Archaeology South-East

ASE

An Archaeological Watching Brief during Ground Investigations in and around Sandwich, Kent

NGR: TR 3290 5850 (centre)

Project No: 3858
Site Code: SAD 09

ASE Report No. 2009142
OASIS id: archaeol6-

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With contributions from
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Abstract

Archaeology South-East was commissioned by Halcrow Group Limited, on behalf of their client the Environment Agency, to undertake an archaeological watching brief during ground investigation in and around Sandwich, Kent. The ground investigation is in advance of the proposed Sandwich and Deal Flood Alleviation Scheme.

With the possible exception of the suggested site of a Second World War anti-aircraft battery, no significant archaeological remains were identified in the farmland to the east of the Stonar Loop and North Downs Farm. However, the presence of an extensive organic rich layer below the Alluvium was confirmed; the potential of this deposit for environmental sampling and dating is high.

The area around the Sandwich Quay slipway was apparently heavily disturbed in post-medieval/modern times. Substantial deep remains associated with a 19th-/20th-century 'gas works' were revealed, suggesting that early quay features have been destroyed in this location. The most significant archaeological remains were revealed during excavations located on within a section of the town moat connecting to the River Stour. A perhaps mid 16th-century dump deposit of mixed refuse lay immediately above the alluvium.

CONTENTS

1.0 INTRODUCTION

1.1 Archaeology South-East (ASE), a division of University College London Centre for Applied Archaeology (UCLCAA), was commissioned by Halcrow Group Limited, on behalf of their client the Environment Agency, to undertake an archaeological watching brief during ground investigation (GI) in and around Sandwich, Kent, hereafter referred to as 'the site' (Figure 1). The ground investigation is in advance of the proposed Sandwich and Deal Flood Alleviation Scheme (FAS).

1.2 The FAS is intended to provide flood alleviation in three areas:

- New Downs Farm (north-east of Sandwich town) – creation of a 200ha regulated tidal exchange (RTE).
- Sandwich and Stonar Loop – improvement of on-line embankments (where required) and construction of a flood wall in Sandwich.
- Sandwich Bay Estate to Deal – beach nourishment, rock armour to the north of Sandown Castle and a wave wall at Deal.

1.3 This report covers the New Downs Farm and Sandwich and Stonar Loop areas only. The monitored works comprised 32 mechanically excavated trial pits. It was originally proposed that 3 hand-dug trial pits should also be monitored but for technical reasons these excavations were replaced by window samples.

1.4 The site extends from the southern bank of the River Stour north-eastwards to North Stonar. The four pits (T19-22) beside the Stour were located on parking areas and lawns; the remaining 28 pits were located on farmland. The underlying geology, according to the British Geological Survey map, consists of an outcrop of Thanet Beds (on which much of Sandwich town stands), surrounded by bands of riverine alluvium with lenses of estuarine sands and gravel.

1.5 As the GI works are permitted activity, there are no specific planning requirements or conditions relating to archaeological coverage. However, in consultation with Kent County Council and English Heritage, Halcrow Group Limited's client, the Environment Agency, have requested that the GI programme be subject to archaeological monitoring.

1.6 A Written Scheme of Investigation (WSI) was produced by Halcrow Group Limited, outlining a programme of archaeological works (Halcrow Group Limited, 2009). The document provides background information which has been re-used in this report with due acknowledgement.

1.7 A continuous watching brief was carried out in two stages between 2nd - 10th July 2009 and 6th - 7th August 2009, by Greg Priestley-Bell (Senior Archaeologist). The project was managed by Darryl Palmer.

2.0 ARCHAEOLOGICAL BACKGROUND

Wantsum Channel

2.1 The northern part of the site lies within the historic Wantsum Channel. In the post-glacial period rising sea levels flooded the lower lying area between Thanet and the North Downs creating the Wantsum Channel. This waterway became a regionally important 'short cut' for continental sea traffic plying between the English Channel and the Thames Estuary, whilst also providing natural havens. It remained navigable through the Roman period when it was guarded by two forts, Reculver at the western end and Richborough at the eastern end. Long shore drift created a shingle spit, the Stonar Bank, which eventually blocked the eastern end of the Wantsum Channel, causing increased alluviation. This process accelerated from the 12th century onwards when large scale reclamation began, carried out by the Monks of St. Augustine's, Canterbury. By the end of the 17th century, comprehensive drainage works had transformed the old channel into an alluvial flat (Hearne *et al.*,1995, 243).

2.2 In the early 1990s an auger survey was carried out across the old Wantsum Channel, as part of a major study commissioned by Southern Water Services Limited and carried out by Wessex Archaeology in conjunction with the Trust for Thanet Archaeology (Hearne *et al.*, 1995, 239-354). The auger transect was located just to the north of the subject site (*c.* 2k north-west of trial pit T1), running between the Ebbsfleet peninsula and Weatherlees Hill. The work identified two principal sedimentary units below the topsoil: the upper deposit (up to 2.5m thick) was greyish brown clay or silty clay with occasional sand lenses and interpreted as alluvium; the lower deposit (*c.* 50mm thick) was very dark grey humic clay with organic laminations and interpreted as estuarine in origin. The sequence was underlain by Thanet Beds.

2.3 Radiocarbon analysis of the basal organic deposit produced dates of cal BC 3620-3140 and cal BC 3630-3100, suggesting that the main phase of alluviation of the Wantsum Channel began in the latter part of the Early Neolithic period (Cook & Naysmith, 1995, 345).

Sandwich Town and Stonar

2.2 The settlement that would become Sandwich was probably founded in the early seventh century on what would have been the southern shore of the eastern entrance of the Wantsum Channel. The first mention of '*Sandvic* haven' is in 664 as the landing place of St Wilfred on his return from France. In 1086, Domesday records that the town had grown to 415 dwellings, probably representing over 1500 inhabitants. After joining the Confederation of Cinque Ports, Sandwich flourished until the end of the fourteenth century when foreign trade decreased due to silting and the French naval threat. By the middle of the sixteenth century silting and long shore drift had rendered the port only suitable for small vessels (Kent County Council (KCC), 2003, 17).

2.3 Roman remains are recorded from the site of Stonar House on the southern edge of Stonar Bank, perhaps associated with a burial or burials (KCC, 2003, 2). The Church of St Nichloas at Stonar is mentioned in the eleventh century, but was a ruin by 1549 (*ibid.* 3). The first documentary reference to settlement

associated with a port at Stonar is from 1127 in a letter from the Prior of Christ Church, Canterbury complaining that houses had been built on the Stonar side of the haven (Hardman & Stebbing, 1942, 49). The port was flooded and destroyed by the sea in 1365-6 (KCC, 2003, 3). Salt working at Stonar is recorded in 1595, and also later in 1683 when only two houses were standing. The last reference to salt working is as late as 1851 (Hardman & Stebbing, 1942, 55).

