SADDS WHARF, STATION ROAD, MALDON, ESSEX

BOREHOLE SURVEY AND ARCHAEOLOGICAL EVALUATION

Report Number: R1060

September 2014

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July 2014

Site Code	HYSW 14	**NGR**	TL 8546 0731
Planning Ref.	APP/X1545/A/09/2105943	**OASIS**	britanni1-189987
Approved By	Matthew Adams	**Date**	September 2014

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Abstract

A five trial trench evaluation and borehole survey was undertaken by Britannia Archaeology Ltd at Sadds Wharf, Station Road, Maldon, Essex (NGR TL 8546 0731) in May and June of 2014. The greatest potential for surviving archaeological remains were believed to be buildings associated with the former post-medieval Steam Saw Mill that previously occupied the site.

The evaluation revealed four phases of activity, the earliest of which was represented by a river gravel layer (1007), when the local environment was dominated by the intertidal zone creating channels and depositing sediments across the site. This provided an environment of marshland and bog punctuated by gravel islands, evidence of which was recorded during the auger survey.

No archaeological phases believed to be earlier than the post-medieval were present, primarily due to the site location in an area of known marshland until the mid-part of the 19th century. The evaluation discovered the presence of a probable timber causeway (1016), comprising a series of horizontally placed timbers forming a surface running east to west through Trench 3.

The evaluation also encountered the remains of the former tidal defence (1004) for the site. This was revealed in Trench 2 and likely relates to successive phases of reclamation that occurred in the intertidal zone through the 19th century. Analysis of the timbers from tidal defence 1014 noted the probable re use of oak timbers and utilization of woodworking waste, suggesting a fairly lowly structure, perhaps not expected to last a long time, but fit for purpose.

A further monitoring area was excavated to the south east of the site which exposed another line of timbers (timber structure 1034) similar in construction to tidal defence 1014. This structure could represent another defence structure aimed at aiding the reclamation and reconsolidation process.

A reclamation layer (1002) was deposited over the site (including over tidal defence 1014) to reclaim the marsh for industrial expansion and development. The most recent phase relates to the demolition of the buildings associated with the former timber yard and the Steam Saw Mill in the late 20th century. Demolition Layer 1011 was present within four of the five trenches and relates to this period of demolition while Made ground layer 1000 is the result of some of this material being spread across the site in a levelling exercise.

The borehole survey showed the varying levels of reclamation actions across the site. The alluvial clays were thickest in the east representing the area that had most recently been part of the intertidal zone. Unfortunately no surviving peat was present in the layers to help date the deposits. The analysis of the pollen samples from ABH 5 revealed the absence of pollen from the silts which strongly suggests that the sediments were exposed

to the oxygen for a prolonged period of time as part of the salt marsh. This fits in well with what we know about the environment being marshland through the post medieval period until the 19th century.

The borehole survey also revealed the absence of alluvial silts in some areas of the site and the high level of the first layer of gravel deposits. This strongly suggests that the area may have been dominated by gravel islands running through the intertidal zone with washes of alluvial material building up either side of these gravel masses. Timber causeway 1016, may not have been one continuous entity but rather a number of smaller structures running between the gravel islands where the alluvial silts had built up and the marsh was higher, wetter and more difficult to navigate.

1.0 INTRODUCTION

From the 19th May – 17th June 2014, Britannia Archaeology Ltd (BA) undertook a borehole survey and trial trench evaluation on behalf of The Baltic Consortium at Sadds Wharf, Station Road, Maldon (NGR TL 8546 0731). The borehole survey and evaluation were undertaken as a condition of planning application reference APP/X1545/A/09/2105943.

The evaluation was carried out in accordance with an archaeological brief produced by Essex County Council (Medlycott, M. 2010, Stabler, K. 2010).

2.0 SITE DESCRIPTION - Figure 1

The site lies at the confluence of the rivers Chelmer and Blackwater. The development site is located on land that had previously been part of the John Sadd and Sons Limited builders and timber merchant's yard. The site comprised a relatively flat, open land with a single derelict building on the boundary with Station Road. The site is approximately 2.1 ha and at its widest measures 220m east-west and 180m north-south. It currently lies at a height of approximately 3.60m AOD.

The bedrock geology is London Clay and is described as brown silty clay in a deposit over 20.00m thick. It dates to the Eocene Epoch of 55.8 to 33.9 million years ago (BGS, 2014).

The superficial geology is described as the fluvial deposits of the Rivers Chelmer and Blackwater arranged in gravel terraces. These terraces represent the remains of former floodplains of the river. They are described as comprising of variable fluvial gravels and mud deposits, (BGS 2014).

3.0 PLANNING POLICIES

Planning permission for the redevelopment of the site has been granted by an appeal decision (APP/X1545/A/09/2105943). The particular issues are raised by Condition 6 and Condition 7 (contamination) and Condition 16 (Archaeology).

3.1 National Planning Policy Framework (NPPF, DCLG March 2012)

The NPPF recognises that 'heritage assets' are an irreplaceable resource and planning authorities should conserve them in a manner appropriate to their significance when considering development. It requires developers to record and advance understanding of the significance of any heritage assets to be lost (wholly or in part) in a manner

proportionate to their importance and the impact, and to make this evidence (and any archive generated) publicly accessible. The key areas for consideration are:

- The significance of the heritage asset and its setting in relation to the proposed development;

- The level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance;

- Significance (of the heritage asset) can be harmed or lost through alteration or destruction, or development within its setting. As heritage assets are irreplaceable, any harm or loss should require clear and convincing justification;

- Local planning authorities should not permit loss of the whole or part of a heritage asset without taking all reasonable steps to ensure the new development will proceed after the loss has occurred;

- Non-designated heritage assets of archaeological interest that are demonstrably of equivalent significance to scheduled monuments, should be considered subject to the policies for designated heritage assets.

3.2 Planning permission Conditions

- Condition 6 (ii) requires "an investigation and risk assessment" which must include an assessment of the "potential to… archaeological sites and ancient monuments".
- Condition 7 requires that a "detailed remediation scheme" must be prepared which will remove "unacceptable risks to… [the] historical environment".
- Condition 16 requires that the applicant secures the implementation of a programme of archaeological work in accordance with an approved written scheme of investigation before any ground disturbance.

3.3 Maldon Local Plan 2005 – Policies BE17 & BE18

The Maldon Local Plan (adopted 2005) is due to be replaced with the Maldon District Local Development Plan, however it is still the relevant local planning legislation governing development and archaeology. Policies BE17 and BE 18 specifically deal with conservation and archaeological preservation:

POLICY BE17 - Preservation of Sites of Nationally important archaeological remains and their settings

- There is a presumption in favour of the physical preservation of nationally important archaeological remains and their settings, whether scheduled or not, listed in Appendix 3.
- Development will not be permitted if it fails to preserve the archaeological value and interest of the remains or their settlings of the sites listed in Appendix 3.

POLICY BE18 Control of Development at a site of local archaeological value

- Planning permission for development which would have a detrimental effect on remains of local archaeological value will only be granted if the importance of the development outweighs the local value of the remains.

- If planning permission is granted, conditions will be imposed to ensure that the remains are properly recorded and evaluated and where practicable preserved

4.0 ARCHAEOLOGICAL BACKGROUND – Figure 2

The following archaeological background is a summary of the information contained within the desk-based assessment (Miles. A, 2005) undertaken by MoLAS as well as additional research collected by Britannia Archaeology.

4.1 Prehistoric (750000BC – 43AD)

Although the wider area around the subject site is known for its Palaeolithic stone tools from the river terrace deposits they tend to be stray, occasional finds, (Essex County Council, 2008, 14). There is little evidence for any Mesolithic occupation in the wider area that has been recorded; however the Neolithic period is better represented where occupation remained inland on dry ground until the later half of the period.

The environment at this time was dominated by salt marsh accumulation punctuated by gravel islands. Excavations in 1972 approximately 1.5km north of the site discovered worked flints that represented “an industry of largely ‘ad hoc’ flake production” which most likely dated to the late Neolithic, (Mils Whip, 2010)

The settlement pattern which was based on agricultural land use especially along the head of the Blackwater continued into the Bronze Age. There are indications of field systems and formalised land tenure leading to stable farming settlements. A concentration of Late Bronze Age settlement sites are known just east of Heybridge on the northern side of the Blackwater Estuary where a well-populated landscape of settlements, farms, fields, enclosures and woodland emerged, (Essex County Council, 2008, 17). Although there are several ring ditches identified from crop marks within the valley of the River Chelmer and Blackwater which are suspected to be Bronze Age, none have been recorded in the immediate local of the site.

During the early Iron Age there is evidence for a settlement being established on the hill at Maldon. Numerous finds from around Maldon indicate a well-populated landscape. Prehistoric activity near the site is represented by a prehistoric ditch (16761) running east to west and a pit that were identified in the north of a site located approximately 450m south of the site. These were tentatively dated to the Early Iron Age from the pottery.

4.2 Roman (43AD – c. 410AD)

Research indicates that 'the transition from Late Iron Age into the Roman period appears, based on evidence from excavations at Elms Farm, Heybridge to have been rather smooth and uneventful…', (Essex County Council, 2008. 20). Agriculture is likely to have been the prominent land use at the head of the Blackwater estuary, (Mills Whip, DBA. 2010). The Roman town at Maldon occupied the low ground continuing on from the Late Iron Age settlement on the southern side of the River Chelmer. The site lies on the limits of the Roman town.

The EHER search returned no entries of Roman date within 500m of the site.

4.3 Saxon (410AD – 1066AD)

A period of marine transgression may have continued into the Saxon period before regressing to its present form by the middle Saxon period, (Mills Whip, 2010). There is evidence for early Saxon settlement in the Maldon district characterised by its accessibility via the Blackwater estuary making it an attractive early location, (Essex County Council, 2006, 22).

In the 10th century Maldon was selected as the location for the establishment of a Royal Mint. The core of the settlement is thought to have lain on the southern side of the Chelmer where All Saints Church now stands.

The EHER returned a single entry relating to the Saxon period approximately 420m south east of the site. An archaeological evaluation (46749) at Croxley Works, Church Street revealed evidence of mid to late Saxon occupation activity. This included a series of pits, linear ditches and alignments of postholes.

4.4 Medieval (1066 AD – 1540 AD)

Maldon is included in the Domesday Survey of 1086 where it is recorded as being in the hundred of Maldon. The population was very large and is recorded as having 54 households with a tax assessed value of 10.2 geld units. The entry specifies that there were 2 lords plough teams and 5 men's plough tams with 10 acres of meadow, 50 pigs and 1 mill. The tenant in chief at the time of the survey was Ranulf Peverel, (Morris, J. 2004).

By the end of the 11th century Maldon was and important town in medieval Essex as it was only one of two boroughs in the county, (Mills Whip, 2014). A quay was established at the Hythe (7717) where the provision for a ship being constructed for the king as part of the burgesses dues in 1066/86 suggests that in addition to a quay and presumed loading/unloading and storage facilities, there may well have been a boat-building yard.

The medieval core of the town appears to have been focused on the southern side of the river Chelmer. The EHER returned 20 records of medieval date from the search. The closest record returned from the search relates to the location of the now extant Chapel of St Mary which lay 100m to the north. One record (18797), approximately 110m south and across the river, relates to the location of the town archery butts. Dating from 1066 – 1539, the town butts were situated between the High Street and the River. Access to these would have been through Butt Lane. Another record (45141) located roughly 120m south east of the site identifies the location of two intercutting pits revealed during monitoring at the Rear of 65 High Street. The lower of the two pits contained domestic rubbish and a small assemblage of 12th – 14th century pottery. Another evaluation (47130) located at 33 – 39 Market Hill, 350m west of the site, also encountered medieval features and finds.

4.5 Post-medieval and modern (1540AD – Present)

Maldon developed as a port in the post-medieval period, trading agricultural produce with London. Oyster fisheries and salt production further added to the prosperity of the town as it expanded north of the river, (Mills Whip, 2014). In the 18th the Chelmer and Blackwater navigation was complete which allowed boat traffic upstream as far as Chelmsford, this increased maritime trade with London which in turn stimulated growth within the town. The 1777 Andre and Chapman map (Fig. 15) shows increased buildings in the Fullbridge area. On this map the site can be seen to be open pasture with a causeway and part of the intertidal zone.

The main record returned from the EHER that relates to the site (15066), is the record of the former timber yard that was present on the site itself. The Sadds are described in the EHER as being “prominent local industrialists” who imported general merchandise as well as being timber merchants. In the 1840’s the firm built on the lands adjacent to the river Chelmer and Blackwater where they constructed a Steam Saw Mill, associated store buildings and wharf facilities. This is evidenced on the 1873 OS map (Fig. 14) which shows a number of buildings across the site. By 1891 the firm had successfully reclaimed land that was formally part of the marsh environment and expanded the wharf to the east, see 1891 OS map, (Fig. 14).

Another important record returned from the EHER relating to the site refers to the Former Maldon East railway Station (15072) which is located approximately 50m north west of the site. The passenger station building is a highly ornate structure in the Jacobean style, built

in 1846 of red brick it contains nine bay arcades with round-headed arches, plaster extrados and keystones which are surmounted by a brick parapet with inset plaster panels. Two moulded brick chimney stacks flank the low slate roof over the central three bays. The platform is still largely intact, with cast iron columns supporting a roof of wrought iron beams and rafters. The engine shed is still visible from the site located at the eastern extent of the former station complex. The building is single storey and built of brick. It has now been incorporated into a modern warehouse. The engine shed is visible on the 1873 OS map (Fig.14).

By 1922 the north east side of the site had been embanked to raise it to the same level of the railway lines. The station was closed in 1966 and the associated buildings became extant. Associated harbour facilities (18800) located in the immediate vicinity of the site were developed throughout the 19th and early 20th centuries, largely as a result of the railway connections. A number of wharfs and docks are still evident on the banks of the Chelmer, and a simple phasing typology may be suggested. Large stone blocks with copings are succeeded by brick and concrete structures and most recently steel -shuttered concrete constructions. Former dock entrances, now blocked up are still evident, along with ties for mooring boats. In 1973 the railway line was removed and the balancing ponds to the north of the site were excavated, (Fig. 1). By the end of the 20th century the Timber Yard was no longer operating and the buildings were demolished, (Mills Whip, 2010).

The main potential for the evaluation was to encounter below ground archaeological remains associated with the former Timber Yard pertaining to the industrial buildings.

5.0 PROJECT AIMS

Essex County Council notes that the aim of the borehole survey and evaluation is the following:

- The borehole survey will consist of two borehole transects that will aim to “assess the site for geo-archaeological potential and visible topographic features”. The boreholes will specifically aim to “target organic sediments, fossilferous sediments and organic/minerogenic interfaces”, (Essex County Council, 2010).
- The Evaluation will seek to determine the nature, location and degree of survival of significant 19th century industrial remains, particularly those of the Steam Saw Mill. The evaluation will also aim to establish the nature, date and significance of any surviving archaeological or sedimentary elements of the upper archaeological sequence beneath the made ground to the depth of impact from the proposed basement i.e. a depth of approximately 1.00m.

6.0 PROJECT OBJECTIVES

Research objectives for the project are in line with those laid out in English Heritage (GLAAS) *Archaeological Guidance Papers 1-5* (revised 1988) and English Heritage Centre for Archaeology *Guidelines* where appropriate.

Specific research questions are outlined as follows:

- What is the nature and level of natural topography?
- What are the earliest deposits/features identified?
- What is the palaeo-environmental potential of the alluvial deposits on site?
- Can any evidence of prehistoric activity be defined on site and does this contribute to our understanding of the artefacts recovered from the River Chelmer Valley and the surrounding area?
- Can any evidence of prehistoric activity be defined on the site?
- What direct or indirect evidence is there from the medieval activity on site?
- Can any evidence of the former John Sadd timber yard be obtained?
- What are the latest deposits identified?
- What is the nature and extent of the truncation on the site?

7.0 FIELDWORK METHODOLOGY

7.1 Evaluation Trench Methodology

A 360° mechanical excavator under the control of a qualified professional archaeologist removed layers of overburden down to the first archaeological horizon, thereafter all excavation work was undertaken by hand.

Trench edges, section locations and archaeological features were recorded on a post-excavation plan and were tied into the Ordnance Survey National Grid. The archaeology was preserved by record using pro-forma sheets, plans and section drawings and appropriate photographic records (Figures 3 to 12), as detailed in the Written Scheme of Investigation (Mills Whip, WSI. 2010). All layers were given unique context numbers assigned during the recording phases on site (Figures 3 to 12).

It became apparent that the on-site remediation team would have to further excavate a number of decontamination pits across the site. One of these pits was in the vicinity of Trench 2 and was monitored down to the working depth that was required.

7.2 Borehole Methodology

The borehole survey consisted of two phases. Phase 1 involved the undertaking of two cable percussion borehole transects across the site in order to assess the depth and nature of the deposits. The transects will be aligned north to south and east to west. Eight boreholes will be inserted with a ninth situated on the northern high ground to test deposit depth. Boreholes 2, 3, 6, 8 and 9 were turned over for gas monitoring installation after they archaeological samples have been taken. The cores from the boreholes were retained, processed and described, (see Appendix 2).

Phase 2 involved the creation of a deposit model based on the borehole logs and where appropriate, the assessment and analysis of selected core samples for dating and palaeoenvironmental analysis.

Cable percussion coring is widely regarded as one of the most suitable methods for the recovery of continuous, undisturbed core samples. The core sampling type is referred to as U100's and are 100mm in diameter and 450 – 500mm in length. These samples provide sub-samples suitable for not only sedimentary and microfossil assessment and analysis but also macrofossil analysis.

All cable percussion coring sampling was undertaken on site. All archaeological strata recovered from the cores were fully described and entered onto o prepared *pro forma* recording sheets. Samples were labelled with top and base depths and labelled top and bottom. Each borehole location was then surveyed. Each sample was wrapped and made air tight.

DP33; Borehole 5, Auger Assessment

Following processing suitable core samples were chosen for assessment followed by analysis. A description of the lithostratigraphic sequence was made by undertaking detailed recording of each context. The purpose of this record is to elucidate the site formation processes and understand, as far as possible, changes to the geomorphology and hydrology of the site. This included an assessment of the alluvium for pollen and molluscs. This will provide information, where possible, on the morphology, depth and date of individual elements of the sequence and provide information on which to add detail to the deposit model of the archaeological / alluvial sequence.

8.0 DESCRIPTION OF RESULTS (Figures 1 - 12)

Archaeological features and deposits are described below in trench order. Detailed information on all features and deposits can be found at Appendix 1.

The trench, borehole and monitoring area locations have all been recorded in Figure 3. Trench 1 was positioned in the northern half of the site located in the area of the 19th century Steam Saw Mill. Trench 2 was located in the eastern extremity of the site located in the area of land reclamation and a 19th century industrial building. Trenches 3 was located just south of the centre of the site to assess an area planned for development as basement 2. Trench 4 was located at the southern end of basement 2 in order to evaluate the area where the early flood defensive bank may lie. The bank appears on the Chapman and Andre map of 1777, (Figure 12). Trench 5 was positioned in the west of the site and was also placed to assess an area that would be part of basement 2.

Demolition material from the former Steam Saw Mill was present throughout Trench 1. Trench 2 contained the remains of the former tidal defence associated with the wharf before further land reclamation for industry in the 19th century. The remains of a former 19th century building footprint were also present in the form of a concrete pad and foundation layer. Trench 3 contained the most significant feature on the site, a post-medieval timber causeway. No archaeological finds or features were present in trench 4 and Trench 5 contained a modern service and modern demolition material, but no archaeological features were present.

8.1 Trench 1 (Figure 4)

Trench 1 was located most northerly in the area of the former Steam Saw Mill. It was targeted to intercept any remains of foundations or the Mill that may remain.

The trench contained demolition layer 1001 which is associated with the demolition of the Steam Saw Mill. It comprised a mixed light grey – dark brown mixture of sand, silt and

clay which contained rubble inclusions throughout. Large pieces of concrete were excavated from the trench and were probably also related to foundations.

No archaeological finds or features were present in the trench.

8.2 Trench 2 (Figures 5 & 6)

Trench 2 was located in the eastern area of the site close to the current tidal wall. It runs perpendicular to the site boundary and was orientated east to west. The trench contained one of the major features of the site, a timber tidal defence (1014) associated with the former boundary of the site before the area beyond was reclaimed for industrial development. The trench also contained a single concrete pad, (1028) at its eastern end associated with the modern buildings located on the site prior to their demolition in the 1990's. Similarly another thin concrete and compressed chalk pad (1027) was present at the western end of the trench above reclamation layer 1002. It is evident that this to was associated with the former storage buildings that were located on this part of the site.

Timber tidal defence 1014 was located just east of the centre of Trench 2, roughly linear in plan and measuring 2.00 x 2.90 x 1.14m it was orientated north east to south west running through the trench. The structure is present on the 1873 OS map (Fig. 14) and is made up of three distinct sections. There are two retaining walls, both orientated north east to south west with the central section made up of a dark blue black, silty clay with gravel and CBM rubble inclusions. The feature comprised 33 timbers with 7 of these selected for further analysis. No fittings were observed connecting any of the horizontal planks to the supports in the retaining walls. Timbers 1, 2, 3, 16, 20, and 22 were all removed and sent to Dr Roderick bale at Lampeter University for further scrutiny (see Appendix X). A single sherd of late slipped Redware was recovered from central layer 1015, dating to the 18th – 19th century. The central section also included waste material and offcuts from the former timber yard, designed to add strength and support to the overall structure. The retaining walls of the tidal defence were made up of tangentially sawn oak (*Quercus. Spp*) planks which were used as the horizontal elements set between posts which were placed either side of the horizontal timbers to keep them secured. The centre of the tidal defence included seven large pieces of wood which appeared to stumps or large offcuts from a tree. Analysis identified the species of Timber 16 as elm (*Ulmus. Spp*), it is fair to assume that the other timbers that were located with it were also of the same species, (Bale, R. 2014. Appendix 2)

8.3 Trench 3 (Figures 7 & 8)

Trench 3 was just south of the centre of the site and was orientated east to west. Its placement was to assess the area that will be affected by the construction of Basement 2. The remains of former building foundation 1031 were present in the trench above

reclamation layer 1002. It consisted of a light grey white, concrete and chalk pad. The 1891 OS map shows a large building on this area of the site and the layers presence above the reclamation layer associates it well with his structure.

The main feature within the trench is the main feature of the site. Probable timber causeway 1016 extends over 17.00m of the trench and from east to west and is made up of a series of horizontal timbers which comprise the surface. 41 individual timbers were identified as part of the causeway in Trench 3. 5 timbers (34, 36, 43, 66 and 61) from the causeway were selected from a variety of locations and were lifted to expose any further timbers that may lie underneath. These 5 timbers were also all sent for further analysis by Dr Roderick Bale. The timbers that were lifted revealed that they had been laid straight onto Alluvial Clay 1003, (DP 16). Analysis of the tightly packed timbers has identified the majority of them as Elm (*Ulmus. Spp*). The causeway can be seen on both the 1777 Andre and Chapman map and later on the 1873 OS map, (Fig. 14 & 15). On the 1873 map the causeway can be seen running to the boundary of the John Sadd Timber Yard in the south west and in the north east.

A layer of degraded material, 1017 similar in composition to peat was present around the timbers and represents outer layers of bark and other wood that has degraded. This material was a dark yellow brown and loose in consistence. 3 sherds of pottery were recovered from this material around causeway 1016 and included a fragment of a salt-glazed English stoneware storage container along with the base of a Yellow ware bowl. Both of these date from the late 18th – 19th century. Along with the pottery two pieces of post medieval glass were also recovered. One dates from the late 18th to early 19th century due to the large diameter of the base and its slight oval shape. The second fragment of glass could not be precisely dated. A total of seven fragments of clay tobacco pipe were found associated with the timber causeway, 6 of these were from the degraded layer of wood around the timbers. One of these had a small pointed spur marked on both sides of the bowl with a probable oak leaf decoration which was a common motif. These bowls are classified as Oswald's Simplified General Typology type 24 (1810 – 40), (Heard, K. 2014. Appendix 2).

6 possible post Holes, (1018, 1021, 1022, 1023, 1024 and 1025) and 2 possible stake Holes, (1019 and 1020) were cut through the centre of timber causeway 1016. This grouping of post and stake Holes appear to be in a rough north to south alignment. All of the post Holes were circular in plan and varied in depth from 0.12m to 0.27m. The stake holes were smaller than the Post Holes and the deepest was 0.18m. All of these features were filled with degraded material layer 1017 however no finds were present within the fills. It is possible that these post holes and stake holes were associated with the construction of the causeway as the timbers directly around them (48, 49, 50, 51, 52, 53, 54 and 55) abut the alignment.

Towards the western end of trench 3 the timbers had become compacted under the footprint of the building. Two test pits, TP 1 and TP 2 were dug through this compressed

layer down to alluvial clay 1003 (Fig.07). Each test pit was 1.00m x 1.00m, Test Pit 1 was excavated to 1.01m below current ground level while Test Pit 2 was excavated to a depth of 1.26m. Both test pits revealed further timbers that were not compressed like those above them. It was noted by the excavators that these timbers were smaller than the ones seen previously and were orientated differently, ran along a different orientation possibly indicating that they were lain as supports. In all 8 new timbers were identified (timbers 67, 68, 69, 70, 72, 73, 74, and 75) and were sent for further analysis. A single sherd of an English Stoneware bottle that dates to the 19th century was recovered from Test Pit 1, while a fragment of clay tobacco pipe stem and bowl was found in Test Pit 2. The bowl had the same moulded decoration seen on previous fragments of clay pipe recovered from Timber Causeway 1016 and is likely to be from Oswalds Simplified General Typology type 24, (1810 – 40), (Heard, K. 2014. Appendix 2).

8.4 Trench 4 (Figure 9)

Trench 4 was targeted to investigate the area of the site that may have contained previous flood defences that appear on the 1777 Andre and Chapman map. No archaeological finds or features were present in the trench. The trench is located 10.00m from trench 3 and runs perpendicular to it; however no further remains of Track Way 1016 were encountered.

8.4 Trench 5 (Figure 10)

Trench 5 was the most westerly trench excavated and was targeted to further investigate the area that is to be affected by the construction of Basement 2. The trench contained a single modern service as well as further material associated with the demolition of the buildings that were on the site previously. No other archaeological features or finds were encountered.

8.5 Monitoring Area 1 (figures 11 & 12)

On the 5th August 2014 Britannia Archaeology undertook a monitoring exercise during the excavation of a decontamination pit in the south east of the site near the location of Trench 2. The total area excavated measured 12.00 x 12.00m and was 1.35m deep. The excavation revealed timber structure 1034, which appears to be another part of the tidal defence system along with tidal defence 1014. In total 4.72m of timber structure 1034 was revealed, however due to the conditions within the excavation area only 3.50m could be recorded, (Fig. 11). 11 timbers were recorded forming the structure. Similarly to tidal defence 1014, the structure was made up of horizontal planks held in place by vertical supports along its length. The excavators noted during the recording of the feature that as with tidal defence 1014 there did not appear to be any iron fittings connecting the

horizontal planks to the supports. Although this structure was on the same alignment as tidal defence 1014 they do not appear to have actually joined. However this does show that there may have been more than one structure in place at the same time.

9.0 DEPOSIT MODEL (Figures 1 - 12, Appendix 1 Tables 1- 9)

The deposit model (Appendix 1, Tables 1 – 10) across the site remained largely uniform despite the large degree of ground disturbance due to multiple phases of demolition and subsequent distribution of that material over the site to level the ground.

At the top of the stratigraphic sequence was made ground layer 1000. It comprised a dark brown grey, loose mixture of sand, silt and clay with frequent CBM rubble inclusions. It varied in depth from 0.24m in Trench 4 to 0.33m deep in Trench 5. The depth of made ground Layer 1000 varies more in the Borehole logs, at its deepest 1.30m in ABH 9.

Below made ground 1000 was demolition layer 1011. It comprised a mixed light grey brown, loose sand, silt and clay with large CBM and rubble inclusions, often there was also large pieces of concrete and large fragments of ferrus building material present as well. This demolition layer is associated with the former buildings of the John Sadd Timber Yard which were demolished at the end of the 20th century. It is likely that a lot of the material that was left over from the demolition of the buildings was also spread over the site to level the area comprising a lot of the makeup of made ground 1000.
The next layer was lay Ash Layer 1001; it comprised a dark grey black loose, sand silt and ash. It appears to relate to *in situ* burning either associated with the demolition of the timber yard or with the fire that took place on the site in 1907.

The next layer in the stratigraphic sequence was reclamation layer 1002 made up of a light yellow orange, loose sandy gravel with frequent large rounded flint inclusions. This layer represents the period in when the eastern end of the site was raised and consolidated, reclaiming it from the marsh for industrial use as part of the timber yard which was expanding. This action gives the site its current outline. In Trench 3, three sherds of pottery were recovered from reclamation layer 1002, two of the sherds were from a banded whiteware bowl with a blue sponged decoration typical of pottery found through the 19th century after *c.*1830 +. The third sherd was from a probable blue and white pearlware glazed bowl with a crenelated rim which dates from the same period, (Goffin, R. 2014 Appendix 2). This layer varied in depth across the site from 0.71m in Trench 1 to 1.45m in Trench 2. It is worth nothing that Trench 2 is located in the area of the former intertidal zone and presumably required more material to consolidate the area that the rest of the site. This can be seen in trench 5 where reclamation layer 1002 is only present at the eastern end of the trench where it is only 0.42m thick. The layer is not present at the western end of the trench, the most westerly point excavated on the site and in the area of the site that was already established and built on at the time of consolidation.

Below reclamation layer 1002 was the first of the natural deposits, alluvial clay layer 1003. This was comprised of a dark blue black, compact silty clay with infrequent small sub rounded flint inclusions. This layer represents the "marsh bed" of the environment prior to the consolidation of the site represented by reclamation layer 1002. Probable Timber Causeway 1016 was placed on top of this layer which suggests that when the causeway was constructed this layer was the uppermost in the stratigraphic sequence at that time.

Archaeological Borehole 1 (ABH 1) – Table 10, Figure 13

ABH1 was the most easterly borehole sunk on the site located near the current sea wall.

The first layer in the stratigraphic sequence was made ground Layer 1000. It comprised a dark brown grey, loose mixture of sand, silt and clay with frequent CBM rubble inclusions. It was present to a depth of 0.30m.

Below 1000 was reclamation layer 1002 which was made up of light yellow orange, loose, sandy gravel with frequent rounded flint inclusions and represents the consolidation of the intertidal zone for industry during the 19th and early 20th centuries. This layer was encountered at 0.30m and ran to a depth of 0.85m.

The next layer in the stratigraphic sequence was alluvial clay layer 1003, which represents the first of the "natural" deposits. It comprises dark blue black, compact silty clay with infrequent small sub rounded flint inclusions. It is present from a depth of 0.85m to 3.80m.

Below alluvial clay layer 1003 was river gravel deposit layer 1005. This was made up of mid brown yellow, loose sandy gravel with frequent sub angular flint inclusions and represents deposits from the river gravel bed.

At the base of the borehole sequence at 4.80m was London clay layer 1008; this superficial geological deposit was comprised of dark blue black, very compact clay.

Archaeological Borehole 2 (ABH 2) – Table 11, Figure 13

ABH2 was located 18.00m west of ABH1 along the east west transect across the site.

To a depth of 0.30m below made ground layer 1000, lay ash layer 1001, it was 0.50m thick and comprised a dark grey black loose, sand silt and ash. It appears to relate to *in situ* burning either associated with the demolition of the timber yard or with the fire that took place on the site in 1907.

Below ash layer 1001 was alluvial clay layer 1003, comprising dark blue black, compact silty clay with infrequent small sub rounded flint inclusions. This layer was present from a depth of 0.80 to 2.00m.

Alluvial clay and gravel layer 1004 was present below alluvial clay 1003. This was made up of a light blue brown, firm, mottled silty clay with small gravel inclusions. This layer was present to a depth of 2.90m. The layer is derived from water borne deposits being left in the intertidal zone by the confluence of the River Chelmer and Blackwater.

The next deposit in the sequence was river gravel and silt alluvial layer 1006. This was comprised of mid yellow brown, loose gravel with frequent sub rounded flint inclusions. Encountered at 2.90m it was present to a depth of 3.80m.

Below river gravel and silt alluvial layer 1006 was river gravel bed 1007. It comprised light yellow brown, loose gravel with frequent sub rounded flint inclusions, and was 1.50m thick. This layer represents the former river gravel bed of the intertidal zone.

The final layer in the sequence of ABH2 was London Clay layer 1008, encountered at a depth of 5.30m.

Archaeological Borehole 3 (ABH 3) – Table 12, Figure 13

ABH 3 was located just south of the centre of the site. A core sample (**<4>**) was taken from ABH 3 between 3.90 and 4.40m and was sent for further analysis.

The first layer in the sequence was made ground layer 1000 which was present to a depth of 0.55m. Below this Reclamation layer 1002 was present to a depth of 1.80m. This layer, comprised of light yellow orange, loose sandy gravel, is particularly thick measuring 1.25m. This may be because there was little alluvial clay in this area and the consolidation of this area required more material to make it level with the rest of the site. Below reclamation layer 1002 was river gravel and silt alluvial layer 1006, which was comprised of mid yellow brown, loose gravel with frequent sub rounded flint inclusions. This layer was present to a depth of 2.23m. It is noticeable here that there was no alluvial clay deposits over this gravel layer which suggests the presence of small gravel islands through the marsh.

The next layer in this borehole sequence was river gravel bed layer 1007. This comprised light yellow brown, loose, gravel with frequent sub-rounded flint inclusions and was 2.17m thick to a total depth of 4.40m. This layer is also associated with the base of the intertidal zone.

The final layer in the stratigraphic sequence was London Clay layer 1008.

Archaeological Borehole 4 (ABH 4) – Table 13, Figure 13

ABH 4 was the most westerly of the boreholes that were sunk at Sadds Wharf. A core sample (**<3>**) was taken from ABH 4 between 2.90 to 3.40m and sent for further analysis.

The first layer in the sequence as with the other boreholes was Made ground layer 1000, which was 0.51m thick. Ash Layer 1001 was present below made Ground 1000 to a depth of 0.92m

Below Ash Layer 1001 lay Reclamation Layer 1002. The layer, consisting of light yellow orange, loose sandy gravel with frequent sub rounded flint inclusions, was 1.53m thick. It is interesting that the layer is so thick here which suggests that the consolidation of the marsh environment also extended a little way south into the river Chelmer before the current sea walls were put into place.

