

Addendum to ES Chapter 10:
Archaeology and Cultural Heritage



Lincolnshire Lakes,
Scunthorpe, N Lincs.
Environmental Statement: Heritage

Client: Keepmoat Homes

Local Planning Authority: North Lincolnshire Council

Planning Reference: TBC

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Every effort has been made to ensure the accuracy of reporting and appropriateness of recommendations. This report is based on information available at the time of writing, from the sources cited. It does not preclude the potential for future discoveries to be made, or for other unidentified sources of information to exist that alter the potential for archaeological impact. Any opinions expressed within this document reflect the honest opinion of Prospect Archaeology. However, the final decision on the need for further work rests with the relevant planning authority.

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1.0 Introduction

- 1.1.1 This chapter of the Environmental Statement replaces Chapter 10 of the Environmental Statement produced in 2015. It assesses the likely significant direct and indirect effects of the proposed development on cultural heritage in terms of archaeology, built heritage and the historic landscape. It describes the baseline conditions at the site and its surrounding area and examines the likely significant effects on the heritage assets and mitigation measures required to offset any significant adverse effects. It also considers the likely residual effects after these measures have been employed.
- 1.1.2 The objectives of the Environmental Impact Assessment have been to identify and assess the relative importance of heritage assets likely to be affected by the development.
- 1.1.3 This chapter is supported by the following technical appendices
- Appendix A Heritage Assessment (Prospect Archaeology Ltd 2023)
- 1.1.4 Naomi Field BA (Hons) MCIFA FSA is the primary author of this report. As a Senior Archaeological Consultant at Prospect Archaeology since 2011, and working as a heritage professional since 1987, Naomi has extensive knowledge and experience of archaeological and built heritage issues across the United Kingdom. Naomi has prepared numerous environmental chapters on heritage matters for planning applications across England. She holds a BA (Hons) in Ancient and Medieval History and Archaeology from the University of Liverpool. She has been a full Member of the Chartered Institute for Archaeologists (MCIFA) since 1992 and has recently been admitted as a Fellow to the Society of Antiquaries.

2.0 Planning Background

- 2.1.1 This report has been prepared in support of two S73 planning applications to North Lincolnshire Council for residential, leisure and community facilities to tie in with an existing outline permission that was granted in 2021 (PA2015/0396). This was subject to a number of conditions including six archaeological conditions (nos. 28-33) which are as follows:

28. Prior to the submission of the first Reserved Matters application the submitted Archaeological Framework Strategy shall be updated to include the results of archaeological evaluation which shall include but not be limited to the following surveys as appropriate:

- *Geoarchaeological and palaeo-environmental assessment*
- *Geophysical survey*
- *Trial trench excavation*

Each stage of archaeological evaluation shall be undertaken in accordance with a written scheme of investigation that has been submitted to and agreed in writing by the Planning Authority at least 15 working days in advance of commencement of proposed fieldwork. Written reports for each stage shall be submitted to the Planning Authority.

Reason

As the application has been submitted in outline form, it is essential to ensure that adequate assessment of the significance of any heritage assets is completed during the design stage to inform a well-planned development that takes full account of the significance of heritage assets, including the potential for nationally important sites, and to inform further decision making in accordance with paragraphs 184 - 202 of the National Planning Policy Framework, policy CS6 of the North Lincolnshire Core Strategy, policies HE8 & HE9 of the North Lincolnshire Local Plan and the Lincolnshire Lakes Area Action Plan sustainability assessment.

29. Prior to or concurrent with the submission of the first Reserved Matters application, and prior to subsequent submission for future Phases of the development, as described within the approved Phasing Plan submitted pursuant to condition 7 or any future update that shall be agreed in writing, the updated Archaeological Framework Strategy shall be submitted and approved in writing by the Local Planning Authority. The Strategy shall include the following:

- Details of proposed construction works including but not limited to site preparation, installation of infrastructure, foundation designs,*
- An Archaeological Impact Assessment Report*
- Mitigation proposals for preservation in situ, or for the investigation, recording and recovery of archaeological and palaeo-environmental remains, post-excavation assessment and analysis, and the publishing and archiving of result, including plans that define the areas for archaeological mitigation.*

Reason As the application has been submitted in outline form, it is essential to ensure that satisfactory assessment of all impacts of the development on the significance of any heritage assets, including those of potential national importance, is undertaken in order that appropriate mitigation is agreed prior to any works commencing on site and that the details of the development are satisfactory to the Local Planning Authority in view of the nature and scale of the development proposed, in accordance with paragraphs 184-202 of the National Planning Policy Framework, policy CS6 of the North Lincolnshire Core Strategy, policies HE8 & HE9 of the North Lincolnshire Local Plan and the Lincolnshire Lakes Area Action Plan sustainability assessment.

