

# **THURROCK FLEXIBLE GENERATION PLANT**

**DCO EXAMINATION REF: EN010092**

## **PROCEDURAL DEADLINE C – FURTHER INFORMATION**

**Environmental Statement: Historic Environment Updated Baseline and  
Significance of Effect Report**

JAC 26701  
Thurrock Flexible Generation Plant  
DCO Examination Ref: EN010092  
December 2020  
NGR: 529556 220000  
Procedural Deadline C – Further  
Information

**Quality Management**

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### EXECUTIVE SUMMARY

This supplemental report has been prepared in response to the directions and relevant representations made following submission of the Development Consent Order (DCO) application for the Thurrock Flexible Generation Plant ('the Proposed Development', ref: EN010092) and additional consultation, comprising:

- The Planning Inspectorate (PINS): letter dated 2nd November 2020
- Historic England: Relevant Representation, ref. PL00490033, received August 2020
- Historic England: letter, dated 12th November 2020
- Historic England: letter, dated 4th December 2020
- Thurrock Council: supplement to Relevant Representation, received 04 September 2020.

This report is intended to supplement the technical baseline reports and Environmental Statement (ES) chapter submitted as part of the DCO application. It addresses the comments raised in the documents noted above and those resulting from additional consultation with various stakeholders since the DCO application was made.

The comments raised through the Relevant Representations have been considered, and a further Historic Environment Settings Assessment has been undertaken (RPS November 2020), which is presented as a stand-alone report. The additional Settings Assessment has also cross-referenced the relevant photomontages and wireframes already produced as part of the Landscape and Visual Impact Assessment (LVIA) submitted as part of the DCO application, for ease of reference (ES Ch.6, LVIA, Figs. 3.4-3.29; Figs. 4.1-4.31).

The scope of this report is limited to addressing the Relevant Representations; updating the baseline characterisation of the Proposed Development site following further field survey work; and combining the results of the additional field survey, and the further Settings Assessment, to produce an updated assessment of significant effects.

In terms of relevant designated heritage assets, there are no World Heritage Sites, Scheduled Monuments, Registered Parks and Gardens of Historic Interest, Registered Historic Battlefields or Historic Wreck sites identified within the Order Limits.

The assessment has taken a proportionate approach, as per national planning policy and guidance, and applied professional judgement, using accepted definitions and terminology for assessing the significance of effect of the proposed development on the historic environment resource.

The effects of the proposed development on the known and potential historic environment resource are summarised in tabular form in Appendix 1.

There are identified effects arising from the proposed development and the majority of these are minor adverse, and therefore not significant in EIA terms. However, there is considered to be a moderate adverse effect on the West Tilbury Conservation Area as a result of the change within its setting, which is deemed significant in EIA terms.

This supplemental report should be read in conjunction with the existing baseline assessment and supersedes the conclusions of ES Chapter 7: Historic Environment.

## Contents

<b>EXECUTIVE SUMMARY</b> .....	<b>I</b>
<b>1 INTRODUCTION AND SCOPE OF STUDY</b> .....	<b>1</b>
Introduction .....	1
Scope .....	1
Response to Relevant Representations, Procedural Decision Letter and updated consultation .....	1
Existing field surveys, baseline information and mitigation .....	4
Reasoning for taking a non-intrusive pre-determination approach .....	6
Compliance .....	7
<b>2 LEGISLATION, PLANNING POLICY AND GUIDANCE</b> .....	<b>8</b>
Legislation relevant to the historic environment .....	9
National Planning Policy .....	9
National Planning Practice Guidance .....	10
Conservation Principles, Policies and Guidance (English Heritage, April 2008) .....	11
Overview: Historic Environment Good Practice Advice in Planning .....	11
GPA1: The Historic Environment in Local Plans (March 2015) .....	11
GPA2: Managing Significance in Decision-Taking in the Historic Environment (March 2015) .....	12
GPA3: The Setting of Heritage Assets (Second Edition; December 2017) .....	12
HEAN 12 Statements of Heritage Significance: Analysing Significance in Heritage Assets (October 2019) .....	13
Local Planning Policy .....	13
Guidance on Landscape and Visual Impact Assessment (GLVIA3) .....	13
<b>3 ASSESSMENT METHODOLOGY</b> .....	<b>14</b>
Introduction .....	14
Assessment methodology .....	16
<b>4 UPDATED HISTORIC ENVIRONMENT BASELINE CHARACTERISATION</b> .....	<b>20</b>
Geophysical Survey .....	20
LTC available information .....	21
Updated baseline character .....	23
Site Conditions .....	23
Proposed Development .....	23
Updated Significance of Effect Assessment .....	24
<b>5 SUMMARY AND CONCLUSIONS</b> .....	<b>25</b>
<b>6 SOURCES CONSULTED</b> .....	<b>26</b>
<b>7 APPENDIX 1 GEOPHYSICAL SURVEY (PRELIMINARY RESULTS)</b> .....	<b>28</b>
<b>8 APPENDIX 2</b> .....	<b>29</b>