The next layer in the sequence was alluvial clay layer 1003, which was dark blue black, compact silty clay with infrequent small sub angular flint inclusions. The alluvial layer was present from 2.40 to 3.00m.

Below alluvial Layer 1003 was River Gravel Bed Layer 1007. Comprised of light yellow brown, loose, gravel with frequent sub-rounded flint inclusions, it was present to a depth of 4.50m.

The final layer in the sequence was London Clay Layer 1008.

Archaeological Borehole 5 (ABH 5) – Table 14, Figure 13

ABH 5 was located 25.00m south east of ABH 4 and was the first borehole to be sunk located along the vertical transect. A core sample (**<2>**) was taken from ABH 5 between 2.60 to 3.10m and was sent for further analysis.

To a depth of 0.44m below Made ground layer 1000, lay Ash Layer 1001. Comprised of a dark grey black, loose sand, silt and ash it was noted during monitoring that in this location the layer contained large fragments of charcoal and burnt CBM rubble, again suggesting that this layer relates to either the demolition of the site or the fire that took place in 1907. This layer was present to a depth of 0.87m.

Below Ash Layer 1001 was Reclamation Layer 1002. The Reclamation Layer, comprised of light yellow orange, loose sandy gravel with frequent large rounded flint, was 1.10m thick and present to a depth of 1.97m.

The next layer in the sequence was Alluvial Clay Layer 1003. Comprised of dark blue black, silty clay with infrequent small sub angular flint inclusions, this layer was present to a depth of 2.32m.

Below Alluvial Clay 1003 lay Alluvial Clay and Gravel Layer 1004. This was comprised of a light blue brown, firm, mottled silty clay with small gravel inclusions. This layer was 0.28m thick.
The next layer in the sequence was a single layer of Alluvial Silt 1009, not encountered in any other borehole sunk on the site. It comprised dark blue black, firm clayey silt with small sub angular flint gravel inclusions and represents water born deposits left in the intertidal zone. Due to the analysis of core sample **<2>**, it is evident that this layer was exposed for a prolonged period to atmospheric oxygen. Alluvial silt 1009 was present from 2.60 to 3.15m.

Below Alluvial layer 1009 was River gravel and Silt Alluvial 1006. This layer consisted of light yellow brown, loose gravel with frequent sub rounded flint inclusions. This layer was present to a depth of 4.00m.

The penultimate layer in the sequence was River Gravel Bed Layer 1007. This layer was comprised of light yellow brown loose gravel with frequent sub rounded flint inclusions and was present from 4.00 to 4.50m.
London Clay layer 1008 was encountered at 4.50m.

Following the assessment of potential of the samples sent for further analysis, core sample **<2>** was selected as the only sample core likely to show any results by Dr Steve Boreham (BSc. phD.) and was subjected to pollen analysis. Two sub samples were taken from the core, one at 2.65m and one at 2.95m. Both of these silt rich samples were then prepared using standard hydrofluoric acid technique and the stained residues were mounted on glass slides for assessment. Unfortunately both the samples showed that the sediments had undergone a significant amount of post depositional oxidation suggesting that this layer (Alluvial Clay and Gravel 1004) had prolonged exposure to atmospheric oxygen potentially as part of the salt marsh that was present in the intertidal zone.

Archaeological Borehole 6 (ABH 6) – Table 15, Figure 13

ABH 6 was located 44.00m north of ABH 5 in the western portion of the site. Two core samples were taken from ABH 6, **<5>** and **<6>**. Sample **<5>** was taken from 1.11 to 1.61m, while sample **<6>** was taken from 1.61 to 2.11m. Both core samples were sent for further analysis.

The first layer in the stratigraphic sequence was Made Ground 1000 which was present to a depth of 0.51m. Below made Ground 1001 was reclamation Layer 1002. It is notable that in this borehole there is no evidence of Ash Layer 1001, suggesting that this area was

either free of demolition or that the fire that took place on the site in 1907 did not effect this part of the site. Reclamation layer 1002 was present to a depth of 1.11m

Below Reclamation Layer 1002 was Alluvial Clay layer 1003. The alluvial clay was 0.50m thick.

River Gravel and Silt Alluvial layer 1006 lay beneath Alluvial Clay Layer 1003. It comprised mid yellow brown, loose gravel with frequent sub rounded flint inclusions. Due to conditions on site after the initial auguring of this layer it became impossible to distinguish between the different grave layers until the change in the geology to London Clay Layer 1008 which was encountered ant 4.00m.

Archaeological Borehole 7 (ABH 7) – Table 16, Figure 13

ABH 7was located near the entrance to the site in the north west of the former timber yard.

Made ground Layer 1000 was the uppermost deposit of the sequence in the borehole and was present to a depth of 1.08m. Below made ground layer 1000 was reclamation layer 1002 which was 0.96m thick. The next layer in the stratigraphic sequence was River Gravel and Silt Alluvial Layer 1006. Similarly to ABH 6, conditions in the area of ABH 7 that required remediation meant that it was impossible to distinguish between the gravel layers. The London Clay was encountered at 4.48m.

Archaeological Borehole 8 (ABH 8) – Table 17, Figure 13

ABH 8 was also located near the entrance to the site 17.5m north of ABH 7.

Made ground layer 1000 was present to a depth of 1.14m. Below this was Ash Layer 1001 which comprised dark grey black, loose sand silt and ash with large fragments of burnt CBM. Ash Layer 1001 was present to a depth of 1.47m.

Next in the stratigraphic sequence was Alluvial Clay and Gravel Layer 1004. Comprised of light blue brown, firm mottled silty clay with small gravel inclusions, the layer was 1.82m thick. Due to remediation concerns in this area differences in the silt layers could not be ascertained. The transition to the next layer however was noticeable and occurred at 3.29m.

The next layer in the sequence was River Gravel and Silt Alluvial layer 1006. This layer was comprised of light yellow brown, loose gravel with frequent sub rounded flint inclusions. This layer was present to a depth of 3.49m.

Below River Gravel and Silt Alluvial layer 1006 lay River Gravel Bed layer 1007 which was made up of light yellow brown, loose gravel with frequent sub rounded flint inclusions. This layer was present to a depth of 3.75m.

The final deposit in the stratigraphic sequence was London Clay Layer 1008.

Archaeological Borehole 9 (ABH 9) – Table 18, Figure 13

ABH 9 was located in the north of the site on the location of the former steam saw mill. A core sample (**<1>**) was taken from this borehole between 2.80 and 3.30m.

The first deposit encountered in the borehole was made ground layer 1000 which was present to a depth of 1.30m. It is likely that this also includes demolition material from Demolition Layer 1011 however due to the nature of the auguring it was not possible to differentiate between the layers.

Below made ground 1000 was Ash Layer 1001. It comprised dark grey black, loose sand, silt and ash. The layer was 0.30m thick.

The next layer in the stratigraphic sequence was Reclamation Layer 1002. The layer was present from a depth of 1.60 to 2.30m.

Below Reclamation Layer 1002 lay Alluvial Clay Layer 1003. Comprised of dark blue black, silty clay with infrequent small sub angular flint, the layer was 050m thick and was present to a depth of 2.70m.
The next layer in the sequence was Alluvial Clay and Gravel layer 1004, this layer was 0.20m thick and was directly on top of River Gravel Deposit layer 1005. River Gravel Deposit Layer 1005 comprised mid yellow brown, loose sandy gravel with frequent sub angular flint inclusions. The layer was present to a depth of 3.50m.

Below River gravel Deposit Layer 1005 lay River Gravels and Silt Alluvial layer 1006. This layer was only 0.10m thick and represents a small band of alluvial material that has been deposited on top of River Gravel bed 1007.

River Gravel Bed 1007 was comprised of light yellow brown, loose gravel with frequent sub rounded flint inclusions. It was present to a depth of 5.80m.

The final deposit in the sequence was London Clay Layer 1008. This Bore hole was by far the deepest but this is to be expected as the location where the borehole was sunk lies at 3.85m aod compared to ABH 8 which is 80.00m west and lies at a height of 2.46m aod, a difference of 1.39m which shows the level of material that was demolished and spread over the area of the steam saw mill.

Monitoring Area 1 – Figure 11 & 12

Monitoring area 1 maintained the trench seen across the rest of the site for layers of made ground and demolition overlying the reclamation layer. The deposit model differs slightly over the area of Monitoring Area 1. On the western side of the area excavated made ground layer 1000 comprised of dark brown grey, loose sand, silt and clay with frequent CBM inclusions, ran to a depth of 0.45m while on the eastern side of the area the layer was thicker at 0.69m.

The deposit model now differs on the western edge with Demolition Layer 1011 underlying made ground layer 1000. The layer was made up of a mixed light grey brown, loose sand, silt and clay with large CBM and rubble inclusions. The demolition was present from a depth of 0.49 to 0.74m. The layer relates to the demolition of the former timber yard buildings present on the site discussed previously.

On the eastern side of the area Reclamation layer 1002 lay below made ground layer 1000 and was present to a depth of 1.22m while on the western side it lay directly below Demolition Layer 1011 to a depth of 1.08m.

The excavated area was stopped at 1.13m in the west and 1.130m on the eastern side. The whole area was reduced to Alluvial Layer 1003 which was below Reclamation Layer 1002.

It seems likely that Demolition Layer 1011 marks the most easterly that the demolition material extends from the former buildings of the timber yard as no further demolished deposits were encountered on the eastern side of the area.

Conclusions

The deposit model shows the varying levels that the reconsolidation actions had to contend with. The Alluvial clays were thickest in the east representing the area that had most recently been part of the intertidal zone. Unfortunately no surviving peat was present in the layers to help date the deposits. The analysis of the pollen samples from ABH 5 revealed the absence of pollen from the silts which strongly suggests that the sediments were exposed to the oxygen for prolonged a period of time as part of the salt marsh which fits in well with what we know about the environment in the post medieval period.

Another interesting result of the borehole survey is the absence of alluvial silts within ABH 6, and the high level of the first layer of gravel deposits. This strongly suggests that the area may have been dominated by gravel islands running through the intertidal zone with washes of alluvial material building up either side of these gravel masses. Certainly it is interesting that the main feature of the site, Probable Timber Causeway 1016, runs on an

alignment that is towards the location of ABH 6 perhaps suggesting that the causeway was not one continuous entity but rather a number of smaller structures running between the gravel islands where the alluvial silts had built up and the marsh was higher, wetter and more difficult to navigate.

10.0 DISCUSSION AND CONCLUSION

Discussion

The evaluation revealed four phases of site activity. The earliest of which is represented by River Gravel Bed Layer 1007, when the local environment was dominated by the intertidal zone creating channels and depositing sediments across the site. This provided an environment of marshland and bog punctuated by gravel islands, evidence of which was recorded during the auger survey. A core sample (Sample **<2>**) taken for further analysis (Appendix 2) revealed that the pollen and spores were very poorly preserved and no pollen grains were observed in the sample. This suggests that the organic sediments had been subjected to a prolonged exposure to atmospheric oxygen as well as fluctuating water tables causing aerobic microbial degradation of organic material to have reached an advanced state. Therefore it seems likely that similar basal deposits across the site may exhibit the same level of poor preservation, (Boreham. S. 2014, Appendix 2).

No archaeological phases believed to be earlier than the post-medieval were present, the site being located in an area that was known to be marshland certainly until the mid-part of the 19th century. This is evidenced by the cartographic sources; Andre and Chapman's 1777 map (Fig. 15) showing little to no development of the area and marking it as marshland but still denoting the causeway crossing the site. This is in contrast to the 1873 OS Map (Fig. 14) which shows significant development of the site which is clearly marked, "Timber Yard". The Steam Saw Mill and associated buildings are present on the map as is tidal defence 1014 which marks the eastern boundary of the site at that time, delineating the extent of reconsolidation at that time.

The presence of probable timber causeway 1016 is extremely interesting. There is very little evidence of post-medieval timber causeways so information on their construction, including preferred materials and techniques is rare. What is evident from the timbers that were sent for further analysis is that the causeway was likely made up from offcuts from timber processing. This is evidenced by the presence of bark edges on the timber that would have been of little use for anything else but would have been suitable for use as a stabilising surface on wet ground, (Bale, R. 2014, Appendix 2). Iron fittings were evident on timbers 69 and 74 as well as containing joints which would be indicative of re use. The tree species employed suggests a post medieval date; Oak and Elm were favoured species for wood working which can be evidenced by historic accounts of post-medieval shipbuilding and books written on post-medieval tree planting and timber use, (Rackham, O. 2003). All of this suggests that there was a timber industry operating in the vicinity of

this area from at least 1777 where the first evidence of the causeway appears in the historic record. This is further backed up by the material evidence collected on site from around timber causeway 1016, the earliest of which was dated to the late 17th to early 19th Century. The small finds assemblage has provided useful dating evidence for the construction of timber causeway 1016. Unfortunately the analysis of the timbers from timber causeway 1016 has not helped to provide an absolute date. It has been noted by the specialist that it may be worth undertaking radiocarbon dating on a section of timber that has no evidence of reuse, to provide a more concrete date for construction of the causeway.

It should be noted that probable timber causeway 1016 was not present in Trench 4 which was perpendicular to Trench 3 and only 10.00m west of the trench. Reclamation layer 1002 is particularly deep in trench 4 so it is possible that either the causeway did not extend this far, or more likely, that when the reconsolidation of the site started some timbers were removed or destroyed. Another possibility is that the causeway was not one continuous entity, rather sections of timber lain between dryer portions of the marshland to assist in its navigation by land. This was evidenced in ABH 3 where no alluvial silts were encountered but River Gravel Layer 1006 was encountered at a shallower depth, suggesting small gravel islands. Similarly this occurred in ABH 6 with the gravels being encountered at a much shallower depth to other areas.

The third phase is reclamation and reconsolidation of the marsh environment for industry and the construction of tidal defence 1014. These events probably took place at approximately the same time. It seems likely that Tidal Defence 1014 was constructed to help section and drain the area that was to be reconsolidated prior to the construction of the Steam Saw Mill and its associated buildings. Analysis of the timbers from Tidal Defence 1014 noted the probable re use of the oak timbers and utilization of woodworking waste suggests a fairly lowly structure, perhaps not expected to last a long time, but fit for purpose, and perhaps patched up periodically with re used planking and timber waste that happened to be available, (Bale, R. 2014. Appendix 2). This description fits with a more temporary structure used to define the boundaries of the site before further reconsolidation would take place. Unfortunately dendrochronological analysis was unable to ascertain an absolute date for the construction of the Tidal Defence.

Monitoring Area 1 exposed another line of timbers (timber structure 1034) similar in construction to the retaining walls of tidal defence 1014. This structure lies further east than the main tidal wall encountered in trench 2 and could represent another defence structure aimed at aiding the reconsolidation process.

Reclamation layer 1002 was deposited over the site (including Tidal Defence 1014) to reconsolidate the marsh for industrial expansion and development. The cartographic evidence suggests that this was an on-going process as we can see in the 1873 OS map (Fig.14) the area has been reconsolidated and built on then 18 years later on the 1891 OS

Map the boundaries of the site have been extended, over tidal defence 1014, creating the current outline of the site today.

The most recent phase relates to the demolition of the buildings associated with the former timber yard and the Steam Saw Mill in the late 20th century. Demolition layer 1011 was present within four of the five trenches and relates to this period of demolition while made ground layer 1000 is the result of some of this material being spread across the site in a levelling exercise.

Conclusion

The archaeological evaluation and borehole survey at Sadds Wharf revealed some very interesting features and geological data. Timber causeway 1016 is a fascinating feature and provides important information on the construction methods associated with post medieval timber causeways. The discovery of tidal defence 1014 aids us in understanding the reconsolidation procedure that the area underwent in the 19th century and suggests that it may have been one ongoing process rather than individual bursts of expansion. It is reasonable to assume that feature 1016 is indeed the causeway that is marked on the Andre and Chapman map of 1777 due to the material evidence that was discovered with it and from the information that the analysis of the timbers was able to provide. The causeway also appears on the later 1873 OS map and a projection of the route the feature would take across the site between the two points of entry identified on the map. This projection would take the feature through Trench 3 where the timbers were encountered, however we do not have an absolute date for the construction of timber causeway 1016.

Recommendation

It is recommended that while timber causeway 1016 is an interesting and important feature there will be no significant merit in opening the area around it for a full excavation. The feature appears to have been truncated to the west and is likely missing in other areas as well. It would be prudent to monitor any works in the vicinity of Trench 3 and timber causeway 1016 to recover any artefactual evidence that could assist in a date for construction of the feature. If this is not successful then a single AMS C14 date can be obtained from one of the timbers recovered during the evaluation to indicate a more definitive date of construction.

11.0 PROJECT ARCHIVE AND DEPOSITION

A full archive will be prepared for all work undertaken in accordance with guidance from the *Selection, Retention and Dispersion of Archaeological Collections,* Archaeological Society for Museum Archaeologists, 1993. The archive will be deposited with Colchester Museum.

The archive will be quantified, ordered, indexed, cross-referenced and checked for internal consistency. The material will be catalogued, labelled and packaged for transfer and storage in accordance with the guidelines set out in the United Kingdom Institute for Conservation's *Conservation Guidelines No.2* and the Archaeological Archives Forum's *Archaeological Archives, A guide to best practice, compilation, transfer and curation* (Brown, 2007).

12.0 ACKNOWLEDGEMENTS

Britannia Archaeology Ltd would like to thank Mr Jeffrey Ciffer (The Baltic Consortium) for commissioning and funding the project, Maria Medlycott at Essex County Council (ECC) for all her advice and assistance throughout the project, Dr Steve Boreham (Cambridge University Department of Geography) for his advice and analysis of the soil sample and to Dr Roderick Bale (University of Wales Lampeter Archaeological Services (UWLAS)) for his help and advice regarding the recording and analysis of the timbers.

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APPENDIX 1 DEPOSIT TABLES & BOREHOLE LOGS, FEATURE DESCRIPTIONS

Deposit Tables & Borehole Logs

Table 1

Trench No 1	**Orientation** N - S	**Height AOD** 4.04m	**Shot No** DP1
Sample Section No 1a	**Location** E Side	**Facing** W Facing	

Context No	**Depth**	**Deposit Description**
1011	0.00 – 0.08m	Demolition Layer. Mixed light grey brown, loose sand silt and clay with CBM and rubble throughout.
1001	0.08 – 0.32m	Ash Layer. Dark grey black, loose, sand silt and ash.
1002	0.32 – 0.71m	Reclamation layer. Light yellow orange, loose, sandy gravel with frequent large rounded flint.
1003	0.71m+	Alluvial clay. Dark blue black, compact, silty clay with infrequent small sub-angular flint.

Deposit Model, Trench 1, Sample Section 1a

Table 2

Trench No 1	**Orientation** N - S	**Height AOD** 3.50m	**Shot No** DP2
Sample Section No 1b	**Location** E Side	**Facing** W Facing	

Context No	**Depth**	**Deposit Description**
1011	0.00 – 0.87m	Demolition Layer. Mixed light grey brown, loose sand silt and clay with CBM and rubble throughout.
1003	0.87m +	Alluvial clay. Dark blue black, compact, silty clay with infrequent small sub-angular flint.

Deposit Model, Trench 1, Sample Section 1b

Table 3

Trench No 2	**Orientation** E - W	**Height AOD** 3.63m	**Shot No** DP5 + 10
Sample Section No 2a	**Location** S Side	**Facing** N Facing	

Context No	**Depth**	**Deposit Description**
1011	0.00 – 1.00m	Demolition Layer. Mixed light grey brown, loose sand silt and clay with CBM and rubble throughout.
1002	1.00 – 1.45m	Reclamation layer. Light yellow orange, loose, sandy gravel with frequent large rounded flint.
1003	1.45m +	Alluvial clay. Dark blue black, compact, silty clay with infrequent small sub-angular flint.

Deposit Model, Trench 2, Sample Section 2a

Table 4

Trench No 3a	**Orientation** E - W	**Height AOD** 3.19m	**Shot No** DP10 + 11
Sample Section No 3a	**Location** S Side	**Facing** N Facing	

Context No	**Depth**	**Deposit Description**
1000	0.00 – 0.27m	Made Ground. Dark brown grey, loose, sand silt and clay with frequent CBM inclusions.
1031	0.27 – 0.43m	Chalk Surface / Building Foundation. Light grey white, compact, chalk and clay.
1002	0.43 – 0.88m	Reclamation layer. Light yellow orange, loose, sandy gravel with frequent large

		rounded flint.
1003	0.88m +	Alluvial clay. Dark blue black, compact, silty clay with infrequent small sub-angular flint.

Deposit Model, Trench 3, Sample Section 3a

Table 5

Trench No	**Orientation**	**Height AOD**	**Shot No**
3	E - W	3.27	DP10 + 11

Sample Section No	**Location**	**Facing**
3b	S Side	N Facing

Context No	**Depth**	**Deposit Description**
1000	0.00 – 0.27m	Made Ground. Dark brown grey, loose, sand silt and clay with frequent CBM inclusions.
1031	0.27 – 0.43m	Chalk Surface / Building Foundation. Light grey white, compact, chalk and clay.
1002	0.43 – 0.88m	Reclamation layer. Light yellow orange, loose, sandy gravel with frequent large rounded flint.
1017	0.88m +	Organic layer above Timber Causeway 1016. Dark yellow brown, loose, degraded wood. Represents the top layer of Timber Causeway 1016 that has degraded almost to peat.

Deposit Model, Trench 3, Sample Section 3b

Table 6

Trench No	**Orientation**	**Height AOD**	**Shot No**
4	N - S	2.83m	DP17

Sample Section No	**Location**	**Facing**
4a	E Side	W Facing

Context No	**Depth**	**Deposit Description**
1000	0.00 – 0.31m	Made Ground. Dark brown grey, loose, sand silt and clay with frequent CBM inclusions.
1011	0.31 – 0.81 m	Demolition Layer. Mixed light grey brown, loose sand silt and clay with CBM and rubble throughout.
1002	0.81 – 1.03m	Reclamation layer. Light yellow orange, loose, sandy gravel with frequent large rounded flint.
1012	1.03 – 1.12m	Organic Layer. Dark grey brown friable, organic sandy silt. Probably associated with the former marsh environment.
1003	1.12m +	Alluvial clay. Dark blue black, compact, silty clay with infrequent small sub-angular flint.

Deposit Model, Trench 4, Sample Section 4a

Table 7

Trench No	**Orientation**	**Height AOD**	**Shot No**
4	N - S	3.39m	DP18

Sample Section No	**Location**	**Facing**
4b	E Side	W Facing

Context No	**Depth**	**Deposit Description**
1000	0.00 – 0.24m	Made Ground. Dark brown grey, loose, sand silt and clay with frequent CBM inclusions.
1002	0.24 – 1.11m	Reclamation layer. Light yellow orange, loose, sandy gravel with frequent large rounded flint.
1003	1.11m +	Alluvial clay. Dark blue black, compact, silty clay with infrequent small sub-angular flint.

Deposit Model, Trench 4, Sample Section 4b

Table 8

Trench No 5	**Orientation** E - W	**Height AOD** 2.88m	**Shot No** DP20
Sample Section No 5a	**Location** N Side	**Facing** S Facing	

Context No	Depth	Deposit Description
1000	0.00 – 0.28m	Made Ground. Dark brown grey, loose, sand silt and clay with frequent CBM inclusions.
1011	0.28 – 0.48 m	Demolition Layer. Mixed light grey brown, loose sand silt and clay with CBM and rubble throughout.
1002	0.48 – 0.90m	Reclamation layer. Light yellow orange, loose, sandy gravel with frequent large rounded flint.
1012	0.90 – 0.96m	Organic Layer. Dark grey brown friable, organic sandy silt. Probably associated with the former marsh environment.
1003	0.96m +	Alluvial clay. Dark blue black, compact, silty clay with infrequent small sub-angular flint.

Deposit Model, Trench 5, Sample Section 5a

Table 9

Trench No 5	**Orientation** E - W	**Height AOD** 2.82m	**Shot No** DP21
Sample Section No 4b	**Location** N Side	**Facing** S Facing	

Context No	Depth	Deposit Description
1000	0.00 – 0.33m	Made Ground. Dark brown grey, loose, sand silt and clay with frequent CBM inclusions.
1011	0.33 – 0.71 m	Demolition Layer. Mixed light grey brown, loose sand silt and clay with CBM and rubble throughout.
1003	0.71m +m +	Alluvial clay. Dark blue black, compact, silty clay with infrequent small sub-angular flint.

Deposit Model, Trench 5, Sample Section 5b

Table 10

Borehole No 1	**Location NGR** TL 85531 07280	**Height AOD** 3.24m

Context No	Depth	Deposit Description
1000	0.00 – 0.30m	Made Ground. Dark brown grey, loose, sand silt and clay with frequent CBM inclusions.
1002	0.30 – 0.85m	Reclamation layer. Light yellow orange, loose, sandy gravel with frequent large rounded flint.
1003	0.85 – 3.80m	Alluvial clay. Dark blue black, compact, silty clay with infrequent small sub-angular flint.
1005	3.80 – 4.80m	River Gravel deposits. Mid brown yellow, loose sandy gravel with frequent sub angular flint inclusions.
1008	4.80m +	London Clay. Dark blue black, very compact clay.

Archaeological Borehole Log, ABH 1

Table 11

Borehole No 2	**Location NGR** TL 85509 07280	**Height AOD** 3.62m

Context No	Depth	Deposit Description
1000	0.00 – 0.30m	Made Ground. Dark brown grey, loose, sand silt and clay with frequent CBM inclusions.
1001	0.30 – 0.80m	Ash Layer. Dark grey black, loose, sand silt and ash.
1003	0.80 – 2.00m	Alluvial clay. Dark blue black, compact, silty clay with infrequent small sub-angular flint.
1004	2.00 – 2.90m	Alluvial Clay and Gravel. Light blue brown, firm, mottled silty clay with small

		gravel inclusions.
1006	2.90 – 3.80m	River Gravels and Silt Alluvium. Mid yellow brown, loose gravel with frequent sub rounded flint inclusions.
1007	3.80 – 5.30m	River Gravel Bed. Light yellow brown, loose, gravel with frequent sub rounded flint inclusions.
1008	5.30m +	London Clay. Dark blue black, very compact clay.

Archaeological Borehole Log, ABH 2

Table 12

Borehole No 3		**Location NGR** TL 85471 07281	**Height AOD** 3.27m
Context No	**Depth**	**Deposit Description**	
1000	0.00 – 0.55m	Made Ground. Dark brown grey, loose, sand silt and clay with frequent CBM inclusions.	
1002	0.55 – 1.80m	Reclamation layer. Light yellow orange, loose, sandy gravel with frequent large rounded flint.	
1006	1.80 – 2.23m	River Gravels and Silt Alluvium. Mid yellow brown, loose gravel with frequent sub rounded flint inclusions.	
1007	2.23 – 4.40m	River Gravel Bed. Light yellow brown, loose, gravel with frequent sub rounded flint inclusions.	
1008	4.40m +	London Clay. Dark blue black, very compact clay.	

Archaeological Borehole Log, ABH 3

Table 13

Borehole No 4		**Location NGR** TL 85399 07282	**Height AOD** 3.19m
Context No	**Depth**	**Deposit Description**	
1000	0.00 – 0.51m	Made Ground. Dark brown grey, loose, sand silt and clay with frequent CBM inclusions.	
1001	0.51 – 0.92m	Ash Layer. Dark grey black, loose, sand silt and ash.	
1002	0.92 – 2.40m	Reclamation layer. Light yellow orange, loose, sandy gravel with frequent large rounded flint.	
1003	2.40 – 3.00m	Alluvial clay. Dark blue black, compact, silty clay with infrequent small sub-angular flint.	
1007	3.00 – 4.50m	River Gravel Bed. Light yellow brown, loose, gravel with frequent sub rounded flint inclusions.	
1008	4.50m +	London Clay. Dark blue black, very compact clay.	

Archaeological Borehole Log, ABH 4

Table 14

Borehole No 5		**Location NGR** TL 85426 07272	**Height AOD** 3.40m
Context No	**Depth**	**Deposit Description**	
1000	0.00 – 0.44m	Made Ground. Dark brown grey, loose, sand silt and clay with frequent CBM inclusions.	
1001	0.44 – 0.87m	Ash Layer. Dark grey black, loose, sand silt and ash.	
1002	0.87 – 1.97m	Reclamation layer. Light yellow orange, loose, sandy gravel with frequent large rounded flint.	
1003	1.97 – 2.32m	Alluvial clay. Dark blue black, compact, silty clay with infrequent small sub-angular flint.	
1004	2.32 – 2.60m	Alluvial Clay and Gravel. Light blue brown, firm, mottled silty clay with small gravel inclusions.	
1009	2.60 – 3.15m	Alluvial Silt. Dark blue black, firm, clay silt with small sub angular flint gravel inclusions.	
1006	3.15 – 4.00m	River Gravels and Silt Alluvium. Mid yellow brown, loose gravel with frequent sub rounded flint inclusions.	
1007	4.00 – 4.50m	River Gravel Bed. Light yellow brown, loose, gravel with frequent sub rounded	

		flint inclusions.
1008	4.50m +	London Clay. Dark blue black, very compact clay.

Archaeological Borehole Log, ABH 5

Table 15

Borehole No 6		**Location NGR** TL 85425 07311	**Height AOD** 2.94m
Context No	**Depth**	**Deposit Description**	
1000	0.00 – 0.51m	Made Ground. Dark brown grey, loose, sand silt and clay with frequent CBM inclusions.	
1002	0.51 – 1.11m	Reclamation layer. Light yellow orange, loose, sandy gravel with frequent large rounded flint.	
1003	1.11 – 1.51m	Alluvial clay. Dark blue black, compact, silty clay with infrequent small sub-angular flint.	
1006	1.51 – 4.00m	River Gravels and Silt Alluvium. Mid yellow brown, loose gravel with frequent sub rounded flint inclusions.	
1008	4.00m +	London Clay. Dark blue black, very compact clay.	

Archaeological Borehole Log, ABH 6

Table 16

Borehole No 7		**Location NGR** TL 85423 07348	**Height AOD** 2.64m
Context No	**Depth**	**Deposit Description**	
1000	0.00 – 1.08m	Made Ground. Dark brown grey, loose, sand silt and clay with frequent CBM inclusions.	
1002	1.08 – 2.04m	Reclamation layer. Light yellow orange, loose, sandy gravel with frequent large rounded flint.	
1006	2.04 – 4.48m	River Gravels and Silt Alluvium. Mid yellow brown, loose gravel with frequent sub rounded flint inclusions.	
1008	4.48m +	London Clay. Dark blue black, very compact clay.	

Archaeological Borehole Log, ABH 7

Table 17

Borehole No 8		**Location NGR** TL 85423 07365	**Height AOD** 2.46m
Context No	**Depth**	**Deposit Description**	
1000	0.00 – 1.14m	Made Ground. Dark brown grey, loose, sand silt and clay with frequent CBM inclusions.	
1002	1.14 – 1.47m	Reclamation layer. Light yellow orange, loose, sandy gravel with frequent large rounded flint.	
1004	1.47 – 3.29m	Alluvial Clay and Gravel. Light blue brown, firm, mottled silty clay with small gravel inclusions.	
1006	3.29 – 3.49m	River Gravels and Silt Alluvium. Mid yellow brown, loose gravel with frequent sub rounded flint inclusions.	
1007	3.49 – 3.75m	River Gravel Bed. Light yellow brown, loose, gravel with frequent sub rounded flint inclusions.	
1008	3.75m +	London Clay. Dark blue black, very compact clay.	

Archaeological Borehole Log, ABH 8

Table 18

Borehole No 9		**Location NGR** TL 85504 07342	**Height AOD** 2.85m
Context No	**Depth**	**Deposit Description**	
1000	0.00 – 1.30m	Made Ground. Dark brown grey, loose, sand silt and clay with frequent CBM inclusions.	
1001	1.30 – 1.60m	Ash Layer. Dark grey black, loose, sand silt and ash.	

1002	1.60 – 2.30m	Reclamation layer. Light yellow orange, loose, sandy gravel with frequent large rounded flint.
1003	2.30 – 2.70m	Alluvial clay. Dark blue black, compact, silty clay with infrequent small sub-angular flint.
1004	2.70 – 2.90m	Alluvial Clay and Gravel. Light blue brown, firm, mottled silty clay with small gravel inclusions.
1005	2.90 – 3.50m	River Gravel deposits. Mid brown yellow, loose sandy gravel with frequent sub angular flint inclusions.
1006	3.50 – 3.60m	River Gravels and Silt Alluvium. Mid yellow brown, loose gravel with frequent sub rounded flint inclusions.
1007	3.60 – 5.80m	River Gravel Bed. Light yellow brown, loose, gravel with frequent sub rounded flint inclusions.
1008	5.80m +	London Clay. Dark blue black, very compact clay.

