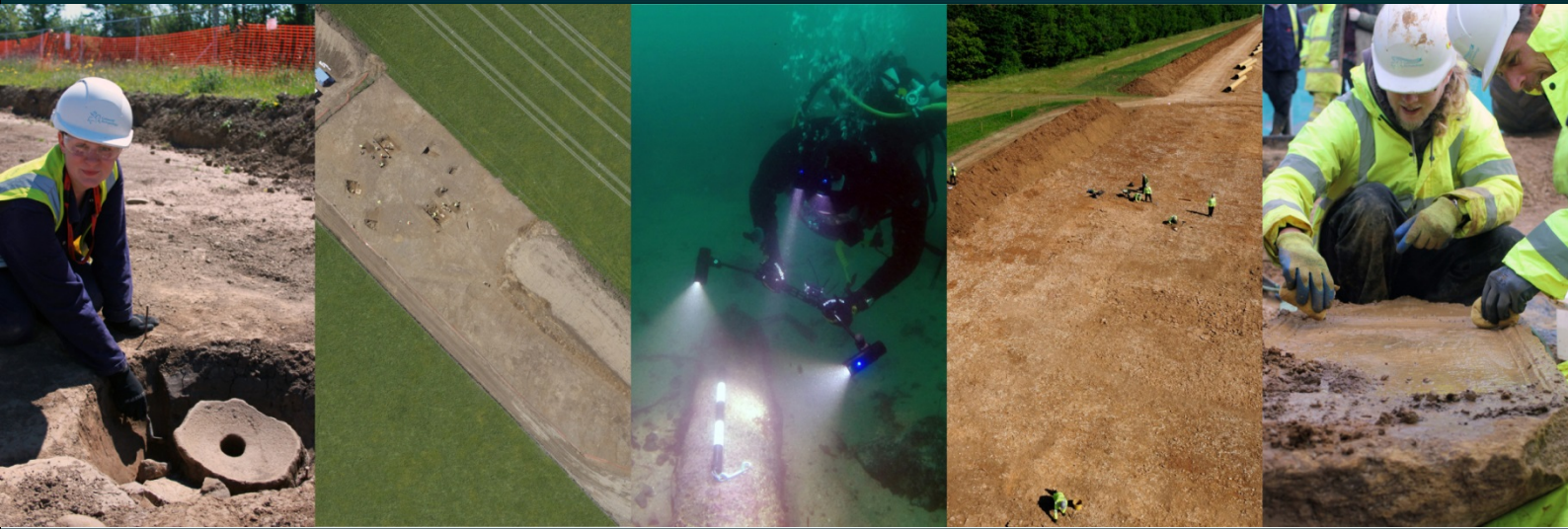


Kinterbury Point Devonport Plymouth

Archaeological Watching Brief



for:
Morgan Sindall

on behalf of:
Defence Infrastructure
Organisation

CA Project: 880388
CA Report: 880388_1
OASIS ID: cotswold2-371709

September 2020



Kinterbury Point Devonport Plymouth

Archaeological Watching Brief

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Document Control Grid						
Revision	Date	Author	Checked by	Status	Reasons for revision	Approved by
A	9 October 2020	Tim Brown	Derek Evans	Internal review	–	Derek Evans

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SUMMARY

Project name:	Kinterbury Point, Devonport, Plymouth
Location:	Plymouth City
NGR:	243567 057698
Type:	Watching brief
Date:	January 2019 to September 2020 (intermittent)
Planning reference:	15/01271/FUL
SMC:	S00067320
OASIS ID:	cotswold2-371709
Location of Archive:	To be deposited with the Archaeology Data Service (ADS)
Site Code:	KPD19

From January 2019 to September 2020, Cotswold Archaeology carried out an intermittent archaeological watching brief at Kinterbury Point, Devonport, Plymouth.

Also known as Bull Point, the site is an ordnance store constructed between 1851 and 1854, although there have been many later reconstructions/additions. Part of the site is designated as a Scheduled Monument (National Heritage List for England Entry Number 1003059).

The watching brief recorded a series of modern made ground deposits throughout the site. These are indicative of extensive ground truncation during the 19th and 20th century development of the site.

The earliest structure recorded during the watching brief was a former cobbled road surface. Although undated artefactually, this surface was cut by later tramways.

The watching brief recorded a series of tramways running on the same lines as the extant roads and pathways within the site. These tramways post-date 1894 and connected the buildings at the site.

The watching brief also recorded a World War II-era bomb shelter and concrete floor slabs associated with demolished 20th-century buildings.

1. INTRODUCTION

- 1.1. From January 2019 to September 2020, Cotswold Archaeology (CA) carried out an intermittent archaeological watching brief at Kinterbury Point, Devonport, Plymouth (centred at NGR: 243567 057698; Fig. 1). This watching brief was undertaken for Morgan Sindall, who were acting on behalf of Defence Infrastructure Organisation.
- 1.2. Plymouth City Council has granted planning permission for the construction of a helipad and forward operating base at the site (planning ref: 15/01271/FUL). The following planning conditions relate to archaeology and heritage:
- **Condition 5:** *No part of the development allowed by this permission shall be commenced until the applicant (or their agent or successors in title) has completed a programme of archaeological work, in accordance with a written scheme of investigation that has been submitted to and approved in writing by the Local Planning Authority. The development shall be carried out at all times in strict accordance with the approved scheme.*
 - **Condition 16:** *The works hereby permitted shall be carried out in strict accordance with all conditions contained within the Schedule Monument Clearance for Scheduled Monument No. PY 122; HA 1003059 - BULL POINT GUNPOWDER MAGAZINE AND CAMBER, PLYMOUTH (Ref: S00067320).*
 - **Condition 17:** *If, during the course of the works, presently hidden archaeological features are revealed, the applicant shall immediately stop work and inform the Local Planning Authority, and shall not continue with the works until agreement has been reached as to the retention or recording of those features.*
- 1.3. A specification for an archaeological watching brief was prepared in response to these conditions (AECOM 2018). This specification document was reviewed and approved by John Salvatore (Archaeologist, Plymouth County Council) and Nick Russell (Inspector of Ancient Monuments, Historic England). It was subsequently supplemented by an archaeological method statement (CA 2019).
- 1.4. As noted in the planning conditions listed above, part of the site is designated as a Scheduled Monument (National Heritage List for England Entry Number 1003059: Bullpoint gunpowder magazines and camber). Figure 1 shows the Scheduled area. Scheduled Monument Consent (SMC) for the development was granted by Historic

England (ref: S00067320). Condition f of the SMC required that a programme of archaeological works was undertaken in line with the approved specification for an archaeological watching brief (AECOM 2018).

- 1.5. During the course of the works, a trench was excavated at the site without archaeological monitoring (Tr30). Subsequently, a Written Scheme of Investigation (WSI; CA 2020) was prepared (at the request of Nick Russell) in order to specify methodologies for recording this trench and for monitoring the reinstatement of structures damaged its excavation. The WSI was reviewed and approved by Nick Russell.
- 1.6. At the request of Nick Russell, and as specified in the WSI (CA 2020), this report is supplemented by a desk-based research document (Francis 2020) which was specifically undertaken as part of the present works. This research document is included in full as Appendix B of the present report.

The site

- 1.7. The watching brief site is within the south-western part of the Royal Naval Dockyard at Devonport, Plymouth (Fig.1). The River Tamar lies to the west of the site.
- 1.8. The underlying bedrock geology of the site is mapped as Saltash Formation slate and siltstone. This sedimentary bedrock formed during the Devonian and Carboniferous Periods. No superficial deposits are recorded at the site (BGS 2020).

2. HISTORIC BACKGROUND

- 2.1. A recording survey of historic buildings at the site was undertaken in 2013 (Atkins 2013). The following text is briefly summarised from this report, supplemented by information from the relevant National Heritage List for England entry (number 1003059). A fuller historic background is appended in the accompanying desk-based study (Francis 2020; Appendix B).
- 2.2. Also known as Bull Point, the site is an ordnance store with magazines, ancillary buildings, enclosure walls and a camber dock. Construction began in 1851 and was largely completed by 1854, although there have been many later reconstructions/additions. In contrast to earlier ordnance yards, Bull Point was specifically designed and purpose-built for the processing and storing of ordnance. It formed part of an integrated complex with tramways connecting the buildings.

2.3. Surviving early structures at the site include a series of stone-built magazines with protective stone-revetted earthen bunds and blast walls, specialist storage buildings for different types of armaments and other ancillary buildings, the enclosure walls and the reinforced stone-built camber dock with associated vaulted magazine. Several of the buildings retain original features, such as shuttered windows, boarded doors, glazing bars, timber trusses and tram rails.

2.4. The site is a Scheduled Monument (National Heritage List for England Entry Number 1003059: Bullpoint gunpowder magazines and camber). Various structures within the site are also Listed: the enclosure walls and gates (Grade II); Building 13: Receipt and Issue Magazine (Grade II*); Building 45: QF Ammunition Store (Grade II); and Building 43: barrel and case store (Grade II).

3. AIMS AND OBJECTIVES

3.1. As set out in the specification document (AECOM 2018), the principal objective of the watching brief was to ensure the recording of any archaeological deposits that were encountered during the development groundworks. The specific objectives of the archaeological watching brief were:

- to identify the presence/absence of buried archaeological remains;
- to determine (where possible) the nature, depth, extent, character, preservation, significance and date of any archaeological deposits or features encountered (as far as circumstances permit); and
- to determine the likely range, quality and quantity of artefactual and environmental evidence present.

4. METHODOLOGY

4.1. The watching brief mainly comprised the observation of intrusive groundworks, comprising the machine excavation of foundation and service trenches, the auguring of postholes for a new perimeter fence and areas of ground reduction/levelling (Fig. 2).

4.2. Additionally, a written, drawn and photographic record was compiled on structures damaged by Tr30 (the unmonitored trench). This record was confined only to the damaged areas of the structures. Archaeological monitoring was also maintained during the reinstatement of these structures.

-
- 4.3. Archaeological features/deposits were investigated, planned and recorded in accordance with *CA Technical Manual 1: Fieldwork Recording Manual*.
 - 4.4. Deposits were assessed for their palaeoenvironmental potential in accordance with *CA Technical Manual 2: The Taking and Processing of Environmental and Other Samples from Archaeological Sites*. No deposits were identified that required sampling.
 - 4.5. As no artefacts were recovered during the archaeological works, no material (finds) archive will be prepared or deposited.
 - 4.6. A digital archive will be prepared and deposited with the Archaeology Data Service (ADS). It will thus be made publicly accessible, in accordance with the *National Planning Policy Framework* (MHCLG 2019). The digital archive will be compiled in accordance with the *ADS Guidelines for Depositors and Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives* (ClfA 2014; updated June 2020). It will consist of all born-digital data and digital copies of all other relevant elements of the primary fieldwork record.
 - 4.7. A summary of information from this project, as set out in Appendix A, will be entered onto the OASIS online database of archaeological projects in Britain (OASIS ID: cotswold2-371709).