3.0 METHODOLOGY and AIMS

3.1 A watching brief was maintained during the excavation of the 32 trial pits: nineteen pits (T1 – T11, T23 – T27 and T29 – T31) were excavated in farmland to the east of the North Stonar loop (Figure 2); nine pits (T12 – T16 and T32 – T35) were excavated in farmland immediately to the north of North Downs Farm (Figure 2); four pits (T19 – T22) were excavated on the north-eastern edge of Sandwich town (Figures 2 & 3). The trial pits were excavated using a JCB mechanical excavator and generally measured *c.* 2m x 0.6m and 2m deep.

3.2 Archaeological monitoring included an inspection of excavated material in order to identify and retrieve artefacts and ecofacts, the use of a metal detector where appropriate and an examination of exposed surfaces for archaeological remains.

3.3 Provision was made for all identified significant archaeological remains to be recorded to accepted professional standards and in accordance with *Standards and Guidance: watching brief* of the Institute for Archaeologists (IfA). Provision was also made for the collection of environmental samples from appropriate deposits. Full details of the techniques used are contained within the archive.

Number of Contexts	151 contexts
No. of files/paper record	1 file
Plan and sections sheets	2 pit location plans, 1 trench plan
Photographs	60 photographs

Table 1: Quantification of site archive

3.4 The general aim of the archaeological work is to ensure that any features, artefacts or ecofacts of archaeological interest exposed and affected by the excavations are recorded and interpreted to appropriate standards and a report of the findings produced.

4.0 RESULTS

Trial pits T1 - T11 (Figure 2)

4.1 Topsoil [1/01] (Context number comprises pit number/deposit) was between 200mm-400mm thick and consisted generally of mid greyish/yellowish brown very silty sand/very sandy silt. Topsoil overlay a 0.8m - 1.3m thick variable deposit (usually recorded as Contexts [/02]/[/03]) consisting of generally laminated clayey sand/ sandy clay (Alluvium). Alluvium overlay a generally dark organic deposit with peaty lenses, varying in thickness between 100mm – 800mm. Samples of the organic deposit were taken from T1, T2 and T11.

4.2 In trial pits T1, T9, T10 and T11, a 150mm – 700mm thick deposit of probably wind-blown sand (recorded as [1/02] etc) lay immediately below the topsoil.

4.3 Although no significant finds or archaeological features were identified, an organic component was noted in a sandy silt/silty sand deposit between 1.1m – 1.8m below ground level. Bulk samples of this deposit were taken from trial pits T1, T2 and T11.

Trial pits T12 – T15 (Figure 2)

4.4 Topsoil [12/01] etc. was the same as recorded in pits T1 *et al.* described above. Topsoil overlay a similar stratigraphic sequence to that recorded in T1 *et al.*. A sand deposit [12/03] recorded in T12 was perhaps wind-blown.

4.5 Although no significant finds or archaeological features were identified, an organic component was noted in a sandy silt/silty sand deposit between 0.9m – 1.5m below ground level. A bulk sample of this deposit were taken from trial pit T12.

Trial pit T16 (Figure 2)

4.6 No cultivated topsoil was present. Coarse grass overlay an 800mm thick mixed deposit [16/01] of mid brownish grey sandy silt with frequent gravel and fragments of modern ceramic drainage pipe. Deposit [16/01] overlay a deposit of mid brownish yellow slightly silty sand. An apparently modern brick structure was exposed in the southern section of the trial pit.

4.7 No significant finds or archaeological features were identified.

Trial pits T17 and T18 (Figure 2)

4.8 Trial pits T17 and T18 were unexcavated.

Trial pit T19 (Figures 2 & 3)

4.9 Trial pit T19 lay on the eastern edge of Sandwich town, in an area of public lawns near the southern bank of the River Stour.

4.10 Topsoil [19/01] consisted of 200mm of light greyish brown sandy silt with frequent rounded flint pebbles. Topsoil overlay a 300mm thick deposit [19/02]

of mid yellowish brown silty sand with 30% gravel. A permeable plastic membrane lay immediately below deposit [19/02] and overlay a 100mm thick deposit [19/03] of very dark blackish grey sandy clay with 20% rounded flint pebbles. Deposit [19/03] overlay a 360mm thick deposit [19/04] of light greyish yellow very fine sandy silt.

4.11 Deposit [19/04] overlay a *c.* 110mm deposit [19/05] of dark greenish grey slightly sandy silt that contained a significant quantity of cultural material, including 14th- to mid 16th-century pottery and post-medieval CBM. Deposit [19/05] overlay a deposit [19/06] of light/mid yellowish brown silty clay (Alluvium).

Trial pit T20 (Figures 2 & 3)

4.12 Trial pit T20 was located on Sandwich Quay, just to the west of the northern end of the slipway.

4.13 Topsoil [20/01] was 200mm thick and consisted of dark yellowish brown very fine sandy silt with occasional rounded flint pebbles. Topsoil overlay a 300mm thick deposit [20/02] of light/mid greyish yellow very fine sandy silt. Deposit [20/02] overlay a 800mm thick deposit [20/03]/[20/04] of dark brownish grey sandy silt with frequent rounded flint pebbles and fragments of post-medieval tile. This deposit overlay an apparently disturbed basal deposit [20/05] of light/mid yellowish grey silty clay.

Trial pit T21 (Figures 2 & 3)

4.14 Trial pit T21 was located on Sandwich Quay, just to the west of the southern end of the slipway.

4.15 Topsoil [21/01] was the same as recorded in T20. Topsoil overlay a 200mm thick deposit [21/02] of dark brownish grey sandy silt with occasional CBM and plastic. Deposit [21/02] overlay a 500mm thick deposit [21/03] of dark brownish grey sandy silt. Deposit [21/03] overlay an 800mm thick deposit [21/04] of very dark greyish brown sandy silt. Deposit [21/04] overlay a concrete mass at between 1.7m – 2m below ground level.

Trial pit T22 (Figures 2, 3 & 4)

4.16 Trial pit T2 was located on Sandwich Quay, just to the east of the southern end of the slipway.

4.17 Topsoil [22/01] was mid yellowish brown sandy silt with occasional modern material (not recovered). Topsoil overlay a 300mm thick deposit [22/02] of light yellowish grey sandy silt. Deposit [22/02] overlay a brick and concrete structure [22/03] with associated iron pipes, measuring at least 4.5m long and 600mm wide.

Trial pits T23 – T27, T29 – T31 (Figure 2) *(T28 was not excavated)*

4.18 Stratigraphy was generally the same in these eight trial pits as recorded in trial pits T1 – T11 described above. No significant archaeological features were identified, although a well-preserved oak roof tile was recovered from deposit [30/04] in T30. The previously recorded and sampled organic

component was present at between 1m – 1.8m below ground level.