30. No development shall commence on each Phase, as described within the approved Phasing Plan submitted pursuant to condition 7 or any future update that shall be agreed in writing, until the applicant, or their agents or successors in title, has secured the implementation of the programme of archaeological work set out in the approved updated Archaeological Framework Strategy, and until detailed written schemes of investigation for site and post-excavation assessment works have been submitted to, and approved in writing by, the Local Planning Authority at least 15 working days in advance of commencement of proposed fieldwork. The written scheme of investigations shall include the following: (i) measures to ensure the preservation in situ, or the preservation by record, of archaeological features of identified importance

(ii) methodologies for the recording and recovery of archaeological remains including artefacts and ecofacts

(iii) post-fieldwork methodologies for assessment and analyses including production of an updated project design

(iv) report content and arrangements for dissemination, and publication proposals

(v) archive preparation and deposition with recognised repositories

(vi) a timetable of works in relation to the proposed development, including sufficient notification and allowance of time to ensure that the site work is undertaken and completed in accordance with the strategy

(vii) monitoring arrangements, including the notification in writing to the North Lincolnshire historic Environment Record Office of the commencement of archaeological works and the opportunity to monitor such works

(viii) a list of all staff involved in the implementation of the strategy, including subcontractors and specialists, their responsibilities and qualifications

Reason To ensure the satisfactory standard of archaeological work in accordance with paragraphs 184–202 of the National Planning Policy Framework, policy CS6 of the North Lincolnshire Core Strategy, policies HE8 & HE9 of the North Lincolnshire Local Plan and the Lincolnshire Lakes Area Action Plan sustainability assessment.

31. The archaeological evaluation and mitigation strategies shall be carried out in accordance with the approved details and timings, subject to any variations submitted in writing to and agreed in writing by the Local Planning Authority. The approved updated Archaeological Framework Strategy shall be reviewed and updated as necessary upon the results of each completed stage of archaeological evaluation and mitigation fieldwork.

Reason To ensure the satisfactory standard of archaeological work in accordance with paragraphs 184–202 of the National Planning Policy Framework, policy CS6 of the North Lincolnshire Core Strategy, policies HE8 & HE9 of the North Lincolnshire Local Plan and the Lincolnshire Lakes Area Action Plan sustainability assessment.

32. The final Phase of the development hereby approved by this permission shall not be occupied or brought into use until the site investigation and post investigation assessment has been completed in accordance with the programme set out in the updated Archaeological Framework Strategy and until the applicant, or their agents or successors in title, has secured the implementation of an updated project design providing for the analysis, publication and dissemination of results and archive deposition that has been submitted to, and approved in writing by, the Planning Authority.

Reason To ensure that the results of the archaeological investigations are publicly accessible in a timely manner to advance the understanding of the significance of heritage assets within the application site in accordance with paragraphs 184–202 of the National Planning Policy Framework, policy CS6 of the North Lincolnshire Core Strategy, policies HE8 & HE9 of the North Lincolnshire Local Plan and the Lincolnshire Lakes Area Action Plan sustainability assessment.

33. A copy of any analysis, reporting, publication or archiving required as part of the mitigation strategy shall be deposited at the North Lincolnshire Historic Environment Record within one year of the date of completion of the development hereby approved by this permission or such other period as may be agreed in writing by the Local Planning Authority.

Reason To ensure that the results of the archaeological investigations are publicly accessible in a timely manner to advance the understanding of the significance of heritage assets within the application site in accordance with paragraphs 184–202 of the National Planning Policy Framework, policy CS6 of the North Lincolnshire Core Strategy, policies HE8 & HE9 of the North Lincolnshire Local Plan and the Lincolnshire Lakes Area Action Plan sustainability assessment.

3.0 Relevant Policy

3.1 National Policy

- 3.1.1 National policy protects heritage assets by ensuring that during the pre-application stage of any development, consideration is given to the significance of a heritage asset, and the effects development may have on them either physically or indirectly. In relation to archaeology, central and local planning policy seeks to ensure that adequate information is provided to enable an informed planning decision when considering development proposals which may impact on known or potential archaeological assets.

National Planning Policy Framework (NPPF) 2023

- 3.1.2 The latest revision of NPPF published in September 2023 emphasises the presumption in favour of sustainable development. Among the core planning principles, provision is made to “conserve heritage assets in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of this and future generations”. Section 16 provides policy on ‘Conserving and enhancing the historic environment’ and remains the broadly same as the previous iteration, except for changes to paragraph numbers. Planning decisions must be made from a position of knowledge and understanding with respect to the historic environment. The value of a heritage asset to this and future generations because of its heritage interest. That interest may be archaeological, architectural, artistic or historic. Significance derives not only from a heritage asset’s physical presence but also from its setting’.

- 3.1.3 Paragraph 194 states:

“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.”

- 3.1.4 The setting of designated assets is a material consideration in the planning process. 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, ‘irrespective of whether any potential harm amounts to substantial harm, total loss or less than substantial harm to its significance’ (para. 199).

- 3.1.5 The impact on a heritage asset should be assessed in terms of the significance of that asset; the greater the significance, the greater weight should be given in that assessment. Any harm to, or loss of, the significance of a designated asset should require clear and convincing justification. Where

substantial harm or loss is predicted, approval should be given only in exceptional circumstances for Grade II listed buildings, parks or gardens. For heritage assets of higher importance (Grade II* & I listed buildings and parks & gardens, scheduled monuments, protected wreck sites, battlefields and World Heritage Sites) approval for proposed developments that cause substantial harm should be 'wholly exceptional' (para 200). In all cases the harm must be weighed against the public benefit (para. 201/202).

3.1.6 Also of note is paragraph 205 which concerns the need to use a 'proportionate evidence base' in decision making and states that:

"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."