5. RESULTS

- 5.1. This section provides an overview of the watching brief results. The monitored groundworks and recorded features are shown on Figures 2 and 14.
- 5.2. The natural geological substrate was only exposed in Tr4, Tr5 and the north-western part of Tr69 only. It comprised yellow/brown shillit and sandy clay and was revealed at a depth of 0.8m–1m below present ground level (bpgl). All other trenches contained various modern made ground deposits to depth.

Trench 1

- 5.3. Tr1 was excavated to a depth of 0.8m bpgl. It failed to reach the level of the natural geological substrate. Modern made ground deposits were recorded to depth.

Trench 2 (Figs. 3–9)

- 5.4. Tr2 contained a World War II-era air raid shelter (context 203; Fig. 3). This structure was cut into the ground and was covered by an earthen bund (Figs. 4 and 5).
- 5.5. The shelter was constructed of concrete breeze blocks. It measured 2.05m in width, widening to 3.85m at its north-western end (where there was an entrance/reception area). It had a total length of 15.2m.
- 5.6. The shelter was entered via steps at its north-western end (Fig. 6), which led down into a reception area. The ceiling in this area was at two different heights: 2.68m above floor level and 2.2m above floor level.
- 5.7. The reception area led to the main chamber of the shelter, which was subdivided into eight bays (labelled bays A–H on their internal walls) by a series of girders (Fig. 7). The main chamber measured 1.98m from floor to ceiling. Graffiti was visible on the walls (Fig. 8).
- 5.8. A ladder up to an exit hatch was present at the south-eastern end of the shelter (Fig. 10).
- 5.9. Further analysis of this shelter is included in the desk-based research document (Francis 2020; Appendix C).

Trench 3 (Figs. 10–12)

- 5.10. Tr3 was excavated to remove two concrete paths which led north-westwards from a now-demolished building (in the location of Tr4; see below).
- 5.11. A series of tramway piers were exposed immediately underneath the concrete pathway surface (contexts 301, 302, 307 and 308). These piers defined two tramways running on the same route as the paths; they merged into one tramway approximately 2m before meeting the main road.
- 5.12. The piers were constructed of frogged bricks. Each pair of piers would have lain with one pier at either side of the tramways; the tramways so defined were 0.71m in width. The spaces between the piers were infilled by made ground deposits (Fig. 11). No metal tramway track survived, although possible fixings were visible within the brickwork (Fig. 12).

Trenches 4 and 5

- 5.13. Both of these trenches were associated with the removal of concrete floor slabs from previously-demolished buildings. The natural substrate was exposed 0.8m–1m bpgl. It was sealed by 0.5m of yellow/brown silty clay subsoil, which was covered in turn by the modern topsoil. This sequence was cut by the construction cuts for the buildings. The concrete slabs were 0.25m thick and had been laid on 0.6m–0.8m of made ground.
- 5.14. The building in Tr4 is first depicted on an Admiralty chart of c. 1914, but is unidentified (Francis 2020, Building 20). The building in Tr5 is not depicted on the Admiralty chart, and must therefore post-date 1914.

Trench 6, Trenches 16–29 and Trenches 31–67 (Fig. 27)

- 5.15. Tr6 was a long, segmented service trench. It was excavated to a depth of 0.35m bpgl, exposing 0.25m of made ground (the base of which was not reached) overlain by 0.1m of modern topsoil/turf.
- 5.16. Tr16–Tr29 and Tr31–Tr67 (shown but not labelled on Fig. 2) were a series of fencing postholes which were excavated within Tr6. They were excavated (by auger) to a depth of 0.6m–0.1m beyond the base of Tr6. They did not penetrate the modern made ground in this area.

Trench 7 (Figs. 13–15)

- 5.17. A former cobbled road surface (704) was revealed in the south-western half of the trench at a depth of c. 0.3m bpgl. The north-eastern half of the trench was occupied by yellow clay made ground 709, which was partially overlain by the fragmentary remnants of further cobbled surfacing (712).
- 5.18. A series of rail support piers ran through the trench on a north-west/south-east alignment, cutting through the cobbled surfacing and made ground described above (piers 703, 706, 708, 710, 711 and 713). The majority of these piers were constructed of frogged bricks, although piers 706 and 708 were constructed of sandstone/chert.
- 5.19. The remains of mortar capping were present on the upper surfaces of some of these piers, and the fragmentary remnants of rails were present in places.

Trench 8 (Fig. 16)

- 5.20. Tr8 contained a series of made ground deposits. These were cut by an L-shaped wall (803) constructed of frogged bricks laid on a concrete foundation.

Trenches 9–14

- 5.21. Tr9 was excavated to a depth of 0.3m bpgl. A series of postholes (Tr10–14; shown but not labelled on Fig. 2) were then excavated within the open trench, to an average depth of 0.7m beyond the base of the trench. These excavations did not penetrate the modern made ground in this area.

Trench 15

- 5.22. Tr15 was excavated to a depth of 0.6m bpgl. It did not reach the base of the made ground in this area.

Trench 30 (Figs. 17–26)

- 5.23. Tr30 was a service trench. It was excavated adjacent to Tr6 and postholes Tr31–Tr67. Tr30 was initially excavated and backfilled without archaeological monitoring. This backfill was subsequently removed under archaeological supervision and the emptied trench was recorded. The trench was excavated to a depth of c. 0.7m–0.8m bpgl. It contained a brown silty clay made ground deposit (3000), which was sealed by 0.2m of modern topsoil. The natural substrate was not exposed. No archaeological features were present and there were no below-ground structures other than those described below.
- 5.24. Tr30 cut through six former tramways. These structures comprised concrete tramway beds standing slightly proud of ground level, supported on twin brick plinths set into the ground. They were cut through the topsoil and made ground deposits described above. The remains of iron rails were present on the surface of one of the concrete beds (context 3005; plinths 3002 and 3003) but were absent from the remainder of the beds. The upper surfaces of some of the concrete beds displayed a chevron pattern.
- 5.25. The heights of the brick plinths varied. In some cases, they extended beyond the depth of the trench; in other locations, the plinths were short enough that rough concrete foundation blocks were exposed (e.g. contexts 3035 and 3036).
- 5.26. The voids between the brick plinths were infilled with stone/brick rubble and gravel, which presumably acted as ballast to support the plinths.

Reconstruction of the tramways

- 5.27. As set out in the WSI (CA 2020), archaeological monitoring was maintained during the reinstatement of the damaged tramways. This process began with the laying of iron mesh over the newly-installed service ducts (Fig. 22) and backfilling of the trench with concrete (Fig. 23), to provide a foundation for the reconstructed structures. The brick plinths were then reconstructed and further iron mesh was placed to either side, to support the new concrete tramway bed (Fig. 24). Fresh concrete was then laid to reconstruct the damaged sections of the tramway bed. Replacement rails were also added (Fig. 25) at the one location where these had been extant (context 3005; plinths 3002 and 3003). The chevron pattern was also reconstructed on the upper surface of the relaid concrete at those locations where this pattern had originally been present (Fig. 26).

Trenches 68 and 69

- 5.28. Tr68 was excavated to a depth of 0.4m bpgl. It exposed a modern made ground deposit, which was overlain by 0.36m of topsoil. Tr69 was a channel within Tr68, within which eight postholes were augured to depths of 0.8m–1.2m (from the base of Tr68). The natural substrate was exposed at a depth of 0.82m bpgl in the north-western postholes, but was not reached in the remainder.

6. DISCUSSION

- 6.1. The archaeological watching brief recorded a series of modern made ground deposits throughout the site. These are indicative of extensive ground truncation during the 19th and 20th century development of the site.
- 6.2. The earliest structures recorded during the watching brief are probably the former cobbled road surfaces in Tr7 (contexts 704 and 712). Although undated artefactually, these surfaces were cut by the later tramways (see below).
- 6.3. The watching brief recorded a series of tramways running on the same lines as the extant roads and pathways within the site. These tramways connected the buildings at the site. It is known that there were numerous phases of tramway construction at the site; the tramways recorded by the watching brief apparently relate to a post-1894 period of construction. Further analysis of the tramways is included in Francis 2020 (Appendix B).

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- 6.4. The watching brief also recorded a concrete-built World War II-era bomb shelter (Tr2) and concrete floor slabs associated with demolished 20th-century buildings (Tr4 and Tr5).

7. CA PROJECT TEAM

- 7.1. Fieldwork was undertaken by Tim Brown, Jeremy Austin, Simon Sworn and Chris Griffiths. This report was written by Tim Brown. The report illustrations were prepared by Ryan Wilson. The project archive has been compiled and prepared for deposition by Hazel O'Neill. The project was managed for CA by Derek Evans.

8. REFERENCES

AECOM 2018 *Specification for Archaeological Watching Brief: Proposed Helipad and FOB at Kinterbury Point, Devonport*

Atkins 2013 *Record of Existing Buildings BP001, BP004, BP044 and Underground Air Raid Shelter Adjacent to Bull Point Gunpowder Magazine and Camber – Scheduled Monument No. PY1022: HA 1003059* Atkins unpublished report reference **5116453 – 500 - 06**