Archaeological Borehole Log, ABH 9

Context Description Table

Table 19

Feature Context	Feature Type & Description (L x W x D)	Layer/Fill Context	Layer/Fill Description	Spot Date	Finds	Trench Number
1010	Demolition Cut, (2.00+ x 30.00+ x 1.20m +), Irregular in plan (extending beyond trench limit), convex irregular sides.	1011	Mixed light grey brown, loose, sand silt and clay with CBM and rubble inclusions.	Modern	None	TT1
1014	Timber Tidal Defence, (2.00+ x 2.90+ x 1.41m +), Roughly linear in plan, orientated north east to south west, vertical sides.	1015	Dark blue black, firm, silty clay and gravel with slate, rubble and CBM inclusions.	18th-19th Century	20g Pottery 1268g CBM	TT2
1016	Timber Causeway, (2.00+ x 18.00+ x 0.93m+) linear in plan, orientated north-east to south-west. Made up of numerous laid timbers, all tightly packed.	1017	Dark yellow brown, loose, organic peaty material mostly degraded wood from Timber Causeway 1016.	Late 17th –early 18th Century	113g Pottery 653g CBM 499g Glass 18.5g Clay pipe	TT3
1018	Possible Post Hole, (0.18 x 0.16 x 0.23m) Circular in plan, steep sloping sides, flat base, associated with Timber Causeway 1016.	1017	Dark yellow brown, loose, organic peaty material mostly degraded wood from Timber Causeway 1016.	Late 17th –early 18th Century	None	TT3
1019	Possible Stake Hole, (0.10+ x 0.17+ x 0.18m) Circular in plan, steep sloping sides, concave base, associated with Timber Causeway 1016.	1017	Dark yellow brown, loose, organic peaty material mostly degraded wood from Timber Causeway 1016.	Late 17th –early 18th Century	None	TT3
1020	Possible Stake Hole, (0.10+ x 0.12+ x 0.12m) Sub Circular in plan, steep sloping sides, concave base, associated with Timber Causeway 1016.	1017	Dark yellow brown, loose, organic peaty material mostly degraded wood from Timber Causeway 1016.	Late 17th –early 18th Century	None	TT3
1021	Possible Post Hole, (0.24 x 0.20 x 0.27m) Circular in plan, steep sloping sides, concave base, associated with Timber Causeway 1016.	1017	Dark yellow brown, loose, organic peaty material mostly degraded wood from Timber Causeway 1016.	Late 17th –early 18th Century	None	TT3
1022	Possible Post Hole, (0.58 x 0.22 x 0.23m) Circular in plan, steep sloping sides, flat base, associated with Timber Causeway 1016.	1017	Dark yellow brown, loose, organic peaty material mostly degraded wood from Timber Causeway 1016.	Late 17th –early 18th Century	None	TT3
1023	Possible Post Hole, (0.22 x 0.21 x 0.18m) Circular in plan, moderately sloping sides, flat base, associated with Timber Causeway 1016.	1017	Dark yellow brown, loose, organic peaty material mostly degraded wood from Timber Causeway 1016.	Late 17th –early 18th Century	None	TT3
1024	Possible Post Hole, (0.22 x 0.24 x 0.18m) Circular in plan, steep sloping sides,	1017	Dark yellow brown, loose, organic peaty material mostly	Late 17th –early 18th	None	TT3

	uneven base, associated with Timber Causeway 1016.		degraded wood from Timber Causeway 1016.	Century		
1025	Possible Post Hole, (0.18 x 0.18 x 0.16m) Circular in plan, steep sloping sides, flat base, associated with Timber Causeway 1016.	1017	Dark yellow brown, loose, organic peaty material mostly degraded wood from Timber Causeway 1016.	Late 17th –early 18th Century	None	TT3
1028	Construction Cut for Modern Building, (2.00 + x 1.40 x 1.00m) Roughly linear in plan, steep nearly vertical sides.	1029	Light yellow orange, loose, sandy gravel. Represents redeposited reclamation material on top of concrete pad within 1028.	Modern	None	TT2
1033	Construction Cut for Timber Causeway 1016, (2.00+ x 18.00+ x 0.93m), assumed linear in plan, moderate sloping sides, concave base.	1016	See above	Late 17th –early 18th Century	N/A	TT3
1034	Timber Structure (4.27 x 0.12 x 0.41m) Roughly linear in plan, orientated north east to south west, vertical sides.	None	No fill, Single line of timbers	18th – 19th Century	None	Monitoring Area 1

Context Description Table

Timber Description Table

Table 20

Timber Number	Associated Feature	Length	Width	Height	Species (if known)	Notes
1	Tidal Defence 1014	1.16m	0.06m	0.21m	Oak	E Retaining Wall Timber
2	Tidal Defence 1014	0.83m	0.05m	0.22m	Oak	E Retaining Wall Timber
3	Tidal Defence 1014	0.14m	0.03m	0.10m	Oak	E Retaining Wall Timber
4	Tidal Defence 1014	0.52m	0.03m	0.17m	-	E Retaining Wall Timber
5	Tidal Defence 1014	0.14m	0.04m	0.28m	-	E Retaining Wall Timber
6	Tidal Defence 1014	0.14m	0.04m	0.12m	-	E Retaining Wall Timber
7	Tidal Defence 1014	0.22m	0.06m	0.22m	-	E Retaining Wall Timber
8	Tidal Defence 1014	0.21m	0.05m	0.18m	-	E Retaining Wall Timber
9	Tidal Defence 1014	0.34m	0.08m	0.10m	-	E Retaining Wall Timber
10	Tidal Defence 1014	0.12m	0.04m	0.14m	-	E Retaining Wall Timber
11	Tidal Defence 1014	0.08m	0.03m	0.16m	-	E Retaining Wall Timber
12	Tidal Defence 1014	0.16m	0.07m	0.11m	Oak	E Retaining Wall Timber
13	Tidal Defence 1014	0.90m	0.70m	0.44m	-	Central Section Timber
14	Tidal Defence 1014	0.58m	0.20m	0.10m	-	Central Section Timber
15	Tidal Defence 1014	0.40m	0.19m	0.08m	-	Central Section Timber
16	Tidal Defence 1014	0.50m	0.42m	0.16m	Elm	Central Section Timber
17	Tidal Defence 1014	0.80m	0.70m	0.22m	-	Central Section Timber
18	Tidal Defence 1014	0.68m	0.10m	0.18m	-	Central Section Timber
19	Tidal Defence 1014	0.48m	0.32m	0.30m	-	Central Section Timber
20	Tidal Defence 1014	1.13m	0.06m	0.18m	Oak	W Retaining Wall Timber
21	Tidal Defence 1014	1.10m	0.08m	0.16m	-	W Retaining Wall Timber
22	Tidal Defence 1014	0.50m	0.09m	0.21m	Oak	W Retaining Wall Timber
23	Tidal Defence 1014	0.66m	0.06m	0.19m	-	W Retaining Wall Timber
24	Tidal Defence 1014	0.53m	0.05m	0.18m	-	W Retaining Wall Timber
25	Tidal Defence 1014	0.25m	0.09m	0.09m	-	Line of Posts W End of Trench 2
26	Tidal Defence 1014	0.25m	0.09m	0.09m	-	Line of Posts W End of Trench 2
27	Tidal Defence 1014	0.22m	0.08m	0.09m	-	Line of Posts W End of Trench 2
28	Tidal Defence 1014	0.23m	0.09m	0.09m	-	Line of Posts W End of Trench 2
29	Tidal Defence 1014	0.27m	0.09m	0.09m	-	Line of Posts W End of Trench 2
30	Tidal Defence 1014	0.25m	0.09m	0.09m	-	Line of Posts W End of Trench 2
31	Tidal Defence 1014	0.19m	0.09m	0.08m	-	Posts at E End of trench 2
32	Tidal Defence 1014	0.16m	0.09m	0.09m	-	Posts at E End of trench 2
33	Tidal Defence 1014	0.24m	0.09m	0.09m	-	Posts at E End of trench 2
34	Timber Causeway 1016	0.50m	0.16m	0.10m	-	-
35	Timber Causeway 1016	0.27m	0.17m	0.05m	-	-
36	Timber Causeway 1016	1.29m	0.52m	0.31m	Elm	-
37	Timber Causeway 1016	1.23m	0.33m	0.28m	-	-
38	Timber Causeway 1016	0.10m	0.11m	0.05m	-	-
39	Timber Causeway 1016	0.20m	0.18m	0.19m	-	-
40	Timber Causeway 1016	0.26m	0.13m	0.33m	-	-
41	Timber Causeway 1016	0.29m	0.14m	0.15m	-	-
42	Timber Causeway 1016	1.40m	0.78m	0.41m	-	-
43	Timber Causeway 1016	1.19m	0.50m	0.37m	Elm	-
44	Timber Causeway 1016	1.28m	0.46m	0.43m	-	-
45	Timber Causeway 1016	1.04m	0.31m	0.35m	-	-
46	Timber Causeway 1016	1.20m	1.40m	0.09m	-	-
47	Timber Causeway 1016	2.00m	0.99m	0.33m	-	-
48	Timber Causeway 1016	1.58m	0.48m	0.29m	-	-
49	Timber Causeway 1016	1.73m	0.41m	0.28m	-	-
50	Timber Causeway 1016	0.41m	0.11m	0.26m	-	-
51	Timber Causeway 1016	0.72m	0.22m	0.13m	-	-
52	Timber Causeway 1016	1.09m	0.18m	0.15m	-	-
53	Timber Causeway 1016	1.70m	0.35m	0.26m	-	-
54	Timber Causeway 1016	0.93m	0.26m	0.31m	-	-

55	Timber Causeway 1016	1.81m	0.59m	0.33m	-	-
56	Timber Causeway 1016	1.04m	0.36m	0.32m	-	-
57	Timber Causeway 1016	1.69m	0.21m	0.23m	-	-
58	Timber Causeway 1016	1.20m	0.66m	0.27m	-	-
59	Timber Causeway 1016	1.08m	0.36m	0.16m	-	-
60	Timber Causeway 1016	1.67m	0.62m	0.18m	-	-
61	Timber Causeway 1016	1.16m	0.44m	0.20m	Elm	-
62	Timber Causeway 1016	1.20m	0.30m	0.22m	-	-
63	Timber Causeway 1016	1.51m	0.42m	0.21m	-	-
64	Timber Causeway 1016	1.22m	0.29m	0.18m	-	-
65	Timber Causeway 1016	0.52m	0.30m	0.09m	-	-
66	Timber Causeway 1016	1.36m	0.31m	0.13m	Oak	-
67	Timber Causeway 1016	0.51m	0.11m	0.03m	Elm	Support Timber from TP1
68	Timber Causeway 1016	0.26m	0.19m	0.05m	Elm	Support Timber from TP1
69	Timber Causeway 1016	0.35m	0.08m	0.04m	Oak	Support Timber from TP1
70	Timber Causeway 1016	0.20m	0.10m	0.04m	-	Support Timber from TP1
71	Timber Causeway 1016	0.44m	0.13m	0.03m	-	Support Timber from TP1
72	Timber Causeway 1016	0.19m	0.16m	0.03m	-	Support Timber from TP1
73	Timber Causeway 1016	0.20m	0.06m	0.03m	Elm	Support Timber from TP1
74	Timber Causeway 1016	0.71m	0.11m	0.04m	Oak	Support Timber from TP2
75	Timber Causeway 1016	0.48m	0.12m	0.02m	Oak	Support Timber from TP2
76	Tidal Defence 1034	0.28m	0.10m	0.07m	-	Recorded in Monitoring area 1
77	Tidal Defence 1034	0.18m	0.12m	0.06m	-	Recorded in Monitoring area 1
78	Tidal Defence 1034	0.34m	0.10m	0.07m	-	Recorded in Monitoring area 1
79	Tidal Defence 1034	0.16m	0.14m	0.06m	-	Recorded in Monitoring area 1
80	Tidal Defence 1034	0.12m	0.10m	0.05m	-	Recorded in Monitoring area 1
81	Tidal Defence 1034	0.16m	0.10m	0.05m	-	Recorded in Monitoring area 1
82	Tidal Defence 1034	1.22m	0.20m	0.04m	-	Recorded in Monitoring area 1
83	Tidal Defence 1034	3.02m	0.25m	0.03m	-	Recorded in Monitoring area 1
84	Tidal Defence 1034	0.56m	0.08m	0.02m	-	Recorded in Monitoring area 1
85	Tidal Defence 1034	1.31m	0.24m	0.04m	-	Recorded in Monitoring area 1
86	Tidal Defence 1034	0.40m	0.10m	0.06m	-	Recorded in Monitoring area 1

APPENDIX 2 SPECIALIST REPORTS

A Timber Assemblage from Sadds Wharf, Station Road, Maldon, Essex

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SA487ED.

Summary

This report comprises an archive providing a record of a waterlogged wood assemblage recovered during archaeological excavation at Sadds Wharf, Maldon, Essex. The timbers were found in the remains of a sea defence and a possible trackway. The assemblage comprises a mixture of converted oak (*Quercus* spp.) and elm (*Ulmus* spp.) timbers. Tree-ring dating of the one suitable oak timber failed to provide an absolute date. Analysis of woodworking technology (toolmarks/fittings etc) indicates conversion by sawing, possible re-use of some timbers and a likely post-medieval date for the assemblage. Much of the timber, particularly the elm used in the possible trackway, is interpreted as waste resulting from the production of squared baulks or planks by sawing off the outer part of the parent trees.

Acknowledgements

The authors are grateful to Britannia Archaeology for supplying contextual information about the timbers and for providing digitised plans and photographs of the site.

Introduction

The timbers were uncovered during excavation prior to development of what was formerly a riverside timber yard and wharf. Britannia Archaeology undertook the excavation and provided all information regarding the context of each timber in the assemblage, including digitized plans and in-situ photographs of the timbers. To summarise, the assemblage is derived from two locations within the site.

The first, a 19th century tidal wall appears on a plan in 1873 and associated finds would suggest a similar date. The samples consist of timber numbers 1, 2, 3, 12, 16, 20 and 22. The other site is a probable timber causeway and the surface samples consist of timber numbers 34, 36, 43, 66 and 61. Timber Numbers 67, 68, 69, 70, 72, 73, 74, and 75 were extracted from two test pits that were dug through the compressed layer of wood at the western end of the causeway trench.

Methods

Timber recording

Each timber was recorded using *pro forma* wood record sheets including scale sketches complemented by overall photographs or photomosaics, and photographs of details such as toolmarks and fittings, in line with guidance on the recording of waterlogged wood (English Heritage 2010). All the information gathered during recording has been analysed to provide information on the nature of the assemblage and the tools employed.

Dendrochronology

Methods employed at the Lampeter Dendrochronology Laboratory in general follow those described in English Heritage guidance (English Heritage 1998).

Samples were surfaced by hand using razor blades so that the ring sequence could be clearly discerned and measured. The complete sequence of growth rings in each sample was measured to an accuracy of 0.01mm using a micro-computer based travelling stage (Tyers 2004). Cross-correlation algorithms (Baillie and Pilcher 1973; Munro 1984) are employed to search for positions where the ring sequences are highly correlated against each other. A *t*-value of 3.5 or over is usually indicative of a good match, although this is with the proviso that high *t*-values at the same relative or absolute position must be obtained from a range of independent sequences, and that satisfactory visual matching supports these positions. Correlated positions are checked visually using computerised ring-width plots.

Wood species

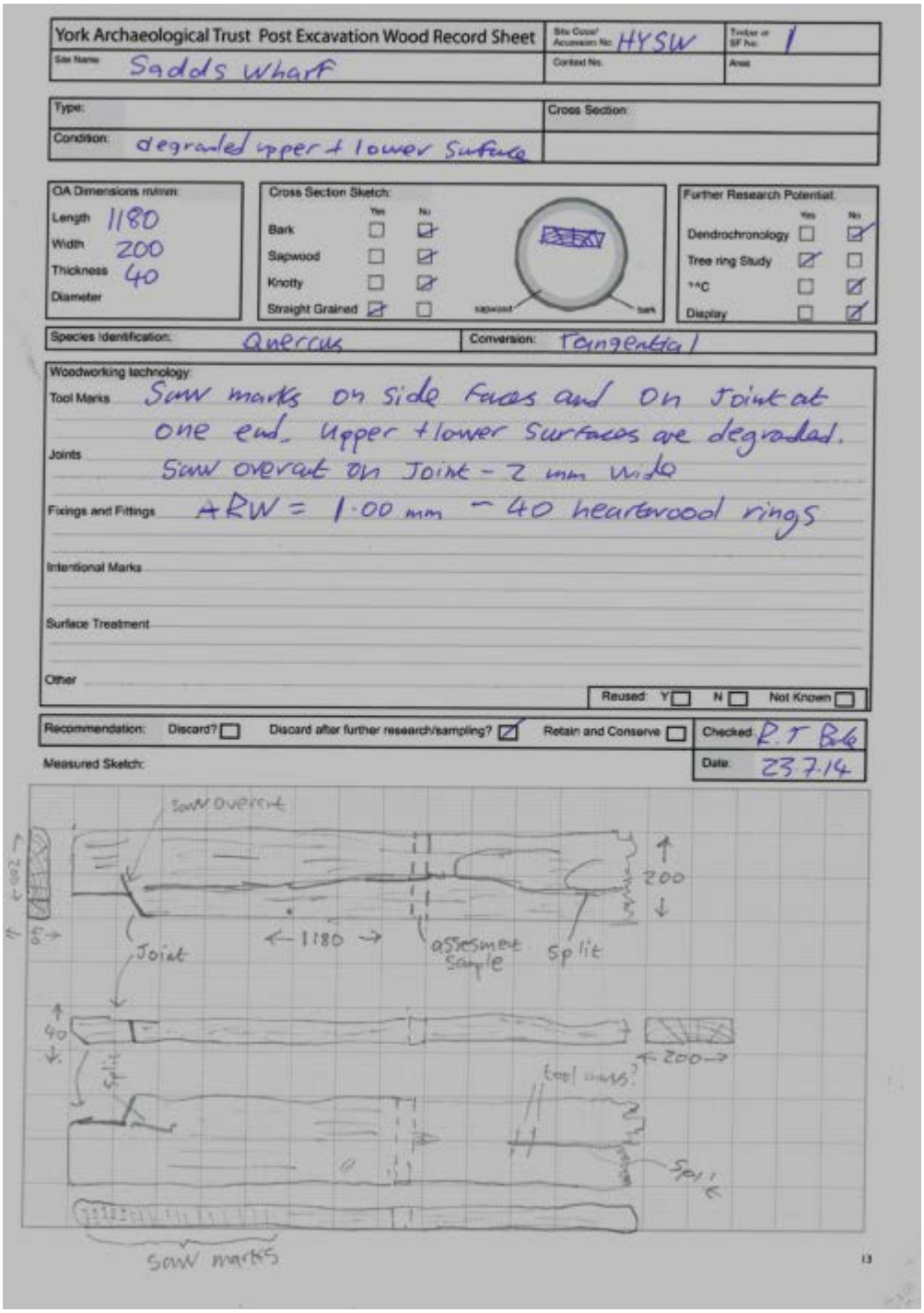
Timber of the oak genus (*Quercus* spp.) can be identified by eye through observation of the ring porous nature of its annual rings and the presence of wide, multi-seriate medullary rays. The two species of oak native to Britain, sessile and pedunculate, cannot be discriminated on the basis of wood anatomy. Whilst timber made from elm (*Ulmus* spp.) often exhibits characteristic tangential banding

of parenchyma, formal identification of elm was achieved through preparation of thin sections which were examined microscopically and compared to reference material and photomicrographs and wood anatomy keys (e.g. Schweingruber, 1982).

Several pieces of bark were identified during the assessment phase (HYSW_34, HYSW_43 and HYSW_68). Species identification of archaeological bark is (with a few exceptions such as cork oak bark) not possible. All the pieces of bark are from the timber surface area of the site and were probably derived from timber processing waste, as with the other components of the surface.

Results

Sea defence timbers



York Archaeological Trust Post Excavation Wood Record Sheet

Site Name: Sadds Wharf | Site Code/Accession No: HYSW | Timber or SF No: 1 | Context No: | Area:

Type: | Cross Section:

Condition: degraded upper + lower surfaces

OA Dimensions mm:
Length 1180
Width 200
Thickness 40
Diameter

Cross Section Sketch:

	Yes	No
Bark	☐	☑
Sapwood	☐	☑
Knotty	☐	☑
Straight Grained	☑	☐

Further Research Potential:

	Yes	No
Dendrochronology	☐	☑
Tree ring Study	☑	☐
^{14}C	☐	☑
Display	☐	☑

Species Identification: Quercus | Conversion: Tangential

Woodworking technology:
Tool Marks: Saw marks on side faces and on joint at one end. Upper + lower surfaces are degraded.
Joints: Saw overcut on joint - 2 mm wide
Fixings and Fittings: ARW = 1.00 mm - 40 heartwood rings
Intentional Marks:
Surface Treatment:
Other:
Reused: Y ☐ N ☐ Not Known ☐

Recommendation: Discard? ☐ Discard after further research/sampling? ☑ Retain and Conserve ☐ | Checked: R.T Bate | Date: 23.7.14

Measured Sketch:

Figure 1 Wood record sheet for timber 1

Figure 2 Photograph of timber 1

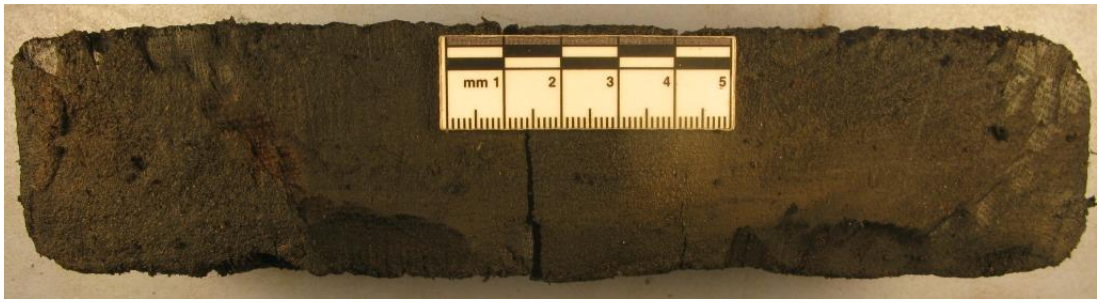


Figure 3 Photograph of cross section through timber 1

Figure 4 Photograph of timber 1

Figure 5 Photograph of saw marks on timber 1

Figure 6 Photograph of 1/2 lap joint and saw overcut on timber 1. Scale=1cm

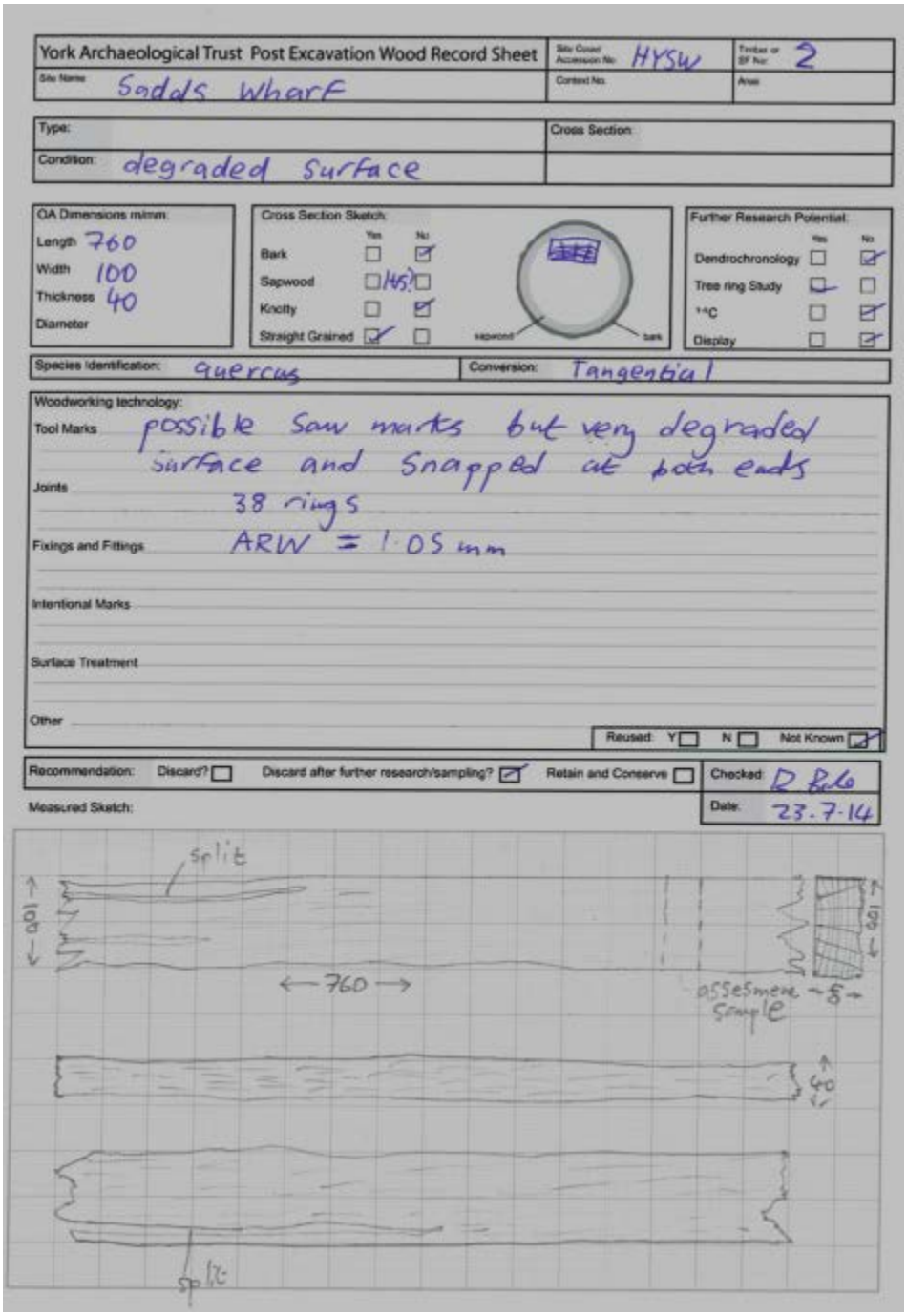


Figure 7 Wood record sheet for timber 2

Figure 8 Photograph of timber 2

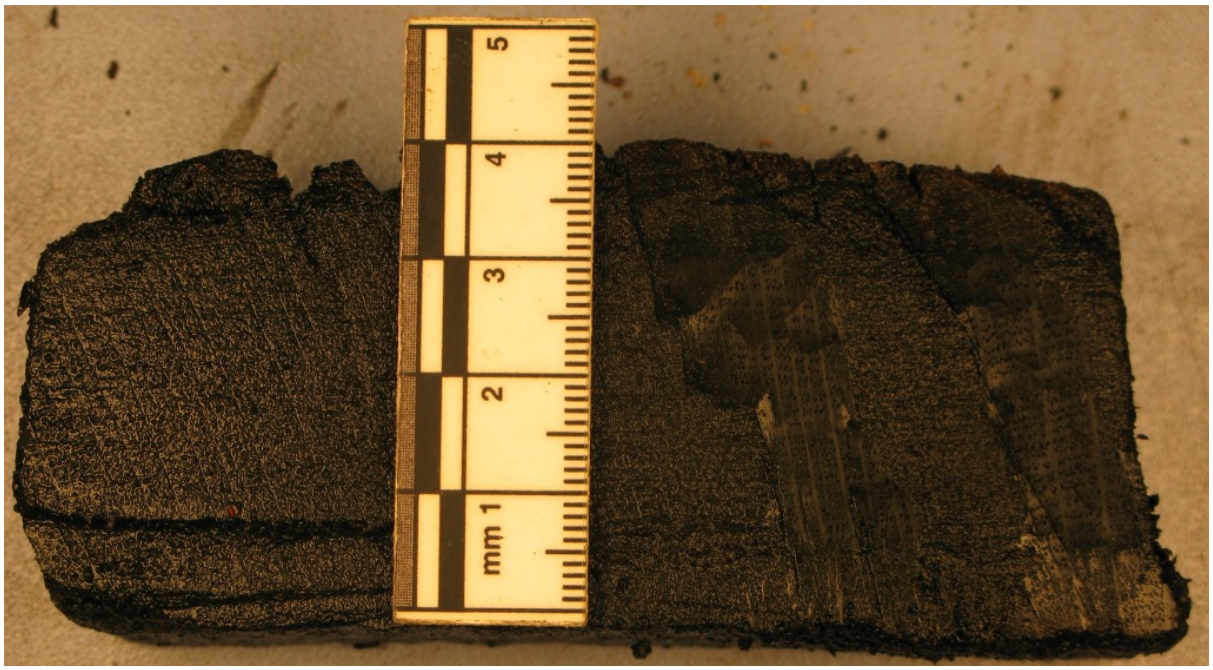


Figure 9 Photograph of cross section through timber 2 showing growth rings

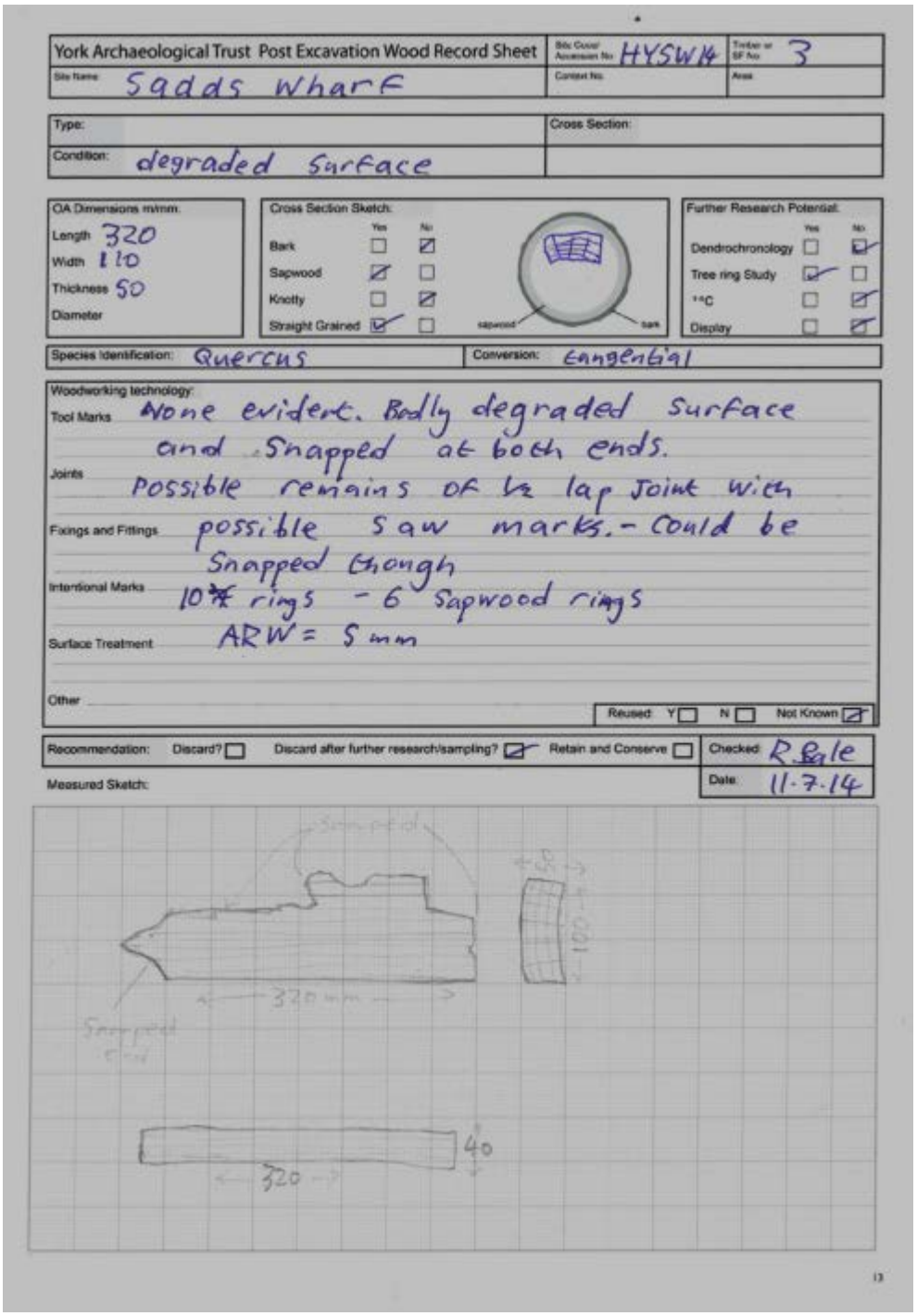


Figure 10 Wood record sheet for timber 3

Figure 11 Photograph of timber 3

Figure 12 Photograph of timber 3

Figure 13 Photograph of cross section through timber 3

Figure 14 Photograph of saw marks on timber 3. Scale=1cm

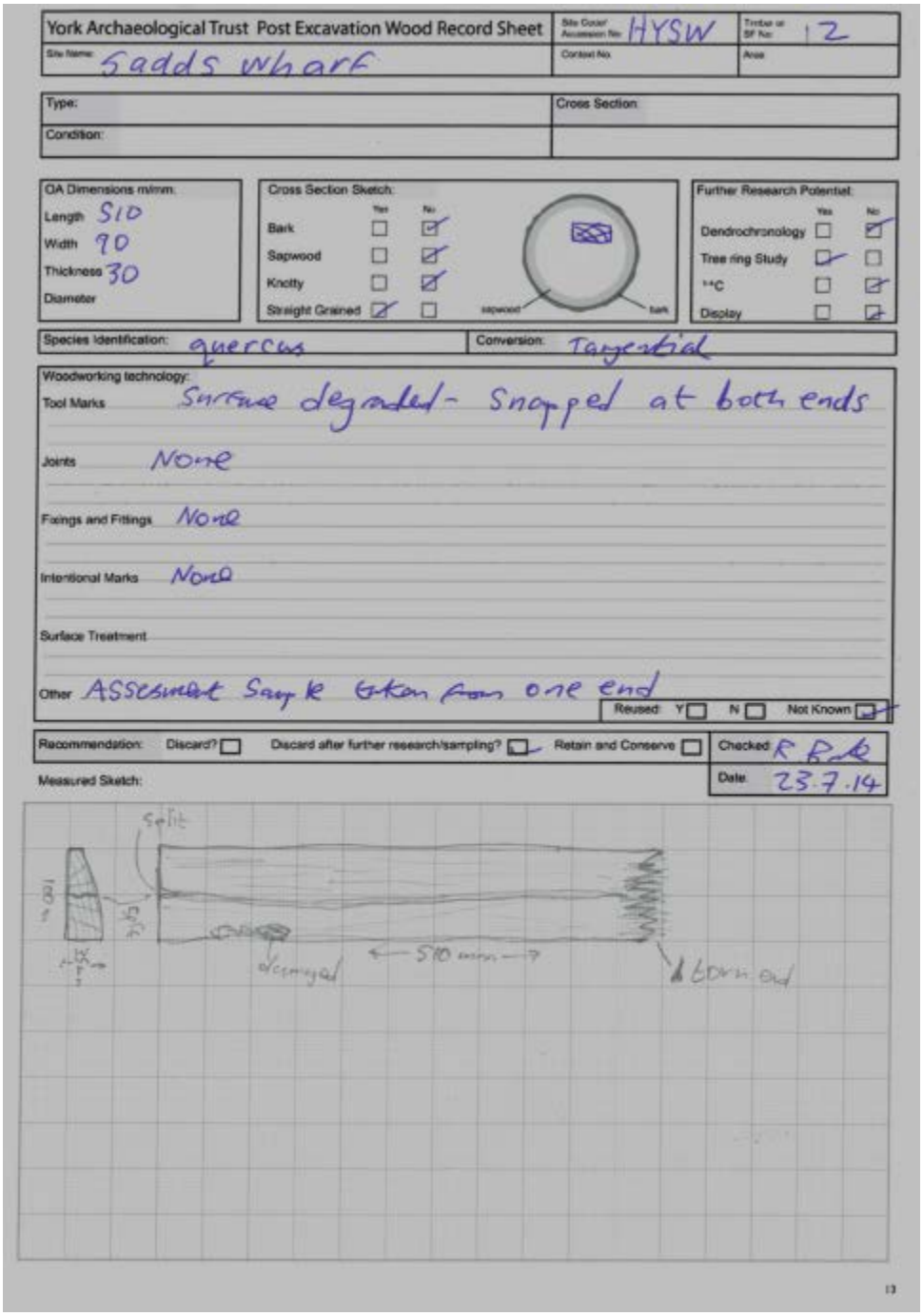


Figure 15 Wood record sheet for timber 12

Figure 16 Photograph of timber 12

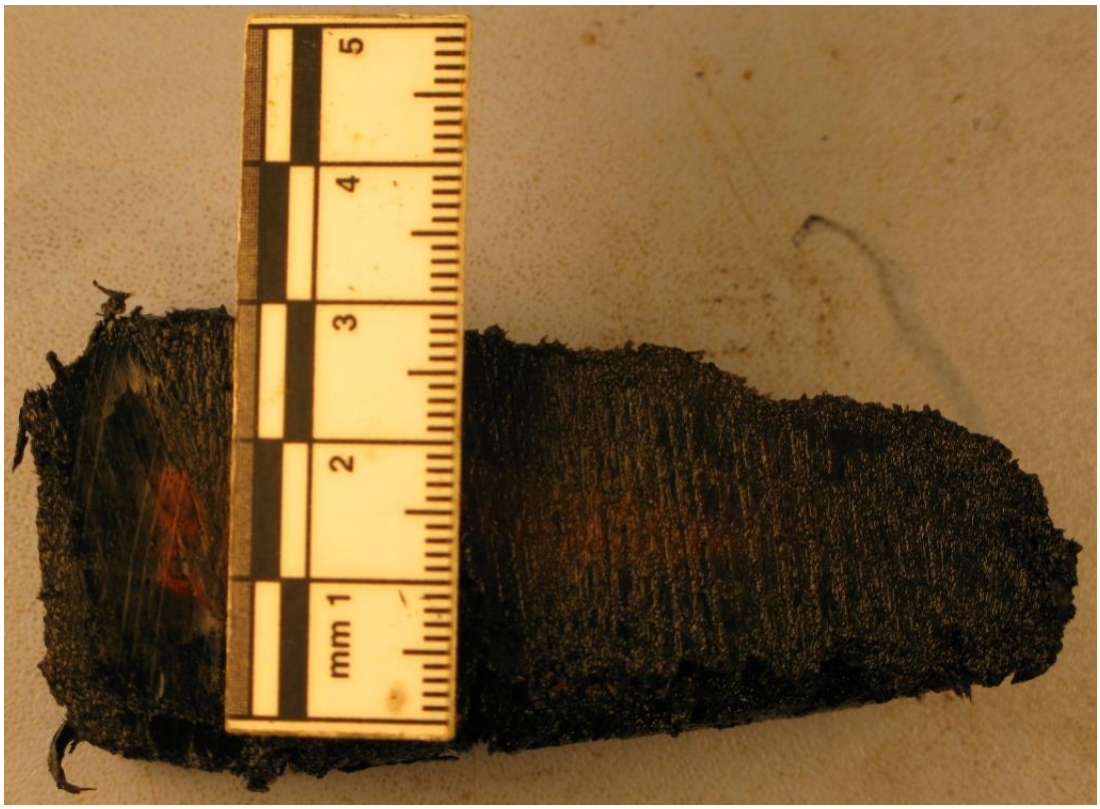


Figure 17 Photograph of cross section through timber 12

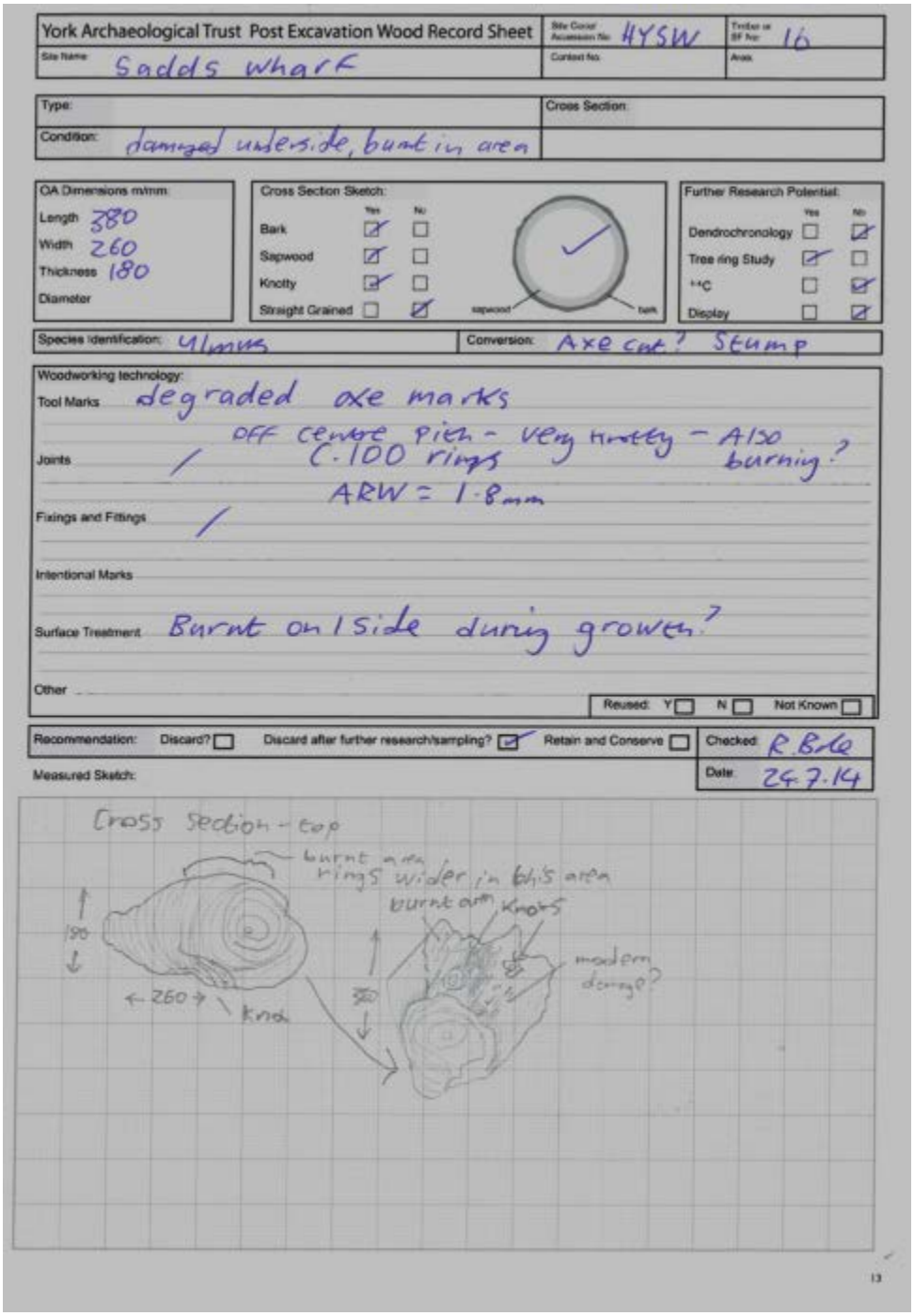


Figure 18 Wood record sheet for Timber 16

Figure 19 Photograph of timber 16 showing burnt area

Figure 20 Photograph of timber 16 showing charred area on right of stump

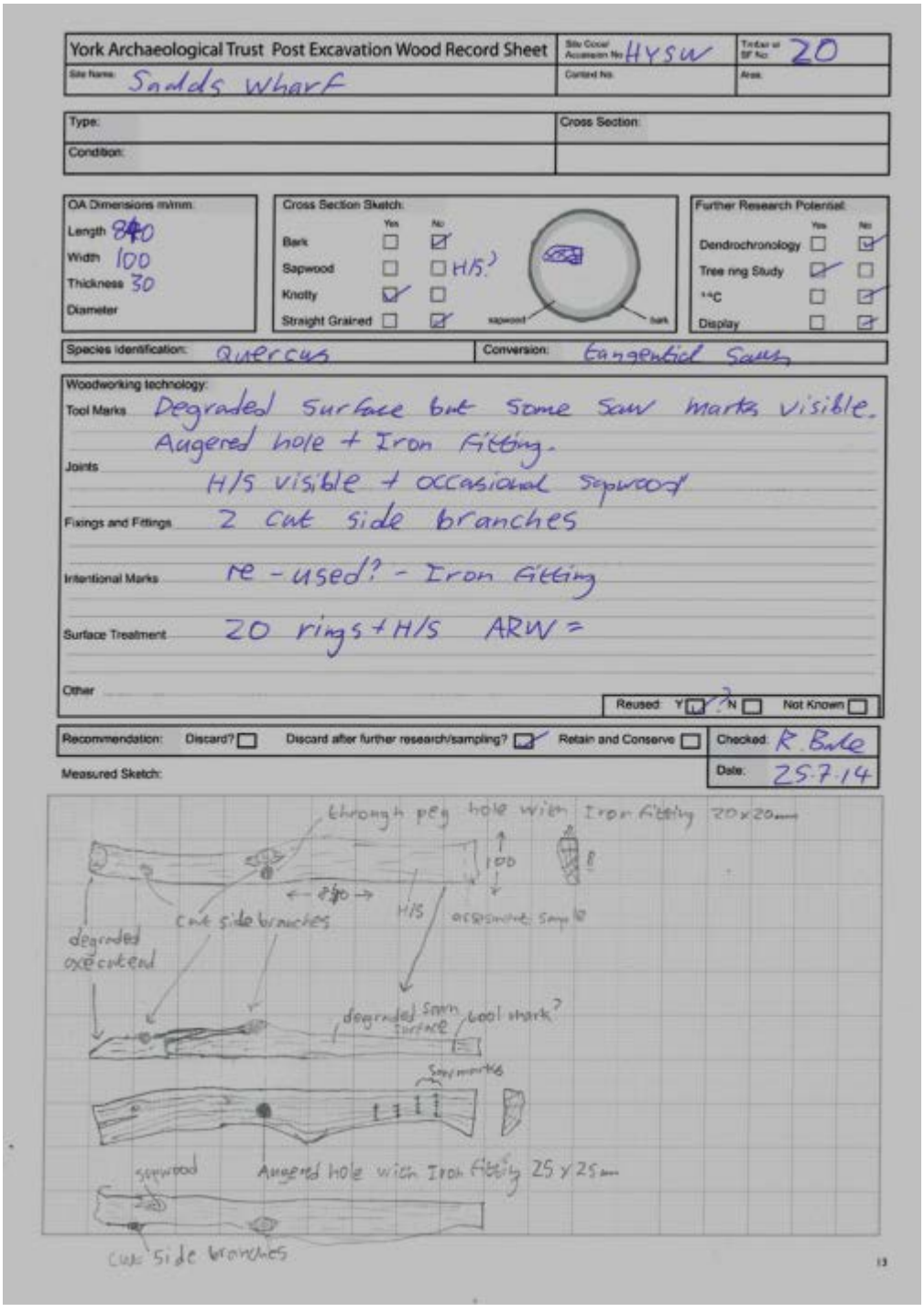


Figure 21 Wood record sheet for timber 20

Figure 22 Photograph of timber 20

Figure 23 Photograph of timber 20

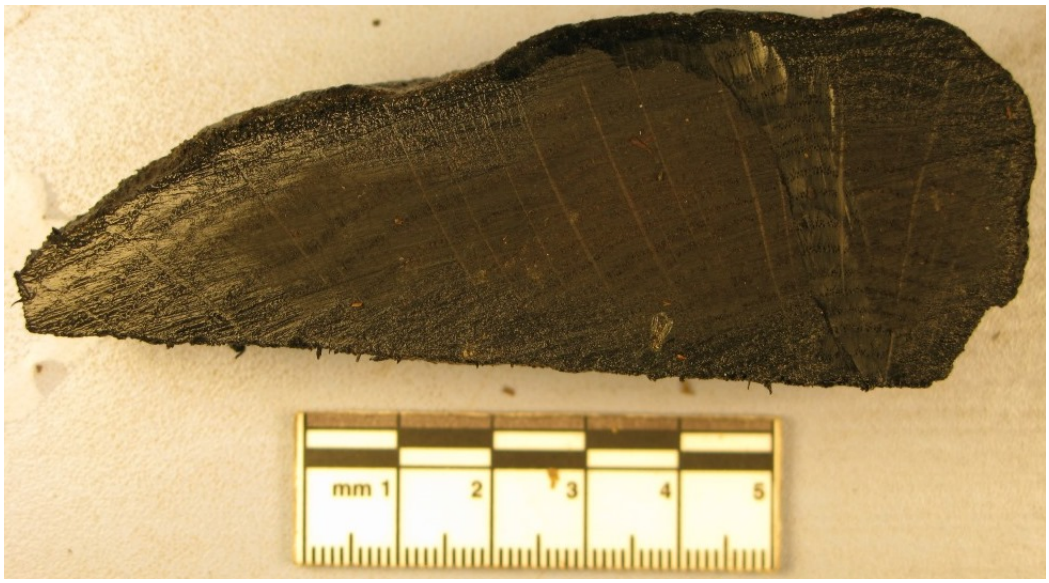


Figure 24 Photograph of cross section through timber 20

Figure 25 Photograph of iron fitting on timber 20

Figure 26 Photograph of iron fitting on timber 20

Figure 27 Photograph of tool mark on timber 20

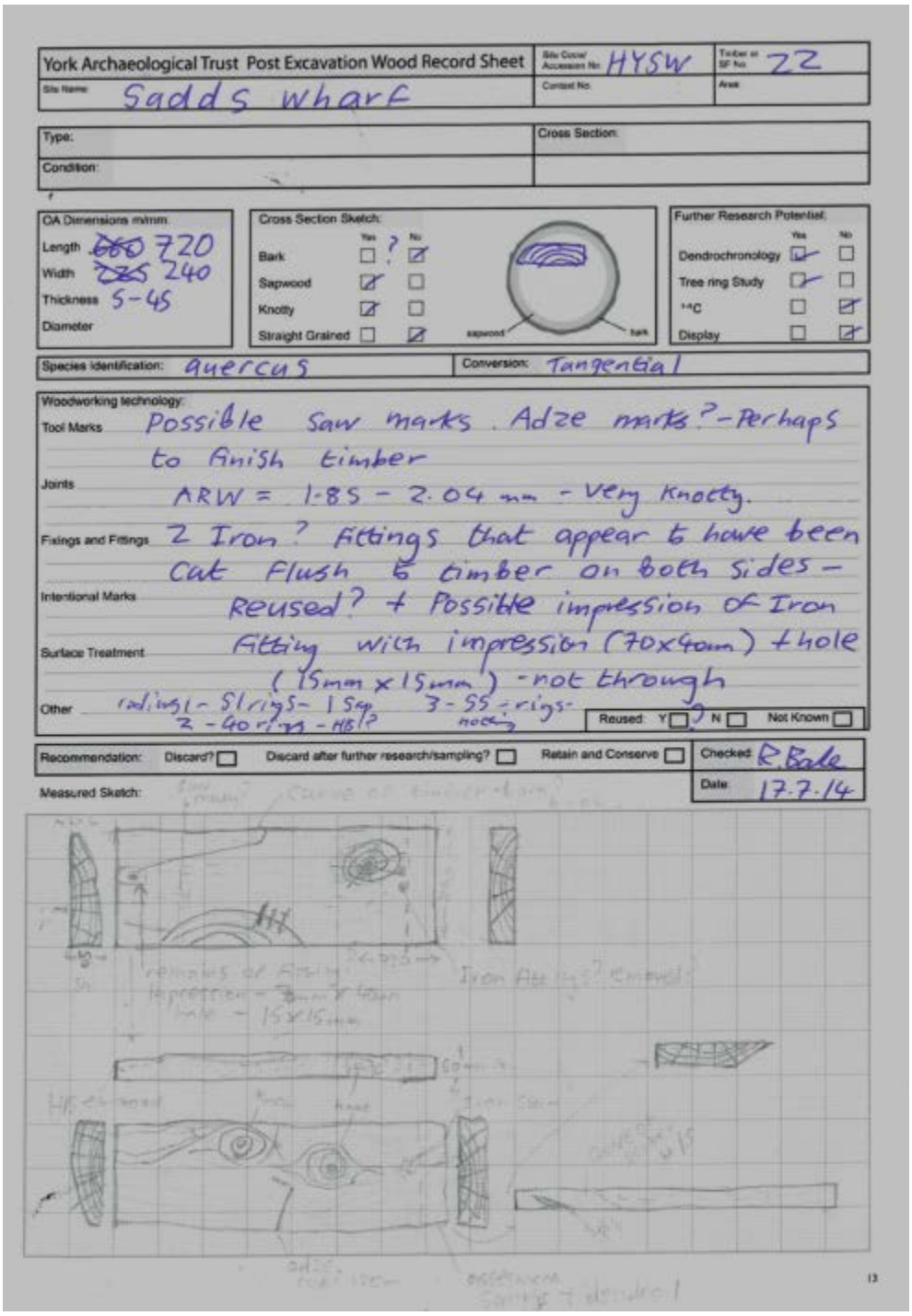


Figure 28 Wood record sheet for timber 22

Figure 29 Photograph of timber 22

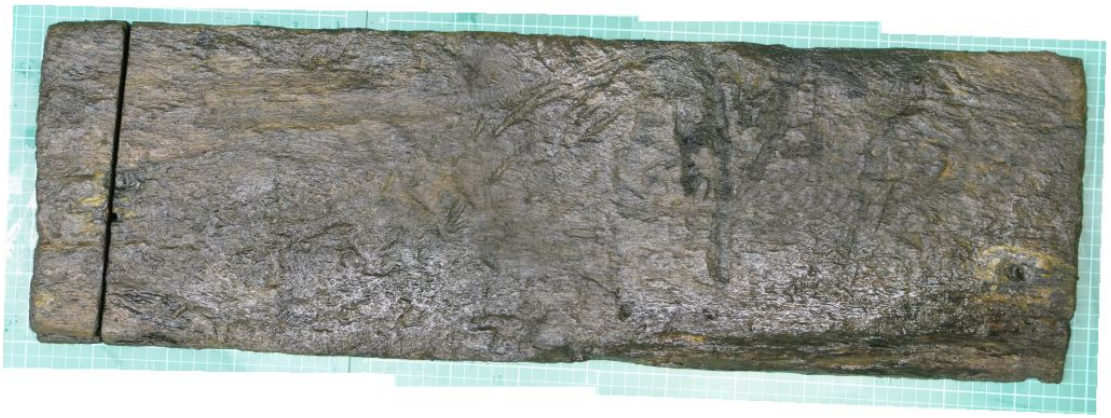


Figure 30 Photograph of timber 22

Figure 31 Photograph of dendro sample 1 from timber 22

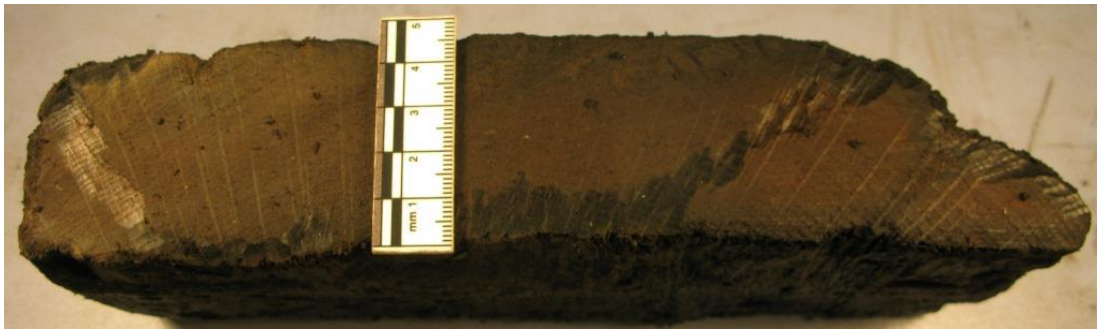


Figure 32 Photograph of dendro sample 2 from timber 22

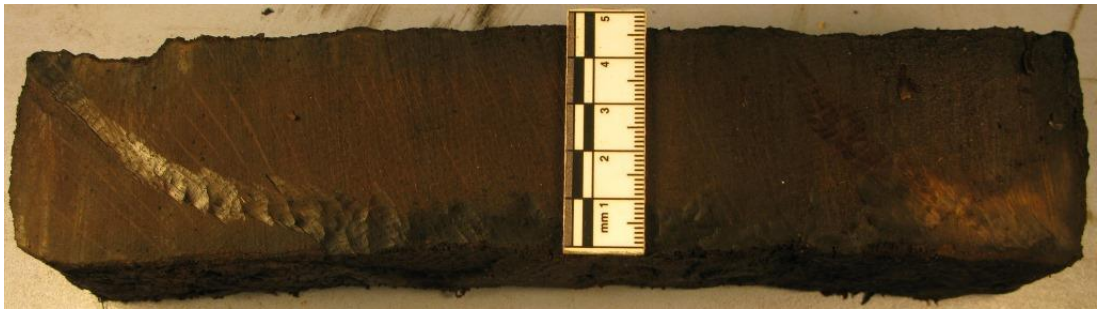


Figure 33 Photograph of dendro sample 3 from timber 22 showing the knotty nature of the timber on right

Figure 34 Photograph of adze mark on timber 22

Figure 35 Photograph of Iron fitting and head compression on timber 22

Figure 36 Photograph of iron fittings on timber 22

Sea defence timbers- interpretation

Details of the recorded sea defence timbers are outlined in Table 1. Timbers 1, 2, 20 and 22 are tangentially sawn oak planks used as the horizontal elements of the retaining walls. These four timbers are similar in nature with between 20 and 55 annual rings and average ring widths between 0.65 and 1.05mm. One timber (HYSW_22) contained sufficient rings (i.e. more than 50) to warrant tree-ring analysis with the hope of producing an absolute date. However, despite measuring three different radii (Figures 29, 30 and 31) no match was found with British, Irish, European or American oak reference chronologies. The three measured sequences from this timber show very low correlation between each other (Table 2) and may be characterised by what is termed a complacent ring width pattern, where annual growth varies little from year to year and is more a product of the individual trees growth response than to regional climate. The half lap joint on HYSW_1 may indicate that it is a re-used timber as no evidence of a reciprocal joint is evidenced on timber 2. The iron fittings evident on HYSW_20 and HYSW_22 likewise suggest possible re-use. The two vertical elements of the retaining walls analysed (HYSW_3 and 12) are both oak and share similar characteristics (see Table 1) suggesting they are contemporary. All the oak timbers from the sea defence are tangentially sawn,

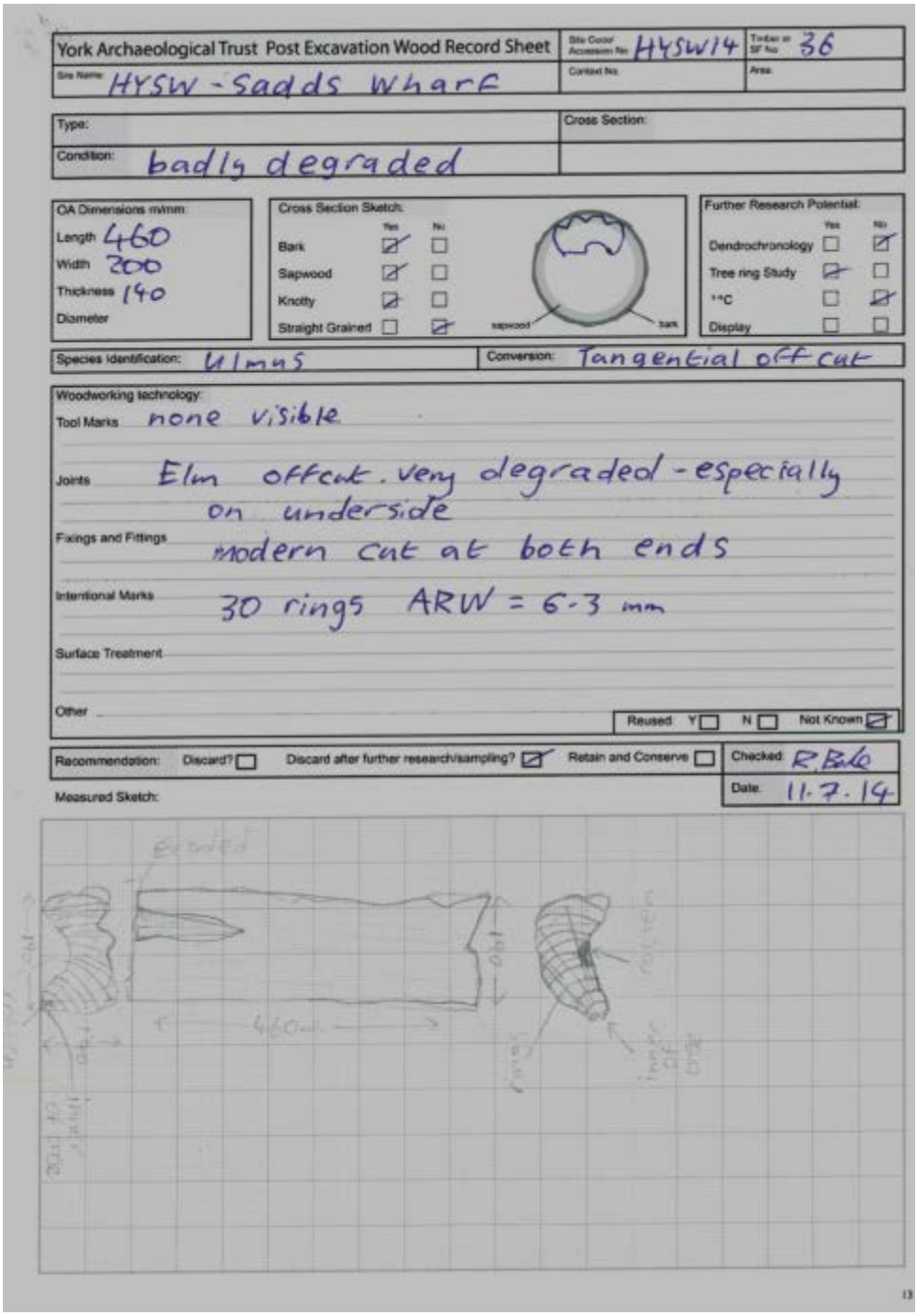
with some saw marks visible. Figure 6 shows a saw overcut on HYSW_1 and indicates that the width of the saw blade employed was 2mm.

HYSW_16 is an axe cut elm stump containing around 100 growth rings. It is partially charred and the tree growth indicates this may have happened while the tree was still alive.

The tree species employed in the sea defence construction, along with the conversion method suggest a post medieval date. The timber, particularly the elm is likely to be of local (British) origin. Oak and elm were the two of the most favoured species for wood working as evidenced by historical accounts of post-medieval shipbuilding, the presence of large elm trees in 18th/19th century landscape paintings and books written on post medieval tree planting and timber use (Evelyn, 1670; Rackham, 2003).

The horizontal oak planks used in the sea defence are probably re-used, as the metal fittings appear to have been partially removed and were not used as fixtures to the vertical elements of the retaining wall. The elm stump (HYSW_16) is likely to be woodworking waste, and along with the other larger stump present, have been used to add stability to the structure. In all, the probable re-use of the oak timbers and utilization of woodworking waste suggests a fairly lowly structure, perhaps not expected to last a long time, but fit for purpose, and perhaps patched up periodically with re-used planking and timber waste that happened to be available.

Timber surface timbers


York Archaeological Trust Post Excavation Wood Record Sheet

Site Name: HYSW - Sadds Wharf | Site Coord/Accession No: HYSW14 | Timber or SF No: 36 | Context No: | Area:

Type: | Cross Section:

Condition: badly degraded

OA Dimensions mm/m: Length 460, Width 200, Thickness 140, Diameter

Cross Section Sketch: Bark Yes ☑, Sapwood Yes ☑, Knotty Yes ☑, Straight Grained No ☑

Further Research Potential: Dendrochronology No ☑, Tree ring Study Yes ☑, ^{14}C No ☑, Display

Species Identification: Ulmus | Conversion: Tangential off cut

Woodworking technology:
Tool Marks: none visible
Joints: Elm offcut. very degraded - especially on underside
Fixings and Fittings: modern cut at both ends
Intentional Marks: 30 rings ARW = 6-3 mm
Surface Treatment:
Other:

Reused: Y ☐ N ☐ Not Known ☑

Recommendation: Discard? ☐ Discard after further research/sampling? ☑ Retain and Conserve ☐ | Checked: R.B.G | Date: 11.7.14

Measured Sketch:

Figure 37 Wood record sheet for timber 36

Figure 38 Photograph of timber 36

Figure 39 Photograph of underside of timber 36

Figure 40 Photograph of cross section through timber 36

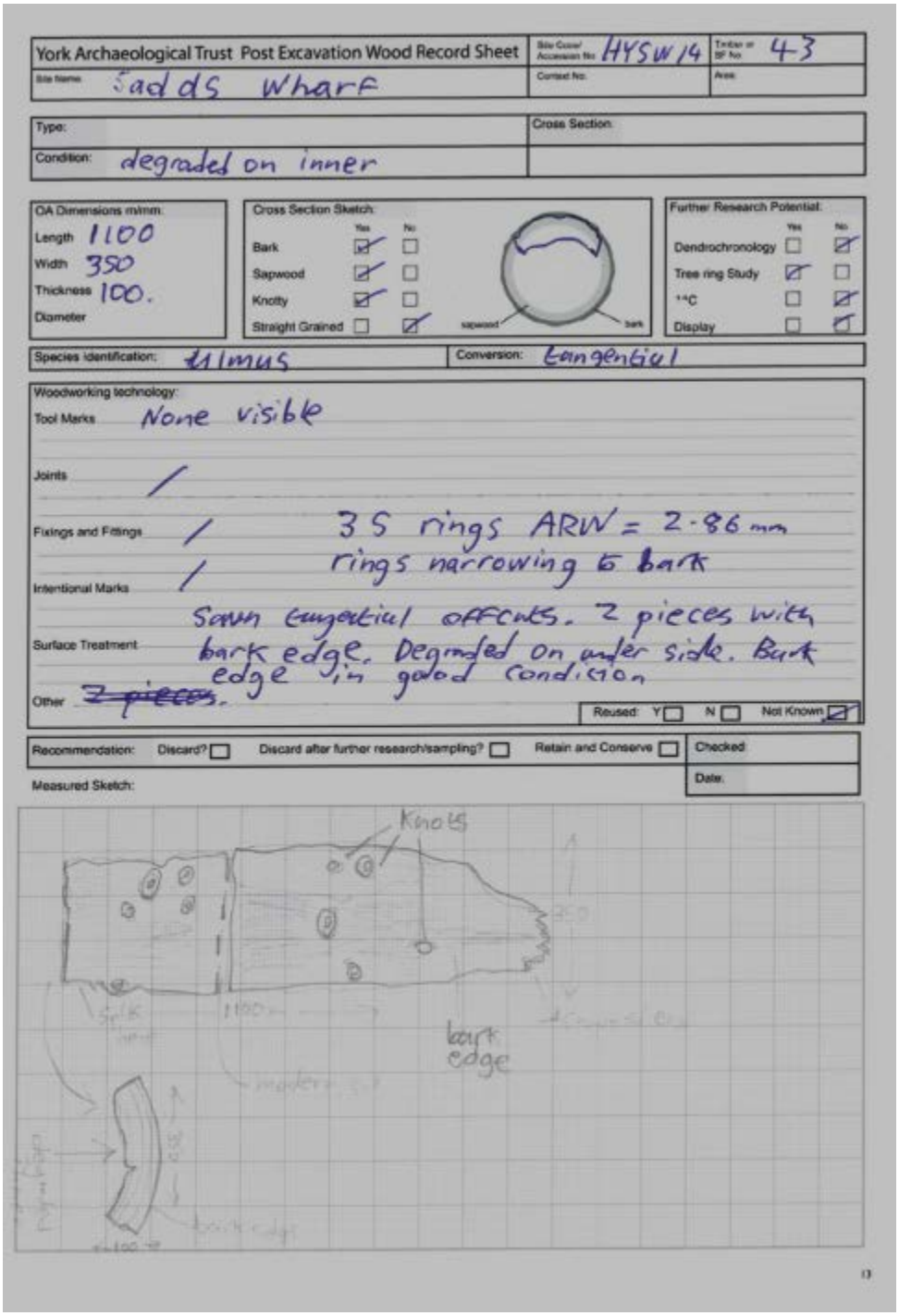


Figure 41 Wood record sheet for timber 43

Figure 42 Photograph of bark edge side of timber 43

Figure 43 Photograph of underside of timber 43

Figure 44 Photograph of cross section of timber 43

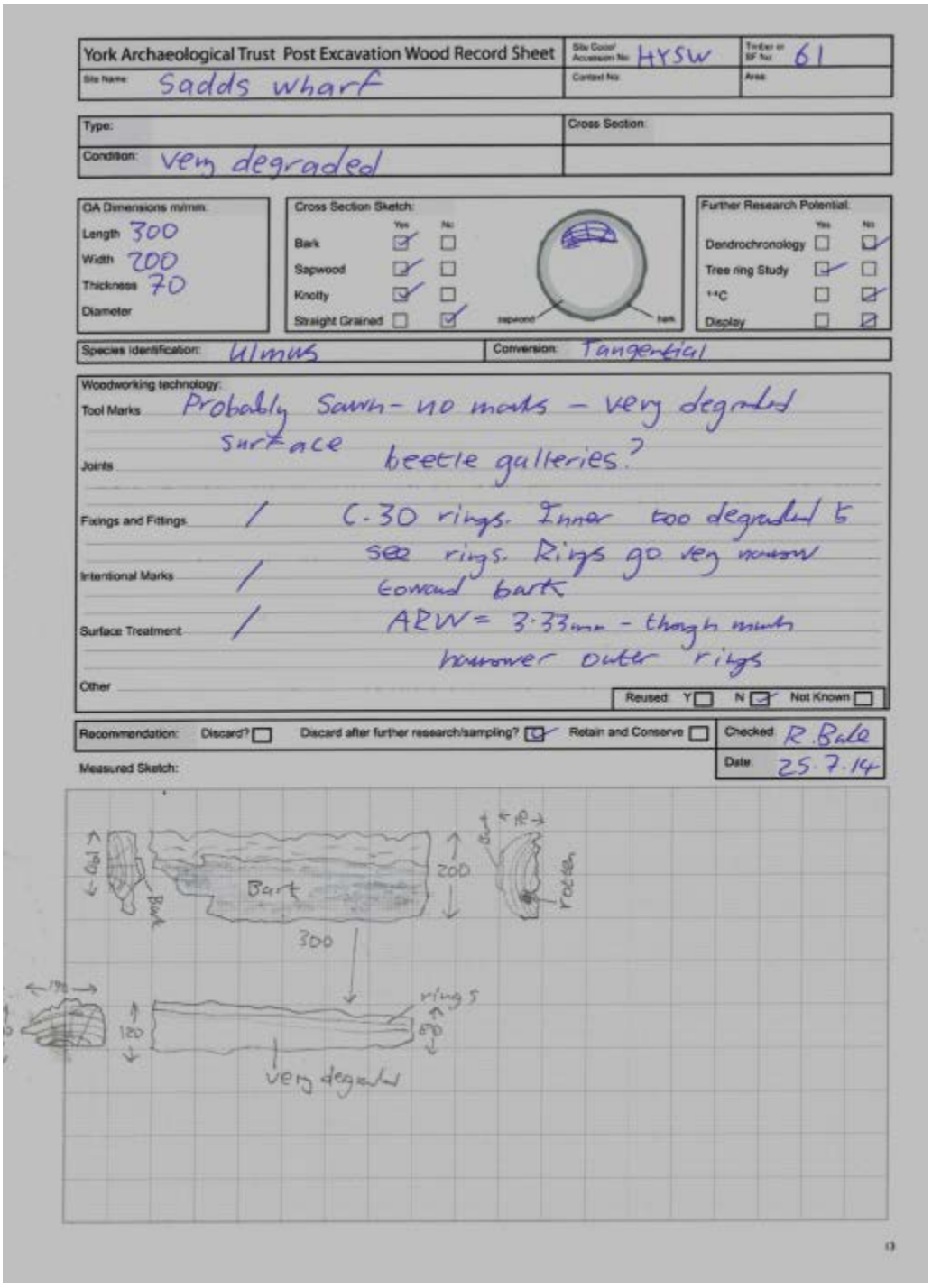


Figure 45 Wood record sheet for timber 61

Figure 46 Photograph of timber 61

Figure 47 Photograph of cross section through timber 61

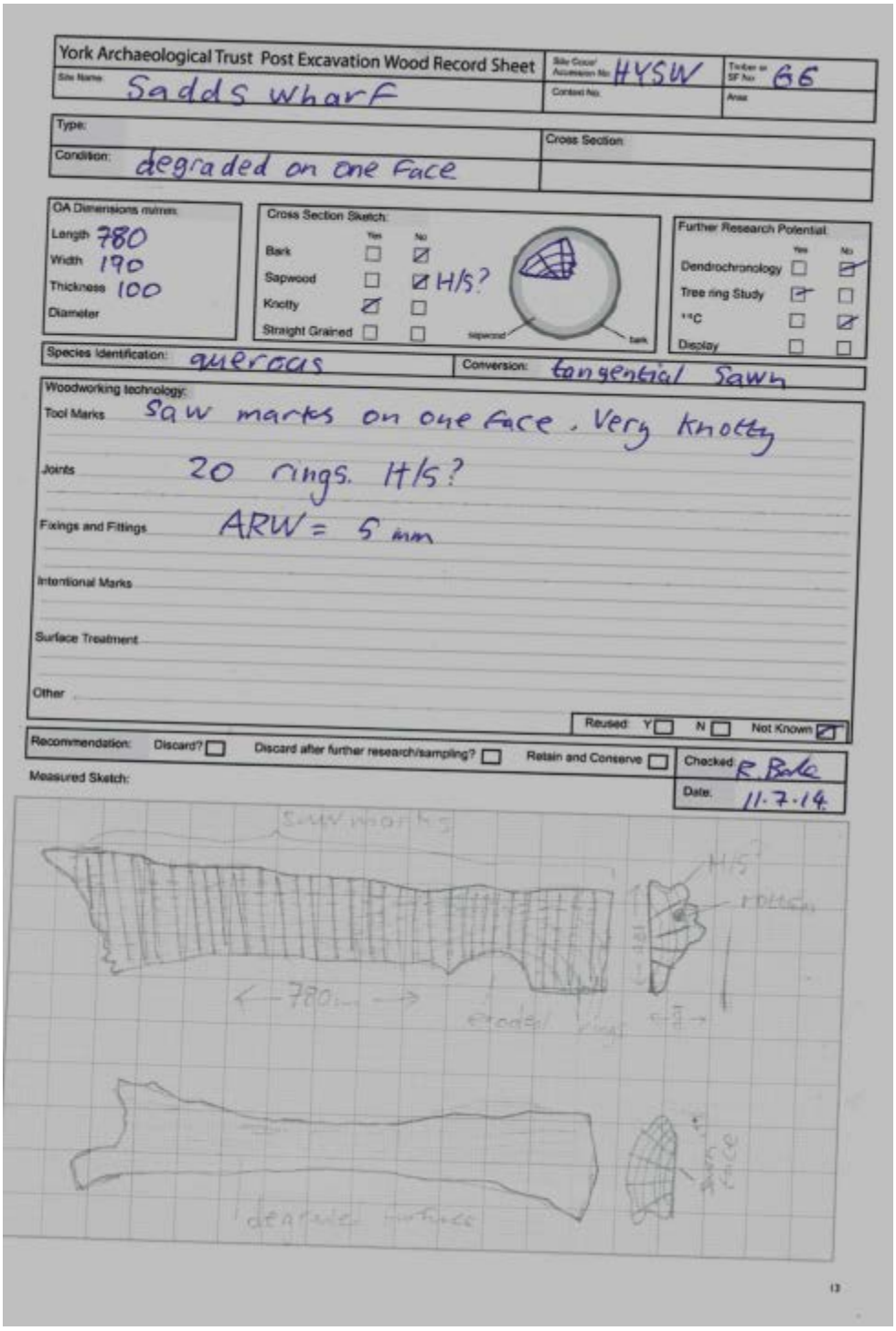


Figure 48 Wood record sheet for timber 66

Figure 49 Photograph of outer face of timber 66

Figure 50 Photograph of sawn face of timber 66

Figure 51 Photograph of saw marks on timber 66

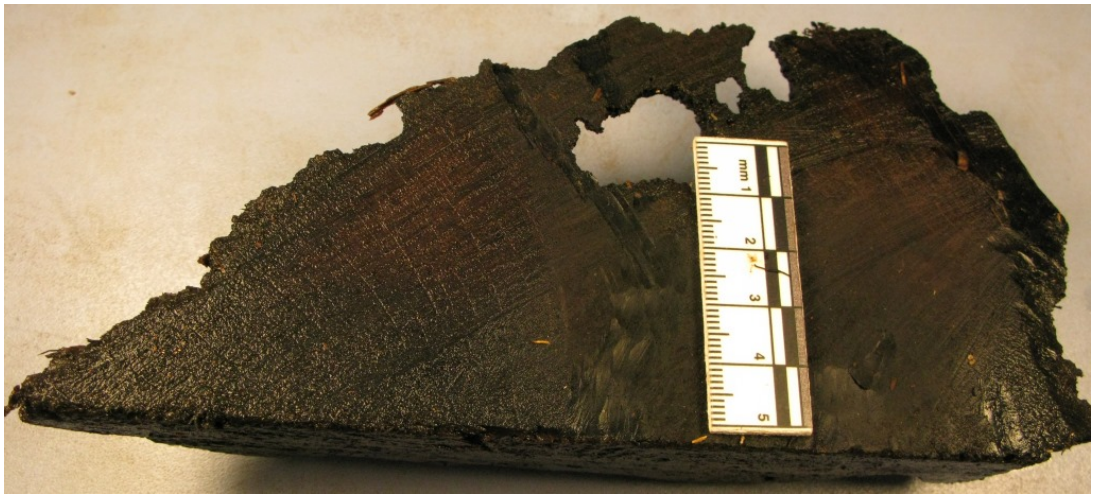


Figure 52 Photograph of cross section through timber 66

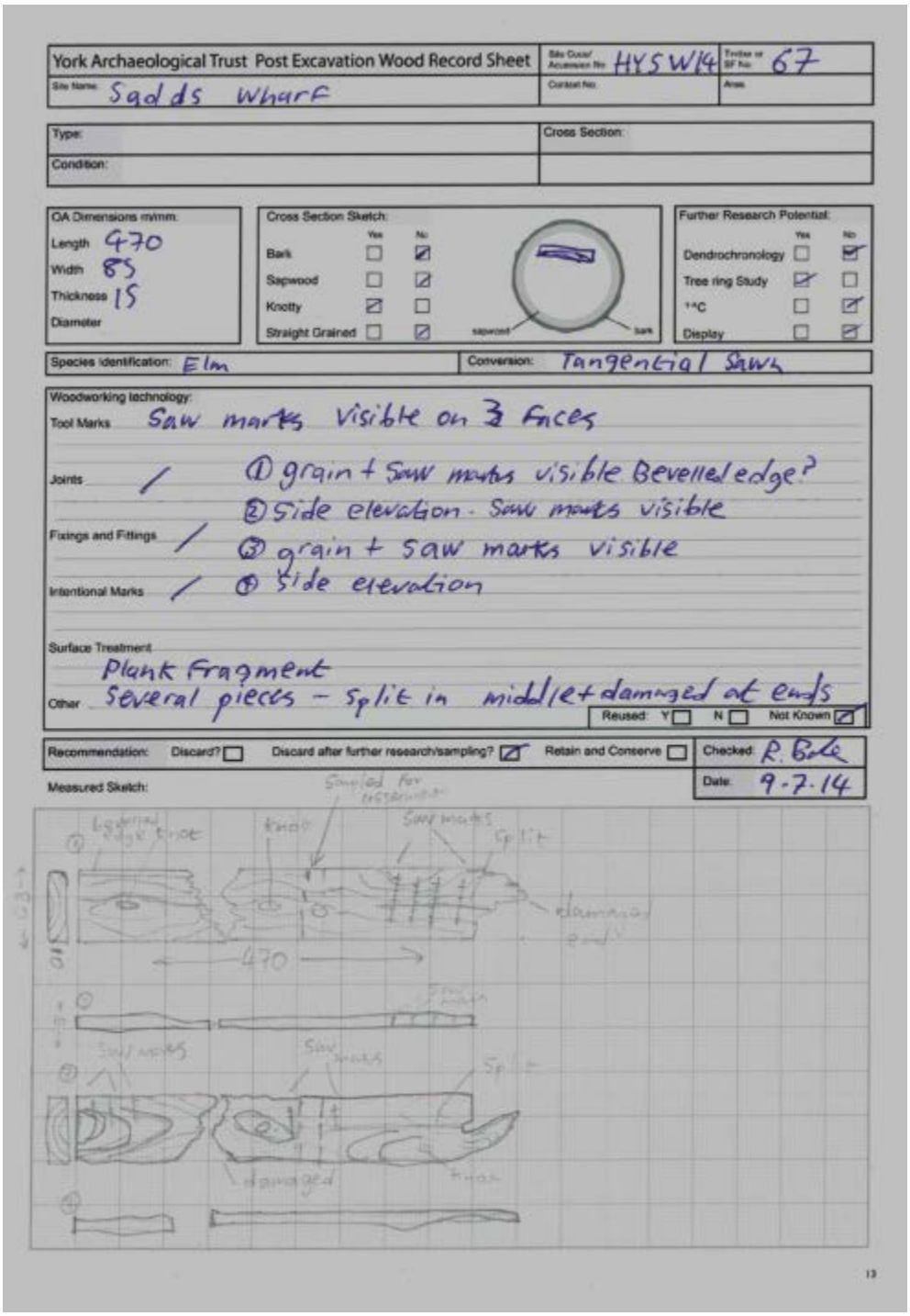


Figure 53 Wood record sheet for timber 67

Figure 54 Photograph of timber 67

Figure 55 Photograph of saw marks on timber 67

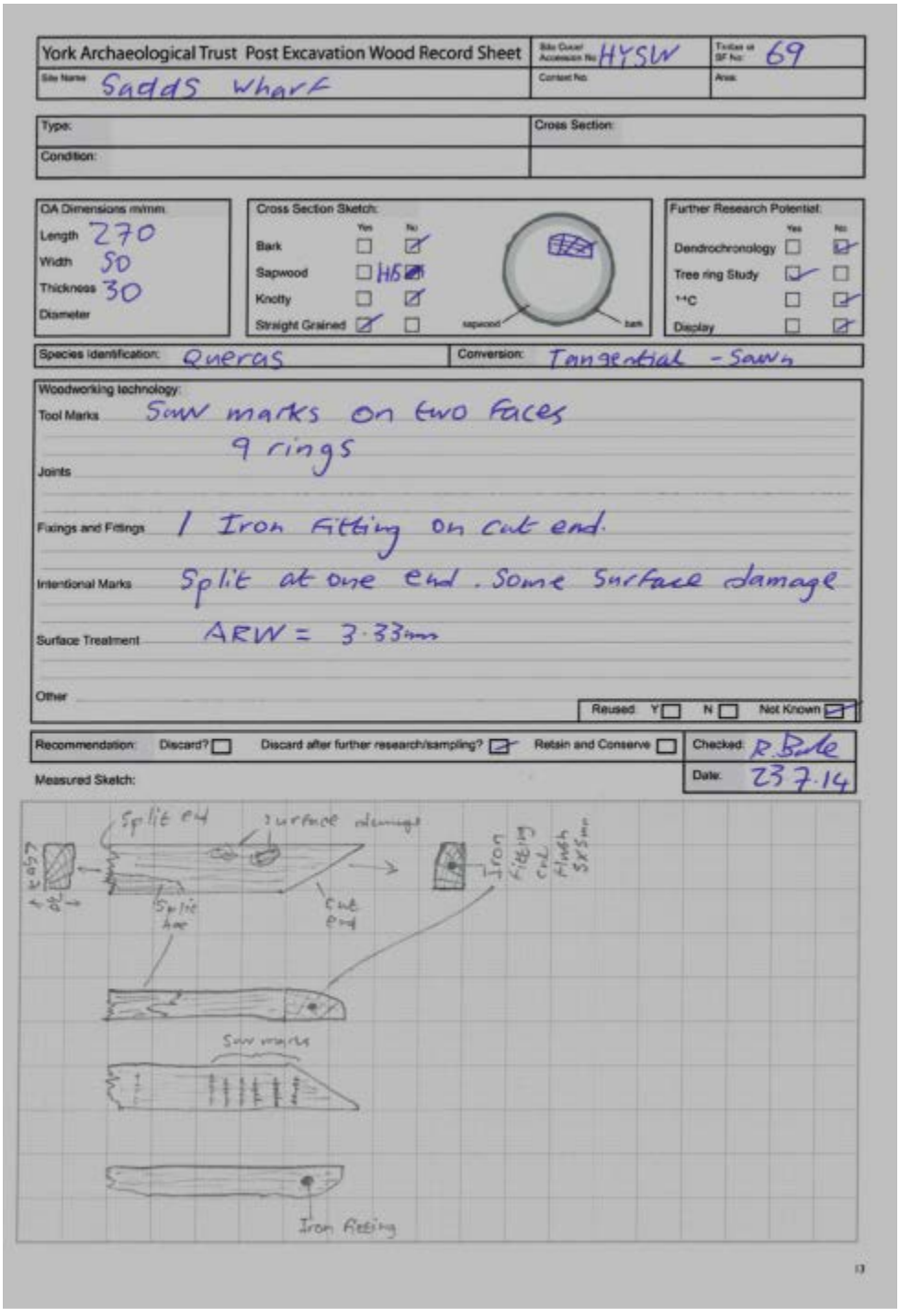


Figure 56 Wood record sheet for timber 69

Figure 57 Photograph of timber 69

Figure 58 Photograph of timber 69

Figure 59 Photograph of saw marks on timber 69

Figure 60 Photograph of iron fitting on timber 69

Figure 61 Photograph of timber 69 with iron fitting at left end

Figure 62 Photograph showing growth rings, iron fitting and saw marks on timber 69

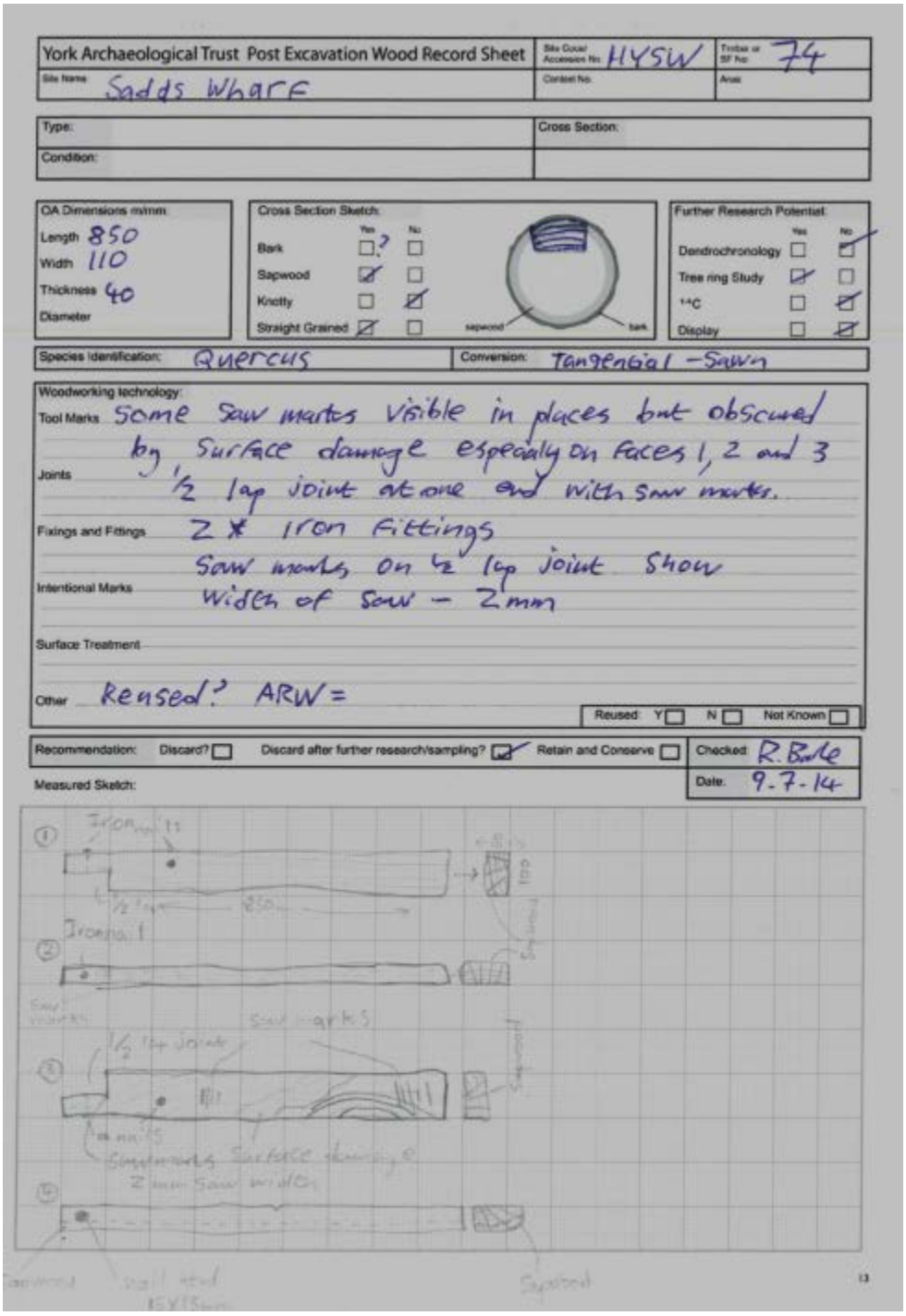


Figure 63 Wood record sheet for timber 74

Figure 64 Photograph of timber 74

Figure 65 Photograph of timber 74

Figure 66 Photograph of timber 74

Figure 67 Photograph of timber 74

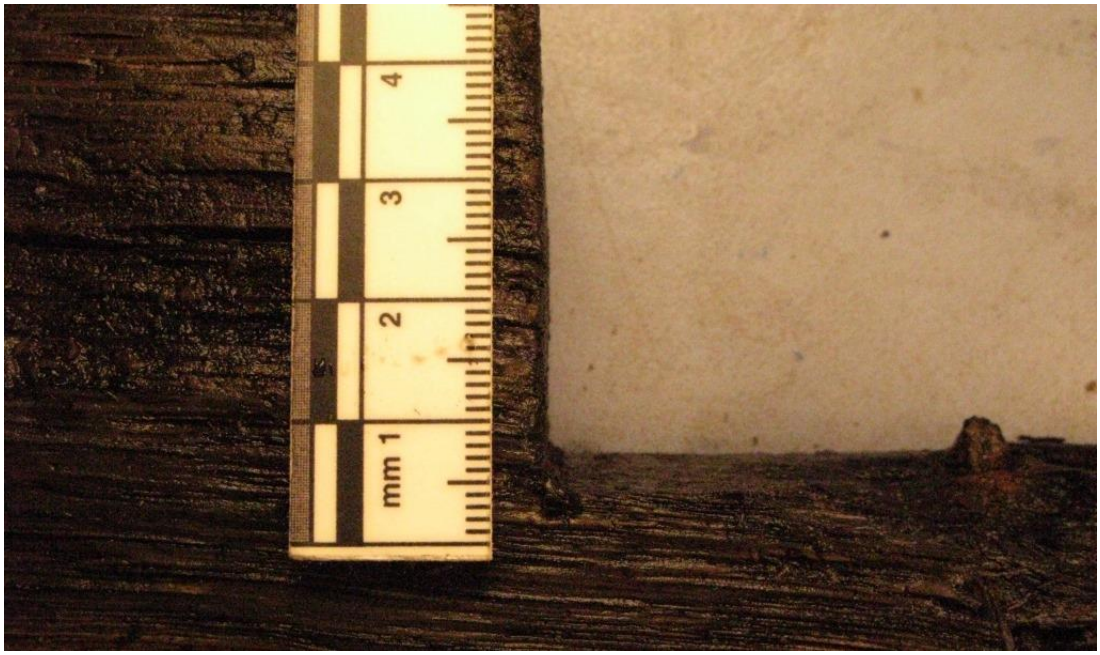


Figure 68 Photograph showing saw overcut and iron fitting on timber 74

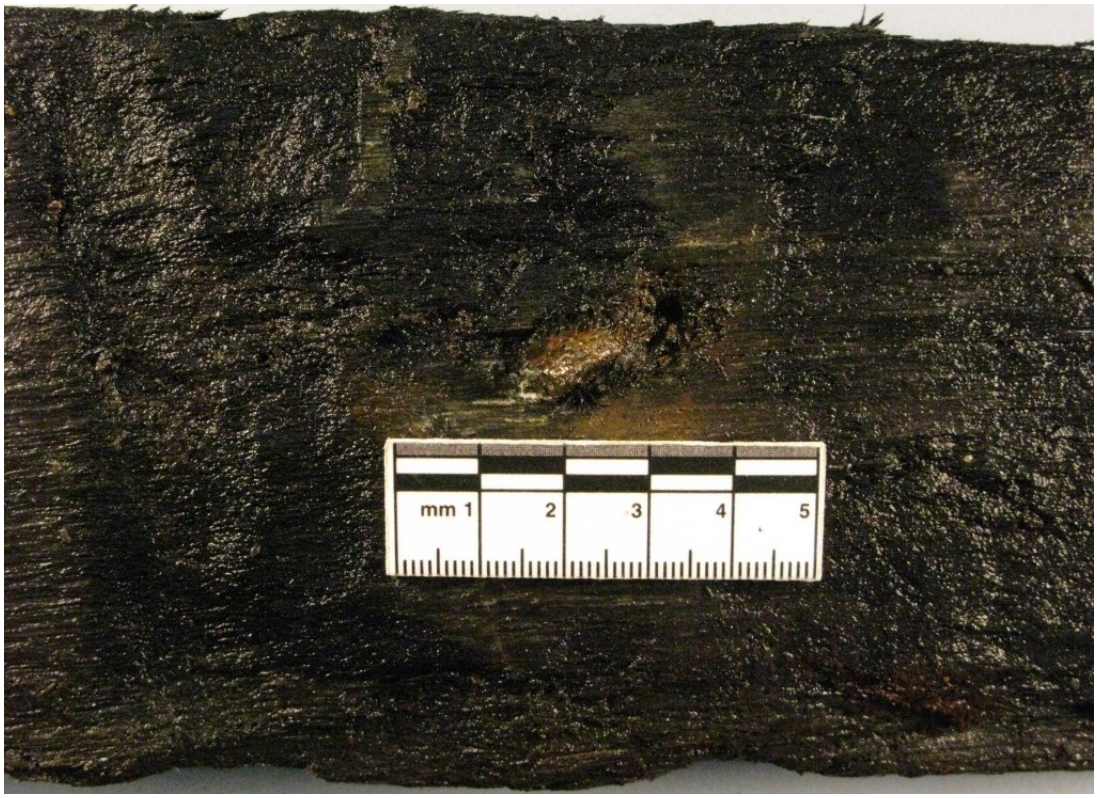


Figure 69 Photograph of second iron fitting on timber 74

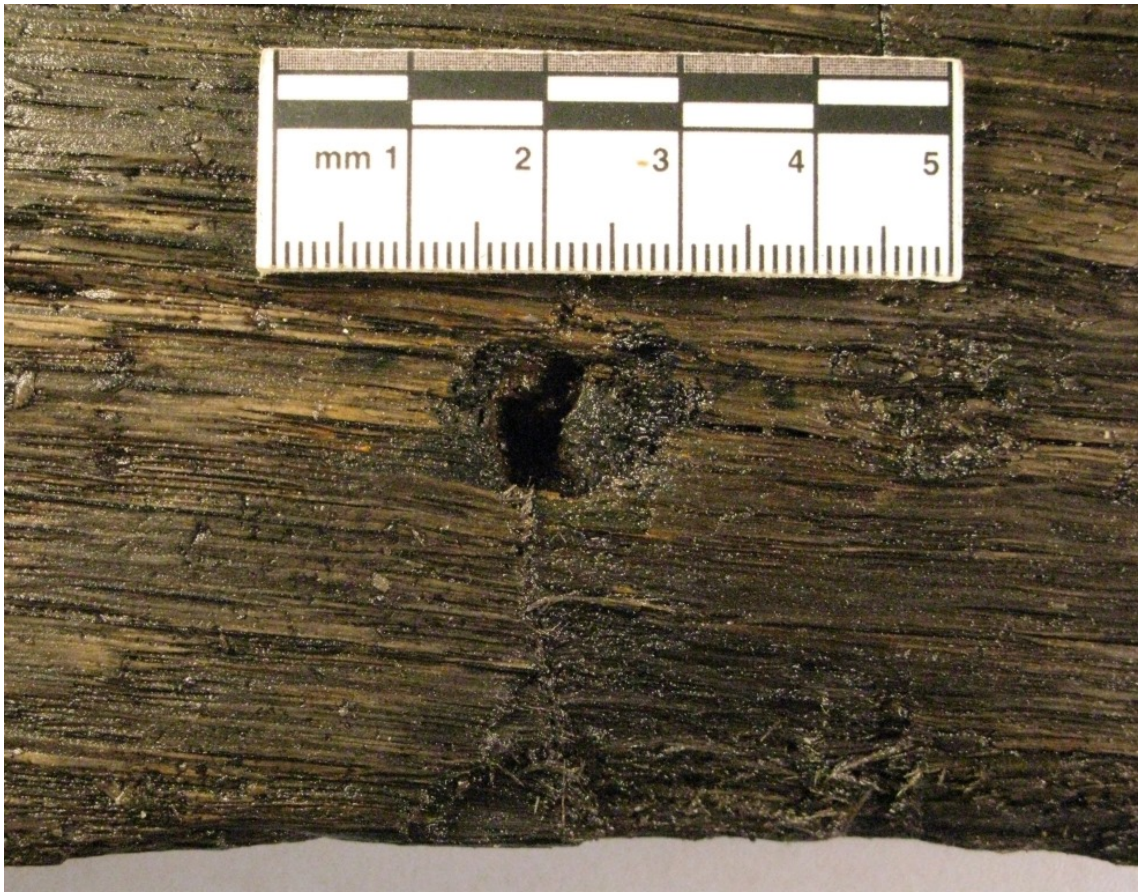


Figure 70 Photograph showing second iron fitting on timber 74

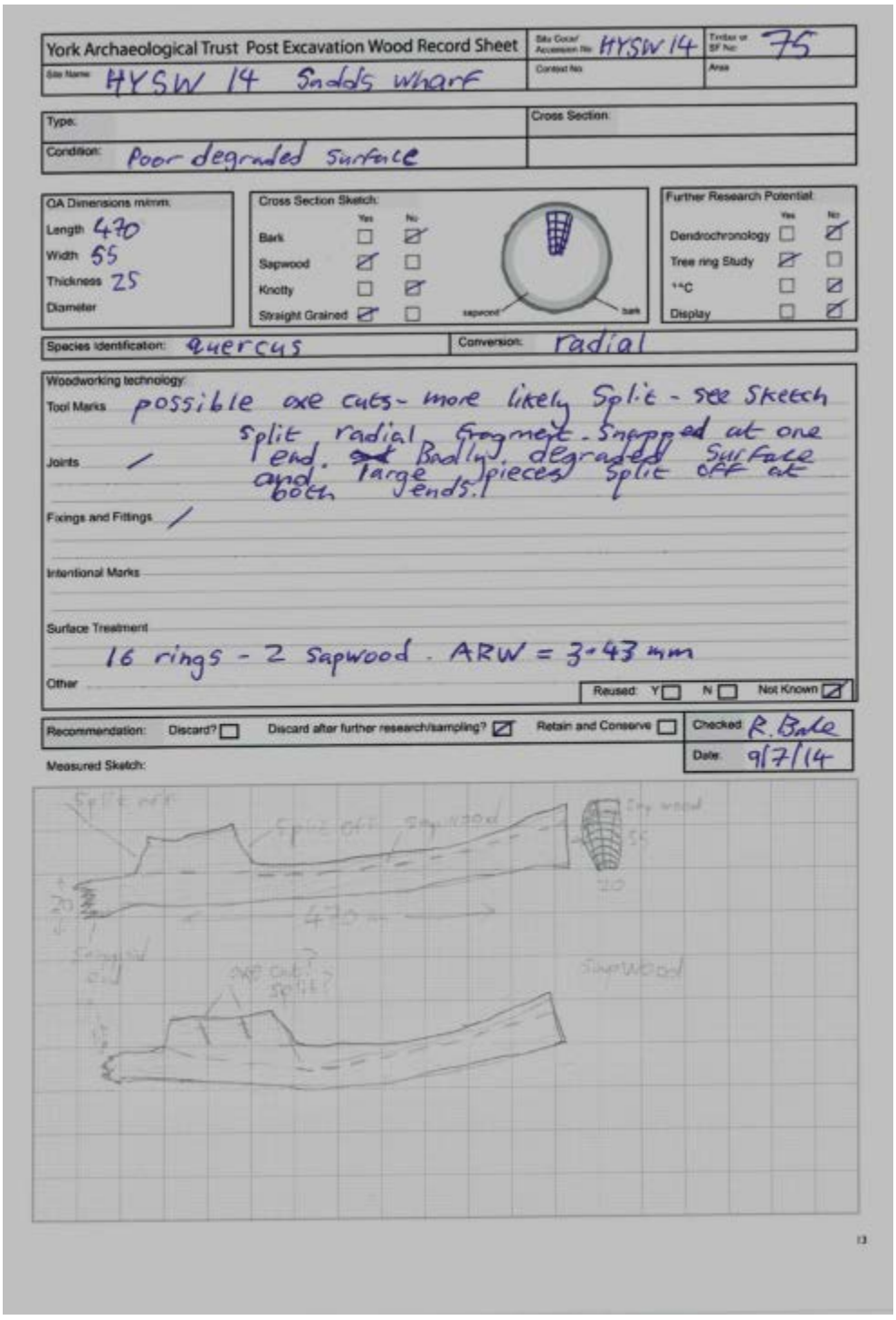


Figure 71 Wood record sheet for timber 75

Figure 72 Photograph of timber 75

Timber surface –interpretation

Samples examined from the timber surface comprised horizontal elm timbers (HYSW_36, 43 and 61). These are likely offcuts from timber processing by sawing as all are the very outer parts of trees with bark edge. As such they would have been waste and suitable for use as a stabilising surface on wet ground.

HYSW_66 is a sawn oak offcut comprising the outer part of a knotty tree or branch but with no bark or sapwood and likely represents woodworking waste. There are well preserved saw marks on the inner of this timber (figure 49). The following timbers were recovered during excavation of two test pits from the timber surface area. HYSW_67 is a tangential elm plank fragment snapped at both ends and likely represents woodworking waste. HYSW_69 and 74 are both oak and both contain iron fittings and joints indicative of re-use as part of the timber surface. HYSW_75 is a snapped radial oak fragment in poor condition and likely represents waste used to stabilise the timber surface.