Trial pit T32 (Figure 2)

4.19 Topsoil [32/01] was the same as recorded in pits T1 *et al.* described above. Topsoil overlay a 200mm thick deposit [32/02] of mid brownish yellow clayey sand. Deposit [32/02] overlay a 600mm thick deposit [32/03] of mid creamy yellow very sandy silt. Deposit [32/03] overlay a 700mm thick deposit [32/04] of mid yellowish grey sandy silt. Deposit [32/04] overlay a basal deposit [32/05] of mottled mid greyish yellow/orange slightly silty sand with occasional rounded flint pebbles and shell. No organic component was identified in the basal deposit.

Trial pits T33 - T35 (Figure 2)

4.20 Stratigraphy was generally the same as recorded in trial pits T1 - T11, T23 - T27 and T29 - T31 described above. The previously recorded organic component was identified at 1.4m below ground level in pits T33 and T35 but was absent in T34.

5.0 FINDS AND ENVIRONMENTAL SAMPLES

A small assemblage of finds, mainly consisting of ceramic building material (CBM), was recovered during the evaluation. A summary is given in Table 2.

Context	Pot/gm	CBM/gm	Bone/gm	Shell/gm	Stone/gm	CTP/gm	Wood
19/05	5/92	14/908			9/209		
20/03		5/1654			1/16		
20/05		3/78					
21/02		3/302	2/66	3/38			
21/04		2/424				1/8	
30/04							1/10
Total	5/92	27/3366	2/66	3/38	10/222	1/8	1/10

Table 2: Finds quantification

5.1 **The Pottery** by Luke Barber

5.1.1 The archaeological work recovered only five sherds (92g) of post-Roman pottery from the site, all of which was recovered from [19/05]. The earliest sherd appears to consist of a single small (1g) residual green glazed jug sherd in fine sand tempered ware and of probable 14th- century date. The remainder of the pottery in this deposit can be placed within a mid/late 15th- to mid 16th- century date range. The majority of sherds consist of hard-fired fine sand tempered oxidised wares typical of the Transitional period. These include an internally glazed cooking pot base (externally sooted) as well as sparse externally glazed sherds from two probable jugs/pitchers. The only other sherd consists of a German stoneware handle probably from a Raeren jug.

5.1.2 The assemblage is not considered to hold any potential for further analysis.

5.2 **Ceramic Building Material** by Sarah Porteus

5.2.1 A total of 27 fragments of ceramic building material (CBM) were recovered from six contexts with a total weight of 3366g. The majority of the material is of post-medieval date with a small quantity of medieval material. A provisional fabric type series was prepared where fabrics could not be assigned to a known fabric type. Fabric forms and types by context are given in Table 3.

5.2.2 All the contexts containing CBM appear to be of post-medieval date containing fragments of mostly roofing tile, with post-medieval brick being recovered from contexts [20/03] and [21/04]. The majority of the peg tile appears to be of local Kentish Canterbury Archaeological Trust fabric CAT32. The earliest CBM recovered is a residual fragment of medieval floor tile (FT1) of 14th to 15th century date from context [21/02], the fragment has a knife cut bevelled edge and a thickness of 34mm, the upper surface is highly abraded, traces of lead glaze on the base suggest it was once glazed on the upper surface. Context [20/03] contained an abraded, residual fragment of brick (B1) of possible Flemish origin and of likely 14th to 16th century date. Fragments of CBM recovered from sample <5>, context [19/05], are of post-

medieval C17th to C19th date and are predominantly abraded and heat affected suggesting they had been subject to fire damage.

Fabric	Form	Description	Date range	Context
T1	Peg tile	Fine orange fabric with fine scatter of mica and sparse coarse red iron rich inclusions.	C17th-C19th	[19/05]
T2	Peg tile	Fine orange fabric with sparse to moderate coarse quartz and sparse medium sized black sand.	C16th-C18th	[19/05], [20/05]
T3	Pantile	Fine sandy fabric with sparse black sand and medium to fine quartz.	Mid C17th-C19th	[20/03]
T4	Pantile	Fine sandy fabric with moderate coarse red iron rich inclusions with fine red silt streaks.	Mid C17th-C19th	[20/03], [20/05]
T5	Pegtile	Similar to CAT32 with sparse calcareous inclusions.	C16th-C18th	[21/02]
CAT	Peg tile	Canterbury Archaeological Trust (CAT) fabric type. Pinkish orange fine fabric with moderate to abundant calcareous speckles.	C18th-C19th	[19/05], [20/05], [21/02]
FT1	Floor tile	Orange fabric with abundant calcareous speckles and sparse coarse quartz and red, coarse iron rich inclusions.	C14th-C15th	[21/02]
B1	Brick	Light fine calcareous pinkish yellow fabric with inclusions of yellow silt. May be Flemish in origin.	C14th-C16th	[20/03]
B2	Brick	Fine red fabric with moderate calcareous speckles and sparse black iron rich inclusions.	C16th-C19th	[20/03]
Nr 3033	Brick	Museum of London (MoL) fabric. Fine orange sandy brick fabric with few inclusions	Mid C15th-C17th	[21/04]
MoL30	Brick	Museum of London (MoL) fabric. Brownish, mottled fabric with moderate coarse clinker inclusions and moderate calcareous inclusions.	C18th-C19th	[21/04]

Table 3: CBM fabric forms and types by context.

5.3 The Clay Tobacco Pipe by Elke Raemen

5.3.1 A single plain stem fragment was recovered from [21/04]. The piece is of 18th-century date.

5.4 The Stone by Elke Raemen

5.4.1 Context [20/03] contained a fragment of Welsh slate. Context [19/05] contained a small amount of stone, three fragments of burned shale or possible slate, five pink granite fragments and a mortared sandstone fragment.

5.5 Animal Bone by Gemma Driver

5.5.1 The animal bone assemblage contains 121 fragments from two contexts, [21/02] and [19/05]. Two fragments of cattle sized long-bone were hand-collected from context [21/02]. One of the fragments displayed three transverse chop marks on the shaft.

5.5.2 Context [19/05] was sampled to retrieve environmental remains. A total of 119 fragments of animal bone were recovered from this sample. The recovered bone was small and in poor condition. Of the identifiable fragments several species have been noted including cattle (*Bos taurus*), sheep/goat (*Ovis/Capra*), pig (*Sus scrofa*) and hare (*Lepus*). The assemblage contains a mixture of fused and unfused bone. One sheep mandible was recorded in accordance with Grant (1982) and gave a wear value of 42. This equates to an age-range of 6-8 years (Hambleton 1999).

5.5.3 Context [19/05] also contained 45 fragments of fish bone and vertebrae. The vertebrae range in size from 0.5cm to 1.5cm and are in good condition.

5.5.4 The assemblage has no potential for further statistical analysis due to its size and condition.

5.6 Marine Shell by Elke Raemen

5.6.1 Three oyster valves were recovered from [21/02]. Included are two lower valves, one of which is immature, and one upper valve, also immature. A minimum of two individuals are represented.

