RWE

Tween Bridge Solar Farm

Environmental Statement
Appendix 8.6: Outline Archaeological Mitigation Strategy

Planning Act 2008
Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

APFP Regulation 5(2)(a)

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Appendix 8.6 – Outline Archaeological Mitigation Strategy for Post-Consent Works

Tween Bridge, Thorne Moors

On behalf of RWE Renewables UK Solar and Storage Ltd

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1. Introduction

1.1. Pegasus Group have been commissioned by RWE Renewables UK Solar and Storage Ltd (hereafter 'the Applicant') to prepare an Outline Archaeological Strategy for Post- Consent Works to support a DCO application for renewable energy development (a full description of the works can be found in **ES Chapter 2 Scheme Description [APP-039]**) at Tween Bridge as shown on Plate 1, below.

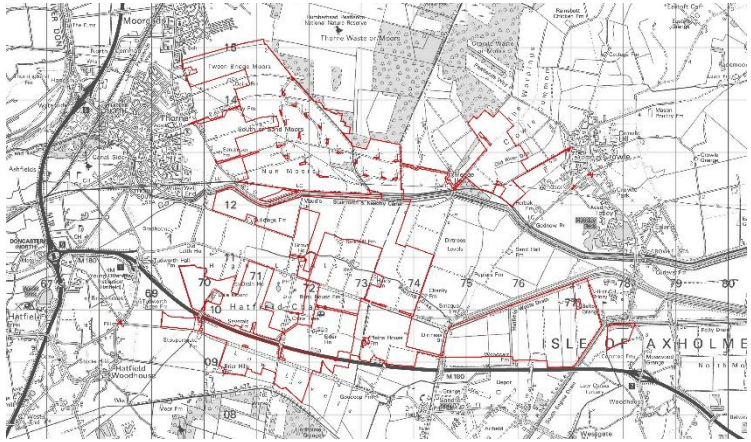


Plate 1: Site location plan

1.2. This Strategy has been prepared as a supporting document and forms **Appendix 8.6** to **Chapter 8 – Cultural Heritage [REP4-025]**. It has been informed by, and should be read in conjunction with, other supporting documents, primarily:

- **Appendix 8.1 Heritage Baseline Assessment [REP4-032]**
- **Appendix 8.2 Geophysical Survey Report [APP-086 to APP-092]**
- **Appendix 8.3 Geoarchaeological Assessment [REP2-043]**
- **Appendix 8.4 Trial Trenching Report [APP-094]**
- **Appendix 8.5 Test Pitting Report [APP-096]**

1.3. Mitigation (if required) will be defined with due regard to the results of the pre-determination investigations and surveys that have been completed, and further archaeological works that will be undertaken post-consent. This Strategy, therefore, outlines the methodology for the post-consent archaeological works and potential mitigation measures. Further details with regard to this proposed strategy and its relation to the policy position are outlined in Section 2 below.

1.4. The proposed mitigation is required as it provides an opportunity to reduce the scale of adverse effect to archaeological assets within the Order Limits when compared to undertaking no additional works.

1.5. The mitigation proposed will reduce the scale of effect in two key ways:

1. Preservation in situ or no dig foundations which will secure no harm to the below-ground remains thereby removing adverse effects completely

2. Preservation by record where affected archaeological assets are investigated and a detailed record prepared. The physical asset is damaged through the intrusive investigation but the recording and assessment of the works provides a detailed understanding such that the physical harm is reduced due to the improved level of knowledge afforded

1.6. The zoning plan is formed of Figures 2-5 in Appendix 2. The figures that make up the plan detail the recorded archaeological assets and findspots within Order Limits (Figure 2), the anticipated scale of effect arising from construction (Figure 3) and archaeological areas of sensitivity (Figure 4). This data has been compiled to form Figure 5 which presents a sensitivity score ranging from 0 (low) to 9 (high) and which will be used to develop location specific mitigation requirements that will employ the appropriate methods, detailed in this document.

~~1.6.~~1.7. This Strategy is a working document, as is the zoning plan appended to it. It is acknowledged that the document will evolve along with the Scheme and the detailed design.

2. Policy Position

2.1. A summary and extracts of relevant NPS policies with regard to archaeological fieldwork is provided below to provide the policy framework for the proposed strategy and timings of archaeological works.

2.2. NPS EN-3[1] paragraph 2.10.113 states:

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

2.3. Similar text is included at paragraph 5.9.11 of NPS EN-1, which states:

"Where a site on which development is proposed includes, or the available evidence suggests it has the potential to include, heritage assets with an archaeological interest, the applicant should carry out appropriate desk-based assessment and, where such desk-based research is insufficient to properly assess the interest, a field evaluation…"

2.4. There is no mandatory requirement to carry out intrusive field work. Paragraph 2.10.114 of NPS EN-3[2] goes on to reinforce this by stating:

"In some instances, field studies may include investigative work…"

2.5. Further, at paragraph 2.10.115 of EN-3 it states:

"The extent of investigative work should be proportionate to the sensitivity of, and extent of, proposed ground disturbance in the associated study area."

2.6. Collectively, the policies clearly indicate that intrusive evaluative works are not a definitive or determinative requirement, and that works should be proportionate.

2.7. The inherent flexibility of solar development, and generally limited nature of below ground impacts (as identified at paragraph 2.10.109 of NPS EN-3), allow for a range of potential mitigation measures to be utilised, should remains of archaeological

[1] https://assets.publishing.service.gov.uk/media/65a7889996a5ec000d731aba/nps-renewable-energy-infrastructure-en3.pdf

[2] https://assets.publishing.service.gov.uk/media/65bbfbdc709fe1000f637052/overarching-nps-for-energy-en1.pdf

significance be encountered. Paragraph 2.10.109 states:

'Below ground impacts, although generally limited, may include direct impacts on archaeological deposits through ground disturbance associated with trenching, cabling, foundations, fencing, temporary haul routes etc.'

2.8. It is therefore considered that the approach taken to date comprising a programme of targeted, pre-determination trial trenching, focussed on fixed, large-scale elements of development, with further works proposed post-consent, is an appropriate one, and is in line with policy.

3. Archaeological Background

3.1. The archaeological background of the land within Order Limits is discussed in detail in **Appendix 8.1 Heritage Technical Baseline [REP4-032].** A summary of this information is included below.

Topography & Geology

3.1. The Study Area is generally flat and comprises of a number of parcels of agricultural land. The historic market towns of Thorne and Crowle are located to the west and east of the Scheme respectively. The towns are located on slightly elevated ground compared to the Scheme, which was historically marshy before much of the area was drained and reclaimed in the 17th-century by Sir Cornelius Vermuyden following his commission from Charles I in 1626 to drain this area.

3.2. The underlying bedrock geology underlying the Order Limits largely comprises Triassic sandstone of the Chester Formation in the west and Triassic mudstone of the Mercia Mudstone Group to the east. The north-western part of the Order Limits, immediately adjacent to Moorends and Thorne, has bedrock geology comprising Permian and Triassic sandstone of the Sherwood Sandstone Group[3].

3.3. There are extensive superficial deposits across the Order Limits. In the north-western part of the Order Limits there are deposits of the Hemingbrough Glaciolacustrine Formation with extensive deposits of Alluvium over much of the Order Limits. A band of peat is indicated to the south-west of Crowle whilst there are deposits of the Sutton Sand Formation immediately to the west of the town[4].

3.4. The geoarchaeological potential of the Order Limits has been assessed and deposits of degraded peat, sand and warp deposits have been identified. The presence of the course of the Old River Don, other palaeochannels, and the potential for an underlying land-surface pre-dating peat deposits has also been identified within the Order Limits. These elements have been discussed in detail as part of the geoarchaeological assessment, **Appendix 8.3 Geoarchaeological Assessment**, **[REP2-043]**.

[3] https://geologyviewer.bgs.ac.uk/

[4] Ibid.

Archaeological Resource

Prehistoric (pre-43 AD)

3.4.1. Mesolithic flint scatters (MLS19442; 01884/01) and a tranchet axe (5097) have been recovered from within the Order Limits. A plan showing the areas within the Order Limits is provided as **Figure 1.2 Land Parcel Plan [APP-130]**. Further finds of Mesolithic date have been recovered from elsewhere in the study area and are discussed in the Baseline Assessment, **Appendix 8.1, [REP4-032]**.

3.4.2. Within the Order Limits, peat deposits and a Neolithic land surface west of Medge Hall (MLS21214) were identified during an auger survey (ELS3938) undertaken as part of the investigations to support the construction of Tween Bridge Wind Farm. The auger survey was followed by targeted trial trenching (ELS3939). The trenching did not identify any prehistoric artefactual material associated with the peat deposits, but some of the environmental evidence suggested human activity nearby. There are also findspots of flint tools (MLS940; MLS19543; MLS19574; MLS19451; MSY10053-MSY10055; MSY10094) situated within the Order Limits. The Humberhead Levels Survey recovered two Late Neolithic flakes (HW8) as well as four other prehistoric flint tools (HW5; HW10; HW13; and HW16) from within the Order Limits. There are extensive further finds of Neolithic date that have been recovered from elsewhere in the Study Area and are discussed in the Baseline Assessment, **Appendix 8.1, [REP4-032]**.

3.4.3. Findspots (MLS25883; MSY9396) are recorded within the Order Limits. Finds MLS25883 and 00563/01 are recorded as worked flints. A Bronze Age trackway and a range of Bronze Age finds have been recorded within the Study Area and are discussed in the Baseline Assessment, **Appendix 8.1, [REP4-032]**.

3.4.4. There are a series of Iron Age cropmarks and finds recorded within the Study Area, these are discussed in the Baseline Assessment, **Appendix 8.1, [REP4-032]**.

3.4.5. A series of undated cropmark enclosures (MLS18343) are recorded within the Order Limits, immediately to the east of Belton Grange. Targeted trial trenching was undertaken, in support of this Application, to determine the presence and survival of such features and to seek dating evidence, see the Trial Trenching Report **Appendix 8.4, [APP-094]**

3.4.6. The trial trenching indicated that the features identified as cropmarks existed as cut features, and

were below ground archaeological remains. Many of the features were considered to be post-medieval or modern in origin although some features are likely to be of earlier date. Dating evidence was only recovered from one ditch and this appeared to indicate an Iron Age or Romano-British presence within this area.

3.4.7. A series of cropmarks (PEG217) is visible within the Order Limits on a 2022 aerial photograph to the south-east of Grove House Farm and are interpreted as being of Iron Age or Romano-British date.

Romano-British (AD 43 - 410)

3.4.8. A possible Romano-British ditch and enclosure are recorded on Crowle Common (MLS20927) and a possible Fortlet and settlement at Sandtoft (MLS901; Van de Noort site HC1) and findspots (MLS17318-MLS17323; MLS19545; MLS19546; MLS19549; MLS20019; MLS20020; MLS21793; 01993/01 and 03111/01) have been identified within the Order Limits. HER records MLS20019 and MLS20020 are at the same locations as 01993/01 and 03111/01 and it seems probable that they are duplicate records for the same finds held by the two Local Authorities. The HER record MLS19549 is a duplicate of van de Noort and Ellis' findspot (C3).

3.4.9. Targeted trial trenching has been undertaken to support the DCO application in relation to the cropmarks west of Crowle (MLS20927) and the settlement (MLS901). The evaluation report detailing the findings of this work is included as **Appendix 8.4 [APP-094]**

3.4.10. Extensive further Romano-British activity has been identified from across the Study Area and is discussed in the Baseline Assessment, **Appendix 8.1 [REP4-032].**

Early medieval (410 AD - 1066) and Medieval (1066 - 1539)

3.4.11. No heritage assets of early medieval or medieval date are recorded within the Order Limits. A number of heritage assets and finds dating to these periods are recorded within the wider study area and discussed in the Baseline Assessment, **Appendix 8.1 [REP4-032].**

3.4.12. During the medieval period the landscape character of the Order Limits was rather different to the present-day as it was dominated by Thorne Moor, Hatfield Moor and Thorne Mere with settlement focused on the high ground at Thorne, Crowle and the Isle of Axholme. This situation changed during

the post-medieval period with artificial drainage, land reclamation and warping.

Post-medieval (1540 – 1901), and Modern (1901 – present)

3.4.13. There are a number of post-medieval heritage assets recorded that are located within the Order Limits. The New Idle Drain (MLS19586) relates to the 17th-century drainage of the marshes and the line of the Old River Don (MLS9488) also relates to these activities. Sections of the Stainforth and Keadby Canal (MLS9485) and the former Barnsley to Barnetby Railway (MLS8828) pass through the Order Limits, although none of these will be impacted by the Scheme.

