works it was also observed and recorded.
- 4.2.3 Adjacent to Southsea Castle rotary core boreholes were to be drilled to confirm both the location and depth of the counterscarp tunnels. As well as the three rotary core boreholes provided for in the WSI, permission was granted for a fourth core, RHT4, to be excavated seaward of RHT3 to corroborate the results of this and the two cores to the west.



- 4.2.4 The watching archaeologist monitored all mechanical excavations within the specified area. Where necessary, the surfaces of uncovered archaeological deposits were cleaned by hand to aid visual definition. A sample of archaeological features and deposits was hand-excavated, sufficient to address the aims of the watching brief.
- 4.2.5 Spoil from machine stripping and hand-excavated archaeological deposits was visually scanned for the purposes of finds retrieval. Artefacts were collected and bagged by context. All artefacts from excavated contexts were retained, although those from features of modern date (19th century or later) were recorded on site and not retained.

#### *Recording*

- 4.2.6 All exposed archaeological deposits and features were recorded. A complete record of excavated features and deposits was made, including plans and sections where appropriate and tied to the Ordnance Survey (OS) National Grid.
- 4.2.7 Survey data was recorded by the ground investigation team and related to OS National Grid coordinates and heights above OD (Newlyn).
- 4.2.8 A full photographic record was made using digital cameras equipped with an image sensor of not less than 10 megapixels. Digital images have been subject to managed quality control and curation processes, which has embedded appropriate metadata within the image and will ensure long term accessibility of the image set.

### **4.3 Finds and environmental strategies**

- 4.3.1 Strategies for the recovery, processing and assessment of finds and environmental samples were in line with those detailed in the WSI (Wessex Archaeology 2018a). The treatment of artefacts and environmental remains was in general accordance with: *Guidance for the collection, documentation, conservation and research of archaeological materials* (ClfA 2014b) and *Environmental Archaeology: A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-excavation* (English Heritage 2011).

### **4.4 Monitoring**

- 4.4.1 The Inspector of Ancient Monuments for Surrey, Hampshire & the Isle of Wight, on behalf of Historic England, and the County Archaeologist, on behalf of the Portsmouth Local Planning Authority, monitored the watching brief. Any variations to the WSI, if required to better address the project aims, were agreed in advance with the client, the Inspector of Ancient Monuments for Surrey, Hampshire & the Isle of Wight and the County Archaeologist.

## **5 STRATIGRAPHIC EVIDENCE**

### **5.1 Introduction**

### **5.2 Western Battery**

- 5.2.1 Trial pits TPRH89, TPRH92, TPRH95 (**Figure 2**) and TPRH103 (**Figure 3**) were all situated within the area of the Western Battery. While they had the potential to provide further information on this late 19th century structure and later landscaping works, they were all located either off or on the outskirts of the main earthworks. These trial pits were targeted on specific structures to inform the detailed design of the secondary defence retaining wall.
- 5.2.2 In general, around 0.15 m of topsoil was found to overlie up to 0.80 m of modern made ground which included fragments of brick and concrete (**Plates 1-4**). No substantive topsoil

was present in TPRH095. Only in the deepest of these trial holes, TPRH092, was the underlying storm beach deposits uncovered at 0.95 m below the current ground level.

- 5.2.3 In this area previous investigations also located made ground thought to relate to modern landscaping (Trench 4/ BHRH05 and Trench 6/ BHRH07) overlying a sequence of storm beach deposits, clays, further storm beach deposits and the bedrock Earnley Sand Formation and Marsh Farm Formation (Wessex Archaeology 2020c).