5.6.2 The assemblage as it stands is too small to be of any potential for further analysis. No further work is required.

5.7 Marine Molluscs by David Dunkin

5.7.1 Six contexts from the evaluation produced marine molluscs with a total weight of 1.470 kg. Five of the assemblages were the product of environmental sampling (Table 4 : Batch samples 1-5). Context 21/02 was hand-picked. For summary of data relating to the identified species see Table 4. The complete assemblage is represented by eleven species: *Ostrea edulis* (Common oyster); *Cerastoderma edule* (Common cockle); *Mytilus edulis* (Common mussel); *Patella vulgata* (Limpet); *Gibbula magus* (Great topshell); *Venerupis decussata* (Carpet shell); *Donax vittatus* (Banded wedge shell); *Buccinum undatum* (Common whelk); *Chlamys varia* (Variegated scallop); *Pholas*

dactylus (Common piddock); *Calliostoma zizyphinum* (Painted topshell).

5.7.2 Table 4 indicates that the number of marine molluscs in each of the six contexts is very small. Only two contexts contain three or more complete individuals ([19/05], [21/02]). The quantities of oyster and whelk in these two contexts are statistically insignificant as are all the other species represented in the total assemblage. The flots from [1/05] and [11/05] in particular, have however unusually produced fragments of a greater number of species than is often encountered. Further work on these is likely to identify more species.

5.7.3 The main conclusion is that the locale has produced evidence of a diverse number (at least 11) of potentially edible shellfish species and that these could have been targeted as a secondary food source. The topshells are more likely to be harvested for their decorative attributes (eg buttons etc). It might also be inferred from the evidence that communities from the earliest period represented (the Neolithic) may have sought a wider diversity of marine shells for consumption.

5.8 Worked Wood by Lucy Allott

5.8.1 A single piece of worked oak (Quercus sp.) wood was collected from context [30/04], an organic rich deposit. The wood measures approximately 200 x 70 x 10 mm and identification revealed that it is radially cleft. This object has been split in two along its length and although it is a radial cut there is little indication of it being wedge shaped. It is pierced with a roughly circular hole located about 15 mm from the long edge and 20cm from the shorter edge (in the corner of the object). At the same end of the object a groove/depression runs across one of the surfaces parallel to and at approximately 55mm from the shorter edge. It is most likely a roof tile/shingle and although the object is broken the wood is exceptionally well preserved. Further comment on the possible date of this object should be sought from a relevant specialist.

Context	Context Type/Dating	Species	Weight/Quantity/ Age	*Evidence of Encrustation
1/05	Estuarine alluvium; Dated 3,630-3,100 Cal BC (Early Neolithic)	*Cerastoderma edule; Donax vittatus; Buccinum undatum; Venerupis decussata; Chlamys varia; Gibbula magus; Pholas dactylus*	Total weight: 28g; All fragments from flot (BS2)	N/a
2/05	Estuarine alluvium; Dated 3,630-3,100 Cal BC (Early Neolithic)	*Cerastoderma edule; Donax vittatus; Calliostoma zizyphinum; Chlamys varia*	Total weight: 19g; All fragments from flot (BS3)	N/a

Context	Context Type/Dating	Species	Weight/Quantity/ Age	*Evidence of Encrustation
11/05	Estuarine alluvium; Date uncertain: Could be as late as Late Saxon (Priestley-Bell pers. comm.)	*Cerastoderma edule; Ostrea edulis; Mytilus edulis; Patella vulgata; Gibbula magus; Venerupis decussata; Chlamys varia; Donaz vittatus; Buccinum undatum*	Total weight: 82g; All fragments from flot (BS1)	N/a
12/05	Same as 11/05	*Chlamys varia; Cerastoderma edule; Donax vittatus; Buccinum undatum; Venerupis decussata*	Total weight 8g; All fragments from flot (BS4)	N/a
19/05	Probably Post-medieval (15th-mid 16th c AD?)	*Ostrea edulis; Buccinum undatum; Mytilus edulis; Cerastoderma edule; Venerupis decussata*	Weight *Ostrea edulis* (Oyster): 800g; *Buccinum undatum* (Whelk): 490g; Other: 11g. Fragments from all 5 species; Oyster: 11 x left valves; 11 x right valves; Age range of oyster *c.* 3-10 years+; Whelk: 29 x complete individuals; Age range of whelks *c.* 2-8 years (BS5)	Evidence of burrowing sponge (*Cliona celata*) in 1/2 valves; Some distortion present
21/02	Residual material (Late Post-medieval)	*Ostrea edulis*	Weight *Ostrea edulis* (Oyster): 32g; 2 x left valves; 1 x right valve; Hand-picked	Evidence of distortion in 1 x left valve

*****Applies to *Ostrea edulis* only

Table 4: Quantification and identification of marine molluscs

5.9 Environmental Samples by Lucy Allott

Introduction

5.9.1 Five bulk samples were taken from deposits within five trenches located across the investigation area. Samples <1-4> were from alluvium deposits while sample <5> was taken from a dump deposit in which finds and organics were noted whilst on site. Sampling aimed to establish evidence for environmental remains such as botanicals, bone and molluscs that could be used to further our understanding of the formation of the deposits and provide evidence for cultural land use activities concurrent with their formation.

Methods

5.9.2 Samples were processed in a flotation tank, the residues and flots were retained on 500µm and 250µm meshes respectively and were air dried prior to sorting. The residues were passed through 4mm and 2mm geological sieves and each fraction sorted for environmental and artefact remains (Table 5). The flots were scanned under a stereozoom microscope at magnifications of x7-45 and an overview of their contents recorded (Table 6).

Results

5.9.3 These samples produced assemblages dominated by molluscs that have been reported on separately (see 5.7). A small quantity of bone was also recovered and has been incorporated into the finds report (see 5.5).

5.9.4 Flots from alluvium deposits (samples <1, 2, 3 and 4>) contained high frequencies of uncharred organic matter. They also produced infrequent small charcoal and mollusc fragments. A few poorly preserved charred cereal grains were recorded in sample <5>, [19/05] from the dump deposit. This context was also moderately rich in wood charcoal and industrial debris. The wood charcoal assemblage includes some oak wood however many of the fragments present were vitrified which limits their potential for identification. Vitrified charcoal is often a result of exposure to high temperatures and is frequently found in combination with industrial debris. The industrial debris includes possible clinker and coal-like fragments. The small botanical assemblages are too limited to provide information about the past land use or natural vegetation however they do provide a limited amount of evidence for fuel use and possible industrial activities.