3.4.14. The sites of several farms have also been identified within or surrounded by the Order Limits. These include the site of the 19th-century Medge Hall Farm (MLS25262); the site of the 19th-century Lover's Ground Farmstead (MLS25265); an unnamed farmstead (MLS25555); the 19th-century Plains House Farm (MLS25552); Hains Farm (MLS25280); the site of the 19th-century Boarding House Farm (MLS25281) and Belton Grange (MLS25556.)

3.4.15. Further heritage assets within the Order Limits have been identified from historic cartographic sources. A possible duck decoy pond (PEG200) is shown on the 1894 OS map centred on NGR 473274 412482. A cottage called 'New Zealand' (PEG201, Area A) was located at NGR 473227 412244, and these are no longer extant.

3.4.16. Peat extraction continued across the Study Area through the 19th and 20th centuries. The British Peat Moss Litter Company was formed in 1896 and had works at Moorends, Medge Hall, Hatfield Moors, Crowle Moors. The peat works transported the cut turves by means of light railways at Medge Hall, Hatfield and Crowle and by means of a canal at Moorends. short sections of some of the peat extraction tramways (PEG210 and PEG211) have been identified by the geophysical survey.

3.4.17. The site of a series of post-medieval barns (MLS25555) within Order Limits, that lie to the west of Belton Grange Farm, is shown on historic maps and, having been previously demolished, their remains are visible as an area of disturbance on the LiDAR data.

3.4.18. A pond (PEG215) was recorded to the west of Belton Grange Farm as a D-Shaped feature with a central island on the 1853 Ordnance Survey map. The pond has been subsequently filled in, but has shown as a

very strong response on the geophysical survey data.

3.4.19. The impact of Vermuyden's drainage scheme and later alterations define the landscape of much of the Order Limits and Study Area. The various elements of the drainage system are widely recorded within the HER data (MLS19586-MLS19588; MLS19591; MLS2491; MLS9488.) Of these records, the warping drain (MLS2491) lies within the Order Limits.

3.4.20. The former bomb store at RAF Sandtoft (MLS26024) and the bombing decoy (MLS18438) lie within part of the Order Limits. The presence of the bomb store indicates the potential for unexploded ordnance to be present in the general area.

3.4.21. A Second World War Lancaster bomber (ND639) crashed near Windsor Lane, Crowle on 5th April 1945. All seven of the Australian crew were killed, but only five of the bodies were recovered. The North Lincolnshire HER records the putative crash site as being within the portion of the Order Limits adjacent to Marsh Road, Crowle. However, the exact location is not certain, with a location to the west of Crook O Moor also suggested, and the presence of an air crash site within this portion of the Scheme cannot be discounted at this stage (MLS25882). Previous research (undertaken to support a wind farm proposal) to locate the crash site in the Marsh Road area was not successful.

3.4.22. A Halifax V bomber (EB149) crashed near Crowle on 19th March 1944. Another Halifax, (DK133), crashed near Crowle on 6th September 1944. The exact location of the crashes and the remains of the crew members are unrecorded.

3.4.23. Two further military aircraft crash sites (PEG206 and PEG207) are present within Order Limits. A Halifax (LK728) crashed adjacent to Moorends on 6th July 1944. The whole crew, composed of Free French Air Force, died in the crash having suffered severe damage during a bombing raid on Mimoyecques. All of the crews' remains were recovered. A Wellington X (MF556) crashed adjacent to Moorends on 6th July 1945. Neither of the pilots on board were injured.

3.4.24. A third military aircraft crash is also recorded in the vicinity of Thorne, its exact location is not recorded. This crash occurred on 19th September 1940 and involved a Magister (T9676) training aircraft. The pilot's remains were recovered.

3.4.25. The geophysical survey undertaken as part of the assessment of the Scheme has included the three known aircraft crash sites within the Order Limits

and has not identified the presence of any visible remains of either an impact crater, or metallic debris.

3.4.26. The aircraft crash sites noted above are protected by the Protection of Military Remains Act 1986 and recovery or interference with the sites would require a licence. Reference to military archives and geophysical survey may elucidate the locations of potential remains, and this aspect of the historic environment will require sensitive consideration due to the potential for human remains of relatively recent date.

3.4.27. An undated rectangular enclosure (PEG208) is visible on the LiDAR data. The feature is not mapped on any of the historic cartographic sources consulted and measures *c.* 100m east-west by 80m north-south.

3.4.28. An undated subcircular feature (PEG212) of uncertain origin, which measures c. 26m in diameter, has been identified by the geophysical survey within the Order Limits, to the north-east of Medge Hall. Nearby, a series of undated linear anomalies (PEG213), probable enclosure ditches, have also been recorded.

3.4.29. An undated, possible sub-rectangular enclosure (PEG214) was identified within the Order Limits adjacent to the North Idle Drain.

3.4.30. The corner of an undated probable rectilinear enclosure (PEG216) has been identified within the Order Limits, to the south of High Levels Bank, by the geophysical survey.

3.4.31. The geophysical survey has also identified a number of linear and curvilinear ditches (PEG226-PEG228; PEG234-PEG242), a possible pond (PEG229), a possible rectilinear enclosure (PEG230), two possible sub-circular enclosures (PEG232; PEG233) and a section of peat railway (PEG231) within the Order Limits.

4. Project Objectives

General Objectives

4.1. The objectives of the archaeological works are:

- To record where feasible the depth, extent, character and date of archaeological features or deposits encountered;
- To provide information about the archaeological resource within the area of the Order Limits (including its presence or absence, character, extent, date, integrity, state of preservation and quality);
- To create a record of the archaeological resource which will be impacted upon as a result of the proposed development;
- To interpret the archaeology of the Order Limits within its local, regional and national archaeological context; and,
- Undertake the above in accordance with the CIfA Code of Conduct[5] and relevant Standards and Guidance ~~(Appendix 2)~~.

[5] Chartered Institute for Archaeologists (CIfA), *Code of Conduct: professional ethics in archaeology* (revised edition, October 2022).

Specific Objectives

4.2. The specific objectives of the archaeological works are to:

- To determine whether any of the potential archaeological remains identified within the site will be impacted by the proposed development and, if so, the nature of these;
- To answer research agenda objectives set in the East Midlands Regional Research Framework;
- To answer research agenda objectives set in the South Yorkshire Regional Research Framework;
- To use any artefactual and dating evidence recovered to assist in answering specific research questions;
- To recover and record an appropriate sample of the range, quality and quantity of the artefacts and environmental evidence discovered; and,
- To provide a report on the results of the evaluation and mitigation, which will be placed in the public domain and held by the North Lincolnshire HER or South Yorkshire HER, and if appropriate publish the results in an academic paper or journal.

5. Archaeological Fieldwork Methodology

Scope of Archaeological Works

5.1. The scope of the post-consent fieldwork will be agreed with the Archaeological Advisors, however this will exclude the areas which have already been subject to pre-determination trial trenching.

5.2. Due to the presence of alluvial deposits over portions of the Order Limits a programme of post-consent targeted fieldwalking is proposed as there is a possibility of archaeological deposits being masked.[6]

5.3. The scope of post-consent trial trenching, outside the areas already trenched during the pre-determination works will be agreed with the Archaeological Advisors. As part of these works, it is proposed that trial trenches will be sited on areas within the Order Limits which have identified geophysical or cropmark anomalies, concentrations of artefactual material, and also potential for geoarchaeological deposits, including possible palaeochannels.

5.4. The scope of post-consent geoarchaeological works will require borehole surveys targeting palaeochannels and the course of the Old River Don. A detailed scope of this programme of works will be developed in consultation with Historic England Science Advisors and be agreed with the Archaeological Advisors.

5.5. Appropriate mitigation will be agreed with the Archaeological Advisor(s) on the basis of the further evaluative works, comprising the post-consent trial trenching, and geoarchaeological works.

5.6. Each separate phase of archaeological works will require a specific Written Scheme of Investigation (WSI) and/or Method Statement, outlining the scope of the works, detailed methodology, and key personnel. These will be

[6] The possibility of undertaking this pre-application was explored but found to not be possible due to the absence of ploughing (necessary for effective artefact recovery) over most of the Order Limits as the farmers' direct drill.

in accordance with this WSI, unless otherwise agreed with the Archaeological Advisors.

5.7. The scope of proposed mitigation will be set out in mitigation statements that will be informally agreed with the relevant Archaeological Officer prior to being incorporated into the appropriate WSI for formal approval.

5.8. The methodologies outlined below comprise a suite of evaluation techniques and a subsequent suite of mitigation measures which may be required. For clarity these have been divided into two sections within this strategy. The two suites of measures should be regarded as separate phases within a wider iterative approach to the management of the archaeological resource within the Order Limits.

5.9. All works will be informed by the information contained in the UXO Risk Assessment and methodologies prepared in accordance with the Risk Assessment to ensure the development of safe systems of work.

Contingency/Mitigation

5.10. Should the initial sample of trenching indicate that there is insufficient information to determine the extent and/or nature of archaeological remains within the Order Limits, then, contingency trenching may be employed. It is anticipated that any contingency trenching would be utilised on localised areas of the Order Limits, to answer specific questions, and would be limited to no more than a further 50% of the agreed initial post-consent trenching sample.

5.11. The results of the evaluative works, comprising the geophysical survey, geoarchaeological assessment, and programme of targeted trial trenching already undertaken will inform the scope and nature of further mitigation, which would also be dependent on the location of any remains and the nature of anticipated impacts associated with the Scheme in these areas.

5.12. The following mitigation options provide the range of possible responses to the results of the evaluation:

- No further works required;
- Micro-siting
- Archaeological watching brief;
- Strip, map and sample (SMS) or open area excavation;

- Preservation *in situ* using 'no dig' construction methods; and,

- Preservation *in situ* by excluding areas from the development.

5.13. Any such work will be agreed with the Consultant and Archaeological Advisors. Each additional programme of archaeological fieldwork will require a specific Written Scheme of Investigation (WSI) and/or Method Statement, outlining the scope of the works, aims and objectives, detailed methodology, and key personnel. These will be substantially in accordance with this Strategy, unless otherwise agreed with the Archaeological Advisors.

5.14. Methodologies for the various fieldwork elements are outlined below, while details in relation to preservation *in situ* are outlined in Section 8.

Roles and Responsibilities

5.15. The Archaeological Advisors responsible for regulating the works undertaken, on behalf of the Local Planning Authority are:

- [redacted], Historic Environment Officer for North Lincolnshire Council, [redacted]@northlincs.gov.uk

- [redacted], Archaeologist for South Yorkshire Archaeology Service, [redacted]@sheffield.gov.uk

5.16. The Archaeological Advisors will be notified of the following activities, within the timescales stated:

- the date of commencement of the archaeological fieldwork not less than two weeks in advance of commencement;

- the date of completion of the archaeological fieldwork within one week of completion.

Archaeological Consultant

5.17. The Archaeological Consultant responsible for project oversight, stakeholder communication and archaeological planning strategy is:

- [redacted], Associate Heritage Consultant, [redacted]@pegasusgroup.co.uk

Archaeological Contractor

5.18. The Archaeological Contractor will be appointed following confirmation of the scope of works, construction programme and project phasing, consistent with the provisions set out in Section 7 of this WSI. The appointed Archaeological Contractor will provide:

- a suitable risk assessment;
- a team of suitably qualified archaeologists; and
- progress reports (verbally or by email) to the Archaeological Consultant or Archaeological Advisor upon request.

Groundworks Methodology

5.19. The groundworks contractor will provide a detailed methodology for the groundworks and construction operations to the Archaeological Consultant and the Archaeological Contractor.

General Methodology

5.20. All archaeological works will be carried out in accordance with this Strategy and the task specific Written Scheme of Investigation (WSI) and any further instructions from the Archaeological Consultant. The design takes account of the guidance provided by the Chartered Institute for Archaeologists (CIfA) Code of Conduct, the standards and guidance for archaeological monitoring and recording, and other current and relevant good practice and standards and guidance. WSI's will also comply with appropriate regional and county standards and guidance.

5.21. Access to the Order Limits will be arranged by the Client. Access routes, welfare areas and any constraints to the archaeological works will be identified by the Client.