National Planning Practice Guidance (2021)

3.1.7 The revised National Planning Practice Guidance (NPPG) was published by the Department for Communities and Local Government in July 2021 with accompanying guidance notes. 'Conserving and enhancing the historic environment' acknowledges:

- The value of a heritage asset to this and future generations because of its heritage interest. The interest may be archaeological, architectural, artistic or historic. *Significance* derives not only from a heritage asset's physical presence, but also from its setting.
- A clear understanding of the significance of a heritage asset and its setting is necessary to develop proposals which avoid or minimise harm.
- the surroundings in which a heritage asset is experienced (i.e., its setting) is not fixed and may change as the asset and its surroundings evolve.
- assessment of the impact on setting needs to take into account, and be proportionate to, the significance of the heritage asset under consideration and the degree to which proposed changes enhance or detract from that significance and the ability to appreciate it.

3.1.8 It is the degree of harm to the asset's significance rather than the scale of the development that is to be assessed. Para. 202 states:

"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."

3.2 Local Planning Policy

3.2.1 A new Local Plan for North Lincolnshire is in preparation and currently out to public consultation. Until it is formally adopted relevant planning policy is covered under Core Strategy (NLC, 2011) and saved policies from the Local Plan published in 2003.

Core Strategy 2011

3.2.2 The Core Strategy includes the following relevant objectives and strategies:

CS6: Historic Environment

The council will promote the effective management of North Lincolnshire's historic assets through:

- *Preserving and enhancing the rich archaeological heritage of North Lincolnshire*
- *Ensuring that development within North Lincolnshire's Market Towns safeguards their distinctive character and landscape setting, especially Barton upon Humber, Crowle and Epworth. The council will seek to protect, conserve and enhance North Lincolnshire's historic environment, as well as the character and setting of areas of acknowledged importance including historic buildings, conservation areas, listed buildings (both statutory and locally listed), registered parks and gardens, scheduled ancient monuments and archaeological remains. All new development must respect and enhance the local character and distinctiveness of the area in which it would be situated, particularly in areas with high heritage value. Development proposals should provide archaeological assessments where appropriate.*

Local Plan 2003

- 3.2.3 Saved policies from the Local Plan, adopted 2003 relating to the historic environment. include:

HE9: Archaeological Excavation

Where development proposals affect sites of known or suspected archaeological importance, an archaeological assessment to be submitted prior to the determination of a planning application will be required. Planning permission will not be granted without adequate assessment of the nature, extent and significance of the remains present and the degree to which the proposed development is likely to affect them. Sites of known archaeological importance will be protected. When development affecting such sites is acceptable in principle, mitigation of damage must be ensured and the preservation of the remains in situ is a preferred solution. When in situ preservation is not justified, the developer will be required to make adequate provision for excavation and recording before and during development.

Lincolnshire Lakes Area Action Plan (2016)

- 3.2.4 After a five year development period, the North Local Development Framework – Lincolnshire Lakes Area Action Plan (LLAAP) was formally adopted 10th May 2016.
- 3.2.5 The Plan has no specific policy relating to archaeology and heritage but acknowledges that
“the Lincolnshire Lakes AAP area has the potential for well-preserved archaeology to be buried below the floodplain deposits and later warped soils which could be negatively impacted by construction works. Waterlogged remains and palaeo-environmental deposits may also be adversely affected by changes to the drainage and hydrology of the site.

- 3.2.6 Policy D4: Area Masterplanning states that the Masterplan will include a green infrastructure plan conserve and enhance the ecological and heritage interests on site.

4.0 Assessment Methodology

4.1 Introduction

4.1.1 This chapter has been prepared in accordance with the Chartered Institute for Archaeology (CIFA) Code of conduct: professional ethics in archaeology (2014, revised 2022); Standard and guidance for historic environment desk-based assessment (2014, revised 2020); and Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment (2014, updated 2020) and the guidance issued jointly by Cifa, the IEMA and IHBC Principles of Cultural Heritage Impact Assessment in the UK (2021).

4.1.2 The assessment takes into account the importance of the heritage assets and the likely effect upon them to establish the significance of the effect of the scheme. A degree of professional judgement is necessary, guided by acknowledged standards, designations and priorities. It is also important to understand that varied archaeological remains may not be well-understood at the time of assessment and can therefore be of uncertain value.

4.2 Consultation

4.2.1 The ES chapter has been prepared in accordance with Cifa guidelines and recommendations for evaluation and mitigation are based on professional judgement of more than 30 years and is in line with current NPPF guidelines (NPPF 2023).

4.2.2 A full range of primary and secondary archaeological and historical sources were consulted for the preparation of the desk -based assessment that accompanies this chapter (Appendix A). Sources include the North Lincolnshire Historic Environment Record (NLHER), site visit, archive search and map regression were undertaken. The work was originally undertaken in 2014 but a new search of the NLHER was made in 2023.

4.3 Scope

4.3.2 The scope of this assessment has been to examine all readily available archaeological and historic sources in order to:

- Describe the survival and extent of known or potential cultural heritage features that may be affected by the proposals;
- Provide an evaluation of their importance;
- Assess the likely scale of impacts, both construction and operational, arising from the proposals;
- Outline suitable mitigation measures to avoid, reduce or remedy adverse impacts; and
- Provide an assessment of any residual impacts that may remain after mitigation.