### 5.3 Promenade and counterscarp gallery adjacent to the castle

- 5.3.1 Trial pits TPRH103A, TPRH105, TPRH105A, TPRH105B, TPRH106 and TPRH107 were all situated within the promenade seaward of the castle, with TPRH105, TPRH105A, TPRH105B, TPRH106 and TPRH107 in the area above the counterscarp tunnels (**Figure 3**).
- 5.3.2 TPRH103A encountered modern made ground to a depth of 0.65 m, thought to be levelling material associated with the construction of the modern-day promenade (**Plate 5**). A sandy gravel beneath this had the characteristics of redeposited storm beach deposits. This was not extensively excavated, and the date is unclear but on balance with what is known from previous investigations a modern date seems likely. Trench 6/ BHRH07 which was situated some 25 m to the north-west, located up to 1.90 m of made ground though to be associated with the present sea defences (Wessex Archaeology 2020c).
- 5.3.3 Within the promenade adjacent to Southsea Castle TPRH105, TPRH105A, TPRH105B and TPRH107 all located deposits though to relate to the former 19th-century promenade surface. This was comprised of limestone 'cobbles' situated immediately beneath the current promenade surfacing. Both TPRH105A and TPRH105B were extended in length to better expose and understand the remains, with TPRH105B eventually comprising a 1.05 m long trench and two 0.5 m<sup>2</sup> test pits.
- 5.3.4 TPRH105A was located immediately south-west of the railings at the moat edge on the southwestern side of the castle (**Plate 6**). Beneath modern tarmac and concrete at the northern end, an area of brickwork was exposed bedded into mortar (**Plate 7**). While the visible brickwork only extended 0.70 m southwards into the trench the mortar surface continued to 2.10 m and imprints of slabs or cobbles could be seen within the surface. At 2.10 m the surface terminated with a line of facing stones which extended down to a depth of at least 0.50 m below the current ground surface (**Plate 8**). The limestone cobbles abutting this were considered to form part of the former promenade. This surface did not extend to the end of the trench, here redeposited storm beach deposits were located directly below the modern concrete.
- 5.3.5 TPRH105B was located immediately south of the railings at the moat edge on the south-eastern side of the castle (**Plates 9-12**). Section 1 extended 1.05 m from the railings, after an interval of 0.95 m Section 2 was excavated as a separate test pit, after a further interval of 2 m another test pit Section 3 was excavated which gave a complete cross-section of the upper deposits across the promenade. Substantial structural deposits were left *in situ*.
- 5.3.6 Remnants of the 19th-century promenade were located in all three of the sections at a depth of 0.25 m below the current ground level. In Section 1 a mortar surface, which may be similar to that seen in TPRH105A was located across the majority of the trench (**Plate 9**). Red bricks or tiles were also uncovered in the south-west corner and again seen in the north-east corner of Section 2 (**Plate 10**). A gravely sand appeared to lie beneath or abut this in Section 2. Section 3 was terminated at the depth of the cobbled surface, though here it was patchy and disturbed (**Plate 11**).



- 5.3.7 While an intact surface was not identified within TPRH107, to the south-east of the castle, occasional limestone cobbles were located at a similar depth to the more intact areas of surfacing seen in the other trial pits (**Plate 13**).
- 5.3.8 Trial pit TPRH106 was situated immediately south of a section of brickwork thought to be part of the counterscarp tunnel complex (**Plates 14**). Beneath the modern promenade surfacing a sandy gravel deposit was encountered, below which a sloping concrete structure was encountered. While a direct relationship was not established, the location and angle of this suggests it is related to the brickwork to the north and may overlie the roof of the tunnel. There was no indication of the 19th-century promenade surface within this area of investigation despite it being identified within TPRH107, 5 m to the north-east.
- 5.3.9 The rotary core boreholes were designed to establish the depth and extent of the counterscarp tunnels (**Plate 15**). RHT1 and RHT3 were situated directly over the apex of the roof of the counterscarp tunnels. In both instance they confirmed the location of the brickwork roof at 1.70 m below the current ground level (4.18/ 4.30 ma OD). In both borehole locations beneath the modern promenade surfacing a substantial depth of masonry was encountered. This could be interpreted as remains of the early 19th century sea defences, however its absence in the other boreholes or more seaward trial pits suggests that it is part of the outer construction of the counterscarp tunnels. Within RHT3 this included a second area of red brick at 1.00 m below ground level; though within the confines of a borehole is unclear whether this evidence of a distinct structure or a potentially isolated piece of brick. RHT2 and RHT4 (**Plate 16**) confirmed that the counterscarp tunnel structures did not extend any further to the seaward, locating only sandy gravel beneath the modern surfacing.

#### 5.4 Eastern Battery

- 5.4.1 Trial pits TPRH108, TPRH110 and TPRH111 were all situated seaward of the Eastern Battery adjacent to the wall at the edge of the promenade (**Figure 4; Plates 17-20**).
- 5.4.2 Beneath the surfacing of the tarmac and the concrete foundation of the wall, a silty sandy clay gravel was encountered which appeared to be predominantly redeposited storm beach deposits, however inclusion of brick and concrete within this confirmed it as modern made ground. The full depth of this deposit was not confirmed within the confines of these investigations but extended to at least 0.80 m below current ground level. A previous borehole within this area (Trench 11/ BHRH08) located made ground to a depth of 1.00 m below ground level overlying storm beach deposits and the sands and clays of the underlying bedrock.