Sample Number	Context	Sample Volume litres	Charcoal >4mm	Weight (g)	Charcoal <4mm	Weight (g)	Bone and Teeth	Weight (g)	Fishbone and microfauna	Weight (g)	Marine Molluscs	Weight (g)	Land Snail shells	Weight (g)	Other (eg ind, pot, cbm)
1	11/005	20									****	92			
2	1/005	10			*	<1			*	<1	***	36			
3	2/005	10									***	22			
4	12/005	30									***	12			
5	19/005	20	**	38	***	16	***	182	*	2	***	1362	**	2	CBM***/1152g, Granite */108g, Shale? */82g, Pot*/16g, FE**/78g, Industrial***/104g

Table 5: Sample residue quantification (* = 1-10, ** = 11-50, *** = 51=250, **** = >250) and weights in grams

Sample Number	Context	Flot volume ml	Uncharred %	sediment %	Charcoal >4mm	Charcoal <4mm	Charcoal <2mm	crop seeds charred	Identifications	Preservation	large mammal bone	Mollusca	Ind debris
1	11/005	10	98	<2			*					* tiny frags	
2	1/005	<2	98	<2			*						
3	2/005	10	95	2			*					* tiny frags	
4	12/005	10	95	<2			*					** tiny frags	
5	19/005	60	15	<5	*	****	****	*	Cerealia indeterminate poorly preserved and puffed	+	* (1) rib frag.	***	**

Table 6: Sample flot quantification (* = 1-10, ** = 11-50, *** = 51=250, **** = >250), and preservation (+ = poor, ++ = moderate, +++ = good)

6.0 DISCUSSION

Trial pits T1 - T15, T23 – T27, T29 – T31 and T33 – T35

6.1 Although no significant archaeological features or finds were identified, the stratigraphy is worthy of note. Topsoil generally lay directly on alluvium, although deposits of probably wind blown sand were identified immediately below the topsoil in pits T1, T9, T10, T11 and T12. The extent of the alluvium in the southern part of the site (south of T11) is confirmed by the geology map of Sandwich reproduced in the Kent Historic Towns Survey (KCC, 2003, Figure 2).

6.2 In the northern part of the site, the observed stratigraphy generally conforms with that recorded by an auger survey carried out just to the north by Wessex Archaeology and the Trust for Thanet Archaeology (Hearne *et al.*, 1995, 239-354). The auger survey identified alluvium overlying a clayey deposit with organic laminations that was interpreted as estuarine in origin.

6.3 Radiocarbon analysis of the organic deposit produced dates of cal BC 3620-3140 and cal BC 3630-3100, suggesting that the main phase of alluviation of the Wantsum Channel began in the latter part of the Early Neolithic period (Cook & Naysmith, 1995, 345). However the organic basal deposits identified on the subject site, although apparently very similar, were possibly laid down after the formation of the Stonar peninsular and date to the post-Roman period. The recovery of a very well-preserved oak tile from deposit [30/04] in T30 demonstrates the potential for the preservation of organic remains within the basal deposit.

Trial pit T16

6.4 Deposit [16/01] was modern made ground almost certainly associated with the construction of a brick built drainage culvert. The underlying deposit [16/02] was perhaps alluvium, but may have been a further made ground deposit.

Trial pit T19

6.5 Deposit [19/02] was modern made ground on a permeable plastic membrane, overlying a thin (100mm thick) trample layer [19/03] probably associated with the made ground formation. Deposit [19/04] was undated made ground probably intended to raise the ground level. Deposit [19/05] was a dump deposit of mixed refuse comprising 14th- to mid 16th-century pottery, post-medieval CBM, foreign stone and bone. A small quantity of later peg tile was probably intrusive. The basal deposit [19/06] at *c.* 1.1m below ground level was alluvium.

6.6 Trial pit T19 was located on the edge of, or within, the infilled channel that would, in the medieval period, have connected the River Stour with the town moat. This arrangement is illustrated in the Kent Historic Towns Survey (KCC, 2003, Figure 16). It might be assumed that the moat was flooded by the incoming tide. However a contemporary painting of the French attack on the Sandown Gate (*c.* 120m south of T19) during the 1457 siege of Sandwich apparently shows the moat as dry, with small trees and shrubs growing in it (Richardson, 2004, 37). It is possible therefore that by the mid 16th century

this part of the moat was permanently dry and had become a dumping area for refuse.

Trial pits T20 and T21

6.7 All deposits below the topsoil [20/01] and [21/01] in T20 and T21 were made ground. Post-medieval CBM was recovered from the basal deposit [20/05] in T20 at between 1.3m - 2m below ground level, while a concrete mass was encountered in T21 at 1.7m below ground level. It is likely therefore, that this area of Sandwich Quay has been redeveloped in post-medieval/modern times.

Trial pit T22

6.8 Structure [22/03] was probably associated with a now disappeared gas works located immediately to the south. On the 1896 OS map, this area of Sandwich Quay is shown as being occupied by a 'shipbuilding yard' beside the Stour and a 'gas works' between the yard and the town wall (KCC, 2003, Figure 13).

Trial pit 32

6.9 Deposit [32/02] was probably made ground; the structure of the underlying deposit [32/03] suggested that it might also have been made ground extending to a depth of 1.1m below ground level. No dating evidence was recovered from either deposit.

6.10 The immediate vicinity of trial pit T32 was *c.* 1m higher than the surrounding area. That the ground had been artificially raised is supported by the absence of the organic layer/lenses recorded in neighbouring trial pits T13 and T33; T32 was bottomed at 2.5m below ground level in silty sand that was apparently the same deposit as recorded at 1.4m in T33.

6.11 The suggested raised area is thought to have been a platform for anti-aircraft guns during the Second World War (pers. comm. the landowner).

7.0 CONCLUSIONS

7.1 With the possible exception of the suggested site of a Second World War anti-aircraft battery identified in T33, no significant archaeological remains were identified in the farmland to the east of the Stonar Loop and North Downs Farm. However, the presence of an extensive organic rich layer below the alluvium was confirmed; the potential of this deposit for the recovery of preserved wood, environmental sampling and dating is high.

7.2 The area around the Sandwich Quay slipway has apparently been heavily disturbed in post-medieval/modern times. Substantial deep remains associated with a 19th-/20th-century 'gas works' were revealed in T22, suggesting that early quay features have been destroyed in this location.

7.3 Perhaps the most significant archaeological remains were revealed in T19, which was located on the edge of or within a section of the town moat connecting to the River Stour. A possibly mid 16th-century dump deposit of mixed refuse lay immediately above alluvium, perhaps signifying a radical change of use for the moat. This is a key location in the history of the town's defences.

7.4 A continuous watching brief during ground works is the most effective way to monitor discrete excavations over large areas.

ACKNOWLEDGEMENTS

ASE would like to thank Halcrow Group Limited for commissioning the work and Fugro Consultants who excavated the test pits.