4.3.3 The development of the site has been established through reference to sources listed below and is described in the Baseline Conditions section of this report. In order to obtain a fuller picture of the cultural heritage potential of the area of the Development and to place it in its wider context, data relating to a wider Study Area, extending 1 km around it, was considered. Additional designated heritage have also been identified for inclusion in this assessment on the advice of Historic England.

4.3.4 Recommendations for archaeological mitigation are based on consultation with the Senior Historic Environment Officer who advises N. Lincolnshire Council and are in line with current NPPF guidelines (NPPF 2023).

4.4 Significance criteria

4.4.1 Each area of archaeological potential has been assessed for its archaeological importance in geographical terms (i.e. the archaeological receptors value/sensitivity), although it should be noted that there is no statutory definition for these classifications. It should be noted that there are no designated heritage assets within the study area.

Archaeological Significance	Factors for assessing value of archaeological assets
International (Very High)	World Heritage Sites (including nominated sites). Assets of acknowledged international importance. Assets that can contribute significantly to acknowledged international research objectives.
National (High)	Scheduled Monuments (including proposed sites), Listed Buildings Grade I and II*(some Grade II) Undesignated assets of schedulable quality and importance. Assets that can contribute significantly to acknowledged national research objectives.
Regional (Medium)	Designated or undesignated assets that contribute to regional research objectives.
Local (Low)	Designated and undesignated assets of local importance. Assets compromised by poor preservation and/or poor survival of contextual associations. Assets of limited value, but with potential to contribute to local research objectives.
Negligible	Assets with very little or no surviving archaeological interest.
Unknown	The importance of the resource has not been ascertained.

Table 1 Archaeological significance (Sensitivity)

Magnitude of Change

4.4.2 There are a number of variables in determining magnitude of change. These include the sensitivity or vulnerability of a site to change (for example, depth of alluvium, or the presence of made ground), the nature of past development or management effects, and the differing nature of proposed development processes such as piling and topsoil stripping

4.4.3 The determination of magnitude of change is based on the level of impact and the current state of survival/condition of the asset, as shown in Table 2 below.

Magnitude	Large	Moderate	Small	Negligible
Direct Impact	Change to most or all key archaeological materials, such that the resource is totally altered.	Changes to many key archaeological materials, such that the resource is clearly modified	Changes to key archaeological materials, such that the asset is slightly altered.	Very minor changes to archaeological materials or setting
Indirect Impact	Comprehensive changes to setting	Considerable changes to setting that affect the character of the asset.	Slight changes to setting.	

Table 2: Magnitude of Impacts

4.5 Assessment of Effects

4.5.1 This assessment uses the baseline data to describe the survival and extent of archaeological receptors that may be affected by the proposed development. The assessment has paid careful attention to the attribution of levels of significance to both potential archaeological receptors and to potential effects arising from the proposed development.

4.5.2 This section sets out the method used in the Environmental Impact Assessment (EIA) for assessing the potential significance of environmental effects for each receptor. The significance of potential environmental effects is determined by two variables:

- The value and/or sensitivity of the receptor (Archaeological Significance); and
- The magnitude of change.

4.5.3 The significance of the environmental effect is assessed using the matrix shown in Table 12.4. The Significance of the archaeological resource/receptor is correlated against the magnitude of the change on that resource/receptor in order to determine whether the overall significance of the effect on the receptor will be Neutral, Negligible, Minor, Moderate or Major.

Magnitude of Change		No Change	Negligible	Minor	Moderate	Major	No Change
Archaeological Significance	Very High	Neutral	Moderate	Moderate	Major	Major	Very High
	High	Neutral	Minor	Minor	Moderate	Major	High
	Medium	Neutral	Negligible	Minor	Minor	Moderate	Medium
	Low	Neutral	Negligible	Negligible	Minor	Minor	Low
	Negligible	Neutral	Negligible	Negligible	Negligible	Negligible	Negligible

Table3: Significance of impact

4.5.4 Depending on the nature of the change, the significance of the effect on the historic environment can range from Adverse to Beneficial and be of a defined duration. For instance, the loss of archaeological remains is always classed as Adverse, while provision of interpretation of an extant archaeological feature might be seen as Beneficial. Tables 3 and 4 provide a general guideline as to how the significance of environmental effects are defined. The assessment is then repeated once the proposals to mitigate the change have been put in place (Table 3).

Impact Assessment	Definition
Major Adverse	The development fails to satisfy the subject environmental objective and results in a major deterioration of the environmental context
Moderate Adverse	The development partly satisfies the subject environmental objective but fails to contribute to the environmental context
Minor Adverse	The development partly satisfies the subject environmental objective but fails to fully contribute to the environmental context
Negligible/neutral	The development satisfies the subject environmental objective but neither contributes to nor detracts from the environmental context
Minor Beneficial	The development satisfies the subject environmental objective and contributes to the environmental context
Moderate Beneficial	The development satisfies the subject environmental objective and contributes to the environmental context
Major Beneficial	The development satisfies the subject environmental objective and results in a major contribution to the environmental context

Table 4 Significance of Effects Matrix

5.0 Baseline Conditions

5.1 Introduction

5.1.1 The assessment of existing conditions has been based on a 'study area' extending 1km from boundary of the proposed development. This enables the significance of existing and potential archaeological features to be considered in their local, regional and national contexts. The Site was visited on 24th October, 2013 and viewed from the public highways. The site has not been revisited.

