

Leysdown Connections, Isle of Sheppey, Kent

Watching Brief Report

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Summary

Between July and October 2018 the Canterbury Archaeological Trust (CAT) undertook an archaeological watching brief of groundworks associated with the construction of a new buried sewage system at land between Eastchurch and Warden Bay (Leysdown Connection), Isle of Sheppey, Kent. The work comprised the monitoring of two schemes, the installation of a new Gravity Sewer near Eastchurch and a Rising Main at Warden Bay. Both schemes passed through open farmland and required the machine removal of topsoil and disturbed subsoil along their complete routes, with a combined total length of 1100m and an area of 15240m².

Underlying geology, composed of London Clay, was exposed along the complete length of both monitored schemes. Three archaeological features were identified along the route of the Warden Bay scheme. These comprised a small pit, a ploughed out linear field boundary and the concrete foundations of a former agricultural building. The pit was infilled with a concentration of burnt flint and daub and was thought to be a field oven or fire. The daub was undiagnostic and could not be dated. The field boundary was post-medieval, or later, in date and conformed to the existing field system. The surviving building foundation utilised concrete footings and available aerial photographic and map data suggesting it was constructed at some time in the second half of the twentieth century. No archaeological remains were present along the route of the Eastchurch scheme.

1 Introduction

1.1 Project background

- 1.1.1 Between July and October 2018 the Canterbury Archaeological Trust (CAT) undertook an archaeological watching brief during groundworks associated with the construction of a new buried sewage system on land between Eastchurch and Warden Bay (Leysdown Connection), Isle of Sheppey, Kent.
- 1.1.2 The work was commissioned by Southern Water (Southern House, Lewes Road, Falmer, East Sussex, BN1 9PY) and comprised two schemes to be monitored:
- 1) a new Gravity sewer near Eastchurch (Eastchurch scheme);
 - 2) a new Rising Main, near Warden Bay (Warden Bay scheme).
- 1.1.3 The archaeological watching brief was conducted in accordance with a written scheme of investigation (WSI) prepared by Archaeology South East (ASE 2018), and a separate risk assessment and method statement (RAMS) produced by CAT (2018). These set out the programme and methodology for undertaking the archaeological watching brief, its objectives, standards to be attained and the format for reporting. The archaeological watching brief works were undertaken to mitigate against the potential impact of the proposed development on any buried archaeological features and deposits that might have been present within the proposed development area.

1.2 Location, topography and current use (Figs 1, 2 and 3)

Eastchurch scheme

- 1.2.1 The proposed Eastchurch scheme was located approximately between National Grid References (NGR) 599546 169856 and 600025 170267, approximately 1.5km to the south-east of Eastchurch. The route extended along the western edge of Old Rides Farm, through land currently utilised as open arable farmland overlooking Harty marshes to the south. Part of the scheme's route passed through a field currently occupied by solar panels. Existing ground level varied between approximately 12m OD at the scheme's western end, rising gradually to approximately 16m OD through the solar panel field, before levelling out to a slight incline, rising to approximately 19m OD at its north-eastern end.

Warden Bay scheme

- 1.2.2 The proposed Warden Bay scheme was located approximately between NGR 602392 171302 and 601949 170806, extending in a south-westerly direction from the southern edge of the village of Warden. The route extended through arable fields to the east of Mustards Farm. At the south-western end, the current ground levels were approximately 2m OD, rising gradually to the north-north-east to approximately 8m OD where the route turned to the north-east, levelling out before a slight decline to approximately 6m OD.

1.3 Geology (Fig 4)

- 1.3.1 The British Geological Survey (1980, sheet 272 Chatham, Solid and Drift edition) shows both schemes lying on solid Eocene London Clay, comprising a clay and silt sedimentary bedrock. No superficial drift deposits are recorded. However, east to west aligned linear bands of Alluvium, a Pleistocene or recent deposit of clay, silt, sand and gravel, is shown capping the London Clay in the lower ground immediately to the northern and southern limits of the Warden Bay scheme. Alluvium is also mapped in the Harty marshes, to the south of the Eastchurch scheme. On the higher ground to the north-west of the Eastchurch scheme small areas of Eocene Bagshot beds of sand capped by Head brickearth are also present.

1.4 Archaeological background

- 1.4.1 The WSI (ASE 2018, 2–7) gives an overview of known archaeological investigations, observations, find-spots and other discoveries within the PDA's immediate vicinity. In summary, the Eastchurch scheme

was seen as lying within an area of low archaeological potential (ASE 2018, 7), while the Warden Bay scheme was seen as lying within an area of moderate potential (*ibid*, 5).

Previous archaeological interventions

- 1.4.2 Three archaeological interventions have been undertaken within the boundaries of the PDA.
- 1.4.3 A watching brief undertaken by Swale and Thames Archaeological Survey Company during installation of a solar panel array at Old Rides Farm, Eastchurch identified no archaeological remains (SWAT 2013).
- 1.4.4 A watching brief undertaken during works associated with the present pumping station at the eastern end of the Warden Bay scheme identified no archaeological remains (ASE 2018, 5)
- 1.4.5 An evaluation comprising thirty-six trial trenches took place along the line of the pipeline that joins the Eastchurch and Warden Bay schemes (ASE 2018). A single trench (Trench 5) which lay towards the western end of the evaluated area produced evidence of two intercutting ditches, one of which yielded pottery sherds dated to the late Iron Age/early Roman period. These may correspond to possible field boundaries. Further finds (a glass bead, fire cracked flint, fired clay fragments and burnt animal bone) retrieved from environmental sampling, indicated the possible proximity of domestic settlement activity (ASE 2018, 7).

Palaeolithic (c 500000–9000 BC)

- 1.4.6 No archaeological remains from this period have been recorded from the Isle of Sheppey. Worked flint tools, recorded in the Kent County Council Historic Environmental Record (KCC HER TR 07 SW 1026) from the foreshore at Warden Bay, appear to be originally from Swalecliffe on the north coast of mainland Kent approximately 10km to the east.

Mesolithic (c 9000–4000 BC)

- 1.4.7 A single flint tool has been recorded from the Isle of Sheppey: a Thames Pick (dated to c 8000–4000 BC) retrieved during archaeological fieldwork at Halfway Houses (KCC HER No TQ 97 SW 143), located approximately 8km to the west-north-west of the PDA.

Neolithic (c 4000–2500 BC)

- 1.4.8 The nearest recorded Neolithic activity comes from archaeological works undertaken near Eastchurch, at Kingsborough Farm located approximately 2km to the north-west of the Eastchurch scheme. Here an early Neolithic causewayed enclosure was first identified during evaluation work in 1999 and excavated in 2000. Three circuits of enclosure ditches were found, dated by pottery to c 3500–2750 BC (KCC HER TQ 97 SE 52). A second potential causewayed enclosure was postulated, in 2004, on the evidence of a length of interrupted ditch dating to the Neolithic identified approximately 280m to the north of the first enclosure. Two groups of postholes within the enclosure are thought to relate to the use of the site in the Neolithic period (KCC HER TQ 97 SE 68).
- 1.4.9 Archaeological work at Warden Bay Primary School, on Leysdown Road located approximately 600m to the south of the Warden Bay scheme, produced residual early Neolithic flints and pottery sherds (ASE 2018, 6) (KCC HER EKE11987 and 11989).