#### 5.5 GPR results

- 5.5.1 Ground Penetrating Radar (GPR) was conducted as part of the ground investigations. This aimed to establish the extent of the stone paving beneath the modern surfacing, to locate the counterscarp tunnels and to test whether voids within the sea defence revetment can be identified (TerraDat 2020).
- 5.5.2 The survey identified areas thought to be associated with the 19th-century promenade surface south-west and south-east of the castle, but not within the centre of the survey area (immediately south of the castle). Unfortunately, the masonry which forms the outer structure of the tunnels has no discernible contrast to the redeposited storm beach deposits and so the survey gives limited information on the tunnel extents. Within the western part of the survey area some high amplitude responses at around 0.45 m and 1.25 m depths may indicate some structural remains.



## 6 CONCLUSIONS

- 6.1.1 The ground investigations, though limited in their extent, were able to provide information relating to the survival of areas of an earlier promenade surface and information of the outer construction of the counterscarp tunnels.
- 6.1.2 The counterscarp tunnels form part of extensive alterations made by Major-General Benjamin Fisher of the Royal Engineers between 1813-1816 (Quail 2000, 64). These included the remodelling of the seaward bastion and the construction of a counterscarp gallery linked to the castle by a caponier around the outer wall of the moat with loopholes to provide flanking fire. As historic map evidence makes clear, the redesign of the seaward side of the complex was necessary due to extensive erosion during the 18th century (**Figure 5, Map A**). While the tunnels are brick lined (**Plate 15**) stone facing to the structures can be seen within the moat (**Figure 6**). The evidence from these investigations and in particular the boreholes would seem to suggest that the tunnels are encased in a substantial masonry superstructure which includes the seaward side and roof of the feature (**Figure 6**). This is situated within redeposited storm beach deposits which are likely to form part of the basis of the redesigned sea defences which were constructed at the same time (see also **Figure 5, Map B**). Red tiles encountered in TPRH105B and evidence of brick within RHT3 may also relate to elements of the structure.
- 6.1.3 The marshy ground of Southsea Common was enclosed, drained and laid out as a pleasure ground from the early 19th century with the seafront promenade constructed in the mid-19th century (Quail 2000, 32-33). The castle continued to be an active military installation and there was sometimes tension between the adjacent uses. The ground investigations and GPR survey have located several areas of limestone cobbling beneath the current surfacing; this is considered to be the remains of the former promenade surfacing, likely to be of 19th-century date. Both the trial pits and GPR survey highlight that the degree of preservation of this surface is varied across the section of promenade which passes in front of the castle (**Figure 7**).

## 7 ARCHIVE

- 7.1.1 The archive resulting from the watching brief is currently held at the offices of Wessex Archaeology in Salisbury. It comprises a single file of paper records, and digital data (site notes, photographs, reports). No artefacts were recovered.
- 7.1.2 The site falls within the collecting area of Portsmouth Museum. However, the physical remains resulting from the watching brief are not considered to warrant full deposition with the Museum, as they are not considered archaeologically significant. The condition of archive deposition will therefore be satisfied by submission of an OASIS report for the Site (see below).
- 7.1.3 A security copy of the written records will be prepared, in the form of a digital PDF/A file and retained by Wessex Archaeology.

## 7.2 OASIS

- 7.2.1 An OASIS (online access to the index of archaeological investigations) record (<http://oasis.ac.uk/pages/wiki/Main>) has been initiated, with key fields completed (Appendix 2). A.pdf version of the final report will be submitted following final approval. Subject to any contractual requirements on confidentiality, copies of the OASIS record will be integrated into the relevant local and national records and published through the Archaeology Data Service (ADS) ArchSearch catalogue.



## **8 COPYRIGHT**

### **8.1 Archive and report copyright**

- 8.1.1 The full copyright of the written/illustrative/digital archive relating to the project will be retained by Wessex Archaeology under the *Copyright, Designs and Patents Act 1988* with all rights reserved. The client will be licenced to use each report for the purposes that it was produced in relation to the project as described in the specification. The museum, however, will be granted an exclusive licence for the use of the archive for educational purposes, including academic research, providing that such use conforms to the *Copyright and Related Rights Regulations 2003*. In some instances, certain regional museums may require absolute transfer of copyright, rather than a licence; this should be dealt with on a case-by-case basis.
- 8.1.2 Information relating to the project will be deposited with the Historic Environment Record (HER) where it can be freely copied without reference to Wessex Archaeology for the purposes of archaeological research or development control within the planning process.