5.1.2 The source of the monuments noted in the following text is the North Lincolnshire HER and noted in the following text with the prefix MLS. Events are with the prefix ELS (Appendix A Figs 4 and 5; Appendices 1 and 2).

5.2 Site Description

5.2.1 The proposed development area lies c.2.5km south-west of Scunthorpe's urban fringe in the Trent Valley. The c.168ha Site comprises three main blocks of land is currently in agricultural use and is surrounded by agricultural land. The M181 bisects the site from north to south and the B1450 Burringham Road runs east-west through the Site.

5.3 Topography and Geology

5.3.1 The proposed development is for residential, leisure and community facilities and will include several lakes for drainage and leisure purposes (Fig. 2). The Site lies at c.3m OD on flat land c.1.6km to the east of the river Trent. The bedrock on the Site comprises Mercia Mudstone, overlain by superficial deposits of Quaternary deposits. On the east side of the site this comprises sand, from wind-blown deposits, and to the west this comprises alluvium from river deposits (Lucent Group 2013, 10). This alluvium is likely to include deposits deriving from warping, a process of deliberate flooding and slow draining of an area, to allow for the accumulation of silty deposits in order to raise the ground level and provide more fertile soil (<http://mapapps.bgs.ac.uk/geologyofbritain/home.html>).

5.4 Historic Landscape Characterisation

5.4.1 The Site lies within the Confluence Area of the Lincolnshire Historic Landscape. This area is split into several character Zones (HLCZ) and the Site lies within the Axholme Fens Zone. The zone is made up of drained fenland and comprises flat arable landscape. There is little woodland and few settlements except at crossing points of the river Trent, the closest to the Site being at Burringham. Remaining occupation comprises isolated farms of 19th century date such as North Grange Farm.

5.4.2 Prior to drainage, the fens provided many resources to the inhabitants of the neighbouring Isle of Axholme, including fish, fowl and seasonal grazing land. The fens were inundated by the nearby rivers each winter, and when the flood water receded it left behind rich sediment that encouraged the growth of grass. Drainage began in the later 17th century and improvements continued through the 18th and 19th centuries. Modern changes have included the removal of some field boundaries.

5.4.3 Much of the proposed development area and the land surrounding it (HLS 1787, HLS 1785, HLS 1784, HLS 1781, HLS 2083, HLS 1782, HLS 1783 and HLS 1812) is described as modern fields and enclosed land, dating from 1945 onwards. To the immediate north-east of the proposed development area is an area identified as artificial open water (HLS 2079), dating from 1945 onwards. Two isolated farmsteads are also identified on the east side of the site (HLS 2164 – Carisbrooke Manor and HLS 2162 – Warp Farm), which are thought to date from c.1875 onwards. North Grange Farm is also an isolated farmstead, located on the west side of the proposed development area, however this has not been given an individual reference number by the HLC. It is shown on the 1887 OS 1:2500 scale map (see Fig. 8).

5.5 Archaeological and Historical Background

5.5.1 There are seven recorded undesignated heritage assets recorded within the redline boundary comprising three warping drain complexes, an undated linear feature, a farmstead and peat deposits (two locations with the same MLS number are undated and nine peat deposits with the same MLS number have been scientifically dated).

5.5.2 In the surrounding study area there are 28 undesignated heritage assets comprising 10 warping drain complexes, 7 farmsteads, 15 scientifically dated peat deposits (under two MLS entries), four cropmarks, two World War II defence features and one record each a causeway, a decoy pond and a scatter of prehistoric flints.

5.5.3 There have been 39 recorded events within the study area (Appendix 2) including six LIDAR survey flights and seven aerial photo surveys. These have helped to identify the numerous crop marks, mainly of post-medieval and modern date (Appendix 1) but their extent is not shown on Fig. 5. In addition four desk-based assessments have been undertaken, including the one by Prospect Archaeology in 2014 upon which this report is based (ELS 4203) and another in the same year by On-Site Archaeology (ELS 4074). This was followed by an archaeological evaluation (ELS 4097), carried out by Archaeological Research Services Ltd where one shallow pit was excavated as well as the buried remains of a former field boundary, which contained 19th-20th century finds. Two other Desk based assessments ELS 4135 (AC Archaeology in 2014) and ELS4501 (AECOM 2017) relate to the M181 terminal junction.

5.5.4 Some archaeological field evaluation has taken place since 2014 all connected with the proposed Lincolnshire Lakes development. This has comprised a fieldwalking and metal detecting survey undertaken in 2015 by Allen Archaeology Ltd (ELS 4174) two geophysical surveys, one by Allen Archaeology in 2015 covering the south-east corner of the Lincolnshire Lakes development (ELS 4180) and Wessex Archaeology in 2021 for the North Lincolnshire Energy Park (ELS4597).

5.5.5 Most of the fieldwork has consisted of geotechnical investigations and twelve interventions have included borehole transects and test pits the results of which are included in the baseline description below.