British Geological Survey 2020 *Geology of Britain*

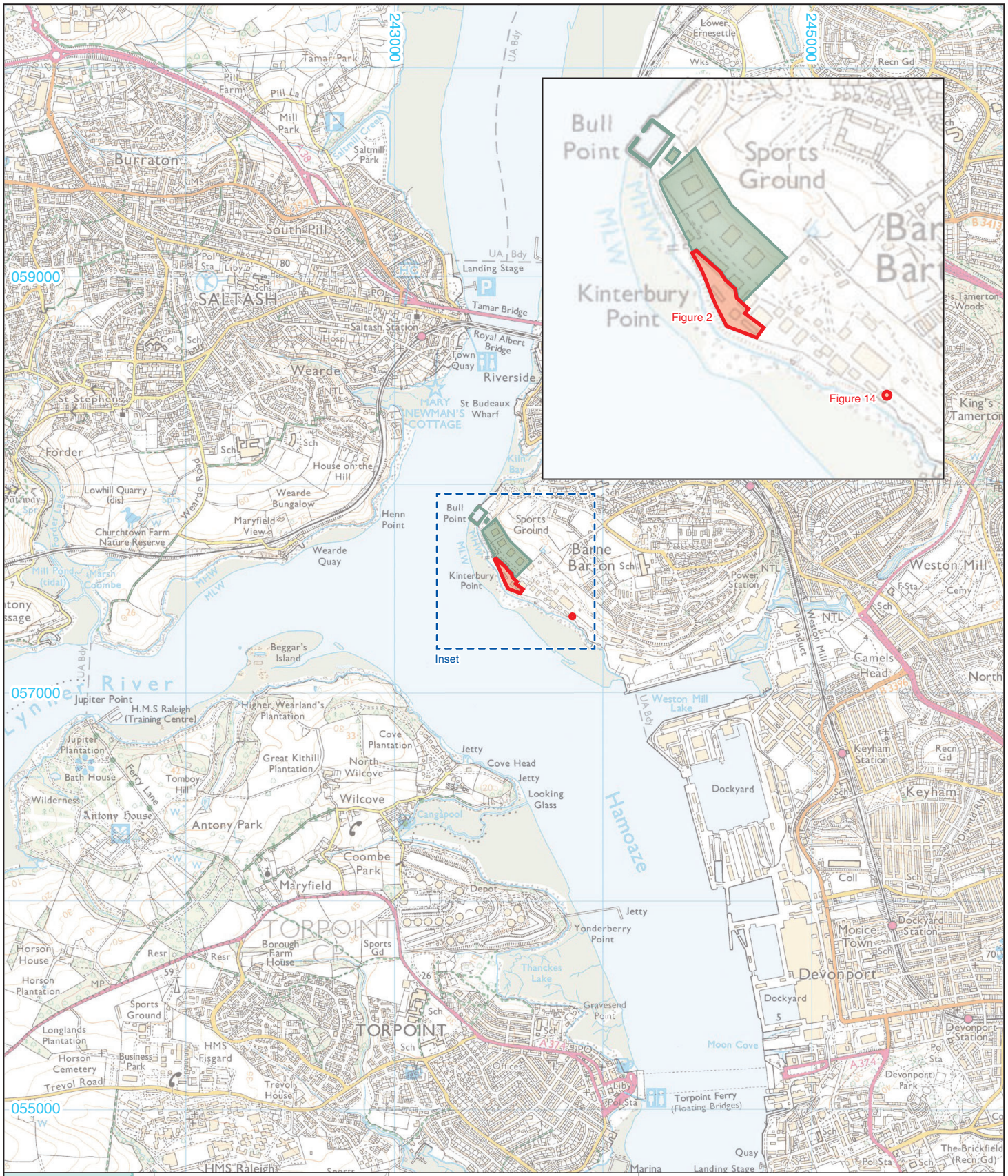
Viewer <http://www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html> Accessed 18 March 2020

Cotswold Archaeology 2019 *Kinterbury Point, Devonport, Plymouth: Method Statement for an Archaeological Watching Brief*

Cotswold Archaeology 2020 *Kinterbury Point, Devonport, Plymouth: Written Scheme of Investigation for a Programme of Archaeological Work*

Francis, P. 2020 *Desk-based analysis of Cotswold Archaeology watching brief at Kinterbury Point*

Ministry of Housing, Communities & Local Government 2019 *National Planning Policy Framework*



N

Site boundary

Scheduled Monument

0 1km

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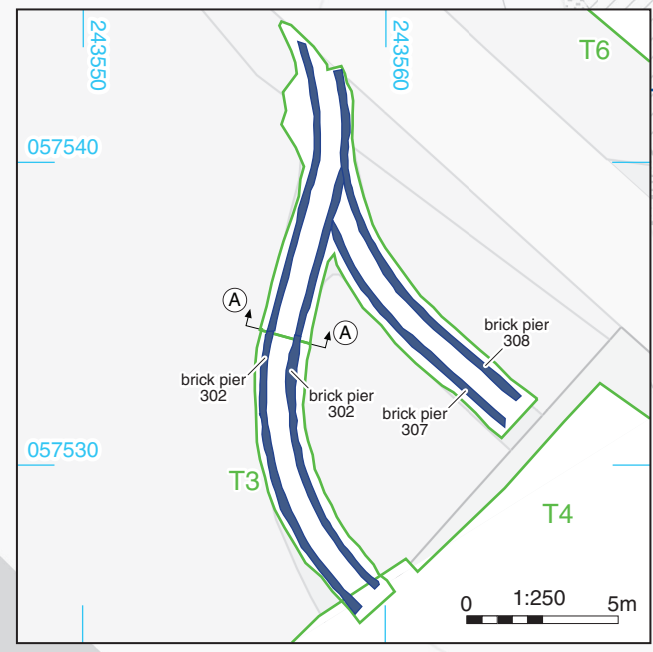
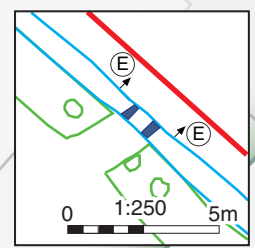
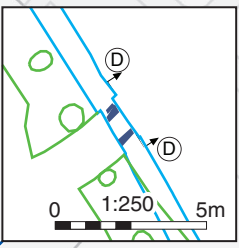
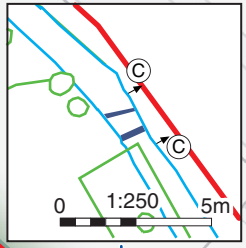
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PROJECT TITLE
 Kinterbury Point, Devonport, Plymouth, Devon

FIGURE TITLE
 Site location plan

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- Watching brief area
- Monitored groundworks
- Trench 30
- Structure
- Section line
- Scheduled Monument
- Earthen bund



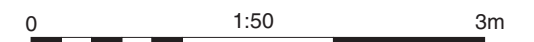
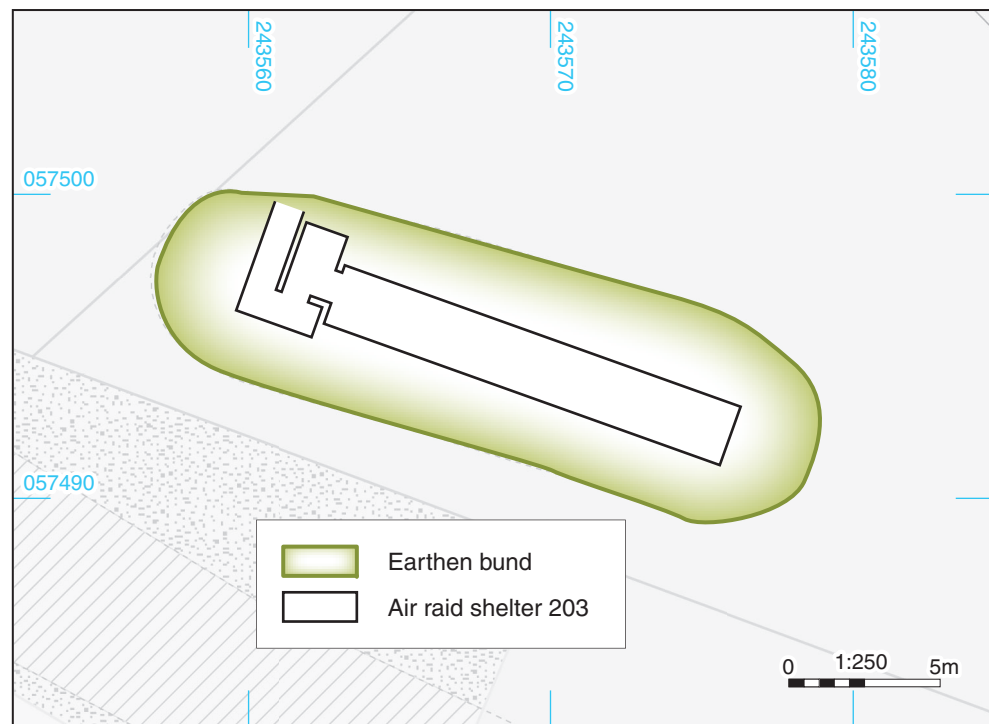
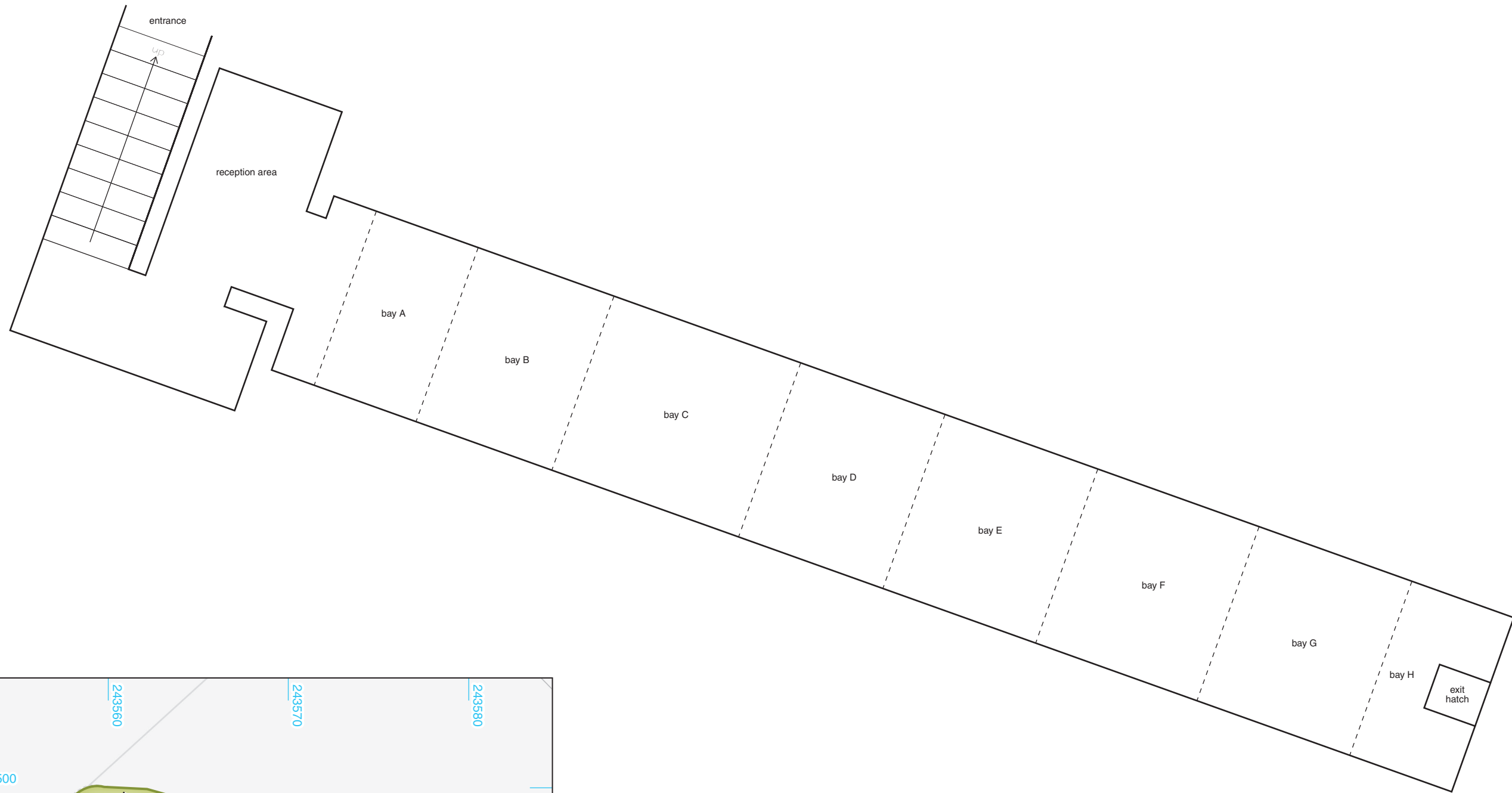
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PROJECT TITLE
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FIGURE TITLE
The site, showing monitored groundworks

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FIGURE TITLE
Trench 2: plans

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APPROVED BY	TB	SCALE@A3	1:250, 1:50	



Shelter 203, looking south-west



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FIGURE TITLE

**Trench 2: shelter 203 at ground level,
showing overlying earthen mound**

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FIGURE NO.