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SMR Summary Form

Site Name: Sandwich and Deal Flood Alleviation Scheme	
Site Address: Sandwich, Kent	
Summary: *Archaeology South-East was commissioned by Halcrow Group Limited, on behalf of their client the Environment Agency, to undertake an archaeological watching brief during ground investigation in and around Sandwich, Kent. The ground investigation is in advance of the proposed Sandwich and Deal Flood Alleviation Scheme. With the possible exception of the suggested site of a Second World War anti-aircraft battery, no significant archaeological remains were identified in the farmland to the east of the Stonar Loop and North Downs Farm. However, the presence of an extensive organic rich layer below the Alluvium was confirmed; the potential of this deposit for environmental sampling and dating is high. The area around the Sandwich Quay slipway was apparently heavily disturbed in post-medieval/modern times. Substantial deep remains associated with a 19th-/20th-century 'gas works' were revealed, suggesting that early quay features have been destroyed in this location. The most significant archaeological remains were revealed during excavations located on within a section of the town moat connecting to the River Stour. A perhaps mid 16th-century dump deposit of mixed refuse lay immediately above Alluvium.*	
District/Unitary: KCC	**Parish:** Sandwich
Nature of Development: Ground Investigation	
Period(s): Post-medieval	
NGR (centre of site : 8 Figures): TR 3290 5850	
Type of archaeological work Watching Brief	
Date of Recording: 2nd - 10th July 2009 and 6th - 7th August 2009,	
Unit undertaking recording: Archaeology South-East	
Geology: Alluvium overlying Thanet Beds	
Title and author of accompanying report: An Archaeological Watching Brief during Ground Investigation in and around Sandwich, Kent by Greg Priestley-Bell	
Summary of fieldwork results *With the possible exception of the suggested site of a Second World War anti-aircraft battery, no significant archaeological remains were identified in the farmland to the east of the Stonar Loop and North Downs Farm. However, the presence of an extensive organic rich layer below the Alluvium was confirmed; the potential of this deposit for environmental sampling and dating is high. The area around the Sandwich Quay slipway was apparently heavily disturbed in post-medieval/modern times. Substantial deep remains associated with a 19th-/20th-century 'gas works' were revealed, suggesting that early quay features have been destroyed in this location. The most significant archaeological remains were revealed during excavations located on within a section of the town moat connecting to the River Stour. A perhaps mid 16th-century*	

dump deposit of mixed refuse lay immediately above Alluvium.	
Likelihood of surviving archaeological remains on-site: Variable dependent upon location	
Location of archive/finds: Currently held at the offices of ASE	
Contact at Unit: Darryl Palmer	**Date:** 28th September 2009

OASIS Form

OASIS DATA COLLECTION FORM: England

Printable version

OASIS ID: archaeol6-64763

Project details

Project name	Sandwich and Deal Flood Alleviation Scheme
Short description of the project	Archaeology South-East was commissioned by Halcrow Group Limited, on behalf of their client the Environment Agency, to undertake an archaeological watching brief during ground investigation in and around Sandwich, Kent. The ground investigation is in advance of the proposed Sandwich and Deal Flood Alleviation Scheme. With the possible exception of the suggested site of a Second World War anti-aircraft battery, no significant archaeological remains were identified in the farmland to the east of the Stonar Loop and North Downs Farm. However, the presence of an extensive organic rich layer below the Alluvium was confirmed; the potential of this deposit for environmental sampling and dating is high.The area around the Sandwich Quay slipway was apparently heavily disturbed in post-medieval/modern times. Substantial deep remains associated with a 19th-/20th-century 'gas works' were revealed, suggesting that early quay features have been destroyed in this location.The most significant archaeological remains were revealed during excavations located on within a section of the town moat connecting to the River Stour. A perhaps mid 16th-century dump deposit of mixed refuse lay immediately above Alluvium.
Project dates	Start: 06-07-2009 End: 07-08-2009
Previous/future work	No / Not known
Any associated project reference codes	SAD09 - Sitecode
Type of project	Recording project
Site status	Conservation Area
Site status	None
Current Land use	Grassland Heathland 4 - Regularly improved
Monument type	DUMP DEPOSIT Medieval
Monument type	DUMP DEPOSIT Post Medieval
Significant Finds	POTTERY Medieval
Significant Finds	POTTERY Post Medieval
Investigation type	'Watching Brief'

Project location

Country	England
Site location	KENT DOVER SANDWICH Sandwich and Deal
Postcode	CT 13 9
Study area	5.00 Kilometres
Site coordinates	TR 3290 5850 51.2773009480 1.339788217730 51 16 38 N 001 20 23 E Point
Height OD / Depth	Min: 1.57m Max: 3.79m