5.6 Designated Heritage Assets

5.6.1 There are no designated heritage assets within the Site or the Study Area.

5.7 Undesignated Heritage Assets

Prehistoric (10,000BC-AD43)

5.7.1 Early Neolithic to Early Bronze Age flints including a Neolithic polished flint axe or adze blade were found at Brumby Common, towards the north and north-eastern extent of the study area some time before 1931 (HER MLS7767). A Bronze Age hoard (MLS1344) was found in the western part of the study area on Burringham Common sometime before, though its exact location is unknown. The hoard included two basal-looped spearheads, two rapiers, and a looped palstave. The current whereabouts of the hoard is

unknown. Outside of the study area, the Bronze Age Burringham Shield (MLS1346) was found during excavations for warping of land in 1843.

- 5.7.2 There are two undated cropmarks in the western part of the study area. MLS21096 is part of a sub-rectangular cropmark, measuring c. 60m across, this could be Iron Age in date, although it could be much later, for instance a post-medieval warping compartment. Similarly, MLS21095 is a large semi-circular cropmark, 180m in diameter, which could conceivably be prehistoric or later in date. Another small enclosure (MLS 24702) was recorded as a cropmark in 1976 in the south-west part of the study area and a ring ditch or possible barrow in the NE part of the study area was detected during geophysical survey in 2014-15 and interpreted as a possible Bronze Age round barrow (MLS 25906, ELS 4180)
- 5.7.3 East of the study area, on the edge of Scunthorpe there have been various finds of prehistoric artefacts including: a flint scraper (MLS1915); a wooden raft of possible Bronze Age date (MLS1042); stone axes (MLS105) and flints and Beaker sherds (MLS1957).
- 5.7.4 Paleoenvironmental studies have been an important component in archaeological evaluation of the study area and have provided important evidence for the development of the Trent flood plain in the prehistoric era. This work has been carried out since the preparation of the original desk-based study in 2014 and has been undertaken within the study area and the development area almost entirely to the east of the M181.
- 5.7.5 In 2015 geo-environmental site investigations were carried out east of the M181 to inform the design of residential and amenity development as part of the Lincolnshire Lakes development. A series of test pits and boreholes revealed the presence of peat deposits within upper sand units at depths between 1.0 - 2.0m, and up to 4.0m in four locations. Peat deposits were identified across a wider area in a series of archaeological trial trenches, auger probes and core samples undertaken in two phases in 2016 and 2017 to assess the archaeological and palaeoenvironmental potential of a proposed large lake in the area of the Lincolnshire Lakes development east of the M181. Peat was recorded in all 13 trial trenches, and the exposed peat sections were sampled and 6 samples were selected for radiocarbon dating. Dates ranged from 7726BP and 6309BP (uncalibrated 5776 BC and 4359BC) to 3827BP (uncalibrated 1902BC) and 1434BP (uncalibrated AD516). Peat was also recorded in a separate ground investigation in 2016 in connection with the M181 terminal junction at Burringham Road but no archaeological recording was undertaken.
- 5.7.6 Undated peat deposits were recorded during a geoarchaeological evaluation in 2020 north of the roundabout in areas west and east of the M181, comprising seven boreholes ((MLS 26766, ELS 4499, ELS4608).). The borehole evaluation revealed the low-lying surface of the presumed Sutton Sand (below 1.5m OD) that forms a single meandering or three separate Late Glacial to Early Holocene relic river valleys with interleaving peat deposits. An initial assessment of subsamples from organic horizons within the core samples has established that they have extremely high potential for further palaeoenvironmental

work, relating to both landscape reconstruction and potentially the recognition of human activity within the landscape. A deposit model of the recorded sequence incorporating data from the boreholes and previous investigations from the area was prepared. The deposits were indicative of a temperate climate and vegetation growth within a wetland or waterlogged environment, possibly on the margins of a river that were almost certainly of Holocene date (9,700 BC/11,650 BP onwards) with some minor potential that any low-lying and/or sandier organic deposits relate to Late Glacial interstadials (14,700-11,650 BP) ELS4608.

- 5.7.7 In 2021, archaeological monitoring of 52 ground investigation trial pits largely confirmed this deposit sequence and model. The Organic deposit is described as c. 0.5-3.5m thick and the surface was encountered between c. 0 to 2m OD (ELS4609).

Roman (AD43-AD410)

- 5.7.8 There is no known evidence for Roman activity within the study area. The nearest Roman site is at Derrythorpe, west of the Trent, c.2.2km to the west of the proposed development area, where an assemblage including around 300 late 3rd/early 4th century pottery sherds was discovered (MLS17425; NGR SE 827 087), indicating a possible occupation site.

Saxon and Medieval (AD410-AD1500)

- 5.7.9 There are no known sites of early medieval or medieval date within the study area. The proposed development area is in a very rural position and not associated with a settlement. At the time of the Domesday Survey of 1086, the settlements of Scunthorpe, to the north-east, Yaddlethorpe, to the south-east, West Butterwick to the south-west and Althorpe to the west (both west of the Trent) were all extant (<http://www.domesdaymap.co.uk>). During the medieval period, the settlements of Gunness to the north-west of the study area; and Burringham and East Butterwick, both on the east side of the Trent, were established. The northern part of the site is part of Brumby Common, and the southern part, Burringham Common.