## Figures

- Figure 1 ZTV and designated heritage assets
- Figure 2 Viewpoint locations

## Plates

Plate 1 Additional geophysical survey areas in relation and former Zone A results .....	20
Plate 2 LTC trial trench areas in relation to Thurrock FGP site (shown as hatched) – reproduced by permission of Highways England.....	22
Plate 3 PQDM report results, showing areas of potential and tranches of boreholes – reproduced by permission of Highways England.....	22

## 1 INTRODUCTION AND SCOPE OF STUDY

### Introduction

- 1.1 Thurrock Power, a subsidiary of Statera Energy, is proposing to develop a flexible electricity generation and storage plant comprising a gas-fired electricity generating station and a battery storage facility on land to the north of Tilbury substation, Thurrock, Essex, located at NGR 566194, 176616.
- 1.2 This supplemental report has been prepared in response to the directions by the Examining Authority (ExA) and Relevant Representations made following the Development Consent Order (DCO) submission for the Thurrock Flexible Generation Plant ('the Proposed Development', ref: EN010092), comprising:
- PINS (as ExA): letter dated 2nd November 2020
  - Historic England: Relevant Representation, ref. PL00490033, 18th August 2020
  - Historic England: letter, dated 12th November 2020
  - Historic England: letter, dated 4th December 2020
  - Thurrock Council: supplement to Relevant Representation, received 04 September 2020.
- 1.3 This report is intended to supplement the Environmental Statement (ES) submitted as part of the DCO application, in order to address the comments raised in the documents noted above, and those resulting from additional consultation with various stakeholders since the DCO application was made.
- 1.4 In a Procedural Decision letter dated 2<sup>nd</sup> November 2020 the ExA stated that having considered the various written submissions made at Procedural Deadline A, the oral submissions made at the Preliminary Meeting (Part 1) and the further written submissions received on or before Procedural Deadline B, he considered it necessary for the Environmental Statement (ES) to contain further information.
- 1.5 As such, the ExA took the procedural decision to postpone Part 2 of the Preliminary Meeting until Tuesday 16<sup>th</sup> February 2021 to allow the information to be prepared, submitted, consulted upon and for Interested Parties (IPs) to be given an opportunity to comment.
- 1.6 In relation to Cultural Heritage, the ExA stated that *"The application site lies within a highly sensitive area for the historic environment. I note the advice of Historic England (HE) and agree that the application has been submitted without a fully detailed assessment of the historic environment; specific concerns are raised about baseline characterisation and the lack of surveys undertaken. As such, in order to adequately understand the likely significant effects of the Proposed Development on the historic environment, I consider that further field surveys are required to fully characterise the baseline. The baseline should include the setting of heritage assets and below ground archaeological deposits, including their extent and significance, and following this, the assessment of significant effects should be updated to assess against the new baseline conditions."*
- 1.7 A Procedural Deadline C of Monday 14<sup>th</sup> December 2020 was proposed, requesting that the Applicant provide the ExA with the further information set out above together with details of any consultation undertaken, responses received and how they have been taken into account.
- 1.8 A summary of the key points raised during consultation since the submission of the DCO are presented in **Table 1.1**.

