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Archaeological Desk-Based Assessment

Carrow Works, Norwich

Iceni Projects Limited on behalf of

Fuel Properties Ltd.

July 2022

ICENI PROJECTS LIMITED ON BEHALF OF FUEL PROPERTIES LTD.

Archaeological Desk-Based Assessment

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Archaeological Desk-Based Assessment

of Proposed Development at

Carrow Works,
Norwich

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Non-technical Summary

This document is an Archaeological Desk-Based Assessment (DBA) which assesses the potential presence and significance of archaeological assets on the Application Site within a set Study Area. Historic structures are not specifically considered within this report except where they are relevant to the archaeological interpretation of the Application Site.

The Proposed Development of the Application Site will involve the Applicant submitting a hybrid planning application (part full, part outline), for mixed reuse redevelopment at Carrow Works. This assessment considers the potential and character of any buried heritage assets on the Application Site. The impact of any subsequent development proposal for the Application Site will be assessed during the application for that scheme.

The potential archaeology on the Application Site is as follows:

- High potential for the presence of palaeoenviromental remains.
- Moderate potential for prehistoric archaeological remains.
- Low potential for Roman remains.
- High potential for medieval remains.
- High potential for post-medieval remains.

Based on the existing geotechnical and historic mapping information, the northeast and central part of the Application Site retains intact natural ground levels and is likely to have the highest potential for archaeological remains, as it has not been impacted by significant landscaping associated with Carrow Works. Development associated with Carrow Works levelled much of the Application Site, with the north of the Application Site potentially comprising up to 4m worth of made ground. Known archaeological remains have been recorded in the central component of the Application Site, where the in-situ remains of Carrow Priory are present.

The aim of a Desk-Based Assessment is to provide the Archaeological Advisor and Local Planning Authority (LPA) with sufficient information to determine whether or not planning consent is permissible with consideration to a) the significance of potential heritage assets surviving on site and b) how they will be affected by the proposed development. This document will also assist the LPA in determining whether intrusive archaeological investigation is required in support of the panning application, or post consent, pursuant to a planning condition.

1. Introduction

1.1.1 This DBA is for the Site of Carrow Works, Bracondale, Norwich (hereafter referred to as 'the Application Site') (Figure 1). It has been commissioned from Iceni Projects by Fuel Properties Ltd.

1.1.2 Given the undertaking of a DBA on the Application Site in 2018, which gave a thorough description of the Archaeological background (CGMS, 2018) the aim of this assessment is to focus more on understanding the topography, stratigraphy and potential below ground impacts of the Proposed Development on the Application Site.

1.1.3 The Application Site is situated to the southeast of Norwich City Centre and covers an area of approximately 17.0 hectares. The Application Site is comprised of two distinct character areas, namely the industrial production area (Carrow Works) extending along the river and railway frontages, and the area around Carrow Abbey which is more residential in nature, comprising a group of residential scale and style properties and grounds. The Carrow Priory Scheduled Ancient Monument (SAM 1004031) is located within the centre of the Application Site.

1.1.4 The Application Site is bound by a rail track to the east, Carrow House offices and associated carparks and soft landscaping to the west, the A147 and Bracondale Road to the south and the River Wensum to the north. The centre of the Application Site lies at National Grid Reference 624280,307428 and this document utilises a Study Area with a radius of 500km from the Application Site Outline.

1.1.5 Ground level has been recorded at an estimated elevation of between 5.0m and 8.0m OD in the northern, central, and eastern part of the Application Site and between 10.0m and 7.0m OD in the central and southwestern part of the Application Site (Leap Environmental, 2018a).

1.1.6 The main Carrow Works area, includes associated industrial buildings, warehouses, and hardstanding. The area around Carrow Abbey encompasses the ruins of the 12th century Priory. The extant structures at the Carrow Works site span a period of c.900 years, with the Grade I Listed Carrow Abbey incorporating 12th century foundations.

1.1.7 The Application Site lies partially within the eastern extent of the Bracondale Conservation Area which incorporates the SAM Carrow Priory and Grade 1 Listed Carrow Abbey complex, the Grade II Listed Carrow House and parts of the industrial Carrow Works site, including two further Grade II Listed Buildings associated with the works. A small portion of the southeastern extent of Carrow Works also lies within the Trowse Millgate Conservation Area, incorporating two locally listed structures (Cotswold Archaeology, 2021)

1.1.8 The Norwich City Walls and Towers SAM (SMA1004023) covers a large area, extending around the limits of the later Medieval city. The nearest element of this SAM is located c.120m northwest of the Application Site.

1.1.9 Paragraph 194 of the National Planning Policy Framework (NPPF) advises that:

"Where a site on which development is proposed includes, or has the potential to include, heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation."

1.1.10 This document has also been undertaken in accordance with the Chartered Institute for Archaeologists (CIfA) Standards and Guidance (CIfA 2014a and b) and the Norwich Local Plan (Adopted 2014) which states:

"Development shall maximise opportunities to preserve, enhance, or better reveal the significance of designated heritage assets and that of any other heritage assets subsequently identified through the development process. It will also promote recognition of the importance of the historic environment through heritage interpretation measures.

Where proposals which involve the unavoidable loss of any designated or locally identified heritage asset are accepted exceptionally under this policy, a legally binding commitment from the developer must be made to implement a viable scheme before any works affecting the asset are carried out."

1.1.11 Planning legislation, policy and guidance which is applicable to this report is contained in more detail within Appendix A: Planning Policies.

1.1.12 The Proposed Development comprises the following:

"Hybrid application to develop Carrow Works for a phased residential-led development (use class C3) with supporting mixed-uses (non-residential Class E/F1 use class), demolition of buildings, the retention, conversion and adaptation of Listed and locally listed Buildings and structures, landscaping, open space, new and modified access, car parking and other ancillary works.

Detailed application component comprises the construction of the primary internal road and associated public spaces and public realm, restoration and change of use of Carrow Abbey back to original residential use (Class C3), enhanced access to Carrow Abbey and Scheduled Ancient Monument and associated ancillary works".

1.1.13 Specialist archaeological advice from John Percival, Historic Environment Senior Advisor at Norfolk Historic Environment Services, EIA Scoping Opinion letter dated 26th May 2022 (Planning Application Reference 22/00540/EIA2) recommended that:

"Any updated archaeological desk-based assessment should include consideration of existing sources of palaeoenvironmental and geoarchaeological information and present this information in the form of a deposit model. At this stage the applicants should consider bolstering the base line information relating to Carrow Priory with information from non-intrusive investigations such as ground-penetrating radar survey."

2. Objectives

2.1.1 The aim of a DBA is to provide the Archaeological Advisor and LPA with sufficient information to determine whether or not planning permission is justifiable with consideration to how the proposed development will affect any buried heritage assets surviving on site.

2.1.2 This document has been undertaken pursuant to the professional guidance issued within the CIfA guidelines (2014b), which sets the standard for Desk-Based Assessments as:

Desk-based assessment will determine, as far as is reasonably possible from existing records, the nature, extent and significance of the historic environment within a specified area. Desk-based assessment will be undertaken using appropriate methods and practices which satisfy the stated aims of the project, and which comply with the Code of conduct and other relevant regulations of CIfA. In a development context desk-based assessment will establish the impact of the proposed development on the significance of the historic environment (or will identify the need for further evaluation to do so), and will enable reasoned proposals and decisions to be made whether to mitigate, offset or accept without further intervention that impact.

The CIfA standard (2014b) also provides the following definition / guidance that a Desk-Based assessment is:

"A programme of study of the historic environment within a specified area or site on land, the inter-tidal zone or underwater that addresses agreed research and/or conservation objectives. It consists of an analysis of existing written, graphic, photographic and electronic information in order to identify the likely heritage assets, their interests and significance and the character of the study area, including appropriate consideration of the settings of heritage assets and, in England, the nature, extent and quality of the known or potential archaeological, historic, architectural and artistic interest. Significance is to be judged in a local, regional, national or international context as appropriate."

2.1.3 The aim of this DBA is to:

- Identify the presence of any known or potential buried heritage assets that may be affected by the proposals,
- Describe the significance of such assets, as required by the NPPF and,
- Assess the likely impacts upon the significance of the assets arising from the Proposed Development.

3. Methodology and Sources Consulted

Archaeological Potential

3.1.1 The **potential** for surviving archaeology of various periods is defined within this report as either:

High: The available evidence suggests a high likelihood for past activity within the Site and a strong potential for archaeological evidence to survive intact or reasonably intact.

Moderate: The available evidence suggests a reasonable likelihood for past activity within the site and a potential that archaeological evidence may survive although the nature and extent of survival is not thought to be significant.

Low: The available evidence suggests archaeological evidence of significant activity is unlikely to survive within the site, although some minor land-use may have occurred.

Uncertain: Insufficient information to assess.

Archaeological Significance

3.1.2 The **significance** value of potential archaeology is defined in this report as follows:

International / National (very high): The highest status of asset and indicative of national importance.

e.g. World Heritage Sites (WHS), Scheduled Ancient Monuments (SAMs), Grade I and II* Listed Buildings (LBs), Grade I and II* Registered Parks and Gardens (RPGs), Protected Wrecks, Heritage assets of national importance, well preserved historic landscapes with exceptional coherence, time depth, or other critical factor(s).

National / Regional / County (high): Archaeological sites that may be designated or undesignated, may contain well preserved or in situ structures, buildings of historical significance, historic landscapes with a reasonably defined extent, or reasonable evidence of occupation/settlement or activities (ritual, industrial etc.).

e.g. Grade II RPGs, Conservation Areas (CAs), Designated historic battlefields, Grade II LBs, burial grounds, protected heritage landscapes such as Ancient Woodland, heritage assets of regional or county importance.

Sub-regional / District (moderate): Designated or undesignated archaeological sites with reasonable evidence of human activity. Assets may be of limited historic value but may contribute to district or local knowledge and/or research objectives. May contain structures or

buildings of potential historic merit.

e.g. Historic village settlements, associated historic field systems and boundaries, historic road systems.

Local Area / Parish (Low): Heritage assets with a local level cultural or education value only

e.g. Historic field systems and boundaries, agricultural features such as ridge and furrow, ephemeral archaeological evidence, artefacts of poor contextual stratigraphy.

Negligible: Historic assets with very little or no surviving archaeological interest or stratigraphic integrity. Buildings and landscapes of no historical significance.

e.g. Destroyed objects, buildings of no architectural merit, relatively modern landscape features or disturbances such as quarries, field boundaries, drains etc.

Unknown: Insufficient information exists to assess the importance. Significance of below ground archaeological remains is often unknown until their nature and extent has been sufficiently determined through archaeological fieldwork.

3.1.3 Potential and significance values are based on guidance in the following documents:

- CIfA, 2014b, *Standards and Guidance for Historic Environment Desk-Based Assessment*.
- Historic England, 2017, *Good Practice Advice in Planning Note 3*;
- Historic England, 2017, *Conservation Principles: Policy and Guidance for the Sustainable Management of the Historic Environment*

Sources

3.1.4 The following sources were consulted in the production of this assessment:

- **Historic Environment Record (HER) Data** detailing the results of previous archaeological investigations on Site and in the surrounding Study Area. The HER Data (Event Number ENF152381) was obtained on 19/05/2022 and is the copyright of Norfolk County Council.
- **Historic England** - Information on statutory Designated Assets data including Scheduled Ancient Monuments, Listed buildings, and any identified Heritage at Risk.
- **Groundsure** - Ordnance Survey (OS) maps from their historic first edition through to modern OS mapping. Earlier historic maps were also consulted where available.
- **British Geological Survey (BGS)** - Solid and Drift geology digital mapping and geological borehole data where applicable.
- **LPA Local Plan** and other information on historic environment policies, conservation

areas and locally listed buildings where published online.

- **Archaeological Data Service (ADS)** - A comprehensive archive of published and unpublished fieldwork reports.
- **Volumes of the Victoria County History (VCH)** - An ongoing history project with the aim of creating an encyclopaedic history of each of the historic counties of England.
- **LIDAR** - Site topography was examined at https://environment.data.gov.uk/
- **Aerial Photography** – Historic and modern aerial photography was examined at https://historicengland.org.uk/images-books/archive/collections/aerial-photos/
- **Site Reports** - Reports on past archaeological investigations within the 500m Study Area.
- **Details of the Proposed Development** - Existing and proposed site plan, topographical survey, contamination report, existing site services and utilities report.

3.1.5 A site visit was undertaken in April 2022 in which included a visual assessment and photographic survey as well as an assessment of the topography and ground disturbance, the existing land use and nature of the existing buildings.

4. Geological, Topographical, Archaeological and Historical Background

4.1.1 To assess the archaeological potential within the area of the Proposed Development, HER Data has been obtained from the Norfolk Historic Environment Record (NHER) within a 500m Study Area of the Application Site.

4.1.2 The Study Area and NHER data have been examined to locate known archaeological sites and thus predict and inform the likely archaeological survival on Site. All references to archaeological interventions, findspots and monuments on Figure 2 and Figure 3 will be contained within parenthesis throughout the document. Many entries from the NHER data record result from chance discoveries. Other information and sources including documentary, cartographic, unpublished grey literature reports and internet resources have also been used to supplement this data. These sources are detailed further in Section 3.

4.1.3 A desk-based geoarchaeological deposit model was undertaken as part of this DBA. This is reproduced in full in Appendix B.

4.1.4 The deposit model, and consideration of hydrology data from geotechnical works previously undertaken on the Application Site, is in order to address comments made by Historic England during the Scoping Opinion, relating to hydrology and the preservation environment. Guidelines contained in Historic England's 2016 publication; *Preserving Archaeological Remains* have been referenced accordingly.

4.1.5 Historic structures are not specifically considered within this assessment except where they are relevant to the archaeological interpretation of the Application Site. A Separate Built Heritage Appraisals were conducted by Cotswold Archaeology in 2021.

Geology

4.1.6 Palaeoenvironmental and Geoarchaeological information which is applicable to this report is contained in more detail within Appendix B.

4.1.7 The BGS identifies the underlying geology of the Application Site to be bedrock of the White Chalk Subgroup, with superficial deposits across the majority of the Application Site to comprise River Terrace Deposits. In the northeastern corner of the Application Site, the superficial geology is indicated to comprise Alluvium.

4.1.8 Extensive archaeological and geoarchaeological investigations in the Study Area have confirmed the underlying geology as comprising alluvial silts, with relatively deep deposits of made ground overlying Peat, River Terrace Deposits (sand and gravel) and Chalk bedrock.

4.1.9 A geotechnical investigation undertaken on the Application Site in 2018 (Leap Environmental, 2018b) identified the ground profile to comprise hardstanding, over a varying thickness of made ground over Alluvium, overlying Chalk. Made Ground varied across the Application Site in both thickness and composition, however predominantly comprised reworked natural soils with some fragments of brick and concrete. Where Alluvium was encountered, it was found predominantly

as a clayey gravelly sand, with occasional clay bands, gravel bands and peat bands. Peat soils were exclusively present in the northeast of the Application Site. Chalk was encountered directly beneath the made ground at a number of locations, whilst in others there was varying thickness of Alluvial soil above it, or it was not encountered within the depth of exploration. Ground conditions have been summarised in below in Table 1.

4.1.10 Dark brown fibrous clayey sandy peat with organic fragments were encountered at a depth of 1.65mbgl, proven to a maximum depth of 4.60mbgl. Peat soils were exclusively present in the northeast of the Application Site.

Strata	**Depth Encountered (Top of the Horizon (mbgl)**	**Maximum Depth (Base of the Horizon) (mbgl)**	**Thickness (m)**
Made Ground	0.00	4.00	0.00 - 4.00
Sand	0.30 – 4.50	0.80 – 5.00 (end of Borehole at 5.00m)	0.50 – 4.50
Clay	0.45 – 1.00	1.00 – 2.00	0.50 – 3.50
Gravel	2.70 – 4.60	3.00 – 5.00 (end of Borehole at 5.00m)	0.25 – 0.40
Peat	1.65 – 3.40	3.50 – 4.60	1.20 – 2.00
Chalk	0.3 – 4.75	2.70 – 5.00 (end of Borehole at 5.00m)	-

Table 1 Ground Conditions Summary (Leap Environmental, 2018b)

Topography

4.1.11 The river Wensum runs roughly east–west, located along the northern boundary of the Application Site. The Application Site is fairly flat with a low point in the northeast and a highpoint in the southwest. The southwestern area of the Application Site is located at a height of c.15m OD which would naturally slope down to the north and east. The natural slope towards the river Wensum has been drastically altered as the northern third of the Application Site has been levelled to create the Carrow Works area. The northern boundary of the Application Site is located at a height of c.1m OD.

4.1.12 Extensive bomb damage was caused to the buildings along the northern boundary of the Application Site. During the repair (and in response to flood risk) the ground level was raised creating some basements (Leap Environmental, 2018a). A number of below ground brick-lined tunnels link buildings in this region of the Application Site.

4.1.13 The extensive landscaping associated with the development and expansion of Carrow Works, along with river defences and water management, particularly during the post-medieval period, would have resulted in significant landscape modification and redesign and impact on archaeological deposits which predate this expansion.

Palaeolithic Period to Iron Age (Before AD 43)

4.1.14 The prehistoric is a broad period comprising the Palaeolithic (c.500,000 – 10,000BC), Mesolithic (c.10,000 – 4,000BC), Neolithic (c.4,000 – 2,500BC), Bronze Age (c.2,500 – 700BC), and Iron Age (c.700BC – 43AD). Continuous human occupation of Britain began as the climate improved at the end of the last Ice Age, with nomadic hunter gatherer societies exploiting wild plants and animals. Farming was first introduced from the continent to Britain around 4000BC and was accompanied by changes in pottery, burial customs, new types of monuments and a sedentary population. The arrival of metalworking in the Bronze Age saw a gradual shift in burial practices, an increase in permanent occupational evidence, distinctive field systems and ceremonial landscape monuments. During the Iron Age, elaborate hillfort type structures are constructed, with evidence of ritual offerings and fine iron metalwork suggestive of a warrior aristocracy and the emergence of extensive tribal territories.

4.1.15 Environmental analysis based on evidence from the Norwich Riverside development, c.200m northwest of the Application Site would suggest that during the early prehistoric period, the area in close proximity to the Application Site was heavily forested (MNF26476). Given the regions underlying geology and position within the Pleistocene River valley of the Wensum, significant evidence for Palaeolithic material has been found within the Application Site and Study Area.

4.1.16 Palaeolithic flint objects, including at least five handaxes and a number of flakes, were recovered from gravel terrace deposits exposed during construction work at Carrow Works in 1927-8 (MNF473). The flints were identified as being of the Acheulian-Clactonian culture, although a more recent re-examination of this assemblage suggested that material of more than one industry/age is present. Mammoth remains including a tooth and a tusk fragment were also recovered from these gravel deposits.

4.1.17 Two Upper Palaeolithic flint blades were also recovered during construction work at the Application Site in 1965. These were found at a depth of approximately 1.2mbgl, although no further information is recorded (MNF74).

4.1.18 The Study Area also records further evidence of Palaeolithic material outside the Application Site Outline, including the survival of in-situ Upper Palaeolithic flint artefacts at Norwich City Football Club, immediately northwest of the Application Site over the River Wensum (MNF 41766).

4.1.19 The geoarchaeological deposit model (appendix to this DBA) indicates that the untruncated surface of the River Terrace Deposits (sealed by peat and alluvium) may survive in the north of the Application Site, and that this surface lies at a similar elevation to the setting of the in-situ Upper Palaeolithic artefacts at Norwich City Football Club.

4.1.20 Other evidence recorded in the NHER data includes one blade component, retrieved from a flint assemblage at 191-213 King Street (MNF 766) and some evidence of Palaeolithic flint artefacts at the Read’s Flour Mill complex (MNF 26467).

4.1.21 Mesolithic flint scatterings were also recorded during the above-mentioned excavations at Norwich City Football Club. Further Mesolithic evidence was present at the King Street site, with a large crested blade, a neat thin blade and several regular tertiary flakes potentially being Mesolithic in date (MNF 766).

4.1.22 Further early prehistoric material is recorded in the NHER as chance finds. In 1887 a Mesolithic flint tranchet axehead was found at the Application Site (MNF465). This was found within peat at a considerable depth below the surface, although no measurements are recorded. A chance find of three long Mesolithic flint blades were also recovered at the top of Carrow Hill in the early 20th century (MNF467).

4.1.23 The peat in the vicinity of the Application Site is likely to have formed in a well-vegetated low-energy riparian wetland environment under temperate climatic conditions, reflecting a mosaic of grass/sedge fen and reedswamp environments, perhaps locally fringed by areas of wet woodland (e.g. carr) that existed adjacent to the Rivers Wensum and Yare. The resources available in these environments are likely to have been attractive to Mesolithic hunter-gatherer communities.

4.1.24 By the Neolithic period, the Application Site likely had given way to a more open environment, probably as a result of increased agricultural development in the area.

4.1.25 Early Neolithic worked flints were recorded at the Norwich Riverside development site (MNF 26476).

4.1.26 Neolithic and Bronze Age worked flints, along with occupational activity in the form of prehistoric pits and post holes were also recorded during the excavations at Norwich City Football Club (MNF 41766).

4.1.27 During the Bronze Age, the environment became progressively more open and there are indications that cultivated soils were present in the locality, although it is unlikely that the landscape became completely treeless. The evidence of Neolithic and Bronze Age occupation in the vicinity indicates the potential for this to extend into the Application Site, though in areas which have been extensively landscaped and / or subject to bomb damage, it is likely to have been disturbed or completely removed.