Post-medieval (AD1500-1899)

- 5.7.10 Warping is thought to have taken place in the environs of the study area from the 17th century onwards to improve the quality of the land for cultivation (Van de Noort 2004; Van de Noort and Davies 1993; Lillie 1997; Network Archaeology Ltd 2012, 3). Wet warping, which was carried out extensively around the Humberside levels (as opposed to dry warping, carried out elsewhere), is a process which involves the construction of ditches to flood areas of embanked land. The subsequent slow draining of the water allowed for the accumulation of alluvium on the land.
- 5.7.11 There are three probable warping drains within the proposed development area. MLS22492, approximately central within the proposed development area, is a double ditched cropmark and MLS21097 is a probable 19th century warping drain, to the south-west of North Grange Farm. This comprises a broad, double ditched linear cropmark, which extends over a distance of 800m. An aerial photograph, taken in 1984, shows a large sub-rectangular enclosure measuring 140m by 150m attached

to its northern side. This may have been a warping compartment, an area where alluvium-laden water was allowed to settle in order to improve the land. In 2016 two warping drains were identified during evaluation trenching east of the M181 motorway and c.190m north of Burringham Road (MLS26106).

- 5.7.12 Within the study area, to the north of the proposed development, further probable warping drains include: MLS22491, a linear channel c.260m long aligned NW-SE, and located to the north of the Site; MLS24682, 'Earl Beauchamp's Warping Drain' a straight, embanked channel, located to the north and north-east of the site; and MLS24683, a straight channel, perpendicular to Earl Beauchamp's Warping drain and MLS 10812 which runs east-west, beneath the M180 and connected to Earl Beauchamp's Warping Drain. Running south-west of MLS10182 is a sinuous channel revealed on high resolution Lidar mapping (MLS25977).
- 5.7.13 To the south-east of the Site were: MLS24679, two straight features interpreted as warping drains, and measuring up to 8m wide and 550m long; MLS24680 a series of 19th century warping drains; and MLS 24701 a series of drains south of the development area recorded on air photographs in 1976. A large warping drain network, MLS24681, extends south from Healey's Drain, which runs west-east through the development site, terminating at the M181 motorway. To the south-west of the Site is MLS24684, 19th century warping drains, running SSW from Healey's Drain for c.1.2km to an unnamed drain within East Butterwick parish.
- 5.7.14 Towards the eastern limit of the study area is Ashby Duck Decoy Pond (MLS4041), constructed in 1833 and which was working until c. 1918. The pond survives within Scunthorpe Golf Course.
- 5.7.15 There are eight farmsteads recording within the study area including North Grange Farm (MLS 25438) within the redline boundary. All are of 19th century origin probably contemporary with the drainage of the surrounding land and are Brumby Grove Farmstead (MLS24739), Brumby Grange (MLS 25637), Burringham South Grange (MLS25439), Manor Cottage/Warren House (MLS 25516), Warp Farm (MLS 25517), Ashby Decoy Farm (MLS 25518) now demolished, and Bottesford Moor (MLS 25668).
- 5.7.16 An undated linear feature was identified during trial trench excavations east of the M181 motorway and north of the Birmingham road over bridge it is unknown date but possibly earlier than the warping drains (MLS26107, ELS4333). Evaluation in 2020 revealed linear features thought to be associated with warping or modern agricultural activity (MLS26 26476, ELS4601). The more substantial feature adjacent to the M181 might be part of the Frodingham Causeway (MLS25905). Frodingham Causeway was a road or path shown on early Ordnance Survey mapping which ran between Frodingham village and the ferry crossing at Burringham across the northern part of the study area. It is now called Brumby Common Lane.

Modern (1900-Present)

- 5.7.17 The site of a World War II 'Permanent Starfish' bombing decoy SF24C, located north of North Grange Farm (MLS18441). It was operational between 1st August 1941 and 8th April 1943 but aerial photography

shows that by 1990 no features of the decoy survived. Also near North Grange Farm was the site of a World War II heavy anti-aircraft battery (MLS21387) Both were part of a network of defences created to protect the steel works in Scunthorpe (Network Archaeology Ltd 2012, 3).

5.7.18 The 1970s saw the construction of the M181 motorway, which runs through the proposed development area on a north-south alignment, and the M180 motorway, which bounds the Site to the south, thus dramatically changing the character of the study area (ibid; http://en.wikipedia.org/wiki/M181_motorway).

6.0 Archaeological Potential

6.1.1 There are seven monuments and five recorded Events (not including evaluation which is currently being carried out but not yet incorporated into the NLHER) within the redline boundary.

6.1.2 Shallow peat lenses and organic clays were identified in test pits and boreholes during geotechnical investigation in 2015 & 2016, and during archaeological trenching, augering and coring in 2016 and 2017 (MLS26076, ELS 4333). Some of this work extended beyond the redline boundary. Thirteen radiocarbon dates for the peat horizons range from 6631 BC in the Mesolithic period through to AD568 (early medieval) with some 6 being of Mesolithic date and 6 Neolithic and Bronze Age with just the one early medieval sample.

6.1.3 The same evaluation programme in 2016 revealed one undated linear feature (MLS26107). Evidence for two warping drains was also found in the same evaluation trench (MLS 26106).