Conclusions/recommendations

While the analysis of the recovered timber has yielded information as to the parent material used, conversion methods and possible re-use of timbers, it does not assist with providing an absolute date for the site. In the absence of artefactual dating evidence it may be worth undertaking radiocarbon analysis from the outer rings of a structural timber from each of the site features. The timbers exhibiting signs of re-use should be avoided for this, and those retaining sapwood or bark edge would be the most suitable for radiocarbon dating.

sample	species	description	area	conversion(cross section)	dimensions(mm)	total rings	sapwood/bark	ARW	dated?
HYSW_1	oak	Horizontal plank from east retaining wall	Sea defence 1014	Tangential sawn	200x40	40	nothing	1mm	insufficient rings
HYSW_2	oak	Horizontal plank from east retaining wall	Sea defence 1014	Tangential sawn	110x40	38	nothing	1.05mm	insufficient rings
HYSW_3	oak	Upright support for timber 1 east retaining wall	Sea defence 1014	Tangential sawn	100x50	10	6 sapwood	5mm	insufficient rings
HYSW_12	oak	Upright support for timber 1 east retaining wall	Sea defence 1014	Tangential sawn	100x35	9	nothing	3.9mm	insufficient rings
HYSW_16	elm	charred cut stump by west retaining wall	Sea defence 1014	axe cut stump	260x180	c.100	bark edge	1.8mm	N/A
HYSW_20	oak	Horizontal plank from west retaining wall	Sea defence 1014	Tangential sawn	100x30	20	H/S	0.65mm	insufficient rings
HYSW_22	oak	Horizontal plank from west retaining wall	Sea defence 1014	Tangential sawn	230x50	55	1 sapwood		did not date
HYSW_36	elm	Horizontal timber comprising timber surface trench 3	timber surface-trench 3	Tangential sawn	190x140	30	bark edge	6.3mm	N/A
HYSW_43	elm	Horizontal timber comprising timber surface trench 3	timber surface-trench 3	Tangential sawn	350x100	35	bark edge	2.86mm	N/A
HYSW_61	elm	Horizontal timber comprising timber surface trench 3	timber surface-trench 3	Tangential sawn	190x70	30	bark edge	3.33mm	N/A
HYSW_66	oak	Horizontal timber at west end timber surface trench 3	timber surface-trench 4	Tangential sawn	180x100	20	H/S	5mm	insufficient rings
HYSW_67	elm	Test pit 1 in trench 3	Test pit 1 in trench 3 –timber surface	Tangential sawn	80x10	8	nothing	1.25mm	N/A
HYSW_69	oak	Test pit 1 in trench 3	Test pit 1 in trench 3-timber surface	Tangential sawn	50x30	9	nothing	3.33mm	insufficient rings
HYSW_74	oak	Test pit 2 in trench 3	Test pit 2 in trench 3-timber surface	Tangential sawn	100x50	33	12 sapwood	1.51mm	insufficient rings
HYSW_75	oak	Test pit 2 in trench 3	Test pit 2 in trench 3-timber surface	radial	55x20	16	2 sapwood	3.43mm	insufficient rings

Table 1 Sample information. ARW=average ring width, H/S=heartwood/sapwood boundary

Filenames	-	-	22a	22b	22c	22d
-	start	dates	1	11	17	2
-	dates	end	55	56	58	56
22a	1	55	*	3.05	-	3.41
22b	11	56	*	*	3.49	4.18
22c	17	58	*	*	*	-
22d	2	56	*	*	*	*

Table 2 *t* values between measured radii of HYSW_22

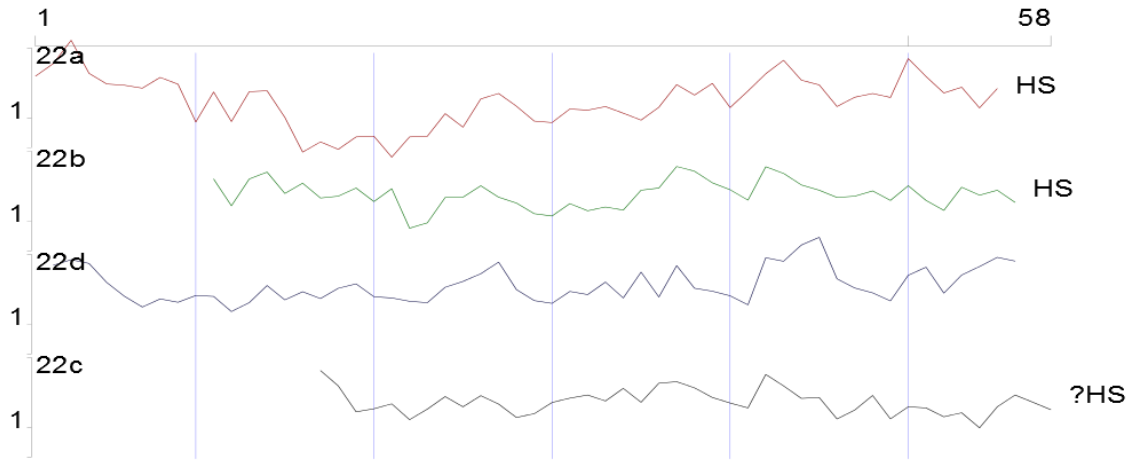


Figure 73 Graph representation of HYSW_22 measured radii

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Sadds Wharf, Station Road, Maldon, Essex

Richenda Goffin

Quantification and assessment of the pottery archive

Introduction

Eight sherds of pottery weighing 152 grammes were recovered from three contexts. The small assemblage dates to the late post-medieval period.

Methodology

The ceramics were quantified using the recording methods recommended in the MPRG Occasional Paper No 2, Minimum standards for the processing, recording, analysis and publication of Post-Roman ceramics (Slowikowski et al 2001). The number of sherds present in each context by fabric, the estimated number of vessels represented and the weight of each fabric were noted. Other characteristics such as form, decoration and condition were recorded, and an overall date range for the pottery by fabric type and by overall context was established. The data is shown in Appendix *.

The fabric names used are based mainly on broad fabric and form types identified in *Eighteen centuries of pottery from Norwich* (Jennings 1981), and supplemented by additional fabric types established by the Suffolk Unit (S Anderson, unpublished fabric list).

Pottery by trench

A single fragment of pottery was recovered from (1015), the infilling of the tidal wall in Trench 2. It was a small fragment of Late Slipped redware dating to the 18th – 19th century.

Seven sherds of pottery were recovered from Trench 3 (132g).

Two fragments of a banded whiteware bowl with blue sponged decoration were found in reclamation fill 1002. The vessel dates to *c.*1830+. In addition a sherd of a blue and white pearlware-glazed? bowl with a crenellated rim dates to the first half of the nineteenth century. The outside has a transfer printed design showing a pastoral scene with a turreted building, whilst the internal rim area is decorated with a floral band.

A small number of pottery fragments were recovered from the timber causeway 1016. A single sherd of an English stoneware bottle from TP1 (1016) dates to the nineteenth century.

Another fragment of stoneware, probably from the same vessel was found in a second bag of 1016 from Trench 3. A large fragment of a salt-glazed English stoneware storage container was also present, together with the base of a Yellow ware bowl dating from the late 18th -19th century.

Quantification and assessment of the ceramic building material

Richenda Goffin

IntroductionTwenty-seven fragments of ceramic building material were collected from all three of the features, weighing 2307g.

Methodology

Fabrics were classified based on microscopic appearance and the main inclusions that could be observed. Any diagnostic measurements such as brick thickness were recorded. The brick was classified according to the catalogue published for the Norwich ceramic building material (Drury 1993). The recorded data can be seen in Appendix *.

Ceramic building material by context

Three fragments of late brick (LB) were present in the reclamation layer 1002. No full measurements for the thickness of the bricks could be taken due to their fragmentation, but their surviving heights were 53mm and 57mm. Both these fragments were made from post-medieval fabrics and one of them has mortar on a broken edge indicative of redeposition. The bricks date to the 17th century or later.

Further fragments of ceramic building material were retained from 1015, the infilling of the tidal wall. A number of fragments of late brick were identified, the best preserved of which dates from the late 17th-18th century. A number of roofing tiles were present, which were made in finer fabrics with clay pellets which are likely to date from the late medieval to early post-medieval period.

A small number of fragments were recovered from 1016, the timber causeway. The group included a medieval roofing tile with a reduced core and fine calcareous inclusions and a possible ridge tile which could also be medieval. A worn roof tile of late medieval/early post-medieval date was present, and an undiagnostic fragment of ?late brick which has a fine sandy fabric with moderate small voids which is fully oxidised and which may also date to the early post-medieval period.

Five additional fragments were collected from 1017, a degraded wood layer above 1016. It contained a worn fragment of late brick, which had some vitrification on two of its edges. It is made in a medium sandy fabric with ferrous inclusions, and with a height of >65mm; it dates to the late 17th -18th century. Accompanying fragments include a pale orange roofing tile with quartz and flint in the moulding sand which is probably medieval, and some late medieval to early post-medieval roof tiles and another post-medieval fragment, probably from another brick.

Quantification and assessment of the post-medieval bottle glass

Two fragments of post-medieval bottle glass were recovered, both from Trench 3. The complete base of a large dark green glass winebottle in 1017 has a slightly oval shape and a high basal kick. This feature, together with the large diameter of the base indicates a date of manufacture of the late eighteenth to the first quarter of the nineteenth century (Noel Hume 1980 68). A second cylindrical green glass fragment from 1016 Trench 3 is thinner and has an abraded surface and cannot be precisely dated.

Quantification and assessment of the clay tobacco pipe
Identifications by Kieron Heard

Seven fragments of clay tobacco pipe were found in the fills of the timber causeway. The six pieces found in Trench 3 are described below.

1016 Trench 3

1 mouthpiece, 2 stems, 2 bowl fragments with leaf decoration along the seams (a common decoration). One has a small, pointed spur marked on both sides with a probable oak leaf. The bowls are probably Oswald's Simplified General Typology type 24 (1810-40). The stems are 19th century.

1017 Trench 3

1 small stem fragment, 19th century

A single fragment of stem and part of the bowl was collected from 1016 Trench 3 TP2. The bowl fragment has moulded ribbing and leaf decoration on the seam facing the smoker (other seam missing). The spur is broken but probably was small and pointed, the same as the other bowl. It is also likely to be Oswald's Simplified General Typology type 24 (1810-40)

Quantification and assessment of the animal bone

Three fragments of animal bone weighing 24g were collected from the timber causeway feature in Trench 3. Part of the rib of a large mammal such as a cow was identified, whilst the other two fragments are longitudinally split and have no identifying characteristics.

The potential and significance of the finds and environmental data

Introduction

Small quantities of pottery, ceramic building material, clay tobacco pipe, post-medieval bottle glass and animal bone were recovered from three features including the timber causeway.

The pottery

Only a very small quantity of late post-medieval pottery was present, some of which provided useful dating information on the features. However, some of the pottery is not closely datable beyond the period of the 19th century.

The range of ceramics from the three fills is typical of early nineteenth century wares, and includes a mixture of English stoneware bottles and storage containers, late slipped redwares, and highly decorated tableware in the form of two bowls, one of which has a pearlware glazed decoration. The second bowl is decorated in an annular design in red and green with a blue sponged pattern, associated with the middle years of the 19th century. Only small quantities of late post-medieval pottery were present and the fabrics and forms are typical of assemblages of this date, and no further work on them is

required.

The clay tobacco pipe

Although fragmentary, the two bowls have sufficient diagnostic features to enable them to be dated, both to the first half of the 19th century. The decoration is not unusual and the value of the pipes lies in their dating evidence for the timber causeway.

The ceramic building material

The small ceramic building material assemblage consists of a number of roofing tiles and the fragmentary remains of some poorly surviving late bricks. A few of these had sufficient diagnostic features to provide some dating for the features. There was some evidence of earlier, medieval cbm in the form of redeposited roofing tiles, and some fabrics which date to the late medieval to early post-medieval were also identified. The ceramic building material was fully catalogued and contributed to the dating of the stratigraphic sequence but no further work is required.

The post-medieval bottle glass

The well preserved base of the winebottle in 1017 has been fully described and approximately dated. The second fragment cannot be dated beyond the post-medieval period. No further work is needed.

The animal bone

The small number of animal bones recovered from 1016 has been catalogued and few diagnostic features were recorded. No further work is required on this part of the assemblage.

Discussion

The small assemblage provides useful dating evidence for the construction of the timber causeway and its associated features. The ceramics and the clay tobacco pipe both provide a date of the first part of the nineteenth century both for the reclamation layer and for the causeway.

Bibliography

Drury, P, 1993, 'The ceramic building materials' in Margeson, S., *Norwich Households: the medieval and post-medieval finds from Norwich Survey Excavations 1971-1978,* EAA Report No. 58.

Jennings, S., 1981, *Eighteen centuries of pottery from Norwich*, EAA Report No 13, Norwich Survey

Noel-Hume, I., 1980, A guide to artifacts of Colonial America, Alfred A Knopf, New York
Oswald, A., 1975, *Clay pipes for the archaeologist*, BAR 14
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Pollen Analysis of Sediments from Sadds Wharf, Maldon (HYSW14)

Steve Boreham BSc. PhD.

Introduction

This report presents the results of assessment pollen analyses of two sub-samples of sediment taken from a core (borehole ABH5) sunk at the archaeological site (HYSW14) at Sadds Wharf, Maldon, Essex. Pollen sub-samples were taken from silt-rich sediments close to the base of the sequence at 2.65m and 2.95m (sample <2>). The lithology of the lower part of the ABH5 core (see Figure 1) was as follows;

2.60 - 2.70m Grey sandy silt (pollen @ 2.65m)
2.70 to 2.90m Grey brown medium sand
2.90 to 2.98m Grey silty clay with organic material (pollen @ 2.95m)
(described in the driller's borehole log as blue-grey silt deposits with gravel)
2.98 to 3.04m Grey brown sand with a little silt

The two pollen sub-samples were prepared using the standard hydrofluoric acid technique, and the stained residues were mounted on glass slides for pollen assessment. Pollen assessment was undertaken at x400 magnification with a high-power stereo microscope.

Pollen Analyses

Both pollen sub-samples showed signs that the sediment had undergone a large amount of post-depositional oxidation. Preservation of organic material was very poor indeed and no pollen grains were observed to have survived the microbial attack. The pollen sub-samples were effectively barren.

Discussion

The absence of pollen and spores in these sub-samples strongly suggests that these silty sediments had experienced prolonged exposure to atmospheric oxygen, perhaps as part of a salt marsh accumulation and that aerobic microbial degradation of organic material has reached an advanced state. It seems quite likely that similar basal deposits at the site may exhibit the same poor preservation potential, not just for pollen, but for other organic remains too. The apparently reduced oxidation state of the silt is most likely due the reversible nature of redox reactions. This means that in the past water tables have been lower and oxidation has proceeded apace, but with higher water tables the signs of oxidation visible to the naked eye have been reversed by the reduction of iron oxide in anaerobic conditions. Unfortunately, once the organic material has been destroyed, a return to reduced conditions cannot resurrect it. Local water table changes can wreak havoc on the preservation potential of archaeological sediments.

Dr Steve Boreham 10-07-2014

Figure 1 – Photograph of the basal core segment from ABH5 at Sadds Wharf, Maldon (HYSW14) <2> showing the stratigraphy and location of the pollen sub-samples at 2.65m and 2.95m. The arrow points to the top of the core.

APPENDIX 3 CONCORDANCE OF FINDS

FEATURE CONTEXT	TRENCH	TEST PIT	FEATURE TYPE	LAYER/FILL CONTEXT	LAYER / FILL DESCRIPTION	SPOT DATE	POTTERY / g (SHERDS)	CBM / g (NUMBER)	ANIMAL BONE / g (NUMBER)	OTHER / g (NUMBER)
1002	3		Layer	1002	Reclamation layer	1830 AD +	19 / (3)	386 / (3)		
1014	2		Tidal Wall	1015	Infill of Tidal Wall	18th – 19th Century	20 / (1)	1268 / (11)		
1016	3		Timber Causeway	1017	Degraded wood layer above 1016	Late 17th – Early 19th Century		425 / (5)		Glass 459 / (1) Clay pipe 0.5 / (1)
1016	3		Timber Causeway		Timber Causeway	18th – 19th Century	108 / (3)	228 / (8)	24 / (3)	Clay pipe 13 / (5) Glass 40 / (1)
	3	1	Timber Causeway		Timber Causeway	19th Century	5 / (1)			
	3	2	Timber Causeway		Timber Causeway	1810 – 40 AD				Clay pipe 5 / (1)

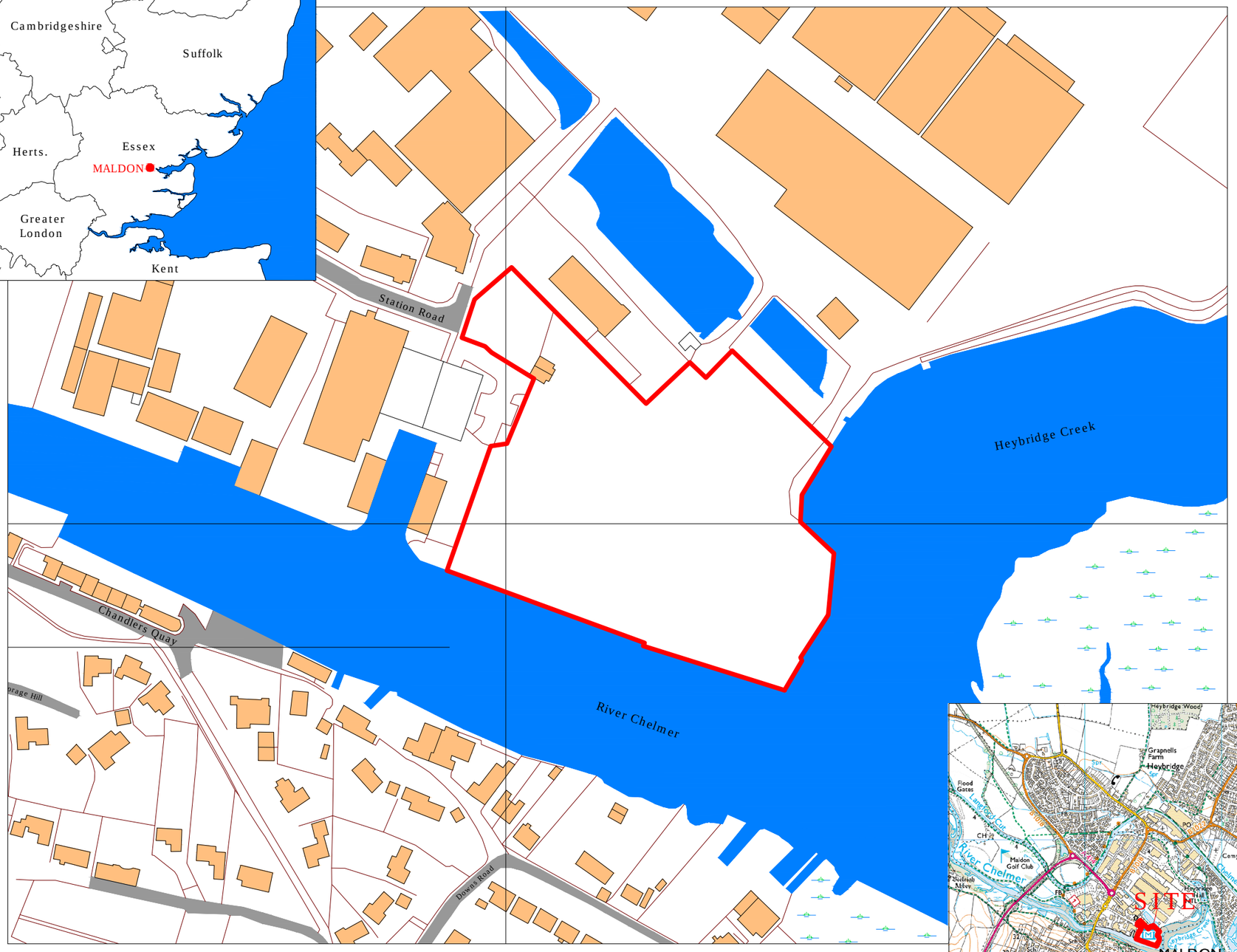
APPENDIX 4 OASIS FORM

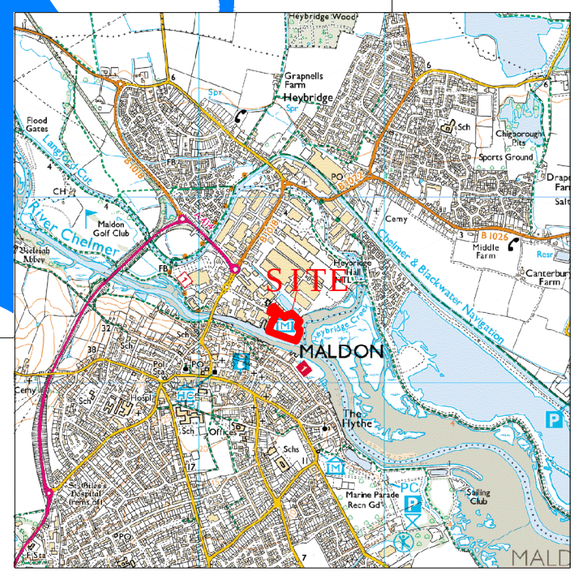
OASIS ID: britanni1-189987

Project details	
Project name	Sadds Wharf, Station Road, Maldon, Essex
Short description of the project	A five trial trench evaluation and borehole survey was undertaken by Britannia Archaeology Ltd at Sadds Wharf, Station Road, Maldon, Essex (NGR TL 8546 0731) in May and June of 2014. The greatest potential for surviving archaeological remains were believed to be buildings associated with the former Steam Saw Mill that was previously present on the site and was of Post-medieval date. The evaluation revealed four phases of site activity. No archaeological phases believed to be earlier than the post-medieval were present, the site being located in an area that was known to be marshland certainly until the mid-part of the 19th century. The evaluation discovered the presence of probable Timber Causeway 1016, a series of horizontally placed timbers forming a surface running east to west through Trench 3. The evaluation also encountered the remains of the former Tidal Defence for the site. Tidal Defence 1014 was revealed in Trench 2 and likely relates to the successive phases of reclamation that occurred in the intertidal zone through the 19th century. Analysis of the Timbers from Tidal Defence 1014 noted the probable re use of the oak timbers and utilization of woodworking waste suggests a fairly lowly structure, perhaps not expected to last a long time, but fit for purpose.
Project dates	Start: 19-05-2014 End: 17-06-2014
Previous/future work	No / Yes
Any associated project reference codes	HYSW 14 - Sitecode
Type of project	Field evaluation
Site status	None
Current Land use	Other 13 - Waste ground
Monument type	CAUSEAWY Post Medieval
Monument type	SEA DEFENCE Post Medieval
Significant Finds	TIMBER Post Medieval
Significant Finds	POTTERY Post Medieval
Methods & techniques	'''Augering''','''Dendrochronological Survey''','''Environmental Sampling''','''Targeted Trenches''','''Test Pits'''
Development type	Urban residential (e.g. flats, houses, etc.)

Prompt	Direction from Local Planning Authority - PPG16
Position in the planning process	After full determination (eg. As a condition)
Project location	
Country	England
Site location	ESSEX MALDON MALDON Sadds Wharf, Station Road, Maldon, Essex
Postcode	CM94LQ
Study area	2.10 Hectares
Site coordinates	TL 8546 0731 51.7332542599 0.686066950505 51 43 59 N 000 41 09 E Point
Lat/Long Datum	Unknown
Height OD / Depth	Min: 1.40m Max: 3.30m
Project creators	
Name of Organisation	Britannia Archaeology Ltd
Project brief originator	Local Authority Archaeologist and/or Planning Authority/advisory body
Project design originator	Martin Brook
Project director/manager	Martin Brook
Project supervisor	Martin Brook
Type of sponsor/funding body	Developer
Name of sponsor/funding body	The Baltic Consortium
Project archives	
Physical Archive recipient	Colchester Museum
Physical Archive ID	HYSW 14
Physical Contents	''Ceramics'',''Glass'',''Industrial'',''Metal'',''Wood''
Digital Archive recipient	Colchester Museum
Digital Archive ID	HYSW 14
Digital Contents	''Ceramics'',''Environmental'',''Glass'',''Industrial'',''Metal'',''Stratigraphic'',''Survey'',''Wood''
Digital Media available	''Database'',''Images vector'',''Spreadsheets'',''Text''
Paper Archive recipient	Colchester Museum
Paper Archive ID	HYSW 14
Paper Contents	''Environmental'',''Wood''
Paper Media available	''Context sheet'',''Correspondence'',''Diary'',''Map'',''Miscellaneous Material'',''Photograph'',''Plan'',''Report'',''Section''
Project bibliography 1	
Publication type	Grey literature (unpublished document/manuscript)
Title	SADDS WHARF, STATION ROAD, MALDON, ESSEX BOREHOLE SURVEY AND ARCHAEOLOGICAL EVALUATION

Author(s)/Editor(s)	Brook. M





N

Site Boundary

TL 8546 0731

PROJECT NUMBER: 1059

PROJECT:
SADDS WHARF, STATION ROAD
MALDON, ESSEX

CLIENT:
MR JEFFREY CIFFER

DESCRIPTION:
SITE LOCATION PLAN

BRITANNIA ARCHAEOLOGY LTD
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IP14 5UX
T: 01449 763034
E: info@britannia-archaeology.com
W: www.britannia-archaeology.com

SCALE: 1:2000 (0 – 100m)

PLOT:	APPROVED:	VERSION:
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DATE:	AUTHOR:	FIGURE:
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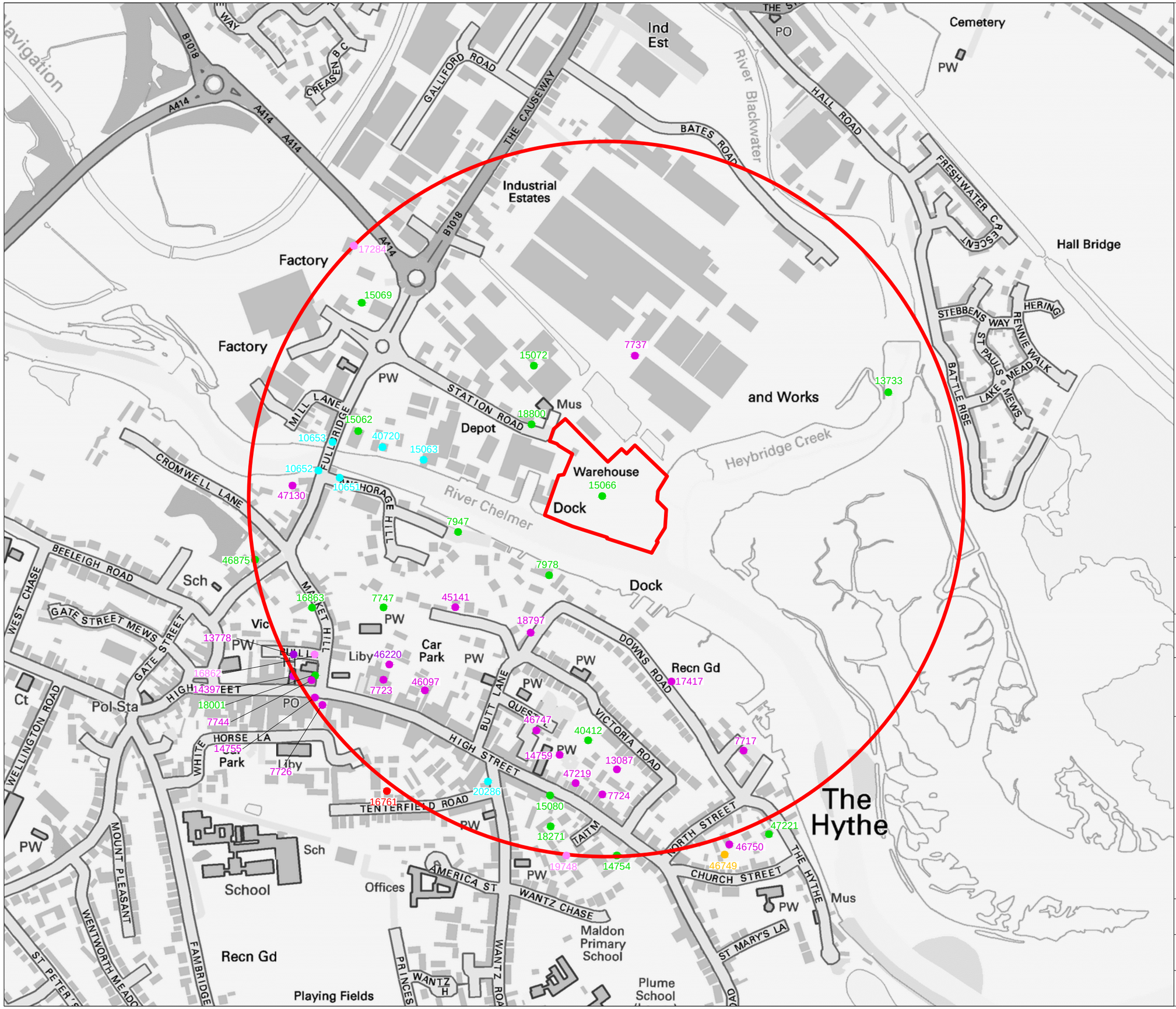

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7744	Monument Number
	Search Area
	Undated Monument Record
	Modern Monument Record
	Post-Medeival Monument Record
	Medieval Monument Record
	Early Medieval Monument Record
	Prehistoric Monument Record
	Site Boundary

TL 8546 0731

PROJECT NUMBER: 1059

PROJECT:
SADDS WHARF, STATION ROAD
MALDON, ESSEX

CLIENT:
MR JEFFREY CIFFER

DESCRIPTION:
HER MONUMENTS PLAN

BRITANNIA ARCHAEOLOGY LTD
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SCALE: 1:5000 (0 – 200m)

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DATE:	AUTHOR:	FIGURE:
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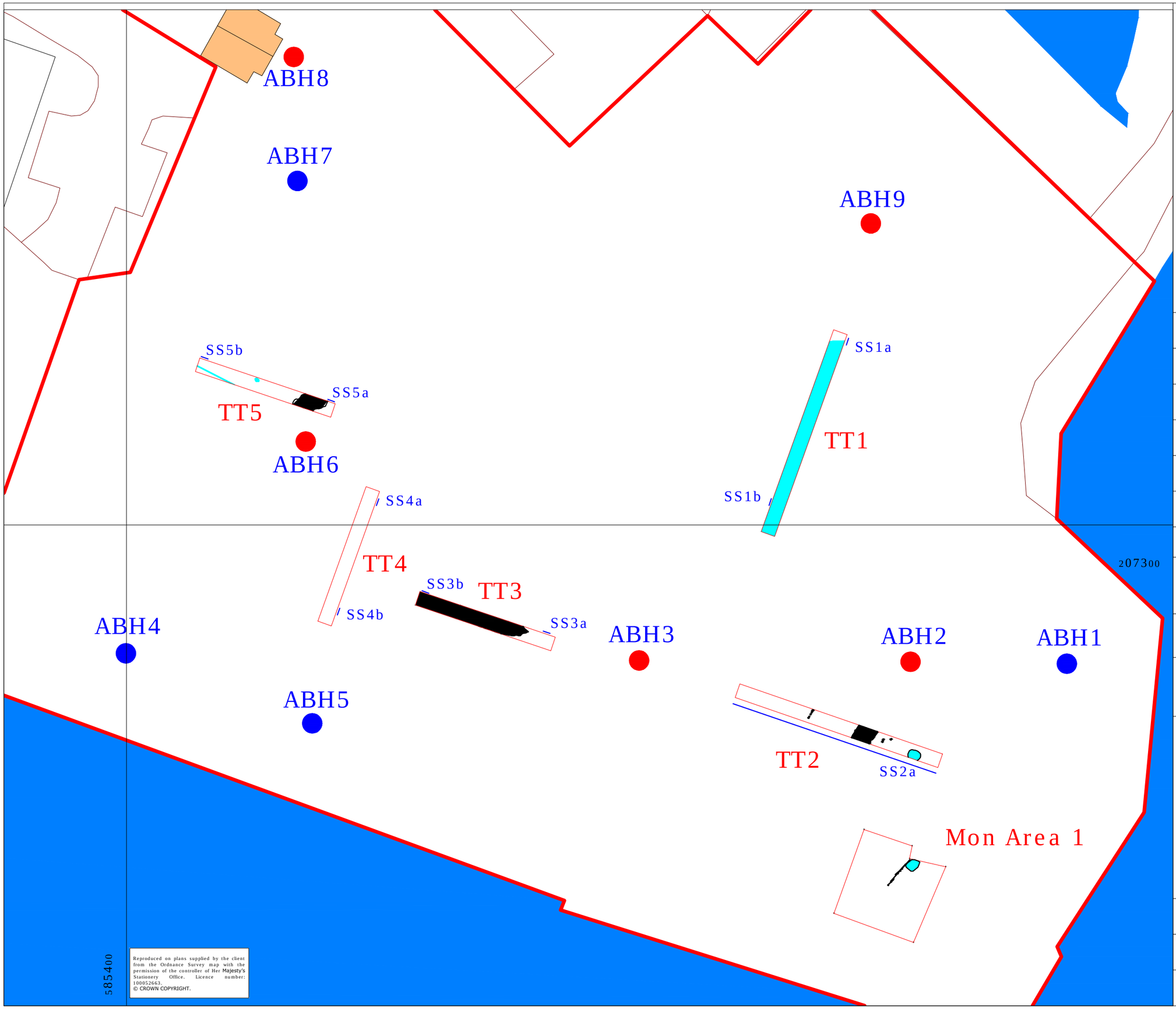

N

	Modern Feature
	Archaeological Feature
ABH9	Proposed Gas Borehole Monitoring Well Locations
ABH1	Proposed Archaeological Borehole Locations
TT1	Trial Trench Locations
	Site Boundary

TL 8546 0731

PROJECT NUMBER: 1059

PROJECT:
SADDS WHARF, STATION ROAD
MALDON, ESSEX

CLIENT:
MR JEFFREY CIFFER

DESCRIPTION:
FEATURE, TRENCH & BOREHOLE LOCATION PLAN

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SCALE: 1:500 (0 – 25m)