### **8.2 Third party data copyright**

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## APPENDICES

### Appendix 1: Stratigraphic summaries

<b>TPRH089</b>			
Easting 464093		Northing 98248	4.33m OD
Length 0.60m		Width 0.60m	Depth 0.70m
Depth from (m)	Depth to (m)	Description	Interpretation
0.00	0.15	Grass + topsoil	Made ground
0.15	0.70+	Gravelly silty clayey sand. Gravel is sub-rounded <0.08m. Vertical metal post present directly in centre of trial pit – former fence footing? Occasional randomly orientated broken brick frags<0.05m. Base @0.70mbgl.	

<b>TPRH092</b>			
Easting 464083		Northing 98203	4.15m OD
Length 0.70m		Width 0.60m	Depth 1.00m
Depth from (m)	Depth to (m)	Description	Interpretation
0.00	0.15	Grass topsoil	Made ground
0.15	0.95	Brown silty sand w/ sub-rounded gravel inclusions <0.05m throughout. Occasional glass frags, Fe nails and rare flint nodule. Lots of modern chocolate wrappers. Fe bar running approx. N-S across trial pit @ 0.25m.	
0.95	1.00+	Sandy gravel. Base @1.00mbgl.	Storm beach deposits - redeposited (?)

<b>TPRH095</b>			
Easting 464129		Northing 98139	3.14m OD
Length 0.72m		Width 0.90m	Depth 0.47m
Depth from (m)	Depth to (m)	Description	Interpretation
0.00	0.02	Grass topsoil	Made ground
0.02	0.47+	Brown silty sandy clay w/ gravel inclusions <0.05m throughout. Rare oyster shell inclusions, modern ceramic pipe frags and Fe nails.  Pit excavated at the intersection between three concrete “structures” to establish footings and/or thickness of concrete. Base of concrete reached @0.47mbgl.	



<b>TPRH103</b>			
Easting 464275		Northing 98035	5.59m OD
Length 0.50m		Width 0.50m	Depth 0.50m
Depth from (m)	Depth to (m)	Description	Interpretation
0.00	0.15	Grass + topsoil	Made ground
0.15	0.50+	Brown silty sand w/ sub-rounded to sub-angular gravel inclusions throughout. Concrete present along western section of trial pit from 0.15-0.30mbgl. Base @0.50m.	

<b>TPRH103A</b>			
Easting 464265		Northing 98024	4.86m OD
Length 0.56m		Width 0.47m	Depth 0.75m
Depth from (m)	Depth to (m)	Description	Interpretation
0.00	0.06	Tarmac	Made ground
0.06	0.18	Concrete	
0.18	0.65	Silty clayey sand w/ freq. sub-rounded gravel <0.10m. Rare oyster shell inclusions and randomly orientated brick frags. Large "cobbles" left in situ, although not bedded in mortar or connected, more like backfill used for construction of modern-day promenade. Modern glazed drainpipe frags.	Made ground – backfill used in construction of modern-day promenade
0.65	0.75+	Sandy gravel. Base @0.75mbgl.	Storm beach deposits – redeposited (?)

<b>TPRH105</b>			
Easting 464306		Northing 97987	5.46m OD
Length 0.65m		Width 0.65m	Depth 0.85m
Depth from (m)	Depth to (m)	Description	Interpretation
0.00	0.02	Tarmac	Made ground
0.02	0.30	Concrete	
0.30	0.35	Limestone "cobbles" <0.05m thick and approx. 0.15m in length	Cobbles from the former 19th-century promenade
0.35	0.85+	Yellow / brown compacted gravelly becoming sandy gravel at depth. Base @0.85m.	Redeposited (?) storm beach deposits

<b>TPRH105A</b>			
Easting 464309		Northing 97995	5.77m OD
Length 3.60m		Width 0.50m	Depth 0.65m
Depth from (m)	Depth to (m)	Description	Interpretation
0.00	0.01	Tarmac	Made ground



0.01	0.40	Concrete. Depth of 0.20m bgl at northern end increasingly to 0.40m bgl at southern end.	
0.20	0.50	Mortar surface. Bricks embedded within this at the northern end on a north-east – south-west alignment. Further to the south imprints where stones or slabs have been can be seen. The mortar surface dipped down slightly, seawards towards the south – from 0.20m bgl to 0.27m bgl. The mortar surface finished 2.4m from the eastern edge of the trench with a west – east aligned line of faced limestone blocks. These extended to a depth of 0.50m bgl. <i>Left in situ.</i>	Structural remains
0.27	-	Limestone “cobbles”, irregular sizes and shapes, no mortar present. <i>Left in situ.</i> Extended from the faced limestone blocks 0.65m eastward.	Cobbles from the former 19th-century promenade
0.40	0.65+	Sandy gravel, rare oyster shell inclusions <0.10m.	Redeposited (?) storm beach deposits

