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The Engine Shed and Lincoln Centre for the Performing Arts Building, Brayford Campus University of Lincoln, Lincoln Archaeological Building Recording and Environmental Assessment

NGR: SK97221 71007 and SK 9715 7102
Planning Application: 2003/0620/F
LCNCC Accn No.: 2005.107
Site Code: LUES 05

Report

for

University of Lincoln

LAS Report No. 1083
October 2008

25 West Parade · Lincoln · LN1 1NW
Telephone 01522 544554 · Facsimile 01522 522211
Email info@linarch.co.uk · Website www.linarch.co.uk

VAT Registration No. 813 8029 41 · Lindsey Archaeological Services Ltd · Registered in England and Wales No. 6133162

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Summary

A programme of archaeological work was undertaken at the Engine Shed prior to its conversion to a students' union and arts centre. This comprised a photographic record of the building, monitoring of geotechnical holes and foundation trenches and a borehole transect across the site to obtain environmental data.

The engine shed and adjacent water tower were constructed in 1874-5. The engine shed ceased to be used in 1964 but some of the offices continued in use until the 1970s. The water tank had collapsed in 1950. All the buildings recorded had been stripped of fixtures and fittings many years before the survey.

The sediment sequence reflected in these cores suggests a Bronze Age and possibly earlier river eroding the glacial sands along its western edge and depositing clays and silts and organic silts in open water. An eastern movement of the channel may have made this area marginal and reeds began to colonise the silts and clays in the late Bronze Age, probably moving eastwards across the site, while woodland carr developed along its margins and then expanded across the site until it covered the whole area in the early 1st millennium BC. These deposits are truncated and may date no later than the early Iron Age but in the historic period, probably in medieval times the river returned and cut a new channel through, and over, the prehistoric peats depositing shell rich organic silts and muds up until the area was actively reclaimed by post-medieval industrial and railway development.

Introduction

Lindsey Archaeological Services was commissioned by The University of Lincoln in May 2005 to undertake a programme of archaeological recording at the Engine Shed, in accordance with a brief set by the city archaeologist dated April 29th 2005 and the general requirements set out in the *Lincolnshire Archaeological Handbook* published by the Archaeology Section, Lincolnshire County Council (October 2003).

Site Location

The site of the Engine Shed students' union and the Lincoln Performing Arts Centre is located on land south of the railway line which runs into St Mary's Station to the east, on the west bank of the Upper Witham and north of the university library (Fig. 1, Pl. 1). At the time of

the survey the site was occupied by the former railway engine shed with attached offices, water tank tower and two modern lean-to extensions. A new building to house the arts centre was constructed immediately to the west of the refurbished former engine shed. This site was previously undeveloped, and adjoins the engine shed about 95m west of the River Witham.

Planning Background

Full planning permission was granted on December 18th 2003 for the erection of a glazed extension to the engine shed and water tower to accommodate a Students' Union and multi-function hall.

A condition of the grant of permission required that;
"No development, geotechnical investigation, site clearance or other enabling work shall take place on the site until details of the measures to be taken to evaluate, preserve and/or record the archaeological content of the site, which shall include a timescale for the investigation, have been submitted to and approved by the Local Planning Authority. All archaeological work shall thereafter proceed in accordance with the approved programme".

This work comprised a photographic record of the buildings prior to demolition and conversion, a watching brief during geotechnical investigations and a transect of four boreholes for environmental sampling. The geotechnical survey established that the proposed groundworks would only affect modern disturbed ground levels so the proposed watching brief during construction works was cancelled after agreement with the Lincoln City Archaeologist. LAS site visits were made on May 2,3 and 9th and November 15th 2005 by Richard Pullen, Naomi Field and Geoff Tann. Environmental samples from the borehole transect were taken in June 2006.

Archaeological Background

The site is situated on the eastern edge of the Brayford Pool close to the point where the River Witham enters the pool from the south. The land bordering the pool is underlain by variable depths of organic, silt and sandy sediments that have built up over the last 7000 years retaining a palaeoenvironmental history of Lincoln and the Brayford. This pool was in the past much larger than today, and radiocarbon dates indicate that the sediments span a time period from the Mesolithic to the medieval period. The water level in the basin has risen continually throughout prehistory and more recent times, with the resultant burial and sealing of the earlier organic sediments. An archaeological programme of test pits was undertaken in 1994 and one on the south side of the Engine Shed (TP56) recorded at a depth of 2.7m an organic peat deposit 1.2m thick beneath a clay layer contaminated with diesel, brick and tile. When the Great Central Warehouse was converted to a library in 2003-4 peat obtained from a borehole sample was found to date to the Mesolithic period (Tann 2005).

After draining of the area in the 19th century, railway yards and sheds were erected. The Great Central Goods and Grain Warehouse and the offices to the south date from 1907. Until backfilling in the 1970s a dock for river transport extended east-west on the south side of the Engine Shed. The University of Lincoln has occupied the site since the 1990s.

Objectives

The aims of the archaeological investigations were to:

- Allow the preservation by record and the interpretation of above ground and below ground archaeological remains affected by the groundworks.
- Allow for appropriate environmental sampling and analysis to be carried out both in conjunction with the results of the engineers' test pits and boreholes with further investigations if considered necessary
- Produce a photographic and written record of the of the building
- Produce a project archive for deposition with the city and County Museum.
- Provide information for accession to the County Sites and Monuments Record (SMR) and the Lincoln Urban Archaeological Database.

METHOD

The building survey was carried out in accordance with the guidelines set out in 'Recording Historic Buildings: A Descriptive Specification (3rd edn) for a Level 1 Record

A series of palaeoenvironmental boreholes forming an east-west transect immediately to the south of the Engine Shed, and the LPAC building to the west. The borehole cores were anticipated to be the best way of obtaining a record of the archaeological deposits as they were likely to be at a depth which could not readily be examined by evaluation trenching. The borehole logs would record the depths of Holocene deposits, and indicate the prehistoric topography of the site in relation to the Rivers Witham and the Brayford Pool.

RESULTS

1. Building Survey

The Engine Shed

The engine shed was built in 1874-75 in order to replace the two previous engine sheds which were sited close to the station. The second of these, built in 1850-51, was already inadequate by 1857 and was extended that year. Despite the extension, traffic delays caused by the crossing gates continued to create serious irritation to city residents and businesses and other solutions were sought. 29 acres of land on the Holmes were sold by Lincoln Corporation in 1870 and various parts of the shunting operation were moved to the west of the High Street crossing. The engine shed and ancillary facilities were costed at £10,860 in 1873, and was built by Kirk and Parry (Pl. 2). It was used as an engine shed until October 1964, but housed a steam breakdown crane for some years (Griffiths and Hooper 1996, 43).

Since then the building was systematically stripped of its fixtures and fittings, including the tracks into the shed.

The brick 12-bay building is c.49m x 18m and was open at its west end (Pls 3-10). On the south elevation there are 11 window bays evenly spaced along the wall. Each window has flat soldier brick lintels and no sills and 16 panes in a 4 x 4 configuration. The central pane in each window swivels open (Pls 11-12). There were 11 windows on the north elevation, with a door in the easternmost bay which means they are not aligned with the windows on the opposite elevation. Unlike the north elevation the windows have cambered brick lintels and stone sills (Pls 13-14).

The corrugated asbestos sheeting roof on a light steel frame was installed in 1956, replacing an earlier hipped roof. The double pile roof with 20 roof lights and 9 vents evenly spaced along each of the ridges. There were three openings at the east end of the shed giving access to the fitting shop, drivers' room and office (see below) (Pl.9).

The Water Tower incorporating the Pump House, Boiler Room and Oil Room

The detached brick building supporting the water tower was built at the same time as the engine shed, and is located to its east side and was built in order to supply water from the River Witham, in place of the mains water supply used until the end of 1874 (Pl. 15). This relieved the Railway Company from paying the domestic water rate (Griffiths and Hooper 1996, 42-3). A 59,000 gallon tank was constructed at first floor level in a separate brick building to the east of the main engine shed building. A plan of 1903 depicts a pump house, boiler room and oil store beneath the tank (LAO MISC DON 1333; see Pl. 2). In 1950 the water tank's internal stays failed and it collapsed, but no injuries or serious damage was caused (Pl. 16).

Exterior

The tower has decorative brickwork comprising three oversailed rows of dentil headers with alternating headers protruding forming pendant triangular pattern with three further oversailed rows of stretchers above (Pls 17,18). At first floor level on the east elevation, there are 4 windows with brick lintels and stone sills, within larger recessed arches, and the 4 x 5 lights looked similar to those on the north wall of the engine shed. A single window is present on the north elevation in the same style, later masked by a later extension (Pl.17). The south elevation has two plain windows one at first floor level above a larger one at ground level (Pls 19, 26,27).

The Fitting Shop, Drivers' Room, and Office

By 1903 a single-storey three-roomed building with a pent roof sloping from east to west had been built filling in the space between the engine shed and the water tower (Pl. 19). There

was direct access into the Engine Shed and also into the Water Tower to the east (Pl. 20). One of the openings, into the boiler house, looks inserted. It is thought that this building continued in use after the engine shed was closed, and possibly until after 1978 (Griffiths and Hooper 1996, 51). This building was demolished in 2005 in advance of the redevelopment of the site (Pl.20).

Later Buildings

A single-storey brick extension was constructed on the east side of the water tower possibly contemporary with the 1956 re-roofing of the engine shed (Pls 21-25). It had a chimney and a corrugated asbestos roof. Its windows are the same as those found on the south elevation of the engine shed and may be contemporary. Its appearance is certainly consistent with a mid-late twentieth century date. It was demolished in 2005.

A slightly taller single-storey brick extension was present on the north side of the water tower and linked the fitting shop complex described above. It had a large northern entrance with a wooden lintel. There was a window to the east with 6 x 4 lights, brick lintel and stone sill.

Interior

The three rooms at ground level were used in 1903 as a Pump House (Pls 26-28), Boiler Room (Pls 29-31) and Oil Room (Pl. 32), with each room accessed via a door to the east (Pl. 2 and Pl. 25). The boiler room, in the centre, had connecting doors into the pump house and oil room. The oil room, to the north, had a door into the office in the later lean-to building to the west. The timber floor supporting the first floor water tank was still present above the boiler room (Pl. 31).

Conclusion

Only the shell of the engine shed and the water tower survived at the time of the building survey and this is reflected in the requirement for a simple record only. Fortunately, detailed records survive, including plans relating to the railway and its buildings which, together with the photographic record made in 2005, combine to form the 'preservation by record' of this complex of structures.

2. Watching Brief

Ground Investigations

Site investigations were carried out in May 2005 by Solmek comprising a series of six boreholes and six test pits (see Fig. 3). The ground disturbance was found to exceed the proposed foundation depths in TP 11 and 13 and the watching brief was abandoned (Pl. 33).

Foundation Trenches

The first archaeological monitoring visit took place after the contractors had demolished lean-to structures to the east, north and west of the water tower, excavated foundation trenches,

and poured the concrete foundations. To the east of the water tower, the uppermost 0.4m of deposits remained visible in the trench faces, overlain by a textile membrane and covered by recently redeposited material. Only a very dark brown peaty material was visible (Pls. 34, 35). The peaty material was not present within *m of the building and in this position a brown mixed fill is suspected to mark the position of a construction trench for the water tower. An offset brick foundation course was visible to the north of the water tower wall. Four open relieving arches were visible in the brickwork below the east elevation (Pl. 36).

Five similar relieving arches were visible in the brickwork below the east elevation of the engine shed (Pl. 37). This contained a light brown silty clay. No other soil deposits remained visible. The stubs remained of five single-brick wide walls which had extended to the east of the engine shed. These probably relate to rooms used for a fitters' shop, drivers' room and office which formed the western side of a building marked on a 1903 plan of the railway premises (LAO MISC DON 1333).

Conclusion

Only features associated with the recently demolished railway buildings were encountered during the watching brief. This is consistent with the findings of the borehole survey (see below) which indicate that this area was in the river until reclamation in the 19th century.

3. The Borehole Transect by James Rackham

Introduction

The archaeological programme for the Engine Shed and Lincoln Centre for Performing Arts Building of the University of Lincoln proposed an auger survey along the axis of the engine shed and proposed new building to the west. This survey was intended to identify the character of the deposits underlying the development site, assess its archaeological potential and palaeoenvironmental potential, and collect samples suitable for any detailed palaeoenvironmental studies that may be recommended (Field 2006).

Method

Site conditions and ongoing building works prevented any work within the footprint of the Engine Shed and proposed new building. The auger transect was therefore laid out on the south side of the Engine Shed at a sufficient distance to minimize hazards associated with the building work. The boreholes were laid at approximately 10m intervals along a broadly east-west transect (see Fig. 4) starting at the east end several metres from the modern bank of the River Witham. A Commachio hydraulic drilling rig mounted on a Mercedes Unimog was used to conduct the coring. Coring at each borehole location continued until the glacial sands underlying the Holocene sediments were reached. The upper deposits in all boreholes comprised recent and post-medieval dumps and made ground deposits, many associated with the railway yard and industrial developments of the 19th century. These deposits were drilled out using an auger bit and discarded. This drilling stopped as soon as sediments

clearly uncontaminated with post-medieval debris were recognized or at a maximum of 3m depth. A sampling unit into which an 80mm diameter transparent plastic sleeve is fitted was then used to take intact cores from each borehole until the underlying sands were reached. The cores were capped and labelled for splitting and logging in the laboratory. The boreholes were not sleeved during the coring and there has been some minor collapse of material into the borehole with the results that some lower samples include slump in the upper part of the core. This has been indicated in the diagrammatic section of the cores (Fig. 5).

The sleeved cores were split and opened in the laboratory, cleaned down to a smooth section and described (Appendix 1). After selection of representative sequences for the site samples were selected from the cores for radiocarbon dating. The selected representative cores were kept and wrapped and sealed against any future post-excavation study, while the remaining cores were broken up into 0.2m units and sieved on a 0.6cm sieve to recover any included archaeological debris which may help to date the sediments.

Results

The overburden of dumped material, limestone rubble, clinker and cinder, ash and sands were removed unrecorded from each borehole. Sample coring was commenced in each borehole at between 150 and 300cm depth. In most boreholes the upper part of the first core still contained dark grey sandy silts with frequent brick, coal, clinker and limestone fragments. These deposits were all interpreted as post-medieval and probably associated with the 19th century development of the site by the railways which necessitated raising the ground level on the site.

The logging and sieving of the discarded cores produced the following finds records:

BH1 - Glazed post-medieval pottery was recorded during logging at 2.69cm depth, and on breaking up the cores clay pipe, brick/tile, tile, coal and oyster shell was recorded between 2.2 and 2.93m depth; brick, tile, mussel and post-medieval leather shoe at 320-347m depth; oyster shell, brick/tile at 347-360m depth,

BH2 – brick/tile, tile, plastic, animal bone, glazed post-medieval pottery, iron screw threaded object, coal, cockle and mussel shell, bone and clay pipe stem were recorded between 2.3 and 3.18m depth, post-med. pot at 3.49-3.69m depth (slump!) and bone at 3.69-3.89 and 4.09-4.29m depth.

BH3 – all three cores kept and not broken up

BH4 – frequent brick/tile, tile, glazed post-medieval pottery, coal, limestone, bone and marine shell between 2.0 and 2.97m depth, cores below 2.97 kept.

BH5 – clay pipe stem, brick/tile, tile, glazed post-medieval pot, non-glazed pot, limestone and mussel shell between 2.1 and 3.1m depth

BH6 – slag, brick/tile, coal, glass, clinker, bone, cockle and mussel shell and coarse woven vegetable fabric recorded between 1.5 and 2.5m depth

BH7 – this core was heavily disturbed and included voids, water and debris through its whole depth down to 5m.
BH8 – core kept and not broken up
BH9 – road surfacing, cinder and slag recorded between 2.15 and 2.66m depth.