Bronze Age (c 2500–800 BC) and Iron Age (c 800 BC–AD 43)

- 1.4.10 Bronze Age and Iron Age activity has been recorded from the Kingsborough Farm site. The remains of a similar date within the vicinity of the Eastchurch scheme, is a postulated circular ring ditch (HER TQ 96 NE 1034) located approximately 375m to the south.
- 1.4.11 The Warden Bay scheme passes within close proximity of a number of earthworks which may be prehistoric in origin (ASE 2018, 5). These include a ring-ditch (KCC HER TR 07 SW 1015) approximately 300m to the south-west, and a shallow depression surrounded by an embankment (KCC HER TR 07 SW 1016) approximately 250m to the north-east; a third feature, a mound (KCC HER TR 07 SW 34) has been wrongly recorded less than 50m to the north of the scheme and is on the Isle of Grain.
- 1.4.12 Later prehistoric settlement at the Warden Bay Primary School site was attested by residual Middle and possibly late Bronze Age pottery, and cut features including pits, ditches, gullies and post holes

dating to the Bronze Age/early Iron Age period. These investigations revealed intensive activity from the middle Iron Age through the Roman period consisting of rubbish pits, trackways, an enclosure and fields in addition to human burials. A late Iron Age or early Roman funerary pit was identified within one trench (ASE 2018, 6). An Iron Age gold coin has been retrieved from a location in close proximity to the scheme (KCC HER MKE73678).

Romano-British (c AD 43–410)

- 1.4.13 Apart from the potential funerary pit identified at the Warden Bay Primary School site, of probable early Roman date, no further remains of this period are recorded within the vicinity of either scheme.

Medieval (c 410–1550)

- 1.4.14 The Eastchurch scheme passes within 50m of earthworks, recorded within Kent's HER as marking the site of an alleged Viking Camp/Danish overwintering place (KCC HER TR 07 SW 11); although the nature of the proposed earthworks is not characterised on the HER record.
- 1.4.15 Medieval activity within the vicinity of the Warden Bay scheme was evidenced during the archaeological work at the Warden Bay Primary School site. This appears to largely comprise agricultural features, including a possible drove way, which produced significant quantities of domestic waste. Although only a few early medieval pottery sherds were identified during these investigations, their presence along with considerable medieval agricultural activity, suggest a settlement, perhaps with earlier Anglo-Saxon origins, is likely to have existed nearby. A silver coin of Henry II has been retrieved approximately 600m to the north-east of the scheme (KCC HER TR 07 SW 4).

Post-medieval/modern (c AD 1550–present)

- 1.4.16 The north end of the Eastchurch scheme lies immediately to the south of the route of the 1901 Queenborough and Leysdown Light Railway (KCC HER TQ 97 SE1071) of which there may be some remains. The modern Old Rides Farm stands on the site of two demolished farmsteads to the east and south-east of the scheme (KCC HER MKE85743 and MKE85744), another earlier farmstead is recorded approximately 250m to the west (MKE85730).
- 1.4.17 Mustards Farm (KCC HER MKE85838) lying approximately 250m to the north-west of the Warden Bay scheme is thought to have originated as a late post-medieval farmstead. Post-medieval sea defences, predating 1870, are recorded on the coast to the east (KCC HER TR 07 SW 1013). A possible late post-medieval brickfield is located on the foreshore (KCC HER TR 07 SW 1010), to the north of the scheme. The Queenborough and Leysdown Light Railway (KCC HER TQ 97 SE 1071), built 1901 and closed in the 1950s, lies to the south of the scheme. Other undated features include further earthworks recorded less than 500m from the scheme towards the coast (KCC HER TR 07 SW 1030, 1031 and 1032), along with undated salt workings (KCC HER TR 07 SW 1014) and linear coastal structures (KCC HER TR 07 SW 1018).

1.5 Objectives and methodology

Aims and objectives

- 1.5.1 The archaeological investigation was undertaken in accordance with those methods outlined in the WSI (ASE 2018), and in accordance with methods of best practice outlined by the Chartered Institute for Archaeologists (2014a, 2014b). A site specific method statement and risk assessment was also prepared by CAT (2018).
- 1.5.2 The principal objective of the archaeological monitoring and recording work was to establish the presence or absence of any elements of the archaeological resource across the area of the proposed development site and ensure their preservation by record where development will lead to their permanent loss.
- 1.5.3 The opportunity was taken during the course of the fieldwork to place and assess the archaeology revealed within the context of other recent archaeological investigations in the immediate area and within the setting of the local landscape and topography.

- 1.5.4 Broader objectives stated in the WSI (ASE 2018, 7) were:
- 1) to determine the presence or absence of archaeological remains and palaeoenvironmental deposits within the development site;
 - 2) to investigate and record archaeological remains and palaeoenvironmental deposits in so far as is safe and practical within the confines of excavations associated with the installation of the new pipeline; and
 - 3) to produce of a report on the findings to allow informed decisions to be made as to the requirement for archaeological fieldwork in advance of or during development within this area.
- 1.5.5 Research specific aims stated in the WSI (*ibid* 8) were:
- 1) to establish if the Bronze Age and/or Iron Age occupation evidence identified to the south of the Warden Bay site (and/or associated field systems), extends into the area impacted by the scheme (Warden Bay);
 - 2) to establish the presence and/or extent of any further late Iron Age/early Roman landscape or settlement evidence in the vicinity of Old Rides Farm (Eastchurch);
 - 3) to establish if there is evidence for later Roman occupation of the landscape at either site;
 - 4) to seek evidence in support of the presence of an alleged Viking camp (Eastchurch);
 - 5) to establish whether as yet unknown heritage assets of the post-medieval period, particularly those associated with the former Sheppey Light Railway extend into the area that might be impacted by the scheme (Eastchurch).
- 1.5.6 The WSI also saw the watching brief as having the potential to address wider research questions. Whilst no appropriate specific research question has been identified in the South-East Research Framework (SERF), the extent of the scheme, coupled to nearby heritage assets from previous investigations, may allow it to address questions regarding cultural transition horizons (Bronze Age to Iron Age, Iron Age to Roman, etc) (ASE 2018, 8), specifically:
- 1) reuse of pre-existing landscape markers / boundaries in the development of the late prehistoric landscape; and
 - 2) longevity or relocation of settlement in the late prehistoric to Roman periods.

Methodology

- 1.5.7 Archaeological monitoring was undertaken during groundworks within the area of the two sewage schemes where development will lead to permanent loss of the buried archaeology. This comprised the stripping of all topsoil (and where necessary disturbed subsoil) along the complete route of the sewage schemes; this did not however include the field occupied by solar panels through which the Eastchurch scheme would cross.
- 1.5.8 The topsoil strip was undertaken using 14 tonne and 20 tonne 360 degree tracked mechanical excavators fitted with flat-bladed ditching buckets. All machine stripping was conducted under direct archaeological supervision. All undifferentiated topsoil, made ground, and modern overburden was removed in approximate 100mm thick spits. Any underlying plough soil and disturbed subsoil was then removed in approximate 50mm thick spits until either the first significant archaeological horizon or underlying geology was encountered.
- 1.5.9 All monitored groundworks have been digitally plotted using AutoCAD and located to a digital Ordnance Survey tile (reproduced by permission of Ordnance Survey on behalf of HMSO © Crown Copyright 2001. All rights reserved. License No. AL100021009) (Figs 5 and 6).
- 1.5.10 Where present, any archaeological features and deposits were excavated by hand in stratigraphic order to determine extent, form, character and date. Recording of all contexts was undertaken using standard CAT pro-forma sheets. Plans of all excavated deposits were made at a scale of 1:20 and sections were recorded at a scale of 1:10. Photographic coverage employed colour digital. Where identified, all artefacts were retrieved from stratified archaeological contexts. Retrieval of finds from non-stratified deposits was carried out on an opportunistic basis.

1.5.11 The archaeological fieldwork was undertaken on 23, 24, 26, 27, 30 and 31 July, 1 August, 19, 20, 21 and 24 September, and 12, 15, 16, 17, 18, 24, 25 October 2018.

Project archive

1.5.12 The project archive, including all the site records and cultural material produced by the project, is to be prepared in accordance with the United Kingdom Institute for Conservation guidelines for the preparation of archives for long term storage (UKIC 1990). A site code (LCS-WB-18) was provided by CAT, and all records can be referenced from this code.