5.22. The Client will provide the Archaeological Contractor with available details for known overhead or buried services for the works. Due to the nature of the works undertaken in this phase, it is anticipated that the locations of the services will already be known, however, to be sure, the Archaeological Contractor will carry out scanning prior to the sampling of deposits.

5.23. The Archaeological Contractor shall ensure that the archaeological investigations are undertaken in an organised, efficient and professional manner.

5.24. The Archaeological Contractor shall have full regard for the safety of all personnel working on the Scheme, including measures to ensure

the safety of all, including any effects the archaeological works may have on neighbouring residences and the daily operations of the Client.

5.25. All paper and digital records made during the course of the fieldwork, and the treatment of artefacts and environmental remains, will be reviewed continuously and informed by specialist input. Record checking and collation will be completed at regular intervals, as appropriate, and before an area is considered complete, abandoned, backfilled or the site closed. Errors or omissions in recording discovered during post-excavation cannot be recovered. The Archaeological Contractor must make suitable allowance for this task.

Evaluation Methods

Fieldwalking Survey

5.26. Survey areas will be subdivided by a 100m grid in line with the National Grid and given a unique number. The grid will be located to an accuracy of ± 100mm of the specified location using survey-grade GPS or equivalent metric-survey equipment. The grids will be subdivided into 25 20m^2 stints, which will be lettered from A to Z omitting O.

5.27. The grid will be walked as parallel north-south transects, 10m apart, with 20m stints from one edge of the survey area to the other.

5.28. Finds will be recorded according to Field number, Grid number and Stint letter.

5.29. Each survey area will be walked systematically at a slow pace along the parallel transects and surface finds were collected from a corridor extending about 1m to each side of the transect line. The overall sample of the surface area is approximately 10%.

5.30. All artefacts pre-dating the 20th-century will be collected, including pottery and worked flint. Samples of brick, tile and slag will be collected, with any concentrations of these materials noted.

5.31. Modern materials, such as animal bone, plastics, glass, tractor parts, and any other hazardous material will not be collected. An exception to this policy will be for any modern material collected in areas of possible Second World War aircraft crashes which should be recovered to determine whether it relates to military remains.

Trial-Trench Evaluation

<u>Machine excavation</u>

5.32. All trenches will be excavated at the locations agreed with the Archaeological Advisor. Should any variations be required, these will be agreed with the Archaeological Consultant and Archaeological Advisors. The trenches shall be positioned to an accuracy of ± 100mm of the specified trench location using survey-grade GPS or equivalent metric-survey equipment.

5.33. Each trench location will be scanned using a Cable Avoidance Tool (CAT scanner) prior to and during the excavation (mechanical excavation and hand excavation) to ensure that no live services are present.

5.34. All topsoil stripping/groundworks within the trenching areas will be undertaken by a back acting tracked excavator fitted with a toothless grading/ditching bucket where possible, under the supervision of the site archaeologist to the depth of formation or to the surface of the archaeological deposits, whichever is reached first.

5.35. All trenches shall be excavated to the agreed dimensions, which are for the base of the trench. Where necessary to achieve this the trenches will be stepped to ensure stability and safety of the excavation and that safe access/egress and working conditions are maintained.

5.36. The arisings from the archaeological works will be stored adjacent to each trench (within a safe working distance) and will be separated according to material, (i.e. topsoil separated from subsoil, and made ground separated from subsoil).

5.37. The excavation will proceed under direct archaeological supervision, in broadly level spits of no more than 200mm, until either the top of the first archaeological horizon or undisturbed natural deposits are encountered. If appropriate, particular attention should be paid to achieving a clean and well-defined horizon with the machine. It is not anticipated that entire trenches will require hand cleaning. Under no circumstances should the machine be used to cut arbitrary trenches down to natural deposits. The surface achieved through machine excavation will be inspected for archaeological remains. Additional care will be taken with machining should potential 'domestic' enclosures or entrances between boundaries be identified. The mechanical excavator will not traverse any stripped areas.

5.38. If important concentrations of artefacts suggestive of significant activity are uncovered during machining, these should be left *in situ* in the first instance, and investigated using hand tools only, if

appropriate. Where warranted, machining should leave some topsoil or subsoil in place in order that a sample can be hand-excavated to establish the presence or absence of ephemeral features (such as wheel ruts or animal hoof prints etc.). If it is identified that the archaeological horizon has been truncated, then machine cleaning can be resumed.

5.39. Machined surfaces will be cleaned by hand sufficiently to allow acceptable definition of the archaeological remains. Following cleaning, all archaeological remains will be planned, to enable the selection of features and deposits for sample excavation by the Archaeological Contractor.

5.40. The trenches will be clearly demarcated and secured with appropriate barrier fencing (such as high visibility plastic barrier mesh fencing or Heras fencing), supplied by the Archaeological Contractor, to ensure that persons or plant cannot inadvertently traverse across the area of investigation whilst archaeological works are in progress. The fencing will be regularly inspected and maintained by the Archaeological Contractor until works in each area have been completed.

5.41. Trenches will not be backfilled without the approval of the Archaeological Consultant and the Archaeological Advisor. In exceptional circumstances, such as for health and safety purposes or ground stability reasons, some backfilling would be permitted. The trenches shall only be backfilled by machine under appropriate conditions and with direct archaeological supervision.

5.42. For each trench, overburden will be removed until either the natural substrate or the uppermost identifiable archaeological horizon is revealed.

5.43. Should archaeological deposits be revealed, mechanical excavation will cease in that area, enabling the supervising archaeologist to investigate those deposits.

5.44. Deposits will be appropriately marked-up so that their location is readily perceivable on the ground. They will then be left *in situ* pending sample excavation and recording, and, if practicable, the supervised excavation of non-archaeological overburden from the remainder of the trench may then resume.

Hand Excavation

5.45. Hand excavation will be initially targeted to provide information on the form, function and date of the archaeological features.

5.46. Machine-assisted excavation may be permissible if large deposits are encountered but only after consultation with the Archaeological Consultant and the Archaeological Advisor.

5.47. A sufficient sample of deposits/features will be investigated through hand excavation to record horizontal and vertical extent of the stratigraphic sequence to the level of undisturbed natural deposits.

5.48. The Archaeological Contractor will make provision for appropriate archaeological specialists to visit the Order Limits or attend meetings upon requested in order to advise on the excavation strategy.

5.49. As a minimum, the following sampling strategy will be employed:

- Non-structural Discrete features: A minimum of 50% of all pits, post-holes and other isolated discrete features will be excavated; unless it is proven that they are of modern origin. If large quarry pits (over 1.5m diameter) are encountered then the sample excavated should be sufficient to define the extent and maximum depth of the feature but should not be less than a 25% quadrant, unless agreed otherwise;

- Non-structural Linear features: A minimum of 20% of the feature (each sample section to be not less than 1m) will be excavated including intersections and terminals in order to determine its character, date, morphology and function. It may be necessary to excavate an additional sample section away from intersections with other features in order to recover an uncontaminated artefact assemblage;

- Where possible one section will be located and recorded adjacent to a trench edge to provide a complete soil profile. Sections through ditches etc. should be positioned perpendicular to the feature and oblique sections avoided wherever possible. If appropriate all intersections will be investigated to determine the relationships between features. All termini will be investigated;

- Structural remains will be sampled sufficiently to define the extent, form, stratigraphic complexity and depth of the component features and its associated deposits to achieve the

objectives of the evaluation. All intersections will be investigated to determine the relationship(s) between the component features. The remains of all upstanding walls will be hand-cleaned sufficient to understand their dimensions, extent, composition, sequence and relationships; and,

- Tree Throws: where features are identified as tree throws or hollows a sample will be hand excavated to confirm the interpretation. Features identified as 'natural' will be sample excavated to establish the presence or absence of deposited artefacts.

5.50. In the event of highly significant discoveries, the Archaeological Advisor will be informed and a site meeting between the Archaeological Contractor, the Archaeological Advisor and the Client will take place to determine an appropriate contingency sampling strategy. Any contingency sampling will be limited to no more than a further 50% of the initial sample.

Geoarchaeological Works

Introduction

5.51. The geoarchaeological works will include two elements – targeted post-consent trial trenching, which will be incorporated into a wider scheme of archaeological trenching and borehole survey. Where evidence of geoarchaeologically sensitive deposits and palaeochannels are identified in any of the trenches (including those targeting archaeological remains rather than geoarchaeological deposits) a geoarchaeologist will attend to excavate sondages into the deposits or palaeochannel within the footprint of the trench.

5.52. Where deposits are found to be of geoarchaeological interest (e.g., peat and organic-rich sediment), then, geoarchaeological boreholes may be drilled at targeted locations to recover deposits suitable for further assessment, if samples cannot be safely recovered from the sondages (following consultation with the Client, Historic England's Regional Science Advisor, and the Archaeological Advisors).

Monitoring of Trenches

5.53. Based on the nature of the Scheme, and location and depth of deposits with palaeoenvironmental potential, it is anticipated that geoarchaeological trenching will be

confined to a targeted sample of the Old River Don and the other potential palaeochannel(s) within the Order Limits.

5.54. If Quaternary deposits of geoarchaeological interest (e.g., buried soils, palaeochannel deposits etc.) are identified within a trench, a sondage will be excavated to the base of Holocene deposits; this will be identified by the exposure of underlying sedimentary deposits.

5.55. Geoarchaeological boreholes will be utilised as required following the initial geoarchaeological assessment of the trial trenches. The number and location of any boreholes will be agreed with Historic England's Regional Science Advisor, and the Archaeological Advisor before works commence.

Machine Excavation

5.56. Sondages will be excavated using a mechanical excavator with a toothless bucket. Machine excavation will be under the constant supervision and instruction of the geoarchaeological specialist, who will record and number the sequence of sedimentary units as excavation progresses following standard descriptive practices. The textural characteristics (grain-size, consolidation, colour, material and sedimentary structures) of sedimentary units will be recorded, and the shape and nature of their lithostratigraphic contacts (dip, conformity and overall geometry).

5.57. Machine excavation will proceed in level spits of no greater than 200mm, respecting the interface between sedimentary units, and will be performed until sedimentary deposits are encountered or failure, whichever is shallower.

5.58. Sondages will be entered at the maximum safe depth (usually *c*.1.20m but will be dependent on stability of deposits) to record the upper stratigraphy. After excavation has progressed beyond this depth, recording will typically take place without entering the sondage or trial pit.

5.59. Within trial trenches where both archaeology and deposits of interest are identified, the archaeology will take precedence over the sondages, with archaeological excavation proceeding prior to the excavation of geoarchaeological deposits. Sondages will be excavated following the complete excavation and recording of all relevant archaeology.

5.60. Where modern features are seen to truncate the geoarchaeological deposits, these may be removed, where practicable.

Geoarchaeological Boreholes

5.61. In addition to the boreholes possibly undertaken within trial trenching, additional boreholes will be undertaken in parts of the Order Limits where the deposits are determined to have geoarchaeological potential.

5.62. It is anticipated that borehole transects will be required in areas of the Order Limits with peat deposits and also in the area of Medge Hall where a Neolithic land surface was identified beneath the peat. Borehole transects will also be required across the line of the Old River Don.

5.63. The boreholes are likely to comprise a series of relatively shallow cores to define the depth and extent of geoarchaeological deposits and a smaller number of deeper cores that will be used to seek dating evidence that can be used to underpin the phasing of the deposit sequence including the reinterpretation of previously undertaken geoarchaeological works within the Order Limits.

Mitigation Measures

Archaeological Monitoring (Watching Brief)

5.64. The methodology for the archaeological monitoring will apply to all areas of watching brief agreed with the Archaeological Advisor (where appropriate).

Programme of Construction Works

5.65. Details of the construction programme details will be passed on to the Archaeological Advisor as soon as these are confirmed with the Principal Contractor.

General Methodology

5.66. All groundworks within the archaeological watching brief areas will be undertaken by a tracked excavator fitted with a toothless grading/ditching bucket, under the supervision of an appropriately qualified groundworker and monitored by an archaeologist to the depth of formation or to the surface of the archaeological deposits, whichever is reached first. If archaeological deposits are encountered, then machining will cease in that area to allow an archaeologist time to investigate the exposed deposits.

5.67. Archaeological features and deposits will be cleaned and excavated by hand, in accordance with the CIfA standard and guidance and in accepted national, regional, local and professional standards as set out in Appendix 3.