The top fill of several of the lower cores includes fragments of brick and coal in situations where the interpretation is slump from above down the hole (Appendix 1) so this material has been treated as contaminants.

Below these upper disturbed deposits presumably built up during the post-medieval reclamation of the area, in an effort to raise the ground level above the contemporary water table, were dark grey freshwater shell rich organic silts. These deposits occurred only in BH1 to BH5, being only 0.13m thick in BH5 but 0.64m thick in BH1. The occurrence of occasional small fragments of brick or tile and coal in these sediments indicate that they are probably medieval or later in date, and in BH5 the deposit below the shelly silts includes small brick and coal fragments. These deposits clearly indicate lake edge or river margin deposits and cursory examination of the shells suggests that they represent a similar assemblage to that found in organic muds downstream in the River Witham. This deposit appears to reflect the western edge of a much broader River Witham channel which has been restricted and reclaimed over the last 200-300 years and is likely to have been deposited in medieval and early post-medieval times. In BH 1-4 this channel feature cuts into underlying peat deposits, but in BH5 a black silt lies between the shell rich silts and the underlying peats. In BH6 to the west shell rich sandy silts overlie the peats but indicate a different environment, probably channel edge, when compared with the shelly silts to the east.

The peat deposits were recorded in all of the boreholes except BH7 which appears to have cored through a relatively recent disturbance. These deposits clearly extend across the whole site and in BH8 cap the underlying glacial sands (Fig. 2). The peat is woody across the whole site but in some cores can be divided into more reedy or more woody peat. In BH1 the 0.33m thick peat is very woody and twiggy and probably represent an alder carr environment, while in BH8 the lower part of the peat is woody while the upper part is a reed peat. Along the whole the transect the woody peat is generally underlain by either reed peats or reed rich silts with laminations of compacted reed. This environment reflects a preceding phase of reed beds that subsequently became colonized by woodland carr.

Two samples of wood were taken from these peaty deposits for dating purposes. A sample of wood from the base of the peats in BH8 has produced a date of 820-910 BC (at 1 sigma - Beta-244186 – see Table 1), while wood from the upper part of the peats in BH4 has yielded a date of 770-800 BC (at 1 sigma - Beta-244185 – Table 1). The peats therefore must have started forming in the late Bronze Age at a height of approximately 1.2m OD and probably continued forming into the early Iron Age up to at least 2.82m OD although the upper levels

may have been truncated across the whole or most of the site. At the western end of the transect (BH8 and BH9) the peats overlie the late glacial deposits, but to the east towards the River Witham a series of clays, organic clays and organic silts underlie the wood and reed peats (Fig. 2). These deposits indicate deposition in water and either indicate a former western extent of the old River Witham or a southwards expansion of the Brayford Pool. A radiocarbon sample of wood was taken from the lower part of a dark grey organic silty clay beneath the peats at 1.1m OD. This gave a date of 1400-1450 BC (at 1 sigma - Beta-244184 – Table 1) in the late Bronze Age confirming that the peats started forming across the site sometime after this and before the start of the 1st millennium BC.

Discussion

The sediment sequence reflected in these cores suggests a Bronze Age and possibly earlier river eroding the glacial sands along its western edge and depositing clays and silts and organic silts in open water. An eastern movement of the channel may have made this area marginal and reeds began to colonise the silts and clays in the late Bronze Age, probably moving eastwards across the site, while woodland carr developed along its margins and then

Table 1. Radiocarbon results

Sample Data	Measured Age	13C/12C Radiocarbon Age	Conventional Radiocarbon Age
Beta - 244184	3210 +/- 40 BP	-28.7 o/oo	3150 +/- 40 BP
SAMPLE : ENGINE-SHED **BH3**-CORE3-38cm ANALYSIS : AMS MATERIAL/PRETREATMENT : (wood): acid/alkali/acid 2 SIGMA CALIBRATION : Cal BC 1500 to 1380 (Cal BP 3450 to 3330) AND Cal BC 1330 to 1330 (Cal BP 3280 to 3280)			
Beta - 244185	2660 +/- 40 BP	-30.1 o/oo	2580 +/- 40 BP
SAMPLE : ENGINE-SHED-**BH4**-CORE2-39cm ANALYSIS : AMS MATERIAL/PRETREATMENT : (wood): acid/alkali/acid 2 SIGMA CALIBRATION : Cal BC 810 to 750 (Cal BP 2760 to 2700) AND Cal BC 680 to 670 (Cal BP 2630 to 2620) Cal BC 610 to 600 (Cal BP 2560 to 2560)			
Beta - 244186	2690 +/- 40 BP	-22.6 o/oo	2730 +/- 40 BP
SAMPLE : ENGINE-SHED-**BH8**-CORE1-95-100cm ANALYSIS : Radiometric MATERIAL/PRETREATMENT : (wood): acid/alkali/acid 2 SIGMA CALIBRATION : Cal BC 970 to 960 (Cal BP 2920 to 2900) AND Cal BC 940 to 810 (Cal BP 2890 to 2760)			

expanded across the site until it covered the whole area in the early 1st millennium BC. These deposits are truncated and may date no later than the early Iron Age but in the historic period,

probably in medieval times the river returned and cut a new channel through and over the prehistoric peats depositing shell rich organic silts and muds up until the area was actively reclaimed by post-medieval industrial and railway development.

Archaeologically, apart from the upper post-medieval deposits most of this area is likely to be sterile or even truncated, but the rising underlying sands at BH8 and BH9 must reflect an area above the contemporary river levels in early prehistory. This area may be the western edge of the prehistoric Witham channel and as such could have been a focus of human activity in the early Bronze Age or earlier. Recent work at St Catherines and at the University Pond (immediately west of the LPAC building) have identified Mesolithic and Neolithic activity on sand banks near the river and this area may be a candidate for occasional occupation in early prehistory. It is possible that some prehistoric waterside structures (to allow access to the river) or boats may have been constructed or beached in this area but the evaluation of deposits at this depth (over 3m) is impractical and probably unnecessary where the new buildings are being piled.

The palaeoenvironmental potential of this sequence is high, with deposits preserving organic remains in good condition spanning perhaps from the mid 2nd millennium BC to the mid 1st millennium BC and capped by river channel silts of probable medieval date. The complete core sequence from BH3, the lower 2m of BH4 and the whole peat sequence in BH8 have been retained for post-excavation analysis of the environmental sequence.

Recommendations

The peats from the borehole transect provide a palaeoenvironmental sequence from the mid 2nd to mid 1st millennium BC. The samples from the University pond site to the south of the LPAC span a sequence running from the later 2nd millennium BC through to the medieval period (Field, forthcoming). It is recommended that the palaeoenvironmental sequence from the mid 2nd to mid 1st millennium BC, and the later historic channel sediments are used to produce a vegetational history of the Brayford area in the late Bronze Age and early Iron Age, and part of the historic period, and confirm the interpretive sequence made above. These studies should be supported by further radiocarbon dates and compared with and added to the results from other studies conducted in the Brayford area.

The work at the Engine Shed, combined with that on the University Pond site (LUNY06) and the nearby Lincoln Marina site would deliver a palaeoenvironmental history of the area from the late Neolithic to the medieval period, charting both the development of the landscape during prehistory and the impact of the development of the Roman and medieval city of Lincoln.

Acknowledgements

The building recording was undertaken by Naomi Field. The watching brief was undertaken by Geoff Tann and Richard Pullen. Members of staff of the University of Lincoln provided digital photographs and digital and paper drawings relating to the development.

Site Investigation Services conducted the augering programme on site under the supervision of James Rackham. Dr Jane Wheeler split, photographed and logged the core samples. The discarded core samples were broken up and sieved by Gemma Martin and Catherine Sharrock Walsh. The radiocarbon dates were undertaken by Beta Analytic Inc, Miami.

References

Field, N. 2006 *Lincoln Centre for Performing Arts Building Brayford Campus, University of Lincoln, Lincoln. Archaeological Evaluation. Project Design and Estimate.*

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Griffiths, R. and Hooper J., 1996 *Great Northern Railway Engine Sheds Vol. 2 The Lincolnshire Loop Nottinghamshire and Derbyshire.* Challenger Publications.

LAO MISC DON 1333. Great Norrthern Railway Lincoln. Railway plan surveyed April- August 1903.

Tann, G. 2005 Great Central Warehouse, Ropewalk, Lincoln:Archaeological Watching Brief. LAS Report 790

Contents of the Site Archive

Correspondence
Architect's drawings
Site plans
Flots from the cores

Digital Photographs
1. Miscellaneous historic images supplied by University of Lincoln 18 images,
2. 2002 supplied by University of Lincoln 19 images
3. LAS film 04/177 45 images
4. LAS film 05/101 51 images
5. LAS film 05/ 142 31 images

full set supplied to Lincoln City Council and HER on CD

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APPENDIX 1

APPENDIX 1. Lincoln University Engine Shed Cores and logs
BH1 Core 1 (220cm-320cm)

49cm Post-medieval pot sherd

0cm-4cm Missing – deposit has slumped to 4cm.

4cm-20cm Firm 5YR 3/1 very dark grey sandy silty layer with ochreous staining and inclusions of fragmented brick, coal and clinker; sub-angular gravel (= 20mm x 10mm) and smaller angular gravel inclusions (= 5mm x 5mm). Industrial rubbish/dump deposit mixed with the sandy silt – most probably active dumping to make ground.

20-44cm Firm 5YR 4/1 dark grey sandy silt with inclusions of angular limestone gravel (ranging in size from 10mm x 5mm to 3mm x 3mm), pebbles (= 20mm x 10mm), and fragments of brick. Industrial rubbish/dump deposit mixed with the sandy silt – most probably active dumping to make ground.

44cm-60cm Firm 5YR 4/1 dark grey sandy silt, with inclusions of angular and sub-angular limestone gravel (ranging from 5mm x 5mm to 2mm x 1mm), brick fragments and coal particles (= 5mm x 4mm). Industrial rubbish/dump deposit mixed with the sandy silt – most probably active dumping. **Note:** Post-medieval glazed pot sherd at **49cm** (sampled for relative dating analysis).

60cm-75cm Wet but firm 5YR 4/1 dark grey sandy silt with inclusions of angular gravel (= 3mm x 2mm), angular coal particles (= 5mm x 5mm), brick fragments, organic matter includes wood/root wood at 60cm, and mollusc shells at 64cm (sampled).

75cm Horizon between dump/rubbish deposits and the shell-rich organic silt.

75cm-100cm Firm YR5 3/1 very dark grey mollusc shell-rich organic silt with wood/root wood and root fibres - indicative of a lake environment.

Shoe sample 320cm-325cm: 10YR 2/2 very dark brown mollusc shell-rich silt.
Note: This sample contained a large fragment of oyster shell.
Shoe sample 348cm-350cm: 10YR 2/1 black peat with wood/root wood inclusions.

Lincoln University Engine Shed – BH1 Core 2 (320cm-440cm)

0cm-26cm Firm 5YR 3/1 very dark grey sandy organic mollusc shell-rich silt with inclusions of pebbles (= 25mm x 18mm), angular and sub-angular limestone gravel (= 5mm x 5mm), fragments of brick and coal. Industrial rubbish has been dumped into the natural organic shell-rich silt to make ground. The initial interpretation of this deposit was that it was 'slip down' but the underlying deposit (see 26cm-39cm) indicates a definite phase of dumping.

26cm-39cm Firm 5YR 2.5/1 black organic mollusc shell-rich silt with inclusions of small brick fragments (= 6mm x 4mm) – less concentrated than the overlying deposit (0cm-26cm), with a greater concentration of mollusc shell and crushed mollusc shell than the overlying deposit (mollusc shell sampled at **37cm**).

39cm Peat horizon.

39cm-72cm Firm YR5 3/2 dark reddish brown peat with well-preserved and semi-degraded organic matter – wood/root wood and twigs. This deposit is indicative of an open and wooded boggy area – most probably scrubby alder carr.

72cm Basal point of definite peat horizon.

72cm-82cm Firm YR5 3/1 very dark grey silty peat with humified organic fibrous matter i.e. reed (*Phragmites*) stem and root fibres.

82cm-93cm Firm YR5 2.5/1 black clayey silt with occasional humified organic fibrous matter i.e. reed (*Phragmites*) stem and root fibres.

93cm-100cm Firm 5YR 3/1 very dark grey silty clay with humified organic matter i.e. root fibres.

Lincoln University Engine Shed – BH1 Core 3 (440cm-540cm)

15cm Top of clay horizons

0cm-2cm 'Slip down' contamination due to dump/rubbish inclusions.

2cm-7cm Soft Gley 1 5/N grey silty clay.

7cm-12cm Soft moist 5YR 2.5/1 black silty mollusc shell-rich clay.

12cm-15cm Firm 5YR 3/1 very dark grey clay with 5YR 4/4 reddish brown mottling (ochreous staining), inclusions of mollusc shells but less abundant than in the overlying deposit (7cm-12cm).

15cm-26cm Soft 5YR 4/4 reddish brown clay with inclusions of angular and sub-angular 5YR 4/4 stones (= 10mm x 10mm), and fine ochreous laminations.

26cm-40cm Firm 5YR 4/1 dark grey clay with fine root fibres.

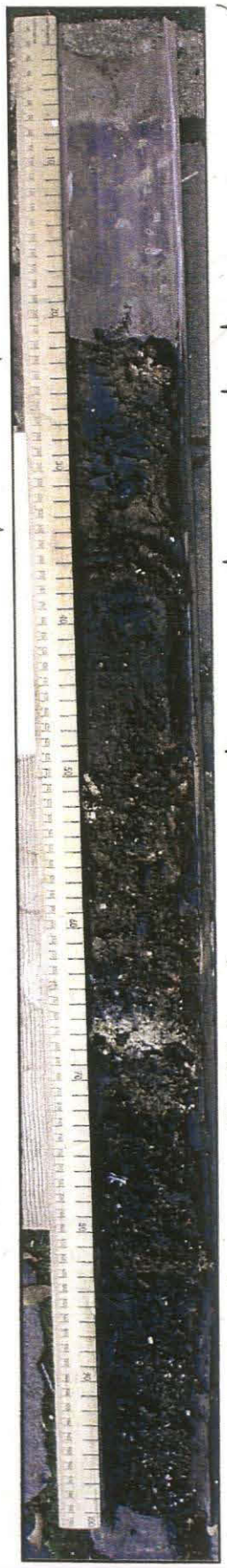
40cm Top of sand horizons.

40cm-60cm Wet but firm 5YR 4/6 yellowish red sand with inclusions of angular and sub-angular stones (= 20mm x 10mm), pebbles (= 10mm x 10mm), and rounded and sub-angular quartz gravel (= 0.5mm x 0.5mm).

60cm-90cm Wet but firm 7.5YR 4/4 brown sand with inclusions of pebbles (= 22mm x 10mm), angular stones (= 25mm x 15mm).

90cm-100cm Wet but firm 5.5YR 3/4 dark brown sand with inclusions of angular and sub-angular gravel (= 7mm x 5mm).

Lincoln University Engine Shed – BH2 Core 1 (230cm-330cm)



23cm Oyster shell

34cm Burnt bone

0cm-21cm Missing

21cm-24cm Firm 5YR 3/1 very dark grey silt with inclusions of angular limestone (= 3mm x 1.5mm), brick fragments and lime mortar, and fragments of oyster shell at **23cm** (sampled).
24cm-37cm Firm 5YR 3/1 very dark grey silt with inclusions of quartz pebbles (= 10mm x 8mm), angular gravel (= 0.5mm x 0.5mm), occasional mollusc shell, and fragment of burnt bone at **34cm** (sampled).

37cm-49cm Firm 5YR 2.5/1 black silt with inclusions of crushed brick.