4



Shelter 203, looking north (2m scale)



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FIGURE TITLE

**Trench 2: south-eastern end of shelter
 203, showing shelter structure exposed
 beneath earthen bund**

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FIGURE NO.

5



Shelter 203, looking north-east (1m scale)



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FIGURE TITLE

**Trench 2: entrance into air raid shelter
203**

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FIGURE NO.

6



Main chamber of shelter 203, looking south-east (1m scale)



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FIGURE TITLE

**Trench 2: main chamber of air raid
shelter 203**

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FIGURE NO.

7



Graffiti inside shelter 203



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PROJECT TITLE

Kinterbury Point, Devonport, Plymouth,
Devon

FIGURE TITLE

**Trench 2: graffiti on wall of air raid
shelter 203**

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FIGURE NO.

8



Exit hatch from shelter 203, looking south-east (0.5m scale)



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PROJECT TITLE

Kinterbury Point, Devonport, Plymouth,
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FIGURE TITLE

**Trench 2: exit hatch from air raid
shelter 203**

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FIGURE NO.

9



Trench 3 tramway structures, looking south (2m scale)



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PROJECT TITLE

Kinterbury Point, Devonport, Plymouth,
Devon

FIGURE TITLE

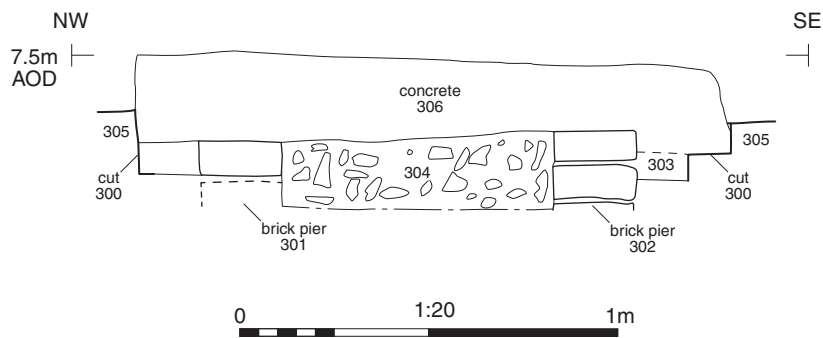
Trench 3: tramway structures

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FIGURE NO.

10

Section AA



Trench 3: tramway pier structures 301 and 302, looking north-east (1m scale)



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PROJECT TITLE

Kinterbury Point, Devonport, Plymouth, Devon

FIGURE TITLE

Trench 3: section and photograph

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FIGURE NO.

11



Trench 3, fixing within structure 301, looking north-west (0.2m scale)



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PROJECT TITLE

Kinterbury Point, Devonport, Plymouth,
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FIGURE TITLE

**Trench 3: possible fixing within
 tramway structure 301**

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FIGURE NO.

12



Trench 7, looking north-east (0.3m and 1m scale)



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PROJECT TITLE

Kinterbury Point, Devonport, Plymouth,
 Devon

FIGURE TITLE

Trench 7: photograph

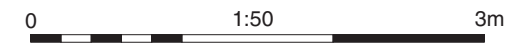
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 CHECKED BY **DJB** DATE **16/09/2020**
 APPROVED BY **TB** SCALE@A4 **NA**

FIGURE NO.

13



- Monitored groundworks
- Mortar
- Metal fixing
- Drain
- Section line



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PROJECT TITLE
Kinterbury Point, Devonport, Plymouth, Devon

FIGURE TITLE
Trench 7 and 8: plan

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CHECKED BY	DJB	DATE	16/09/2020	14
APPROVED BY	TB	SCALE@A3	1:500, 1:50	

057380

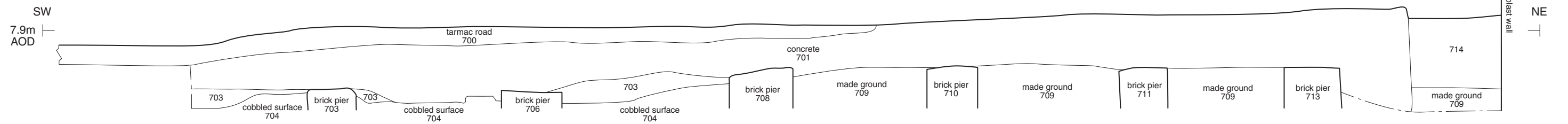
057375

057370

243860

243865

Section BB



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PROJECT TITLE
Kinterbury Point, Devonport, Plymouth,
Devon

FIGURE TITLE
Trench 7: section

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APPROVED BY	TB	SCALE@A3	1:20	



Wall 803, looking north-west (1m scale)



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PROJECT TITLE

Kinterbury Point, Devonport, Plymouth,
Devon

FIGURE TITLE

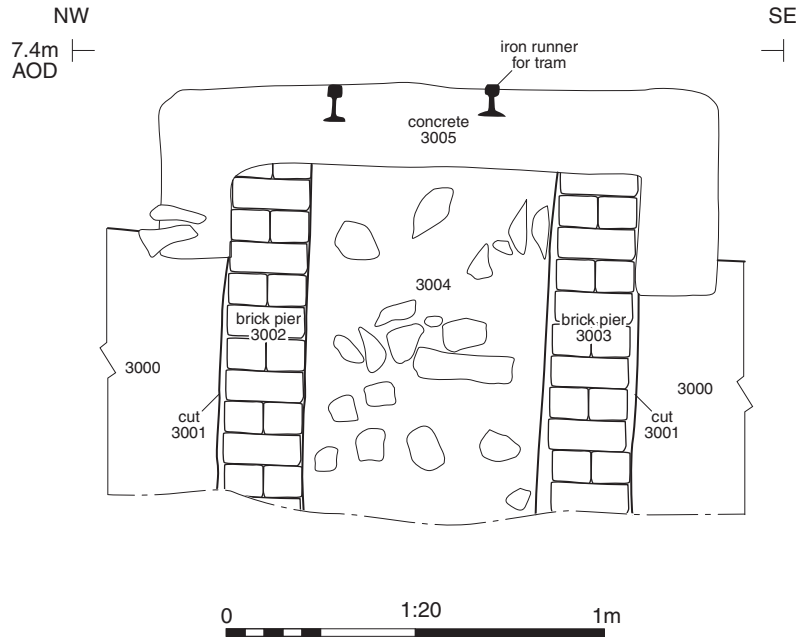
Trench 8: wall 803

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APPROVED BY **TB** SCALE@A4 **NA**

FIGURE NO.

16

Section CC



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PROJECT TITLE

Kinterbury Point, Devonport, Plymouth, Devon

FIGURE TITLE

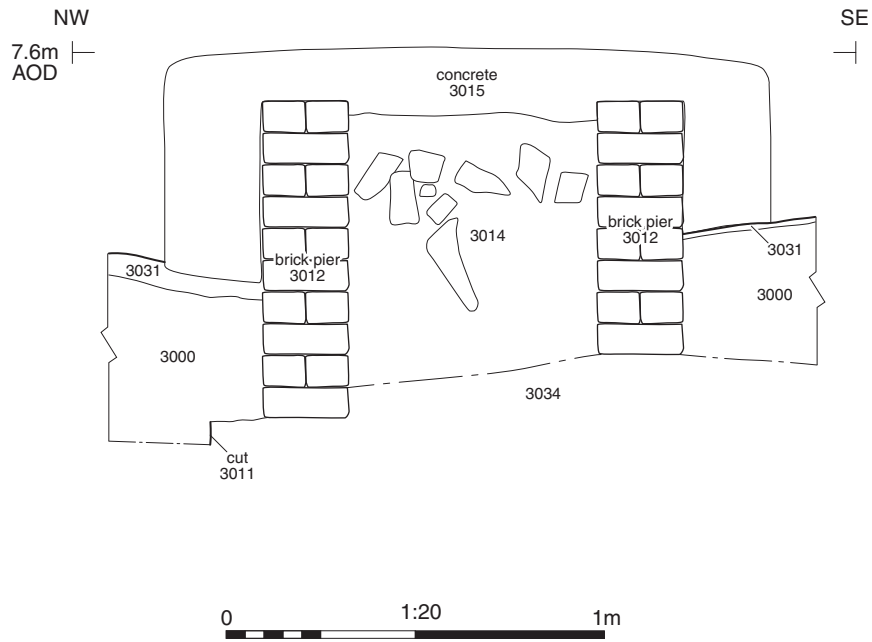
Trench 30: section

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FIGURE NO.

17

Section DD



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PROJECT TITLE

Kinterbury Point, Devonport, Plymouth, Devon

FIGURE TITLE

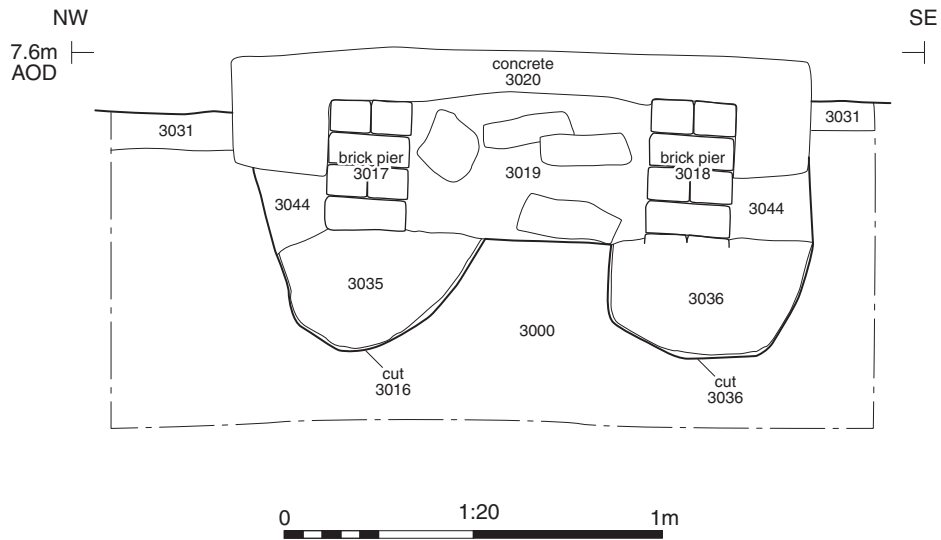
Trench 30: section

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 APPROVED BY **TB** SCALE@A4 **1:20**

FIGURE NO.