5.68. As a minimum:

- Non-structural Discrete features: A minimum of 50% of all pits, post-holes and other isolated discrete features will be excavated; unless it is proven that they are of modern origin. If large quarry pits (over 1.5m diameter) are encountered then the sample excavated should be sufficient to define the extent and maximum depth of the feature but should not be less thana 25% quadrant, unless agreed otherwise;

- Non-structural Linear features: A minimum of 20% of the feature will be excavated including intersections and terminals in order to determine its character, date, morphology and function. It may be necessary to excavate an additional sample section away from intersections with other features in order to recover an uncontaminated artifact assemblage;

- Structural remains and areas of significant and special activity: are to be the subject of 100% excavation. Where complex structures or activity areas are encountered additional detailed recording and specialist environmental sampling or scientific dating may be required; and

- Tree Throws: where features are identified as tree throws or hollows a sample will be hand excavated to confirm the interpretation.

5.69. If the above percentage excavation does not yield sufficient information to enable the form and function of archaeological deposits/features to be determined, full excavation of such features/deposits may be required (within the groundworks area). Spoil will be examined for the recovery of artefacts.

SMS Excavation

5.70. It is anticipated that areas of Proposed Development will only be subject to SMS excavation if highly significant archaeological remains are encountered during the evaluative works and an alternative form of mitigation (e.g. *in situ* preservation via 'no dig' construction methods) is not viable. Any such areas will be agreed between the Archaeological Consultant and Archaeological Advisors.

<u>Machine Excavation & Pre-excavation Plan</u>

5.71. All stripping/groundworks within the areas will be undertaken by a tracked excavator fitted with a toothless grading/ditching bucket where possible, under the supervision of the site archaeologist to the depth of formation or to the surface of the archaeological deposits, whichever is reached first.

5.72. The machined surface will be cleaned by hand. Following cleaning, all archaeological deposits and remains will be pre-excavation planned.

5.73. The machined surface will be examined regularly in order to identify any features revealed by weathering. Any such features will then be added to the site plan.

5.74. After the machine strip, each excavation area will be subject to a rapid metal detector scan, in order to identify and recover metal artefacts within the upper topsoil. The exposed surface and spoil heaps will also be rapidly scanned by metal detector. Scanning will only be undertaken by an experienced operator, if necessary, under direct archaeological supervision. Unless of relevance to the project objectives all recent artefacts (later 19th century and modern) will be noted but will not be retained. An archaeological surveyor will record all the locations where an artefact has been detected and recorded. All finds should be surveyed-in and retrieved along with any associated markers by the close of each working day (the procedure for the reporting of artefacts defined as Treasure is set out in detail below).

5.75. A site grid will be established using electronic survey equipment and tied into the National Grid.

5.76. The exposed surface will be planned at a scale of 1:50 or 1:100, as is appropriate to the complexity and extent of any archaeological features and deposits revealed. Planning will be carried out immediately following completion of machine excavation and any hand cleaning required.

5.77. In addition to any electronic data capture sufficient levels will be taken across the stripped areas to allow possible future topographic modelling of the investigated area.

Hand excavation

5.78. Once the identified areas have been stripped, discussions will take place with the Archaeological Advisors to discuss the way forward, and the extent of any hand excavations.

5.79. All archaeological features and deposits within the detailed excavation areas will be hand excavated and recorded in an archaeologically controlled and stratigraphic manner in order to compile a site archive and to fulfil the aims and objectives of the project.

5.80. Following stripping and planning the detail of the excavation will be agreed with the Archaeological Advisors.

5.81. Machine-assisted excavation may be permissible if large deposits are encountered but only after consultation with the Archaeological Advisors and Archaeological Consultant.

5.82. If necessary, the Archaeological Contractor will make provision for appropriate archaeological specialists to visit the site, or attend meetings upon request, in order to advise on the excavation strategy. Any variations to the excavation strategy will be agreed with the Archaeological Advisors and Archaeological Consultant.

5.83. As a guide, and unless it is agreed otherwise, the following excavation strategy will be employed:

- Non-structural Discrete features: A minimum of 50% of all pits, post-holes and other isolated discrete features will be excavated; unless it is proven that they are of modern origin. If large quarry pits (over 1.5m diameter) are encountered then the sample excavated should be sufficient to define the extent and maximum depth of the feature but should not be less than a 25% quadrant, unless agreed otherwise;

- Non-structural Linear features: A minimum of 25% of the feature will be excavated including intersections and terminals in order to determine its character, date, morphology and function. It may be necessary to excavate an additional sample section away from intersections with other features in order to recover an uncontaminated artefact assemblage;

- Structural remains and areas of significant and special activity: are to be the subject of 100% excavation. Where complex structures or activity areas are encountered additional detailed recording and specialist environmental sampling or scientific dating may be required; and

- Tree Throws: where features are identified as tree throws or hollows a sample will be hand excavated to confirm the interpretation.

- Human remains: during detailed excavation human remains will be 100% excavated, recorded in situ and subsequently lifted, labelled and packed to the standard established by Excavation and post-excavation treatment of cremated and inhumed human remains (McKinley and Roberts 1993). Environmental samples will be recovered from grave fills and specific locations such as the abdominal cavity for specialist analysis. Site inspection will be made by a recognised specialist who will advise on the excavation and sampling strategy. The location of each grave, inhumation/cremation and any associated grave goods will be recorded three dimensionally using metric survey-grade equipment (or its equivalent). The exhumation of any human remains will only be undertaken in accordance with current UK legislation, published guidance and best practice.

- Furrows: each archaeological feature identified as a potential furrow will be subject to limited hand investigation and recorded in order to confirm the interpretation. Features where this interpretation is unclear should be treated as non-structural linear features and investigated in accordance with the strategy set out above.

- General: features demonstrated as being the earliest or latest in the stratigraphic sequence will be considered for full (100%) hand excavation. Selection will be based on whether they may belong to a transitional period.

5.84. In the event of highly significant discoveries, the Archaeological Advisors will be informed and a site meeting between the Archaeological Contractor, the Archaeological Advisors and the Client will take place to determine an appropriate mitigation strategy.

<u>Reinstatement</u>

5.85. The arisings from the archaeological works will be stored adjacent to each area (within a safe working distance) and will be separated according to material, (i.e. made ground separated from subsoil), unless an alternative storage location is provided. Unless agreed otherwise, upon completion of the works, the

material will be returned in the appropriate order, with the ground tracked back in following backfilling.

Archaeological Recording

5.86. All archaeological features will be recorded in accordance with industry best practice, including the appropriate CIfA standards and guidance. Other relevant standard and guidance documentation is provided in Appendix 3.

5.87. As a minimum, archaeological site recording will include the following:

- a pro-forma context record for each stratigraphic unit revealed;
- a record of any areas identified as being devoid of archaeological remains and of any features investigated and confirmed to be of natural origin;
- plans, either DGPS-recorded, or hand-drawn at a scale of 1:100, and depicting:
    - the extent of the area of archaeological works, tied into the Ordnance Survey National Grid and located on a 1:2,500 scale plan;
    - the extent of all stratigraphic units revealed; and
    - appropriate detail identified within stratigraphic units;
- Hand-drawn plans and sections of features/deposits will be undertaken and at an appropriate scale (usually 1:20 for plans and 1:10 for sections). All scale drawings will include spot heights relative to the Ordnance Datum in metres, correct to two decimal places.
- A photographic record comprising recognised industry-quality digital SLR photographs;
- numerical indices of all context records, drawings, photographs, samples and small finds, checked and cross-referenced as necessary; and
- a diary record of the progress of the archaeological work, including details of liaison and monitoring meetings, site visits, and a record of staff on site.

5.88. All of the above records will form part of the eventual project archive, to be deposited with a suitable repository upon completion of the project (see Section 6, below).

Artefact Recovery

5.89. Archaeological artefacts will be collected, stored and processed in accordance with accepted national and regional methodologies, guidelines and standards (Appendix 3).

5.90. 'Bulk finds' will be collected and recorded by context. 'Small finds' will be recorded three-dimensionally using DGPS or equivalent survey equipment.

5.91. All artefacts (apart from modern finds) will be collected and retained, unless otherwise agreed in advance with the Archaeological Advisor.

5.92. Where required, artefacts will be stabilised, conserved and stored in accordance with the guidance of the United Kingdom Institute of Conservators (UKIC). If necessary, a conservator will visit the site to undertake 'first aid' conservation treatment of finds prior to their removal from site.

Environmental Sampling and Dating

5.93. If deposits with the potential to yield palaeo-environmental or micro-artefactual data are identified, a proportionate programme of bulk sampling will be undertaken in liaison with the Archaeological Advisor, and in accordance with the following general protocol:

- samples will be recovered from cleaned surfaces, using clean tools and placed in clean containers;
- samples will be appropriately recorded and labelled, and a register of all samples recovered will be maintained; and
- the samples will be stored safely in a sufficiently secure location prior to their delivery to the appropriate specialist.

5.94. Should any palaeo-environmental deposits of particular interest be revealed, the Historic England Regional Science Advisors (RSA) will be contacted, and their advice sought in respect of an appropriate further sampling strategy. The RSA for the East Midlands and Yorkshire are:

- Matthew Nicholas (East Midlands), 07342 062544
- Andy Hammon (Yorkshire), 07747 486255

5.95. Any sampling would be undertaken in accordance with Historic England's guidance.[7]

5.96. Where appropriate, and when this may contribute to research aims, the sampling strategy should identify a process for determining when scientific dating be considered, and the form most appropriate to the site (e.g. radiocarbon dating, luminescence dating etc.). The sampling strategy should be refined at suitable stages throughout the fieldwork, utilising appropriate specialists, where necessary, including the Historic England Regional Science Advisor.

Human Remains

5.97. Should human remains be encountered, they will initially be left *in situ*, suitably covered and secured, in compliance with industry best practice. The Archaeological Contractor will notify Pegasus Group, who will then inform both the Client and the Archaeological Advisor.

5.98. Following this initial consultation, the removal of human remains will only take place in accordance with a Ministry of Justice exhumation license, the appropriate Environmental Health regulations and the Burial Act 1857.

5.99. The Archaeological Contractor will be responsible for applying for an exhumation license from the Ministry of Justice, and, once in receipt, for ensuring that the provisions of that license are complied with.

Treasure Act

5.100. Should any treasure be discovered, it will be removed, if possible, to a secure location. Where removal is not practical on the same working day as the discovery, suitable security measures will be put in place in order to protect the find from damage, loss and theft.

5.101. Upon discovery of any treasure, the Archaeological Contractor will immediately inform Pegasus Group, the local coroner, and the Portable Antiquities Finds Liaison Officers for South & West Yorkshire and Northern Lincolnshire.

[7] Historic England, 2011, *Environment Archaeology: A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-Excavation* 2nd Ed.

5.102. In accordance with the provisions of the Treasure Act 1996 Code of Practice (2nd Rev.), the Senior Coroners for Doncaster and North Lincolnshire are:

- [redacted], hmc.doncaster@doncaster.gov.uk
- [redacted], lincscoroner@lincolnshire.gov.uk

5.103. The Archaeological Contractor will ensure that the Treasure Act regulations are complied with and that all relevant parties are kept informed. A list of finds which have been collected and which fall under the Treasure Act will be included within the Fieldwork Report.

5.104. For all relevant artefacts, the Portable Antiquities Scheme Finds Liaison Officer for Northern Lincolnshire and South & West Yorkshire are:

- [redacted], [redacted]@northlincs.gov.uk
- [redacted] [redacted]@wyjs.org.uk

6. Reporting and Publication

General

6.1. The Archaeological Contractor will provide verbal/email progress reports to the Archaeological Consultant or the Client on request. Upon completion of each phase of fieldwork, an interim statement will be prepared and submitted to the Archaeological Consultant. This will include:

- A brief summary of the results;
- A draft or sketch plan of locations archaeological investigations, and archaeological features (if identified); and
- A quantification of the primary archive including finds and samples.

6.2. Immediately after completion of each phase of fieldwork the finds and samples will be processed (cleaned and marked) as appropriate.

6.3. If the results of the fieldwork are not significant then, immediately after the completion of the works, the Archaeological Contractor will prepare a full illustrated report, to a level of detail commensurate with the findings of the archaeological works.