49cm-62cm Firm 5YR 3/2 dark reddish brown sandy silt with inclusions of brick (= 70mm x 30.5mm) and crushed brick, angular limestone (= 30mm x 10mm), and black ash. Rubbish/dump deposit mixed with the sandy silt – most probably active dumping to make ground.
62cm-66cm Firm 7.5YR 2.5/1 silty black ash/coal deposit mixed with 10YR 5/1 grey ash.
66-68cm Firm 10YR 7/2 light grey crushed limestone with inclusions of 10YR 5/1 grey ash.
68cm-70cm Firm 10YR 4/1 dark grey silt with inclusions of angular limestone (= 10.5mm x 5mm).
70cm-72cm Firm 5YR 4/2 dark reddish grey sandy silt with brick fragments (= 10mm x 10mm) and occasional mollusc shells.
72cm-84cm Firm5YR 2.5/1 black sandy silt with inclusions of angular stones (= 20.5mm x 10mm), brick fragments (= 0.5mm x 0.5mm), and burnt bone at 79cm (sampled). Rubbish/dump deposit.
84cm-88cm Firm 5YR 2.5/1 black organic mollusc shell-rich silt, with inclusions of brick fragments. Mollusc shell sampled at **85cm**.

88cm-100cm Firm 5YR 2.5/1 black organic mollusc shell-rich silt with inclusions of small brick fragments (= 6mm x 4mm). Dump/rubbish deposit to make ground.

Shoe sample 330cm-338cm: 10YR 2/1 black mollusc shell-rich silt.

Lincoln University Engine Shed – BH2 Core 2 (330cm-430cm)

0cm-19cm Missing.

19cm-26cm Firm 5YR v3/c1 very dark grey silt with inclusions of fragmented brick (= 1mm x 1mm) and brick dust, and sub-angular quartz gravel (= 1mm x 0.5mm). The absence of mollusc shells in this deposit suggests this layer may be contaminated with 'slump'.

26cm Horizon between dump/rubbish deposits and peat.

26cm-65cm Firm 5YR v5/ch2 dark reddish brown peat with organic matter i.e. twigs, wood/root wood, and fine root fibres.

65cm-82cm Firm and compacted 5YR 3/2 dark reddish brown peat – the organic matter i.e. wood/root wood and root fibres form fine laminations.

82cm-88cm Firm 5YR 2.5/2 dark reddish brown silty peat containing organic matter i.e. humified stem and root fibres.

88cm-100cm Soft 5YR 3/1 very dark grey silt with organic matter i.e. small twigs, stem and root fibres.

Shoe sample 430cm-435cm: 10YR 3/1 very dark grey clayey silt.

Lincoln University Engine Shed – BH2 Core 3 (437cm-520cm)

25cm Horizon between basal dump/rubbish deposit and silt

0cm-11cm Missing.

11cm-13cm Firm 5YR 3/1 very dark grey silt with fragmented brick (= 2mm x 1.5mm) and lime mortar.
13cm-20cm Firm 5YR 3/1 very dark grey silt with inclusions of organic matter i.e. stem and root fibres.
Note: Fracture at 19cm.
20cm-25cm Firm 5YR 2.5/1 black silt with inclusions of fragmented brick (= 1mm x 1mm) and organic matter i.e. stem and root fibres. Dump/rubbish deposit/slump.

25cm-34cm Firm 5YR 4/1 dark grey clayey silt.

34cm-40cm Soft 5YR 3/1 very dark grey clayey silt with concentrated inclusions of organic matter i.e. wood/root wood, reed (*Phragmites)* stem fibres.
40cm-45cm Firm 10YR 3/1 very dark grey clayey sandy silt with inclusions of quartz pebbles (= 5mm x 3mm) and angular and sub-angular gravel (= 3mm x 3mm), and organic matter i.e. twigs, wood/root wood, and reed (*Phragmites)* stem fibres.

55cm-64cm Firm 10YR 3/1 very dark grey sandy clayey silt with inclusions of quartz pebbles (= 5mm x 3mm) and angular and sub-angular gravel (= 3mm x 3mm) as noted in the overlying deposit (40cm-45cm), but the organic matter is well-humified containing well-decomposed reed (*Phragmites)* stem fibres.

64cm-77cm Firm and moist 7.5YR 5/1 grey silty sand with inclusions of angular stones (= 20mm x 15mm), quartz pebbles (= 10mm x 10mm), and angular and sub-angular gravel (= 5mm x 5mm).

77cm Horizon between silt and sand deposits.

77cm-89cm Firm 10YR 4/3 brown sand with inclusions of angular stones (= 20mm x 15mm), quartz pebbles (= 10mm x 10mm), and angular and sub-angular gravel (= 5mm x 5mm). Inclusions are the same as those noted in the overlying deposit 64cm-77cm.

89cm-100cm Firm 10YR 4/6 dark yellowish brown sand with inclusions of quartz pebbles and sub-angular stones (= 10mm x 10mm).

Lincoln University Engine Shed – BH3 Core 2 (300cm-400cm) [Note: No Core 1]

0cm-5cm Missing.

5cm-12cm Firm 5YR 3/1 very dark grey silt with inclusions of brick dust.

12cm Top of shell-rich silt horizon.

12cm-29cm Firm 5YR 2.5/1 black mollusc shell-rich silt.

29cm-38cm Firm 5YR 3/1 very dark grey mollusc shell-rich peaty silt.

38cm Top of peat horizon.

38cm-100cm Firm 5YR 2.5/2 dark reddish brown peat.

Core 1 22cm: Despite failure of this core a sample of water lain silt at 22cm was collected at the time of coring – 10YR 3/1 very dark grey sandy mollusc shell-rich silt.
Shoe sample Core 2 400cm-403cm: 10YR 2/1 black well-humified peat.

Lincoln University Engine Shed – BH3 Core 3 (400cm-500cm)

81cm
Sand horizon

0cm-3cm Firm 5YR 2.5/2 dark reddish brown peat.

3cm-11cm Firm 5YR 3/2 dark reddish brown peat with wood/root wood.

11cm-16cm Firm 5YR 3/1 very dark grey clayey peat with organic matter comprising twigs and reed (*Phragmites*) stem and root fibres.

16cm-48cm Soft 7.5YR 4/1 dark grey silty clay with organic matter i.e. wood/root wood, twigs, and root fibres.

48cm-62cm Soft 7.5YR 5/1 grey silty clay with inclusions of angular limestone gravel (= 5mm x 4mm), and well-humified organic matter including reed (*Phragmites*) stem fibres and fine root fibres.

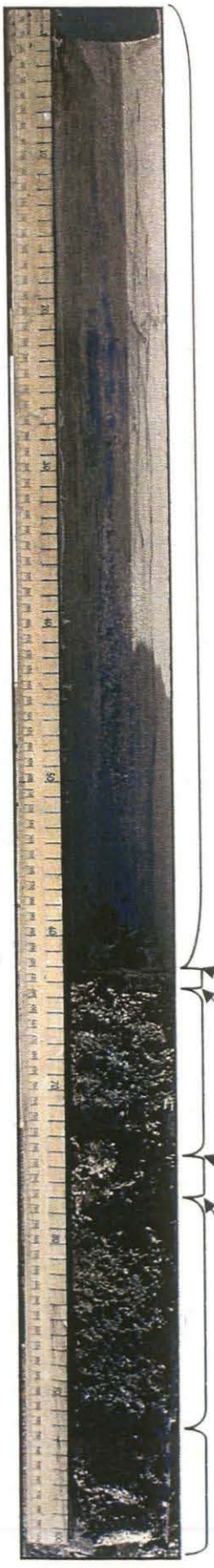
62cm-74cm Soft 10YR 5/2 greyish brown sandy clay with inclusions of angular gravel (= 3mm x 3mm), and organic matter i.e. reed (*Phragmites*) stem fibres and fne root fibres

74cm-81cm Soft and moist 10YR 4/2 dark greyish brown clayey sand with inclusions of quartz pebbles (= 7mm x 6mm) and sub-angular quartz gravel (= 5mm x 4mm).

81cm-89cm Soft and moist 10YR 4/6 dark yellowish brown sand with inclusions of quartz pebbles (= 10mm x 10mm), rounded and sub-angular gravel (= 5mm x 4mm).

89cm-100cm Soft and moist 10YR 5/6 yellowish brown sand with inclusions of quartz pebbles and sub-angular quartz gravel (= 5mm x 5mm).

Lincoln University Engine Shed- BH4 Core 1 (200cm-290cm)



0cm-62cm Missing

62cm-64cm Firm 5YR 4/3 reddish brown sandy silt with inclusions of brick fragments (= 5mm x 3mm).
64cm-74cm Firm 5YR 2.5/1 black silt with inclusions of brick fragments (= 30mm x 15mm), lime mortar, and a fragment of bone at **69cm** (sampled). Dump/rubbish deposit to make ground.

74cm-77cm Firm 7.5YR 6/3 light brown angular limestone deposit (= 30mm x 30mm). Dump deposit of limestone to make ground.

77cm-92cm Firm 7.5YR 3/1 very dark grey sandy mollusc shell-rich silt with inclusions of brick fragments (= 30mm x 17mm) and coal (= 3mm x 2mm). Dump/rubbish deposit.

92cm-100cm Firm 5YR 5/1 grey silty sand with inclusions of angular limestone (80mm x 60mm), brick fragments (= 3mm x 1.5mm), and oyster shell at **97cm**. Dump/rubbish deposit.

Lincoln University Engine Shed- BH4 Core 2 (300cm-400cm)

6cm Oyster shell and post-medieval pot sherd

7cm Shell-rich silt horizon

19cm Seeds

0cm-7cm Firm 5YR 5/1 grey silty sand with inclusions of limestone (= 40mm x 30mm), brick fragments (= 4mm x 3mm), oyster shell and post-medieval pot sherd at **6cm** (sampled). Dump/rubbish layer.

7cm-16cm Firm 5YR 2.5/1 black mollusc shell-rich silt.

16cm-27cm Firm 5YR 2.5/2 dark reddish brown peaty mollusc shell-rich silt, with organic matter i.e. root fibres, and seeds at **19cm** (sampled).

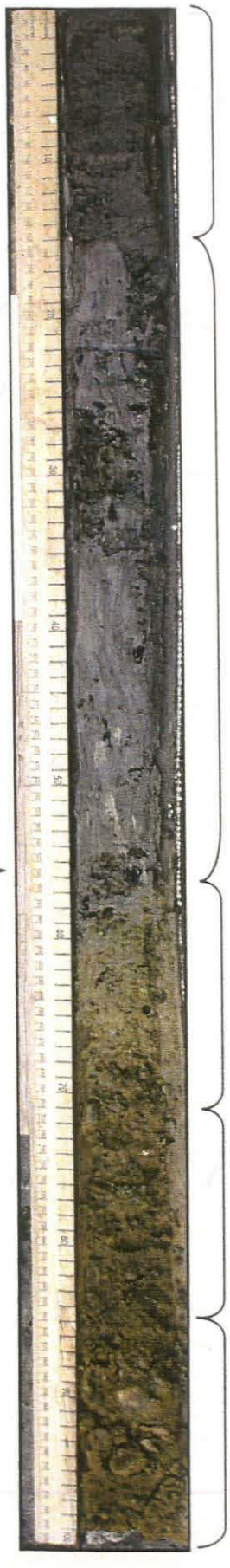
27cm-34cm Firm 5YR 2.5/2 dark reddish brown mollusc shell-rich silty peat, with organic inclusions of wood/root wood.

34cm Peat horizon.

34cm-100cm Firm 5YR 2.5/1 black peat with fine laminations of humified matter and inclusions of twigs and wood/root wood.

Shoe sample 400cm-405cm: 10YR 2.5/1 black peat.

Lincoln University Engine Shed- BH4 Core 3 (400cm-500cm)



56cm Charcoal Fragments

0cm-15cm Firm 5YR 2.5/2 dark reddish brown clayey peat with organic matter i.e. reed (*Phragmites*) stem fibres and root fibres.

15cm-57cm Firm 10YR 5/1 grey clay with organic matter i.e. well-humified wood/root wood and charcoal at **56cm** (sampled).

57cm Top of sand horizons.

57cm-71cm Firm 10YR 6/4 light yellowish brown sand with inclusions of angular and sub-angular stones (= 15mm x 10mm) and angular and sub-angular gravel (= 4mm x 3mm).

71cm-85cm Firm 10YR 5/4 yellowish brown sand with inclusions of quartz pebbles (= 8mm x 4mm), sub-angular stones (= 4mm x 3.5mm), and organic matter i.e. fine root fibres.

85cm-100cm Firm 10YR 4/4 dark yellowish brown sand with inclusions of quartz pebbles (= 25mm x 20mm) and sub-angular gravel (= 4mm x 4mm).

Lincoln University Engine Shed – BH5 Core 1 (210cm-310cm)

64cm-69cm Peat horizon between dump layers

74 cm New peat horizon

0cm-29cm Missing.

29cm-34cm Firm 10YR 3/1 very dark grey sandy silt with inclusions of ash, rounded and broken pebbles (= 5mm x 4mm), and coal (= 3mm x 2.5mm). Dump/rubbish deposit most probably associated with use of the site as a locomotive shed. **Note:** This deposit has a strong smell of hydrocarbons.

34cm-47cm Firm 10YR 4/1 dark grey slightly mollusc shell-rich silt with inclusions of brick fragments (= 3mm x 2.5mm), angular limestone (= 40mm x 25mm). Mollusc shell sampled at **46cm**.

47cm-64cm Firm 10YR 2/1 black silt with inclusions of brick fragments (= 3mm x 2mm) and small coal particles (= 1mm x 1mm). Dump/rubbish deposit.

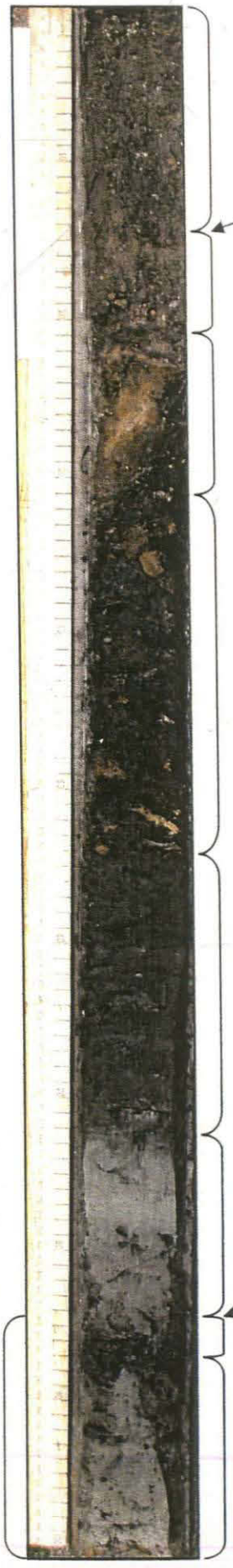
64cm-69cm Firm 10YR 2/2 very dark brown peat.

69cm-74cm Firm 10YR 2/2 very dark brown peat with inclusions of brick fragments (= 50mm x 40mm) (sampled) and brick dust, limestone (= 40mm x 30mm). Dump/rubbish deposit.

74cm-84cm Firm 10YR 2/1 black peat with wood/root wood and fine root fibres.

84cm-100cm Firm 10YR 2/1 black peat with wood/root wood (= 50mm x 45mm) and well-humified organic matter.

Lincoln University Engine Shed – BH5 Core 2 (310cm-410cm)



0cm-15cm Firm 5YR 3/1 very dark grey sandy silt with inclusions of brick fragments (= 20mm x 10mm) and angular and sub-angular limestone gravel (= 10mm x 7mm). Dump/rubbish deposit/ slumped material.