1.5.13 A summary of the project archive is presented below.

Table 1. Project archive summary

Type	Description	Eastchurch Scheme	Warden Bay Scheme	Total
Fieldwork Records	Daily Record Sheets	7	12	19
Survey Data	Digital Survey Data	3	2	5
Photographic Data	Register sheets	3	1	4
	Digital Images	81	22	103
Finds	Bulk finds	-	3	3

2 Results

2.1 Eastchurch scheme (Fig 5, Plates 1–13)

- 2.1.1 The Eastchurch scheme, comprised an easement strip measuring approximately 875m in length. It was undertaken in four separate stages comprising chainage 0–130m, chainage 540–575m, chainage 575–800m and chainage 800–875m.
- 2.1.2 The route of the scheme where it crossed the field occupied by the solar panels (chainage 130–540), had been subject to a previous archaeological watching brief and therefore was not monitored (SWAT 2013). In total an area of approximately 8040m² was stripped, with a combined length of approximately 465m across the four stages. The topsoil (200) measured between 200mm and 350mm thick and comprised soft to moderately compacted mid to dark grey brown, slightly sandy clay loam.
- 2.1.3 A summary of recorded contexts is provided below.

Table 2. Eastchurch Scheme context list

Context	Interpretation	Description
200	Topsoil	Soft to moderately compacted mid to dark grey brown slightly sandy clay loam.
201	Disturbed geological interface/colluvium	Firmly compacted mid brown slightly silty sandy clay with occasional small- to mid-sized (0.02–0.08m) rounded and sub-rounded flint pebbles.
202	Natural clay (Chainage areas 1–135m, 540–575m)	Moderate to firmly compacted mid brown slightly sandy clay with very occasional small- to mid-sized (0.02–0.08m) rounded and sub-rounded flint pebbles.
203	Natural clay (Chainage area 575–875m)	Moderate to firmly compacted yellowish mid brown slightly silty clay with occasional small- to mid-sized (0.02–0.08m) rounded and sub-rounded flint pebbles and very occasional larger (0.08–0.12m) sub rounded and sub-angular flint nodules/pebbles

Chainage 0–130m (Plates 1–5)

- 2.1.4 The first stage of the scheme was aligned roughly east to west, starting at an existing man-hole and proceeding eastwards. The topsoil strip covered an area of approximately 1920m², measuring approximately 130m by between 8m and 18m wide.
- 2.1.5 The exposed natural subsoil (201) comprised moderate to firmly compacted mid brown slightly silty sandy clay with occasional small- to mid-sized (0.02–0.08m) rounded and sub-rounded flint pebbles. No archaeological features were present. A series of modern ceramic field drains traversed the stripped area at an approximate north-west to south-east alignment; these were partially infilled with clinker to aid drainage.
- 2.1.6 It wasn't clear if the natural subsoil represented the denuded upper surface of the London Clay, or an interface between it and the overlying topsoil, or due to its silt content, a colluvial deposit potentially masking archaeological remains. As such, a second subsoil strip was undertaken targeted to an area along the route of the pipe trench itself. This covered an area of 810m², measuring approximately 110m long by between 5m and 11m wide, and was reduced by a further 50mm to 100mm. This exposed moderate to firmly compacted mid brown slightly sandy clay (202) which was interpreted as representing the London Clay. No archaeological features were identified.

Chainage 540–575m (Plates 6 and 7)

- 2.1.7 This phase of the scheme was located to the north of the field containing the solar panels, where the route cut across a narrow strip of land put aside for conservation reasons. The stripped area, aligned roughly north-east to south-west, covered 488m², measuring approximately 35m long by between 17m and 20m wide.

- 2.1.8 The same sequence as seen in Chainage 0-130m was recorded here, although natural London Clay (202) was exposed in a single phase of stripping reducing the area by 250mm to 300mm. No archaeological features were present.

Chainage 575–800m (Plates 8–11)

- 2.1.9 This stage formed the main phase of the Eastchurch scheme, and comprised a stripped area aligned roughly north to south covering 4170m², measuring approximately 225m long by between 18m and 22m wide.
- 2.1.10 A moderately to firmly compacted yellowish mid brown slightly silty clay (203) with occasional small- to mid-sized (0.02–0.08m) rounded and sub-rounded flint pebbles and very occasional larger (0.08–0.12m) sub rounded and sub-angular flint nodules/pebbles, represented the underlying geology.
- 2.1.11 The stripped area was traversed by a complex sequence of field drains (mainly aligned approximately east to west or north-west to south-east) and had also been disturbed by several deep wheel ruts. A secondary strip was therefore undertaken along the line of the proposed pipe trench. This second strip covered 810m² being 200m long by between 3m and 5m wide, with the area being reduced by a further 100 to 150mm. No archaeological features were present.

Chainage 800–875m (Plates 12 and 13)

- 2.1.12 This stage of the scheme was located at its northern end. This area had been heavily disturbed by activities associated with the modern working farm and the topsoil had been mixed with made ground in an attempt to make a rough farm road and areas of hardstanding. The area subjected to the topsoil strip covered approximately 1,464m² measuring approximately 75m long by between 5m and 24m wide. The area was reduced by between 200mm and 250mm, and although natural clay (2002) was exposed it was heavily disturbed. Due to time and space constraints a secondary strip could not be undertaken, therefore a watching brief was maintained during the cutting of the pipe trench and associated manholes. No archaeological features were identified.

2.2 Warden Bay scheme (Figs 6 and 7, Plates 14–20)

- 2.2.1 The Warden Bay scheme started at its south-western end and was undertaken in a continuous linear strip. Initially heading in an approximate north-north-east direction for a distance of 230m to the top of the slope, before it turned to the north-west for a further distance of 400m.
- 2.2.2 Overall an area of 7,200m² was stripped, measuring approximately 630m long by between 9m and 15m wide. Topsoil (100) coverage varied between 250mm and 400mm deep, being shallower along the higher ground in the north-east to south-west section.
- 2.2.3 A summary of recorded contexts is provided below.

Table 3. Warden Bay Scheme context list

Context	Interpretation	Description
100	Topsoil	Soft to moderately compacted mid to dark grey brown slightly sandy clay loam.
101	Fill of [102] F2	Moderate to firmly compacted mid grey brown slightly silty clay mixed with burnt flint; several fragments of burnt daub also present.
[102]	Small pit F2	Oval in shape, aligned east to west, 0.68m in length by 0.36m wide; 0.26m deep with a slightly concave base and extended 'U' shaped profile.
103	Fill of [104] F3	Moderately compacted mid brown silty clay
[104]	Ditch/gully F3	NNW–SSE linear; exposed length 11.50m 0.83–1.10m wide. 0.18m deep with an irregular extended 'U' shaped profile
105	Fill of [106] F1	Concrete over gravel bedding/levelling
[106]	Footings trench F1	Narrow trenches measuring between 0.50 and 0.60m wide, and between 0.10 and 0.22m deep, formed the outline of a rectangular building aligned NNW to SSE, measuring approximately 11.50m by 8m.

Context	Interpretation	Description
107	Natural clay (NNE–SSW section)	Moderately to firmly compacted mid to dark brown slightly silty clay with occasional small- to mid-sized (0.02–0.08m) rounded and sub-rounded flint pebbles and very occasional larger (0.08–0.12m) sub rounded and sub-angular flint nodules/pebbles.
108	Natural clay (NE–SW section)	Moderately to firmly compacted mid to dark brown slightly silty clay with pockets/lenses of light brown slightly sandy clay mixed with small- to mid-sized (0.02–0.06m) rounded flint pebbles outlined by light yellowy brown clay.

2.2.4 The exposed natural recorded in the lower north-north-east to south-south-west section of the Warden Bay scheme route (Plate 16) comprised moderately to firmly compacted mid to dark brown slightly silty clay (107) with occasional small- to mid-sized (0.02–0.08m) rounded and sub-rounded flint pebbles; very occasional larger (0.08–0.12m) sub rounded and sub-angular flint nodules/pebbles were also present. This deposit was seen as representing the natural London Clay solid geology. It was noted that this deposit appeared to have been previously horizontally truncated; the route of the existing Rising Main falls within the stripped area and it is likely that an easement was stripped for its construction during the late 1960s. Two archaeological features (Building F1 and Pit F2) were identified.