6.4. Should the results of the works be significant then post-excavation assessment, analysis, and publication will need to be considered. The post-excavation and reporting programme will be undertaken in accordance with the procedures set out in Historic England's *MoRPHE* guidelines.[8] The following sequence of post-excavation tasks will be undertaken:

- Prepare a brief summary of results immediately following completion of fieldwork;
- preparation of the site archive;
- preparation of a post-excavation assessment;
- if the post-excavation assessment recommends that analysis is required,

[8] Historic England, *Management of Research Projects in the Historic Environment: The MoRPHE Project Managers' Guide* (Swindon, 2015).

then an updated project design for this will be included, naming specialists, which will be submitted to the Archaeological Advisor for agreement;

- post-excavation analysis consistent with the assessment (if required);
- preparation of a grey-literature report (if required);
- preparation of a publication (if required); and
- deposition of finds and archive with the receiving museum.

Timescales

6.5. Timescales for reporting will be dependent upon the presence/extent of archaeological remains, and the phase/scope of archaeological works. Timescales for reporting for each phase of works will be agreed with the Archaeological Consultant ahead of commencement of fieldwork.

6.6. If a substantial delay is anticipated (e.g. pending the completion of specialist input reports or radiocarbon dating), then an interim report may be required. The Archaeological Consultant and the Archaeological Advisors must be informed of this, and a revised date for the production of the full report will be agreed between the Archaeological Advisors and the Archaeological Contractor.

Finds Processing and Material Archive

6.7. All finds will be processed promptly following completion of the fieldwork. Retained finds will be washed, marked, bagged and recorded within a database (e.g. MS Access or GIS DBASE), and will include the location from which they were recovered in National Grid and Ordnance Datum, accurate to two decimal places.

6.8. The finds assemblage will be treated, labelled and stored in accordance with the appropriate Historic England guidance documentation, all relevant local authority guidelines and the UKIC guidelines.

6.9. The Archaeological Contractor will ensure that the processing of all assemblages recovered is also undertaken in accordance with the requirements of the agreed repository.

6.10. Where appropriate, each category of find, or each material type, will be examined by a qualified archaeologist/specialist, with the

results of that analysis incorporated into the fieldwork report.

Reporting

6.11. The full report will include the following, unless deemed unnecessary:

- A non-technical summary;
- Site location plan;
- Archaeological and historical background;
- Methodology;
- Aims and Objectives;
- Results (including full description, assessment of condition, quality and significance of features/deposits);
- Summary of archive, storage and curation;
- General and detailed plans illustrating the location(s) of the investigations, accurately plotted on an OS base map to an appropriate scale;
- If human remains are encountered the report will include a statement that addresses the future retention of the material;
- An appendix containing specialist artefact, dating and environmental sampling reports;
- An appendix illustrating specific finds and general working shots or portraits of specific features or structures as appropriate;
- A list of all finds that fall within the scope of the Treasure Act and associated legislation;
- A stratigraphic matrix for each area (as appropriate);
- Assessment /conclusion and a statement of potential with recommendations for further work and analysis identifying specific research questions;
- A statement of the significance of the results in their local, regional and national context cross referenced to relevant research agenda;
- The current and proposed arrangements for long-term conservation and archive

storage (including details of the recipient museum);

- Detailed plans and sections illustrating archaeological features (at an appropriate and recognised scale), including a long section of each trench that contains archaeological remains. Plans should include spot heights and OS grid coordinates derived from the OS datum;

- Colour photographic plates illustrating the site setting, work in progress and archaeological discoveries; and

- A cross-referenced index of the project archive.

6.12. The report will be submitted to the Archaeological Consultant or the Client as a draft. In finalising the report, the comments of the Archaeological Consultant or the Client should be considered. A draft will subsequently be issued to the Archaeological Advisor for review in order to agree any recommendations for further work and to confirm it fulfils planning requirements.

6.13. One digital and one bound (if required) version of the report (along with illustrations) will be produced within one week of the receipt of the Archaeological Consultant's or the Client's comments on the draft report. Digital text should be in Microsoft Word format, and illustrations in AutoCAD and/or PDF format.

6.14. On finalisation of the report, in addition to copies requested by the Client, digital copies of the reports will be provided to the Archaeological Advisors, with the intention that one copy will be deposited for public reference with the relevant HER. A digital copy will also be provided in an agreed format (ISO 10005-1 PDF/A format), on the understanding that it will be made available in the future via a web-based HER database.

6.15. The Archaeological Contractor will complete an Online Access to the Index of Archaeological Investigations (OASIS) form regarding the archaeological work, which will include a digital version of the report. The full report will include the OASIS ID number.

<u>Post-Excavation Analysis and Publication</u>

6.16. There will be a contingency for post-excavation analysis and publication if required. This requirement will be dependent upon the results of the fieldwork and recommendations

of the post-excavation assessment and will be agreed with the Archaeological Advisors.

6.17. If the results of the archaeological fieldwork are considered sufficiently significant as to warrant wider public dissemination, then a suitable format and forum will be identified in agreement with the Archaeological Advisors. As a minimum, this might include a short article in a local peer-reviewed journal.

7. Archive Composition & Deposition

Archaeological Fieldwork

Composition

7.1. The compilation of an integrated and ordered project archive will be undertaken by the Archaeological Contractor in accordance with the provisions of the following:

- Historic England's MoRPHE guidance;[9]
- the requirements of the local repository; and
- this WSI.

7.2. The archive will include:

- All recovered artefacts and significant samples (material archive);
- all written, drawn, photographic and other records generated during the fieldwork (site archive); and
- all digital data, including that which is digital in origin,[10] and any digital copies made of the primary site records, including images.[11]

7.3. Once prepared, the Archaeological Contractor will store the archive in a suitable and secure location prior to its deposition.

Deposition

7.4. The hardcopy archive will be deposited for long-term curation with a recognised, accredited or trusted repository. In depositing the archive, the Archaeological Contractor will:

- contact the relevant Archives at an early stage, in order to obtain their

[9] Historic England, *Management of Research Projects in the Historic Environment*.

[10] Including email correspondence, images, survey data and other site data collected through digital/electronic means.

[11] Including relevant drawn and written data created during fieldwork (context sheets, sample sheets, finds records, drawings/plans/sections/sketches, all indices, earthworks surveys, and any notes that contribute to the interpretation and understanding of the site and its recording) and any other relevant records/data produced during subsequent analysis etc.

acceptance, in principle, of the archive for long-term storage and curation;

- be responsible for identifying and adhering to any specific policies or requirements provided by the repository in respect of archive preparation and submission;
- contact the agreed repository to obtain an Accession Code or other reference number, which will be stated within the fieldwork report(s);
- obtain a written agreement from the landowner to transfer title to all items in the material archive to the repository (on their behalf);[12] and
- grant license to copyright for documentary material (both physical and digital) to the Client, for transfer to the relevant repository.

7.5. In the event that the fieldwork does not reveal deposits of archaeological interest and produces little or no artefactual material, there would be no requirement for an archive to be deposited. In these circumstances, the Archaeological Contractor should obtain written agreement from the receiving museum that this is the case.

Deposition of Digital Archive

7.6. Spatial data for trench locations will be submitted to the HER in a suitable GIS format (e.g. shapefiles).

7.7. A digital management plan should be created by the Archaeological Contractor in accordance with standards and recommendations contained within regional and national guidance.

7.8. Currently, the only suitable repository for digital archives is the Archaeology Data Service (ADS). The digital archive must therefore be compiled in accordance with the ADS standards and requirements.[13]

7.9. Should the archive repository confirm that they do not require the hardcopy archive, then once the digital archive has been transferred

[12] If ownership of any or all of the artefactual material is to be retained by the landowner, then provision must be made for its time-limited retention by the Archaeological Contractor to facilitate its full analysis and specialist recording.

[13] Archaeology Data Service, http://archaeologydataservice.ac.uk/advice/guidelinesForDepositors.xhtml;http://archaeologydataservice.ac.uk/advice/selectionGuidance.xhtml.

to the ADS, the Archaeological Contractor may retain, disperse or dispose of the primary hardcopy items. This may entail physical destruction of the primary record.

Notification

7.10. The Archaeological Contractor shall promptly notify the Archaeological Advisor when the archive of records and finds has been deposited with the appropriate repository.

Copyright

7.11. The Archaeological Contractor will assign copyright in all reports, documentation and images generated during the project to the Client. The Archaeological Contractor will retain the right to be identified as the author/originator of the material. It is the responsibility of the Archaeological Contractor to obtain such rights from any sub-contracted specialists.

7.12. The Archaeological Contractor may apply in writing to use or disseminate any part of the project archive, documentation or images, and such permission will not be unreasonably withheld.

7.13. Both South Yorkshire Archaeology Service and North Lincolnshire Council's Archaeology and HER teams will be granted a license to use the report, document and images generated by the project to fulfil their functions, which may include copying by third parties.

7.14. The Client will own all Intellectual Property Rights to photographs and documentation prepared for this project by or on behalf of the Archaeological Contractor.

8. General Provisions

Archaeological Fieldwork

8.1. The Archaeological Contractor will undertake the works in accordance with this Strategy and any subsequent written variations agreed with the Archaeological Advisor. No variation from, or changes to, this Strategy will be undertaken except by prior agreement with the Archaeological Consultant or the Client, in consultation with the Archaeological Advisor where appropriate.

Personnel

8.2. All archaeological personnel involved in this project will be suitably qualified and experienced professionals. Prior to commencement of each phase of fieldwork, the Archaeological Contractor will provide the Archaeological Consultant, on behalf of the Client, with the following staff details:

- Project Manager CVs;
- Project Officer and / or Site Supervisor CVs; and
- a list of other archaeological personnel proposed for deployment on the project, including summary detail of professional field experience and any relevant specialisms.

8.3. The Archaeological Contractor's Project Manager will be a Member of the Chartered Institute for Archaeologists (MCIfA) or will be able to demonstrate an equivalent level of experience and competency in managing archaeological field projects of a comparable nature and scale.

8.4. Specialist staff, including those engaged specifically for post-excavation assessment, analysis and report-writing, will be suitably qualified and, where appropriate, will be supervised by personnel with additional relevant expertise.

8.5. Specialist staff will be available at 48 hours' notice, for the duration of the fieldwork, in order to provide specialist advice.

Access Arrangements and Welfare

8.6. Site access is to be restricted at all times, with only authorised personnel admitted.

8.7. The Archaeological Contractor will liaise with the Client and, if applicable, the Principal Groundworks Contractor in order to agree:

- site access and egress;
- the location(s) of compound facilities, and any relevant operational detail relating to those facilities; and
- a spoil management strategy.

8.8. The Archaeological Contractor will be responsible for ensuring that all personnel are made aware of, and adhere to, any site arrangements and regulations defined by the Client and, if applicable, the Principal Contractor.

8.9. Should a Principal Contractor have been appointed, they will be responsible for providing site welfare facilities of a suitable size and standard, and for the maintenance of those facilities. Should no Principal Contractor have been appointed at the point of commencement of each phase of fieldwork, provision and maintenance of suitable welfare facilities will be the responsibility of the Archaeological Contractor.

Health and Safety

8.10. Health and Safety will, at all times, take priority over work detail and archaeological issues. Prior to commencement of each phase of fieldwork, the Archaeological Contractor will:

- provide the Archaeological Consultant and the Client with details of their public liability and professional indemnity insurance;
- submit a copy of their Health and Safety policy, compiled in accordance with national guidelines and all relevant Health and Safety legislation, to the Archaeological Consultant and the Client;
- complete a Risk Assessment detailing any project-specific Health and Safety considerations, measures and requirements, and submit a copy to the Archaeological Consultant, the Client and, where applicable, the Principal Contractor.

8.11. Prior to preparation of the site-specific Risk Assessment by the Archaeological Contractor, either the Client or the Principal Contractor will provide the Archaeological Contractor with any and all information obtained in relation to

existing services within the site. This will include the most accurate information available on the nature and locations of those known services.

8.12. During the course of the archaeological works, the Archaeological Contractor will ensure:

- the adherence of all on-site archaeological personnel engaged on the project to the Principal Contractor's Safety Standards, if applicable, and CDM Health and Safety rules;
- the implementation and management of the Archaeological Contractor's own Health and Safety Policies;
- dissemination of the site-specific Risk Assessment to all on-site archaeological personnel engaged on the project, ensuring that it is reviewed and the content acknowledged, prior to the admission of any archaeological personnel to any working areas and prior to their undertaking any other work-related tasks;
- that the identity of any on-site First Aiders is made known to all archaeological personnel engaged on the project;
- that the location(s) of First Aid boxes and, if relevant, fire extinguishers is made known to all archaeological personnel engaged on the project; and
- that all archaeological personnel engaged on the project are in possession of, and wear at all times (as required), the necessary Personal Protective Equipment (PPE), which, as a minimum, should include a hard hat, a hi-vis vest, safety gloves and site-appropriate footwear.[14]

8.13. Where required, all archaeological personnel engaged on the project will attend a Health and Safety Induction coordinated by either the Principal Contractor or the Archaeological Contractor.