15cm-21cm Firm 5YR 3/2 dark reddish brown silty coarse grained sand with inclusions of brick fragments (= 5mm x 5mm), angular and sub-angular limestone gravel (= 10mm x 8mm), and pebbles (= 5mm x 3mm). Dump/rubbish deposit to make ground.

21cm Top of organic/peat horizon.

21cm-31cm 5YR 3/2 dark reddish brown/5YR 2.5/1 black compressed wood.

21cm-54cm Firm 7.5YR 2.5/1 black peat with inclusions of twigs, wood/root wood, reed (*Phragmites*) stem fibres and root fibres.

54cm Silt horizon.

54cm-72cm Firm 7.5YR 2.5/2 very dark brown silt with occasional fine root fibres.

72cm Clay horizon

72cm-85cm Firm 7.5YR 5/1 grey clay with organic matter i.e. reed (*Phragmites*) stem fibres and fine root fibres.

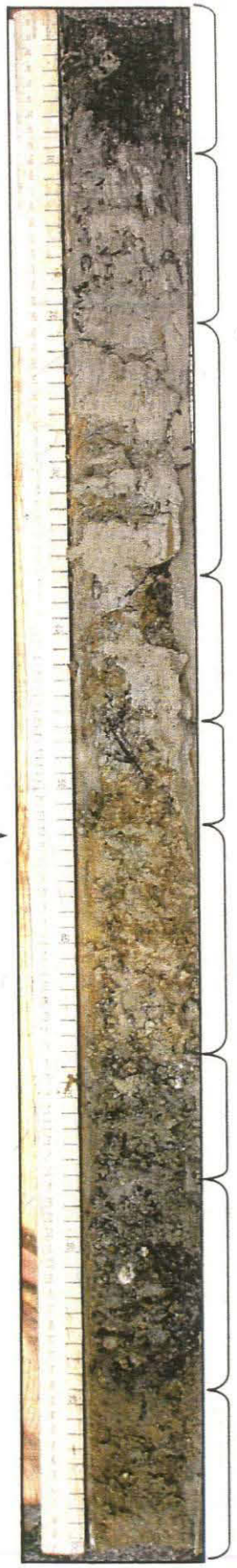
85cm-87cm Firm 10YR 2/2 very dark brown silty clay with well-humified organic matter and burnt organic matter i.e. reed (*Phragmites*) stem fibres.

87cm-100cm Firm 10YR 5/2 greyish brown clay with organic matter i.e. reed (*Phragmites*) stem fibres, including burnt stem fibres and charcoal particles (= 1mm).

85cm-100cm Phase of burning.

100cm-104cm trapped in core cap: 10YR 5/2 greyish brown clay with ochreous mottling.

Lincoln University Engine Shed – BH5 Core 3 (410cm-504cm)



53cm Top of definite sand horizon.

0cm-10cm Firm 10YR 2/1 black sandy clayey silt with inclusions of angular and sub-angular limestone gravel (= 10mm x 10mm), brick dust, and burnt organic matter. **Note:** This deposit is most probably contaminated with 'slump'.

10cm-20cm Firm 10YR 4/2 dark greyish brown clay with organic matter i.e. humified wood/root wood and bark.

20cm Clay horizon.

20cm-36cm Firm 10YR 4/3 brown clay with ochreous mottling, and with organic inclusions i.e. small twigs and fine root fibres.

36cm-46cm Firm 10YR 4/3 brown clay with inclusions of angular limestone (= 30mm x 20mm), and organic matter i.e. wood/root wood.

46cm-53cm Firm 10YR 5/3 brown sandy clay with inclusions of quartz pebbles (= 10mm x 10mm) and angular stones (= 12mm x 9mm).

53cm-68cm Firm 10YR 4/4 dark yellowish brown silty sand with inclusions of 7.5YR 5/3 brown sandstone, quartz pebbles (= 6mm x 5mm), and occasional organic matter i.e. humified wood and root fibres.

68cm-76cm Firm 10YR 5/4 yellowish brown silty sand with inclusions of 7.5YR 5/3 brown sandstone, quartz pebbles (= 6mm x 5mm), and occasional organic matter i.e. humified wood and root fibres.

76cm-89cm Soft and moist 10YR 4/3 brown silty sand with inclusions of pebbles (= 30mm x 20mm), and organic matter i.e. wood/root wood.

89cm-100cm Soft and moist 10YR 4/4 dark yellowish brown sand with inclusions of pebbles (= 5mm x 5mm) and sub-angular gravel (= 7mm x 5mm).

Shoe sample 504cm-506cm: 10YR 3/2 very dark greyish brown sandy silt with inclusions of rounded and sub-angular gravel (= 6mm x 4mm).

Lincoln University Engine Shed – BH6 Core 1 (150cm-250cm)

0cm-18cm Missing.

18cm-23cm Loose 2.5YR 3/4 dark reddish brown sandy clayey silt with inclusions of brick fragments (= 15mm x 10mm) and brick dust and sun-angular gravel (= 10mm x 8mm). Dump/rubbish deposit to make ground.

23cm-34cm Loose 5YR 3/1 very dark grey sandy mollusc shell-rich silt with inclusions of brick fragments (= 15mm x 8mm) and brick dust. Dump/rubbish layer to make ground.

34cm Fracture.

34cm-43cm Loose 5YR 2.5/1 black mollusc shell-rich silt with inclusions of angular and sub-angular limestone gravel (= 8mm x 8mm).

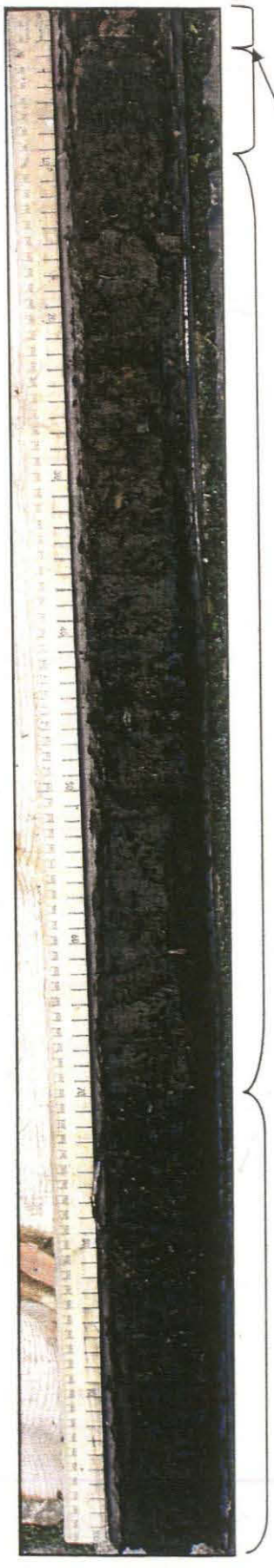
43cm-73cm Firm 7.5YR 2.5/2 very dark brown sandy mollusc shell-rich silt with inclusions of angular limestone gravel (= 5mm x 4.5mm), brick fragments (= 3mm x 3mm) and brick dust. Dump/rubbish deposit to make ground.

73cm-79cm Firm 7.5YR 3/2 dark brown silty sand with inclusions of angular and sub-angular stones (= 20mm x 10mm) and brick fragments (= 3mm x 3mm). Dump/rubbish deposit to make ground.

79cm-100cm Firm 7.5YR 3/3 dark brown/7.5YR 2.5/1 black sandy mollusc shell-rich silt with inclusions of brick fragments (= 3mm x 2mm) and burnt sub-angular coal particles. Dump/rubbish deposit to make ground.

Additional sample 235cm-250cm: 10YR 2/2 very dark brown well-humified peat with ochreous mottling.

Lincoln University Engine Shed – BH6 Core 2 (250cm-350cm)



9cm
Reed peat horizon.

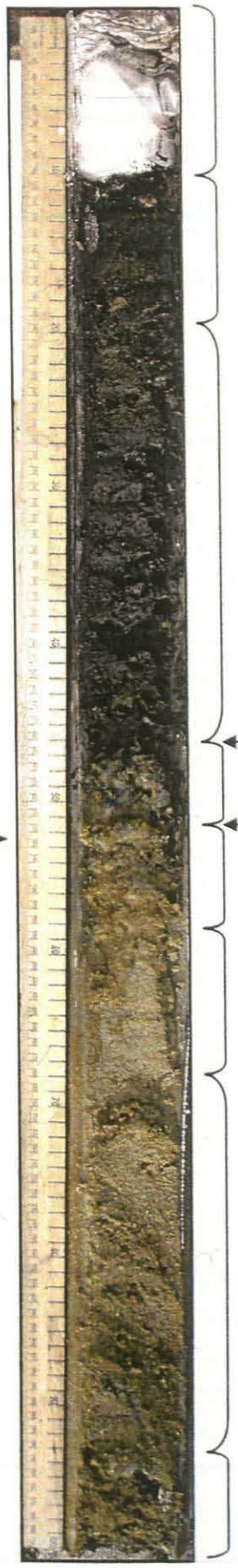
0cm-3cm Firm 7.5YR 2.5/2 very dark brown clayey silt and 2.5YR 4/4 reddish brown clay mottling and inclusions of angular and sub-angular limestone gravel (= 2mm x 2mm) and brick fragments (= 3mm x 2.5mm). Dump/rubbish layer which could possibly be contamination from 'slump'.

3cm-9cm Firm 7.5YR 3/2 dark brown clayey humified peat with reed (*Phragmites*) stem fibres and root fibres.

9cm-70cm Firm 7.5YR 2.5/1 black peat with wood/root wood and reed (*Phragmites*) stem fibres and root fibres.

70cm-100cm Firm 7.5YR 2.5/1 black well-humified peat with wood/root wood and reed (*Phragmites*) stem fibres and root fibres.

Lincoln University Engine Shed – BH6 Core 3 (350cm-440cm)



52cm Definite sand horizon.

0cm-10cm Missing.

10cm-20cm Firm 7.5YR 2.5/1 black peat with small twigs and wood/root wood.

20cm-46cm Firm 7.5YR 3/1 very dark grey clayey sandy silt with inclusions of angular and sub-angular gravel (= 3mm x 2mm) and organic matter i.e. reed (*Phragmites*) stem fibres and root fibres.

46cm-52cm Loose 7.5YR 5/4 brown clayey sand with 5YR 2.5/2 black mottling, and inclusions of quartz pebbles (= 30mm x 20mm) and angular gravel (= 3.5mm x 2mm).

52cm-58cm Loose 10YR 5/6 yellowish brown sand with 5YR 2.5/2 black mottling, and inclusions of pebbles (= 40mm x 30mm) and angular gravel (= 4mm x 2.5mm).

58cm-69cm Loose 10YR 5/4 yellowish brown sand.

69cm-93cm Loose and moist 10YR 4/4 dark yellowish brown sand with inclusions of pebbles (= 40mm x 25mm) and angular and sub-angular gravel (= 5mm x 3mm).

93cm-100cm Loose and moist 10YR 3/3 dark brown sand with inclusions of pebbles (= 30mm x 15mm), rounded and sub-angular gravel (= 4mm x 3mm), and well-humified organic matter i.e. fine root fibres.

Lincoln University Engine Shed – BH7 Core 1 (300cm-373cm)

0cm-55cm Missing.

55cm-60cm Loose 10YR 4/2 dark greyish brown sandy silt with inclusions of brick fragments (= 1mm x 1.5mm).

60cm-70cm Loose 10YR 3/3 dark brown sandy gravel with inclusions of rounded and sub-angular pebbles (= 6mm x 4mm), angular and sub-angular gravel (= 5mm x 4mm), brick fragments (= 4mm x 3mm), and coal (= 3mm x 2.5mm). Dump/rubbish deposit to make ground.

70cm-74cm Loose 10YR 6/8 brown yellow angular limestone (= 50mm x 40mm). Dump deposit to make ground.

74cm-91cm Firm 10YR 3/1 very dark grey clayey silty sand with inclusions of angular limestone (= 40mm x 25mm), angular and sub-angular gravel (= 2mm x 1.5mm), and brick fragments (= 1.5mm x 1mm). Dump/rubbish deposit to make ground.

91cm-100cm Firm and moist 10YR 2.1/1 black silty sandy with inclusions of stones (= 60mm x 30mm), angular and sub-angular gravel (= 4mm x 2mm), and brick fragments (= 60mm x 35mm). **Note:** This deposit has a strong smell of hydrocarbons most probably associated with the use of the site as a locomotive shed.

Lincoln University Engine Shed – BH7 Core 2 (380cm-460cm) [Bottom]

0cm-80cm Missing.

80cm-87cm Soft 10YR 3/1 very dark grey silty sludge. **Note:** This deposit has a strong smell of hydrocarbons and probably associated with the use of the site as a locomotive shed.

87cm-100cm Soft 10YR 4/2 dark grey sand.

Lincoln University Engine Shed – BH8 Core 1 (250cm-350cm)

0cm-30cm Missing.

30cm-35cm Loose 10YR 3/1 very dark grey silt and compressed wood.

35cm-45cm Firm 10YR 2/1 black organic peat with organic matter including fibrous wood and root fibres.

45cm-78cm Firm 10YR 2/2 very dark brown humified peat with reed (*Phragmites*) stem fibres).

5cm-100cm Reed eat

78cm-90cm Firm 10YR 2/1 black humified peat with reed (*Phragmites*) stem fibres).

90cm-97cm Firm 10YR 3/2 very dark greyish brown peat with compacted wood.

97cm-100cm Firm 10YR 2/2 very dark brown peat with twigs and reed (*Phragmites*) stem fibres).

Lincoln University Engine Shed – BH8 Core 2 (250cm-440cm)

0cm-2cm Missing.

2cm Top of sand horizons.

2cm-24cm Firm 10YR 5/3 brown sand with 10YR 4/2 dark greyish brown mottling, and inclusions of angular and sub-angular sandstone (= 3mm x 2.5mm).

24cm-41cm Firm 10YR 5/3 brown sand.

41cm-65cm Firm 10YR 5/3 brown sand with 10YR 4/2 dark greyish brown mottling, and inclusions of angular and sub-angular sandstone (= 3mm x 2.5mm).

65cm-79cm Firm 10YR 4/4 dark yellowish brown sand.

79cm-84cm 10YR 4/3 brown sand with ochreous mottling and inclusions of angular stones (= 22mm x 10mm), angular gravel (= 4mm x 2mm), and well-humified organic matter.

84cm-96cm Firm 10YR 4/1 dark grey sand with inclusions of pebbles (= 20mm x 12mm).

96cm-100cm Firm 10YR 4/4 dark yellowish brown sand with inclusions of pebbles (= 3mm x 2mm).

Lincoln University Engine Shed – BH9 Core 1 (215cm-315cm)

0cm-14cm Missing.

14cm-23cm Loose 10YR 3/1 very dark grey sandy silt with inclusions of quartz pebbles (= 4mm x 3mm), angular limestone gravel (= 2mm x 2mm), fragments of brick (= 4mm x 2mm). Dump/rubbish deposit to make ground.

23cm-40cm Firm and dry 10YR 2/2 very dark brown sandy silt with inclusions of brick (= 1.5mm x 1mm) and brick dust. Dump/rubbish deposit to make ground.

40cm-54cm Firm 10Yr 3/1 very dark grey clayey silt with inclusions of brick fragments (= 2mm x 1mm), and organic matter i.e. root fibres.