2.2.5 On the north-east to south-west section of the Warden Bay scheme route (Plates 14 and 15) there was a marked difference in the exposed geology. Although the majority of the deposit comprised moderately to firmly compacted mid to dark brown slightly silty clay (108), similar to that recorded above, within it there frequent irregular-shaped depressions infilled with pockets/lenses of light brown slightly sandy clay mixed with small- to mid-sized (0.02–0.06m) rounded flint pebbles. These pockets were surrounded by ‘halos’ of light yellowy brown clay. Again this deposit is seen as representing the natural London Clay solid geology, it is believed to be a younger deposit surviving at its upper horizon were it would have been sealed by the later Bagshot Beds formation; both deposits are Eocene in date. A single archaeological feature (Ditch/gully F3) was identified.

Archaeological feature (Building F1 [106] (105)) (Plates 17 and 18)

2.2.6 The remains of the foundations for a small building were identified towards the top of the rise at the northern end of the north-north-east to south-south-west section of the Warden Bay scheme route. The foundations were constructed by rough concrete footings laid on a layer of gravel, measuring between 0.50m and 0.60m wide, and surviving to a depth of between 0.10–0.22m. These formed the outline of a rectangular building, aligned roughly north-north-west to south-south-east, measuring approximately 11.50m long by 8m wide. Internal sub-divisions suggested a smaller room in the building’s south-east corner. There was no obvious evidence for the building’s purpose. It does not appear on any maps, but it is visible on an aerial photograph dated December 1960 (Google Earth). Notably the building is absent from a photograph dated 1946 (KCC HER), suggesting it post-dates the Second World War. The building was aligned parallel with the current surviving field boundaries and it appears likely it was a former farm building.

Archaeological feature (Pit F2 [102] (101)) (Plates 19 and 20)

2.2.7 A small pit [102] was located south of building F1. The pit was oval in shape, aligned east to west, and measured 0.68m in length by 0.36m wide. Sample excavation revealed a surviving depth of 0.26m with a slightly concave base and extended ‘U’ shaped profile. The pit was infilled with a concentration of burnt flint mixed with clay (101). Several fragments of burnt daub was also present, however this was undiagnostic and could not be dated. The pit potentially represented a small field oven or fire pit.

Archaeological feature (Ditch/ gully F3 [104] (103))

2.2.8 Along the north-east to south-west section of the Warden Bay scheme route a single linear feature [104] was identified crossing the stripped area at an approximate north-north-west to south-south-east alignment. Within the limits of the stripped area a length of 11.50m was exposed. The feature measured between 0.83m and 1.10m wide. Sample excavation revealed a surviving maximum depth of 0.18m with an irregular extended ‘U’ shaped profile, and was infilled with a moderately compacted mid brown silty clay (103). Two fragments of late post-medieval pottery of a late eighteenth- or

nineteenth-century date were recovered. This feature is seen as representing a ploughed-out field boundary.

3 Conclusion

3.1 Assessment of significance

3.1.1 Across both schemes a total length of 1100m was subject to a topsoil strip under archaeological supervision, covering an area of 15240m². Natural clay, part of the London Clay formation dated to the Eocene, was exposed along the complete length of the monitored schemes.

3.1.2 No archaeological remains were recorded within the Eastchurch scheme.

3.1.3 Three archaeological features were identified within the Warden Bay scheme. Of these the most significant was a small undated pit found to contain a large quantity of burnt flint and daub, and interpreted as a field oven or fire pit. The presence of a ploughed out field boundary and a small building are thought to represent agricultural activity, dating to the late eighteenth and second half of the twentieth century. The features are deemed to be of low research potential of local archaeological significance.

3.2 Confidence rating

3.2.1 The watching brief methodology was considered to have been an effective form of mitigation during both the Eastchurch and Warden Bay schemes. The confidence rating of the watching brief results is high.

References

- ASE 2018, Leysdown Connections, Isle of Sheppey, Kent: Written Scheme of Investigation for an Archaeological Watching Brief. ASE unpublished document.
- British Geological Survey, 1980, 1:50,000 Solid and Drift Edition, Sheet 272, Chatham.
- CAT 2003, A249 Iwade to Queenborough Improvement Scheme, Kent: Archaeological Survey Stage 4b: report on pre-evaluation fieldwork, Pratt, S, Branch, N and Bates, M, unpublished client report 2003/2.
- CAT 2018, Leysdown Connections, Isle of Sheppey, Kent: Risk Assessment and Method Statement for an Archaeological Watching Brief. CAT unpublished document.
- Chartered Institute for Archaeologists, 2014a. Standards and guidance for an Archaeological Watching Brief, Manchester.
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Appendix 1 OASIS Record

OASIS ID: canterbu3-348645

Project details

Project name	Leysdown Connections, Isle of Sheppey
Short description of the project	Between July and October 2018 the Canterbury Archaeological Trust (CAT) undertook an archaeological watching brief of groundworks associated with the construction of a new buried sewage system at land between Eastchurch and Warden Bay (Leysdown Connection), Isle of Sheppey, Kent. The work comprised the monitoring of two schemes, the installation of a new Gravity Sewer near Eastchurch and a Rising Main at Warden Bay. Both schemes passed through open farmland and required the machine removal of topsoil and disturbed subsoil along their complete routes, with a combined total length of 1100m and an area of 15240m ² . Underlying geology, composed of London Clay, was exposed along the complete length of both monitored schemes. Three archaeological features were identified along the route of the Warden Bay scheme. These comprised a small pit, a ploughed out linear field boundary and the concrete foundations of a former agricultural building. The pit was infilled with a concentration of burnt flint and daub and was thought to be a field oven or fire. The daub was undiagnostic and could not be dated. The field boundary was post-medieval, or later, in date and conformed to the existing field system. The surviving building foundation utilised concrete footings and available aerial photographic and map data suggesting it was constructed at some time in the second half of the twentieth century. No archaeological remains were present along the route of the Eastchurch scheme.
Project dates	Start: 23-07-2018 End: 25-10-2018
Previous/future work	No / No
Any associated project reference codes	WB LCS 18 - Sitecode
Type of project	Field evaluation
Site status	None
Current Land use	Cultivated Land 4 - Character Undetermined
Monument type	PIT Uncertain
Monument type	DITCH Late Prehistoric
Monument type	BUILDING Modern

Project location

Country	England
Site location	KENT SWALE LEYSDOWN Leysdown Connections
Study area	15240 Square metres
Site coordinates	TQ 99546 69856 51.392022706407 0.868549423604 51 23 31 N 000 52 06 E Point
Site coordinates	TQ 00025 70267 51.422079894924 -0.561261943754 51 25 19 N 000 33 40 W Point
Height OD / Depth	Min: 2m Max: 19m

Project creators

Name of Organisation	Canterbury Archaeological Trust
Project brief originator	Contractor (design and execute)
Project design originator	Archaeology South East
Project director/manager	Richard Helm
Project supervisor	Adrian Gollop

Type of sponsor/funding body Water Authority/Company body

Name of sponsor/funding body Southern Water

Project archives

Physical Archive Exists?	No
Physical Archive recipient	Canterbury Archaeological Trust
Physical Archive ID	4161
Digital Archive recipient	Canterbury Archaeological Trust
Digital Archive ID	4161
Digital Media available	"Database", "Images raster / digital photography", "Images vector", "Spreadsheets", "Survey", "Text"
Paper Archive recipient	Canterbury Archaeological Trust
Paper Archive ID	4161
Paper Contents	"Stratigraphic", "Survey"
Paper Media available	"Context sheet", "Correspondence", "Drawing", "Notebook - Excavation", "Research", "General Notes", "Photograph", "Plan", "Report", "Section", "Survey", "Unpublished Text"

Project bibliography 1

Publication type	Grey literature (unpublished document/manuscript)
Title	Leysdown Connections, Isle of Sheppey, Kent: Watching Brief Report
Author(s)/Editor(s)	Gollop, A
Other bibliographic details	Report No. 2019/10
Date	2019

Issuer or publisher	Canterbury Archaeological Trust
Place of issue or publication	Canterbury
Description	A4 Report ii + 11pp + Appendix 1 + 20 plates + 7 figures + 3 tables

Entered by	Richard Helm (richard.helm@canterburytrust.co.uk)
Entered on	10 April 2019



Plate 1. Pre-work shot taken at the extreme western end of the Eastchurch Scheme (chainage 0–135m area), as viewed from the west with the existing manhole to the left. No scale.