TPRH105B (section 1)			
Easting 464355		Northing 97976	6.00m OD
Length 1.05m		Width 0.45m	Depth 0.45m
Depth from (m)	Depth to (m)	Description	Interpretation
0.00	0.02	Tarmac	Made ground
0.02	0.25	Concrete	
0.25	0.30	Limestone “cobbles”, irregular deposit.	Cobbles from the former 19th-century promenade
0.30	0.42+	Mortar surface. <i>Left in situ.</i>	Structure
0.45		Red tiles/ bricks in south-west corner. <i>Left in situ.</i>	Structure

TPRH105B (section 2)			
Easting 464355		Northing 97974	5.79m OD
Length 0.50m		Width 0.50m	Depth 0.46m
Depth from (m)	Depth to (m)	Description	Interpretation
0.00	0.02	Tarmac	Made ground
0.02	0.30	Concrete	
0.25	0.30	Limestone “cobbles”, irregular deposit. No mortar present??	Cobbles from the former 19th-century promenade
0.46		Red tiles in north-east corner. <i>Left in situ.</i>	Structure
0.46	0.46+	Pale brown gravelly sand. Includes rare oyster shell inclusions.	Made ground



<b>TPRH105B (section 3)</b>			
Easting 464355		Northing 97971	5.68m OD
Length 0.50m		Width 0.45m	Depth 0.27m
Depth from (m)	Depth to (m)	Description	Interpretation
0.00	0.01	Tarmac	Made ground
0.01	0.25	Concrete	
0.25	0.27	Disturbed limestone "cobbles". Base @0.27m.	Cobbles from the former 19th-century promenade

<b>TPRH106</b>			
Easting 464380		Northing 97970	6.08m OD
Length 0.55m		Width 0.45m	Depth 0.75m
Depth from (m)	Depth to (m)	Description	Interpretation
0.00	0.02	Tarmac	Made ground
0.02	0.20	Concrete	
0.20	0.75	Very loose sandy gravel.	Redeposited storm beach deposits
0.75	-	Sloped concrete – dipping downwards towards the sea (south). Base @0.75mbgl.	Concrete – possible top of tunnel.

<b>TPRH107</b>			
Easting 464383		Northing 97974	6.28m OD
Length 0.70m		Width 0.45m	Depth 0.30m
Depth from (m)	Depth to (m)	Description	Interpretation
0.00	0.03	Tarmac	Made ground
0.03	0.17	Concrete	
0.17	0.50+	Yellow / brown coarse sandy sub-rounded gravel <0.04m. Occasional angular limestone "cobbles" <0.30m in length and 0.03m thick were encountered @0.25m and left in situ. Base @0.50m.	Redeposited storm beach deposits with cobbles from the former 19th-century promenade.

<b>TPRH108</b>			
Easting 464411		Northing 97984	4.85m OD
Length 0.70m		Width 0.50m	Depth 0.55m
Depth from (m)	Depth to (m)	Description	Interpretation
0.00	0.02	Tarmac	Made ground
0.02	0.33	Concrete	
0.33	0.70+	Brown silty sandy clayey gravel w/ rare oyster shell <0.10m, frequent flint inclusions throughout <0.05m and occasional red brick frags <0.08m. Base @0.70m.	Redeposited storm beach deposits/ made ground



<b>TPRH110</b>			
Easting 464451		Northing 97986	3.64m OD
Length 0.70m		Width 0.40m	Depth 0.75m
Depth from (m)	Depth to (m)	Description	Interpretation
0.00	0.06	Tarmac	Made ground
0.06	0.45	Concrete. Wall foundation.	
0.20–0.50	0.50	Brown silty sandy clay w/ sub-rounded gravel <0.04m and frequent sub-angular flint inclusions <0.05m. Brick and concrete inclusions.	
0.50	0.65	Stone blocks	(?) Cobbles from the former Victorian / Edwardian promenade
0.65	0.75+	Brown silty sandy clay w/ sub-rounded gravel <0.04m and frequent sub-angular flint inclusions <0.05m. Concrete noted. Base @0.75m.	Redeposited storm beach deposits/ made ground

<b>TPRH111</b>			
Easting 464539		Northing 97994	3.96m OD
Length 0.65m		Width 0.45m	Depth 0.75m
Depth from (m)	Depth to (m)	Description	Interpretation
0.00	0.10	Tarmac - with Fe “loop / hook” inclusion just below surface.	Made ground
0.10	0.50	Concrete	
0.50	0.80+	Yellow coarse sand w/ sub-rounded gravel <0.04m and frequent sub-angular flint inclusions <0.08m throughout. Base @0.80m.	Redeposited storm beach deposits