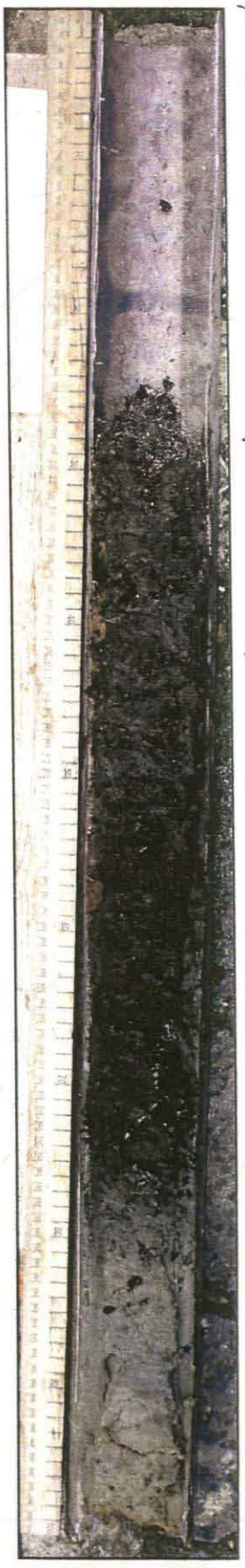
54cm Peat horizon.

54cm-81cm Firm 10YR 2/2 very dark brown well-humified peat.

81cm-100cm Firm 10YR 2/1 black humified peat with twigs, reed (*Phragmites*) stem fibres and fine root fibres.

Shoe sample 315cm-317cm: 10YR 2/2 very dark brown well-humified peat with twigs reed (*Phragmites*) stem fibres and fine root fibres.

Lincoln University Engine Shed – BH9 Core 2 (315cm-415cm)



50cm – 76cm
Peat horizon

0cm-28cm Missing.

28cm-43cm Firm 10YR 3/1 very dark grey sandy silt with inclusions of coal (= 50mm x 20mm). Dump/rubbish deposit or contamination from 'slump'.

43cm-50cm Firm 10YR 2/2 very dark brown clayey silt with inclusions of brick fragments (= 2.5mm x 2mm), and humified organic matter i.e. stem (*Phragmites*) stem fibres and fine root fibres. Dump/rubbish deposit to make ground.

50cm-76cm Firm 10YR 2/1 black well-humified and compacted peat.

76cm-81cm Firm 10YR 4/1 dark grey clayey sand.

81cm-90cm Firm 10YR 5/2 greyish brown clayey sand with well-humified organic matter i.e. stem (*Phragmites*) stem fibres and fine root fibres.

89cm-100cm Firm 10YR 5/3 brown sandy clay with organic matter i.e. fine root fibres.

Shoe sample 415cm-417cm: Firm 10YR 4/4 dark yellowish brown sandy clay.

Lincoln University Engine Shed – BH9 Core 3 (415cm-490cm)

0cm-4cm Missing.

4cm-6cm Firm 10YR 3/1 very dark grey silt. Possible slump

6cm-11cm Firm 10YR 2/2 very dark brown well-humified peat.

11cm-29cm Soft and moist 10YR 5/1 grey/10YR 5/4 yellowish brown mottled clayey sand.

29cm-35cm Firm 10YR 2/2 very dark brown clayey silt.

35cm-42cm Firm 10YR 6/3 pale brown silty sand.

42cm-56cm Firm 10YR 5/3 brown clayey sand with occasional organic matter i.e. fine root fibres.

56cm Definite sand horizon.

56cm-80cm Firm 10YR 4/3 brown sand with inclusions of quartz pebbles (= 3mm x 2mm).

80cm-98cm Firm 10YR 4/3 brown sand with fine 10YR 6/2 light brownish grey clay laminations between **93cm-96cm**. **Note:** late glacial deposit with the potential for pollen analysis.

98cm-100cm Soft and moist 10YR 4/4 dark yellowish brown sand.

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APPENDIX 2

APPENDIX 2

Lincoln University – Engine Shed Boreholes

Finds recovered from the sieved cores (Gemma Martin)

Bore Hole 1 - Core 1

- *0-25cm*: Clay pipe fragment, oyster shell and larger brick/tile pieces (bagged), smaller fragments of brick/tile present (discarded).
- *25-50cm*: A couple of large tile fragments (bagged) as well as smaller fragments of brick/tile (discarded).
- *50-73cm*: (Context change). Coal and occasional small fragments of brick/tile (discarded).
- *73-100cm*: Very occasional tiny fragment of brick/tile (discarded) as well as some coal (bagged).

Bore Hole 1 – Core 2

- *0-27cm*: Frequent brick/tile, heel of post-medieval leather shoe (some bagged).
- *27-40cm*: (Context change to shelly silt). A single large fragment of oyster shell (bagged).
- *40-55cm*: (Context change to peat). No finds noted.
- *55-72cm*: No finds noted.
- *72-82cm*: No finds noted.
- *82-92cm*: No finds noted.
- *92-100cm*: No finds noted.

Bore Hole 1 – Core 3

- *0-8cm*: (Clay & peat mix). Very tiny fragments of brick/tile noted in peat matrix (discarded).
- *8-14cm*: (Clay & ?shelly silt mix). No finds noted.
- *14-39cm*: No finds noted.
- *39-43cm*: (Clay & sand mix). No finds noted.
- *43-100cm*: SAND

Bore Hole 2 – Core 1

- *0-24cm*: EMPTY.
- *24-37cm*: (Loose overburden). Frequent fragments of brick/tile as well as pieces of plastic, bone, glazed ceramic sherds and coal (some bagged).
- *37-51cm*: (Compact overburden). Small flecks of brick/tile frequent, with larger fragments of brick/tile and bone also noted (these bagged).

- *51-71cm*: (Overburden). Frequent brick/tile, some glazed/polished tile, clay pipe stem, glazed post-medieval pottery, limestone, an iron screw and other small remains of degraded iron (bagged).
- *71-88cm*: Frequent fragments of brick/tile, tile, coal, some bone and cockle and mussel shell (bagged).
- *88-100cm*: No finds noted.

Bore Hole 2 – Core 2

- *0-19cm*: EMPTY.
- *19-39cm*: Tiny fragments of brick/tile in one small pocket of sediment and a glazed post-medieval pot sherd (some bagged).
- *39-59cm*: No finds noted, but a largish fragment of bone bagged.
- *59-79cm*: No finds noted.
- *79-98cm*: bone bagged.
- *98-100cm*: EMPTY.

Bore Hole 2 – Core 3

- *0-22cm*: EMPTY.
- *22-27cm*: (Context change). Marine shell and some larger pieces of brick/tile (bagged), as well as occasional snails (discarded).
- *27-34.5cm*: (Context change). Bark (bagged).
- *34.5-42cm*: (Context change). Single fragment of bark (bagged).
- *42-56cm*: (Context change). Bark and degraded organics? (bagged).
- *56-65cm*: (Context change). Bark and degraded organics? (bagged).
- *65-100cm*: SAND.

Bore Hole 4 – Core 1

- *0-62.5cm*: EMPTY.
- *62.5-77cm*: frequent tile, limestone and one sherd of post-medieval glazed pottery (ceramic & larger fragments of brick/tile bagged).
- *77-90cm*: (Context change). Frequent brick/tile, tile, post-medieval glazed pottery, coal and bone (larger fragments bagged).
- *90-96.5cm*: Brick/tile, tile, glazed post-medieval pottery, limestone and mussel shell (bagged).
- *96.5-100cm*: A large stone.

Bore Hole 5 – Core 1

- *0-31.5cm*: EMPTY.

- *31.5-49.5cm*: Clay pipe stem fragment, brick/tile, tile, post-medieval glazed ceramic (bagged).
- *49.5-61cm*: (natural break in core). Occasional tiny flecks of brick/tile (discarded).
- *61-73cm*: Two quite large fragments of tile (bagged).
- *73-78cm*: Frequent brick/tile, tile, post-medieval glazed ceramic and limestone (some bagged).
- *78-100cm*: Most of this section consists of a large lump of wood, but two pieces of brick/tile noted (bagged).
- *100-104cm*: A continuation of the 78-100cm section which has expanded out of the core; the lump of wood protrudes out of the bottom of the core.

Bore Hole 5 – Core 2

- *0-20cm*: Mussel shell, brick/tile (some bagged).
- *20-39cm*: A section through a piece of wood.
- *39-54cm*: No finds noted.
- *54-65.5cm*: No finds noted.
- *65.5-72cm*: No finds noted.
- *72-85cm*: No finds noted.
- *85-100cm*: No finds noted.

Bore Hole 5 – Core 3

- *0-10.5cm*: (A mix of clay, peat & modern material). Large fragments of brick/tile (bagged) as well as tiny fragments (discarded).
- *10.5-19cm*: (Clay & soil/peat). Some traces of brick/tile noted in the soil/peat matrix (discarded).
- *19-36cm*: Flecks of brick/tile noted in a small pocket of darker material with in the clay.
- *36-46cm*: No finds noted.
- *46-53cm*: No finds noted.
- *53-100cm*: SAND.

Bore Hole 6 – Core 1

- *0-34cm*: 'EMPTY', but loose sediment collapsed and spread into this section. Brick/tile, fired earth, coal, ?slag, fragment of coarse woven vegetable fabric (bagged).
- *34-56cm*: Brick/tile, glass, slag, clinker, coarse woven vegetable fabric (some bagged).
- *56-64cm*: Brick/tile, limestone and coal (some bagged).
- *64-81cm*: Coal, clinker, bone and cockle shell fragments (some bagged).

- *81-100cm*: Cockle and mussel shell, brick/tile and bone (some bagged).

Bore Hole 6 – Core 2

- *0-8.5cm*: Fired earth and coal (bagged).
- *8.5-33cm*: (Peat). No finds noted.
- *33-58cm*: (Peat). No finds noted.
- *58-69.5cm*: (Peat). No finds noted.
- *69.5-90cm*: (Peat). No finds noted.
- *90-100cm*: (Peat). No finds noted.

Bore Hole 6 – Core 3

- *0-10cm*: EMPTY.
- *10-23cm*: No finds noted.
- *23-34cm*: No finds noted.
- *34-35cm*: No finds noted.
- *35-100cm*: SAND.

Bore Hole 9 – Core 1

- *0-19cm*: 'EMPTY' – some loose sediment with cindery/slag like inclusions (bagged).
- *19-41cm*: Road surfacing inclusions? Cindery material present (bagged).
- *41-52cm*: No finds noted.
- *52-56cm*: No finds noted.
- *56-71cm*: No finds noted.
- *71-82cm*: No finds noted.
- *82-100cm*: No finds noted.

Bore Hole 9 – Recorded as 'Core 1: 215-315' but should be Core 2.

- *215-235 (0-20cm)*: Nothing.
- *235-255 (20-40cm)*: Nothing.
- *255-265 (40-50cm)*: Nothing.
- *265-285 (50-70cm)*: Dark brown silty clay with small inclusions of wood.
- *285-305 (70-90cm)*: Dark brown silty clay inclusions of wood. Rootlets inclusions from 292 onwards.
- *305-315 (90-100cm)*: Dark brown silty clay with small inclusions of wood and a few rootlets. One fairly large piece of wood and a piece of charcoal found and bagged.

Bore Hole 9 – Recorded as 'Core 2: 315-415' but should be Core 3.

- *315-338 (0-23cm)*: Nothing.

- *338-358 (23-43cm)*: Dark grey/light grey mix, clay. Iron pan? Brick/stone inclusions (bagged).
- *358-378 (43-63cm)*: Gradual change from dark grey clay to dark brown (slightly silty) clay. A few small stones and small pieces of wood/twig inclusions.
- *378-397 (63-82cm)*: Dark brown silty clay with small wood/twig inclusions.
- *397-402 (82-87cm)*: Grey/brown sand with small wood inclusions.
- *402-410 (87-95cm)*: Yellow/brown sand with patches of grey clay.
- *410-415 (95-100cm)*: Orange sand.

APPENDIX 3

APPENDIX 3

Radiocarbon Calibration curves

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-28.7:lab. mult=1)

Laboratory number: Beta-244184

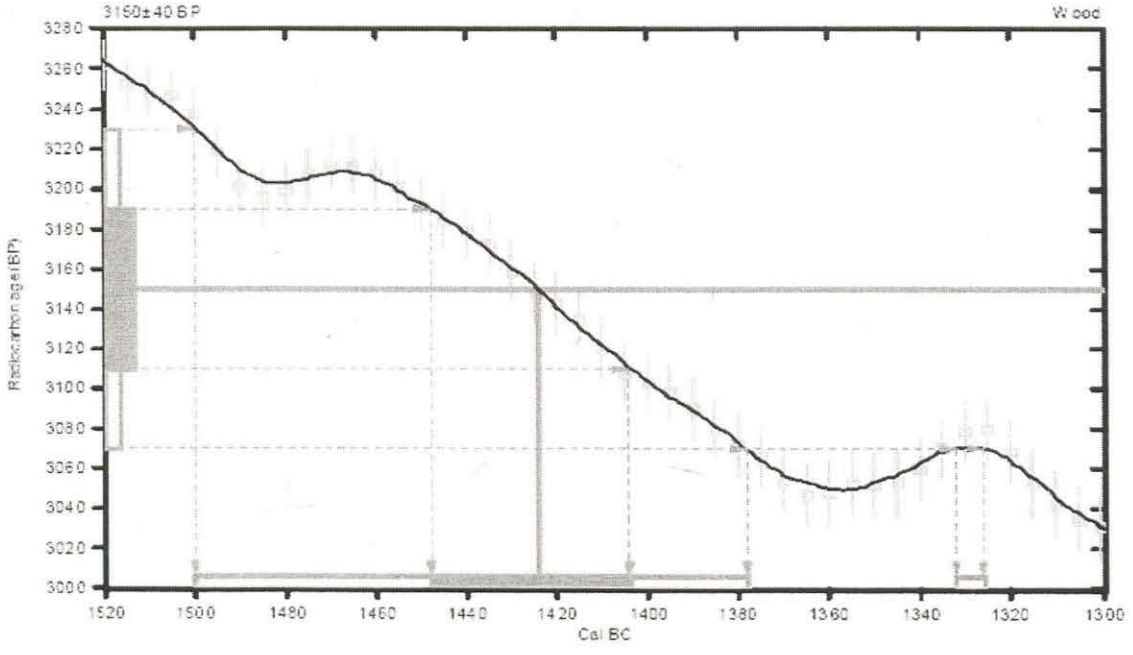
Conventional radiocarbon age: 3150±40 BP

2 Sigma calibrated results: Cal BC 1500 to 1380 (Cal BP 3450 to 3330) and
(95% probability) Cal BC 1330 to 1330 (Cal BP 3280 to 3280)

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1420 (Cal BP 3370)

1 Sigma calibrated result: Cal BC 1450 to 1400 (Cal BP 3400 to 3350)
(68% probability)



References:

Database used
INTCAL04
Calibration Database
INTCAL04 Radiocarbon Age Calibration
IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).
Mathematics
A Simplified Approach to Calibrating C14 Dates
Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-30.1:lab. mult=1)