Table 1-1: Key points raised during relevant representations and consultation to date

Date	Consultee and type of response	Points raised	How and where addressed
2 <sup>nd</sup> November 2020	PINS – Procedural decision	<p>Further field surveys are required to fully characterise the baseline.</p> <p>The baseline should include the setting of heritage assets and below ground archaeological deposits, including their extent and significance, and following this, the assessment of significant effects should be updated to assess against the new baseline conditions.</p>	<p>Additional non-intrusive archaeological site investigation work has been undertaken, following consultation with Historic England, to further enhance the known archaeological and historic baseline context of the site. The results of this work are summarised in this report</p> <p>Newly-released field survey data generated by the LTC project has also been reviewed and incorporated into the updated baseline where relevant to the Thurrock Flexible Generation Plant Order Limits.</p> <p>A separate Settings Assessment has been prepared as a supplemental stand-alone report.</p> <p>An updated baseline and assessment of significant effects has been produced which incorporates the results of the additional field survey work and the Settings Assessment, and is set out in this report.</p>
November 2020	PINS – Procedural decision	<p>The Inspector encourages the Applicant and all IPs to use the extended adjournment to narrow down the remaining issues, attempt to reach agreement on the matters raised by IPs in their Relevant Representations and progress Statements of Common Ground as much as possible.</p>	<p>A Statement of Common Ground (SoCG) continues to be negotiated with Historic England.</p>
November 2020	PINS – Procedural decision	<p>Provide the ExA with the further information set out above together with details of any consultation undertaken, responses received and how they have been taken into account</p>	<p>This document fulfils the requirements of 2a of the procedural decision letter in respect of cultural heritage.</p>

**ES SUPPLEMENTAL INFORMATION: HISTORIC ENVIRONMENT UPDATED BASELINE REPORT**

Date	Consultee and type of response	Points raised	How and where addressed
18 <sup>th</sup> August 2020	Historic England – letter	<p>The ES does not fully address the impact upon the significance of heritage assets through a development within their setting.</p> <p>No archaeological evaluation work.</p> <p>The geoarchaeological report is good but only assesses Area A</p> <p>WSI has not been agreed with Historic England.</p>	<p>A revised and updated settings assessment has been produced (see enclosed 'Settings Assessment' supplemental report, November 2020), the results of which are summarised in this report.</p> <p>Archaeological evaluation work has been undertaken. The reasoning for its scope is set out in Section 1 of this report, and summarised in non-technical letter to the ExA, dated 11<sup>th</sup> December 2020.</p> <p>The geoarchaeological investigations were initially concentrated in Zone A as this is the area of major impact within the Proposed Development where deposits at these depths may be impacted. Geophysical survey for the remainder of the Order Limits has been completed and the baseline characterisation updated in this report.</p> <p>Comments on the Outline WSI were received on 9<sup>th</sup> November 2020 and are being taken on board in an updated WSI draft. This will be issued to HE to progress discussion towards an SoCG prior to examination.</p>

ES SUPPLEMENTAL INFORMATION: HISTORIC ENVIRONMENT UPDATED BASELINE REPORT

Date	Consultee and type of response	Points raised	How and where addressed
September 2020	Thurrock Council – Relevant Representation	<p>In some instances the assessment is not considered robust enough, as well as lacking in information such as visualisations from key heritage assets. As such, it is considered that the applicant has not fulfilled the requirements of paragraph 189 of the NPPF, as the assessment is not sufficient enough to understand the potential impact of the proposed development on the significance of the identified heritage assets.</p> <p>The Council's Historic Environment Advisor for Archaeology has commented that further information is required as the lack of fieldwork has resulted in a lack of evidence as to the impact of the development on the below ground archaeological impacts. At present there is no field assessment of much of the area for the proposed development. These matters will need further consideration.</p>	<p>These concerns are addressed within this report and the further Settings Assessment. Visualisations are included and the baseline context and assessment of significance updated with the results of recent surveys. It is asserted in this report that the assessment is sufficient to understand the potential impact of the Proposed Development as per NPPF para. 189.</p> <p>Reasons for not undertaking intrusive fieldwork at this stage are set out in Section 1. An Outline WSI has been produced which specifies the further investigation to be undertaken prior to construction to offset<sup>1</sup> potential impact to below-ground archaeological deposits, which also includes mitigation (avoidance) by design.</p>
9 <sup>th</sup> November 2020	Historic England – by email	Comments on draft Outline Written Scheme of Investigation for Archaeological Mitigation.	These comments are being taken on board in an updated WSI draft. This will be issued to HE to progress discussion towards an SoCG prior to examination.

<sup>1</sup> see paragraph 1.15 and footnote 2.