<b>RHT1</b>			
Easting 464306		Northing 97996	5.88m OD
Type Rotary Odex Borehole			Depth 1.75m
Depth from (m)	Depth to (m)	Description	Interpretation
0.00	0.02	Tarmac	Made ground
0.02	0.23	Cement	
0.23	1.70	Masonry blocks of Portland stone	19th-century sea defences/ outer construction of counterscarp tunnels
1.70	1.75	Red brick	Top of counterscarp tunnel brickwork



<b>RHT2</b>			
Easting 464306		Northing 97994	5.70m OD
Type Rotary Odex Borehole			Depth 4.00m
Depth from (m)	Depth to (m)	Description	Interpretation
0.00	0.05	Tarmac	Made ground
0.05	0.45	Cement	
0.45	4.00+	Sandy gravel	Made ground/ redeposited storm beach deposits

<b>RHT3</b>			
Easting 464355		Northing 97976	6.00m OD
Type Rotary Odex Borehole			Depth 1.75m
Depth from (m)	Depth to (m)	Description	Interpretation
0.00	0.02	Tarmac	Made ground
0.02	0.40	Concrete	
0.40	1.00	Masonry blocks of Portland stone	19th-century sea defences/ outer construction of counterscarp tunnels
1.00	1.10	Red brick	
1.10	1.70	Masonry blocks of Portland stone	
1.70	1.75	Red brick	Top of counterscarp tunnel brickwork

<b>RHT4</b>			
Easting 464355		Northing 97974	5.88m OD
Type Rotary Odex Borehole			Depth 4.00m
Depth from (m)	Depth to (m)	Description	Interpretation
0.00	0.02	Tarmac	Made ground
0.02	0.30	Concrete	
0.30	4.00+	Sandy gravel	Made ground/ redeposited storm beach deposits



## Appendix 2: OASIS record

### OASIS ID: wessexar1-415928

#### Project details

Project name	Southsea Castle, Portsea Island, Hampshire
Short description of the project	Wessex Archaeology was commissioned by the Eastern Solent Coastal Partnership to carry out archaeological monitoring of geotechnical investigations as part of design work for the Southsea Coastal Defence Scheme (centred on National Grid reference 464327, 97976). These additional GI works are within or adjacent to the Scheduled Monument Boundary of Southsea Castle (list entry 1001869) and as such required Scheduled Monument Consent. The monitored works consisted of thirteen trial pits and four rotary core boreholes. The watching brief was undertaken between 13-16 July 2020 with additional coring undertaken 21-22 September 2020. The ground investigations, though limited in their extent, were able to provide information relating to the survival of areas of an earlier promenade surface and information on the outer construction of the counterscarp tunnels. These investigations suggest that the tunnels are encased in a substantial masonry superstructure which includes the seaward side and roof of the feature. This is situated within redeposited storm beach deposits which are likely to form part of the basis of the redesigned sea defences which were constructed at the same time. Several areas of limestone cobbling beneath the current surfacing were located and considered to be the remains of the 19th-century promenade. Both the trial pits and GPR survey highlight that the degree of preservation of this surface is varied.
Project dates	Start: 03-07-2020 End: 22-10-2020
Previous/future work	Yes / Yes
Any associated project reference codes	1001869 - SM No.
Any associated project reference codes	118666 - Contracting Unit No.
Type of project	Recording project
Site status	Scheduled Monument (SM)
Site status	Scheduled Monument (SM)
Current Land use	Coastland 3 - Above high water
Current Land use	Other 14 - Recreational usage
Current Land use	Coastland 3 - Above high water
Current Land use	Other 14 - Recreational usage
Monument type	PATH Post Medieval
Monument type	TUNNEL Post Medieval
Significant Finds	NONE None
Investigation type	"Watching Brief"
Prompt	Scheduled Monument Consent

#### Project location

Country	England
---------	---------



Site location	HAMPSHIRE PORTSMOUTH PORTSMOUTH Southsea Castle, Portsea Island, Hampshire
Postcode	PO5 3PA
Study area	0 Hectares
Site coordinates	SZ 64327 97976 50.777223596562 -1.087530875855 50 46 38 N 001 05 15 W Point

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#### Project creators

Name of Organisation	Wessex Archaeology
Project brief originator	Historic England
Project design originator	Wessex archaeology
Project director/manager	Alex Godden
Project supervisor	Holly Rodgers
Project supervisor	Neil Fitzpatrick
Type of sponsor/funding body	Developer