18

Section EE



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PROJECT TITLE

Kinterbury Point, Devonport, Plymouth, Devon

FIGURE TITLE

Trench 30: section

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APPROVED BY	TB	SCALE@A4	1:20	



Tram piers 3002 and 3003, looking north-east (1m scale)



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PROJECT TITLE

Kinterbury Point, Devonport, Plymouth,
Devon

FIGURE TITLE

Trench 30: tram piers 3002 and 3003

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FIGURE NO.

20



Tram piers 3012 and 3013, looking north-east (1m scale)



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PROJECT TITLE

Kinterbury Point, Devonport, Plymouth,
Devon

FIGURE TITLE

Trench 30: tram piers 3012 and 3013

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FIGURE NO.

21



Iron mesh laid over services



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PROJECT TITLE

Kinterbury Point, Devonport, Plymouth,
Devon

FIGURE TITLE

**Trench 30: iron mesh laid over service
ducts**

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FIGURE NO.

22



Infilling of concrete above mesh



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PROJECT TITLE

Kinterbury Point, Devonport, Plymouth,
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FIGURE TITLE

Trench 30: concrete backfill

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FIGURE NO.

23



Reconstructed brick plinths at piers 3002 and 3003



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PROJECT TITLE

Kinterbury Point, Devonport, Plymouth,
Devon

FIGURE TITLE

Trench 30: reconstructed brick plinths

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FIGURE NO.

24



Concrete tramway and replacement metal rails (1m scale)



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PROJECT TITLE

Kinterbury Point, Devonport, Plymouth,
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FIGURE TITLE

**Trench 30: reconstructed concrete
tramway bed and rails**

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FIGURE NO.

25



Reconstructed ramp at piers 3027 and 3028, looking north-east (1m scale)



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PROJECT TITLE

Kinterbury Point, Devonport, Plymouth,
Devon

FIGURE TITLE

**Trench 30: reconstructed ramp at piers
3027 and 3028**

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FIGURE NO.

26



Trench 52 augured posthole, looking north-east (0.3m scale)



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PROJECT TITLE

Kinterbury Point, Devonport, Plymouth,
Devon

FIGURE TITLE

Trench 52: augured posthole

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FIGURE NO.

27



Trenches 68 and 69 looking north-west (1m scales)



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PROJECT TITLE

Kinterbury Point, Devonport, Plymouth,
Devon

FIGURE TITLE

Trenches 68 and 69: photograph

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FIGURE NO.


28

APPENDIX A: OASIS REPORT FORM


PROJECT DETAILS		
Project name	Kinterbury Point, Devonport, Plymouth	
Short description	<p>From January 2019 to September 2020, Cotswold Archaeology carried out an intermittent archaeological watching brief at Kinterbury Point, Devonport, Plymouth.</p> <p>Also known as Bull Point, the site is an ordnance store constructed between 1851 and 1854, although there have been many later reconstructions/additions. Part of the site is designated as a Scheduled Monument (National Heritage List for England Entry Number 1003059).</p> <p>The watching brief recorded a series of modern made ground deposits throughout the site. These are indicative of extensive ground truncation during the 19th and 20th century development of the site.</p> <p>The earliest structures recorded during the watching brief are probably a former cobbled road surface. Although undated artefactually, this surface was cut by later tramways.</p> <p>The watching brief recorded a series of tramways running on the same lines as the extant roads and pathways within the site. These tramways post-date 1894 and connected the buildings at the site.</p> <p>The watching brief also recorded a World War II-era bomb shelter and concrete floor slabs associated with demolished 20th-century buildings.</p>	
Project dates	January 2019 to September 2020	
Project type	Watching brief	
Previous work	Historic building recording survey (Atkins 2013)	
Future work	Unknown	
PROJECT LOCATION		
Site location	Kinterbury Point, Devonport, Plymouth City	
Study area (m ² /ha)	0.1ha	
Site co-ordinates	243567 057698	
PROJECT CREATORS		
Name of organisation	Cotswold Archaeology	
Project brief originator	N/A	
Project design (WSI) originator	AECOM and Cotswold Archaeology	
Project Manager	Derek Evans	
Project Supervisor	Various	
MONUMENT TYPE		
	19th/20th-century military site	
SIGNIFICANT FINDS		
	None	
PROJECT ARCHIVES		
	Intended final location of archive	Content
Physical	N/A	N/A
Paper	N/A	N/A
Digital	Archaeology Data Service (ADS)	Born-digital data; scans of primary site archive
BIBLIOGRAPHY		
Cotswold Archaeology 2020 <i>Kinterbury Point, Devonport, Plymouth: Archaeological Watching Brief</i> CA typescript report 880388_1		

APPENDIX B: DESK-BASED ANALYSIS REPORT

Follows



DESK-BASED ANALYSIS OF COTSWOLD
ARCHAEOLOGY WATCHING BRIEF AT
KINTERBURY POINT



Paul Francis
ARP Ware, Herts

Scope and Limitations

The Report

This is a desk-based analysis of a Cotswold Archaeology Watching Brief report on Kinterbury Point, Devonport, Plymouth that was carried out between January 2019 and September 2020. To achieve this, it has been necessary to look at the constructional history of the site primarily using internet sources. This report is in seven sections:

1. Describes the final days of the Board of Ordnance
2. Parliamentary Papers correspondence
3. An overview of the early constructional history of the depot
4. A general look at War Department (WD) and Royal Engineer (RE) tramways and railways
5. Analysis of the tramway within the newspapers and my redrawn plan
6. Analysis of the watching brief of the tramway
7. Analysis of the watching brief of an air raid shelter

The report is not a history of the site, it has not been possible to discuss the origin and function of every building and, it has not been possible to locate any annotated site plans. Any errors are entirely mine.

Paul Francis ACiFA, 03 October 2020

Sources and Acknowledgements

Re-drawn Site Plan

This report is illustrated with a redrawn plan of the site, based on two digital fragments of unidentified and undated Admiralty charts, but which are presumed to date from 1894 and 1914. The digital versions are very poor copies and do not overlap very well and have large parts missing. The accompanying plan is therefore my interpretation.

Online Newspaper Sources

It was hoped that the newspapers might shed some light on land purchase and the subsequent construction phases including the tramways, beginning with the St. Budaeaux Royal Powder Works (RPW) of the early 1800s, followed by the period between 1840 and 1914 for the site's redevelopment. Most of the digitised Cornwall and Devon (Western) newspapers date from the 1850 / 60s and only two titles predate this. The newspaper search has been quite successful, but only one entry was found relating to the original RPW. There are many notices requesting tenders for work at Bull Point, not so many as to who won the contracts – including the absence of the one mentioned in the Historic England (HE) listing descriptions (see Part 3). Most news items are repeated word for word by many newspaper titles published all over the UK. The articles are mostly thinly detailed with the occasional very detailed description such as that for the construction of the shell base in 1907.

There are numerous mentions of a tramway (but without any detail), including an early one before the construction of Bull Point magazines and their supporting buildings.

The newspapers can be found on the web site www.britishnewspaperarchive.co.uk

Other Sources

The site's history is not represented very well on the internet and in published sources. In June 1982, the Bull Point magazines, their associated buildings and enclosure walls were scheduled as ancient monuments. A site-wide survey and report was carried out in 2000 by English Heritage (EH), the author being David Evans. In 2003 his work on Bull Point as well as the other Naval ordnance sites (such as Upnor and Priddy's Hard) were re-examined by Jeremy Lake of the Listing team assisted by Evans who between them compiled an EH thematic survey and report of all the ordnance yards. In 2009, this study was used

as the basis of various listings at Bull Point and today are the descriptions as published on the internet by HE: www.historicengland.org.uk/listing/the-list/.

It has not been possible to locate a copy of Evans's 2000 report, nor the location of original building drawings mentioned in the Blg.13 listing description – though a few site plans can be found at the (now closed) National Archives, Kew (TNA) – these are identified in an addendum.

Wayne Crocroft the author of the English Heritage book, *Dangerous Energy* (2001) has an illustration of the RPW site dated 1811 and a couple of paragraphs of text.

Files Located at The National Archives, Kew

- Ordnance Office and War Office Correspondence (1847-52) WO 44/14
- Boundaries of Admiralty Land (1895) ADM 116/842
- OS Map (1910) ADM 140/1484/40
- Survey of Bull Point, Royal Laboratory and Barracks (1866) WO 78/4484
- Plans and drawings showing ordnance land (1855) MPH 1/1183
- Map of Bull Point (1925) MR 1/1896/2
- Maps & plans (1878) WO 78/3038
- Maps & plans (1916) WO 78/4341
- Plan (1849) MFQ 1/218/10
- Time & Motion Study (1943-44) ADM/13670

Abbreviations

A: Admiralty
ARG: Airfield Research Group
EH: English Heritage
HE: Historic England
RE: Royal Engineers
RPW: Royal Powder Works
TNA: The National Archives
WD: War Department
Wks.: Workshops

Acknowledgements

Graham Crisp (ARG)
Wayne Crowcroft (HE)
Derek Evans (Cotswold Archaeology)
Roger Thomas (HE)

1. The Final Days of the Board of Ordnance

The Crimean War lasted between 1854 to March 1856 and with it came the terrible suffering of British troops before Sevastopol during the winter of 1854-55. This was caused by the complete breakdown of all supply and transport plus the collapse of military organisation and administration. It also created an outcry at home both in and outside Parliament; the result being that a Parliamentary Committee was appointed to inquire into the general administration of the army. Amongst the committee's many recommendations was the abolition of the Board of Ordnance. So in May 1885 the 'Letters Patent' were cancelled, the Department of the Board of Ordnance was dissolved, and the Royal Regiment of Artillery, the Corps of Royal Engineers, the guns, coast defences, forts, ordnance, equipment and stores were all transferred to the War Office. The last major construction project engineered by the Board of Ordnance was the new depot at Bull Point.

2. Parliamentary Papers

It is worth including parts of three letters written prior to the construction of the Bull Point Magazines. The one of 17 April 1845 concerns Keyham but gives an insight into the procedure of receiving ordnance from the storekeeper's point of view. All three are contained in Volume 21, Part 2 Correspondence:

Letter from P Glinn, storekeeper, Keyham to Colonel J Oldfield 17-04-1845

Sir, in reply to your letter of the 16th instant, requesting information as to the process the powder undergoes at these magazines, when delivered from vessels of war over to my charge and care.

I beg to state that as soon as I receive the Admiral's authority to take the powder out of any HM ships, preparatory to their coming into the harbour, to be refit or paid-off, I despatch the powder vessel and it is then landed and deposited in the magazines here. Each barrel or case is taken into the examining house, and separately opened, and each cartridge minutely inspected; such cartridges as are found serviceable are immediately repacked into the barrels or cases, the number being correctly ascertained. These are then sent to the magazines to again be issued for service. Those that are found to be defective are separated from the others, taken to the magazines to be broken up, the powder from which is sent to St Brideaux to be dried, dusted and proved; such as may be found fit after which it is returned to Keyham.