8.14. The Archaeological Contractor will leave the site in a tidy and professional condition and will remove all materials that it has introduced onto the site, unless specifically agreed

[14] Any additional PPE, such as safety glasses/goggles, ear defenders, dust-masks etc., should be issued and worn, as required.

otherwise with the Client and/or Principal Contractor.

Confidentiality and Publicity

8.15. All communications regarding the archaeological works will be directed to the Archaeological Consultant and the Client.

8.16. The Archaeological Contractor will not comment upon any aspect(s) of the project to members of the public or any other parties, unless specifically authorised to do so by the Archaeological Consultant or the Client.

8.17. The Archaeological Contractor will not disseminate images or information associated with the project, either for information or publicity purposes, without the prior written consent of the Archaeological Consultant or the Client.

8.18. On completion of the fieldwork, and in association with the construction of the Proposed Development, it is anticipated that information boards would be erected to provide information with regard to areas of significant archaeological remains, providing wider context in relation to the surrounding heritage and landscape. The content and locations of any such boards would be agreed with the Archaeological Advisor.

9. Preservation *in situ*

9.1. Should highly significant archaeological remains be encountered during the evaluative works across the Order Limits, then preservation *in situ* may be considered as a mitigation measure. Depending on the nature, location and extent of any such remains, different approaches may be taken, comprising:

- Avoidance; and,
- No Dig Construction methods.

9.2. In each case, the scope, and appropriate approach would be agreed with the Archaeological Advisors, and an Archaeological Mitigation Statement would be prepared to ensure the preservation of archaeological remains throughout the construction, operation, and decommissioning of the Scheme in such areas.

9.3. The extent of areas of preservation in situ, and a detailed methodology for this to be achieved, will be agreed with the relevant Archaeological Officer prior to being incorporated into the appropriate WSI for formal approval.

9.4. In both the construction and decommissioning phases, temporary fencing will be installed around the identified areas of archaeological significance, to ensure that vehicular access is controlled. Temporary fencing around areas of avoidance is anticipated throughout the operation of the Proposed Development, unless otherwise agreed with the Archaeological Advisor.

9.5. With regard to areas of 'no dig' construction, it is anticipated that all access tracks will be surface-laid, and that cables will be suspended. Support frames for photovoltaic modules would be installed directly onto ballast foundations which would sit above ground level, as outlined in **Figure 2.6 – Indicative Layouts and Cross Section Plans REP4-037 / REP4-038]**. No heavy vehicles will track across areas for the construction of these panels and no work will be undertaken in wet weather conditions to avoid rutting.

9.6. The details of the location and restrictions to works in archaeologically sensitive areas excluded through design or preserved in situ by design will be included in other relevant Outline plans. This is included in the **Outline Landscape Ecological Management Plan [REP4-055] to**

ensure that no harmful groundworks undertaken for ecological mitigation occur within areas where archaeological remains are preserved in situ.

9.7. An area of preservation in situ has been identified in relation the Romano-British settlement (MLS901) that lies immediately to the north of the M180 in Land Parcel E. The location and extent of the preservation in situ area is shown on Figure 1 in Appendix 2 of this document.

Appendix 1: Standards and Guidance

- Archaeological Resources in Cultural Heritage: A European Standard (ARCHES) (2013) *The Standard and Guide to Best Practice for Archaeological Archiving in Europe, EAC Guidelines 1* http://archaeologydataservice.ac.uk/arches/Wiki.jsp?page=Main
- Archaeology Data Service / Digital Antiquity. *Guides to Good Practice*. Accessible online at http://guides.archaeologydataservice.ac.uk/Guides to Good Practice
- British Association for Biological Anthropology and Osteoarchaeology (BABAO) and IFA (2004) *Guidelines to the Standards for Recording Human Remains*
- Brickley, M. and McKinley, J.I. (2004) *Guidelines to the Standards for Recording Human Remains. IFA Paper No 7*, Institute of Field Archaeologists: Reading
- Brown, A. and Perrin, K. (2000) *A Model for the Description of Archaeological Archives* English Heritage Centre for Archaeology/ Institute of Field Archaeologists: Reading
- Brown, Duncan H. (2011) *Archaeological Archives: A guide to best practice in creation, compilation, transfer and curation*
- Chartered Institute for Archaeologists (CIfA) (2020) *Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives* CIfA: Reading
- CIfA (2020) *Standard and guidance for the collection, documentation, conservation and research of archaeological materials* CIfA: Reading
- CIfA (2020) *Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment* CIfA: Reading
- CIfA (2021) *Regulations for professional conduct* CIfA: Reading

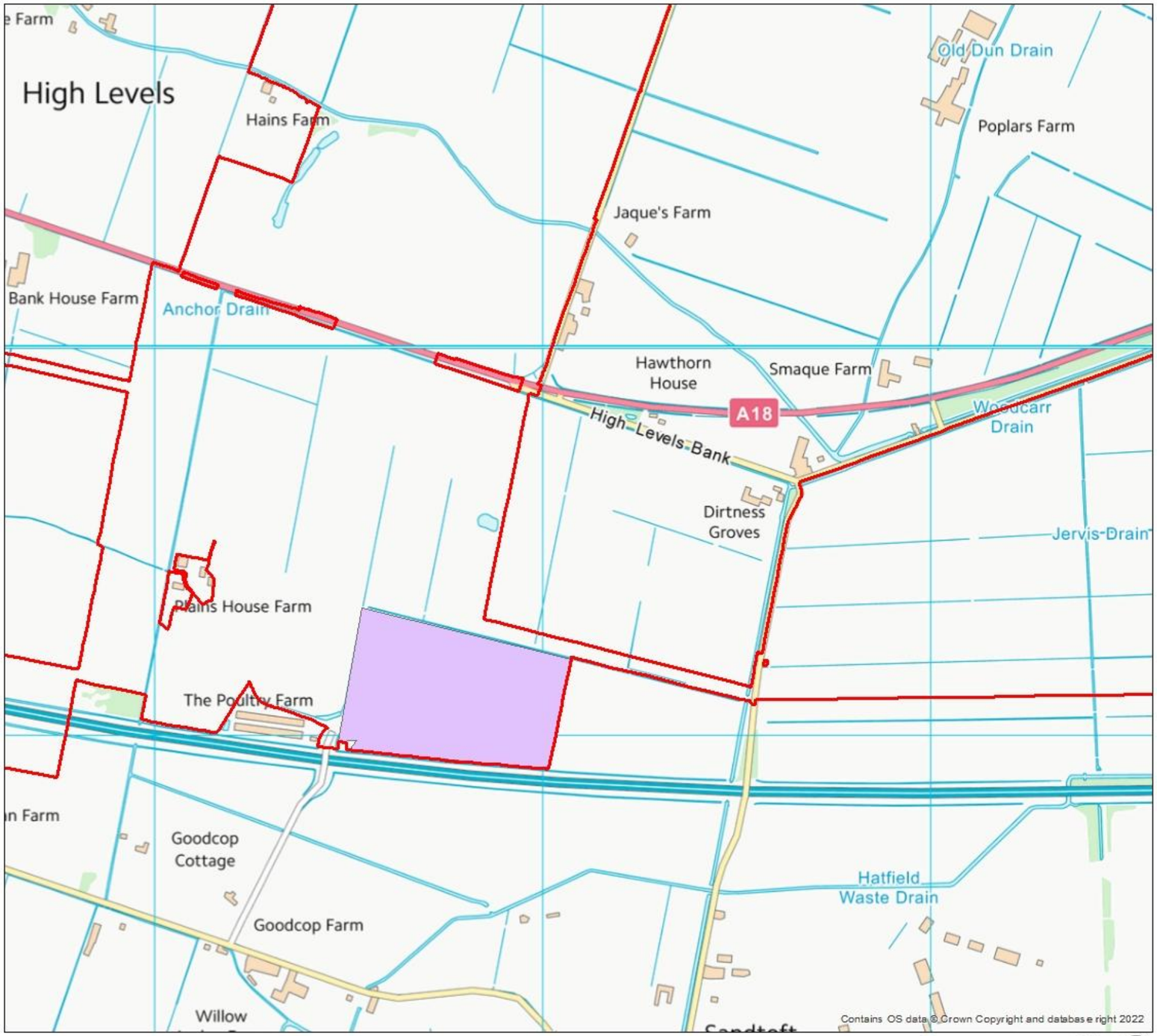
- ClfA (2022) *Code of Conduct: professional ethics in archaeology* ClfA: Reading
- ClfA (2022) *Toolkit for selecting archaeological archives* ClfA: Reading
- ClfA (2023) *Standard for archaeological excavation* ClfA: Reading
- ClfA (2023) *Standard for archaeological field evaluation* ClfA: Reading
- ClfA (2023) *Standard for archaeological monitoring and recording* ClfA: Reading
- Cooper, N. [ed] (2006) *The Archaeology of the East Midlands An Archaeological Resource Assessment and Research Agenda*
- Cowton, J. (1997) *Spectrum. The UK Museums Documentation Standard Museums* Documentation Association.
- Eiteljorg, H., Fernie, K., Huggett, J. and Robinson, D. (2002) *CAD: A guide to good practice* Archaeology Data Service: York
- English Heritage (1995) *A Strategy for the Care and Investigation of Finds* English Heritage Ancient Monuments Laboratory: London
- English Heritage (2008) *Investigative Conservation. Guidelines on how the detailed examination of artefacts from archaeological sites can shed light on their manufacture and use* English Heritage: Swindon
- Handley, M. (1999) *Microfilming Archaeological Archives. IFA Technical Paper 2* Institute of Field Archaeologists: Reading
- Historic England (2004) *Human Bones from Archaeological Sites. Guidelines for producing assessment documents and analytical reports* Historic England: Swindon

- Historic England (2008) *MoRPHE Project Planning Note 3 Archaeological Excavations* Historic England: Swindon
- Historic England (2011) *Environmental Archaeology: A guide to the theory and practice of methods, from sampling and recovery to post-excavation* Historic England: Swindon
- Historic England (2015) *Management of Research Projects in the Historic Environment: The MoRPHE Project Managers' Guide* Historic England: Swindon
- Historic England (2015) *Metric Survey Specifications for Cultural Heritage* Historic England: Swindon
- Historic England (2016) *Human Remains* Historic England: Swindon
- Historic England (2018) *Our Portable Past: English Heritage statement of good practice for portable antiquities/surface collected material in the context of field archaeology and survey programmes (including the use of metal detectors)* Historic England: Swindon
- Mays, S., Brickley, M. and Dodwell, N. (2002) *Human Bones from Archaeological Sites. Guidelines for Producing Assessment Documents and Analytical Reports. Centre for Archaeology Guidelines* English Heritage: Portsmouth
- McKinley, J. I. and Roberts, C. (1993) *Excavation and Post-excavation Treatment of Cremated and Inhumed Human Remains. Institute of Field Archaeologists Technical Paper No. 13*
- Museums Documentation Association (MDM) and Society of Museum Archaeologists (SMA) (2000) *Standards in Action: Working with Archaeology Guidelines. Museum Documentation Centre and Society of Museum Archaeologists* MDM and SDM
- Museums and Galleries Commission (MGC) (1992) *Standards in the Museum Care of Archaeological Collections* MGC

- Owen, J. (1995) *Towards an Accessible Archaeological Archive. The Transfer of archaeological archives to museums: guidelines for use in England, Northern Ireland, Scotland and Wales* Society of Museum Archaeologists
- Society of Museum Archaeologists (1993) *Selection, Retention and Dispersal of Archaeological Collections Guidelines for Use in England, Wales and Northern Ireland* SMA
- SYAS (2021) *South Yorkshire Historic Environment Research Framework*
- Turnpenny, M. (2012) *Archaeological Archive Deposition Policy for Museums in Yorkshire and the Humber*

Appendix 2: Figures

Following ongoing consultation with stakeholders ~~an~~ additional figure~~s~~ (~~Figure 4) has~~have ~~-~~been included to ~~identify~~ clarify areas of archaeological and geoarchaeological sensitivity