---

#### Project archives

Physical Archive Exists?	No
Digital Archive recipient	Wessex Archaeology
Digital Media available	"Images raster / digital photography", "Text"
Paper Archive recipient	Wessex Archaeology
Paper Media available	"Diary", "Report"

---

#### Project bibliography 1

Publication type	Grey literature (unpublished document/manuscript)
Title	Southsea Castle, Portsea Island, Hampshire: GI Works Archaeological Watching Brief
Author(s)/Editor(s)	Brennan, N.
Other bibliographic details	report 118666.03
Date	2021
Issuer or publisher	Wessex Archaeology
Place of issue or publication	Wessex Archaeology - Salisbury
Description	A4 client report





- Scheduled Monument
- Trial pit
- ⊕ Rotary core



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Scale:	1:15,000 and 1:2,500	Illustrator:	Naomi_B
Path:	X:\PROJECTS\118666\GIS\FigsMXD\WB report\		

Southsea Castle, trial pits and core locations

Figure 1



	Scheduled Monument	Trial pit
	Previous GI investigation	Rotary core

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Investigations within the Western Battery

Figure 2



	Scheduled Monument	Trial pit
	Previous GI investigation	Rotary core

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Investigations in the vicinity of the castle

Figure 3



	Scheduled Monument	Trial pit
	Previous GI investigation	Rotary core

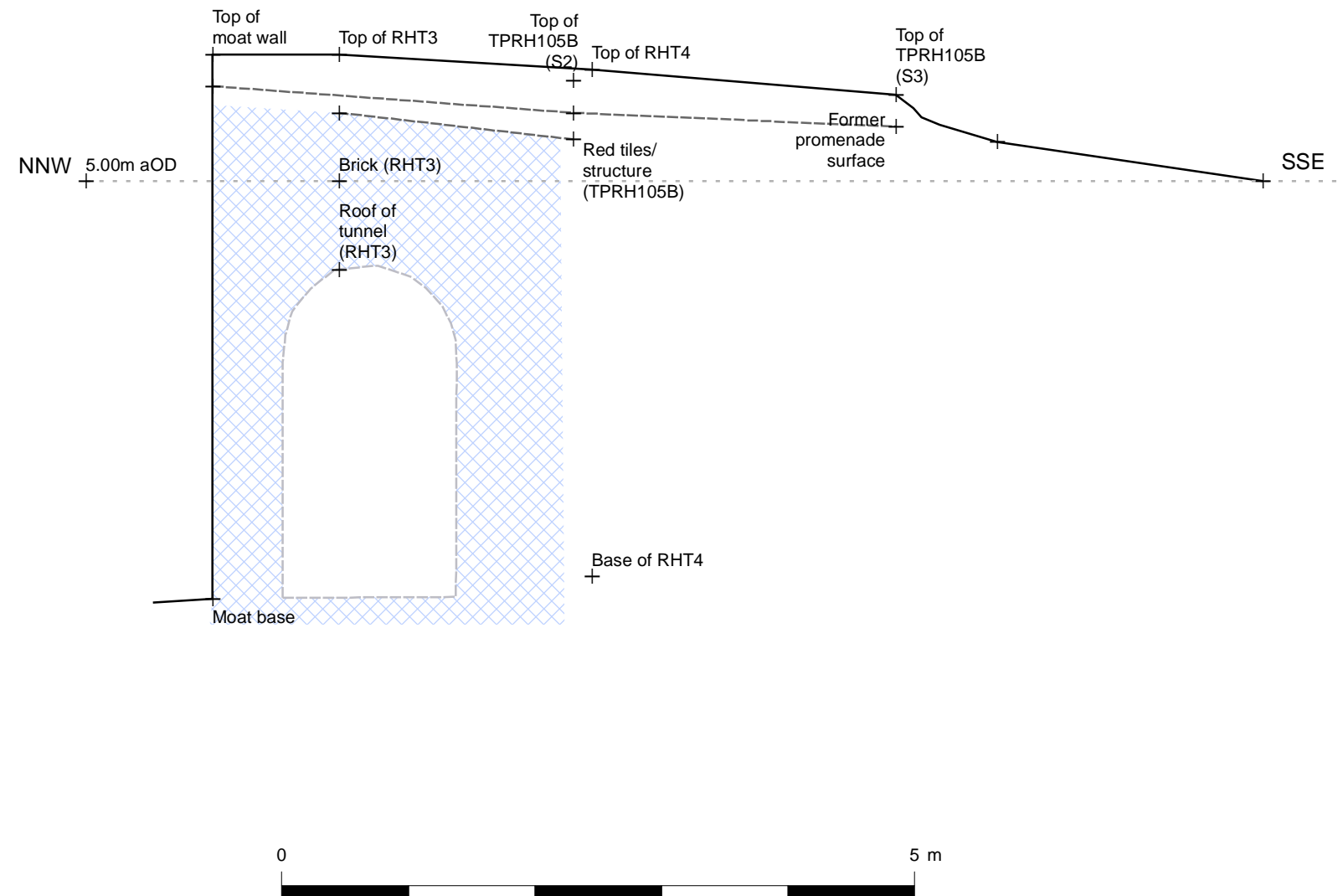
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Investigations adjacent to the Eastern Battery