The number of filled flannel cartridges issued to a first-rate ship of war will be about 9,800 and will require about 800 metal-lined barrels to contain them. The filling of these cartridges would alone occupy the whole time of all my men for one month, exclusive of any other duty, and other classes of HM ships in proportion.

All the flannel cartridges required for HM ships fitted or refitted at this port, are first stamped for the gun required with the charge of powder it contains and are filled and packed here. The number so filled or made up at this place since the 1 March last is 6,037 and the number of filled flannel cartridges, examining, or packing, and the issuing and receiving of them is constantly going on, I may say daily.

Letter from Commanding Royal Engineer's Office, Devonport, Colonel J Oldfield 19-04-1845

..... I think the powder works could be not be better placed than at Kinterbury, with the store magazines at Keyham Point; but as this site is to be abandoned to the navy, and Point Petre cannot be obtained, Bull Point the site recommended by the Defence Committee in paragraph 3 of their report of the 23 October last, is perhaps the most eligible of those proposed. This has the date that Bull Point / Kinterbury Point was officially approved (23 October 1845).

Letter from Colonel Jas Cockburn, Director Royal Laboratory and Colonel J Oldfield RE Commanding Western District to the Secretary to the Board of Ordnance 10-06-1845

In obedience to the commands of the Master-General and Board, of the 2 May 1845 we have carefully examined the site at Bull Point. There is no great depth of water either full or half tide and nothing but

mud some distance at low water which will render it necessary to have a comber (sic) for vessels to load and unload in. The distance of the magazines from the powder works will be about 600 yards, and a communication can be made by tramroad from the one establishment to the other. This is the first source found, for the tramroad (10 June 1845).

3. Newspapers

Below are snippets of longer articles – they are not exact copies of the originals and have been edited.

1. Exeter Flying Post 14-06-1810

Barton¹ of Kinterbury – To be sold by private contract, the valuable Barton called Kinterbury with all rights, royalties and privileges, comprising a good dwelling house, two walled gardens, barns, stables, outhouses, two orchards, 13 enclosures of meadow, pasture and arable land containing about 100 acres. The proprietor is Francis Corham of Tothill, near Plymouth.

2. Yorkshire Gazette 10-02-1821

About two o'clock on Friday afternoon, the receiving house of the Royal Powder Works at Kinterbury, about two miles up the Hamoaze, blew up with a dreadful explosion. An old man named Carne, and a boy called Matthewson, who were the only persons on the works, died. A quantity of 3-pound cartridges had lately been received, which the men in the establishment were employed in opening and putting the powder and shot into separate barrels; happily, seven men were that day sent to measure timber, about a half a mile away, so that only two remained on the premises. It is conjectured that in throwing the iron shot together some sparks were elicited and on connecting with the loose powder might accidentally have got into the barrel causing the fatal occurrence. About 40 barrels were in the house, de-headed, which blowing up at the same time, spread destruction, and violently shook the houses for several miles around.

3. Western Times 15-07-1843

Kinterbury Estate – For sale by private contract:

- *Lot 1: Kinterbury House and offices, coach house, four-stalled stable, two enclosed courts, walled gardens, orchard, plantations, pleasure grounds and pasture lands. Containing about 11 acres, 2 rods, 2 poles.*
- *Lot 2: Kinterbury Villa and offices, coach house, stable, enclosed court, two walled gardens, plantation, orchard and two fields of pastureland containing about 5 acres, 3 rods, 2 poles.*
- *Lot 3: Two fields about 9 acres, 1 rod, 21 poles.*
- *Lot 4: Two fields, about 9 acres, 2 rods, 4 poles.*

4. London Evening Standard 18-07-1845

It will be recollected that that the site of the powder magazine, at Keyham near Devonport, has been included in the ground on which the new steam establishment is to be constructed. The Government have been negotiating for an eligible spot on which to remove the magazine, and at length decided in purchasing the Kinterbury Estate, situated at a short distance farther up the River Tamar, at the point of which the powder mills are at present. The purchase of the site has been completed for £23,000 and the works will be commenced forthwith.

5. Daily News 16-03-1847

The erection of the new magazine establishment, at Bull Point, on the River Tamar, is now about to take place, the Ordnance Department having issued notices of contract, to be taken in the ensuing month. Five large magazines, with their necessary storehouses, sheds, and tanks, and a large basin, pier, and

¹ The land of the manor reserved for the Lord's use

wharfs, will be constructed, in order that vessels may approach at all times of tide. The situation is well adapted for the purpose, being at the head of the Hamoaze, and in considerable distance from town and arsenal, and near the powder works at Kinterbury.

6. North Devon Journal 08-04-1847

Notice: Bull Point – sealed tenders invited for five large magazines – with sundry storehouses, workshops, landing shed, enclosure walls. Also, for constructing a basin and pier – to reach below low-water mark, wharfs, tanks at Bull Point on the River Tamar. Tenders will be received at the Ordnance office, Pall Mall, London on or before 23 April 1847.

Specifications and detailed plans of the proposed buildings and works may be seen, and forms of tender obtained, after 15th instant at the Commanding Royal Engineer's office, Devonport until 22 April next.

7. Western Courier 05-05-1947

We perceive that the first step is about to be taken preparatory to commencing the new Government works on the Kinterbury Estate, by clearing it of timber, for the sale of which an auction is announced to be held by Mr. William Wood, on Monday next.

8. Naval and Military Gazette 05-09-1946

In addition to improvements to these fortifications (Mount Wise, Devonport and Western King Redoubt etc), plans and estimates have been made for new works at the Kinterbury powder Magazine, to cost £212,000, and it is said that in the event of war, immense floating batteries would be moored off either end of the breakwater, further to defend the entrances to this important naval arsenal.

9. The Sun (London) 21-08-1849

On-going up the Hamoaze this morning, the Lords of the Admiralty landed on and inspected Bull's Point on the eastern bank of the Hamoaze into which it abuts about a mile north of the present powder works. It was purchased some years since by the Board of Admiralty when the Board of Ordnance abandoned Keyham, but after purchase, it was discovered that the protection of a powder magazine at Bull's Point by a military guard so far distant from headquarters presented a considerable obstacle to the completion of the arrangements between the two boards.

10. Western Courier 30-07-1851

Fatal Accident at Bull Point – An inquest into the death of George Peard, a labourer employed on the new powder works. William Blampy, a stone mason was a witness. On the 16th instant, about one o'clock, the deceased was employed driving a horse and waggon containing dirt on a railway; I was about three yards away from him; he was in front of the waggon, and unfastened the horse to let the waggon pass down an incline; exactly as he did he fell down and the waggon rolled over him. He was placed on a board and taken to the South Devon and East Cornwall Hospital where he died.

11. Bath Chronicle and Weekly Gazette 13-05-1852

Notice: Bull Point – sealed tenders for four magazines, four traverses with the necessary tanks, drainage, entrance gates and part enclosure wall will be received at the Ordnance office, Pall Mall, London on or before 25 May 1852. Detailed plan etc can be seen at the RE offices at Bull Point.

12. Western Courier 28 July 1852

Notice: Bull Point – sealed tenders for completing the excavations of the site for four magazines, five terraces and enclosure walls etc to be received at the Ordnance office, Pall Mall, London on or by 9 August 1852. Detailed specifications can be seen at the RE office, Bull Point.

13. Western Courier 08-03-1854

The New Magazine at Bull Point – Barracks are to be erected on a portion of ground of at Kinterbury purchased by the Government, for the accommodation of a detachment of troops for duty at the new establishment.

14. Sun (London) 03-08-1854

Notice: Bull Point – sealed tenders for constructing a basin and an embankment, will be received at the RE office, Pall Mall, London, on or before 17 August 1854. Detailed plans etc can be seen at the RE office, Bull Point.

15. Hampshire Advertiser 02-09-1854

Colonels Ward and Nelson, RE, met their lordships at Plymouth, in relation to the speedy completion of the new powder magazine, at Bull Point. This was in order that the old one which lies on the northern portion of the Keyham site may be removed for the completion of the steam yard.

16. Supplement to the Birmingham Journal 25-11-1854

Notice: Bull Point – sealed tenders for the following services:

- 1. Completing the interior of the Bull Point Magazines Establishment, with railroads, asphaltting, metalling etc.*
- 2. Forming a railroad to connect the Bull Point Magazines with the Powder Establishment at Kinterbury.*
- 3. Building two walls at or near No.4 magazine, Bull Point as a temporary completion of the enclosure.*
- 4. Build a guard house at Bull Point.*

17. North Devon Journal 11-01-1955

Notice: Bull Point - sealed tenders for the following construction services:

- Cottages for a foreman and 16 labourers*
- Cookhouse and wash house for the crew of two powder vessels, with privy and urinal*
- Office for the Ordnance Storekeeper*
- Civil watch house and a shed for waggons*
- Warder's lodge and storehouse*
- Engine house*
- Boathouse*
- Removing the present wooden filling and examining house Keyham and taking to Bull Point.*

Specific sums will be received at the Ordnance office, Pall Mall, London on or before 27 January 1855. Detailed specifications etc can be obtained from the RE office Bull Point.

18. The Sun 01-02-1855

Bull Point Magazine – A railroad of a peculiar description is now being made under directions of the Ordnance Board, by Mr. Roach², builder, the contractor, from the powder works at Kinterbury to the new magazine at Bull Point, a distance of about a quarter of a mile. The object being to facilitate the removal of gunpowder, after it had been proved, from the old establishment to the magazine. About 200 men were set to work on the 18th instant, and the road is to be completed in six months. The trams of the line

² This refers to Mr. George Roach contractor who died in c.1866. He was responsible in 1865 for the construction of Scraesdon Fort. His contract had been completed and the executors of his estate organised two auctions there, one of which took place on 24 September 1867 included steam engines, 160 tons of railway switches, rails, points, and crossings etc. Also 40 railway waggon. Western Morning News 24-1-09-1867.

are to be of wrought copper, and the carriage wheels of mixed metal, as a preventative from fire. The cost we learn, is estimated to be £14,000.

19. Sun (London) 09-01-1856

Notice: Bull Point – sealed tenders for building barracks for a specific sum, will be received by the Director-General of Contracts, War Department, Pall Mall, London, on or before 25 January 1856. Detailed drawings and specifications of the above may be obtained at the RWE office, Bull Point from 10 to 24 January.

20. Royal Cornwall Gazette 07-03-1856

Bull Point – Messrs Greenwood and King³ have taken the contract for the erection of the proposed barracks at Bull Point, for the sum of £13,900.

21. Western Morning News 14-08-1861

Notice: Bull Point - tenders are required for constructing a dwelling house. Persons desiring to tender for the above work must leave their names at this office on or before 21 August 1861. RE office, Devonport.