ES SUPPLEMENTAL INFORMATION: HISTORIC ENVIRONMENT UPDATED BASELINE REPORT

Date	Consultee and type of response	Points raised	How and where addressed
12 <sup>th</sup> November 2020	Historic England – letter	<p>Your letter of 9 November proposes further geophysical survey of the site, to cover the proposed gas pipeline route, access road, habitat creation land and exchange common land. We welcome this additional survey work.</p> <p>However, we believe this additional survey will not, by itself, adequately address our concerns raised in our S56 letter of 18 August, specifically relating to the lack of fully detailed assessment (evaluation), and also concerns about the assessment of the impact on the setting of designated heritage assets.</p> <p>We advise that further specialist geoarchaeological assessment should be undertaken across the rest of the site at the pre-consent stage, to establish the significance of these remains across the entire site, and to provide a complete deposit model for the site</p> <p>The ES does not provide a specific section, in terms of visual resources, on the historic environment (either in Vol. 3 Chap. 6 or Chap. 7), to assess the visual impact of the proposed development on the setting of designated heritage assets. We are also disappointed with the key viewpoints, and visual resources, that have been presented and would recommend that further assessment work is carried out to ensure the historic environment baseline is fully characterised.</p> <p>The evidence presented in the ES does not enable the cumulative effects to be adequately assessed, and further assessment is required.</p>	<p>Evaluation in the form of a non-intrusive geophysical survey across the whole site where any ground-disturbing works would occur, tied into the results already produced for Zone A. Results included in Section 4 of this report and in Appendix 1.</p> <p>Email response setting out justification for proposing intrusive works post-DCO consent. Settings Assessment report produced. Response to points also included in Section 1 of this report.</p> <p>Further boreholes within Zone A were recommended by Quest in 2019. A reasonable and proportionate level of extra geoarchaeological information will be agreed at the appropriate stage, as outlined in the WSI, following synthesis of the geophysical survey results and the detailed design for the pipeline route being agreed.</p> <p>The visual impact of the proposed development on the settings of designated heritage assets has been further assessed and a revised settings assessment has been produced (see ‘Settings Assessment’ supplemental report, November 2020), the results of which are summarised here .</p> <p>We consider that the cumulative effects assessment in the ES is robust and further assessment is unnecessary. CEA visualisations are presented in ES Vol.4, Chapter 16, Figs.1.2-1.11.</p>

ES SUPPLEMENTAL INFORMATION: HISTORIC ENVIRONMENT UPDATED BASELINE REPORT

Date	Consultee and type of response	Points raised	How and where addressed
4 <sup>th</sup> December 2020	Historic England – letter	<p>Comments on November 2020 Historic Environment Settings Analysis.</p> <p>No additional visualisations have been provided for Viewpoint Nos. 4, 10, 13, and 31 (and no photomontage for 32).</p> <p>There are no visualisations for the scheduled monument at Bowaters Farm (WWII HAA Battery) located c.250m southwest of Zone D3 (gas connection compound).</p> <p>No winter visualisations have been provided.</p> <p>“We are disappointed with the further field survey relating to the setting of heritage assets, and we believe this information does not enable the effects of the proposed flexible generation plant to be adequately assessed.”</p>	<p>Representative viewpoint photographs were taken during the EIA process, after which some viewpoints were scoped out from being taken forward for producing wirelines. Viewpoints 4, 10, 13 and 31 were scoped out as there was little or no intervisibility with the Proposed Development, and therefore no significant effect. Wirelines were then produced for the remainder of the viewpoints. Where these demonstrated low or negligible visibility, these views were then also scoped out, with only the remainder scoped in for the production of photomontages, where a significant effect might be predicted. This is a proportionate and industry standard approach, as per GLVIA3 para.1.17.</p> <p>The HAA Battery at Bowaters Farm is surrounded by woodland. There is little to no intervisibility with the Proposed Development at either Zone A or Zone D and producing wirelines and/or photomontages would offer no value to the assessment and would be disproportionate.</p> <p>Summer and winter photos are provided in Figs. 3.4-3.29, and were signposted and cross-referenced within the Settings Assessment</p> <p>The application documents include some 83 viewpoint photographs, wirelines and photomontages (not counting character panoramas or multiple design option wirelines) which provide a comprehensive evidence base of views to the Proposed Development from all directions in the surrounding area.</p> <p>These have been selected as representative for assessment of impacts by experienced professionals qualified in landscape, visual and heritage impact assessment, as set out in the ES. The information provided and the Settings Assessment undertaken has been prepared in accordance with industry standards, guidance, and the application of professional judgement. The information and visualisations are robust and more than sufficient to assess the effect of the Proposed Development.</p>