Figure 4





The moat, counterscarp gallery and caponier



Gun embrasure within wall of counterscarp tunnel showing brick and stone construction

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Based on topographic survey information provided by the client and results from GI investigations

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- GPR survey area
- Extent of promenade\*
- Evidence for the former promenade located

\*as identified by GPR report (TerraDat 2020)

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Path:	

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Extent of the former promenade surface as identified by the investigations

Figure 7



Plate 1) TPRH89, view from the east



Plate 2) TPRH92, view from the east



Plate 3) TPRH95, view from the south-west



Plate 4) TPRH103, view from the south



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Plate 5) TPRH103A, view from the north-west



Plate 6) Location of TPRH105A



Plate 7) Northeastern end of TPRH105A, mortar surface



Plate 8) TPRH105A, view from the south-west



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Plate 9) TPRH105B (Section 1), view from the south



Plate 10) TPRH105B (Section 2), view from the south-west

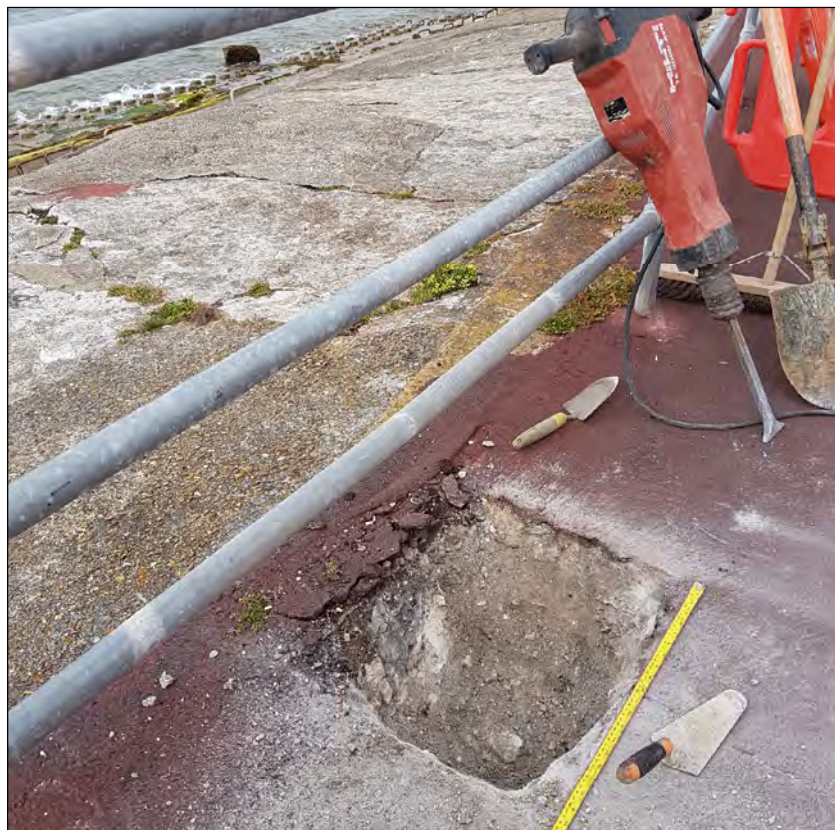


Plate 11) TPRH105B (Section 3), view from the north-east



Plate 12) Locations of the separate sections of TP105B after reinstatement



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Plate 13) TPRH107, view from the south



Plate 14) TPRH106, view from the south-east



Plate 15) View within the counterscarp tunnels



Plate 16) Working shot, excavating RH4, view from the north-east



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Plate 17) Location of trial pits TPRH108, TPRH110 and TPRH111



Plate 18) TPRH108, view from the south



Plate 19) TPRH110, view from the south



Plate 20) TPRH111, view from the south-east



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