4.1.28 A pot containing cremated human remains, speculatively dated to the Bronze Age, was recovered c.350m from the Application Site and may be associated with the nearby possible prehistoric settlement on Gas Hill (MNF 344).

4.1.29 A Bronze Age copper alloy socketed spearhead was recovered from the River Wensum near Carrow Bridge during dredging, c.170m northwest of the Application Site (MNF 503).

4.1.30 There is scant information for Iron Age activity within the Study Area. A single Iron Age coin was identified during works at Norwich City Football Club (MNF 41766).

4.1.31 It is likely that the recovery of prehistoric material in the Study Area is primarily the result of deposition from ongoing fluvial erosion of archaeological deposits, including fills of pits cut into in situ prehistoric soil horizons, which may extend southwards across the Application Site.

4.1.32 The surrounding riverine environment would have provided an attractive occupation setting throughout the prehistoric period, providing important natural resources which were probably utilised for a broad range of activities including grazing, fishing and fowling.

4.1.33 Surviving areas of river terrace deposits present on the Application Site have the potential to contain significant archaeological material from the prehistoric period, including highly significant Palaeolithic material.

Roman Period (AD 43 – 410)

4.1.34 The Application Site is situated away from major known Roman settlements, although some limited evidence for Roman settlement is present in the broader Study Area.

4.1.35 A dispersed group of finds, including pottery and coins, cremations, burials and archaeological features of Roman date, have been recorded in c.550m northeast, possibly indicating a settlement of this period (MNF63912). The area is located around the point where the projected line of the Roman road leading south from Brampton Roman town would meet the River Yare and includes the location of a possible wharf.

4.1.36 Roman pottery sherds were identified at the Norwich Riverside development site (MNF26476). A further small amount of pottery sherds has been identified at Norwich City Football Club site (MNF41766).

4.1.37 The Application Site itself lay some distance from a Roman arterial road network and was not located in the vicinity of any known settlements. The marginal location of the Application Site during this period suggests the Application Site has limited potential for Roman remains or evidence of occupation being present.

Saxon and Medieval Period (AD 410 –1485)

4.1.38 The Application Site likely comprised agricultural or pastoral land until the construction of Carrow Priory in the 12th century.

4.1.39 During this period, increased land reclamation and redevelopment in the north of the Application Site along the River Wensum is thought to have been undertaken to create an area in which to carry out agricultural and maritime industry. Riverside or channel edge structures such as drains, revetments, boats or fishtraps relating to the period may occur within the alluvial clays and channel fills which built up in the earlier palaeochannels.

4.1.40 Carrow Priory (MNF296) represents the surviving foundations of a Benedictine nunnery that was founded in the 12th century. The monument survives as upstanding and buried remains, including the Priory church, and the claustral ranges of the inner precinct. The area encompasses the prioresses house, which survives as the Grade I listed building called Carrow Abbey.

4.1.41 Previous archaeological work within the Application Site had uncovered substantial archaeological remains including:

- A gatehouse on the north side of the Priory, roughly 40m northwest of the west front of

the church. This provided access to the outer court.

- Evidence of the nave and its west front survives as buried remains, beneath the Abbey Dining Room, which was constructed in 1968.
- Immediately east of the chapter house this area was excavated in 1881 and identified as a cemetery, the graves remaining undisturbed
- On the south side of the Cloister, the remains of the refectory and other outbuildings are likely present below ground.
- East of the dormitory range LIDAR images indicate the presence of distinct ditches and banks which may relate to the medieval Priory.

4.1.42 Further information relating to previous archaeological excavations within the Application Site are listed below in the Past Archaeological Investigations within the Application Site section.

4.1.43 Carrow Priory is of national significance having very high historical, evidential, and architectural heritage values. It represents the remains of an important religious house in England's second largest city during the medieval period. Outside of the known areas of material associated with the upstanding remains of the Priory, there is potential for further significant archaeological material from the medieval period, including highly significant below ground remains associated with the Scheduled Area of the Priory.

Post-medieval to Modern Period (AD 1485 – present)

4.1.44 After the dissolution in the 16th century, Carrow Priory gradually fell into ruin, with the only exception being the upstanding early 16th century Grade I Listed Prioress' house, which was maintained as a secular residence (MNF64583). The house and its grounds were eventually acquired by the Colman firm in 1878.

4.1.45 In 1850, the land north of Carrow Abbey along the river Wensum, which was initially owned by the Norfolk Railway Company, was purchased by Jeremiah James Colman as the new location for the industrial and manufacturing works of the Colman's business which produced mustard. This area became known as Carrow Works, and progressively expanded around the Abbey.

4.1.46 The industrial buildings at Carrow Works are north of the Abbey, and date from the 1850s onward. The earliest buildings were constructed along the river, in the western part of the Application Site.

4.1.47 An undated map of Carrow Works (Figure 4), likely from the 1870s, shows the early layout of the factory buildings. The majority of the buildings were to the east, and included counting rooms, paper, starch, and laundry blue factories, mills for flour and mustard, and warehouses for new pickings, mustard, and starch. The fact that the Application Site also contained kilns, cooperage, saw mills, and a carpenter's shop demonstrates that production ranged from the processing of the raw goods to the creation of packaging for the finished products. The plan also shows the network of railway tracks extending throughout the factory complex, which joined up with to the

Norfolk Railway Company's line to the west, enabling the efficient transportation of goods off site.

4.1.48 The surviving foundations of the Priory Church and east range of the monastic buildings were subject to extensive excavation in the 1880-1. A plan of Carrow Abbey based on the excavation is illustrated in Figure 5. The Prioress's Lodging is the standalone building to the west of the Cloister. The 1885 OS Map (Figure 6) shows the central portion of the Application Site containing the Priory.

4.1.49 The 1886 OS Map (Figure 7) shows that Carrow Works expanded eastwards, with the extent of the railway network also visible. Much of the area to the east and south of the works remained open, with cattle and sheep pens adjacent to the railway line. This area in seen in more detail in Figure 8.

4.1.50 Between 1899 and 1909, the Prioress's House was significantly extended and remodelled as seen in the 1914 OS Map (Figure 9). A wing on the southeastern side of the building was also demolished. Stables Cottage, a group of outbuildings south of the Prioress's House, was also built during this period. Glasshouses have been erected to the south-southwest of the Priory buildings and the field to the east side has been landscaped with trees, shrubs and perimeter pathways. The outbuildings to the orchard / kitchen garden to the north of the Prioress's lodging have been redeveloped as a new factory building.

4.1.51 The expansion of the factory site with to include the mustard seed drier (constructed in 1890) and storage complex is also shown. This encroached onto the Priory grounds. Stable and Cottages are constructed to the south of the Priory. To the south of Carrow House a sunken garden has been created with a fountain at the centre.

4.1.52 The 1956 OS Map (Figure 10) records a number of new buildings and alterations. Significant bomb damage occurred during the Second World War, with Blocks 201 and 204 being demolished and rebuilt. A new storage silo is present to the northeast of the Priory.

4.1.53 The 1976 OS Map (Figure 11) no longer depicts the network of railway sidings within the factory works. A new access road for articulated lorries is present to the to the east of the Application Site. This also includes a new car park south of the Priory. Blocks 213 & 213a (Technical Centre) have been constructed to the west of Carrow Abbey. The canteen adjoining to the north of Carrow Abbey is present. The glasshouses and outbuildings associated with the large kitchen garden have been demolished to accommodate a very large distribution shed (Block 224). Block 218 has been erected to the south of the Mustard Seed Drier.

4.1.54 The 1983 OS Map (Figure 12) illustrates the car park to the west of the Stable cottages has been enlarged and a new roadway has been laid out along the western boundary of the Application Site. The large distribution shed on the location of the former kitchen garden (Block 224) has been considerably enlarged on the area of the playing field.

4.1.55 No significant changes are evident on the OS Maps after this period. The existing site plan is illustrated in Figure 13.

4.1.56 Since the mid-19th century, the Application Site has formed part of a large industrial and manufacturing complex initially owned by the Norfolk Railway Company, before passing into the ownership of the Coleman family who used the works for the production of Coleman's Mustard.

4.1.57 Post-medieval deposits potentially present within the Application Site will demonstrate a variety of industrial debris assemblages, most notably 19th and 20th century structures and footings associated with increased industrialisation and infrastructure development on the Application Site.

Past Archaeological Investigations within the Application Site

4.1.58 In 1880, J.J. Colman also undertook a major excavation of the Priory, which revealed the surviving elements of the foundations (MNF385/ENF86509).

4.1.59 The surviving portions of the church, the chapter house and the eastern range were recorded during this excavation. Fragments of a number of other buildings were also identified, along with a boundary wall to the north of the church, that enclosed an area containing several features that were probably cesspits and/or wells.

4.1.60 Several graves were also identified, these indicating the presence of graveyards both to the north of the church nave and to the east of the chapter house. The presence of a cemetery to the north of the nave had been suggested by earlier discoveries and further burials were encountered in this area on several occasions during the 20th century.

4.1.61 The location of a possible gatehouse associated with Carrow Priory were also recorded during this excavation, in the northwest corner of the grounds of Carrow Abbey (MNF64579/ENF130619). Steps that led down to a small basement and a least one 'vault' were also recorded, although no remains were identified above ground. A single flint and brick was subsequently recorded her in 1954. It is possible that this building is associated with the post-medieval secular residence at Carrow Abbey.

4.1.62 Further human remains were found during monitoring of ground works associated with the construction of a works canteen on the area of the Priory church nave (ENF130531). This discovery lies relatively close to the grave identified to the north of the nave during the 19th century excavations.

4.1.63 In the southeast corner of the grounds of Carrow Abbey, the excavation of a gas pipe trench in 1976 revealed medieval floor surfaces and flint rubble walls (MNF64578/ENF130585). The evidence recovered during this work supports the suggestion that this building was associated with Carrow Priory, rather than the earlier, 12th century nunnery.

4.1.64 A single cesspit was excavated at the possible site of the Priory reredorter in 1978 (ENF6246).

4.1.65 A programme of consolidation work was undertaken at Carrow Priory in 1981 (ENF95218). Several areas of intact late medieval tiled floor and a series of burials were recorded. Eleven burials of late 12th to late 15th century date were discovered within the choir and side chapels of the Priory church. Two further burials of possible 13th century date were found in what would

have been the graveyard to the north of the 12th century Priory church, cut by an extension to the north aisle.

4.1.66 A geophysical survey was also undertaken in 1981, revealing evidence for buried walls on the site of the cloister and the remains of several buildings beyond the east range (ENF130596). The area to the east of Carrow Abbey was investigated with several walls associated with the cloister identified. A large area was also surveyed to the east of the dorter range, revealing a number of additional buildings. Several walls were also identified between the main Priory complex and the eastern boundary of the Priory.

4.1.67 A watching brief in the northwest area of the Application Site in 2009, in proximity to the large scale industrial units revealed only modern rubble and demolition from landscaping of the area, likely as a result of a post-World War Two demolition and clearance (MNF57921/ENF122835).

4.1.68 A watching brief in the northeast of the Application Site in 2010, close to the culinary unit, revealed an early 20th century retaining wall and revetment that had been inserted against the river frontage to stabilise the bank (MNF59870/ENF124305).

5. Archaeological Potential and Significance

5.1.1 A review has been undertaken of the sources detailed in Section 4 including archaeological investigations conducted close to the proposed site and a handful of antiquarian findspots, sites with historic or cartographic references and listed buildings. These are shown on Figure 2 and Figure 3.

5.1.2 The potential for archaeological evidence originating from the various periods is summarised below. HER Data is only a partial reflection of the buried archaeological record and the true archaeological potential of the area may be higher than suggested. Historic impacts are also taken into consideration when assessing potential.

5.1.3 Although now fully drained and developed, the vicinity of the Application Site and Study Area was formerly marshy and was crossed by a number of streams and minor watercourses.

5.1.4 This area of the Wensum floodplain was subject to several significant and prolonged episodes of inundation and water-borne sedimentation over the last 8,500 years, resulting in the gradual build-up of alluvial clays and silts. This sediment deposition would have sealed any earlier (e.g. early prehistoric) archaeological deposits which may be present. River terrace gravels and may represent the position of the River Wensum prior to canalisation (likely during the medieval period), when it was wider and shallower.

5.1.5 The extant structures at the Carrow Works site span a period of c.900 years. Since the mid-19th century, the Application Site has formed part of a large industrial and manufacturing complex. The cartographic sources suggest that the Application Site generally remained open land associated with Carrow Priory for much of the post medieval period, before being occupied by buildings from the 19th century onwards. The nature and extent of the foundations for these buildings is unknown, though there is likely to be at least partial truncation of any surviving archaeological deposits within the footprint of these buildings.

5.1.6 In open flat areas such as the surface car park, archaeological survival is likely to be much higher, as evidenced by the results of the prior archaeological investigations on site detailed at the end of Section 4.

5.1.7 Borehole records on the Application Site indicate that alluvium and river terrace deposits remain below made ground. The made ground ranges between 0.00m – 4.00m in depth.

5.1.8 Current borehole records for the Application Site and adjacent area reveal that much of the natural ground is likely to have been partly truncated. The made ground ranges between 0.00m – 4.00m in depth. However, the depth of disturbance is shallow in places and there is potential for the survival of deeper archaeological features within the alluvial deposits and river terrace deposits within these less disturbed areas.

Paleoenvironmental

5.1.9 The Application Site has **high potentia**l to contain palaeoenvironmental remains. BGS mapping shows that the Application Site lies on superficial deposits of alluvium, and a previous geotechnical investigation across the Application Site identified a 1.20m – 2.00m thick peat layer.

Holocene alluvial sediments and peats, where they survive undisturbed, are known to preserve a range of palaeoenvironmental indicators such as plant remains, pollen and diatoms, that can provide information on past environmental conditions and indirect evidence for human activity (e.g. evidence for agriculture and/or industrial activities). Preservation of such indicators is generally highest in peats, which being organic in nature, are also potentially datable (using radiocarbon dating). Such remains would be considered as having **sub-regional significance**.

Prehistoric

5.1.10 The Application Site has **high potential** to contain prehistoric remains dating to the Palaeolithic, Mesolithic, Neolithic and Bronze Age periods, with the archaeological potential for the Iron Age considered as being **low**. The Proposed Development lies within an area of important prehistoric archaeological deposits. Most significantly, a substantial number of important Palaeolithic finds and paleoenvironmental deposits have been uncovered nearby. Surviving Palaeolithic deposits are incredibly rare and the potential of further deposits being present within the Proposed Development site should not be discounted. Remains would be considered as having regional significance.

Roman

5.1.11 The Application Site has low potential to contain Roman remains, likely to constitute chance finds, remains of cut features and limited evidence of rural occupation and activity. There is a general paucity of evidence for Roman occupation within the Study Area, with the extent of Roman material in immediate proximity to the Application Site constituting pottery sherds discovered during excavations at the Norwich Riverside Development and Norwich City Football Club. Remains dating to this period would be considered as having **local area significance**.

Medieval

5.1.12 The Application Site has **high potential** to contain Medieval remains, principally stratified archaeological deposits which retain considerable potential to increase our understanding of the physical characteristics of the buildings at Carrow Priory and of medieval female religious houses more generally. Carrow Abbey is also considered to be of significance by virtue of the rarity of late medieval religious houses, commissioned by, and built for, women, surviving in England. Though much of the Application Site is built upon, the scale of the development has the potential to impact on surviving archaeological remains of medieval date. These would likely be of **regional/national significance**.

Post-Medieval

5.1.13 Numerous archaeological remains dated to the post-medieval period have been identified in the Application Site attesting to intensive industrial activity. The industrial production area to the north, west and east of Carrow Priory extends along the river and railway frontages, occupied by buildings for associated trades. In areas of the Application Site unaffected by modern disturbance or truncation, there is high potential for later post-medieval building foundations

relating to structures associated with Carrow Works, along with dump layers sealing alluvial deposits. There is also high potential for 19th century structures, deposits or artefacts of archaeological interest relating to the Norfolk Railway Company which previously occupied parts of the Application Site. These would likely be **local area/sub-regional significance**.

6. Impact of Proposals

6.1.1 The Proposed Development will involve the Applicant submitting a hybrid planning application (part full, part outline), alongside Listed Building Consent and Demolition within a Conservation Area.

- The outline application, which covers a site area of 11.9 ha comprises:

  "Demolition of existing buildings and replacement with phased residential-led (Use Class C3 and/or Class E and/or F1 and/or F2 and/or C1 and/or C2 and/or B2 and/or B8 and/or Sui Generis), landscaping, open space, new and modified access, car parking and ancillary works."

- The detailed (full) application which covers an area of 5.02 ha comprises:

  "Full application comprising the construction of the principal means of access, the primary internal road and associated public spaces and public realm, including restoration and change of use of Carrow Abbey to former use as residential (Use Class C3), alteration and extension and conversion to residential use (Use Class C3) of the Lodge, Garage and Gardener's Cottage and the Stable Cottages, development of the former Abbey Dining Room for residential use (Use Class C3), adaptation and conversion for flexible uses (Class E and/or and/or C2 and/or and/C1 and/or C3 and/or F1 and/or F2 and/or B2 and/or B8 and/or Sui Generis) for buildings 207, 92, 206, 7 (7a, 8 and 8a), 209, 35, the Chimney and Class E and/or B2 and/or B8 for the retained Workshop (Block 258), enhanced access to Carrow Abbey and Scheduled Ancient Monument and associated ancillary works".

6.1.2 A demolition plan identifying areas where existing buildings which will be removed is provided in Figure 14.

6.1.3 A location plan identifying the outline and detailed application areas for the subject land is provided in Figure 15.

6.1.4 The works which are proposed within the boundary of the SAM will require scheduled monument consent. Works immediately adjacent to the SAM, such as the impact of the demolition of the former canteen, located over the western parts of the Priory church, which cause vibration and / or affect the setting or condition should be mitigated for as part of any construction management plan. The potential for similar deposits to survive elsewhere within the Application Site should also be considered.

6.1.1 The buried remains of the SAM and its wider environs should be utilised to the advantage of any development on the Application Site, in that archaeological work in the vicinity to offset construction impact (excluding the footprint of the monument) would actually provide the opportunity for further analysis and understanding of the medieval activity in the area and the purpose/ extent of the SAM itself.

6.1.2 Some of the proposed new structures depicted in the illustrative masterplan (Figure 16) are likely

to have foundations extending below ground level. The above-mentioned proposals would impact on any surviving archaeological remains within their footprint.

6.1.3 Existing impacts on the Application Site may include remnant foundations of previous structures seen on the historic mapping, such as the location of a possible gatehouse near Carrow Priory (situated on the northwest corner of the grounds of Carrow Abbey) (MNF64579) and a medieval hospital associated with Carrow Priory (MNF64578) (situated in the southeast corner of the grounds of Carrow Abbey). Remnant foundations of previous structures such as 19th and 20th century residential and industrial buildings may also be present.

6.1.4 The Application Site did suffer from bomb damage during the Second World War. This potentially impacted on any in-situ archaeological remains within localised areas.

6.1.5 Any groundworks outside the footprint of the proposed foundations (such as service runs, crane bases, grubbing out of obstructions, levelling etc.) associated with construction, also have the potential to impact on in-situ archaeological remains. The extent of these activities is yet to be defined.

7. Conclusion

7.1.1 The primary objectives of this report were to identify the nature, extent, and significance of any archaeological heritage assets that may be impacted by the Proposed Development.

7.1.2 Carrow Priory SAM is located within the centre of the Application Site. Given the national significance of the SAM and the potential archaeology on the Application Site, consideration should be given to the potential constraints in the earliest stages of the development.

7.1.3 The Application Site has the potential to contain archaeological remains, likely to constitute prehistoric, Roman, medieval or post-medieval features.

7.1.4 A number of previous archaeological excavations have been undertaken on the Application Site.

7.1.5 With consideration to the archaeology recorded within the 500m Study Area and the nature of the Application Site's topography, geology, and archaeological and historical background, there is a **high potential** for palaeoenvironmental remains, **moderate potential** for prehistoric remains, **low potential** for Roman remains, a **high potential** for medieval remains and a **high potential** for post-medieval remains to be present on the Application Site.

7.1.6 Archaeological survival on the Application Site is likely to be variable. Within the location of existing buildings and areas of identifiable intrusive landscaping, archaeology is likely to be truncated or completely disturbed. Outside of these locations, the potential for archaeological remains is higher.

7.1.7 Due to the range of periods that remains may date to and the proximity of Carrow Priory, surviving archaeological remains on the Application Site are likely to range between **negligible/local area significance** and **national** significance.

7.1.8 The Proposed Development will include below ground intrusions (piling, foundations, service runs etc.) with potential to impact on below ground archaeological remains.