22. Western Morning News 24-08-1861

Notice: Bull Point – tenders are required for constructing a small branch line of railway and a carriage road. Persons desiring to tender for the above works must leave their names at this office on or before the 29 August. RE office, Devonport.

23. Western Morning News 08-04-1869

The Discharges at Bull Point – A petition is in course signature to the Secretary of State by the employees of Bull Point Laboratory, stating that the majority of the memorialists⁴ have already been discharged from the laboratory, and those who have received notice that their employment be dispensed with. They believe that the discharges and notices are due to the transfer of the bulk of laboratory work to Woolwich. The men are mostly of long service and of good character.

24. Western Morning News 06-08-1883

Notice: Bull Point - War Department contract, tenders are required for the renewal of piles and increasing the accommodation of the laboratory jetty Persons interested in the above works must leave their names at the RE office Devonport, or before 13 August 1883.

25. Western Morning News 28-02-1889

Notice: Bull Point - War Department contract - buildings, barracks and other WO buildings, roads, tramways, and boundaries.

26. Western Morning News 01-12-1897

The Explosion at Bull Point – A searching investigation was made yesterday morning into the explosion in the live shell store. A close examination of the building showed that it was in no way damaged, but the inquiry also revealed that a second fuze in the case had also ignited, leaving the third shell intact. The

³ The Devonport builders of T Greenwood and S King announced that they were bankrupt on 3 June 1857. Wrexham Advertiser 06-05-1857. Another source says the company was based at Hirtzel, Exeter. Perry's Bankrupt Gazette 24-04-1858

⁴ Men who witness and provide a written record for legal reasons of work being carried out at the laboratory such as the number of barrels stored in a magazine and whether they are filled and sealed etc. Other work included the repair of powder cases, ammunition boxes, tube boxes, shells, fuzes, rockets and manufacturing flannel cartridges from raw material. Western Morning News 06-04-1869

shell which exploded were of medium size, and under normal circumstances the detonators would require to be subjected to considerable force to cause the fuzes to act on the combustible material.

27. Western Morning News 22-06-1898

The Admiralty have decided to erect at Bull Point Ordnance Depot a building to be used exclusively for the storage of cordite. The superintending engineer at Devonport has been requested to prepare the working drawings for the new building, in order that tenders may be invited for its erection. About £10,000 was recently spent at Bull Point in building a new cartridge-filling house and improving the accommodation of the old premises.

28. Western Morning News 16-11-1906

A Bull Point Fatality – At the Government establishment at Bull Point, early yesterday morning, nine labourers including Alfred Jones and Jack Williams, employed by Matcham and Co⁵, contractors were engaged in building a storehouse. They were removing a large quantity of clay, about six feet from the ground. The method was to pick out the earth underneath and allow the top portion to slide down. On the previous evening, the earth had been found to be quite hard, but the rain during the night had evidently loosened it. The men resumed their work at 7 am yesterday morning. Shepherd who had been standing and Jones and Williams were bending down picking out the earth when suddenly about a ton of earth slipped off and Jones and Williams received the full force of the clay. They were conveyed by wagon and then tram to the Royal Albert Hospital where Jones died.

Western Morning News 26-11-1907

Bull Point Depot – The New Shell Base – A valuable addition will shortly be made to the Naval Ordnance Depot by the completion of the shell base. The fine building is situated about the centre of the depot. It is rectangular in shape, its dimensions being length 230ft, breadth 128ft, height of side walls nearly 14ft. The walls are built of two thicknesses of special bricks (over 90,000 having been used) with an intervening space between the tiers. Into this had been poured a special composition which on becoming hard, renders the walls not only more stable, but also damp proof. It also gives further strength and acts as supports for the roof steel girder pillars that are placed at 10ft centres. Between the upper course of brick and the edge of the roof, glass has been introduced, glazed in the three panes sashes, which rise to a height of 5ft and run around the building.

The roof is constructed in four spans which are supported at the angles by rows of steel girder pillars, 23 in each row and is further braced by lattice girders of the latest design. Attached to the pillars at about 14ft from the floor are overhead rails for the entire length of the building and on these will run overhead travelling cranes, 12 in number capable of handling weights of up to three tons. Entrance to the base will be by four broad doorways at either end into which will be four branch trolley lines connected with the main system of rails, thus enabling the heaviest shells to be handled with ease. The building will be lit electrically.

The contract has been carried out by Matcham and Co, under the supervision of Mr AA Williamson, of the Director of Works Department at Devonport, the Clerk of Works being Mr. WP George.

29. Western Morning News 09-07-1908

Electric Light Trials - To test the efficiency of the incandescent fittings installed in the War Department section at Bull Point Ordnance Depot, an endurance trial was carried out yesterday with satisfactory results. These were arranged as Police lights and for illuminating the passages and entrances to the magazines and ammunition stores. Those intended for the former duty are fitted with special globes, two

⁵ Matcham & Co of Plymouth had constructed the Royal Naval Barracks, Devonport in 1883 and considerable extensions some 15 years later

lights in each raised on standards. Those for lighting buildings are generally single lights enclosed in watertight lamp holders containing reflectors and mounted outside the buildings at such an angle as to ensure maximum illuminating power along several passages. The electricity is obtained from the Admiralty powerhouse near the eastern end of the depot.

Missing Contractor

Within the Listing description, is the reference to the company Baker and Son⁶ which should read George Baker and Son. Nothing was found in the newspapers connecting this company with Bull Point – though they would have been in an excellent position to be the main contractor.

It is interesting to note that this London firm was the main contractor for the new Steam Yard at Keyham. This was constructed under the direction of Colonel Williams, a Mr. R Townshend was the engineer in charge of the works, and the buildings were designed by a Mr. Scamp. The foundation stone was laid on 12 September 1846⁷. The steam yard was partially brought into service during October 1853 with the docking of HMS *Queen* – though at this time, it was still not finished, and the powder works were extant at least until 1855.

4. Notes on War Department and Royal Engineer Deauville Railways / Tramways

The design of War Department (WD) track equipment had not changed since the earliest days of tramways to the Second World War.

A weight of 9 lb per yard track was the original type and was generally used as a means of serving lines up to 3 or 400 yards in length (such as short isolated spurs connected to light railway systems) and only if push type wagons were in operation (this weight of track was generally used inside buildings). Typically, this weight served quarries, factories, and ammunition dumps. Turntables and turnouts were available for this type of track.

The standard light railway system track was the WD type consisting of British steel flat bottom rails weighing 20 lbs per yard, these were joined by a bar fish plate and supported by pressed steel sleeper to which the rails were clipped.

Motorised power units were not available until c.1917 and were not suitable for the track weighing 9 lbs. It is understood that the Bull Point tramway had a gauge of 18in although this gauge may not have been as originally used which might have been 3ft 8in.

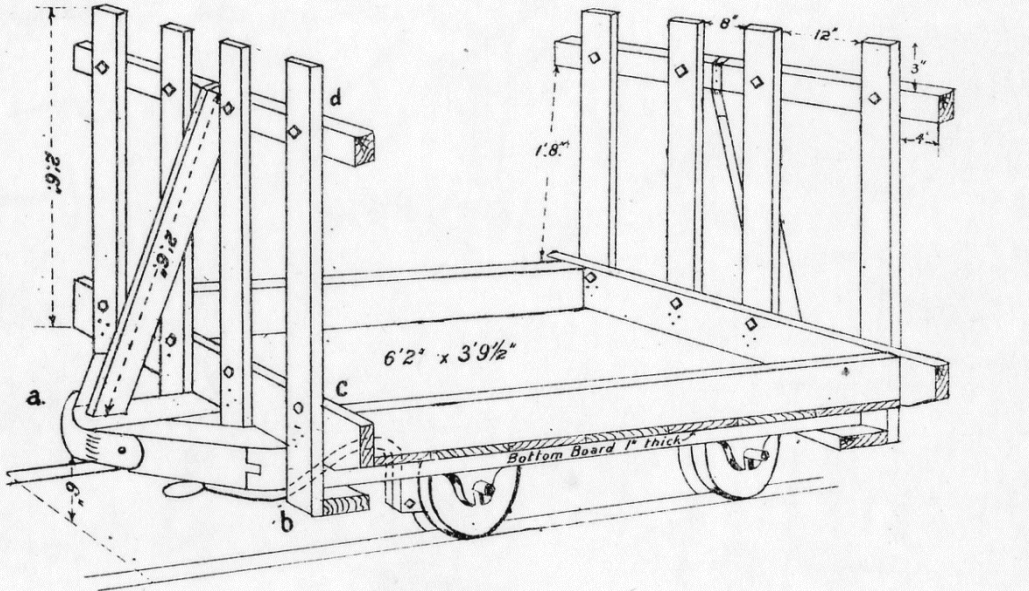
⁶ Possibly one of the last contracts (October 1872) of this amazing company was the building of the National History Museum, London. The directors of the company were William Mark Wick, William Henry Thurgood, and George Dashwood Baker. Baker died c.1880 and Wick had already died by then. In July 1879, the company's assets were placed into a trust fund for the benefit of its creditors. London Standard 23-07-1880.

⁷ On this project, the company employed 750 men, 110 horses, three steam engines, 12 miles of railway, 639,00 cu ft of granite and limestone from seven local quarries. Western Times 19-09-1846

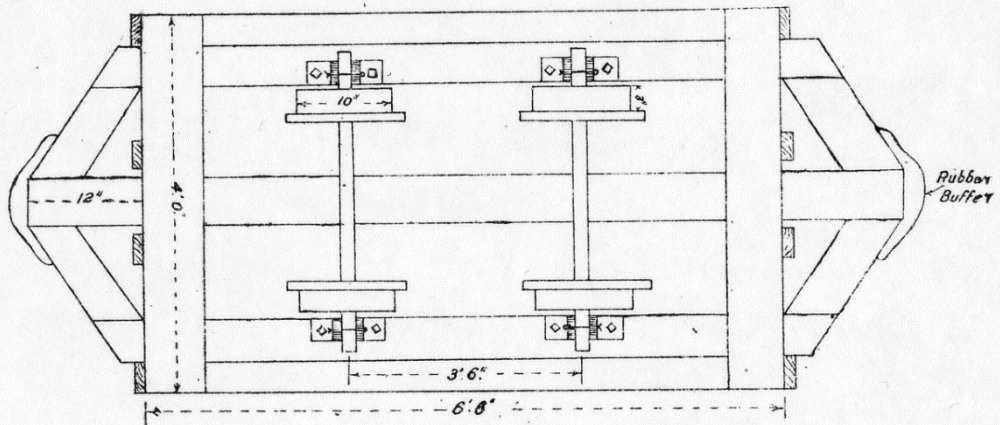
G.S. TRAMWAY TRUCK TO CARRY ONE TON OR FOUR STRETCHERS.

MAXIMUM LOAD 1/2 TONS.