KEY

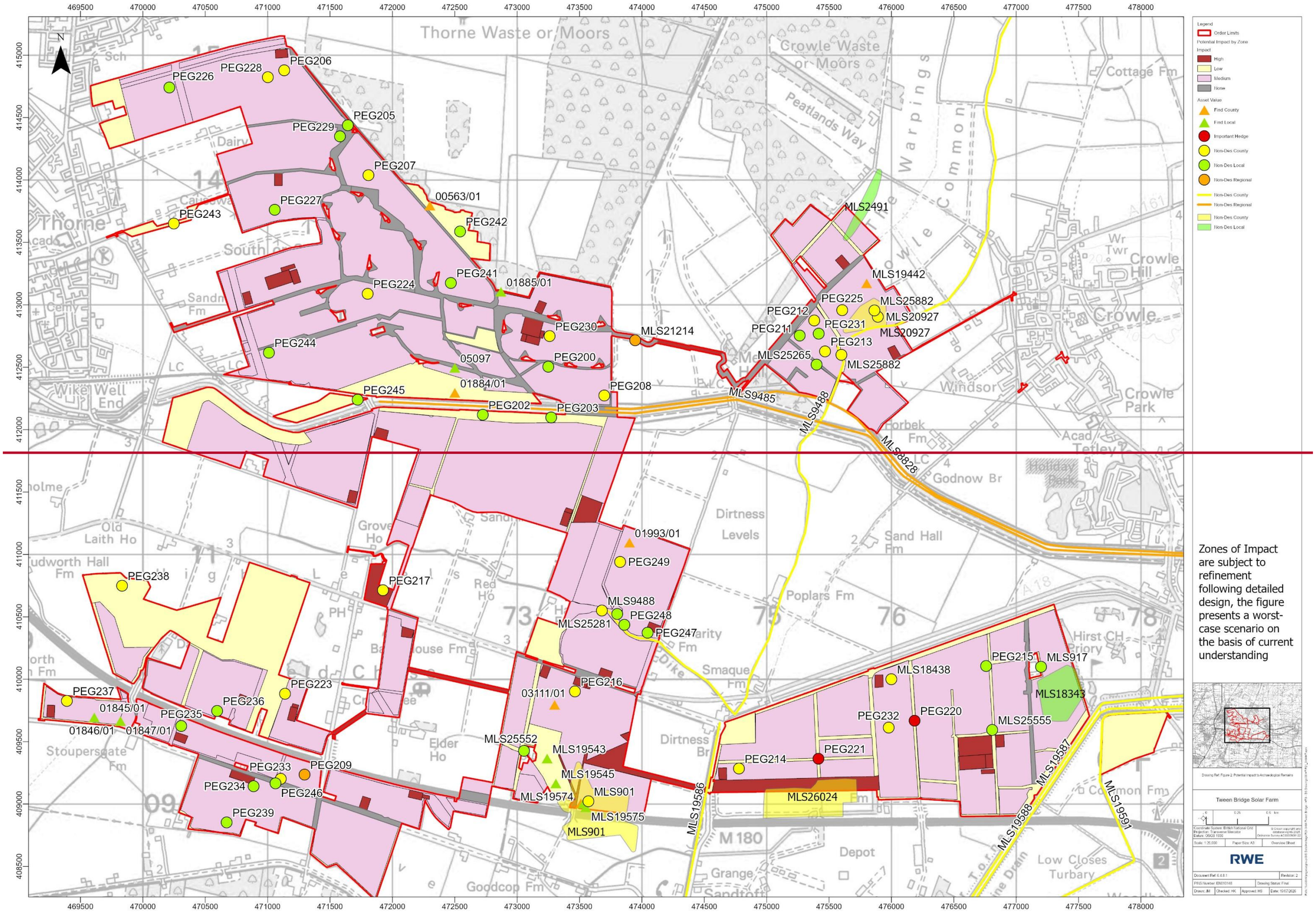
- Order_Limits
- Preservation in situ area

Figure 1: Proposed Area of Preservation in Situ

Tween Bridge DCO

Client:	RWE		
DRWG No:	**P21-3484HT**	Sheet No: -	REV: -
Drawn by:	JM	Approved by:	-
Date:	09/07/2025		
Scale:	1:10,000 @ A3		

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Zones of Impact are subject to refinement following detailed design, the figure presents a worst-case scenario on the basis of current understanding

Drawing Ref: Figure 2: Potential Impact to Archaeological Remains

Tween Bridge Solar Farm

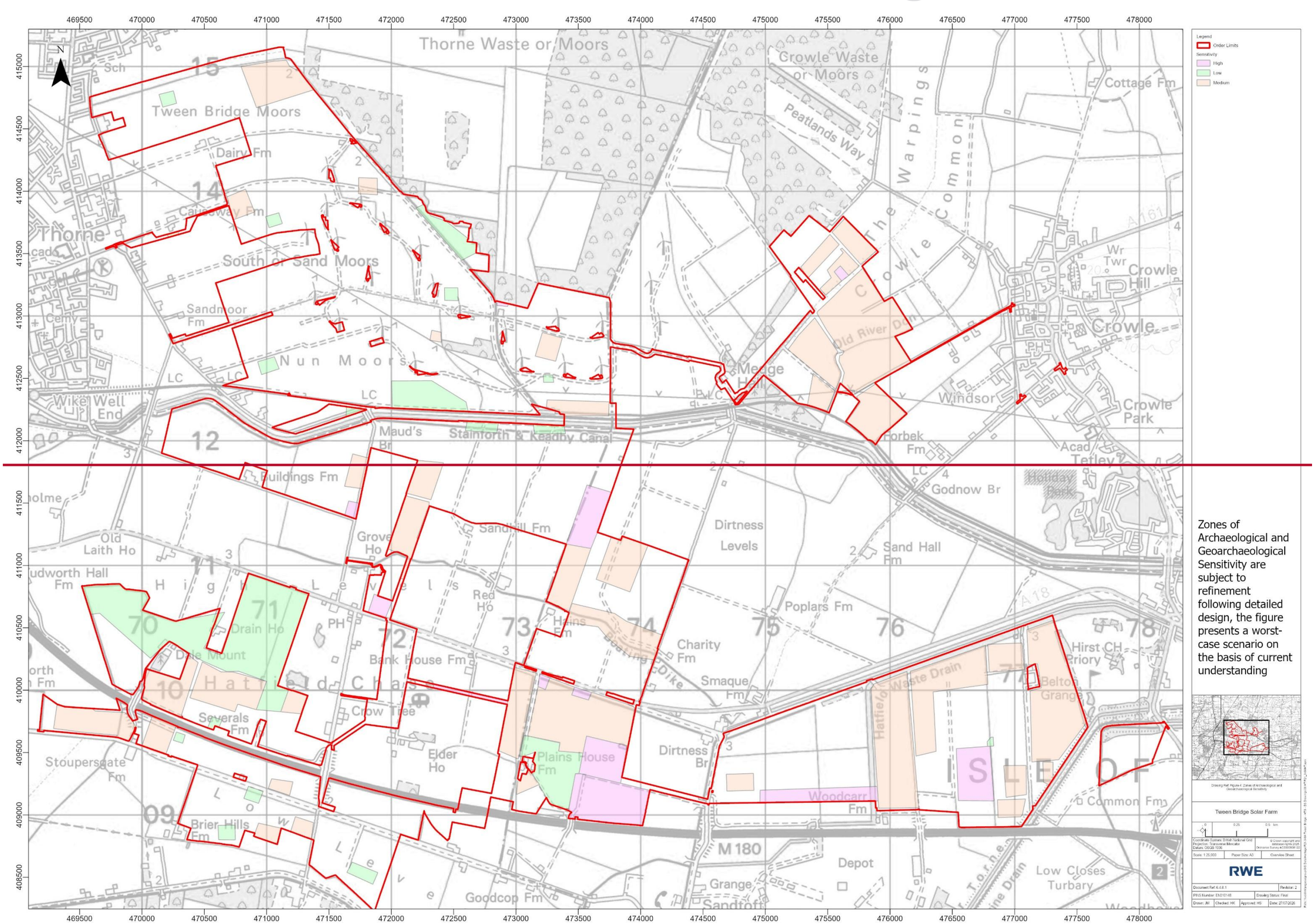
RWE



Zones of Impact are subject to refinement following detailed design, the figure presents a worst-case scenario on the basis of current understanding

Tween Bridge Solar Farm

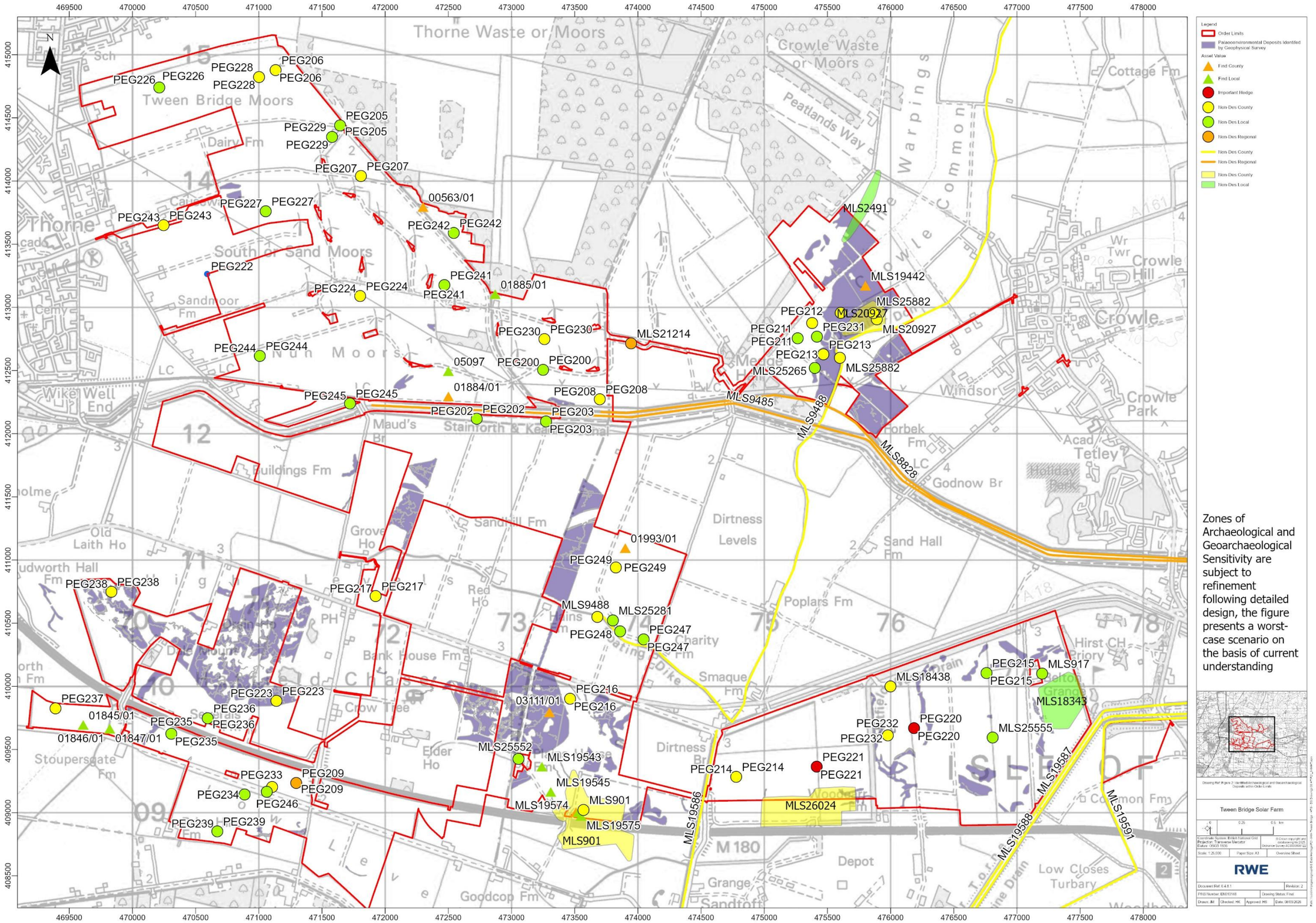
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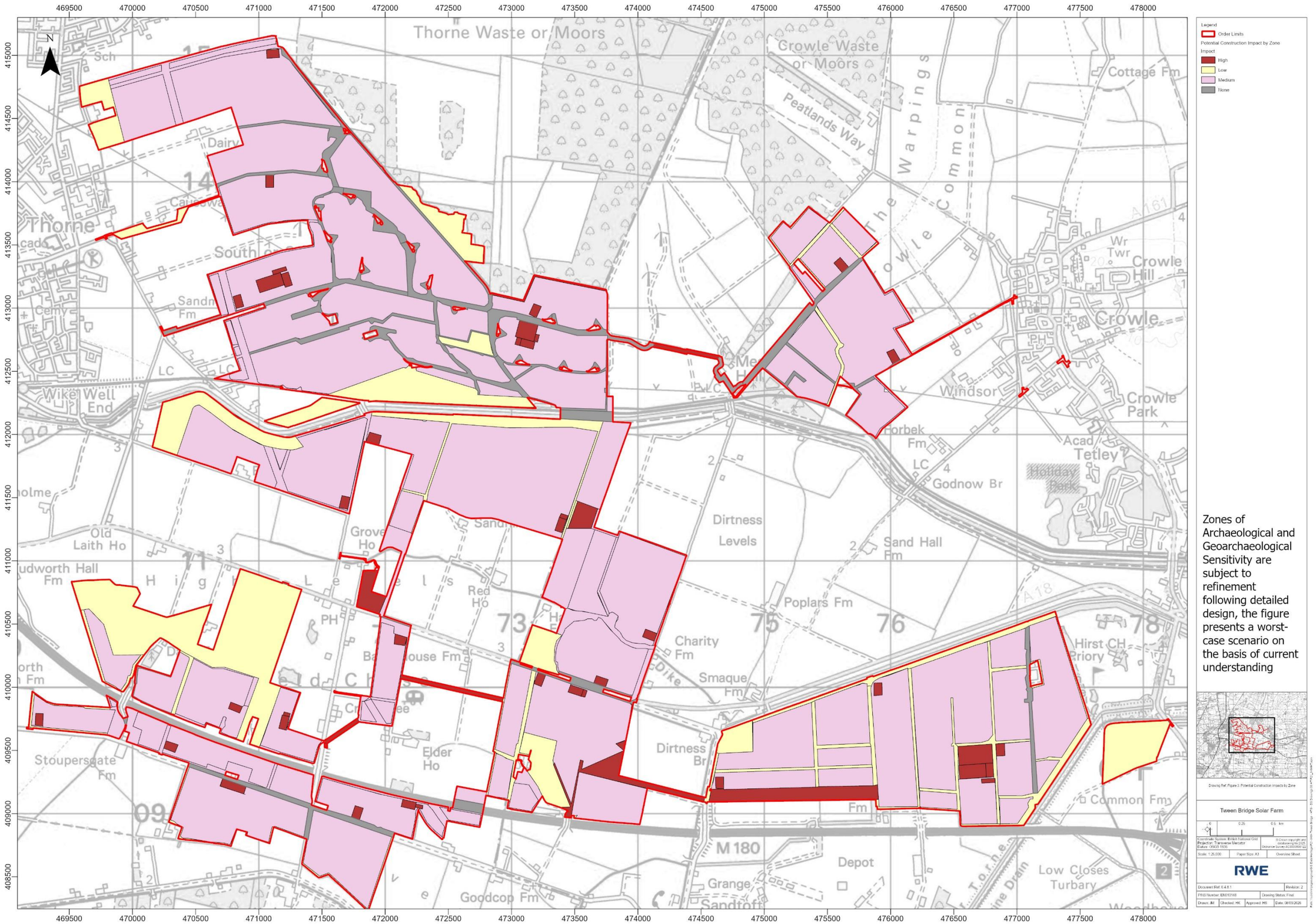
Zones of Archaeological and Geoarchaeological Sensitivity are subject to refinement following detailed design, the figure presents a worst-case scenario on the basis of current understanding