Plate 2. View taken from the extreme western end of the Eastchurch scheme (chainage 0–135m area) during the initial topsoil strip, as viewed from the west. No scale.



Plate 3. View taken from the eastern end of the Eastchurch scheme (chainage 0–135m area) during the initial topsoil strip, as viewed from the east. No scale.



Plate 4. View taken from the eastern end of the Eastchurch scheme (chainage 0–135m area) during the lower subsoil strip down to natural London Clay as viewed from the west. No scale.



Plate 5. View taken from the extreme eastern end of the Eastchurch scheme (chainage 0–135m area) during the lower subsoil strip down to natural London Clay as viewed from the east. No scale



Plate 6. Pre-work shot taken at the Eastchurch Scheme (chainage 540–575m area), as viewed from the south-south-west. No scale.



Plate 7. Eastchurch Scheme (chainage 540–575m area), after machine reduction down to the upper surface of the exposed London Clay, as viewed from the south-south-west. No scale.



Plate 8. Southern end of Eastchurch Scheme (chainage 575–800m area), after machine reduction down to the upper surface of the exposed London Clay, as viewed from the south. No scale.



Plate 9. Northern end of Eastchurch Scheme (chainage 575–800m area), after machine reduction down to the upper surface of the exposed London Clay, as viewed from the north-east. No scale.



Plate 10. Southern end of Eastchurch Scheme (chainage 575–800m area), after further machine reduction of the disturbed London Clay upper horizon, as viewed from the south. No scale.



Plate 11. Northern end of Eastchurch Scheme (chainage 575–800m area), after further machine reduction of the disturbed London Clay upper horizon, as viewed from the north. No scale.



Plate 12. Southern end of Eastchurch Scheme (chainage 800–875m area), after topsoil strip, as viewed from the south-south-west. No scale.



Plate 13. Reduced area for man-hole location at the northern end of the Eastchurch Scheme (chainage 575–800m area), as viewed from the east. No scale.



Plate 14. Pre-work view of the North-east to south-west section of the Warden Bay scheme, as viewed from its south-western end. No scale.



Plate 15. View of the north-east to south-west section of the Warden Bay scheme, from its south-western end, after machine reduction to the exposed upper surface of the London Clay. No scale.



Plate 16. View of the north-north-east to south-south-west section of the Warden Bay scheme, from its north-eastern end, after machine reduction to the exposed upper surface of the London Clay. No scale



Plate 17. View of the concrete footings marking the outline of the building (archaeological feature F1) at the northern end of the north-north-east to south-south-west section of the Warden Bay scheme, as viewed from the south-west. No scale.



Plate 18. View of the concrete footings marking the outline of the building (archaeological feature F1) at the northern end of the north-north-east to south-south-west section of the Warden Bay scheme, as viewed from the south-east. No scale.



Plate 19. Pre-excavation view of archaeological feature (F2) identified along northern end of the north-north-east to south-south-west section of the Warden Bay scheme, looking west. Scale 0.5m.



Plate 20. Section detail of archaeological feature (F2) identified along northern end of the north-north-east to south-south-west section of the Warden Bay scheme, looking west. Scale 0.2m.



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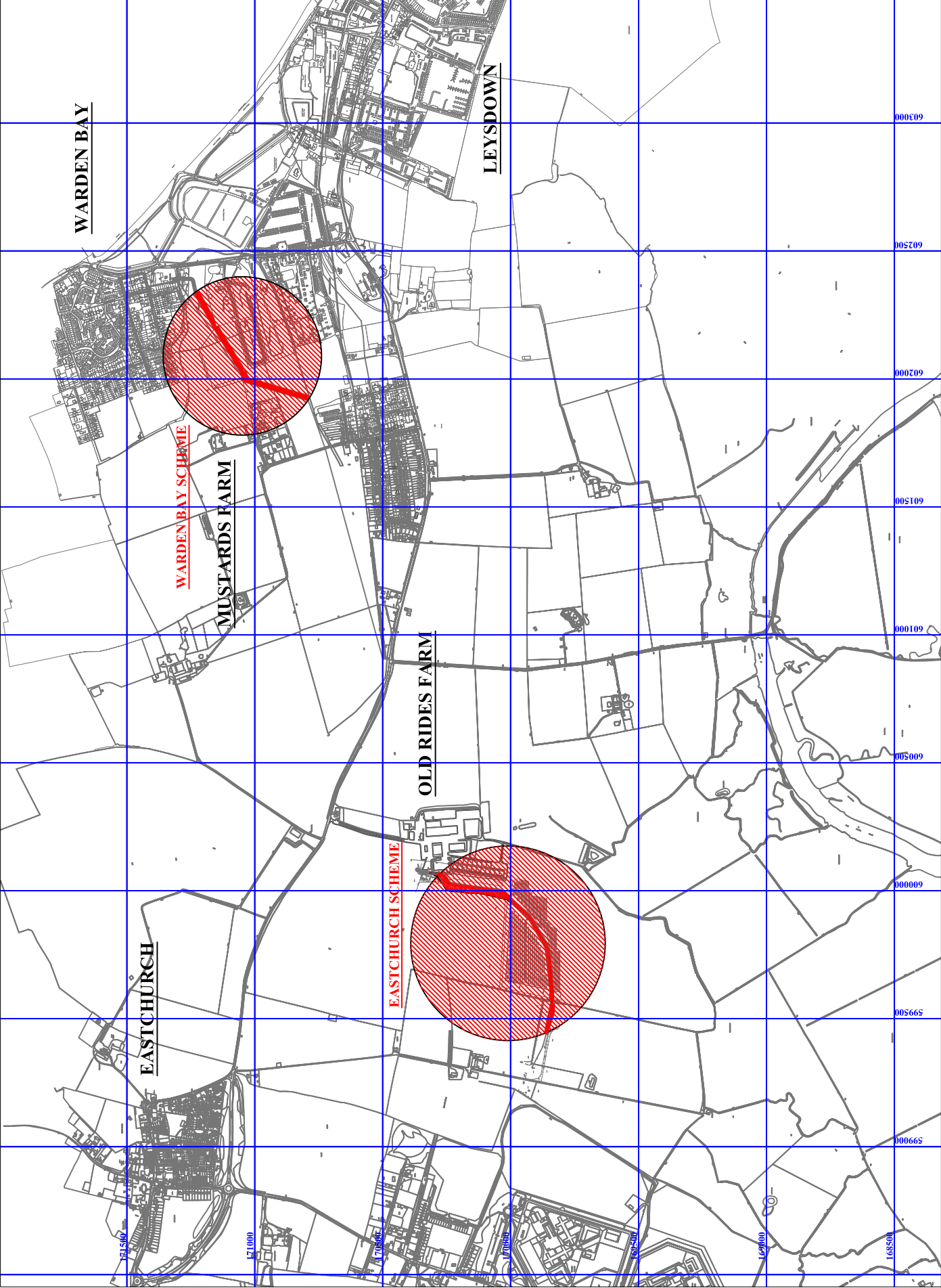