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Norwich City Council, 2014. Adopted Local Plan


Figure 1
Site
Location
iceni
0 100 200 300 m
Site Outline

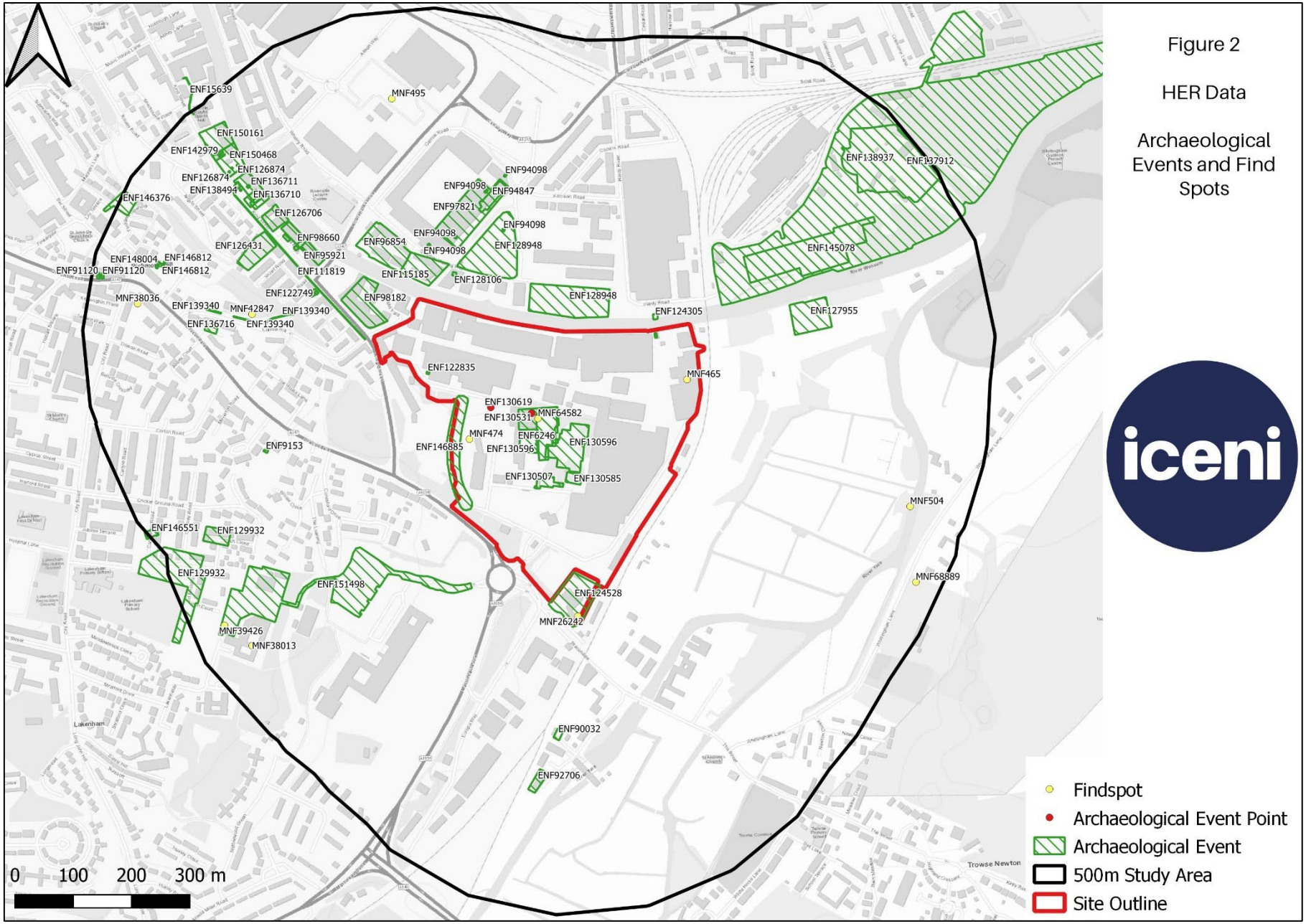
Figure 2
HER Data
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ENF150161
ENF142979
ENF150468
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ENF126874
ENF136711
ENF138494
ENF136710
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MNF68889
ENF124528
MNF26242
MNF39426
MNF38013
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Lakenham
Trowse Newton
0 100 200 300 m
Findspot
Archaeological Event Point
Archaeological Event
500m Study Area
Site Outline

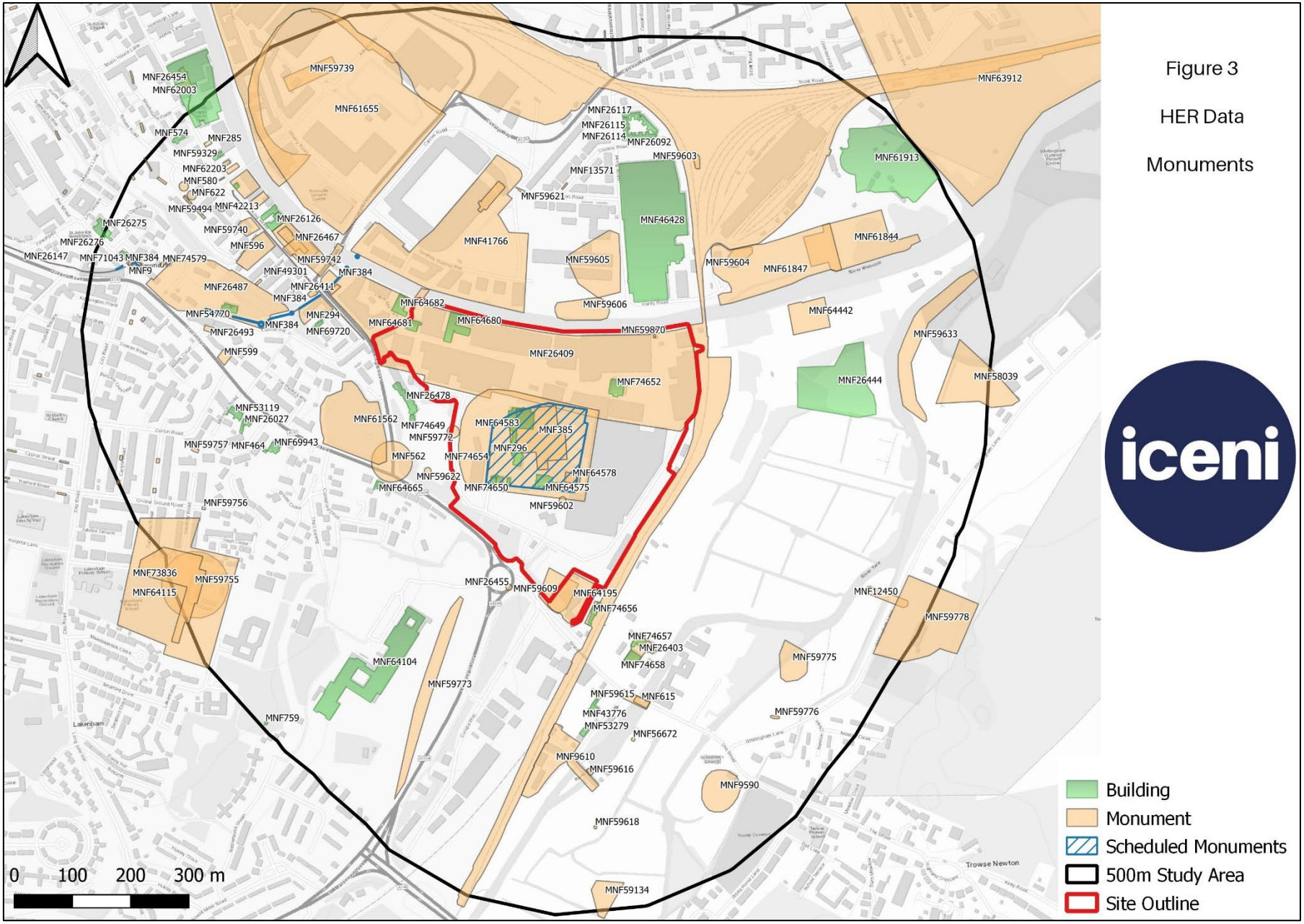
Figure 3
HER Data
Monuments
iceni
Building
Monument
Scheduled Monuments
500m Study Area
Site Outline
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Lakenham
Trowse Newton

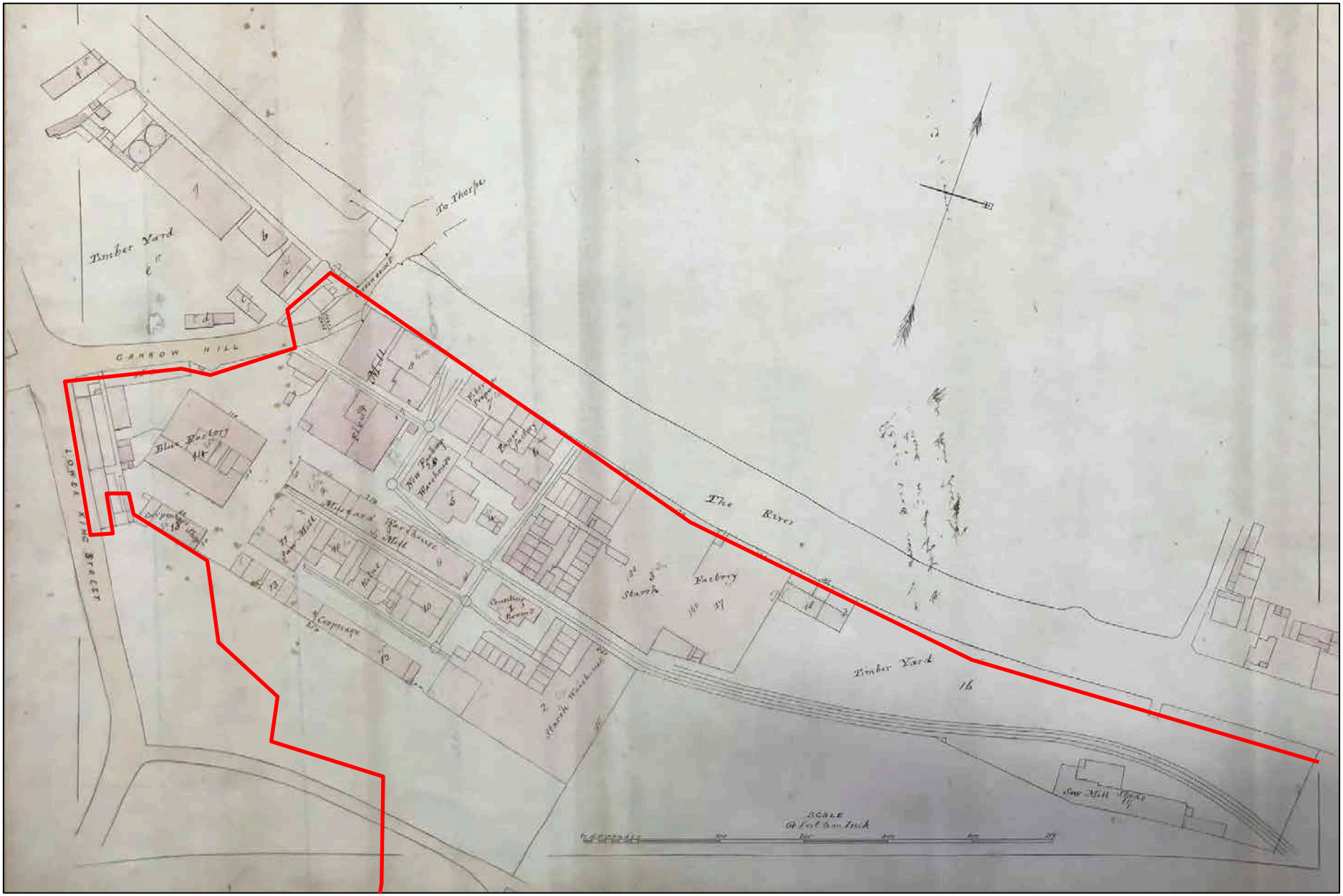

Figure 4 Undated plan of Carrow Works c.1870 (Norfolk Record Office)

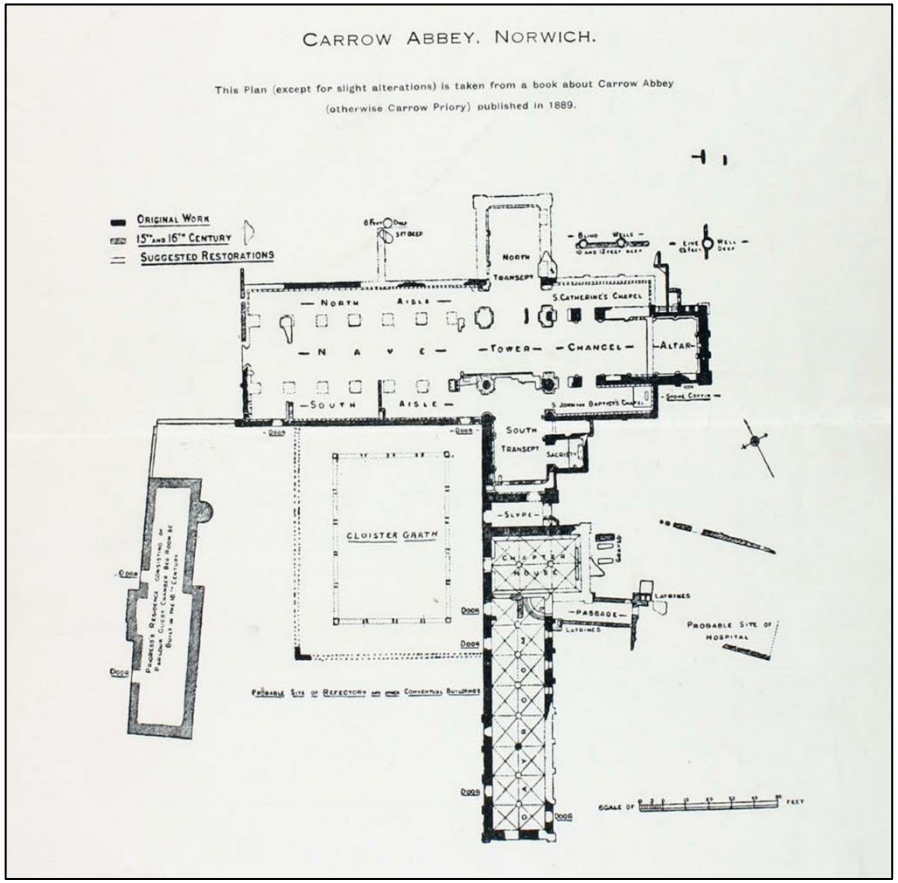

Figure 5 Plan of Carrow Abbey based on 1880-1 excavation

Figure 6 1885 OS Map (Scale 1:500)

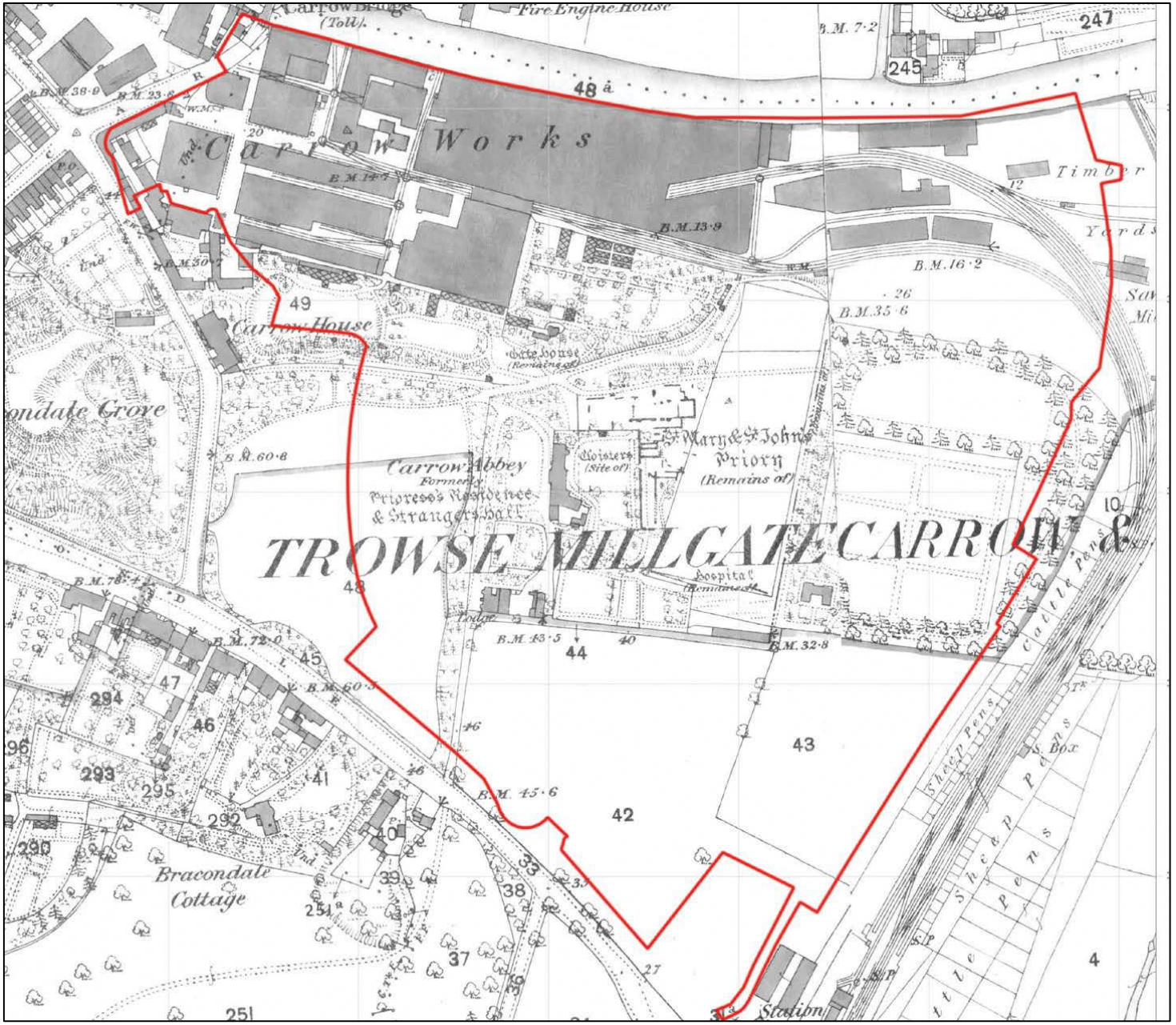

Figure 7 1886 OS Map (Scale 1:2,500)

Figure 8 1889 Plan of Carrow Works (Norfolk Record Office)

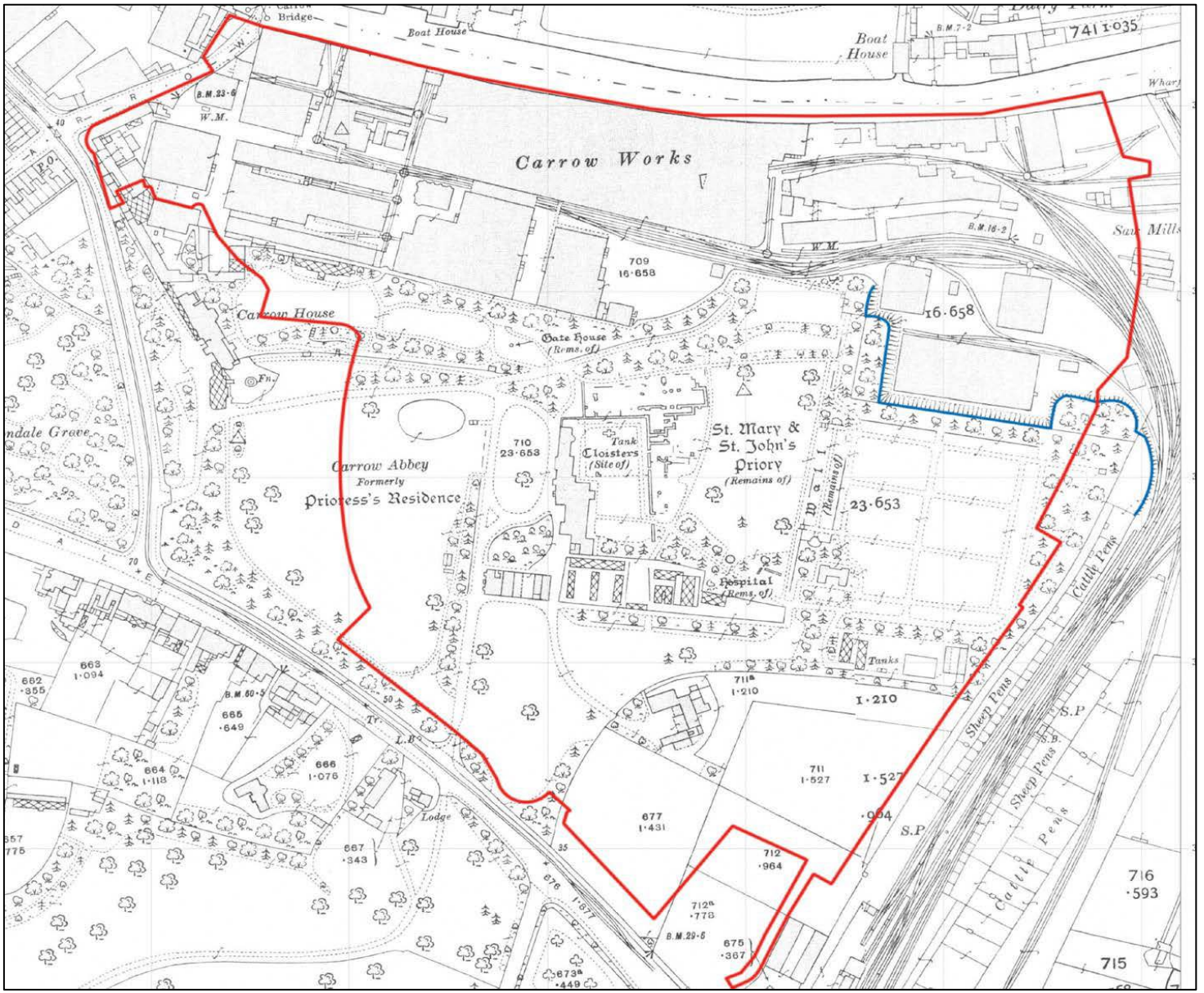

Figure 9 OS Map 1914 (Scale 1:2,500)