TYPE A



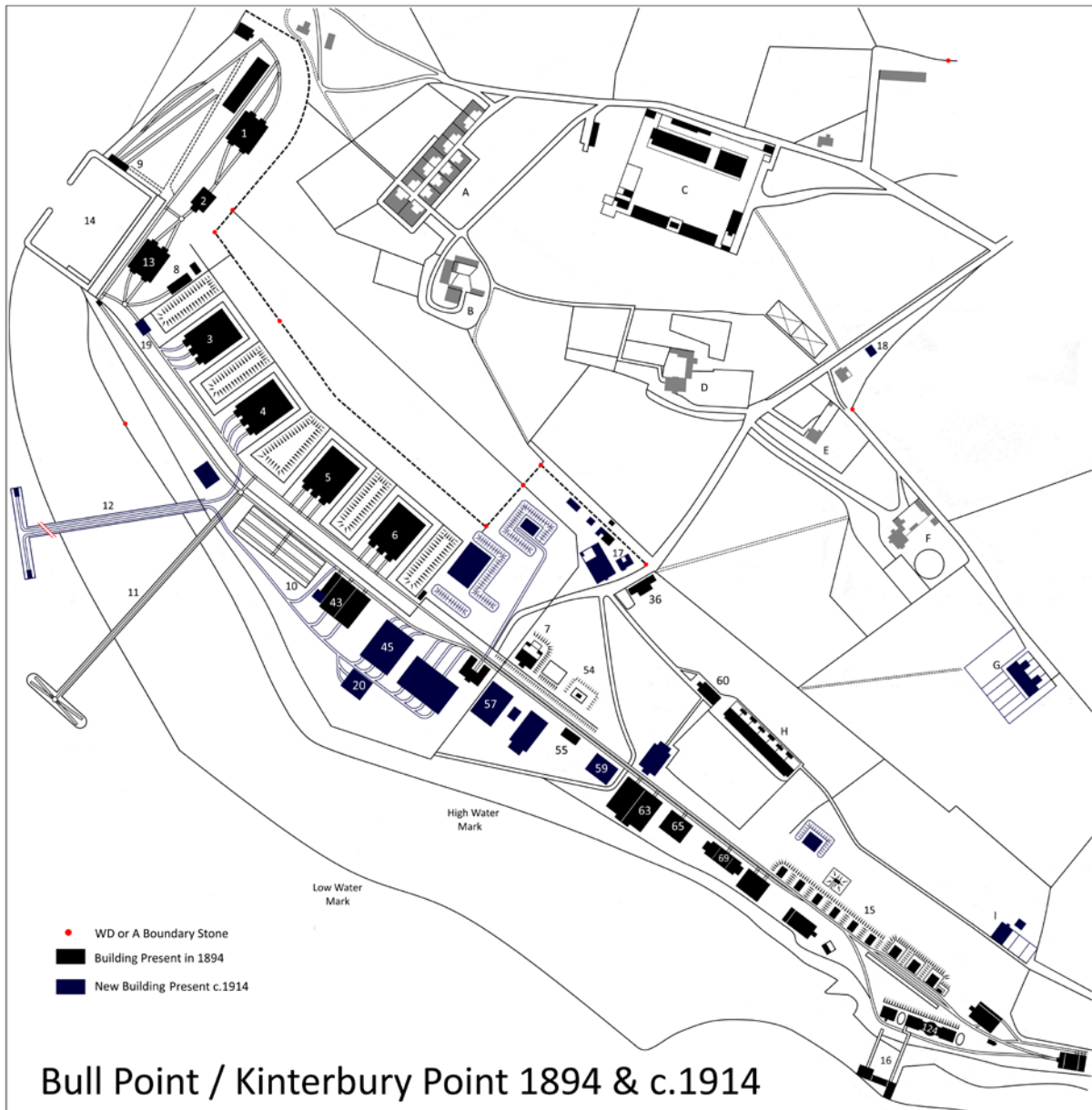
ELEVATION



NOTE: Allow 1/2" play between each wheel and bearing

UNDERSIDE

Drawing of a typical RE First world War tramway truck. Source: Work of the RE in the European War – Miscellaneous, 1926



Bull Point / Kinterbury Point 1894 & c.1914

A	Bull Point Terrace	B	Park Cottage	C	Bull Point Barracks
D	Kinterbury House	E	Kinterbury Villa	F	DNOO's Quarters
G	Police Quarters	H	Laboratory Cottages	I	'New' dwelling
1	Shell Magazine	2	SAA Magazine	3	Magazine
4	Magazine	5	Magazine	6	Magazine
7	Store Holder's Office	8	Tumbrel Shed	9	Crane Shed
10	Shell Base	11	1855 Jetty	12	'New' Jetty
13	SAA Magazine	14	Bull Point Pier	15	Laboratory, Stores & Wks.
16	Laboratory Jetty	17	Naval Ordnance Office	18	'New' Fire Engine House
19	Examining Shed	20	Unknown		
36	Guardhouse / Police Office	43	Unknown	45	Quick-firing Ammunition store
54	Press House	55	Tube & Fuze Store	57	Wet Guncotton Store
59	Examining Room	60	Classroom (Church & Infant School)	63	Empty Barrel & Case Store
65	Shell Filling & Packing Wks.	69	Breaking-up House (Deheading)	124	Mixing House (Royal Powder Wks.)

Note: 36 to 124 are the building numbers allocated to the Listing descriptions with my additions in brackets

5. Analysis – Tramways

Map

The re-drawn site plan holds a few clues to the tramway / railway network. It covers two building phases identified by black (1894) and Blue (c.1914). The railway shown in black makes use of turntables for the wagon to change direction – meaning that is possible for a wagon to go in the wrong direction. The blue railway dispenses with turntables and instead has curved track and turnouts to change direction which indicates that there is a one-way system in operation. Magazines 3 & 4 show the c.1914 layout and 5 & 6, the 1894 turntable arrangement. In 1914 all magazines reverted to the curved track / turnout layout. It is thought that it was impossible to replace all turntables with curved track as a lot of the older buildings are too close to the main arterial railway.

The northern section of the c.1914 map is missing so the plan illustrated here only shows the earlier track arrangement. Comments:

- The Shell Base (10) structure is shown uncoloured as per 1894 drawing – it shows three parallel lines (E-W) and a single N-S line with turntables – this may indicate a structure was just a floor slab. The same building on the later drawing is shown hatched and from the newspapers it is known that it was erected in 1907.
- The 1855 Jetty (11) shows one railway line accessed from a turntable – this jetty was later mostly demolished and converted into a small pier (without a railway). It was replaced before 1914 and aligned on a different angle (the plan shows it foreshortened). It has a pair of railway tracks from a new branch line serving the c.1914 buildings.
- Building (8) is identified on the 1894 drawing as a Tumbrel Shed – this is normally a horse-drawn two-wheeled cart – as this structure is shown connected to the railway system, it is assumed that the term tumbrel has been used generically.

Tramway Summary from the Newspapers

The following is known:

- The first mention of a tramway in the newspapers appears to be in July 1851 during clearance works - this is probably a contractor's 3ft 8in gauge line: *a horse and waggon containing dirt on a railway.*
- Then there is a gap until November 1854, when the magazines have already been built, a notice appeared for a tender in respect of: *completing the interior of the Bull Point Magazines Establishment, with railroads, asphaltting, metalling etc. Forming a railroad to connect the Bull Point Magazines with the Powder Establishment at Kinterbury.*
- The next is 01 February 1855 which is a follow up from the November 1854 notice (above): *Bull Point Magazine – A railroad of a peculiar description is now being made under directions of the Ordnance Board, by Mr. Roach, builder, the contractor, from the powder works at Kinterbury to the new magazine at Bull Point, a distance of about a quarter of a mile. The object being to facilitate the removal of gunpowder, after it had been proved, from the old establishment to the magazine. About 200 men were set to work on the 18th instant, and the road is to be completed in six months. The trams of the line are to be of wrought copper, and the carriage wheels of mixed metal, as a preventative from fire. The cost we learn, is estimated to be £14,000.*
- Then there is a gap until 24 August 1861 when the last known notice (between 1850 and 1908) concerning tramways appeared: *tenders are required for constructing a small branch line of railway and a carriage road.*

6. Notes on Cotswold Archaeology Watching Brief of the Tramway

Fig.10: Trench 3 tramway structures, looking south

This shows a typical tramway brick foundation bed with ballast of a post 1894 turnout before it enters a building (identified on my site plan as '20').

Fig.11: Trench 3 tramway pier 301 and 302 looking north-east

This shows three courses of a brick-lined tramway bed with ballast and a later concrete overlay to create a clearway for vehicles.

Fig.12: Trench 3 fixing within structure 301, looking north-west

The appears to show a brick pier in three courses at right-angles to the tramway route and a metal object below a later layer of concrete. It is assumed that this is a brick support for a sleeper and the exposed steel is part of that.

Figs.13 - 15: Trench 7. Looking north-east

This appears to show two, maybe three parallel foundation tramway road courses below a later concrete and tarmac roadway or clearway. The use of tarmac as the wearing carpet is significant for safety reasons as it is impossible to generate sparks as opposed to concrete which might produce a spark if ordnance came into contact with it, such as falling off a waggon.

Figs.17 – 25 Trench 30

These appear to be tramway brick foundation courses and a later over cladding of concrete. The illustrations raise more question than answers as the rails are inboard of the piers, it is possible they (brick courses) have moved but it is a mystery.

7. Notes on Cotswold Archaeology Watching Brief of an Air Raid Shelter

Shelter 203

Details of Air Raid Precaution (ARP) measures for naval establishments were never revealed in the Estimates, though the Western Daily Gazette did state in an article on 1 March 1939, that a total of £1.5m had been earmarked for passive defence. Of that sum, £800k was to be spent in that year. The measures included the following:

The digging of blast and splinter-proof trenches and the strengthening of buildings which could be used as refuges. It is not proposed to construct deep bomb-proof shelters.

Both measures were carried out at Bull Point, including adding precast concrete roofs to certain buildings to create refuges.

The images show a typical trench shelter consisting of the main shelter with a baffle entrance (to prevent flying debris from entering the shelter area). An area identified on the drawing as a reception area (but is probably an area allocated for a latrine), and then the shelter, most likely to accommodate 50 in three rows of seating. An emergency escape with iron ladder is at the opposite end of the shelter.

It has a concrete (cast in situ) entrance baffle with steps down and the whole structure is concealed and further protected by a covering of earth and turf. The wall lining and rear wall are all precast concrete panels fixed between wall posts while the roof has a precast concrete plank arrangement, the floor appears to be cast in situ.

I cannot positively identify which company manufactured it from the photographs. As far as the framework goes there is a similarity with both Stent and Richard Costain designs (the webbed feet of the concrete wall posts suggest this), while the wall lining appears to be a British Concrete Federation design (where local builders who were members of the federation could acquire contracts).

The addition of a steel brace system was probably added later as an added precaution, probably because of Plymouth being continually blitzed.

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