Figure 1. Location plan of Leysdown Connection Scheme



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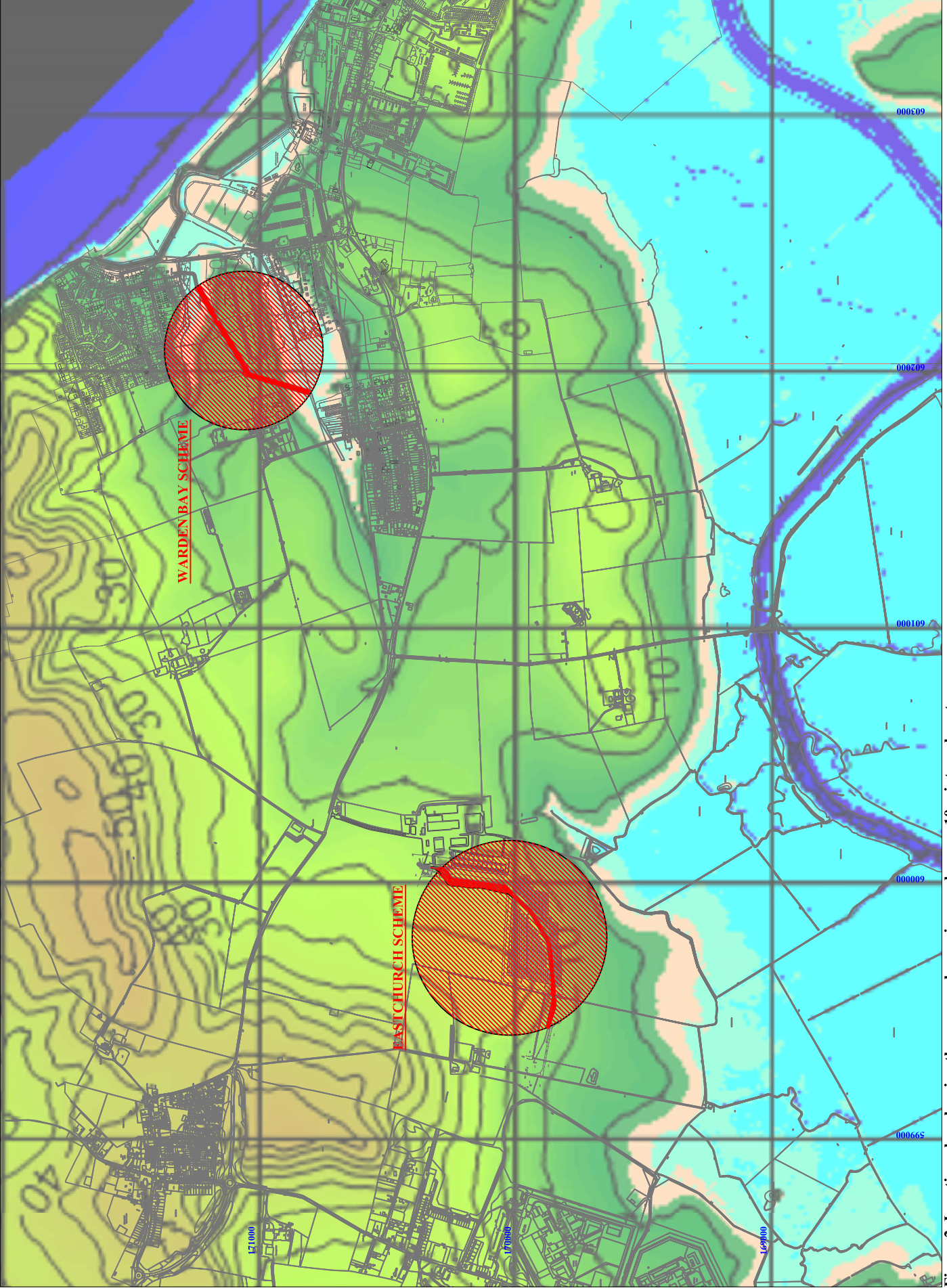


Figure 2. Location plan showing the sewer schemes imposed over a 10m interval contour map



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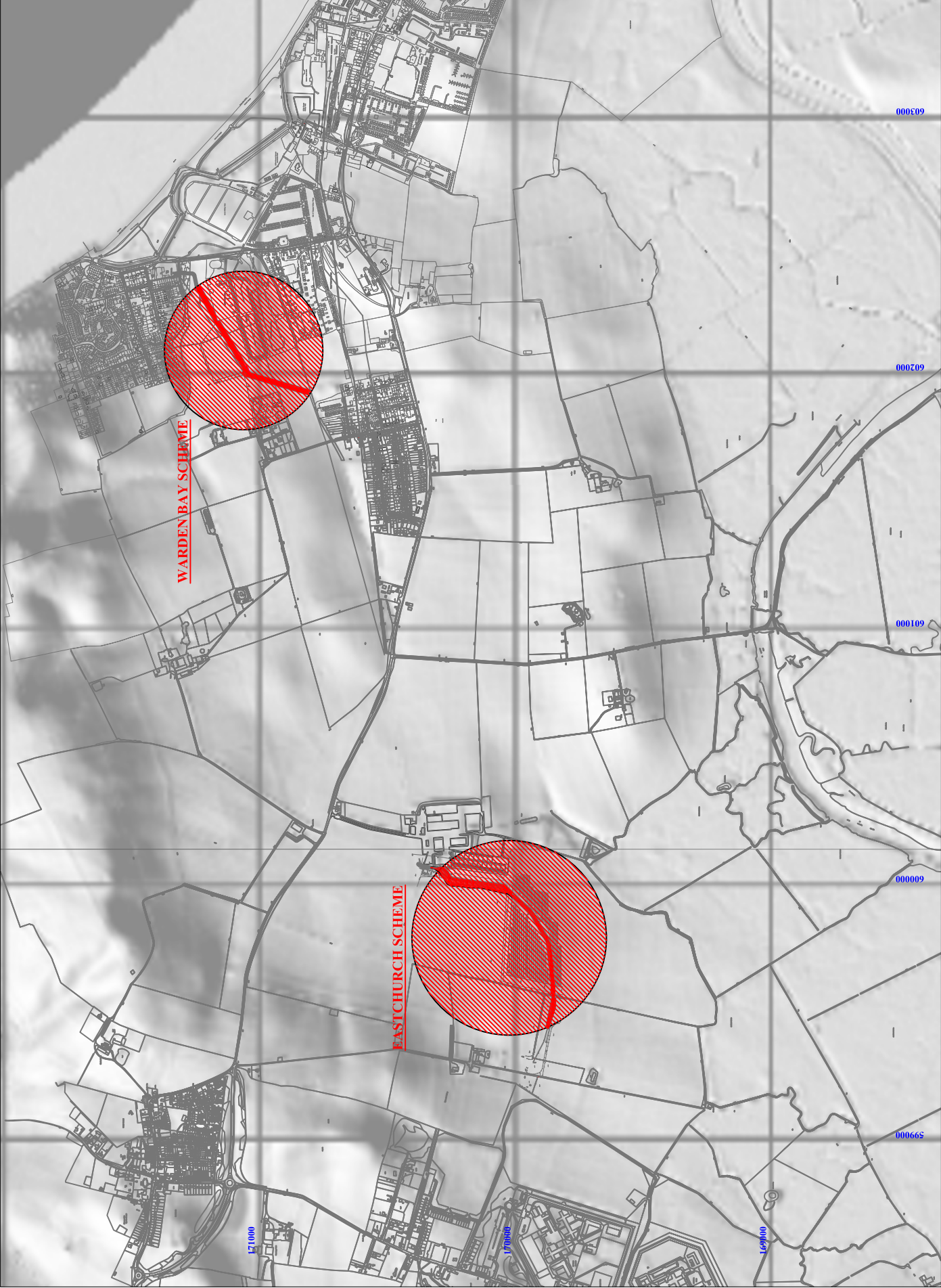
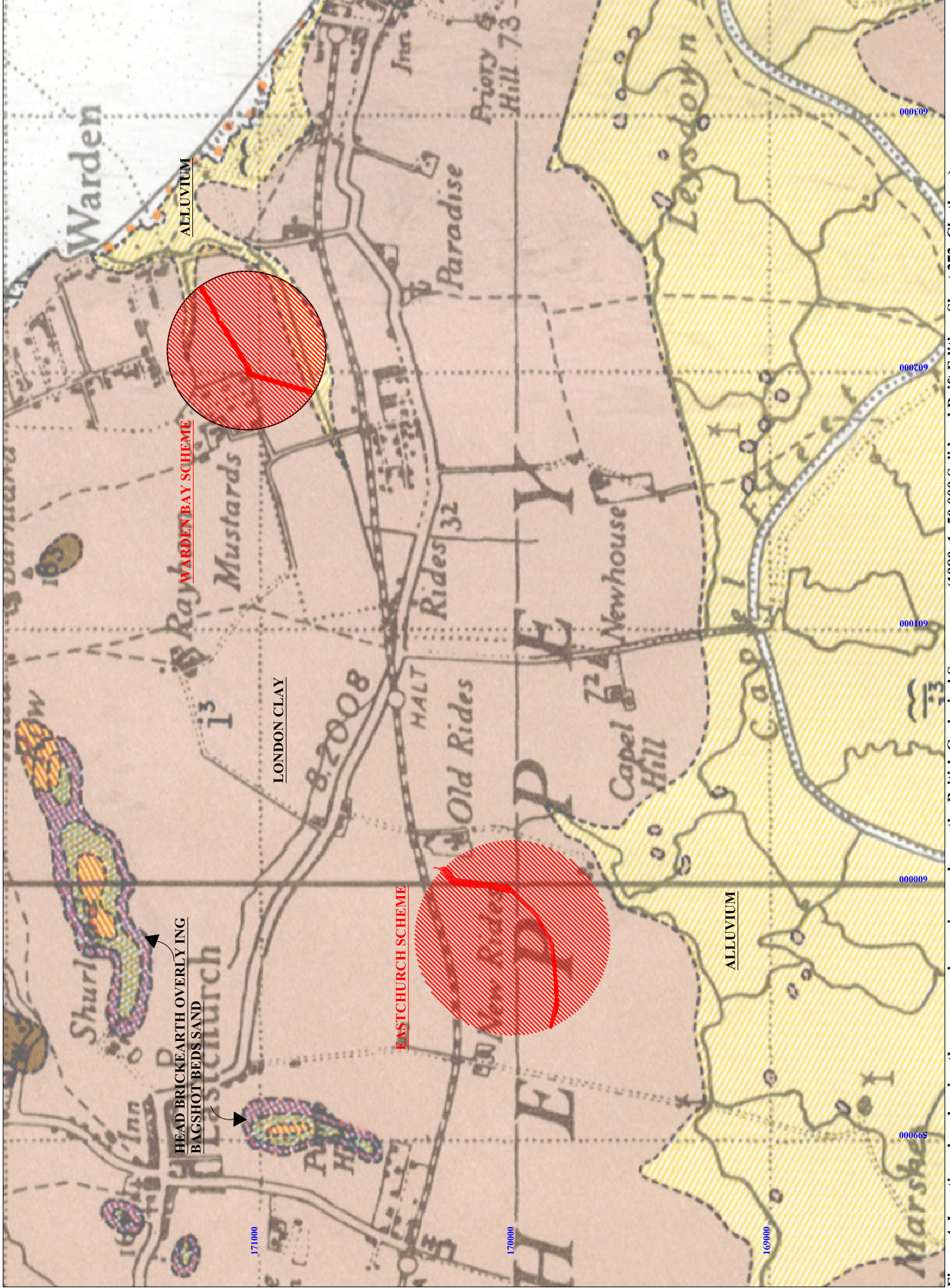