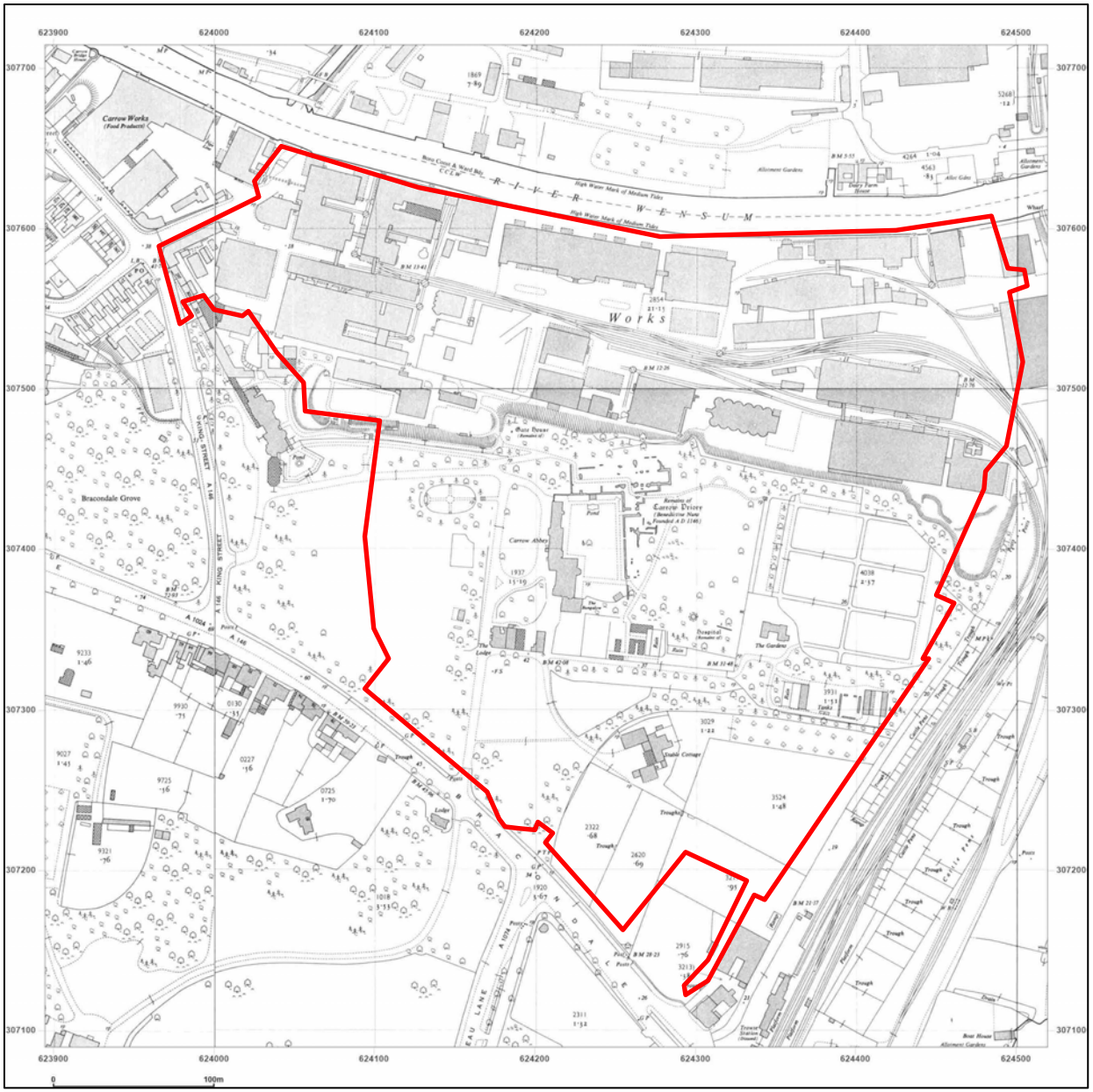

Figure 10 OS Map 1956 (Scale 1:2,500)

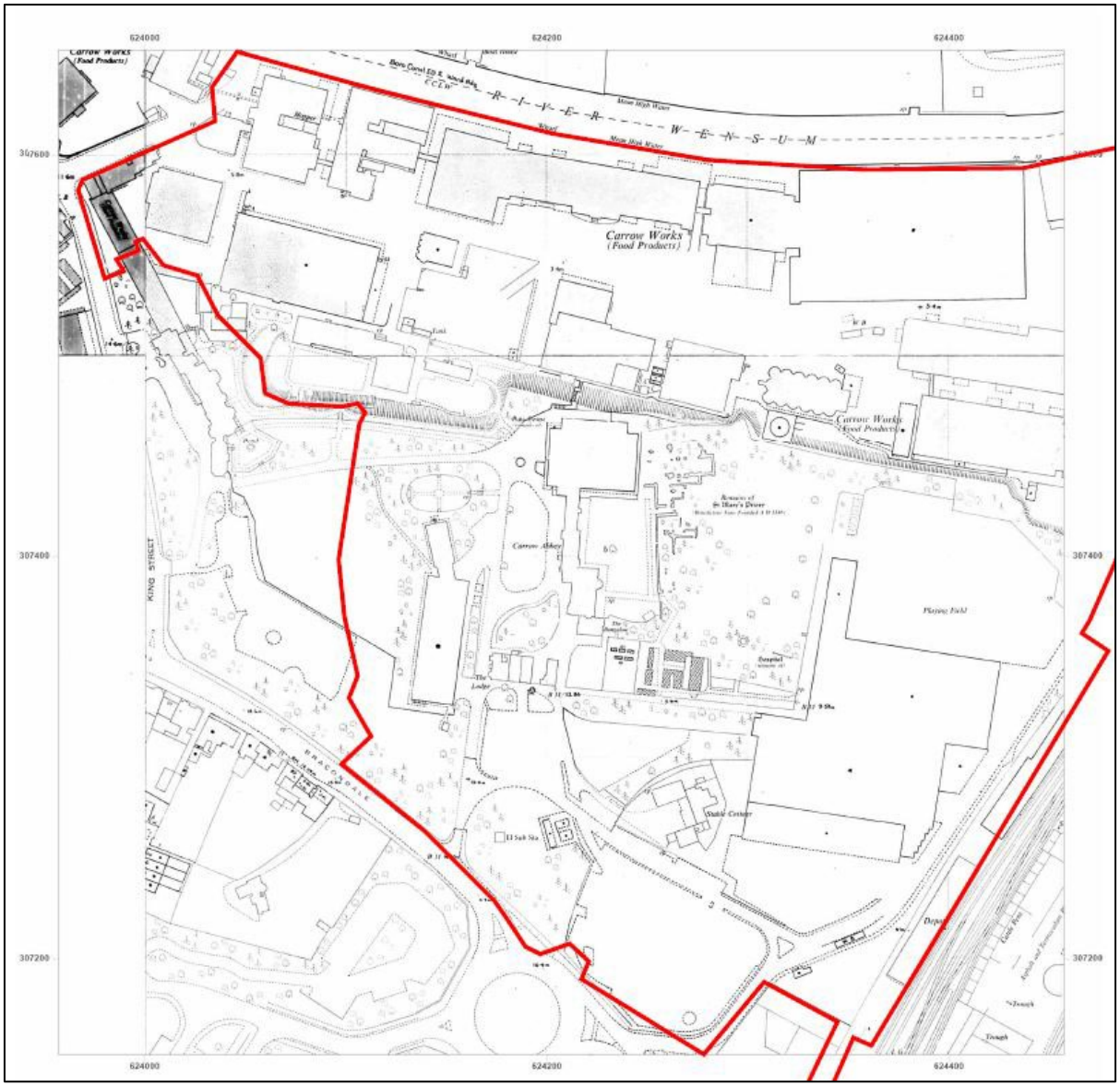

Figure 11 OS Map 1976 (Scale 1:2,500)

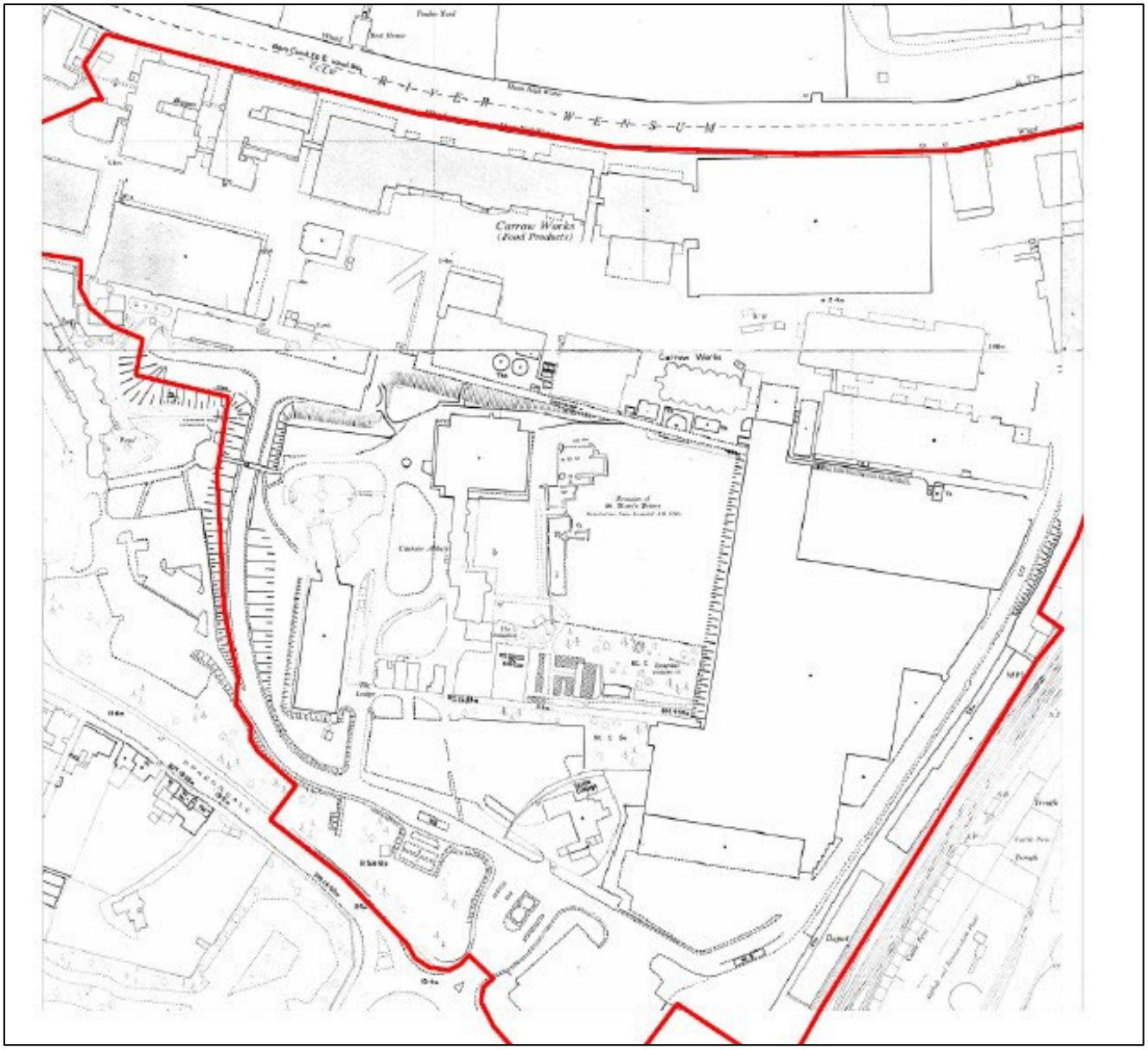

Figure 12 OS Map 1983 (Scale 1:2,500)

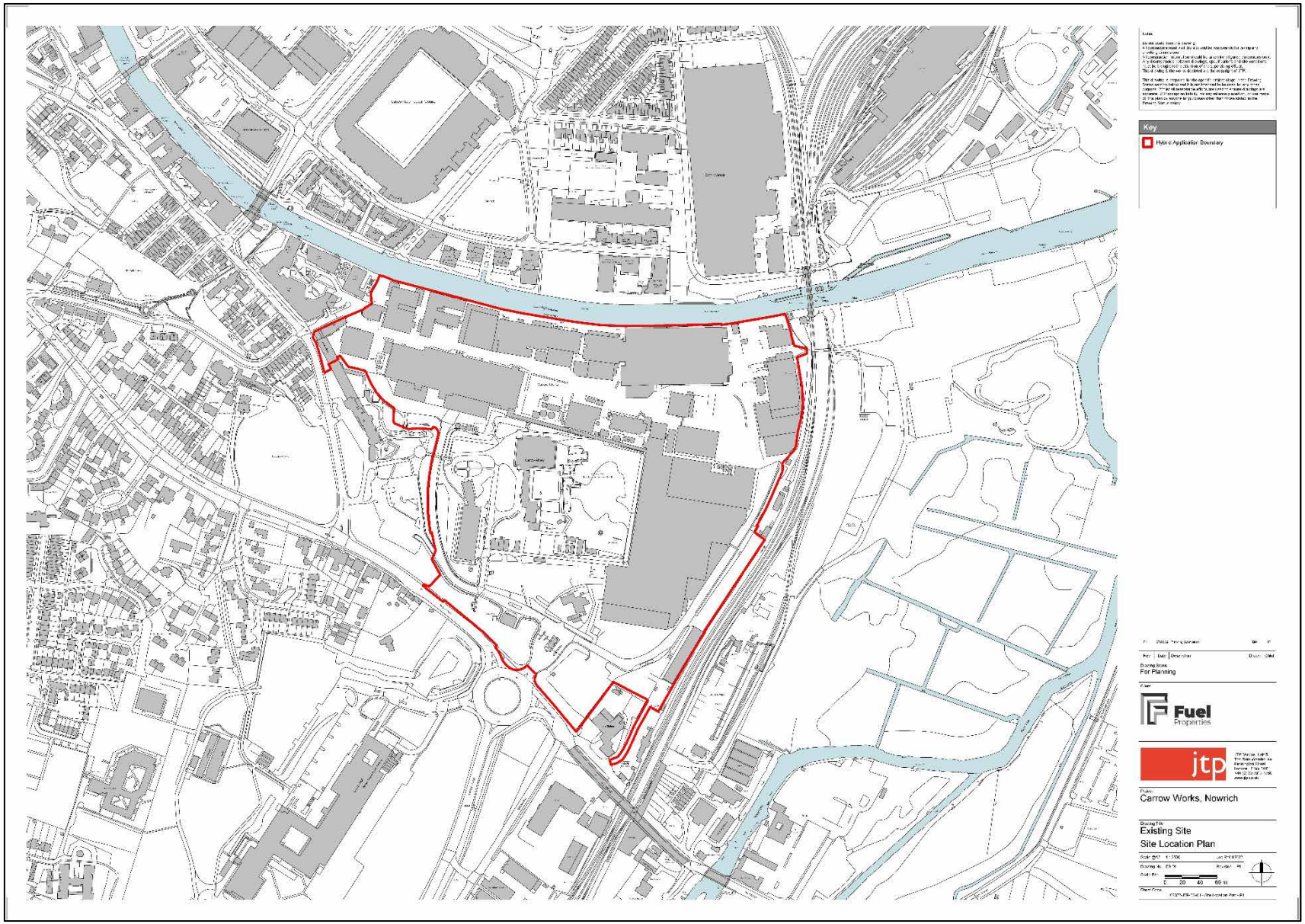

Figure 13 Existing Site Location Plan

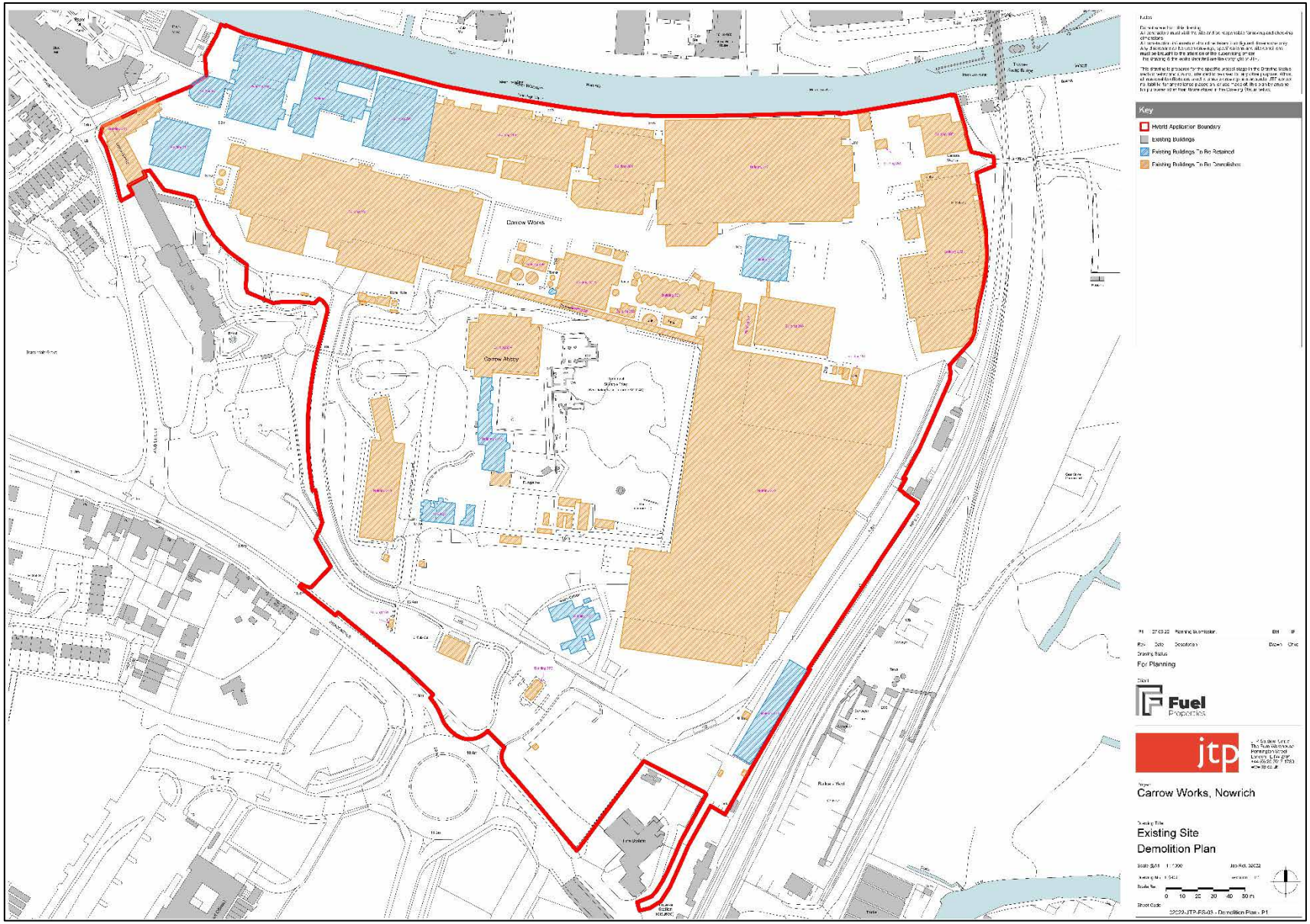

Figure 14 Demolition Plan

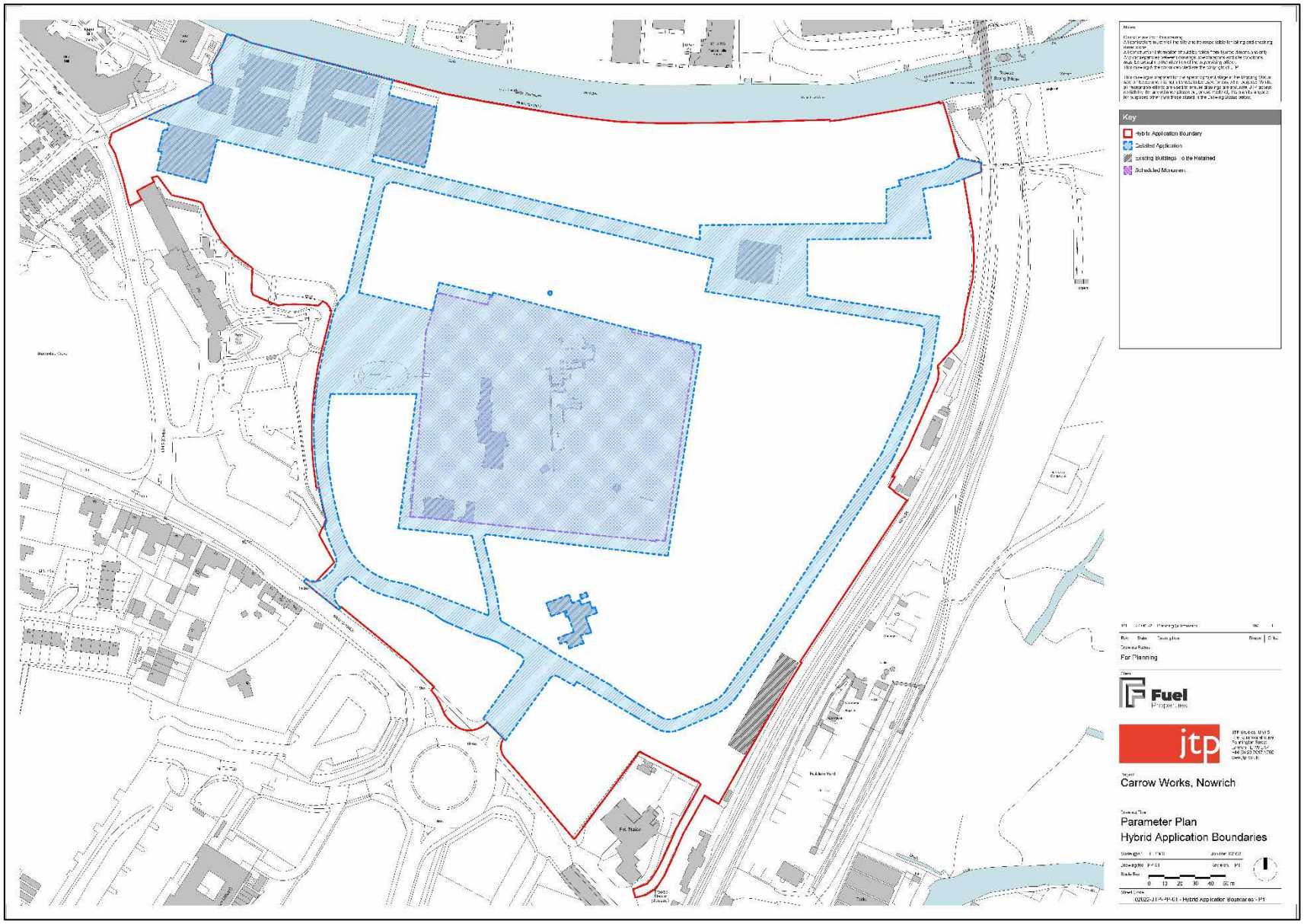

Figure 15 Hybrid Application Boundaries

Figure 16 Illustrative Masterplan

Appendix A: Planning Policies

National Planning Policy Framework (NPPF) 2021

In July 2021, the government published the updated National Planning Policy Framework ("NPPF"). This maintains the focus on the promotion of sustainable development that was established as the core of the previous, 2012, NPPF. The heritage policies within the NPPF are largely unchanged with the exception of new paragraph 198.