Laboratory number: Beta-244185

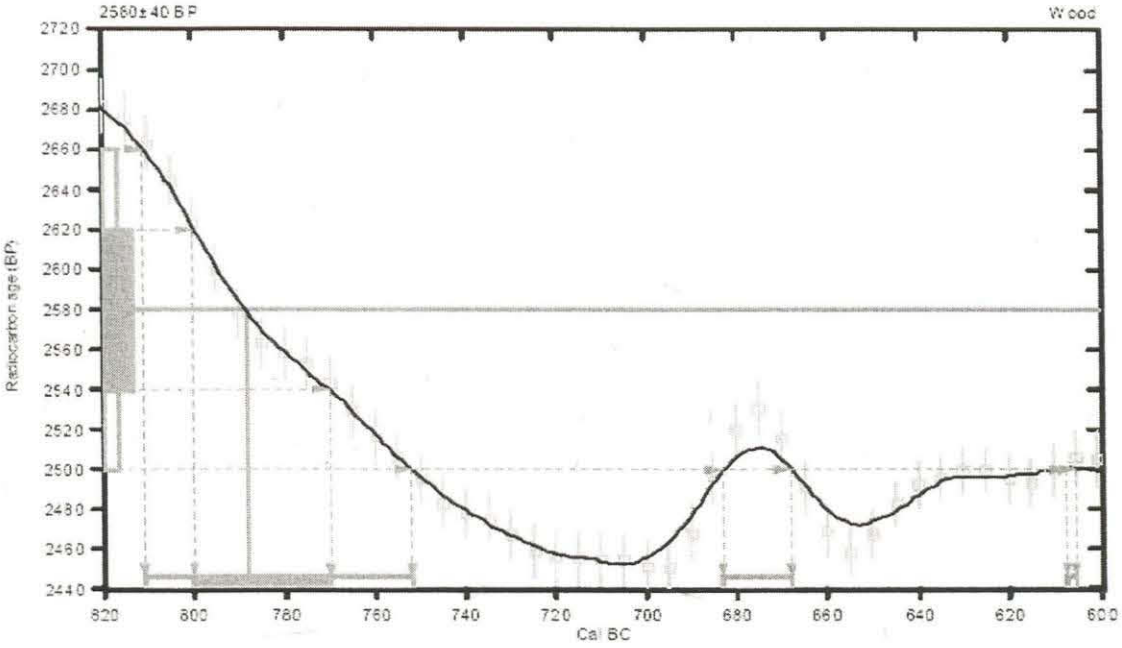
Conventional radiocarbon age: 2580±40 BP

2 Sigma calibrated results: (95% probability) Cal BC 810 to 750 (Cal BP 2760 to 2700) and Cal BC 680 to 670 (Cal BP 2630 to 2620) and Cal BC 610 to 600 (Cal BP 2560 to 2560)

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 790 (Cal BP 2740)

1 Sigma calibrated result: (68% probability) Cal BC 800 to 770 (Cal BP 2750 to 2720)



References:

Database used

INTCAL04

Calibration Database

INTCAL04 Radiocarbon Age Calibration

IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

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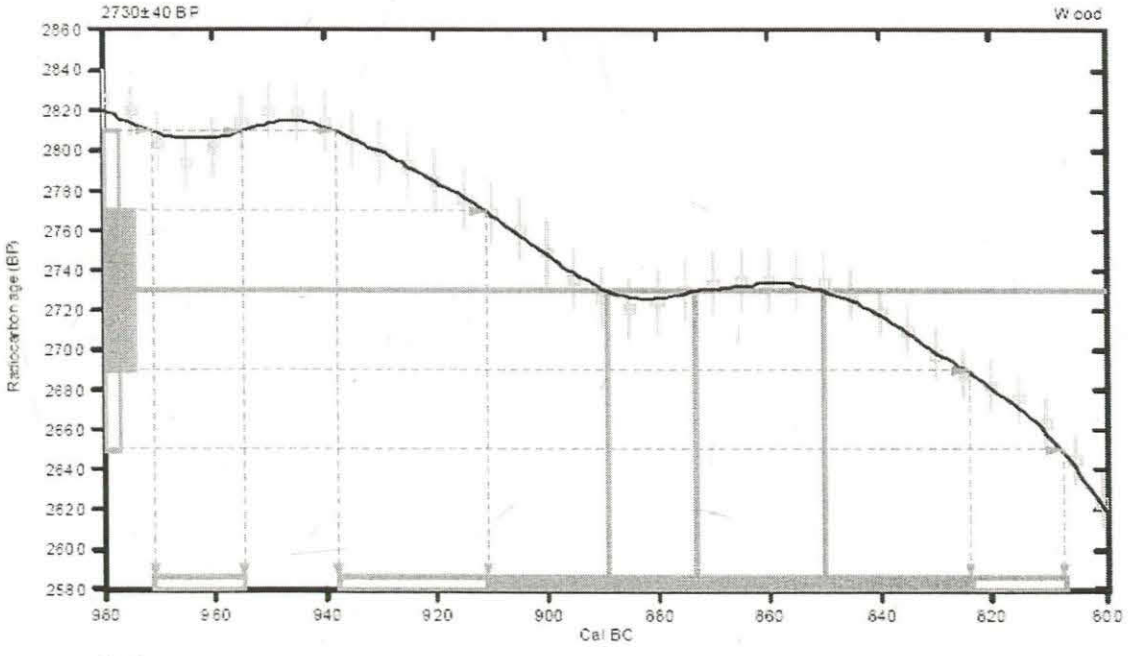
CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-22.6:lab. mult=1)

Laboratory number:	**Beta-244186**
Conventional radiocarbon age:	**2730±40 BP**
2 Sigma calibrated results: (95% probability)	**Cal BC 970 to 960 (Cal BP 2920 to 2900) and Cal BC 940 to 810 (Cal BP 2890 to 2760)**

Intercept data

Intercepts of radiocarbon age with calibration curve:	Cal BC 890 (Cal BP 2840) and Cal BC 870 (Cal BP 2820) and Cal BC 850 (Cal BP 2800)
1 Sigma calibrated result: (68% probability)	Cal BC 910 to 820 (Cal BP 2860 to 2770)



References:

Database used

INTCAL04

Calibration Database

INTCAL04 Radiocarbon Age Calibration

IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

Mathematics

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APPENDIX 4

OASIS DATA COLLECTION FORM: England

List of Projects | Search Projects | New project | Change your details | HER coverage | Change country | Log out

Printable version

OASIS ID: lindseya1-50659

Project details

Project name	The Engine Shed and Lincoln Centre for Performing Arts Building, Brayford Campus, Lincoln
Short description of the project	A programme of archaeological work was undertaken at the Engine Shed prior to its conversion to a students' union and arts centre. This comprised a photographic record of the building, monitoring of geotechnical holes and foundation trenches and a borehole transect across the site to obtain environmental data. The engine shed and adjacent water tower were constructed in 1874-5. The engine shed ceased to be used in 1964 but some of the offices continued in use until the 1970s. The water tank had collapsed in 1950. All the buildings recorded had been stripped of fixtures and fittings many years before the survey. The sediment sequence reflected in these cores suggests a Bronze Age and possibly earlier river eroding the glacial sands along its western edge and depositing clays and silts and organic silts in open water. An eastern movement of the channel may have made this area marginal and reeds began to colonise the silts and clays in the late Bronze Age, probably moving eastwards across the site, while woodland carr developed along its margins and then expanded across the site until it covered the whole area in the early 1st millennium BC. These deposits are truncated and may date no later than the early Iron Age but in the historic period, probably in medieval times the river returned and cut a new channel through, and over, the prehistoric peats depositing shell rich organic silts and muds up until the area was actively reclaimed by post-medieval industrial and railway development.
Project dates	Start: 02-05-2005 End: 12-06-2006
Previous/future work	No / Not known
Any associated project reference codes	LUES 05 - Sitecode
Any associated project reference codes	2005.107 - Museum accession ID
Type of project	Environmental assessment
Current Land use	Other 2 - In use as a building
Monument type	INDUSTRIAL BUILDING Post Medieval
Significant Finds	NONE None
Survey techniques	Soils

Project location

Country	England

Site location	LINCOLNSHIRE LINCOLN LINCOLN The Engine Shed and Lincoln Centre for Performing Arts, Brayford Campus
Study area	6000.00 Square metres
Site coordinates	SK 9715 7102 53.2270397369 -0.544554421415 53 13 37 N 000 32 40 W Point
Site coordinates	SK 97221 71007 53.2269098994 -0.543495081169 53 13 36 N 000 32 36 W Point
Height OD / Depth	Min: 5.00m Max: 5.00m

Project creators

Name of Organisation	LINDSEY ARCHAEOLOGICAL SERVICES
Project brief originator	Lincoln City Council
Project design originator	Naomi Field
Project director/manager	Naomi Field
Project supervisor	Naomi Field
Type of sponsor/funding body	Developer
Name of sponsor/funding body	University of Lincoln

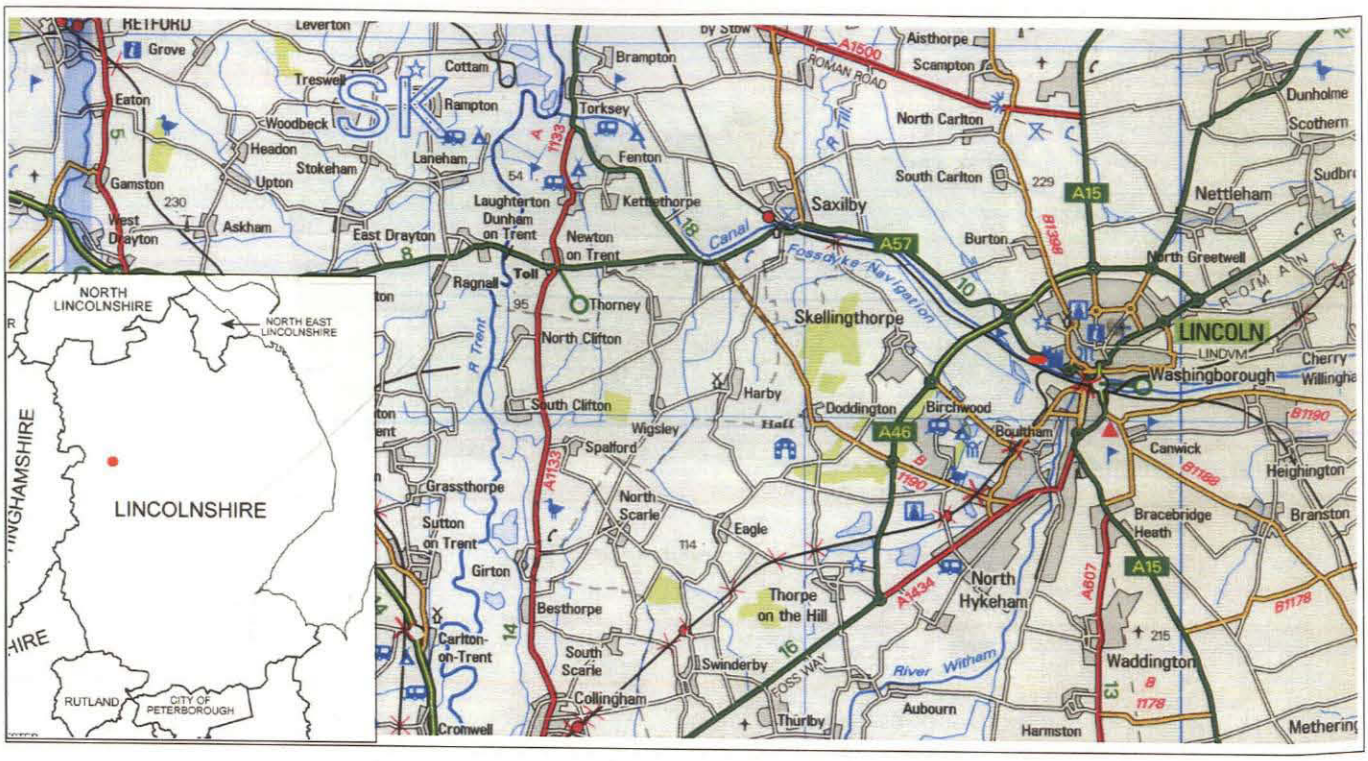
Project archives

Physical Archive Exists?	No
Physical Archive recipient	LCNCC
Physical Archive ID	2005.107
Physical Contents	'Environmental'
Digital Archive recipient	Lindsey Archaeological Services
Digital Archive ID	LUES 05
Digital Contents	'Environmental'
Digital Media available	'Images raster / digital photography','Images vector','Spreadsheets','Survey','Text'
Paper Archive recipient	LCNCC
Paper Archive ID	2005.107
Paper Contents	'Environmental'
Paper Media available	'Context sheet','Correspondence','Drawing','Manuscript','Photograph','Plan','Report'

Project bibliography 1

Publication type	Grey literature (unpublished document/manuscript)
Title	The Engine Shed and Lincoln Centre for the Performing Arts, Brayford Campus, University of Lincoln, Lincoln:Archaeological Building Recording and Environmental Assessment
Author(s)/Editor (s)	Field, N. , Tann, G. and Rackham, J.
Other bibliographic details	LAS Report 1083
Date	2008
Issuer or publisher	LAS
Place of issue or publication	Lincoln
Description	A4 comb bound 11pp+ 3 appendices + 5 figs + 37 plates
Entered by	Naomi Field (naomi@linarch.co.uk)
Entered on	30 October 2008

THE FIGURES



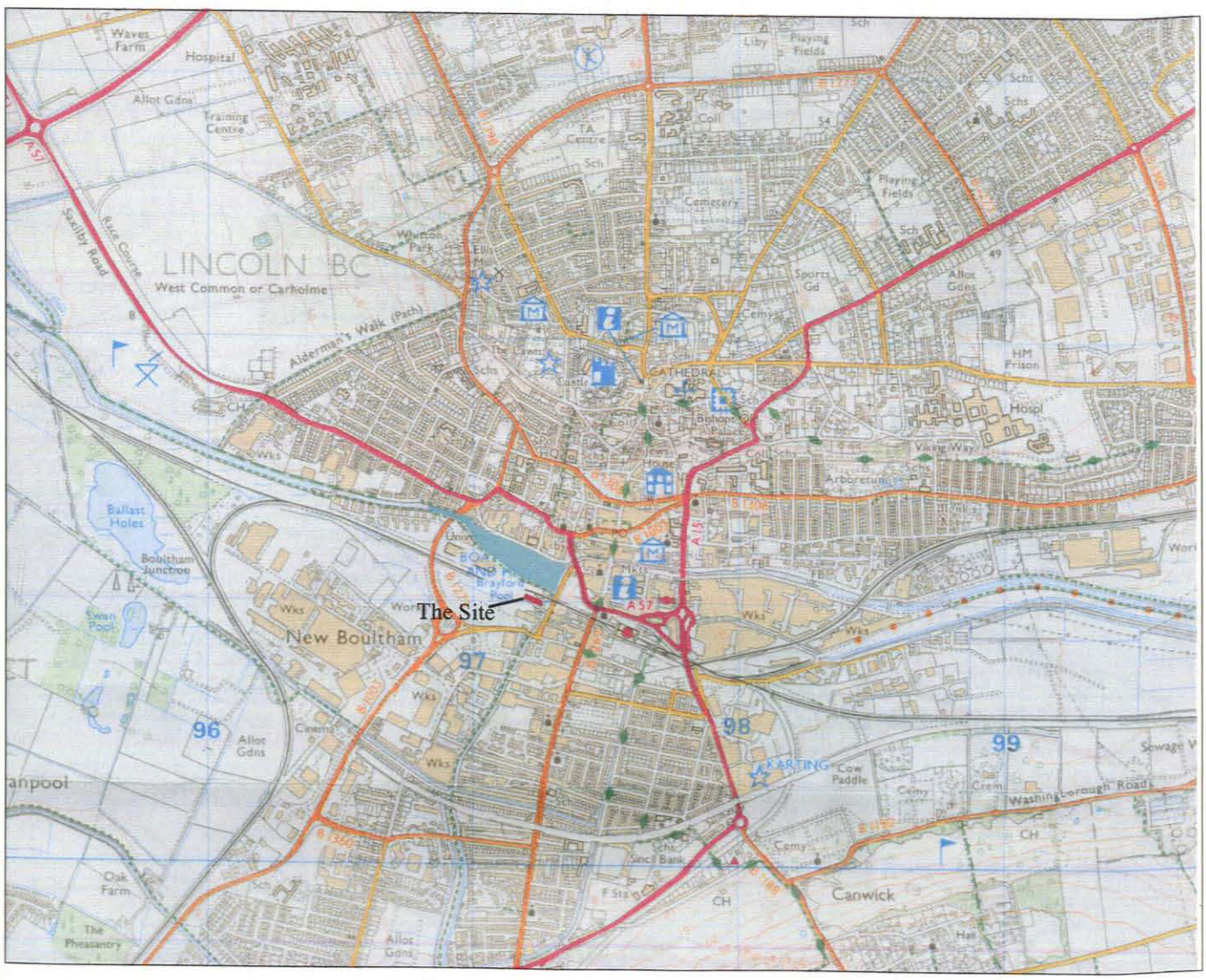
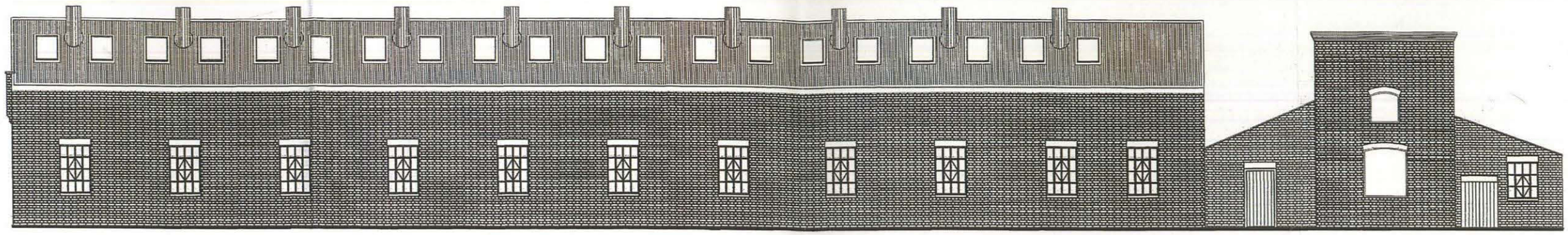
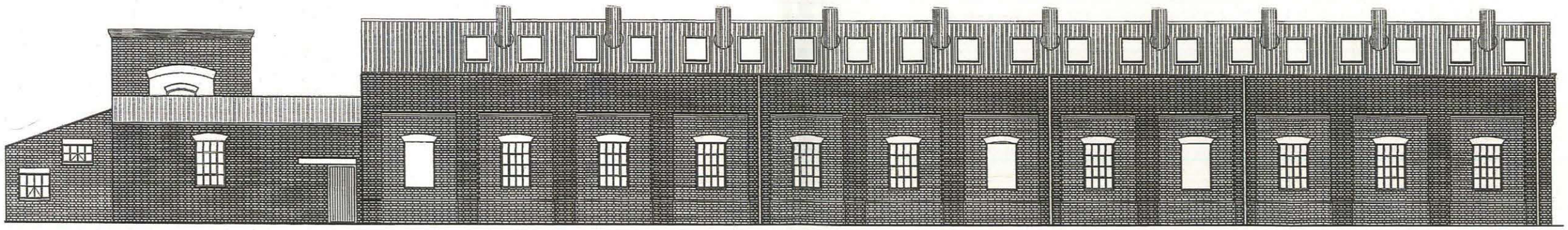