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DATE:	AUTHOR:	FIGURE:
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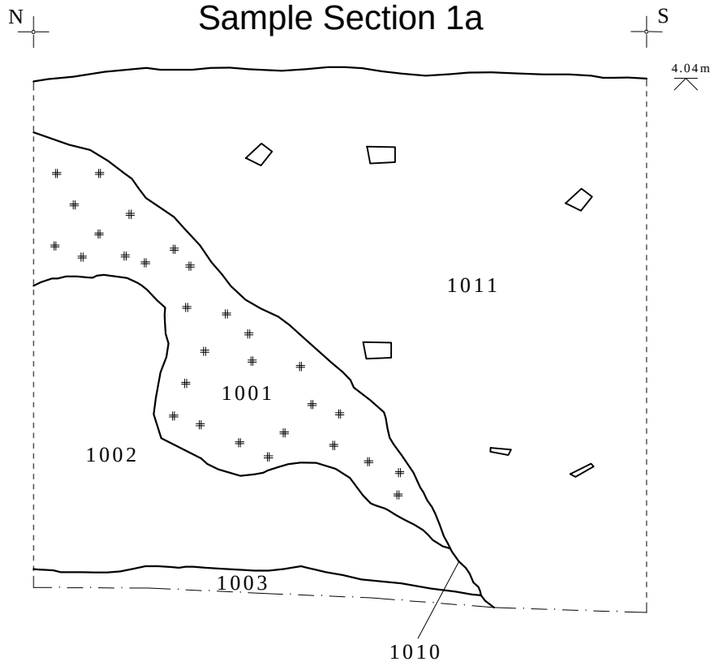
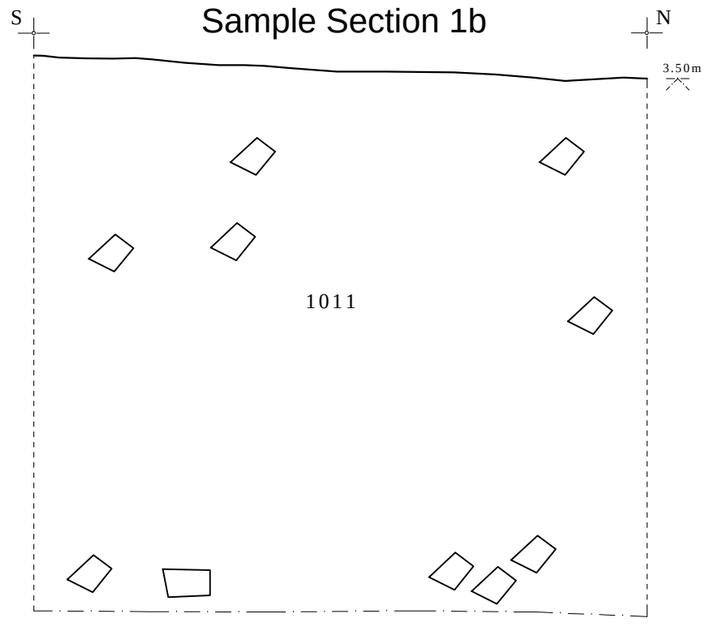
TRENCH 1



DP 1 - Sample Section 1a
- View East

DP 3 - Trench 1 Post Excation - View South



DP 2 - Sample Section 1b
- View West

N

Burnt Material & Ash

CBM

TL 8546 0731

PROJECT NUMBER: 1059

PROJECT:
SADDS WHARF, STATION ROAD
MALDON, ESSEX

CLIENT:
MR JEFFREY CIFFER

DESCRIPTION:
TRENCH 1 - SAMPLE SECTIONS & PHOTOGRAPHS

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SCALE: 1:10 (0 – 50cm)

PLOT:	APPROVED:	VERSION:
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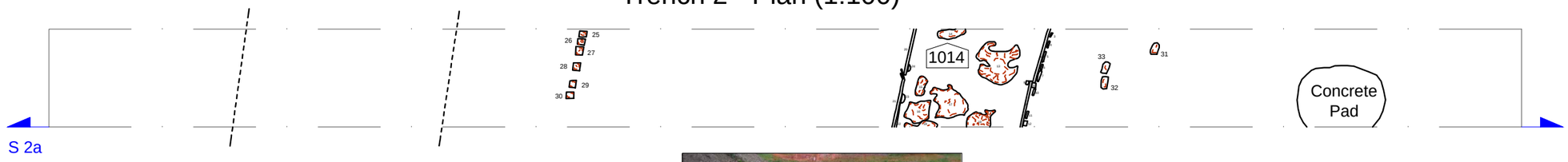
DATE:	AUTHOR:	FIGURE:
SEP 2014	MCA	04

TRENCH 2

Trench 2 - Plan (1:100)

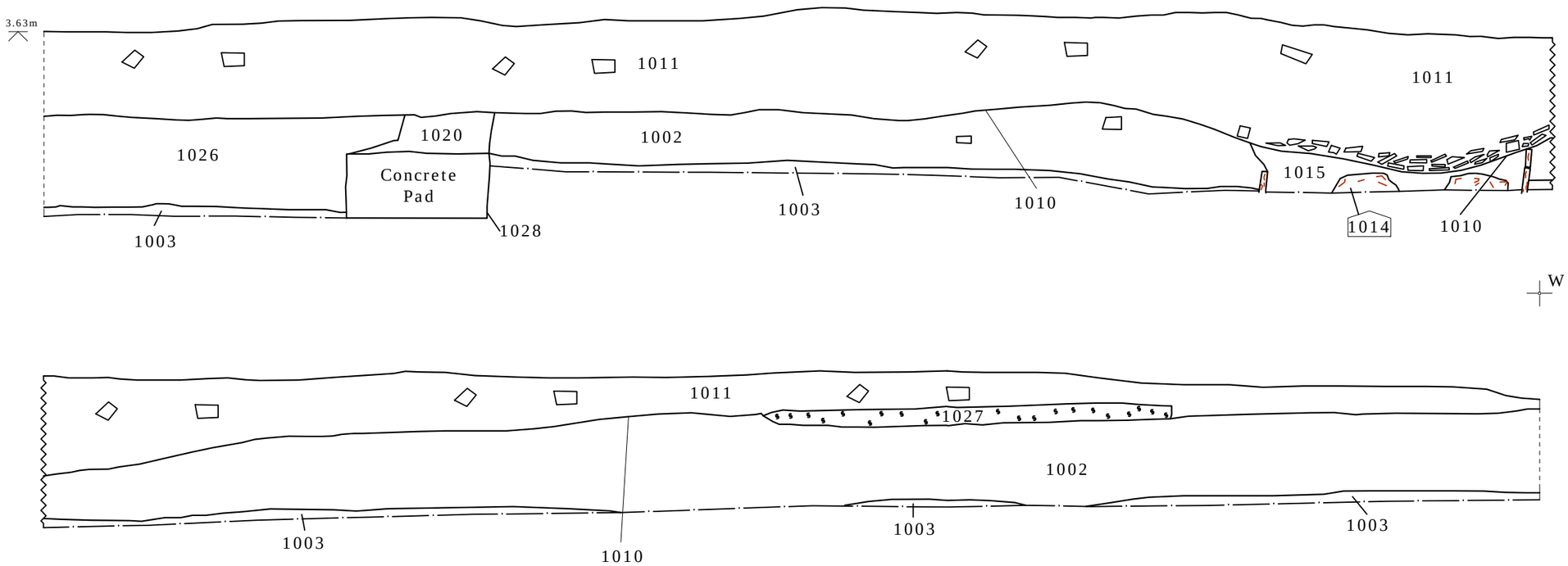


DP 4 - Long Section 2a & Tidal Defence 1014 - View South West

DP 5 - Post Excavation - View West

DP 7 - Internal Timbers/Roots 1014 - View North

Section 2a - Long Section Trench 2 - North Facing (1:50)



N

	Compacted Chalk
	CBM & Slate
	Building Foundation Footprint
S 2	Section
36	Timber Number
	Identifiable Timber
	Trench Extent

TL 8546 0731

PROJECT NUMBER: 1059

PROJECT:
SADDS WHARF, STATION ROAD
MALDON, ESSEX

CLIENT:
MR JEFFREY CIFFER

DESCRIPTION:
TRENCH 2 - TRENCH PLAN AND LONG SECTION

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SCALE:
1:50 (0 – 2m)
1:100 (0 – 5m)

PLOT:	APPROVED:	VERSION:
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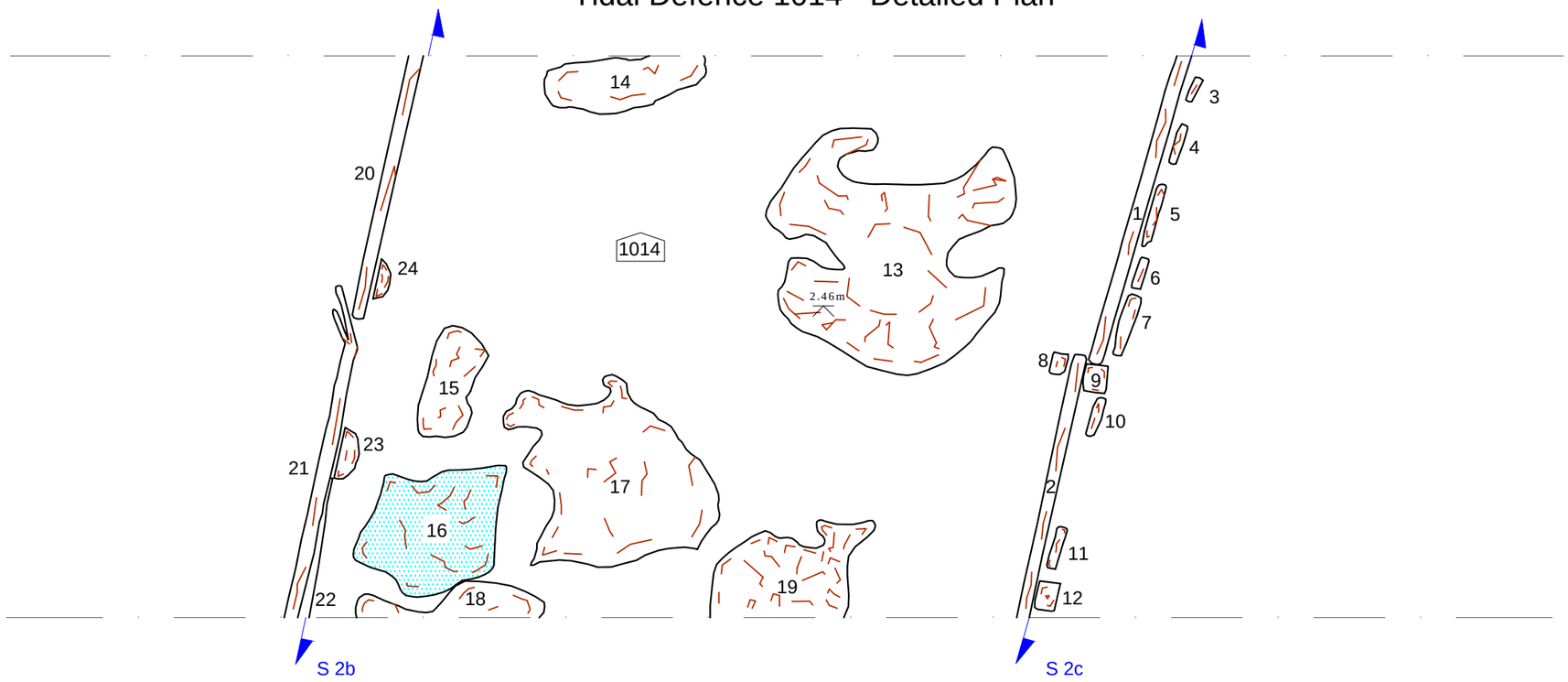
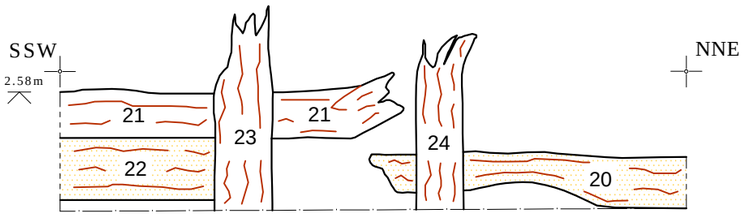
DATE:	AUTHOR:	FIGURE:
JUNE 2014	MCA	05

TRENCH 2 - CONT'D

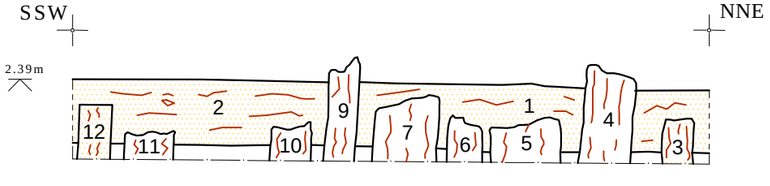
Tidal Defence 1014 - Detailed Plan



Section 2b - West Retaining Wall

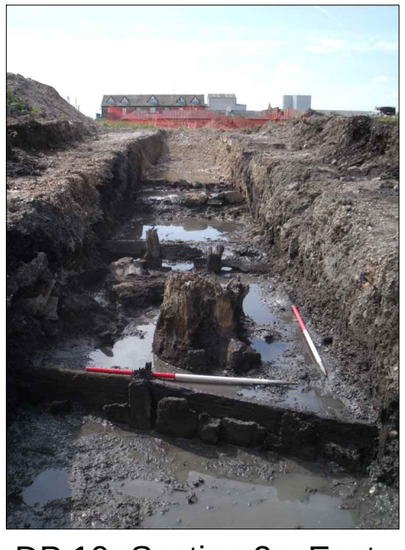


Section 2c - East Retaining Wall



DP 8 - Section 2b, West Retaining Wall 1014 - View West

DP 9 -Close Up of Timbers 1, 6, 8 & 7, Possible Tool Marks 1014 - View West



DP 10 -Section 2c, East Retaining Wall 1014 - View West

N

	Timber Species Elm
	Timber Species Oak
S2	Section
36	Timber Number
	Identifiable Timber
	Trench Extent

TL 8546 0731

PROJECT NUMBER: 1059

PROJECT:
SADDS WHARF, STATION ROAD
MALDON, ESSEX

CLIENT:
MR JEFFREY CIFFER

DESCRIPTION:
TRENCH 2 - DETAILED PLAN AND SECTIONS OF TIDAL DEFENCE 1014

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SCALE: 1:20 (0 – 1m)

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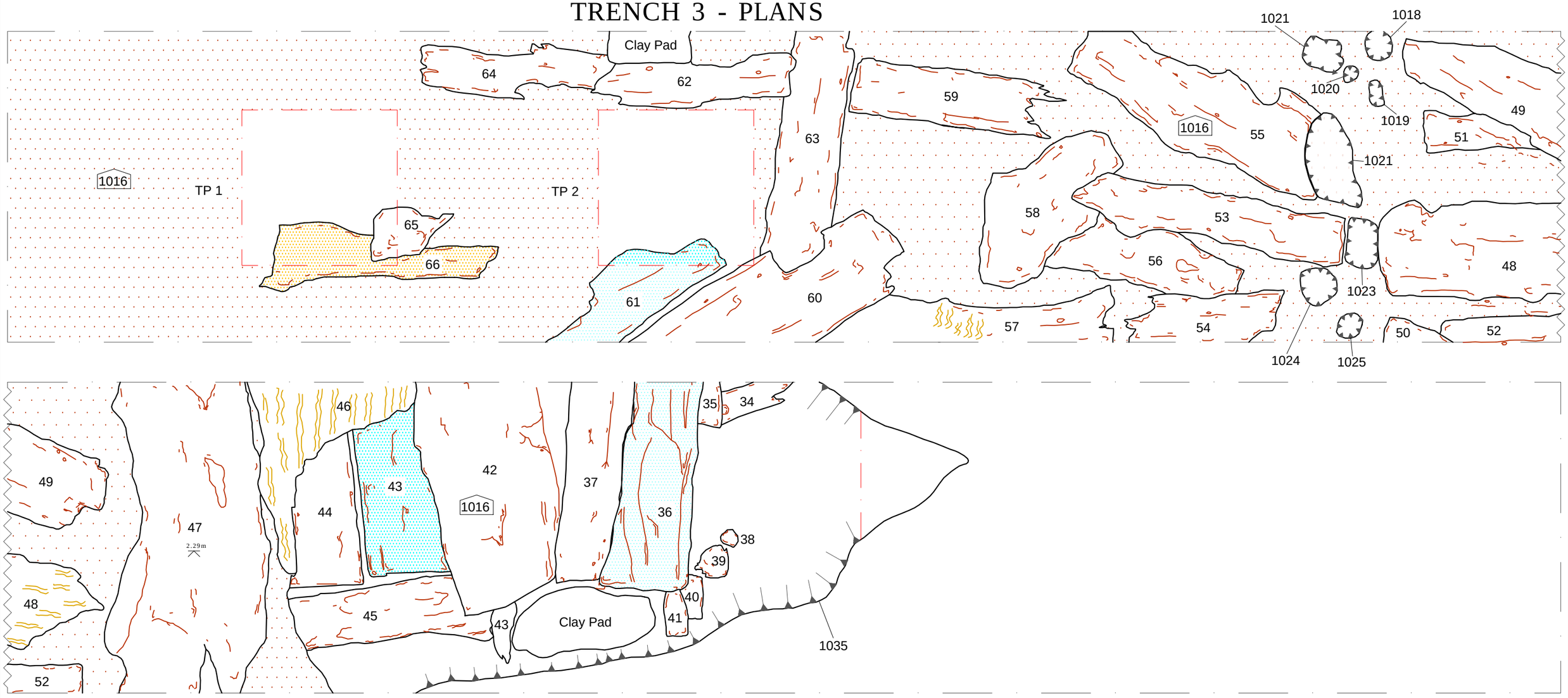
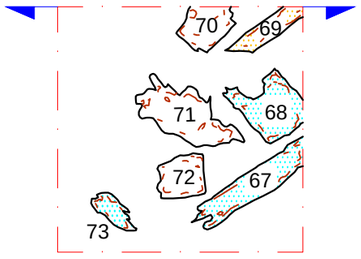
DATE:	AUTHOR:	FIGURE:
SEP 2014	MCA	06

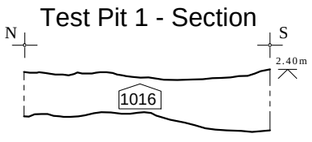
TRENCH 3 - PLANS



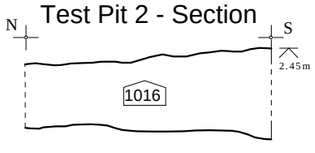
Test Pit 1 Underlay Plan



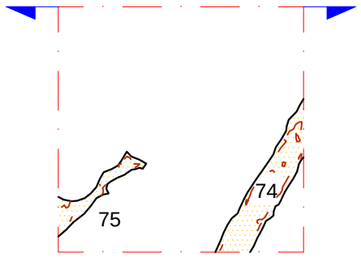
Test Pit 1 - Section



Test Pit 2 - Section



Test Pit 2Underlay Plan



DP14 - Test Pit 1 - View E

DP15 - Test Pit 2 - View E

	Timber Species Elm
	Timber Species Oak
	Surviving Bark
36	Timber Number
	Area of Degraded Timber
	Identifiable Timber
	Test Pit
	Trench Extent

N

TL 8546 0731

PROJECT NUMBER: 1059

PROJECT: SADDS WHARF, STATION ROAD MALDON, ESSEX

CLIENT: MR JEFFREY CIFFER

DESCRIPTION: TRENCH 3 - DETAILED PLAN (TIMBER CAUSEWAY 1016)

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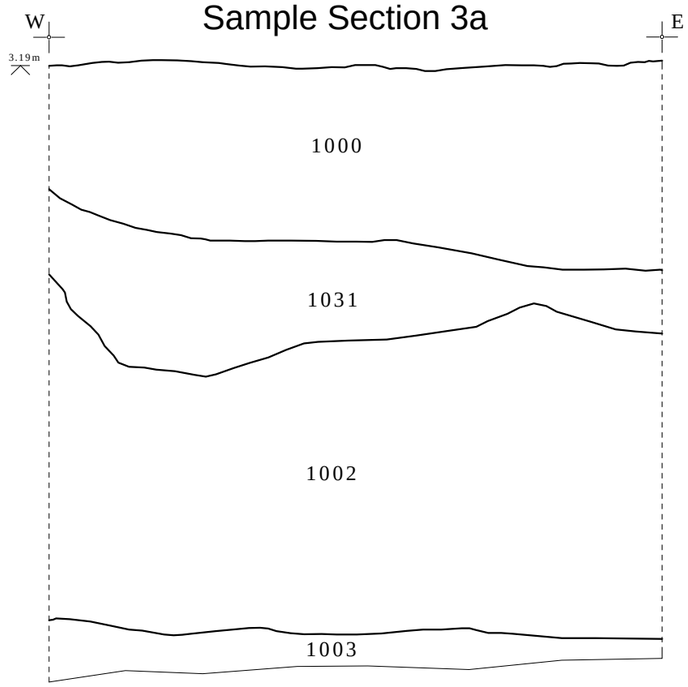
SCALE: 1:25 (0 – 1m)

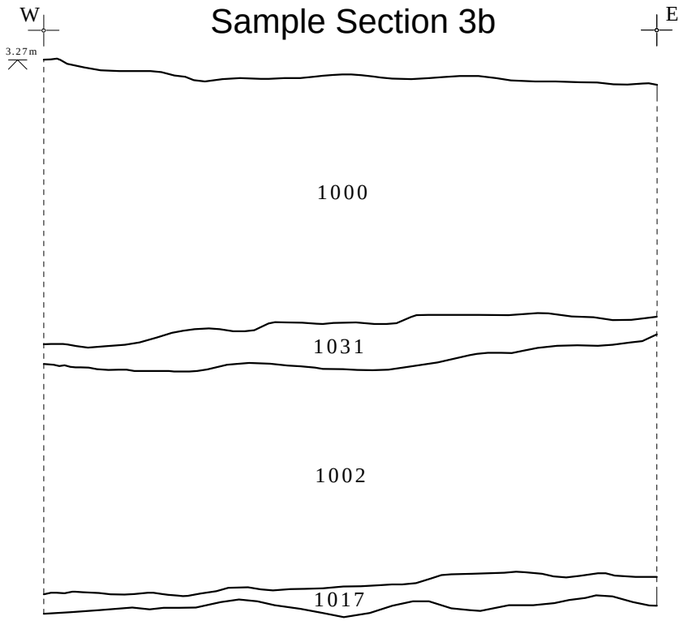
PLOT:	APPROVED:	VERSION:
A3	TPS	01
DATE:	AUTHOR:	FIGURE:
SEP 2014	MCA	07

TRENCH 3 CONT'D - SECTIONS & PHOTOGRAPHS

Sample Section 3a



Sample Section 3b



DP10 - Timber Surface 1016 - View W

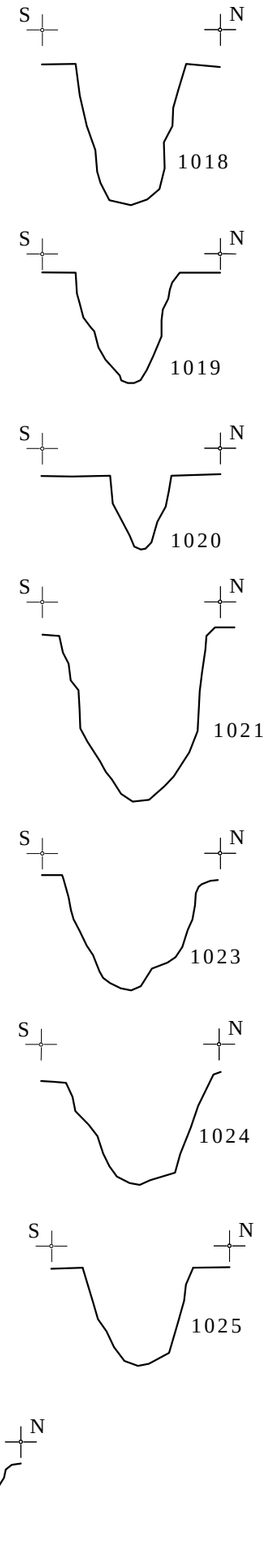
DP12 - Posthole & Stakeholes - View S

DP11 - Timber Surface 1016 - View E

DP16 - Natural 1003 Beneath Timber Surface 1016 - View S

DP13 - Surviving Bark Laid Over Timber Surface 1016- View E

Postholes & Stakeholes



TL 8546 0731

PROJECT NUMBER: 1059

PROJECT:
SADDS WHARF, STATION ROAD
MALDON, ESSEX

CLIENT:
MR JEFFREY CIFFER

DESCRIPTION:
TRENCH 3 - SECTIONS & PHOTOGRAPHS

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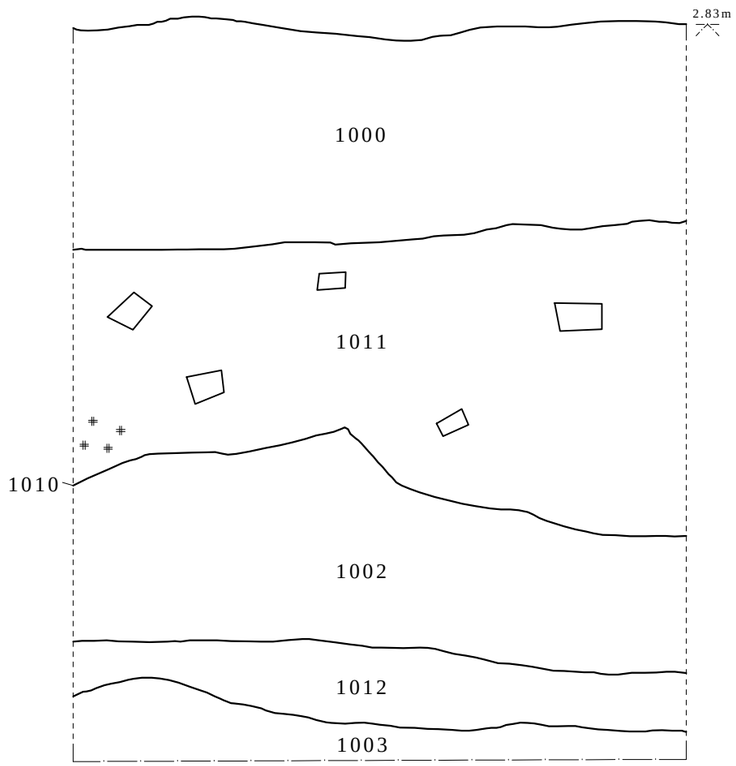
SCALE: 1:10 (0 – 50cm)

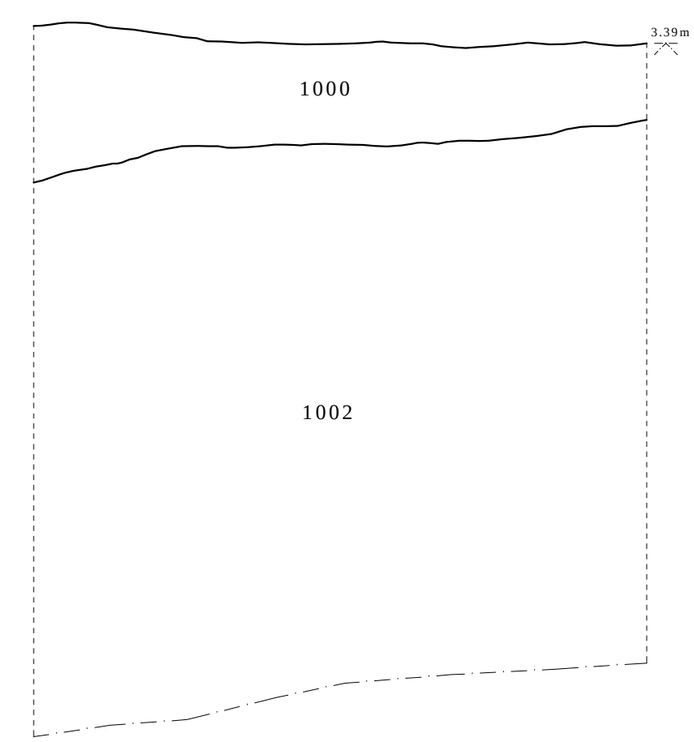
PLOT:	APPROVED:	VERSION:
A3	TPS	01
DATE:	AUTHOR:	FIGURE:
SEP 2014	MCA	08

TRENCH 4

Sample Section 4a



Sample Section 4b



DP17 - Sample Section 4a - View E

DP18 - Sample Section 4b - View E

	Burnt Material & Ash
	CBM

TL 8546 0731

PROJECT NUMBER: 1059

PROJECT:
SADDS WHARF, STATION ROAD
MALDON, ESSEX

CLIENT:
MR JEFFREY CIFFER

DESCRIPTION:
TRENCH 4 - SECTIONS & PHOTOGRAPHS

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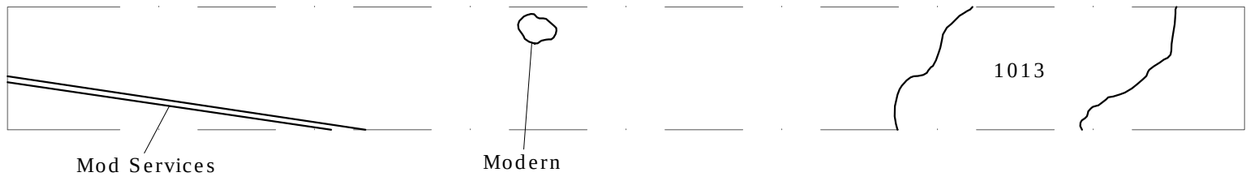
SCALE: 1:10 (0 – 50cm)

PLOT:	APPROVED:	VERSION:
A3	TPS	01
DATE:	AUTHOR:	FIGURE:
SEP 2014	MCA	09

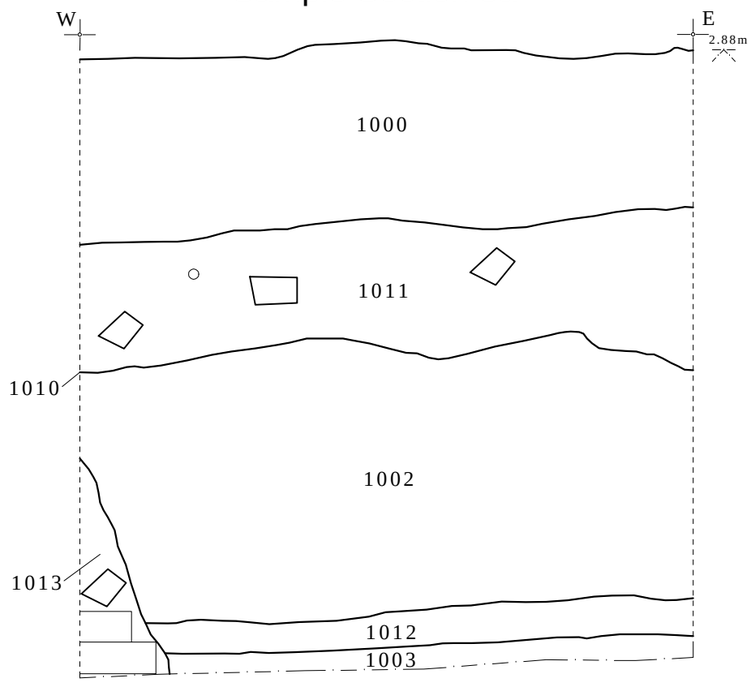
TRENCH 5

Trench 5 - Plan (1:100)



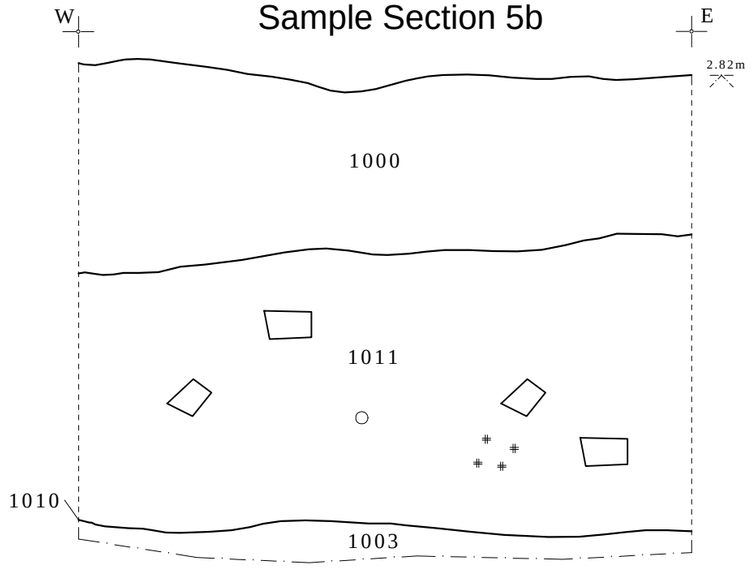
DP19 - Trench 5 Post Excavation - View W

Sample Section 5a



DP20 - Sample Section 5a - View N

Sample Section 5b



DP21 - Sample Section 5b - View N

N

	Trench Extent
	Burnt Material & Ash
	CBM

TL 8546 0731

PROJECT NUMBER: 1059

PROJECT:
SADDS WHARF, STATION ROAD
MALDON, ESSEX

CLIENT:
MR JEFFREY CIFFER

DESCRIPTION:
TRENCH 5 - PLAN, SECTIONS & PHOTOGRAPHS

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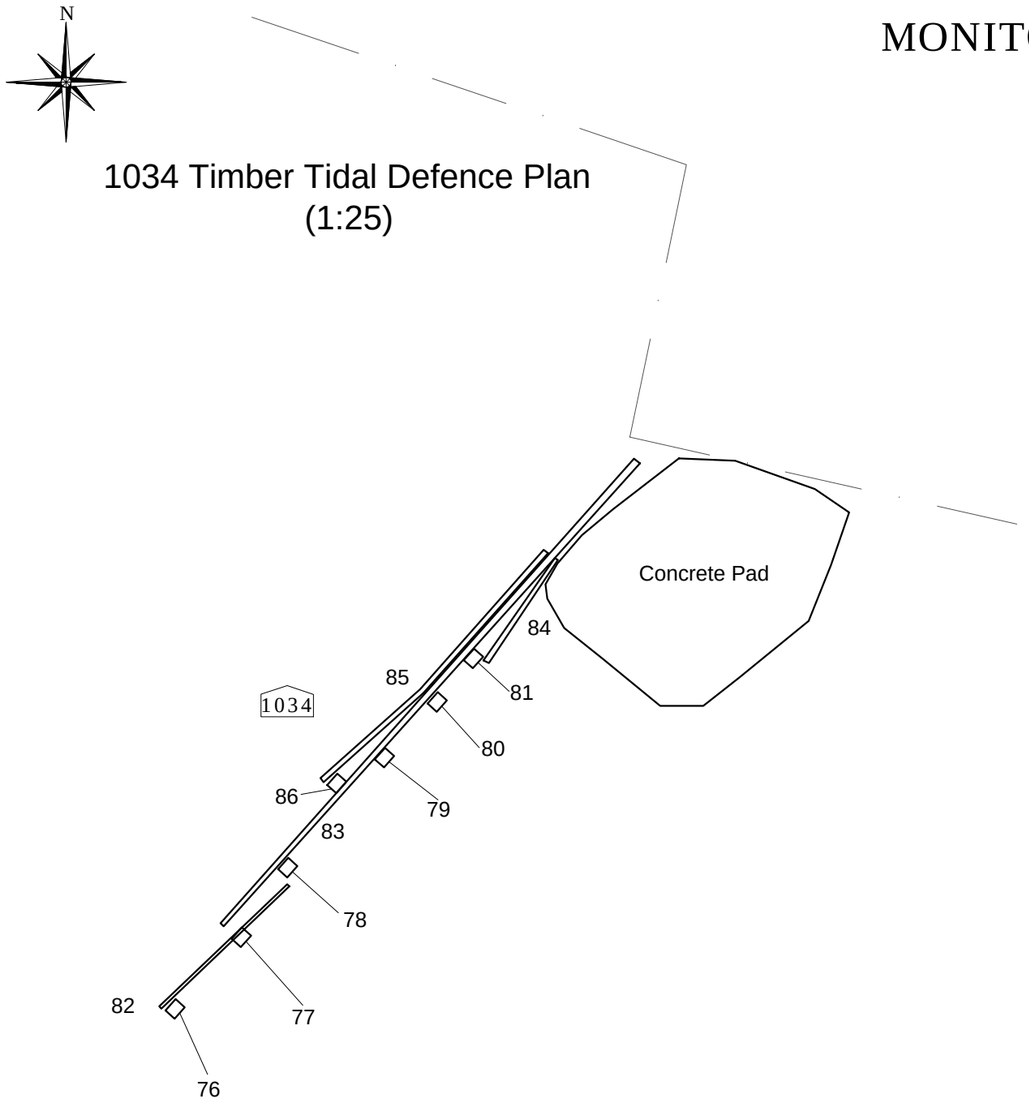
SCALE:
1:10 (0 – 50cm)
1:100 (0 – 5m)