The guidance contained within Section 16, 'Conserving and enhancing the historic envionment', relates to the historic environment, and developments which may have an effect upon it. Relative paragraphs have been reproduced in full below:

Conserving and enhancing the historic environment

Para 189. Heritage assets range from sites and buildings of local historic value to those of the highest significance, such as World Heritage Sites which are internationally recognised to be of Outstanding Universal Value. These assets are an irreplaceable resource, and should be conserved in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of existing and future generations.

Para 190. Plans should set out a positive strategy for the conservation and enjoyment of the historic environment, including heritage assets most at risk through neglect, decay or other threats. This strategy should take into account:

a) the desirability of sustaining and enhancing the significance of heritage assets, and putting them to viable uses consistent with their conservation;

b) the wider social, cultural, economic and environmental benefits that conservation of the historic environment can bring;

c) the desirability of new development making a positive contribution to local character and distinctiveness; and

d) opportunities to draw on the contribution made by the historic environment to the character of a place.

Para 191. When considering the designation of conservation areas, local planning authorities should ensure that an area justifies such status because of its special architectural or historic interest, and that the concept of conservation is not devalued through the designation of areas that lack special interest.

Para 192. Local planning authorities should maintain or have access to a historic environment record. This should contain up-to-date evidence about the historic environment in their area and be used to:

a) assess the significance of heritage assets and the contribution they make to their environment; and

b) predict the likelihood that currently unidentified heritage assets, particularly sites of historic and archaeological interest, will be discovered in the future.

Para 193. Local planning authorities should make information about the historic environment, gathered as part of policy-making or development management, publicly accessible.

Proposals affecting heritage assets

Para 194. In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. 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. As a minimum the relevant historic environment record should have been consulted and the heritage assets assessed using appropriate expertise where necessary. Where a site on which development is proposed includes, or has the potential to include, heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation.

Para 195. Local planning authorities should identify and assess the particular significance of any heritage asset that may be affected by a proposal (including by development affecting the setting of a heritage asset) taking account of the available evidence and any necessary expertise. They should take this into account when considering the

impact of a proposal on a heritage asset, to avoid or minimise any conflict between the heritage asset's conservation and any aspect of the proposal.

Para 196. Where there is evidence of deliberate neglect of, or damage to, a heritage asset, the deteriorated state of the heritage asset should not be taken into account in any decision.

Para 197. In determining applications, local planning authorities should take account of:

a) the desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation;

b) the positive contribution that conservation of heritage assets can make to sustainable communities including their economic vitality; and

c) the desirability of new development making a positive contribution to local character and distinctiveness.

Para 198. In considering any applications to remove or alter a historic statue, plaque, memorial or monument (whether listed or not), local planning authorities should have regard to the importance of their retention in situ and, where appropriate, of explaining their historic and social context rather than removal

Considering potential impacts

Para 199. When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation (and the more important the asset, the greater the weight should be). This is irrespective of whether any potential harm amounts to substantial harm, total loss or less than substantial harm to its significance.

Para 200. Any harm to, or loss of, the significance of a designated heritage asset (from its alteration or destruction, or from development within its setting), should require clear and convincing justification. Substantial harm to or loss of:

a) grade II listed buildings, or grade II registered parks or gardens, should be exceptional;

b) assets of the highest significance, notably scheduled monuments, protected wreck sites, registered battlefields, grade I and II* listed buildings, grade I and II* registered parks and gardens, and World Heritage Sites, should be wholly exceptional.

Para 201. Where a proposed development will lead to substantial harm to (or total loss of significance of) a designated heritage asset, local planning authorities should refuse consent, unless it can be demonstrated that the substantial harm or total loss is necessary to achieve substantial public benefits that outweigh that harm or loss, or all of the following apply:

a) the nature of the heritage asset prevents all reasonable uses of the Site; and

b) no viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation; and

c) conservation by grant-funding or some form of not for profit, charitable or public ownership is demonstrably not possible; and

d) the harm or loss is outweighed by the benefit of bringing the Site back into use.

Para 202. Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal including, where appropriate, securing its optimum viable use.

Para 203. The effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. In weighing applications that directly or indirectly affect non-designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset.

Para 204. Local planning authorities should not permit the 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.

Para 205. Local planning authorities should require 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. However, the ability to record evidence of our past should not be a factor in deciding whether such loss should be permitted.

Para 206. Local planning authorities should look for opportunities for new development within Conservation Areas and World Heritage Sites, and within the setting of heritage assets, to enhance or better reveal their significance. Proposals that preserve those elements of the setting that make a positive contribution to the asset (or which better reveal its significance) should be treated favourably.

Para 207. Not all elements of a Conservation Area or World Heritage Site will necessarily contribute to its significance. Loss of a building (or other element) which makes a positive contribution to the significance of the Conservation Area or World Heritage Site should be treated either as substantial harm under paragraph 200 or less than substantial harm under paragraph 201, as appropriate, taking into account the relative significance of the element affected and its contribution to the significance of the Conservation Area or World Heritage Site as a whole.

Para 208. Local planning authorities should assess whether the benefits of a proposal for enabling development, which would otherwise conflict with planning policies, but which would secure the future conservation of a heritage asset, outweigh the disbenefits of departing from those policies.

Local Planning Policy - Norwich Local Plan (Adopted 2014)

Following the Planning and Compulsory Purchase Act 2004, Planning Authorities have replaced their Unitary Development Plans (UDP), Local Plans and Supplementary Planning Guidance with a new system of Local Development Frameworks. UDP policies have been either ‘saved’ or ‘deleted’. In most cases archaeology policies are likely to be ‘saved’ because there have been no significant changes in legislation or advice at a national level, whilst Built Heritage policies often have been subject to change and strengthening, following the lead of the NPPF. On occasion Supplementary Planning Documents may also apply.

The Norwich Local Plan Development Management Plan (adopted in 2014) deals with heritage issues in Policy DM9 - The historic environment and heritage assets and establishes the following:

The development area is located in the local authority of Norwich City Council (NCC). A new Joint Core Strategy for Broadland, Norwich and South Norfolk was adopted in March 2011, with amendments adopted in January 2014. The document comprises the Joint Core Strategy document adopted in March 2011, as amended by the Broadland Part of the Norwich Policy Area: Local Plan adopted in January 2014.The principal existing local plan policies relating to archaeology within the historic environment are as follows:

All development must have regard to the historic environment and take account of the contribution heritage assets make to the character of an area and its sense of place (defined by reference to the national and local evidence base relating to heritage, including relevant detailed advice in conservation area appraisals. Development shall maximise opportunities to preserve, enhance, or better reveal the significance of designated heritage assets and that of any other heritage assets subsequently identified through the development process. It will also promote recognition of the importance of the historic environment through heritage interpretation measures.

Where proposals which involve the unavoidable loss of any designated or locally identified heritage asset are accepted exceptionally under this policy, a legally binding commitment from the developer must be made to implement a viable scheme before any works affecting the asset are carried out.

Locally Identified Heritage Assets

Where locally identified heritage assets are affected by development proposals, their significance should be retained within development wherever reasonably practicable. Development resulting in harm to or loss of significance of a locally identified asset will only be acceptable where:

a) there are demonstrable and overriding benefits associated with the development; and;

b) it can be demonstrated that there would be no reasonably practicable or viable means of retaining the asset within a development.

In the defined areas of archaeological interest, development that will disturb remains below ground will only be permitted where it can be demonstrated through an assessment that:

a) there is little likelihood of remains being found and monitoring of works will take place during construction; or

b) remains which should be preserved in situ can be protected and preserved during construction and significant artefacts are displayed as part of the development; or

c) remains that would not justify preservation in situ will be removed and displayed in an appropriate location and context.

Other heritage assets

Consideration will be given to the protection of heritage assets which have not been previously identified or designated but which are subsequently identified through the process of decision making, or during development. Any such heritage assets, including artefacts, building elements or historical associations which would increase the significance of sites and/or adjoining or containing buildings, will be assessed for their potential local heritage significance before development proceeds.

Where heritage assets newly identified through this process are demonstrated by evidence and independent assessment to have more than local (i.e. national or international) significance, there will be a presumption in favour of their retention, protection and enhancement.

Where heritage assets newly identified through this process are demonstrated to have local significance, development proposals affecting them will be determined in accordance with the criteria for existing locally identified heritage assets as set out in this policy. Any assessment of local significance should be made in accordance with the criteria set out in Appendix 7 of this plan.

Historic environment record

Development proposals affecting designated and locally identified heritage assets will be expected to show that the significance of these assets has been adequately assessed and taken into account by reference to the Historic Environment Record and the relevant local evidence base.

Where a heritage asset is lost or its significance harmed the asset must be recorded and placed on the Historic Environment Record.

The Joint Core Strategy for Broadland, Norwich and South Norfolk was adopted in March 2011 (amended January 2014) and contains the following policy relating to the historic environment:

Policy 1: Addressing climate change and protecting environmental assets

The built environment, heritage assets, and the wider historic environment will be conserved and enhanced through the protection of buildings and structures which contribute to their surroundings, the protection of their settings, the encouragement of high-quality maintenance and repair and the enhancement of public spaces.

Appendix B: Geoarchaeological Deposit Model

JUNE 2022

Geoarchaeological Deposit Model

Carrow Works, Norwich

Iceni Projects Limited on behalf of

Fuel Properties Ltd.

June 2022

ICENI PROJECTS LIMITED ON BEHALF OF FUEL PROPERTIES LTD.

Geoarchaeological Deposit Model

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Geoarchaeological Deposit Model

of Proposed Development at

Carrow Works,

Norwich

Report Issue #	1
Date issued	June 2022
Report by	Phil Stastney, MCIfA Geoarchaeology
Project Lead	Claire Cogar, MCIfA Director, Archaeology
Notes	First issue for team review

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Non-technical Summary

This document is a geoarchaeological deposit model appendix to the Archaeological Desk-Based Assessment (DBA) on the Proposed Development at Carrow Works, Norwich.

Six distinct litho-stratigraphic units have been recorded across the Application Site: Made Ground, Upper Alluvium, Peat, Lower Alluvium, River Terrace Deposits, and Bedrock. The Upper Alluvium and Lower Alluvium units are assessed as being of moderate archaeological and palaeoenvironmental potential, the Peat is of high archaeological and palaeoenvironmental potential, and the River Terrace Deposits are assessed as being of high archaeological and moderate palaeoenvironmental potential. All other units are of low or no archaeological and palaeoenvironmental potential.

1. Introduction

1.1. Report Scope

1.1.1. This document a geoarchaeological deposit model appendix to the Archaeological Desk-Based Assessment (DBA) (Iceni Projects, 2022) on the Proposed Development at Carrow Works, Norwich (hereafter 'the Application Site'). This document should be read in conjunction with the DBA.

1.1.2. The purpose of this geoarchaeological deposit model is to examine and assess existing geotechnical site investigation data from the Site and nearby geological boreholes to provide a preliminary geoarchaeological assessment of the sediment sequence within the Application Site.

1.1.3. The geoarchaeological deposit modelling exercise has been carried out in accordance with the following standards and guidance documents:

- Chartered Institute for Archaeologists (CIfA), 2014a, *Standard and guidance for historic environment desk-based assessment* (revised 2020)
- Chartered Institute for Archaeologists (CIfA), 2014b, *Code of Conduct* (revised 2019)
- English Heritage, 2011, *Environmental Archaeology: A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-excavation*
- Historic England (HE), 2015, *Geoarchaeology: Using earth sciences to understand the archaeological record*
- Historic England (HE), 2016, *Preserving Archaeological Remains: Decision-taking for Sites under Development.*
- Historic England (HE), 2020, *Deposit Modelling and Archaeology: Guidance for mapping buried deposits.*

1.2. Project background

1.2.1. Details of the project background, including relevant planning legislation, policy and guidance, and details of the Proposed Development are provided in the DBA (Iceni 2022).

2. Background

2.1. Site Location

2.1.1. The Application Site is situated to the southeast of Norwich City Centre and covers an area of approximately 17.0 hectares. The Application Site is comprised of two distinct character areas, namely the industrial production area (Carrow Works) extending along the river and railway frontages, and the area around Carrow Abbey which is more residential in nature, comprising a group of residential scale and style properties and grounds. The Carrow Priory Scheduled Ancient Monument (SAM 1004031) is located within the centre of the Application Site.

2.1.2. The Application Site is bound by a rail track to the east, Carrow House offices and associated carparks and soft landscaping to the west, the A147 and Bracondale Road to the south and the River Wensum to the north. The centre of the Application Site lies at National Grid Reference 624280,307428.

2.2. Archaeological and Historical Background

2.2.1. A thorough description of the archaeology and history of the Site is provided in DBA (Iceni 2022).

2.3. Geology

2.3.1. The mapped geology of the Application Site (British Geological Survey (BGS) map sheet 161, BGS, 1975) comprises 'Upper Chalk' bedrock (Lewes Nodular Chalk Formation, Seaford Chalk Formation, Newhaven Chalk Formation, Culver Chalk Formation and Portsdown Chalk Formation (Undifferentiated), BGS 2022) overlain by superficial deposits comprising River Terrace Deposits 1 (Sand and Gravel) and, in the north-western corner of the Application Site, Alluvium (Clay, Silt, Sand and Gravel).

3. Methodology

3.1. Data sources

3.1.1. The location of the datapoints used to construct the geoarchaeological deposit model are shown in Figure 1.

3.1.2. The deposit model was constructed using a total of 127 datapoints (borehole (BH), trial pit (TP) and window sample (WS) logs/records), 75 of which were obtained from previous geotechnical site investigations from within the Application Site itself.

3.1.3. A summary of the data sources used for the deposit model is given in Table 1.

Table 1 Deposit model data sources

Reference	**No. of datapoints**
BGS 2022 (open-access records)	28 *(12 BH, 3 WS, 13 TP)*
GWT 1989	2 *(2 BH)*
LTG 1995	15 *(15 WS)*
LWRC 1998	21 *(21 BH)*
Leap 2018	53 *(53 WS)*
Harrison Geotechnical 2017 (Carrow Quay site to N)	8 *(8 BH)*
TOTAL	**127** ***(43 BH, 71 WS, 13 TP)***

3.2. Deposit modelling

3.2.1. Location and lithological data from the borehole, window sample and trial pit record were manually entered into an excel spreadsheet and then transferred into the BGS GroundHog software package.

3.2.2. Each lithological unit was assigned the appropriate AGS 4 3-digit legend code, and the GroundHog software package was then used to plot cross-sections across the Site. Geological correlations between boreholes were then drawn onto the cross-sections to provide schematic views of deposit sequence present beneath the Site (see Figures 2 and 3).

3.2.3. The surface elevation and thickness of key litho-stratigraphic units in each datapoint were then calculated. The resulting data was loaded into a GIS package and the Inverse Distance Weighting (IDW) algorithm was then used to interpolate thickness and surface models for each unit across the Site (see Figures 4 to Figure 14, inclusive).

4. Model parameters

4.1.1. Six distinct litho-stratigraphic units have been recorded across the Site. These are summarised in Table 2, below.

Table 2 Summary of modelling units

Name	Order (1 = top)	Lithology and stratigraphic definition	Extent within Application Site
Made Ground	1	Lithology variable: surface tarmac, paving and concrete; fill and deliberate ground-raising deposits; redeposited/reworked natural deposits. May include historic (early medieval to post-medieval) archaeological deposits towards the base of the unit that cannot be reliably differentiated from modern made ground on the basis of geotechnical logs alone. Positive identification of in-situ archaeological deposits and remains would generally require archaeological site investigation or monitoring, although some definitively modern made ground deposits can be identified from geotechnical logs where obviously modern inclusions (e.g. plastic, concrete, rebar) are noted in descriptions, or inferred where fills are obviously associated with modern developments. Always occurs at top of the sediment column. Base of unit likely to be irregular; may be locally non-conformable as a result of localised truncation, but elsewhere may lie conformably upon underlying natural deposits.	Occurs across the whole of the Site and the wider surrounding area. Up to 4.50m thick.
Upper Alluvium	2	Clastic minerogenic alluvial sediments, most commonly sands and silts, occasionally clays, with variable inclusions of gravel (generally fine to medium flint) and organics (usually trace components of humified/amorphous organic matter, but rare pockets of peat and/or in-situ plant remains (reeds/grasses/sedges) within a minerogenic matrix. In places, especially to the N of the Site (e.g. Norwich City Football Club site) beds appear to coarsen upwards from clays and silts to sands and sandy gravels). Defined as the uppermost or only minerogenic (i.e. not predominantly organic) alluvial sediment unit within a sequence. Where sediments are absent, a zero-thickness control point has been inferred for the purposes of modelling at the contact between the overlying and underlying units. Where present, the Upper Alluvium lies conformably over Peat or River Terrace Deposits.	Highly localised in a few small areas in N of Application Site only. Up to 1.9m thick.

Peat	3	Black and dark brown amorphous, and locally fibrous, peat. Occasionally with a minor minerogenic sediment component (clay, silt or sand), either dispersed throughout the matrix of the peat, or rarely occurring as fine bands/laminae of silt. Rare inclusions of fine gravel sized shell, "straw"-like plant remains that are most probably remains of reeds, grasses or sedges, and woody plant remains. Defined on the basis of lithology where any peats and organic-dominated muds are noted in logs. Where the Peat is absent, a zero-thickness control point has been inferred for the purposes of modelling at the contact between the overlying and underlying units. Where present, the Peat lies conformably over Lower Alluvium or River Terrace Deposits.	North-eastern corner of the Application Site. Up to 2.0m thick.
Lower Alluvium	4	Minerogenic alluvial sediments, typically consisting of grey to grey brown, variably sandy and/or organic, silts and clays, with occasional fine gravel-sized shells and shell fragments. Defined as any minerogenic (i.e. not predominantly organic) alluvial sediments occurring beneath the Peat in a sequence. Where sediments are absent, a zero-thickness control point has been inferred for the purposes of modelling at the contact between the overlying and underlying units. Where present, the Lower Alluvium lies conformably over River Terrace Deposits.	Highly localised in a few small areas in N of Application Site only. Up to 0.7m thick.
All Holocene Alluvium	n/a	This is a "parent" stratigraphic unit, comprising all sediments included within the Upper Alluvium, Peat, and Lower Alluvium units.	Lateral extent as above. Up to 2.8m total thickness.
River Terrace Deposits	5	Dense sands, flint gravels, and gravelly sands. Occasional beds of finer-grained sediments (clays, silts, sandy clays). Overlies and erosive contact with the underlying Bedrock.	Across the whole of the Application Site.

Bedrock	6	Defined as all bedrock geological units - within the Site itself, this consists of chalk, usually with flints, and often weathered to putty chalk at the top (White Chalk Subgroup), but within the wider study area also includes the overlying Crag Group sediments (e.g. sands and gravels of the Norwich Crag Formation).	Across the whole of the Application Site and the surrounding area.

5. Inferred chronology and depositional environments

5.1. Made Ground

5.1.1. Largely modern in date but may locally include some Late Holocene (early medieval to post-medieval) archaeological deposits.

5.1.2. By definition these deposits were formed as a direct result of human activity - construction/development and demolition activities, ground levelling/landscaping, and/or the dumping/accumulation of refuse and other anthropogenic material.

5.2. Upper Alluvium

5.2.1. Holocene in date, potentially spanning from the Early to Late Holocene into the modern period. Formation of the Upper Alluvium within the vicinity of the Site will have ceased when the former floodplain was developed during the post-medieval to modern period and the riverbanks became formalised/embanked.