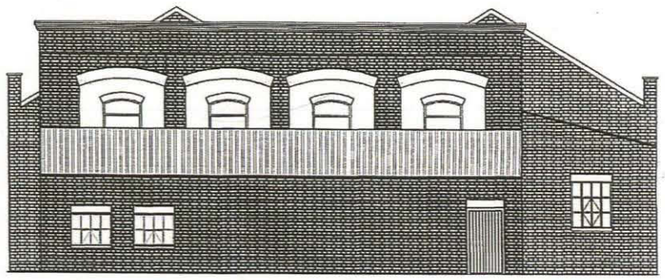
Fig. 1 Location of the Engine Shed Holmes Yard Lincoln (C based on the 2000 1:25000 Ordnance Survey Explorer map Sheet 272. Crown Copyright, reproduced with the permission of the Controller of HMSO. LAS Licence No.AL 100002165).



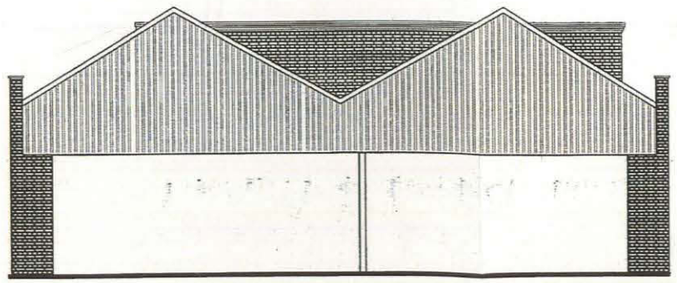
South elevation



North elevation



East elevation



West elevation

Fig. 2 The engine shed, Holmes Yard, Lincoln. elevations Scale 1:200. Drawing supplied by University of Lincoln.

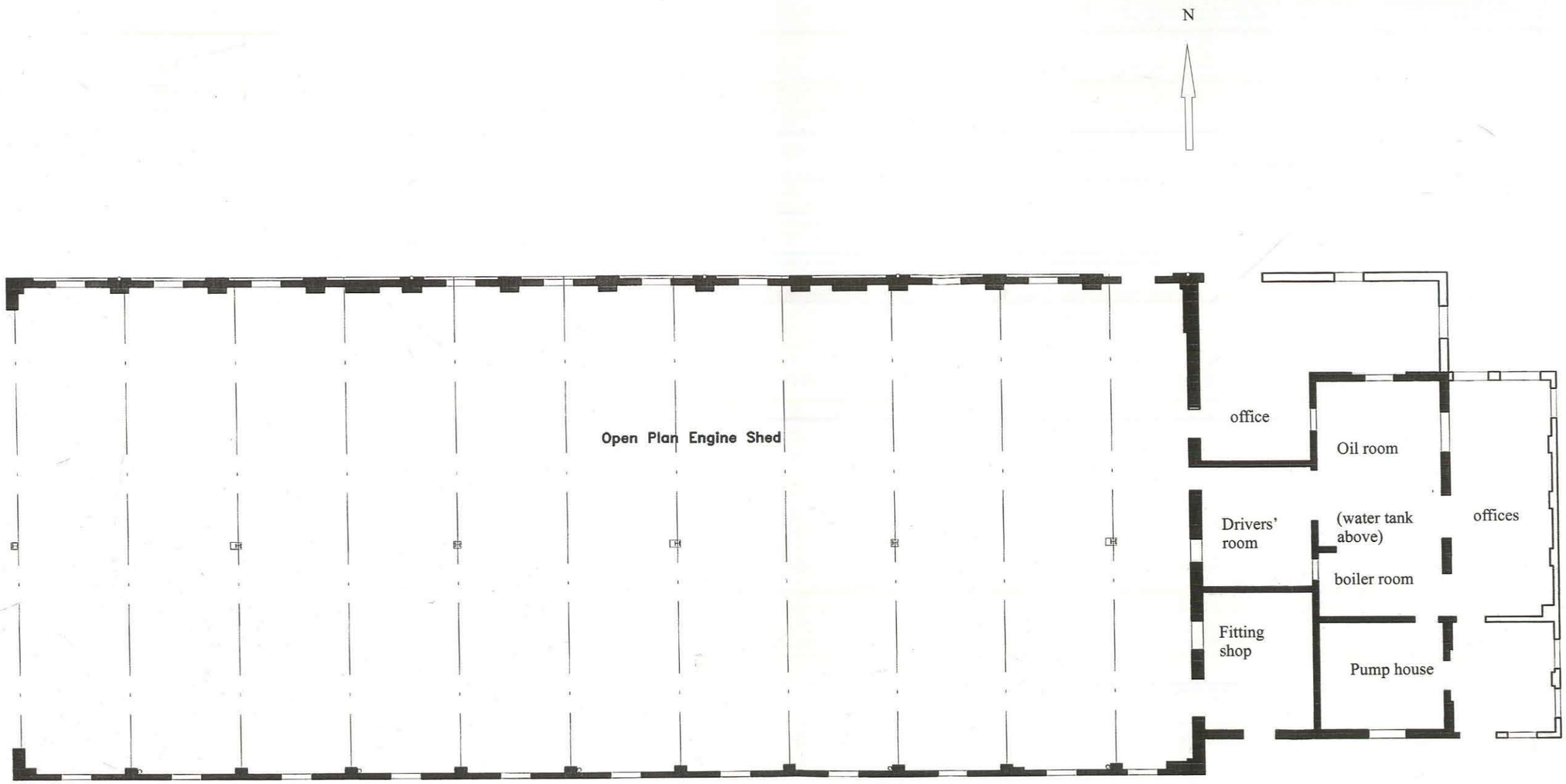


Fig. 3 The engine shed, Holmes Yard, Lincoln. Ground plan

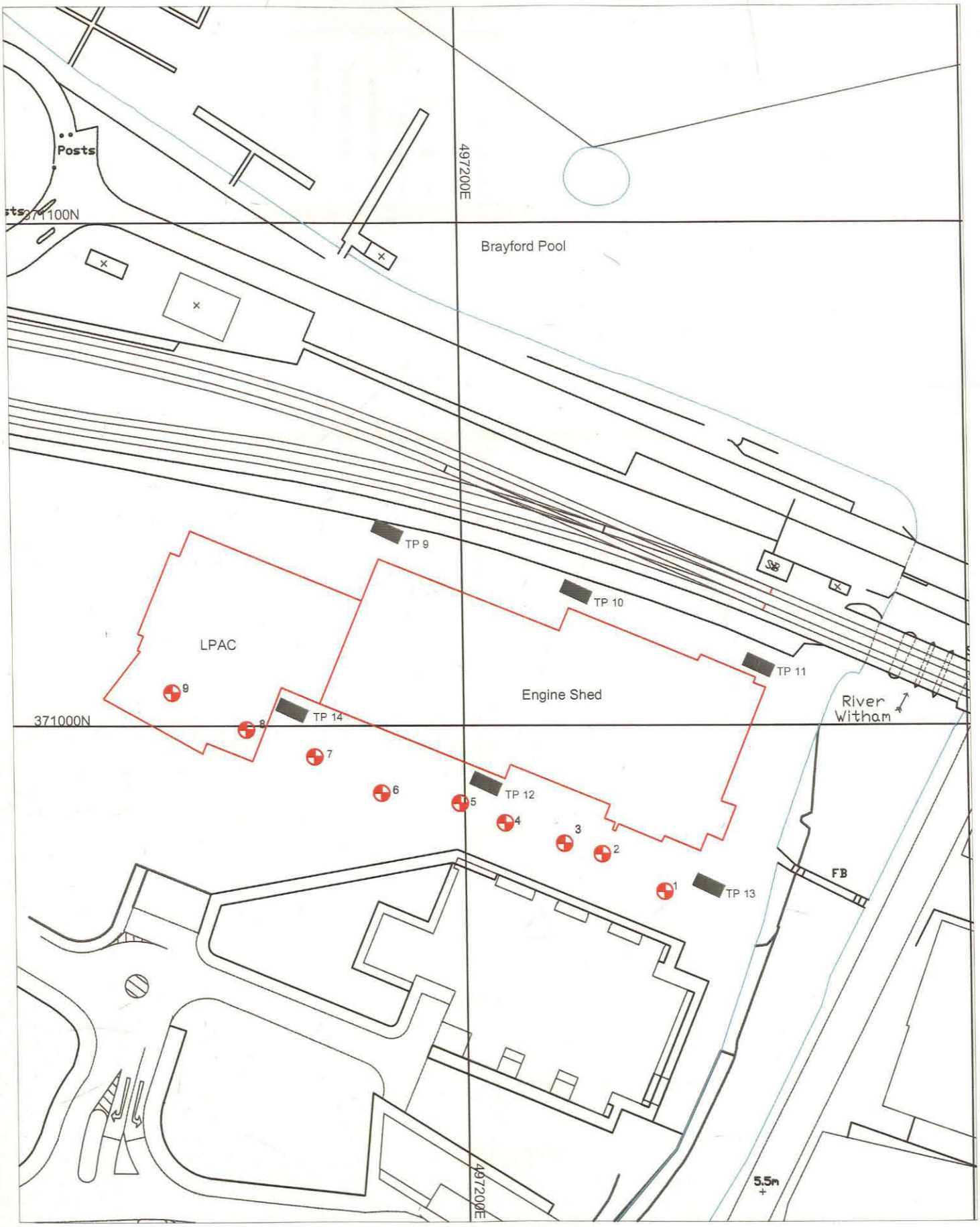


Fig.4 Location of borehole transect and geotechnical test pits (Solmek)

LINDSEY ARCHAEOLOGICAL SERVICES	PROJECT NAME: University of Lincoln Engine Shed and Performing Arts Centre	SITE CODE: LUES 05	DRAWN BY: R Schofield	N
	PROJECT TYPE: Archaeological Recording	ACC. NO: 2005.107 SCALE: 1: 1000	DATE: 01/07/08	

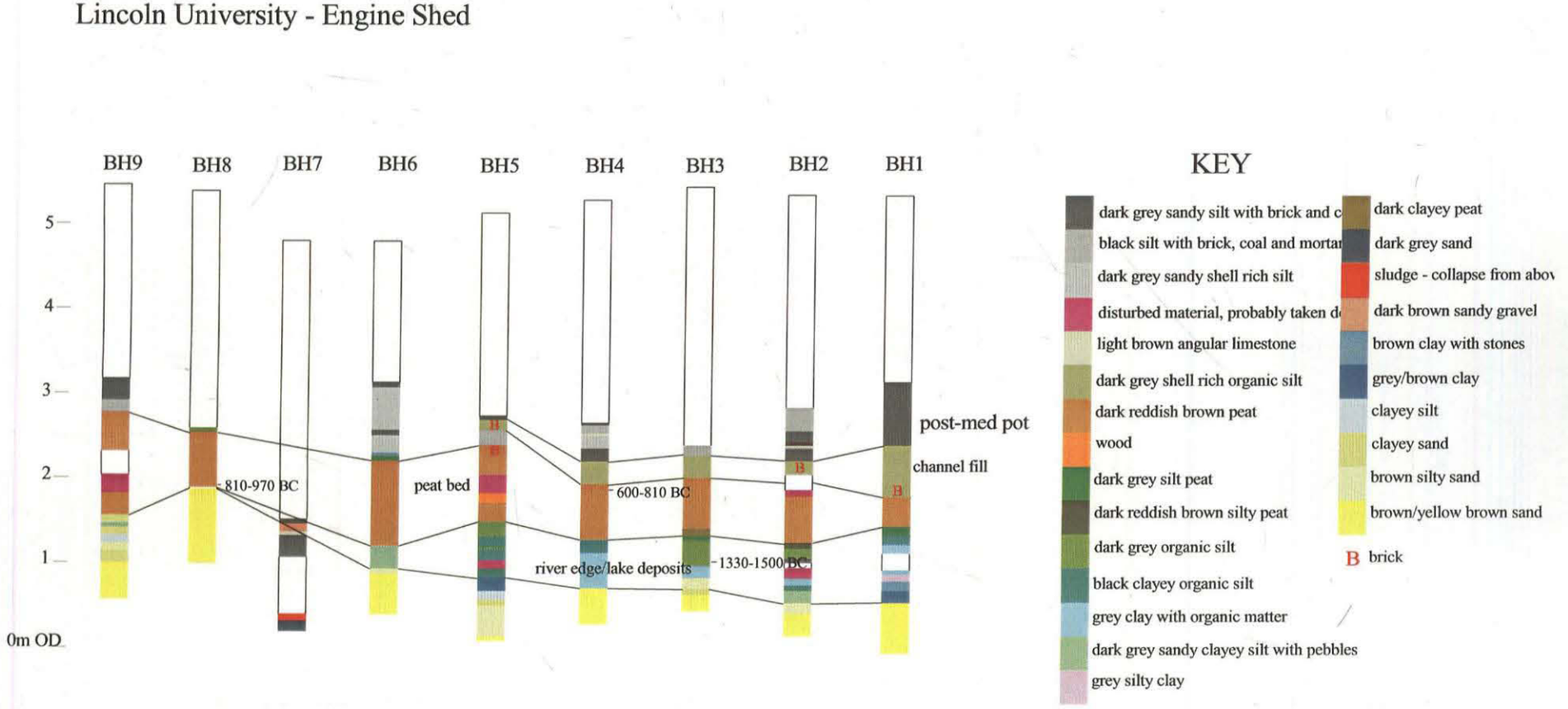
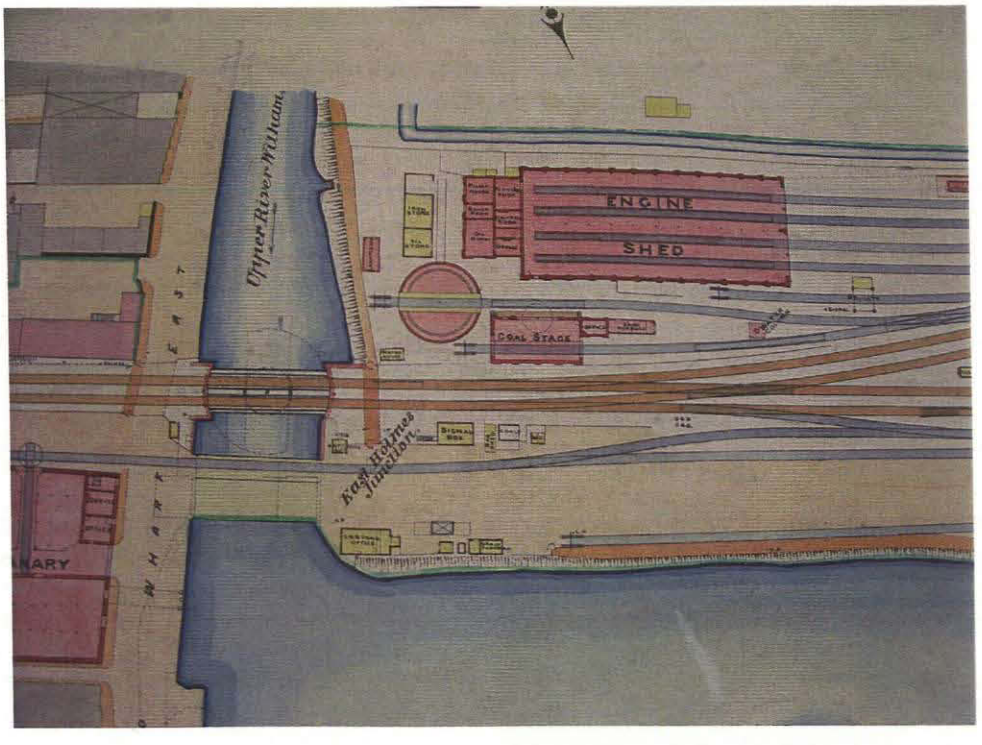