Figure 3. Location plan showing the sewage schemes imposed over a digital terrain model based upon lidar data



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Figure 4. Location plan showing the sewage schemes imposed over the British Geological Survey map (1980, 1: 50,000 Solid and Drift Edition, Sheet 272, Chatham)

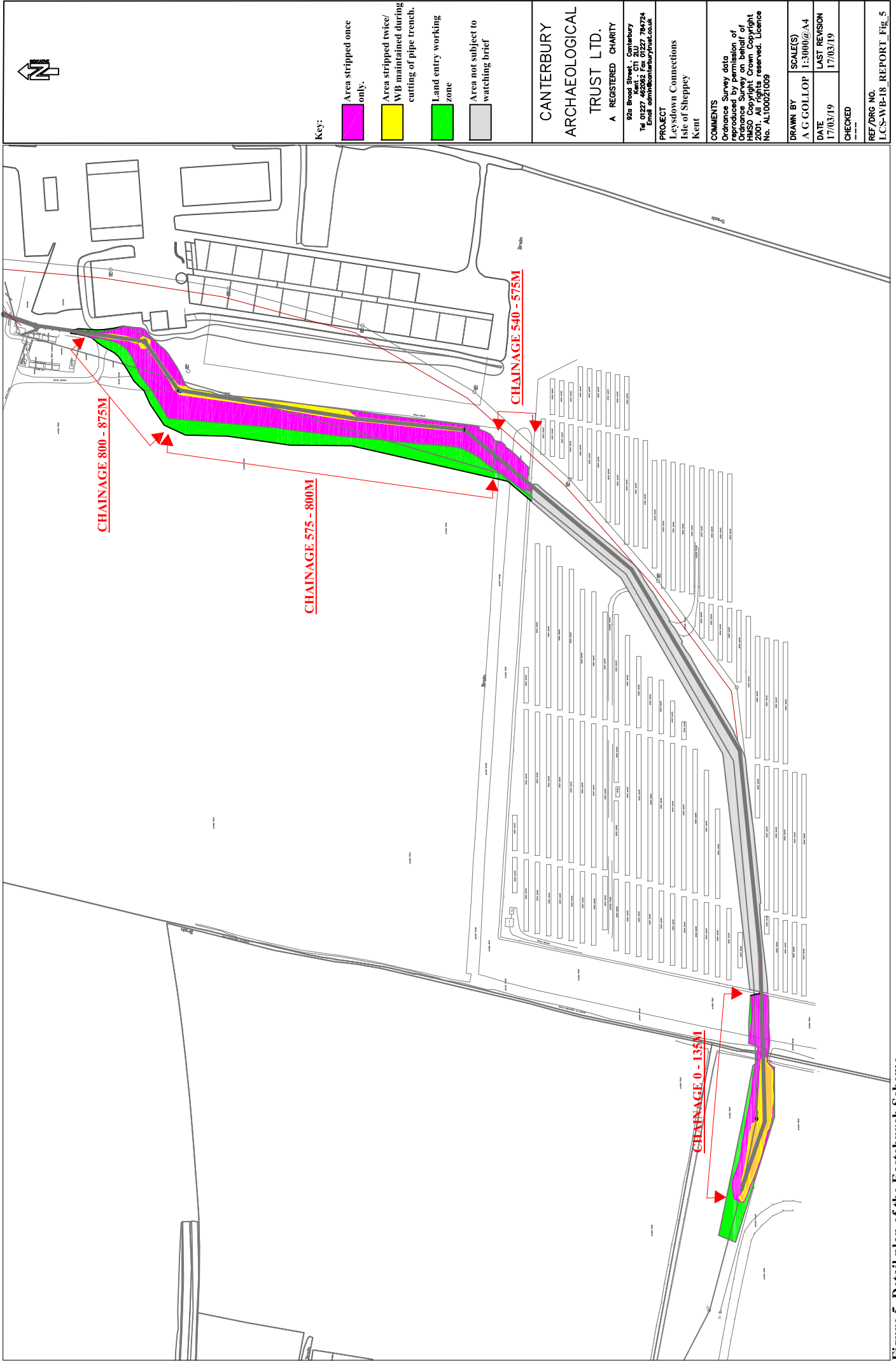






Figure 5. Detail plan of the Eastchurch Scheme



Key:

-  Area stripped once only.
-  Area stripped twice/ WB maintained during cutting of pipe trench.
-  Land entry working zone
-  Area not subject to watching brief