5.2.2. Formed in an alluvial (i.e. river) floodplain environment near the confluence of the Rivers Wensum and Yare. Generally low-energy depositional environment indicative of overbank sedimentation, although apparent upwards-coarsening of beds in some localities (e.g. Norwich City Football Club site) may be indicative of inclusion of some colluvial sediments within the upper part of this unit (e.g. sands and gravels reworked from outcrops of River Terrace Deposits or Norwich Crag on nearby higher ground) or increasing deposition of coarse-grained sediments in an intertidal foreshore environment later in the Holocene.

5.3. Peat

5.3.1. Holocene in date. Likely to be somewhat time-transgressive, and contemporary (at least in part) with both the Upper Alluvium and Lower Alluvium units. Dating of Peat to the northwest of the Site (e.g. Riverside) demonstrate this unit began to form during the Mesolithic period as early as 8000 BP (c. 6000 BC) during the Middle Holocene. Peat formation may have persisted through later prehistory and into the historic period (i.e. the Late Holocene).

5.3.2. Formed in a well-vegetated low-energy riparian wetland environment under temperate climatic conditions. Where plant remains survive, these are likely to be indicative of the contemporary in-situ flora of the locality and may reflect a mosaic of grass/sedge fen and reed swamp environments, perhaps locally fringed by areas of wet woodland (e.g. carr) that existed adjacent to the Rivers Wensum and Yare. Such environments are likely to have also existed adjacent to areas of less-densely vegetated alluvial floodplains and/or mudflats upon which minerogenic alluvial sediments (i.e. Upper Alluvium and Lower Alluvium) formed at the same time. Preservation of shell inclusions reflect probably mineral-rich/alkaline soil/water conditions; these shells may be remains of contemporary terrestrial land snail, freshwater and/or estuarine/brackish mollusc fauna. Rare fine bands/laminae of silt or fine sand are likely to be indicative of some tidal influence on the depositional environment.

5.4. Lower Alluvium

5.4.1. Holocene in date. The earliest parts of the Lower Alluvium are likely to pre-date the onset of

Peat formation, and so probably date to the Early or Middle Holocene. The later/upper parts of the Lower Alluvium are probably broadly contemporary with the Peat and parts of the Upper Alluvium (all three units are likely to overlap chronologically to some extent), although the Lower Alluvium is the earliest of these units, and formation may have ceased during the Middle Holocene, passing upwards into the Peat and Upper Alluvium.

5.4.2. Formed in an alluvial (i.e. river) floodplain environment near the confluence of the Rivers Wensum and Yare. Generally low-energy depositional environment indicative of overbank sedimentation, although apparent upwards-coarsening of beds in some localities (e.g. Norwich City Football Club site) may be indicative of inclusion of some colluvial sediments within the upper part of this unit (e.g. sands and gravels reworked from outcrops of River Terrace Deposits or Norwich Crag on nearby higher ground) or increasing deposition of coarse-grained sediments in an intertidal foreshore environment later in the Holocene.

5.5. River Terrace Deposits

5.5.1. Late Pleistocene in date. Formed within a high-energy river braidplain environment under cold climatic conditions.

5.5.2. The River Terrace Deposits were formed by the Late Pleistocene precursor to the modern Rivers Wensum and/or Yare during periods of high river discharge (i.e. spring meltwater), during which time the river(s) formed multiple braided channels with sands and gravels deposited on shifting channel bars within and between channels. This results in a characteristic undulating surface morphology, comprising lower-lying relict channels and higher channel bars and islands, that was later partially infilling/overlain by finer-grained (lower-energy) alluvial deposition during the Holocene.

5.5.3. Clay and silt beds within the River Terrace Deposits are likely to have formed along the edges of the river valley by solifluction (down-slope movement of sediments under periglacial conditions) of bedrock and glacial till (i.e. 'boulder clay') from higher ground to the west, which occurred between episodes of sand and gravel aggradation on the river braidplain.

5.5.4. Basal sand and gravel beds included here within the River Terrace Deposits unit may also comprise glacial outwash sands and gravels.

5.6. Bedrock

5.6.1. Almost entirely pre-Quaternary in date - the Chalk is Cretaceous in date (formed in a warm-climate deep marine environment), although Crag Group deposits date to the Pliocene to Early Pleistocene (shallow marine and coastal environment).

6. Hydrological characteristics and potential for waterlogging

6.1. Made Ground

6.1.1. Highly variable depending on lithology, and likely to comprise complex and highly localised sequences of permeable and non-permeable beds and lenses. Potential for existence of perched water tables that may be highly localised. In places, especially close to the River Wensum, lower parts of the Made Ground may be in hydrological continuity with local groundwater and subject to permanent or intermittent waterlogging.

6.2. Upper Alluvium

6.2.1. Silt and clays generally low permeability, potential for localised perched water tables at upper contact of the unit and may locally confine groundwater table. Sandier beds likely to be more permeable and in hydraulic continuity with underlying River Terrace Deposits.

6.3. Peat

6.3.1. Generally permeable to moderately permeable, likely to be permanently or seasonally waterlogged as a result of groundwater flowing along hydraulic sink zone in base of the Wensum valley or from localised minor perched water tables above the Lower Alluvium.

6.4. Lower Alluvium

6.4.1. Silt and clays generally low permeability, potential for localised perched water tables at upper contact of the unit and may locally confine groundwater table. Sandier beds likely to be more permeable and in hydraulic continuity with underlying River Terrace Deposits.

6.5. River Terrace Deposits

6.5.1. Sediments are generally highly permeable. River Terrace Deposits close to the present valley bottom sit within a hydraulic sink zone of concentrated groundwater flow (VLWRC, 2012). Sands and gravels higher on the sides of the valley are likely to be dry.

6.6. Bedrock

6.6.1. Generally permeable, the Chalk is classified as a highly productive principal aquifer.

7. Archaeological and palaeoenvironmental potential

7.1. Made Ground

7.1.1. **Low archaeological potential**. Demonstrably modern deposits will be of no archaeological interest, although this unit may include archaeological deposits and features dating to the medieval and post-medieval periods that may be of higher archaeological significance.

7.1.2. **No palaeoenvironmental potential**. By definition these deposits are anthropogenically reworked and so any palaeoenvironmental indicators preserved within the deposits are likely to have been reworked and of unknown provenance.

7.2. Upper Alluvium

7.2.1. **Moderate archaeological potential**. Findspots of prehistoric artefacts are known from alluvial sediments in the vicinity of the Application Site (e.g. bronze age copper alloy spearhead, c.170 northwest of the Site (MNF 503)). Although in-situ deposits and features relating to settlement/habitation are unlikely to occur in a river floodplain environment there may be some potential for features to cut into the upper surface of the alluvium close to the floodplain edge.

7.2.2. **Moderate palaeoenvironmental potential**. Holocene alluvial sediments are known to preserve a range of palaeoenvironmental indicators such as pollen and diatoms, that can provide information on past environmental conditions and indirect evidence for human activity (e.g. evidence for agriculture and/or industrial activities). The quality of preservation of palaeoenvironmental indicators within clastic alluvial sediments may, however, be variable - with coarser-grained sediments (e.g. sands, gravels) tending to be poorer than in finer-grained strata.

7.3. Peat

7.3.1. **High archaeological potential**. Findspots of prehistoric artefacts are known from alluvial sediments and peats in the vicinity of the Application Site (e.g. bronze age copper alloy spearhead, c.170 northwest of the Site (MNF 503)), and Mesolithic material including a tranchet axe from within the Site (MNF465) and flint scatters (from Norwich City Football Club, MND41766) are specifically known to be associated with Peat strata in the area. The resources available in the environment in which the Peat formed is likely to have been attractive to Mesolithic hunter-gatherer communities. Furthermore, the preservation conditions within the Peat strata are likely to be conducive to the preservation of organic artefactual material (e.g. wood) that is rarely preserved in most archaeological contexts.

7.3.2. **High palaeoenvironmental potential**. Holocene alluvial sediments and peats generally are known to preserve a range of palaeoenvironmental indicators such as plant remains, pollen and diatoms, that can provide information on past environmental conditions and indirect evidence for human activity (e.g. evidence for agriculture and/or industrial activities). Preservation of such indicators is generally highest in peats, which being organic in nature, are also potentially datable (using radiocarbon dating).

7.4. Lower Alluvium

7.4.1. **Moderate archaeological potential**. Findspots of prehistoric artefacts are known from alluvial sediments in the vicinity of the Application Site (e.g. bronze age copper alloy spearhead, c.170 northwest of the Site (MNF 503)).

7.4.2. **Moderate palaeoenvironmental potential**. Holocene alluvial sediments are known to preserve a range of palaeoenvironmental indicators such as pollen and diatoms, that can provide information on past environmental conditions and indirect evidence for human activity (e.g. evidence for agriculture and/or industrial activities). The quality of preservation of palaeoenvironmental indicators within clastic alluvial sediments may, however, be variable - with coarser-grained sediments (e.g. sands, gravels) tending to be poorer than in finer-grained strata.

7.5. River Terrace Deposits

7.5.1. **High archaeological potential**. Palaeolithic artefacts (Acheulian-Clactonian) and faunal remains have previously been recovered from the River Terrace Deposits within the Application Site (MNF473). Additionally there is potential for later (Upper Palaeolithic, Mesolithic and Neolithic) flint scatters on the surface of the River Terrace Deposits similar to those previously found within the Application Site (MNF74) and in the vicinity (MNF766, MNF41766), and potentially also for later prehistoric cut features, especially where the surface of the River Terrace Deposits survives untruncated beneath the Made Ground, away from the present floodplain of the River Wensum.

7.5.2. **Moderate palaeoenvironmental potential**. Faunal remains associated with Palaeolithic artefacts are known from the River Terrace Deposits within the Application Site (MNF473), although such finds are typically rare. Furthermore, fossiliferous fine-grained (sand, silt, or clay) beds are known to occur within similar sediments elsewhere in the country; although no such deposits are definitely known to exist within the Application Site, should they be present such remains could provide evidence for the Late Pleistocene environment at the Site.

7.6. Bedrock

7.6.1. **No archaeological potential**. The Chalk bedrock beneath the Application Site formed several million years before the evolution of humans and is therefore of no archaeological potential. There is no potential for archaeological cut features to survive in the top of the bedrock within the Site, as the surface has either been truncated by modern development activity or is deeply buried by Pleistocene deposits.

7.6.2. **No palaeoenvironmental potential**. The Chalk bedrock beneath the Application Site formed several million years before the evolution of humans and is therefore of no palaeoenvironmental potential (in relation to the study of the human past).

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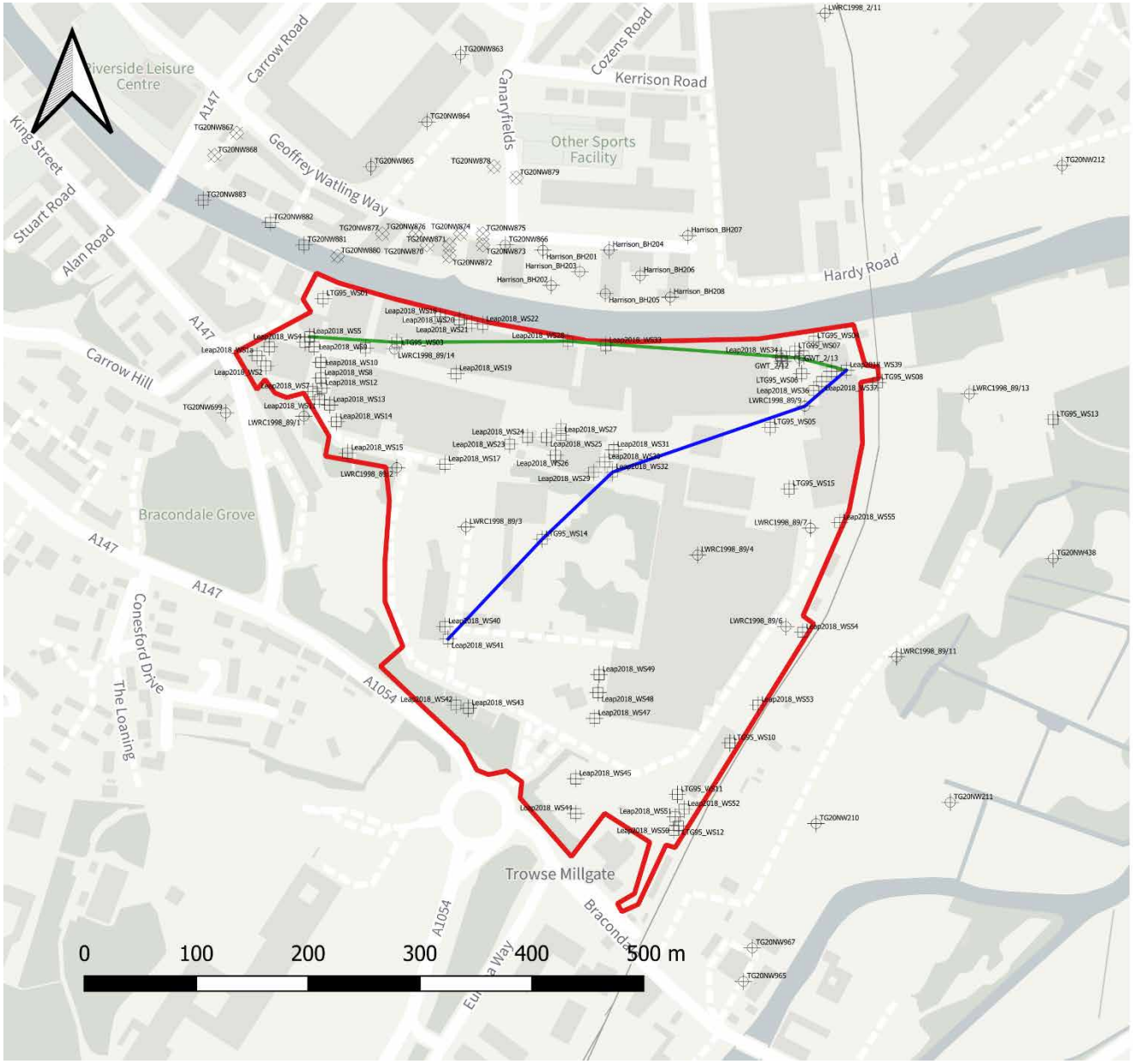
9. Figures



Deposit model datapoints

- BH
- TP
- WS

Site outline

Transect line (Figure 2)

Transect line (Figure 3)