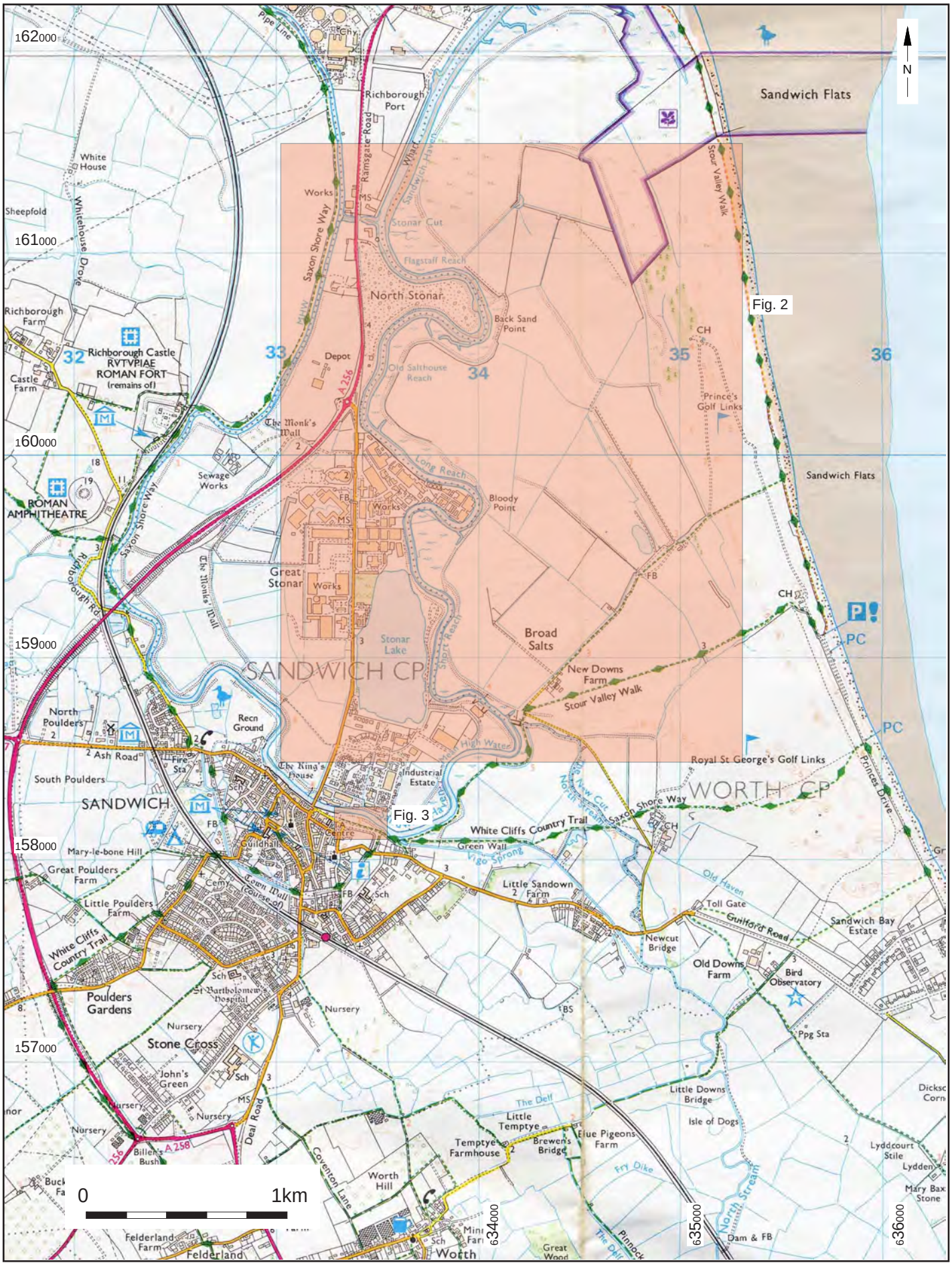
Project creators

Name of Organisation	Archaeology South East
Project brief originator	Halcrow Group Limited
Project design originator	Halcrow Group Limited
Project director/manager	Darryl Palmer
Project supervisor	Greg Priestley-Bell
Type of sponsor/funding body	Client

Project archives

Physical Archive recipient	Local Museum
Physical Contents	'Animal Bones','Ceramics','Wood'
Digital Archive recipient	Local Museum
Digital Contents	'other'
Digital Media available	'Images raster / digital photography','Text'
Paper Archive recipient	Local Museum
Paper Contents	'other'
Paper Media available	'Notebook - Excavation',' Research',' General Notes','Plan','Report'

Entered by	Greg Priestley-Bell (gregpbell@btinternet.com)
Entered on	28 September 2009



© **Archaeology South-East**		Sandwich and Deal	Fig. 1
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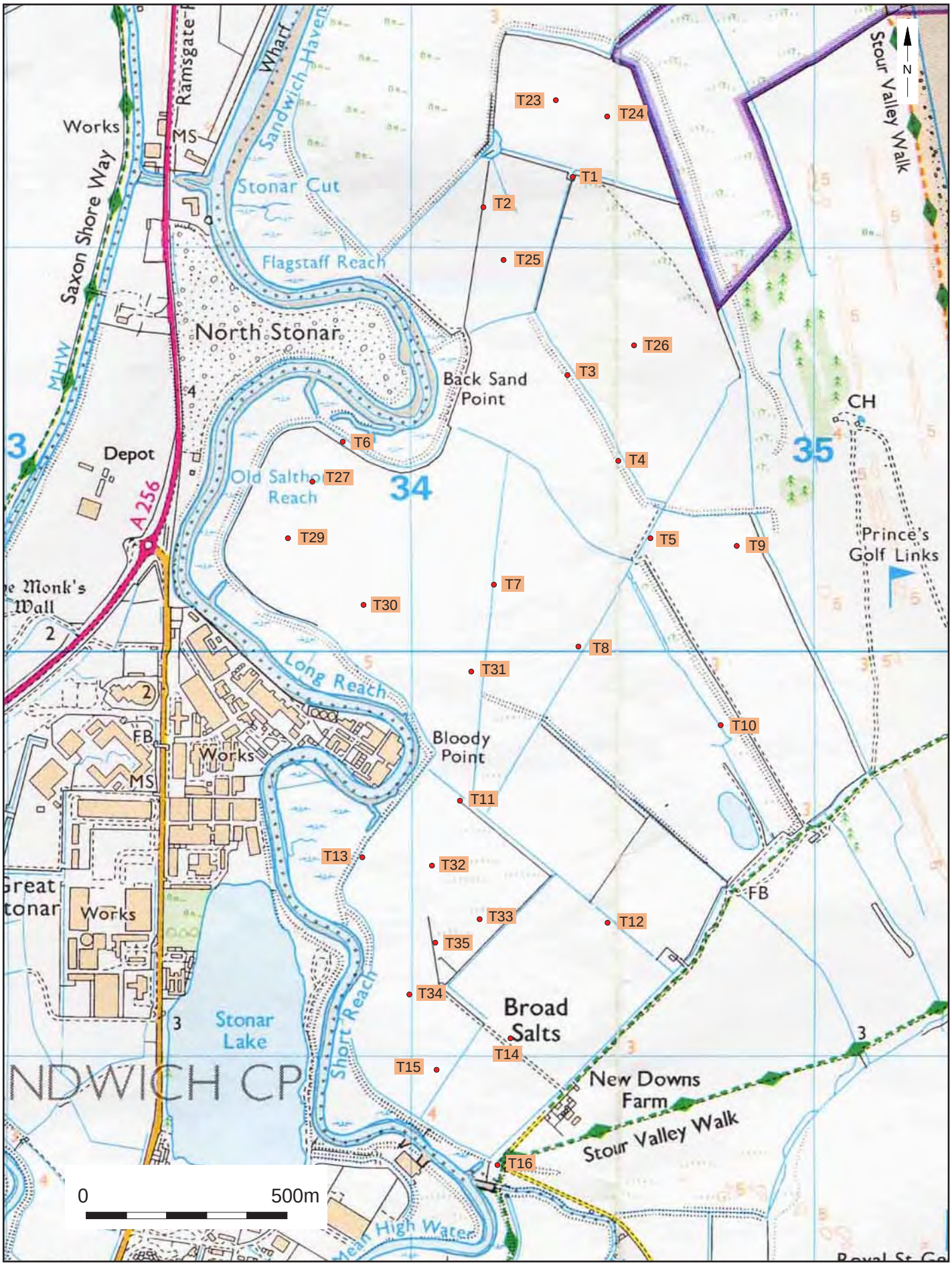
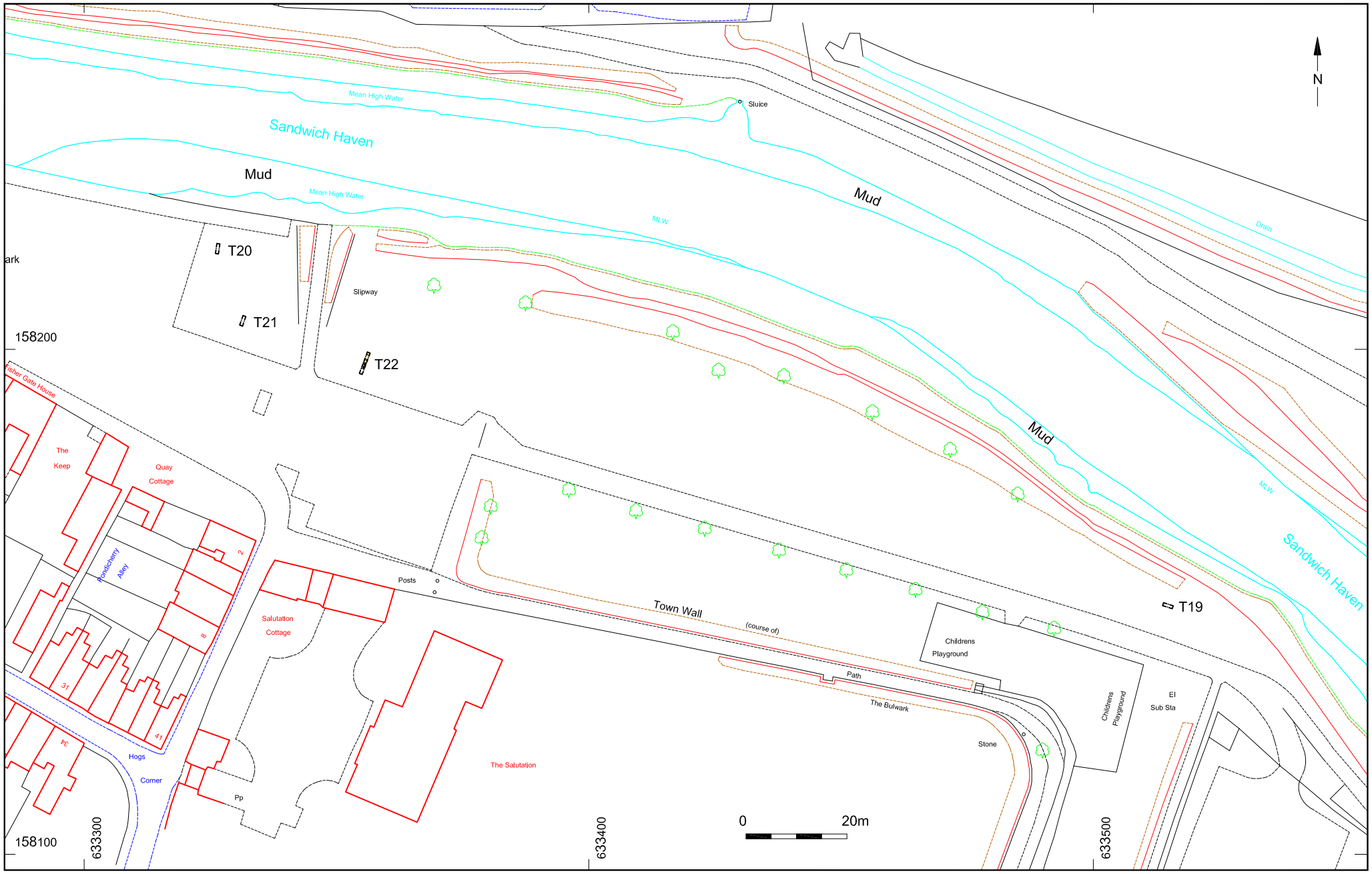
Report Ref: 20091442	Drawn by: JLR		