6.1.4 Undated peat deposits were recorded during a geoarchaeological evaluation in 2020 (MLS 26766; ELS 4499, ELS4608, ELS4609). Borehole 1 contained a single band of peat 0.84m thick whilst the others contained several narrow bands of peat. Samples for carbon 14 dating were retained from three of the boreholes (ELS 4499). In 2021, archaeological monitoring of 52 ground investigation trial pits largely confirmed this deposit sequence and model. A deposit model of the recorded sequence incorporating data from the boreholes and previous investigations from the area was prepared and the assessment noted the great potential for further environmental investigations. The organic deposit is described as c. 0.5-3.5m thick and the surface was encountered between c. 0 to 2m OD (ELS 4608).

6.1.5 An aerial photograph taken in this area in 1984 shows a straight channel, 20m wide. It was orientated NW-SE, and could be traced over a distance of 260m. Its appearance was typical of a 19th century warping drain (MLS 22492). Another warping drain was recorded north of the M180 by Mike Felcey in the 1970s (MLS 21097)

6.1.6 Associated with the warping of the land were new farmsteads, of which North Grange Farm, Burringham is one. It is 19th century in date but has subsequently been much altered (MLS 25438).

MLS	ELS	Receptor	Importance
26076	4333	Peat deposits Mesolithic, Neolithic, Bronze Age, Early medieval	Regional/national
26107	4333	Linear ditch, post-medieval, pre-19 th century ?	Local
26106	4333	Warping drains 19 th century	Local
26766	4499, 4608, 4609	Peat deposits	Regional/national
22492	-	Warping drains (air photographic evidence 1984)	Local
25438	-	North Grange Farm Burringham	Local
21097	-	Warping drain North grange Farm A cropmark from air photo	Local

Table 5 Sensitive Receptors

6.1.7 In summary, the main archaeological potential identified so far is for the presence of peat deposits ranging in date from the Mesolithic to Bronze Age periods. Several prehistoric artefacts are recorded in and around the study area and undated cropmarks recorded on aerial photographs that lie within the study area have the potential to be prehistoric in date.

6.1.8 The potential for archaeological remains is considered to be low for the Roman to medieval periods. Historic maps, and the presence of warping drains across the study area indicate that the Site was in agricultural use from at least the 19th century. The potential for archaeological finds and features from the post-medieval period is higher than for Roman – medieval periods, however, the significance of such remains would be no more than Local.

7.0 Impact Assessment

7.1 Impact on Designated Assets

7.1.1 There are no designated sites within the proposed development area nor within the Study Area.

7.2 Impact on Non-Designated Assets

7.2.1 While there is moderate potential for finds from the prehistoric period, the results of geotechnical investigation have shown extensive peat deposits with huge palaeo-environmental potential. The proposed development includes several ponds, both for drainage and leisure purposes. These excavations may therefore be deep enough to penetrate the underlying peat deposits which have the potential to contain archaeological and palaeo-environmental remains. The impact from building foundations and services may have a lesser impact. Details are not available at the time of preparing this report.

8.0 Potential Effects

8.1 Construction stage

8.1.1 Construction will require major remodelling of the landscape and the creation of ponds. Such groundworks would significantly truncate or entirely remove archaeological and palaeo-environmental remains where peat deposits survive. The potential for post-medieval remains to be affected is also recognised, however, these are considered to be of no more than local importance. The potential effects for all sensitive receptors would range between Minor and Major and would be permanent. This conclusion is based on an understanding of archaeological importance (sensitivity) and the magnitude of change for each receptor.

8.1.2 Construction of the development will have no direct impact upon any designated heritage assets as there are none in the vicinity of the application.

8.2 Post-completion stage

8.2.1 There would be no further impacts on sensitive receptors post-completion. Therefore, no archaeological mitigation or monitoring would be required during the operational phase of the proposed development.

8.3 The projected future baseline

8.3.1 Mitigation by means of archaeological excavation within a selected area of the application site will better characterise archaeological features already identified.

9.0 Conclusions

9.1.1 Various interventions have taken place between 2015 and 2023 concentrating on the area of the development site located east of the M181. These geotechnical and archaeological programmes of work have demonstrated the potential for environmental remains ranging in date from the Mesolithic period to the Bronze Age which have the potential to enhance our understanding of the prehistoric landscape.

9.1.2 Outline Planning permission sets out in detail the archaeological requirements for further evaluation and mitigation proposals. It is unlikely that any variation in the current S73 application will alter these requirements.

9.1.3 In the first instance, prior to submission of the first Reserved Matters application, Condition 28 requires an updated Archaeological Framework Strategy to include the results of archaeological evaluation to the east of the M181 which has taken place to date. Each stage of archaeological evaluation shall be undertaken in accordance with a written scheme of investigation that has been submitted to and agreed in writing by the Planning Authority. Written reports for each stage will also be submitted to the Planning Authority. This is in line with National Planning Policy Framework (NPPF) guidelines.

10.0 Summary of Effects

Receptor	Impact	Potential Effects (taking account of embedded mitigation)	Additional Mitigation and Monitoring	Residual Effects
During Construction				
Warping drains	Large Direct	Minor Adverse (Not Significant)	No archaeological evaluation or excavation, recommended	Negligible (Not Significant)
Peat deposits	Large Direct	Major Adverse	Archaeological evaluation, excavation and recording	Minor Adverse (Not Significant)
North Grange Farm	Unknown	Unknown	Building recording if necessary	Minor Adverse (Not Significant)
During Operation - not applicable				

11.0 References

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