Figure 1 Deposit model datapoints

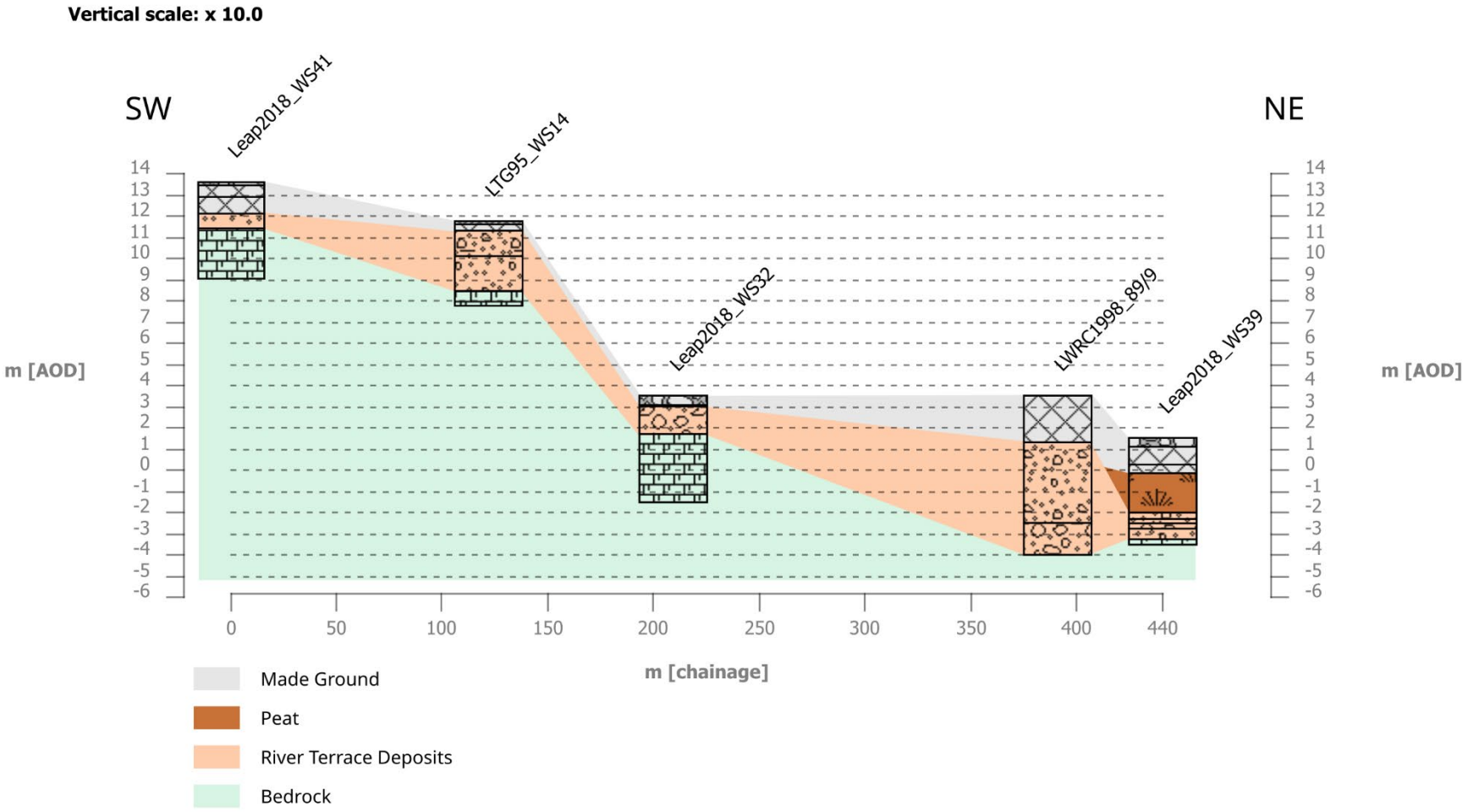


Figure 2 SW to NE transect

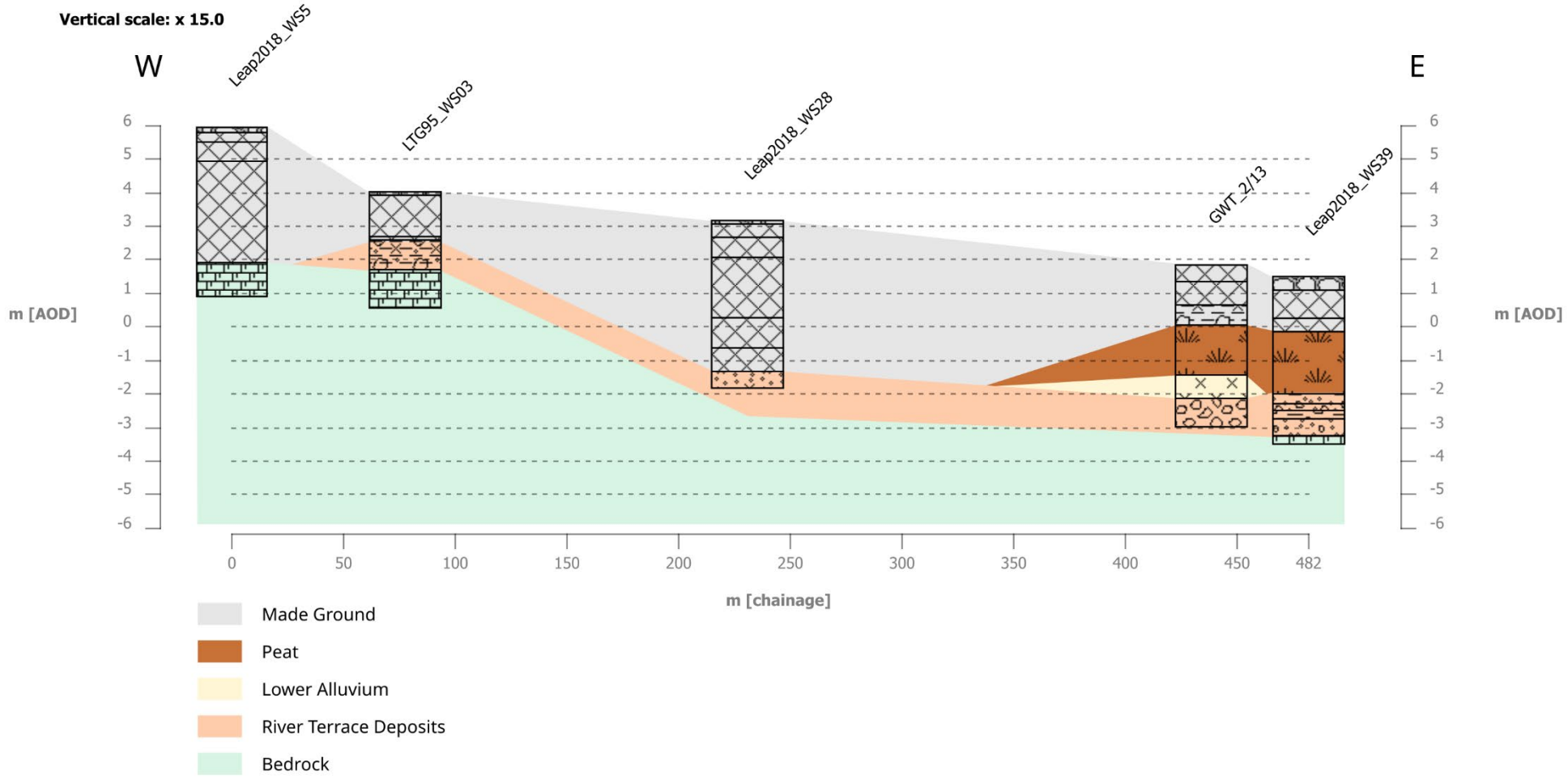


Figure 3 W to E transect

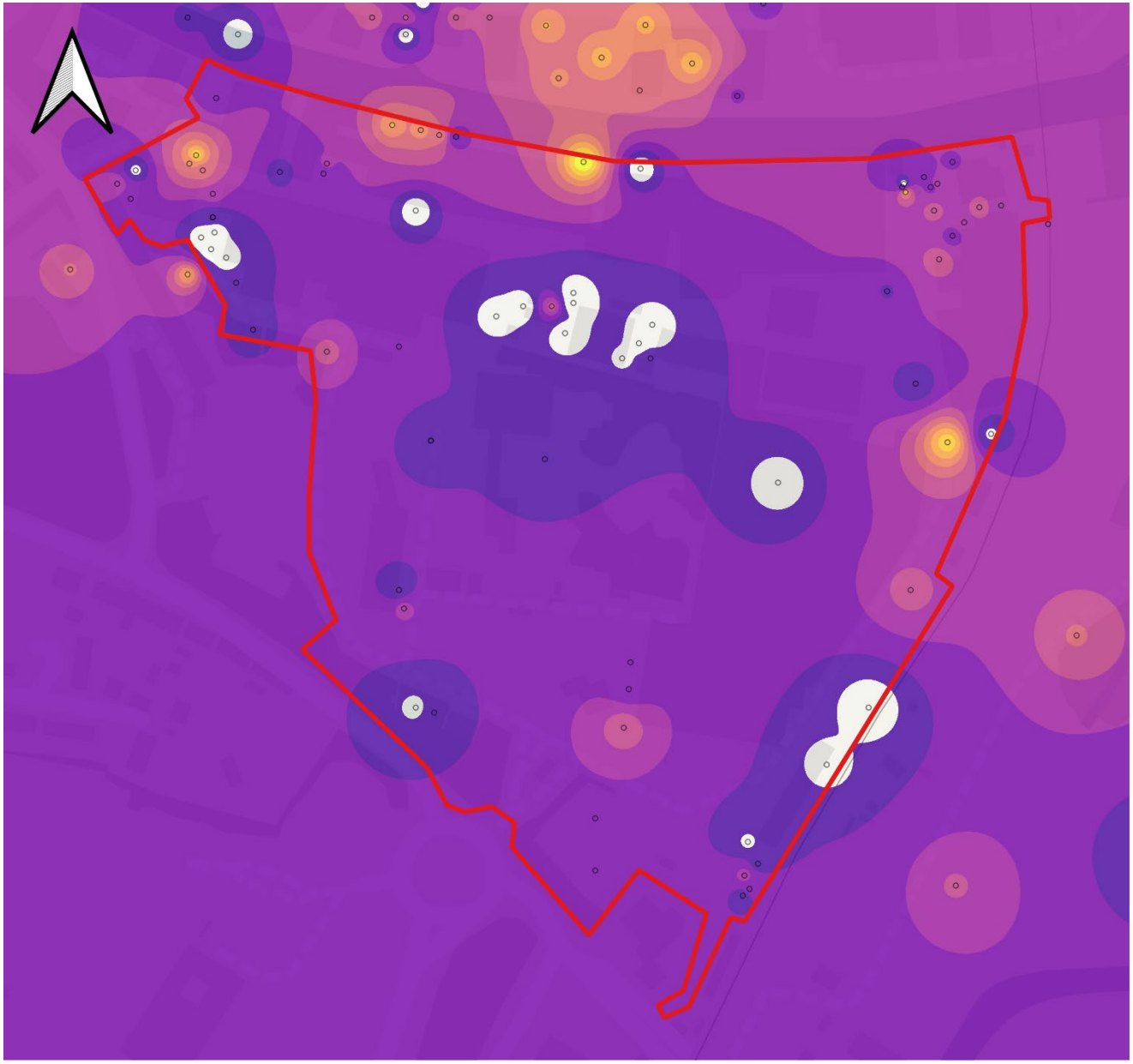


Figure 4 Modelled thickness of Made Ground

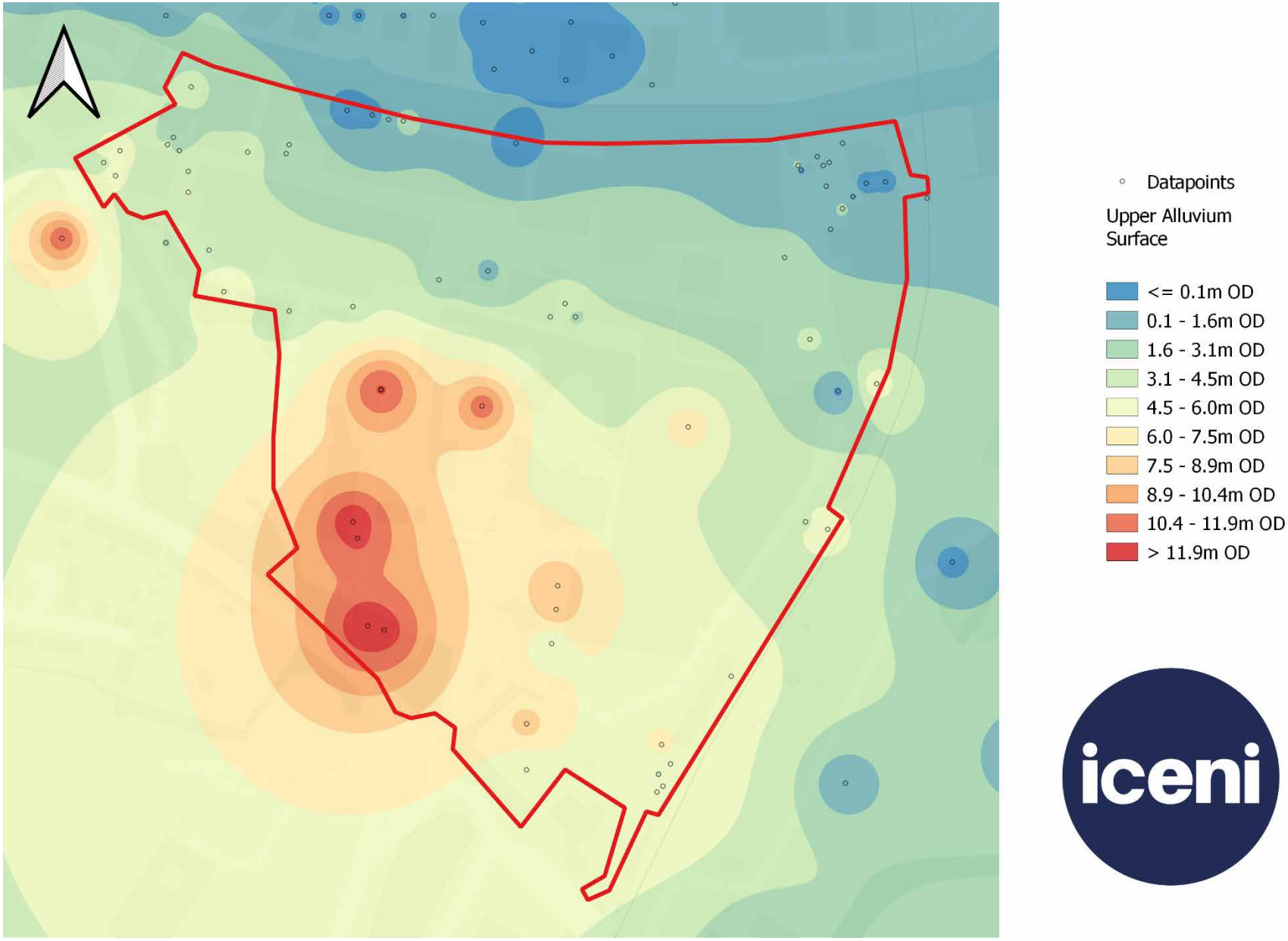


Figure 5 Modelled surface of Upper Alluvium

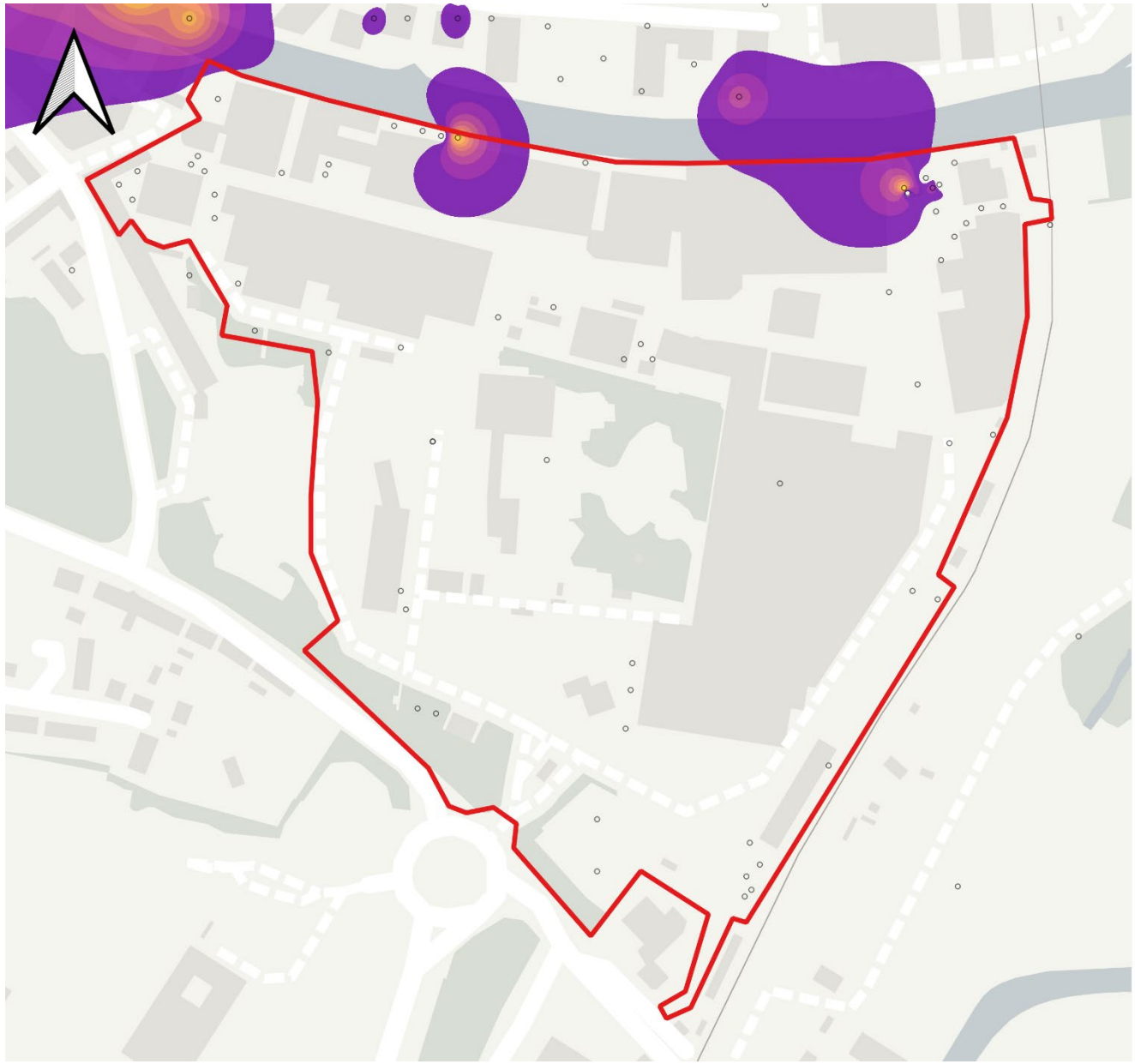


Figure 6 Modelled thickness of Upper Alluvium

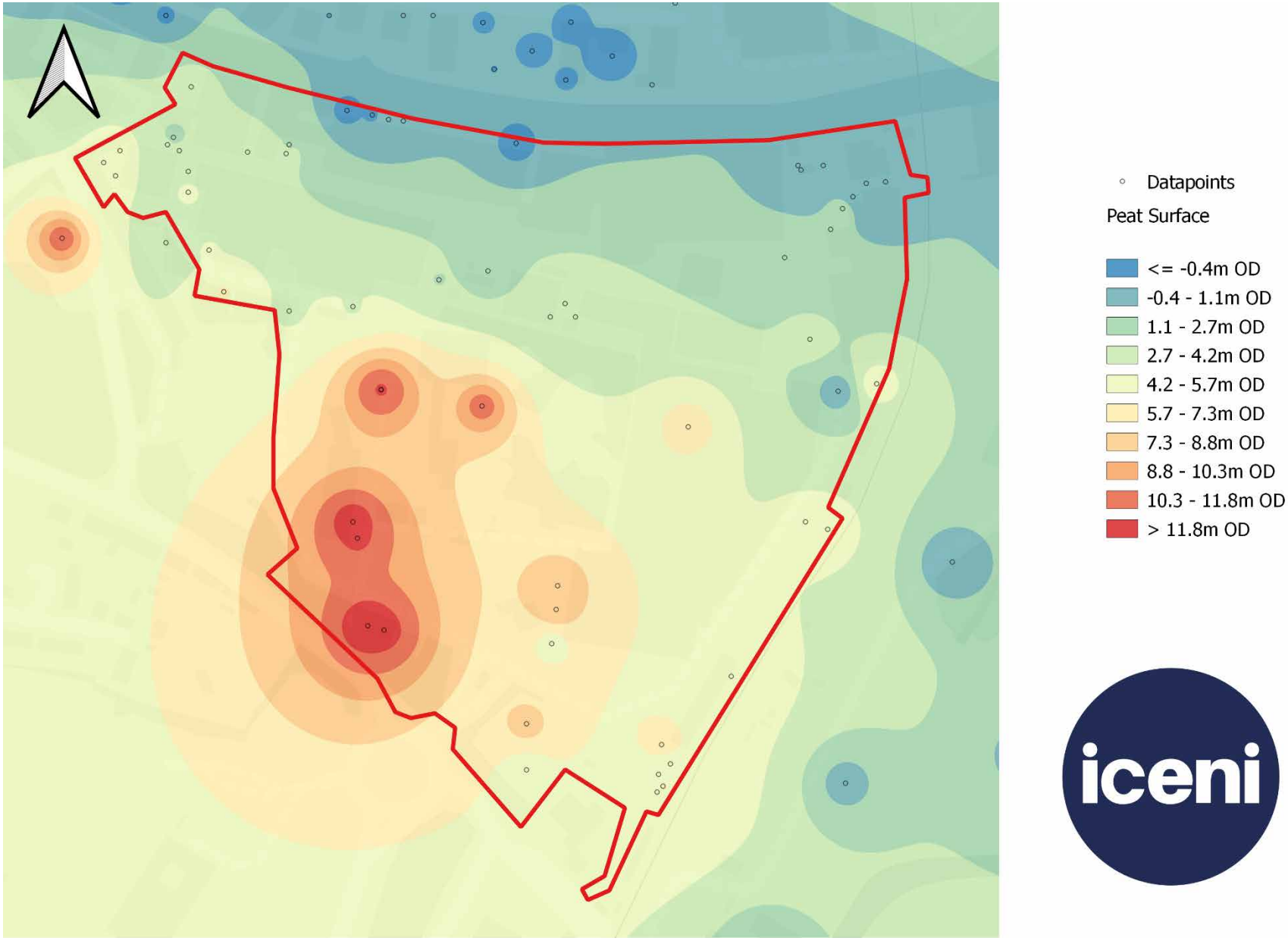


Figure 7 Modelled surface of Peat

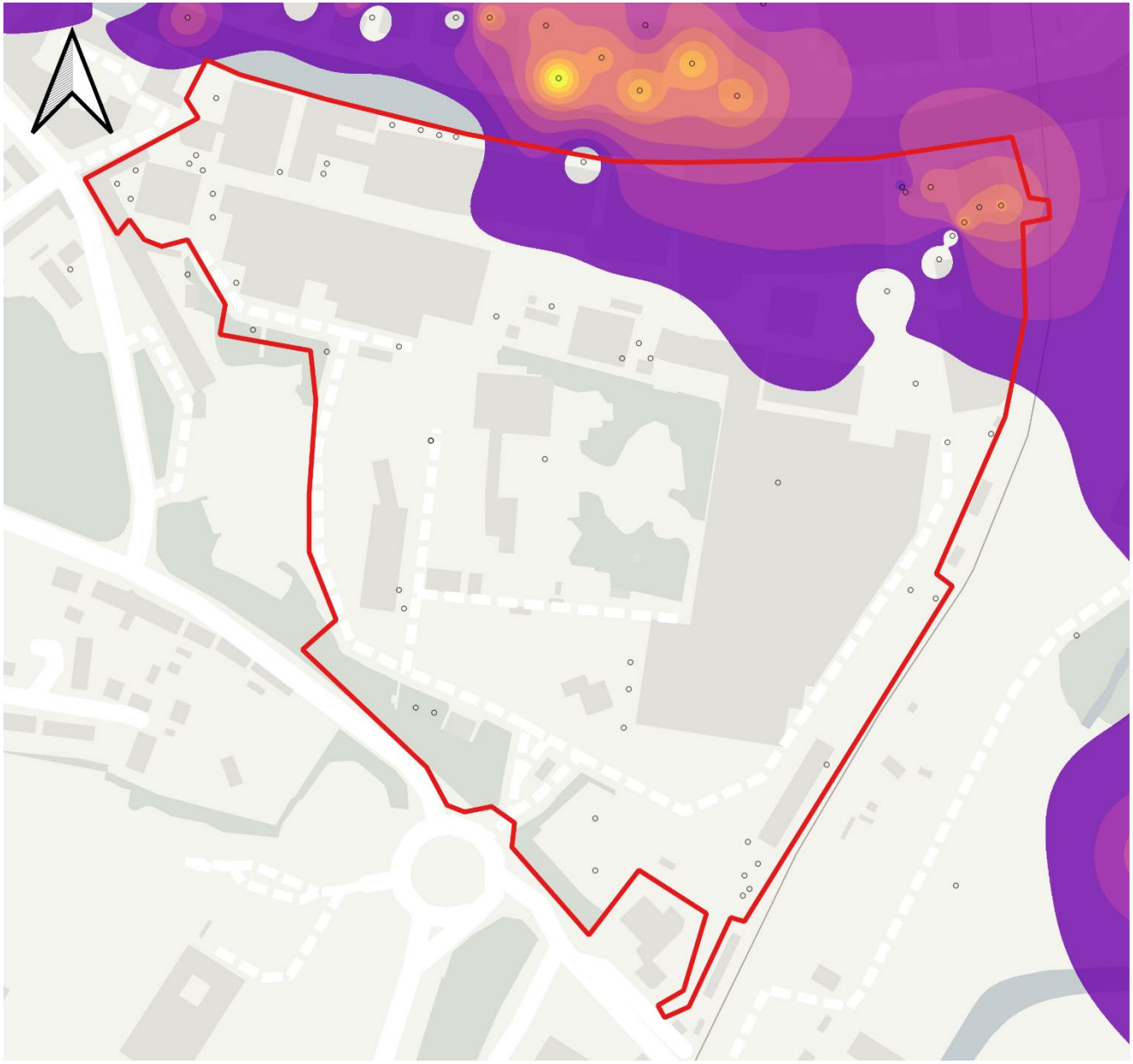


Figure 8 Modelled thickness of Peat