© Archaeology South-East		Sandwich and Deal	Fig. 2
Project Ref: 3858	Sept 2009	Trench location	
Report Ref: 20091442	Drawn by: JLR		



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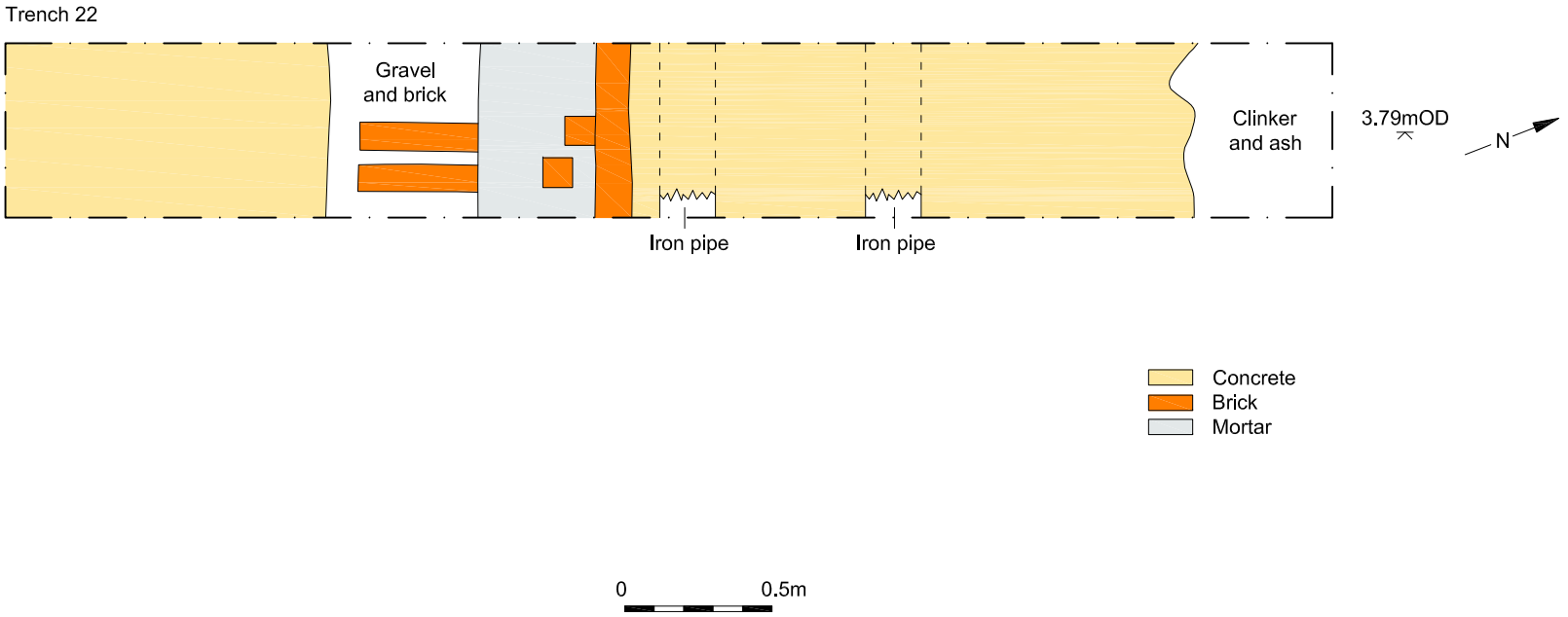
Project Ref: 3858	Sept 2009	Trench location plan (Trenches 19-22)	
Report Ref: 2009142	Drawn by: JLR		



© Archaeology South-East		Sandwich and Deal	Fig. 4
Project Ref: 3858	Sept 2009	Trench 22: Plan	
Report Ref: 2009142	Drawn by: JLR		

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