Tween Bridge Solar Farm

RWE



Zones of Archaeological and Geoarchaeological Sensitivity are subject to refinement following detailed design, the figure presents a worst-case scenario on the basis of current understanding

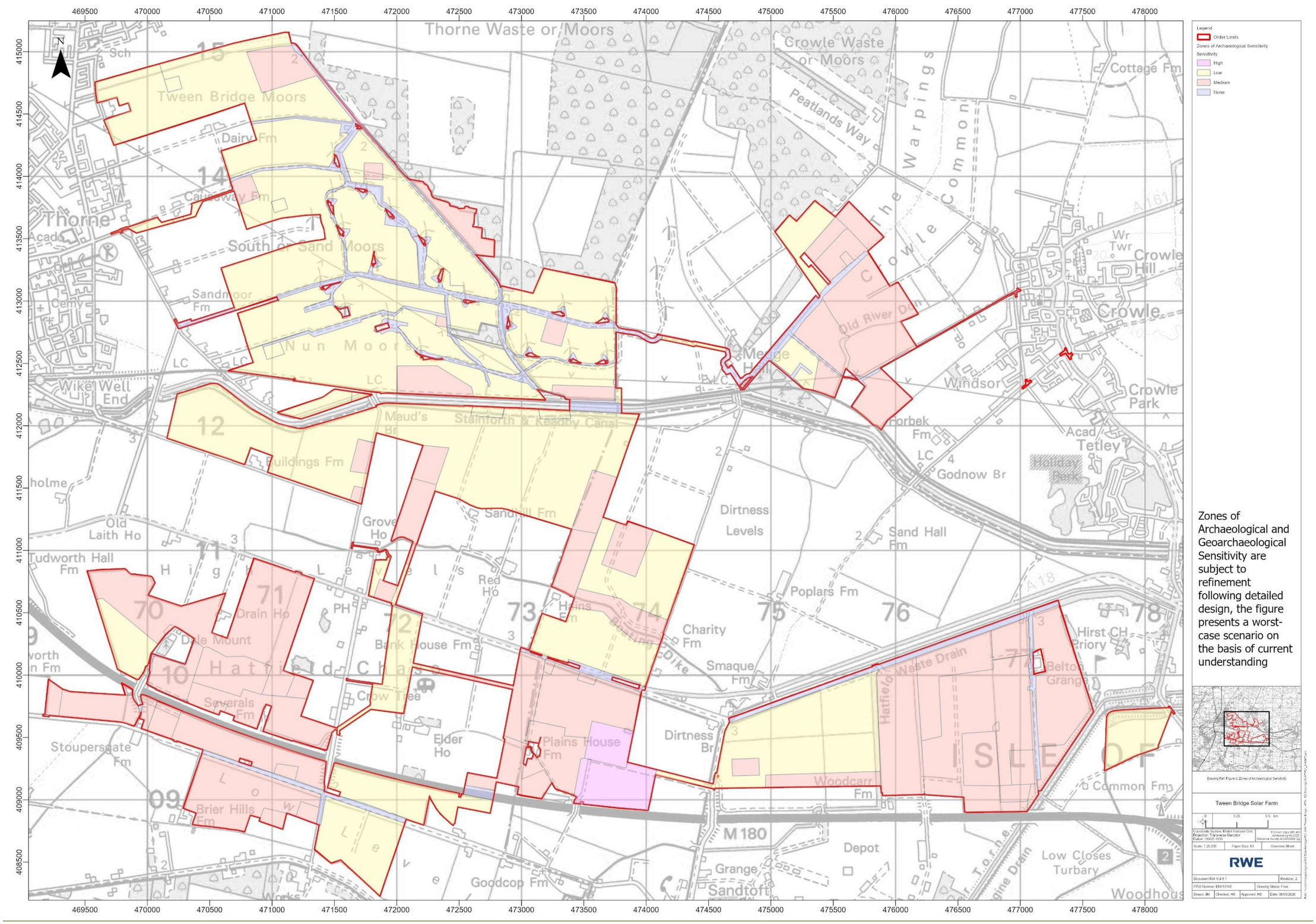


Zones of Archaeological and Geoarchaeological Sensitivity are subject to refinement following detailed design, the figure presents a worst-case scenario on the basis of current understanding

Drawing Ref: Figure 3: Potential Construction Impacts by Zone

Tween Bridge Solar Farm

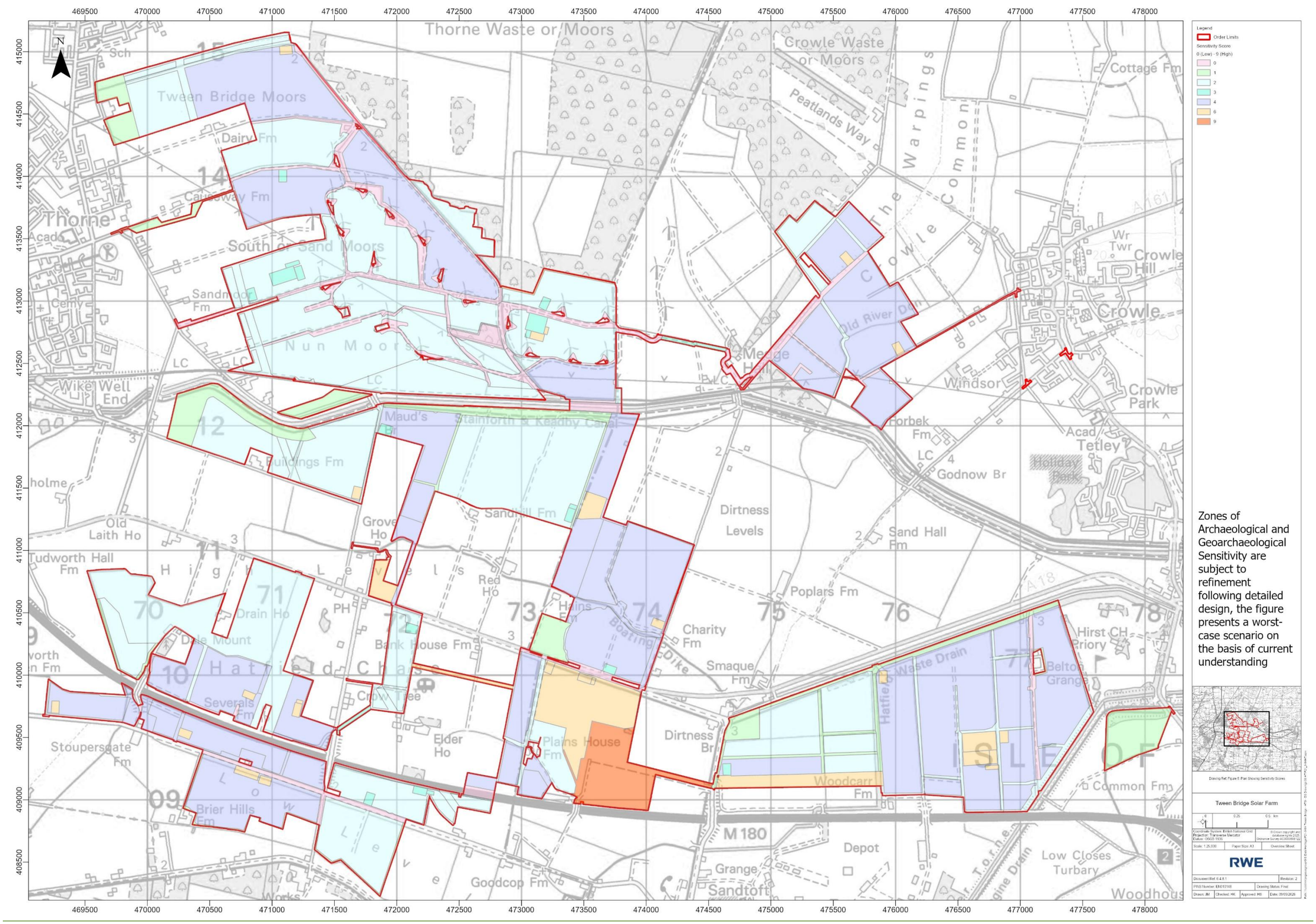
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Zones of Archaeological and Geoarchaeological Sensitivity are subject to refinement following detailed design, the figure presents a worst-case scenario on the basis of current understanding

Tween Bridge Solar Farm

RWE



Zones of Archaeological and Geoarchaeological Sensitivity are subject to refinement following detailed design, the figure presents a worst-case scenario on the basis of current understanding

Drawing Ref: Figure 6: Plan Showing Sensitivity Scores

Tween Bridge Solar Farm

RWE

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