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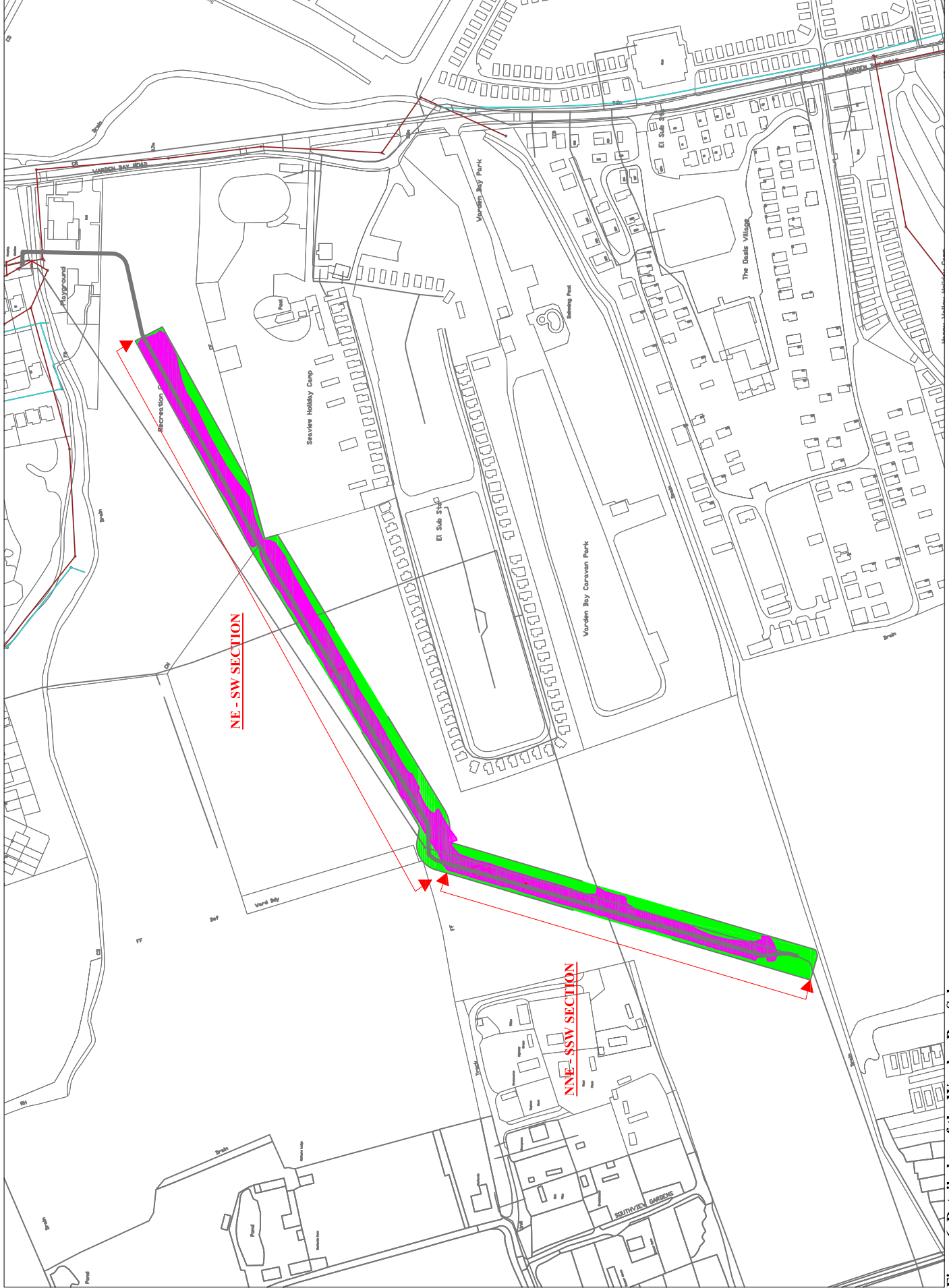


Figure 6. Detail plan of the Warden Bay Scheme

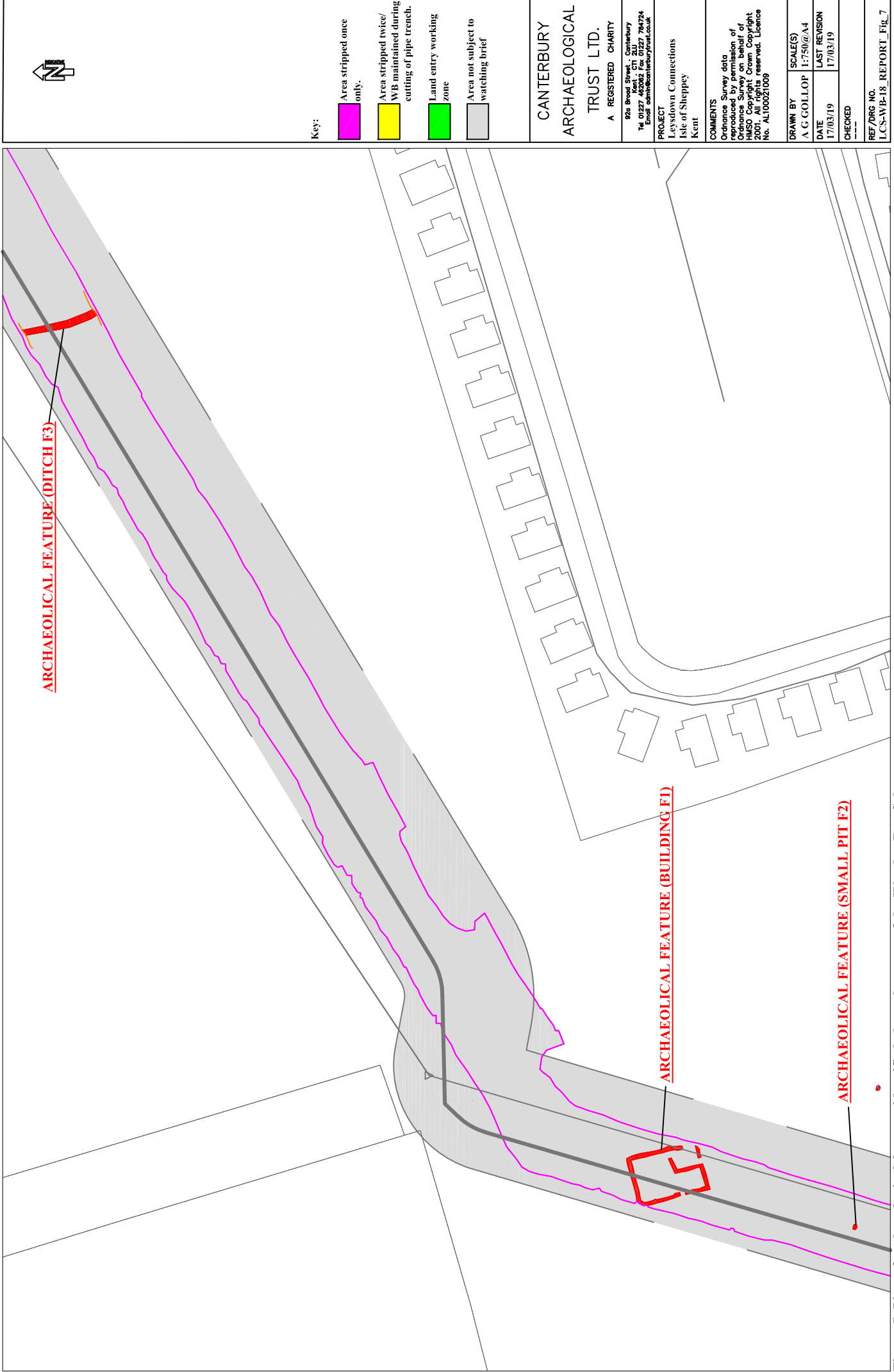


Figure 7. Plan of archaeological features identified along the route of the Warden Bay Scheme