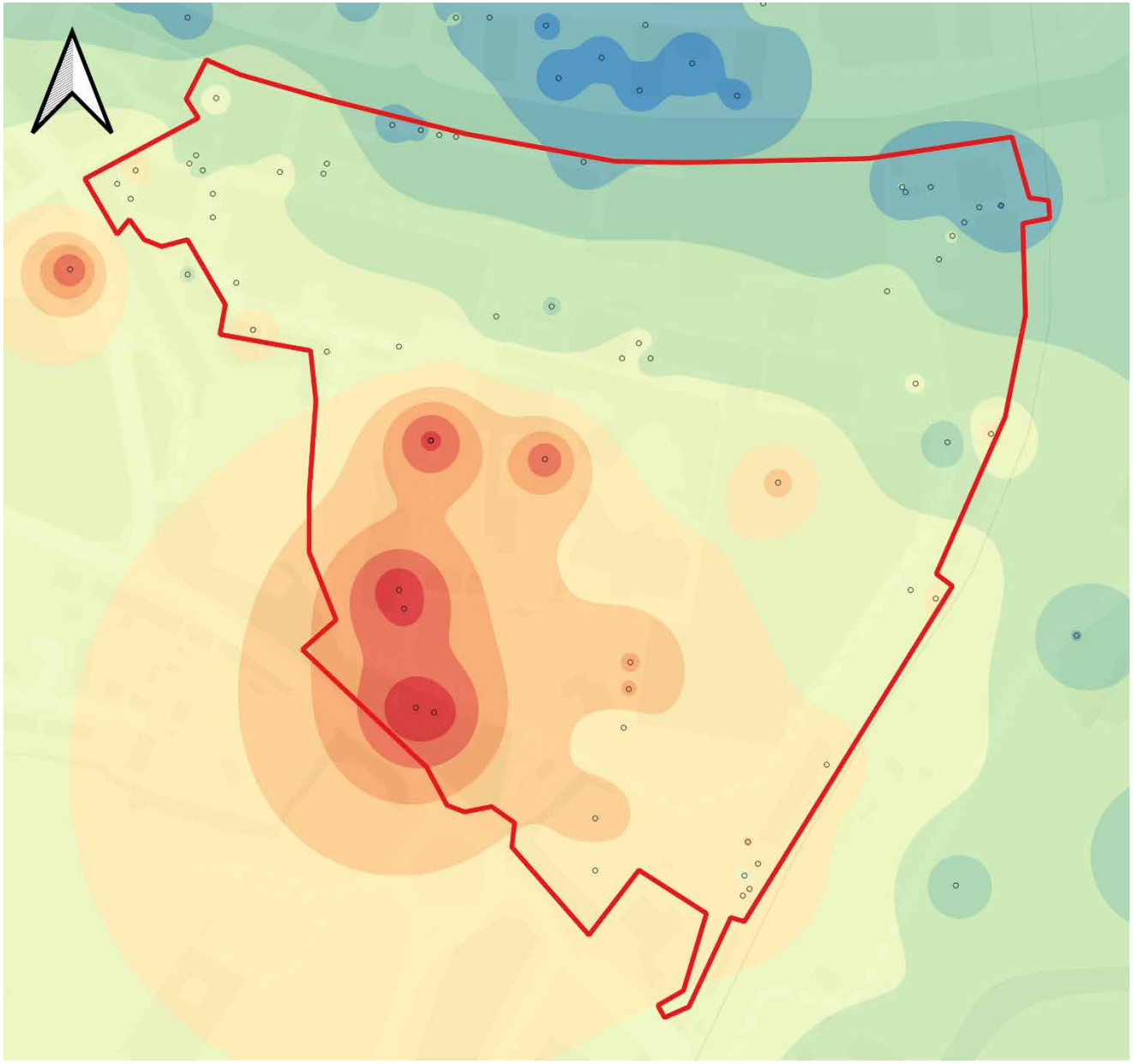


Figure 9 Modelled surface of Lower Alluvium

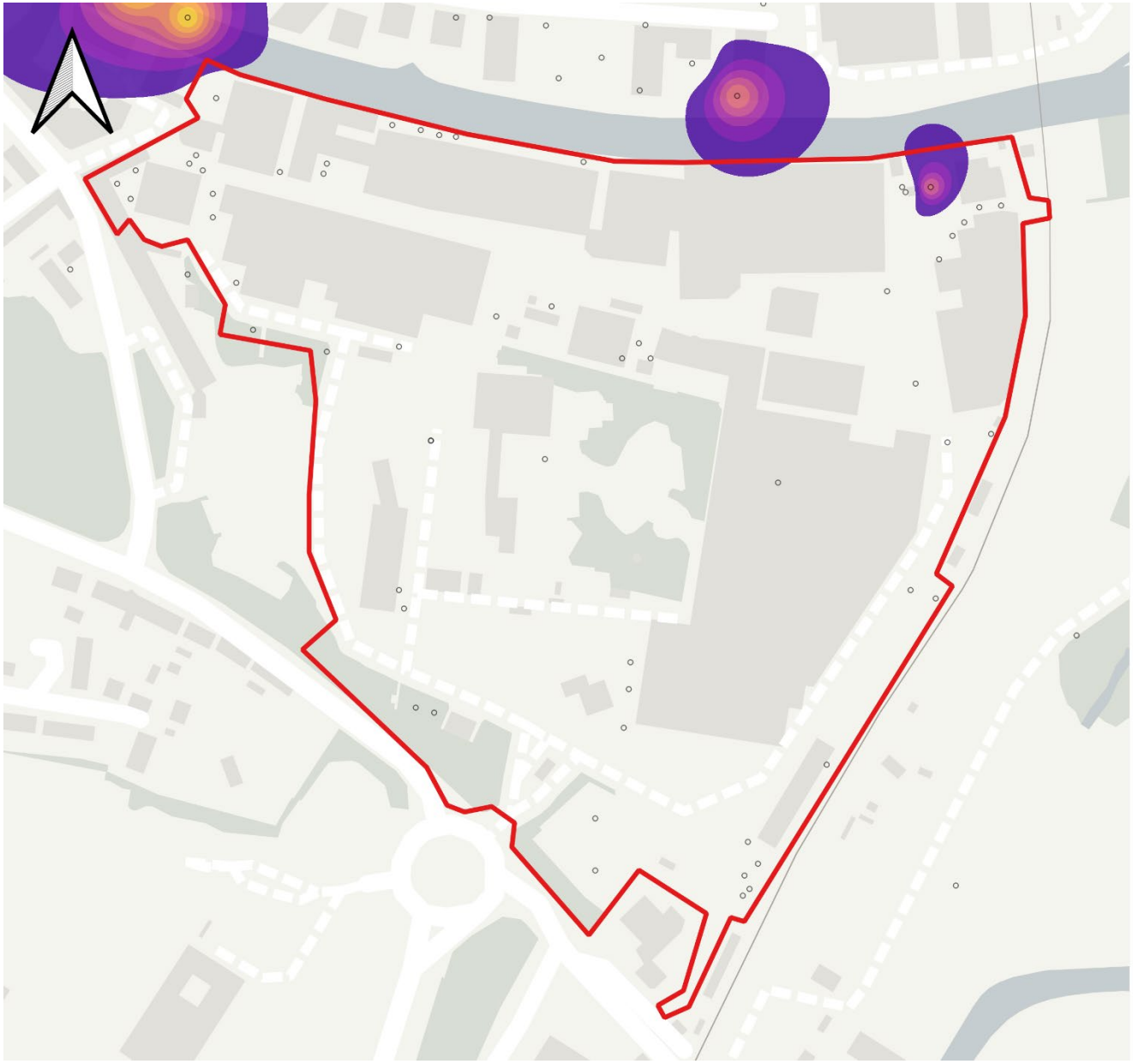


Figure 10 Modelled thickness of Lower Alluvium

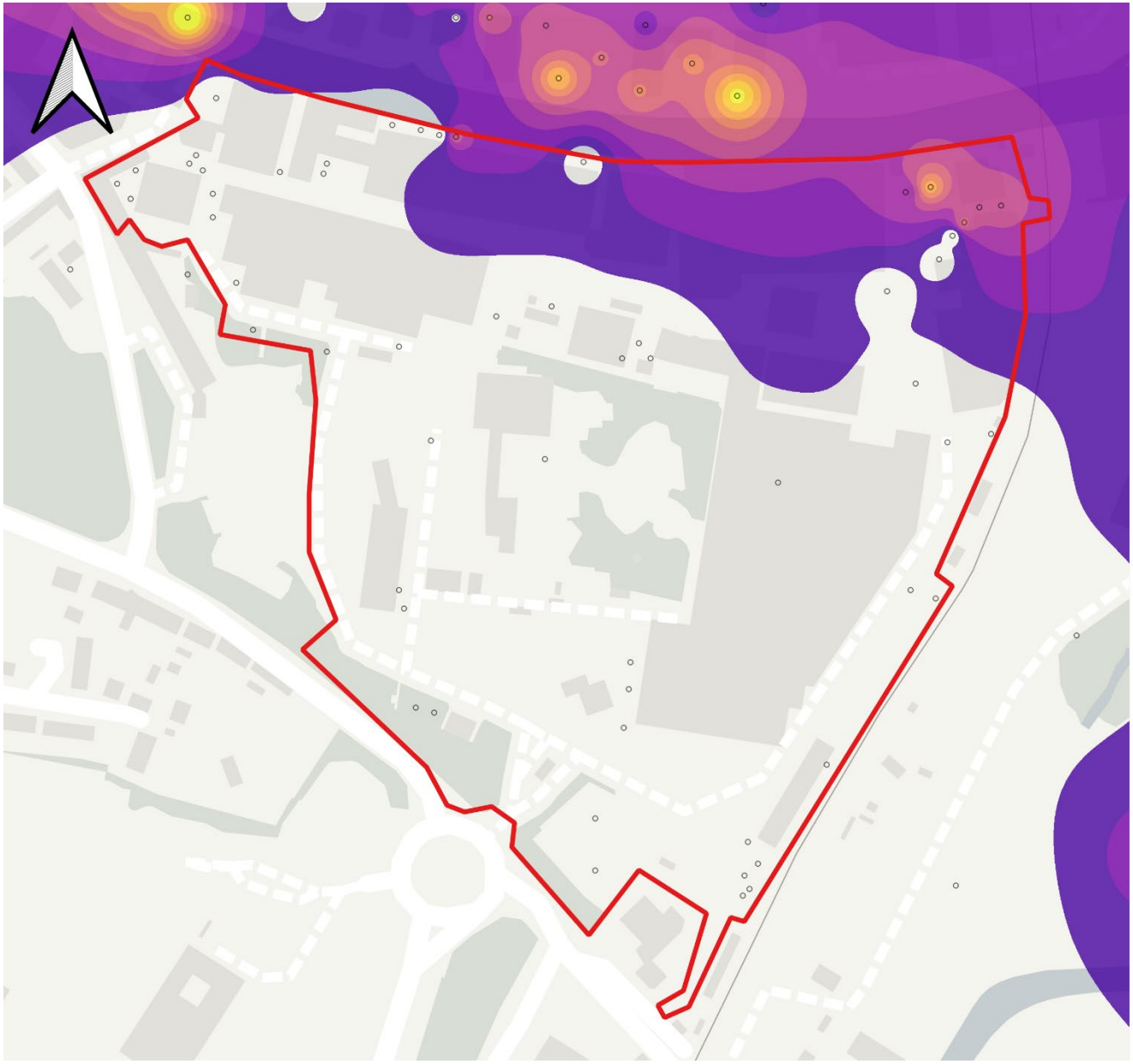


Figure 11 Modelled thickness of all Holocene Peat and Alluvium units

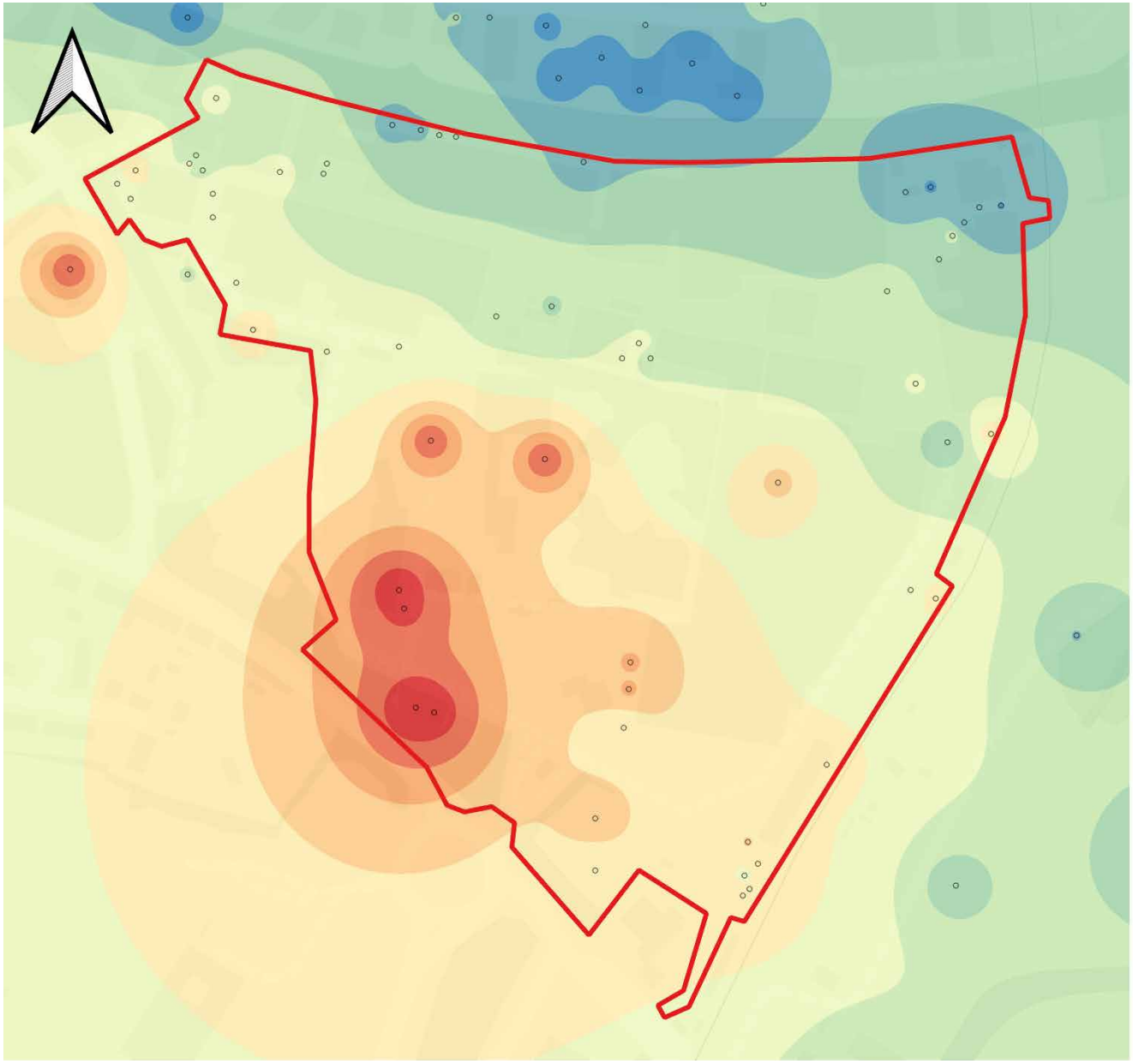


Figure 12 Modelled surface of River Terrace Deposits

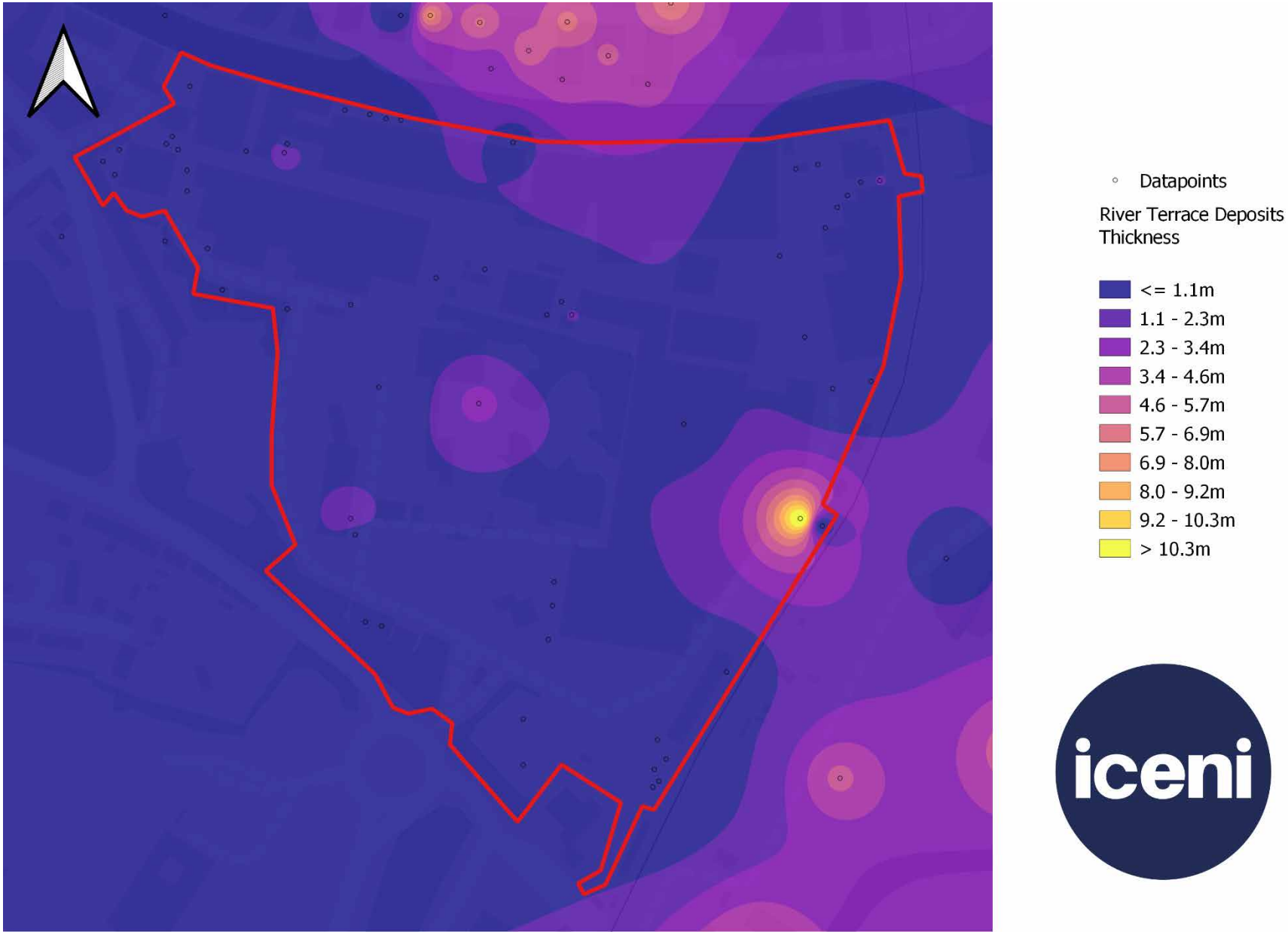


Figure 13 Modelled thickness of River Terrace Deposits

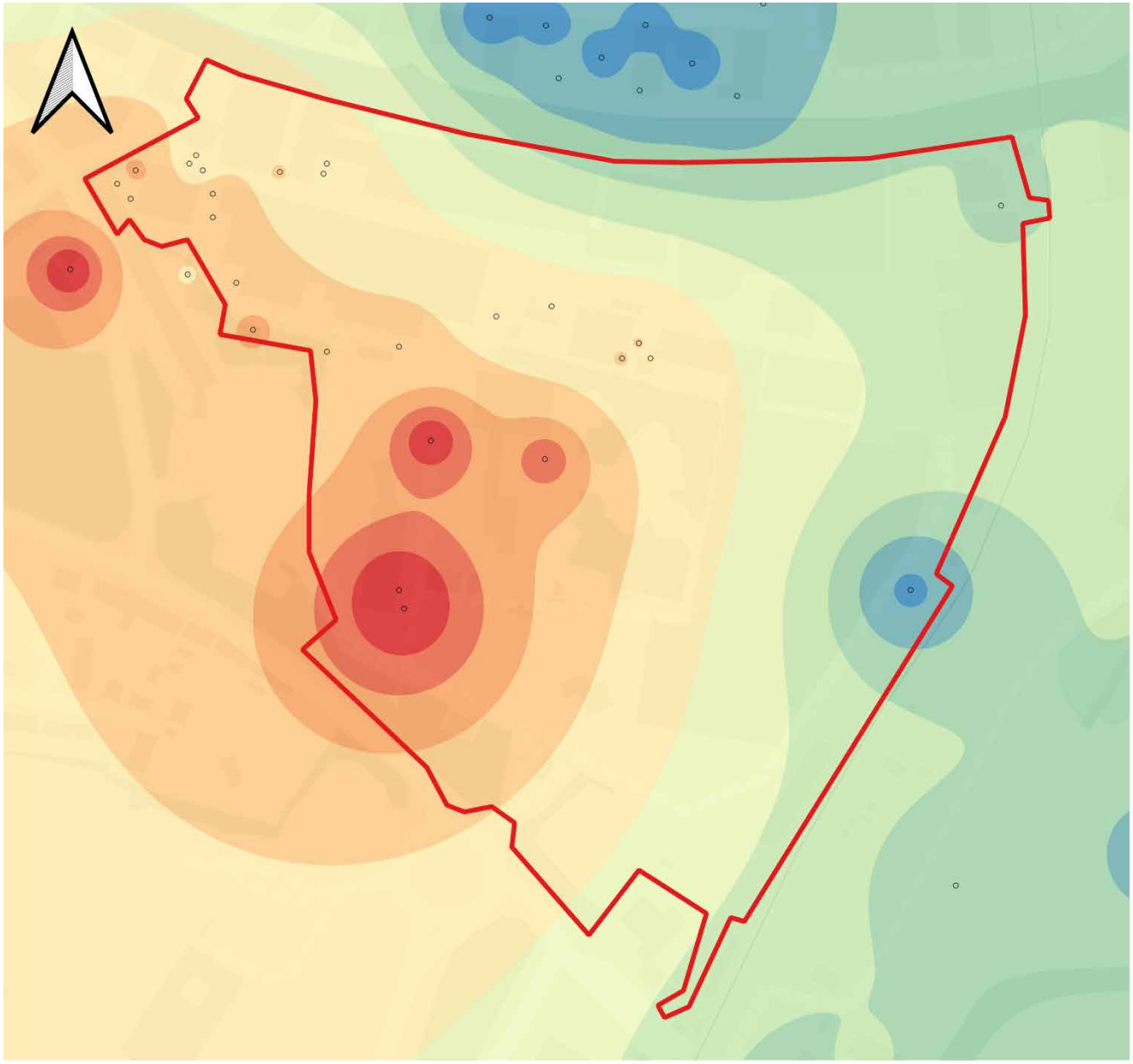


Figure 14 Modelled surface of Bedrock