PLOT:	APPROVED:	VERSION:
A3	TPS	01
DATE:	AUTHOR:	FIGURE:
SEP 2014	MCA	10

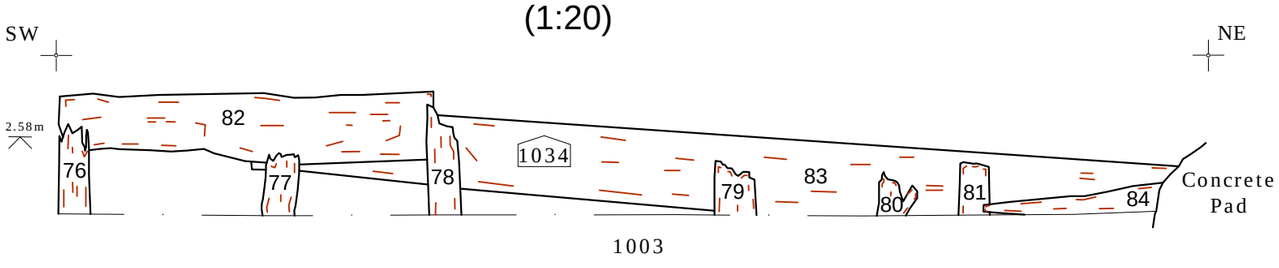
MONITORING AREA 1



DP23 - Monitoring Area - View NE

DP22 - Sample Section 6a - View NW

Sample Section 6a
(1:20)



	Excavation Extent
78	Timber Number
	Timber

TL 8546 0731

PROJECT NUMBER: 1059

PROJECT:
SADDS WHARF, STATION ROAD
MALDON, ESSEX

CLIENT:
MR JEFFREY CIFFER

DESCRIPTION:
MONITORING AREA 1 - PLAN, SECTIONS & PHOTOGRAPHS

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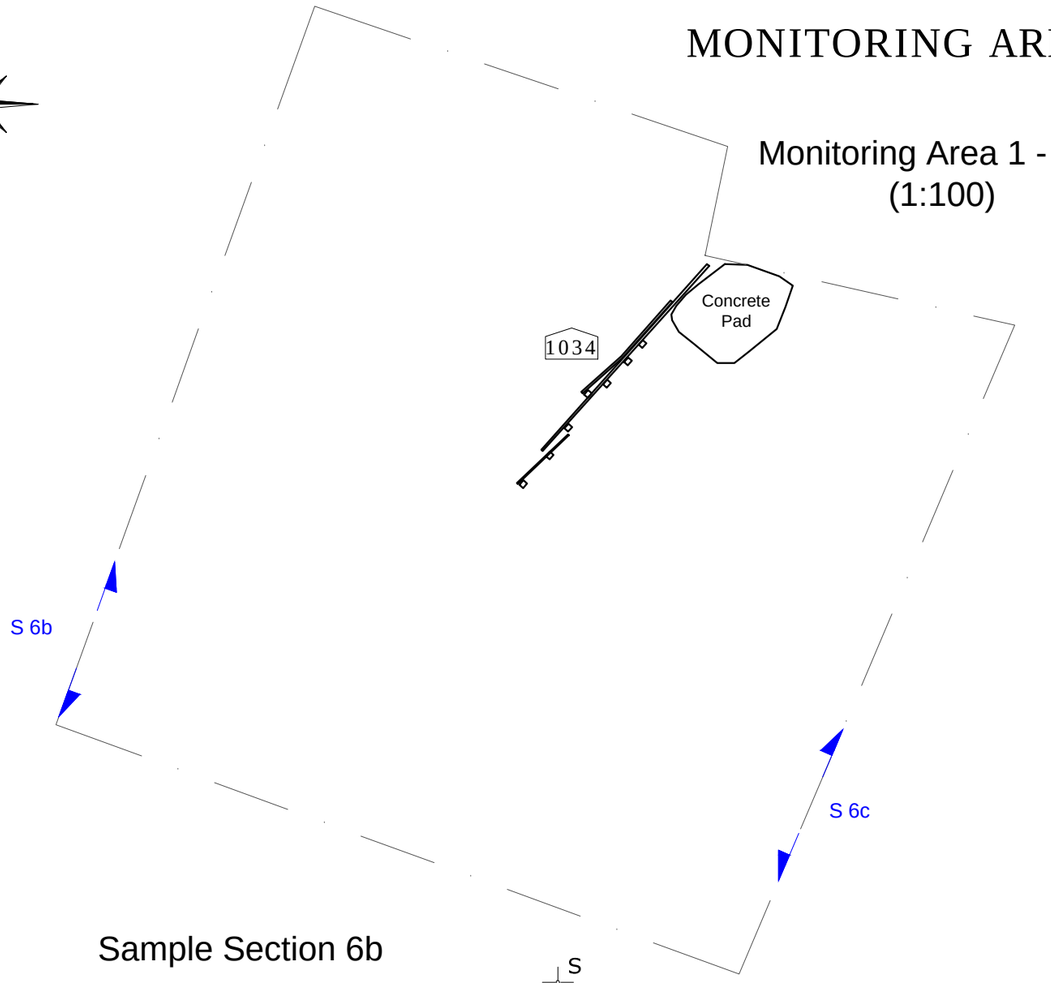
SCALE:
1:25 — 0 — 1m
1:20 — 0 — 80cm

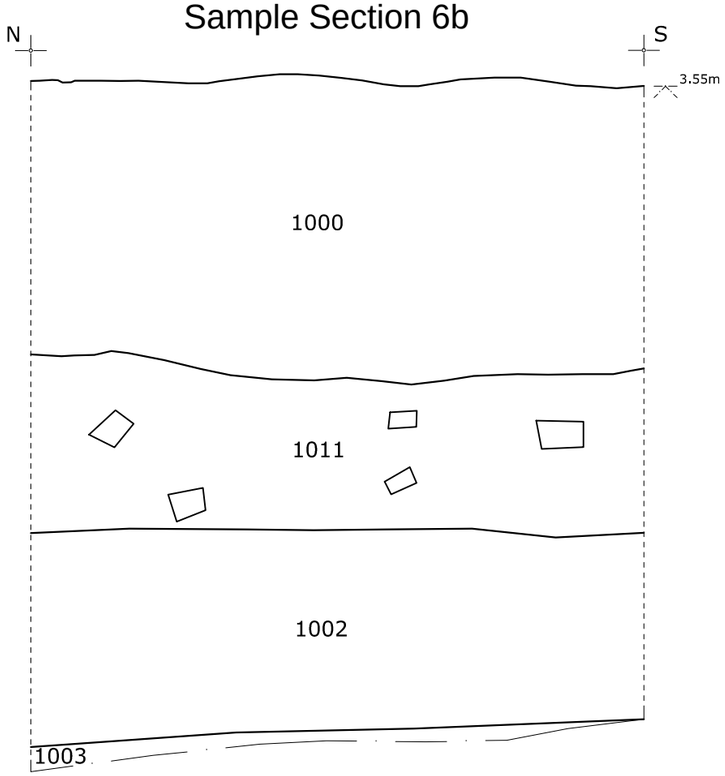
PLOT:	APPROVED:	VERSION:
A3	TPS	01
DATE:	AUTHOR:	FIGURE:
SEP 2014	MCA	11

MONITORING AREA 1 - CONTINUED

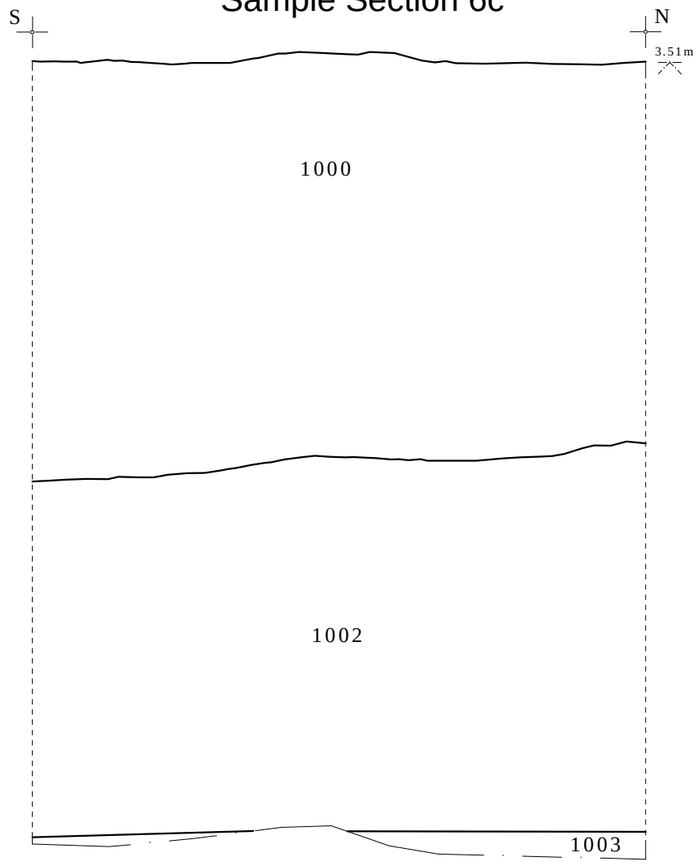
Monitoring Area 1 - Plan (1:100)



Sample Section 6b



Sample Section 6c



DP24 - Sample Section 6b - View NW

DP25 - Sample Section 6c - View SE

Excavation Extent

Section

CBM

TL 8546 0731

PROJECT NUMBER: 1059

PROJECT:
SADDS WHARF, STATION ROAD
MALDON, ESSEX

CLIENT:
MR JEFFREY CIFFER

DESCRIPTION:
MONITORING AREA 1 (CONT'D)- PLAN, SECTIONS & PHOTOGRAPHS

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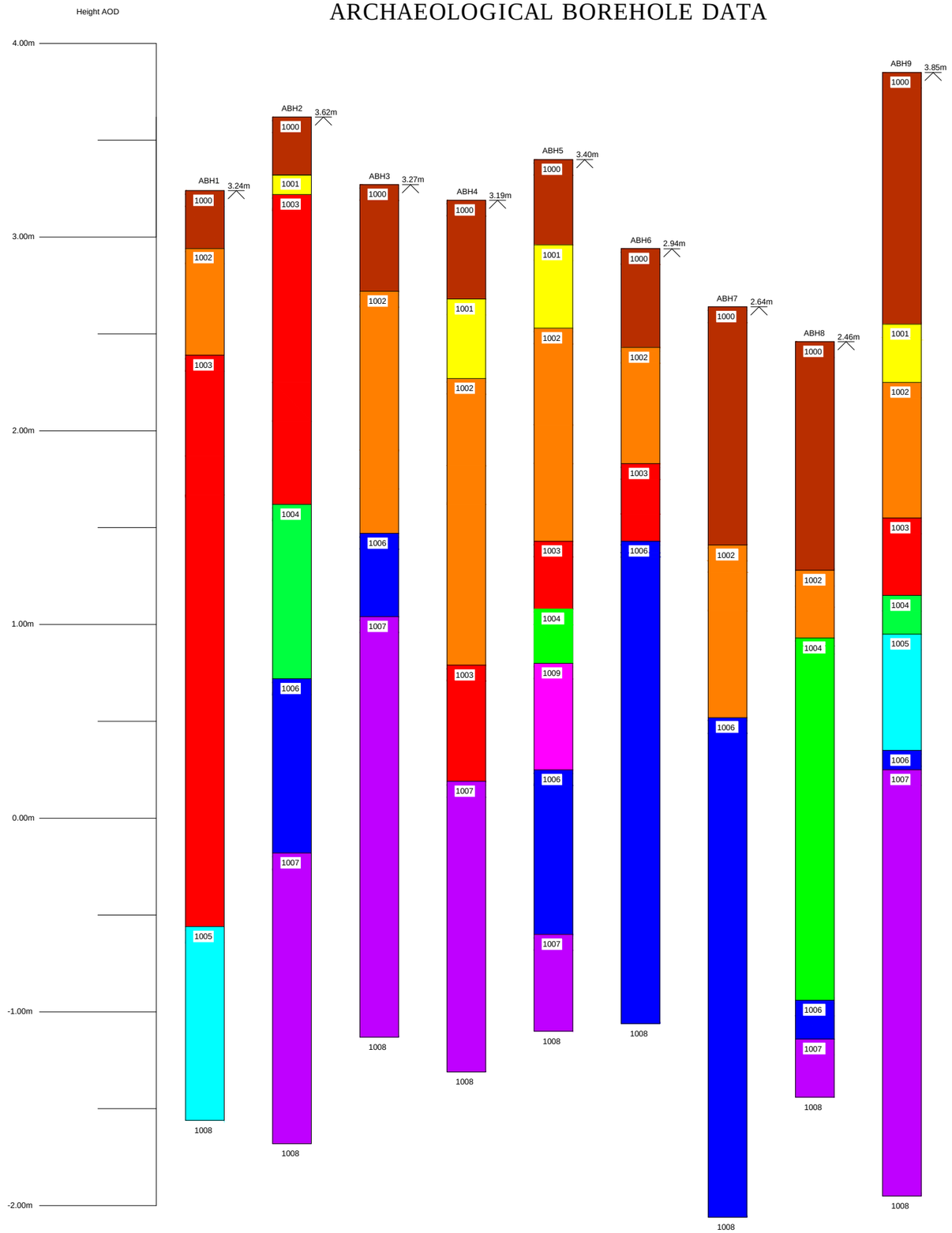
SCALE:
1:10 (0 – 50cm)
1:100 (0 – 5m)

PLOT:	APPROVED:	VERSION:
A3	TPS	01
DATE:	AUTHOR:	FIGURE:
SEP 2014	MCA	12

ARCHAEOLOGICAL BOREHOLE DATA



	1000 - Made Ground - Dark brown grey, loose sand, silt & clay with freq. CBM rubble
	1001 - Ash Layer - Dark grey black, loose sand, silt and ash
	1002 - Reclamation Layer - Light yellow orange, loose sandy gravel
	1003 - Alluvial Clay - Dark blue black, compact silty clay
	1004 - Alluvial Clay & Gravel - Light blue brown, firm mottled silty clay
	1005 - River Gravel Deposits - Mid brown yellow, loose sandy gravel
	1006 - River Gravels & Silt Alluvium - Mid yellow brown, loose gravel & silt
	1007 -River Gravel Bed - Light yellow brown, loose gravel
	1008 - London Clay - Dark blue black, very compact clay
	1009 - Alluvial Silt - Dark blue black, firm clay silt

TL 8546 0731

PROJECT NUMBER: 1059

PROJECT:
SADDS WHARF, STATION ROAD
MALDON, ESSEX

CLIENT:
MR JEFFREY CIFFER

DESCRIPTION:
ARCHAEOLOGICAL BOREHOLE DATA

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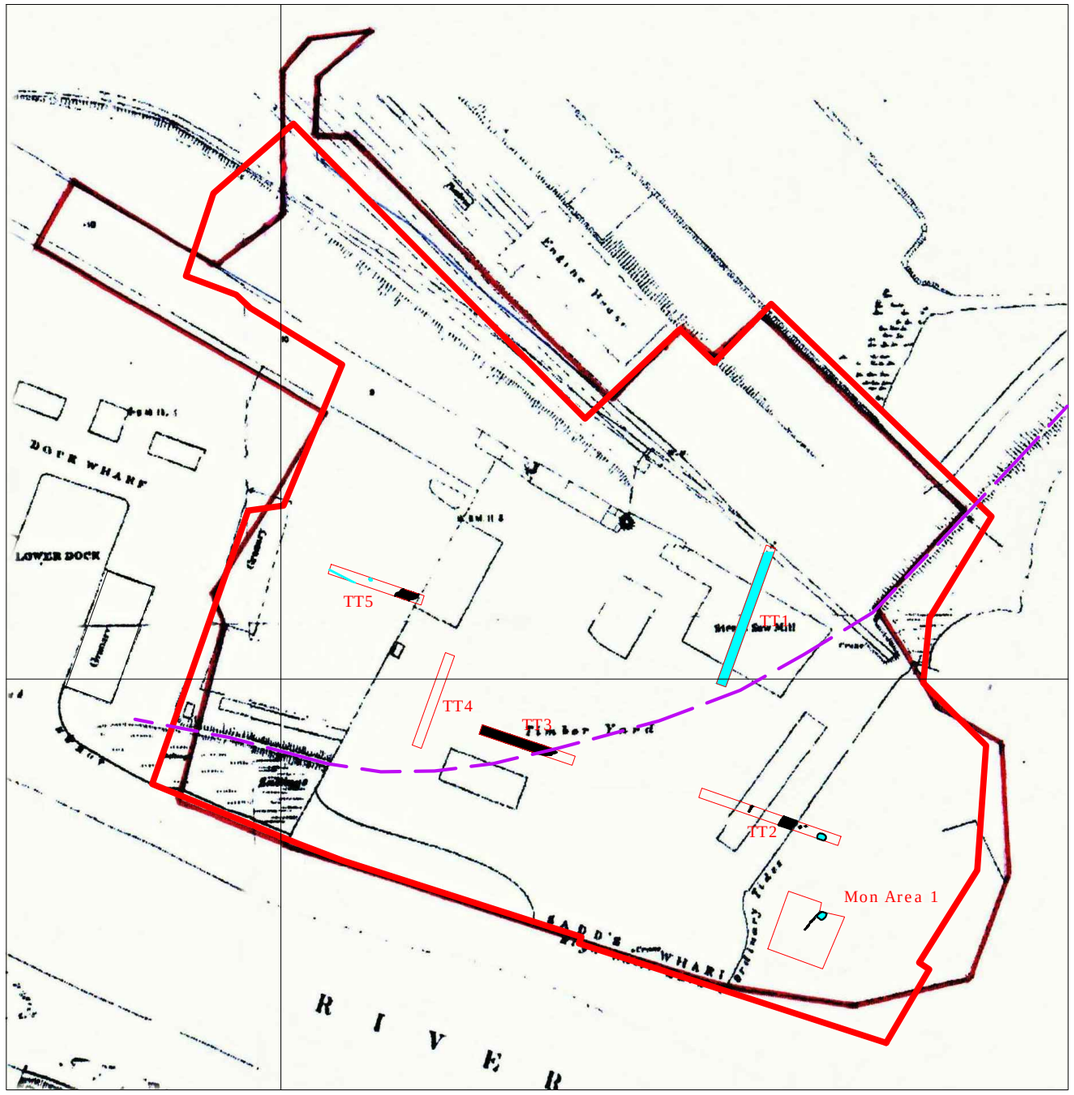
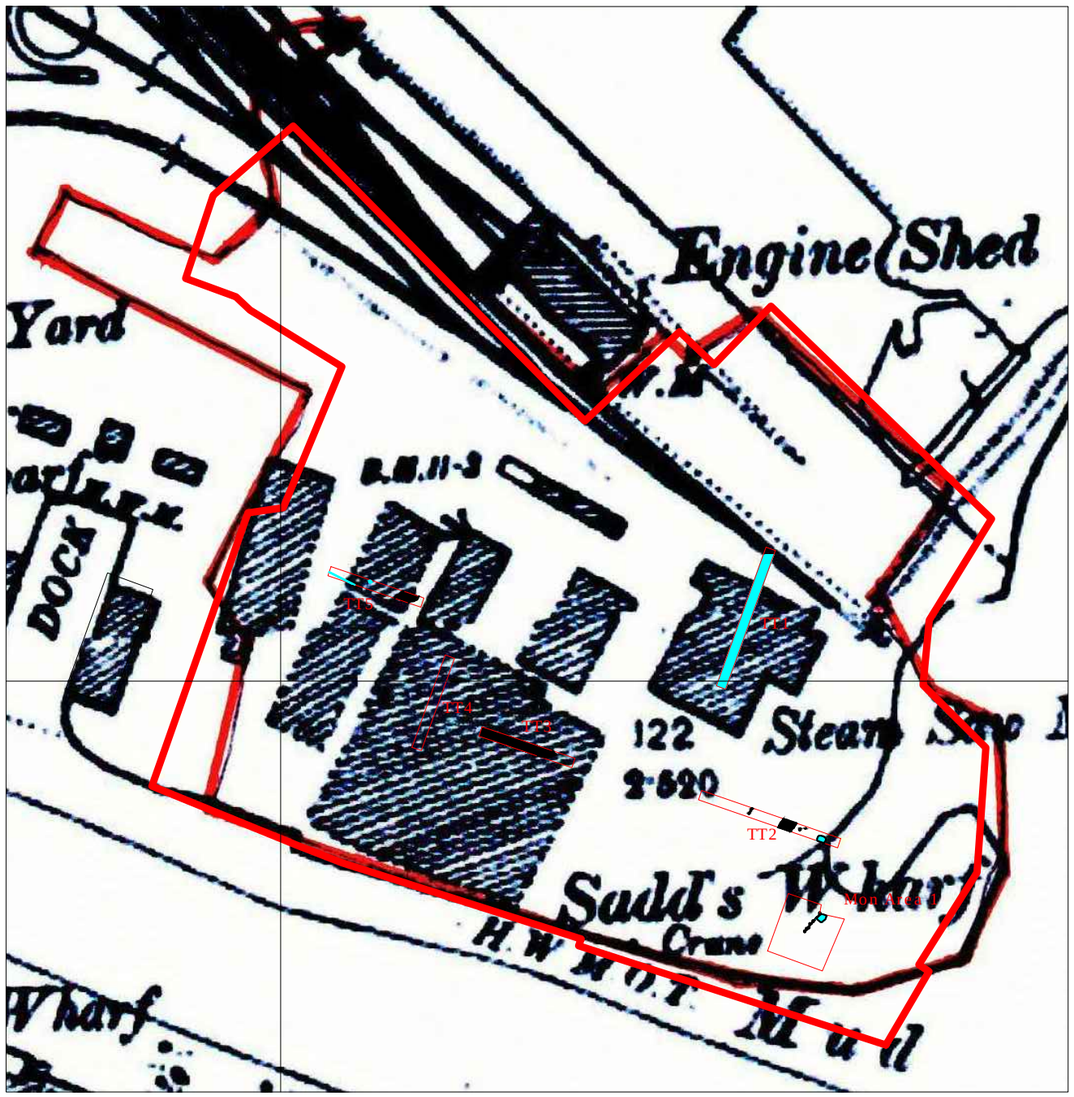
SCALE: 1:25 (0 – 1m)

PLOT:	APPROVED:	VERSION:
A3	TPS	01
DATE:	AUTHOR:	FIGURE:
SEP 2014	MCA	13

MAP REGRESSION



Ordnance Survey 1873 - Showing High Tide & 1014 Correlation



Ordnance Survey 1891 - Showing Changes in Site Layout & Reclamation Activity From 1873 Map

	Projected Route of Causeway
	Modern Feature
	Archaeological Feature
TT1	Trial Trench Locations
	Site Boundary

N

TL 8546 0731

PROJECT NUMBER: 1059

PROJECT: SADDS WHARF, STATION ROAD MALDON, ESSEX

CLIENT: MR JEFFREY CIFFER

DESCRIPTION: MAP REGRESSION

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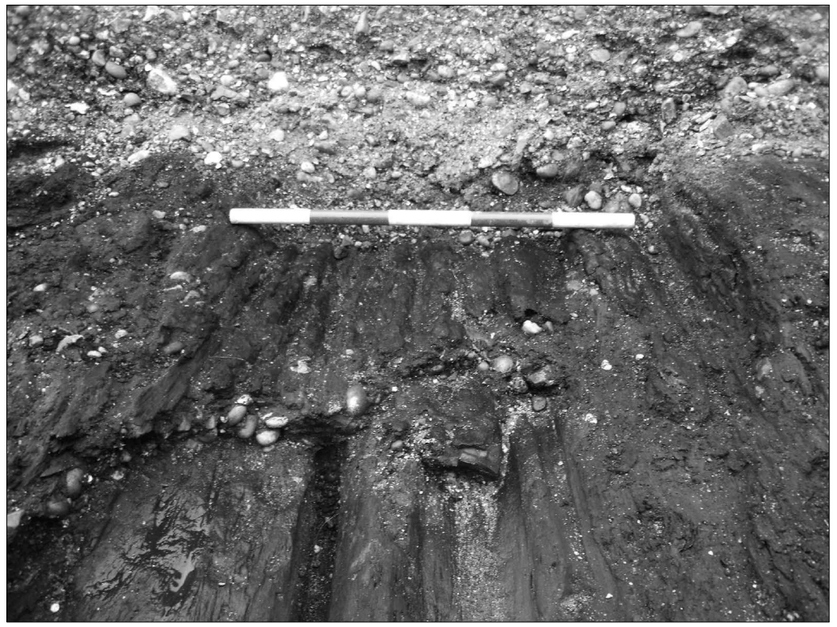
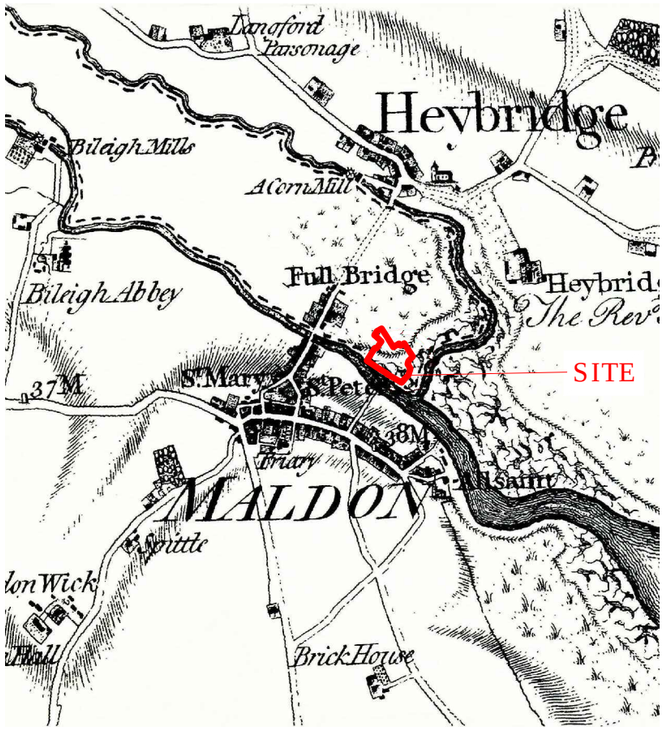
SCALE: 1:1250 (0 – 50m)

PLOT:	APPROVED:	VERSION:
A3	TPS	01
DATE:	AUTHOR:	FIGURE:
SEP 2014	MCA	14

DP26 - Timber Surface 1016 B&W Hi Res - View W



DP27 - Bark Above Timber Surface 1016 B&W Hi Res - View N



Andre & Chapman's Map 1777

DP28 - Timber Surface 1016 B&W Hi Res - View E

N

Site Boundary

TL 8546 0731

PROJECT NUMBER: 1059

PROJECT:
SADDS WHARF, STATION ROAD
MALDON, ESSEX

CLIENT:
MR JEFFREY CIFFER

DESCRIPTION:
ADDITIONAL B&W HI RES PHOTOGRAPHS & MAP

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SCALE: Not to Scale

PLOT:	APPROVED:	VERSION:
A3	TPS	01
DATE:	AUTHOR:	FIGURE:
SEP 2014	MCA	15

N

TT1	Trial Trench Locations
	Site Boundary

TL 8546 0731

PROJECT NUMBER: 1059

PROJECT:
SADDS WHARF, STATION ROAD
MALDON, ESSEX

CLIENT:
MR JEFFREY CIFFER

DESCRIPTION:
PROPOSED DEVELOPMENT & TRENCH LOCATION PLAN

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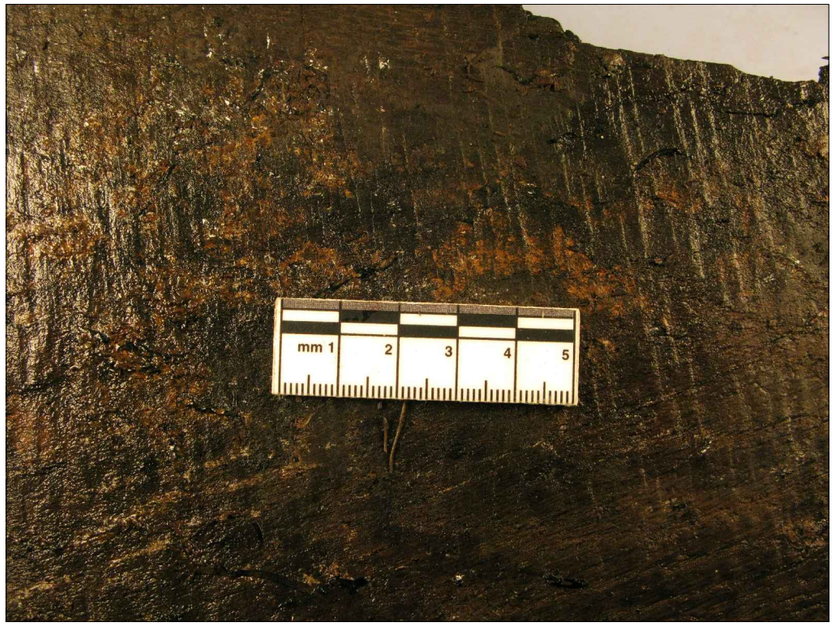
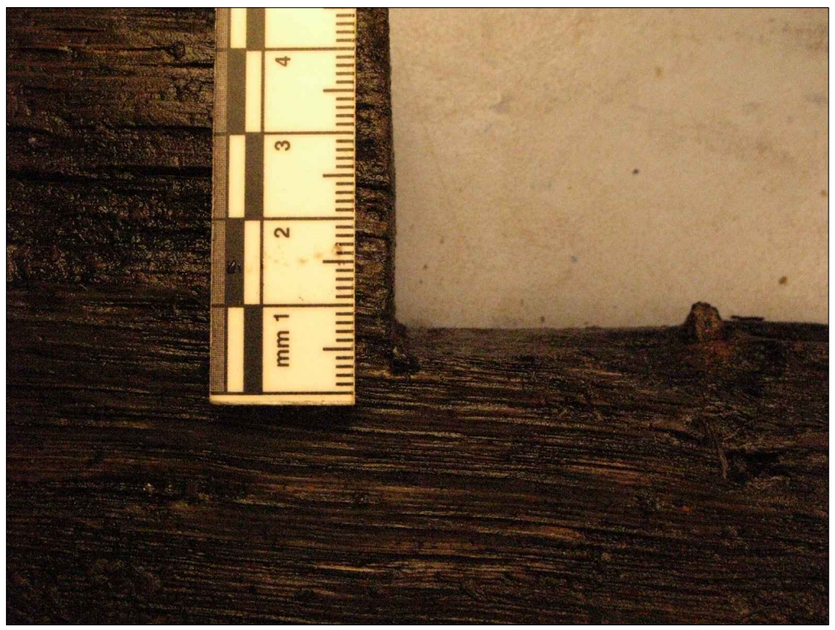
SCALE: 1:500 (0 – 25m)

PLOT:	APPROVED:	VERSION:
A3	TPS	01
DATE:	AUTHOR:	FIGURE:
SEP 2014	MCA	16

DP29 - Timber 36 - Hi Res Photo



DP30 - Timber 66, Saw Marks - Hi Res Photo



DP31 - Timber 69, Iron Fittings - Hi Res Photo

DP32 - Timber 74, Saw Over cut & Iron Fittings - Hi Res Photo

TL 8546 0731	PROJECT NUMBER: 1059

PROJECT:

SADDS WHARF, STATION ROAD
MALDON, ESSEX

CLIENT:

MR JEFFREY CIFFER

DESCRIPTION:

TIMBER HI RES PHOTOGRAPHS

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SCALE:

Not to Scale

PLOT:	APPROVED:	VERSION:
A3	TPS	01
DATE:	AUTHOR:	FIGURE:
SEP 2014	MCA	17

DP33 - Timber 1, Oak Plank - Hi Res Photo

DP34 - Timber 3, Saw Marks - Hi Res Photo

DP35 - Timber 16, Showing Burnt Area - Hi Res Photo

DP36 - Timber 20, Showing Iron Fitting - Hi Res Photo

N

TL 8546 0731

PROJECT NUMBER: 1059

PROJECT:
SADDS WHARF, STATION ROAD
MALDON, ESSEX

CLIENT:
MR JEFFREY CIFFER

DESCRIPTION:
TIMBER HI RES PHOTOGRAPHS CONTINUED

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SCALE: Not to Scale

PLOT:	APPROVED:	VERSION:
A3	TPS	01
DATE:	AUTHOR:	FIGURE:
SEP 2014	MCA	18