Fig. 5 Diagrammatic section of the deposits along the auger transect

THE PLATES

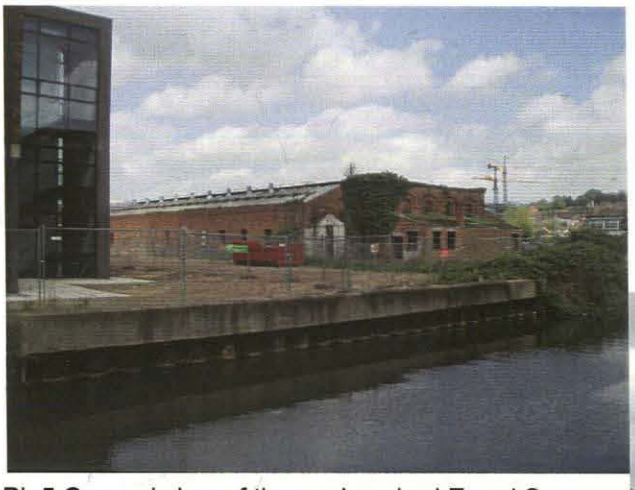
Pl. 1 General overhead view of the engine shed , water tower and associated outbuildings, taken in 2002. Photo courtesy University of Lincoln.



Pl. 2 Part of the 1903 Great Northern Railway plan of 1903 showing the engine shed and Water Tower (LAO MISC DON 1333)

Pl. 3 General view of the engine shed W and N elevations (looking SW)

Pl. 4 General view of the engine shed N and E elevations (looking SE)



Pl. 5 General view of the engine shed E and S elevations (looking NW)

Pl. 6 General view of the engine shed S and W elevations (looking NE)

Pl. 7 Engine shed W elevation

Pl. 8 Engine shed interior

Pl. 9 Engine shed interior

Pl. 10 Engine shed interior, detail of ventilation hoods

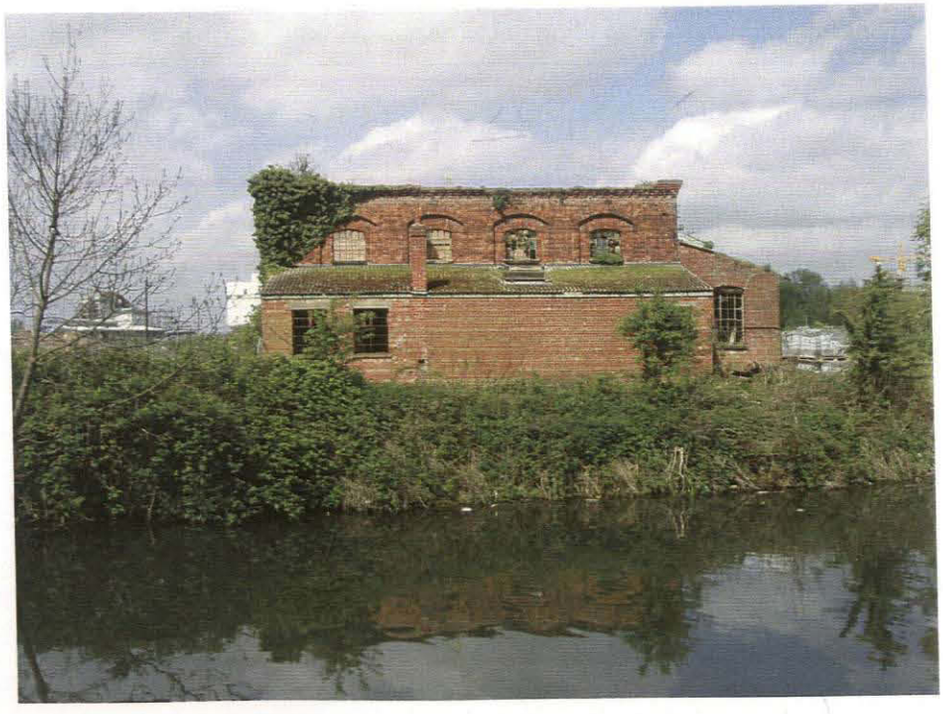
Pl. 11 Engine shed S elevation

Pl. 12 Engine shed S elevation, window

Pl. 13 Engine shed N elevation

Pl. 14 Engine shed N elevation, window

Pl. 15 General view showing buildings to the east of the engine shed, looking SW



Pl. 16 Water tower and east extension

Pl. 17 Water tower after demolition of the north extension, looking south

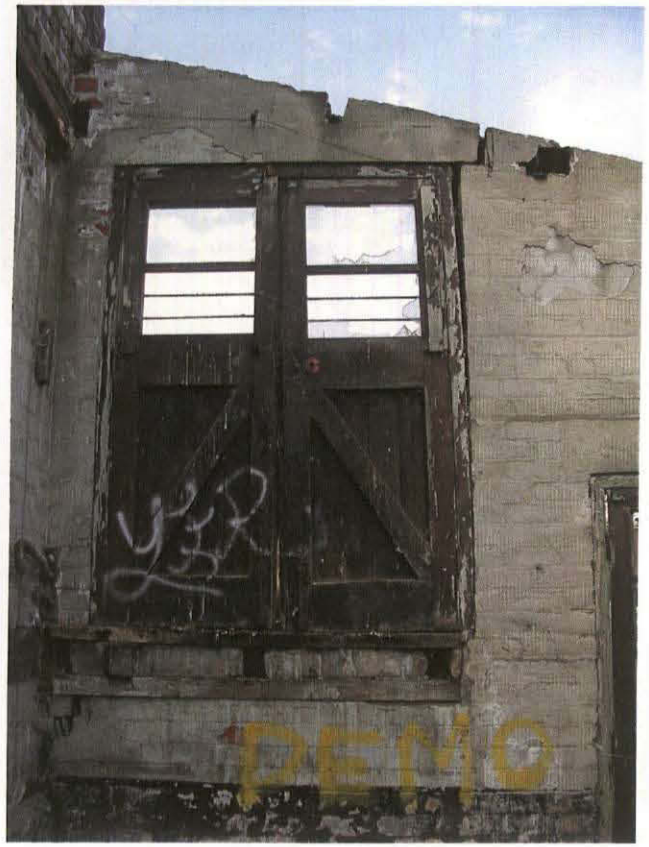
Pl. 18 Water tower , detail of decorative brickwork

Pl. 19 Water tower, west and east extensions, south elevation

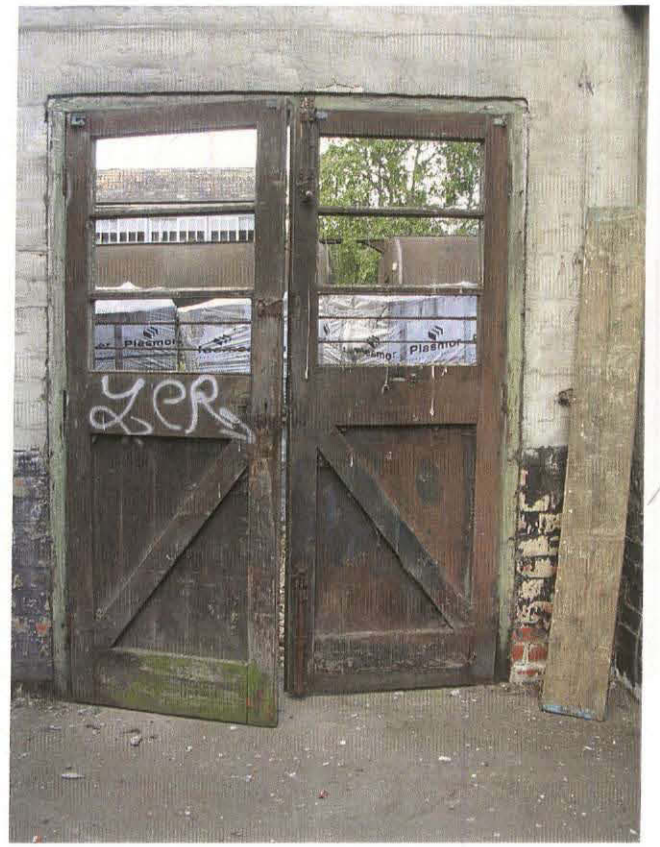
Pl. 20 Area to the west of the water tower after demolition

Pl. 21 East extension, looking west

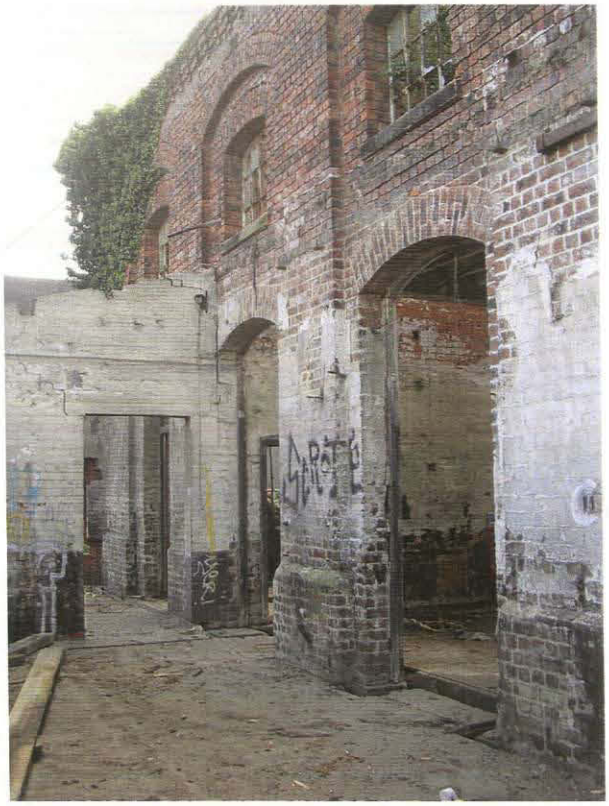
Pl. 22 East extension, interior looking NE



Pl. 23 East extension interior, opening in north elevation



Pl. 24 East extension interior, door in north elevation

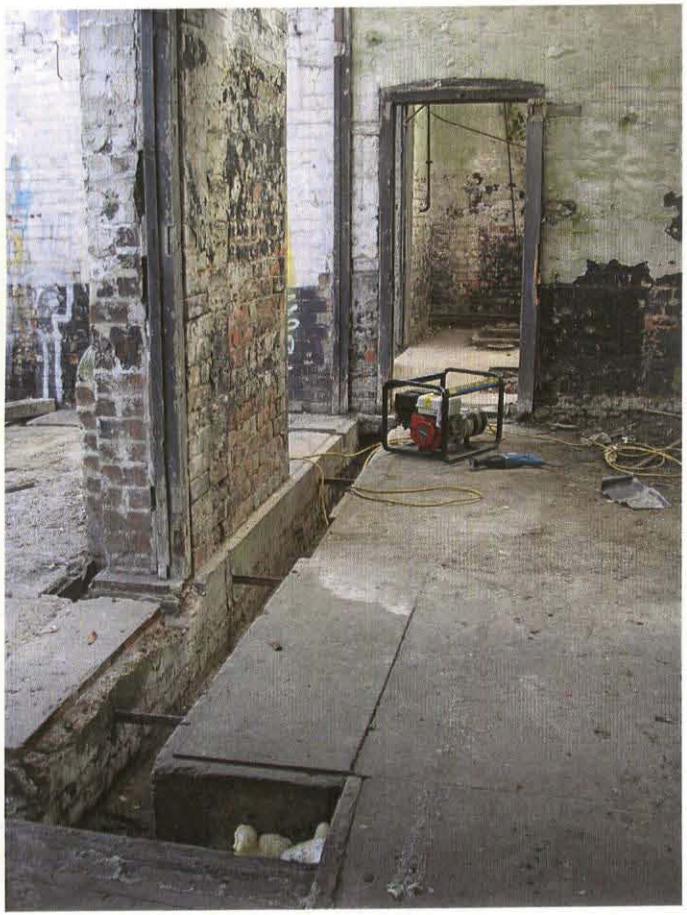


Pl. 25 East extension interior looking S with water tower east wall openings to the right

Pl. 26 Water tower interior, upper window in south elevation

Pl. 27 Water tower interior, window in pump room, south elevation

Pl. 28 Water tower interior, pump room fittings in the floor, looking S.



Pl. 29 Water tower interior, boiler room, looking N.

Pl. 30 Water tower interior, boiler room tank base, south end of the room

Pl. 31 Water tower interior, boiler room looking N

Pl. 32 Water tower interior, oil room, tank base at S end of room

Pl. 33 Piling in progress to east of the water tower, looking NW.

Pl. 34 Groundworks north and east of the water tower (looking south-east)

Pl. 35 Groundworks north and east of the water tower (looking east)

Pl. 36 Groundworks east of the water tower (on site of the east extension, showing the brick relieving arches at ground level (looking north)

Pl. 37 Groundworks west of the water tower (on site of the west extension, showing the brick relieving arches at ground level (looking north)