## Scope

- 1.9 This Updated Baseline report focuses on providing an updated baseline characterisation, in order to address the concerns raised by HE and Thurrock Council and to provide the further information requested by the ExA by Procedural Deadline C. It is a stand-alone document to supplement the information already presented within the DCO application documents, but should be read in conjunction with the updated Historic Environment Settings Assessment that is enclosed.
- 1.10 The relevant legislative, policy and guidance context is set out in **Section 2** and the methodology applied for the assessment is set out in **Section 3**.
- 1.11 **Section 4** of this report presents the results of the recent further field studies and synthesises this with the results of the updated Settings Assessment to present an updated summary assessment of significant effects in terms of the impacts from the Proposed Development on the overall historic environment resource. This is set out in **Appendix 2**.
- 1.12 It is important to note that setting is not a heritage asset, nor a heritage designation, and that its importance lies in what it contributes to the significance of the heritage asset, or the ability to appreciate that significance. Its extent is not fixed, and its assessment is a matter of professional judgement.
- 1.13 It is also important to note that intrusive archaeological fieldwork (evaluation and/or excavation) is not of itself a form of 'mitigation': it is instead 'offsetting', in which advances in understanding offset the loss of physical remains.<sup>2</sup>

## Response to Relevant Representations, Procedural Decision Letter and updated consultation

- 1.14 The ExA issued Procedural Decision Letter on 2<sup>nd</sup> November 2020, referencing advice from HE, and requiring the Applicant to undertake *“further field surveys to fully characterise the historic environment baseline”*. The letter states, *“the baseline should include the setting of heritage assets and below ground archaeological deposits, including their extent and significance, and following this, the assessment of significant effects should be updated to assess against the new baseline conditions”*.

## Settings Assessment

- 1.15 In its Relevant Representation dated 12<sup>th</sup> November 2020, Historic England ('HE') stated that in its view, with regard to onshore historic environment, *inter alia* the ES did not fully address the impact upon the significance of heritage assets from a development within their setting. Although not referred to by the ExA, the Relevant Representation made by Thurrock Council also stated, *inter alia*, that the historic environment assessment was not considered robust enough, as well as lacking in information such as visualisations from key heritage assets. In the view of the Council's Historic Environment advisor, the settings for the relevant heritage assets including in section 4.1 of the ES were not considered in enough detail and not assessed in line with HE guidance.
- 1.16 Although we do not accept that there is any deficit in the assessment of significant effects as presented in the ES, these comments have been addressed with the production of a further stand-alone Historic Environment Settings Assessment (RPS November 2020), which provides a robust

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<sup>2</sup> Roger Thomas (2019) It's Not Mitigation! Policy and Practice in Development-Led Archaeology in England, *The Historic Environment: Policy & Practice*, 10:3-4, 328-344, DOI: [10.1080/17567505.2019.1662999](https://doi.org/10.1080/17567505.2019.1662999)

assessment and cross-references to the relevant visualisations as provided within ES Chapter 6, LVIA, Figs.3.4-3.29 and Figs.4.1-4.31.

- 1.17 HE and Thurrock Council were consulted on the revised Settings Assessment. HE has recently sent another letter of advice, dated 4<sup>th</sup> December 2020. We note that the response does not comment on the content or outcomes of the Settings Assessment, other than to suggest that there are insufficient visualisations for selected viewpoints and that the information provided does not enable the effects of the Proposed Development to be adequately assessed. This is refuted, as the process of taking representative viewpoints and then scoping in, or scoping out, certain viewpoints for additional visualisations (first in the form of wireframes and then photomontages) requires a proportionate approach, as per national policy and guidance. The purpose of EIA is to identify and determine likely significant effects, not to provide photography of every conceivable location within a study area, which would usually be disproportionate and would often be impossible in practical terms.
- 1.18 A similarly proportionate response is also required, and was followed, for the scoping in and scoping out of heritage assets in terms of the assessment of their settings, and likely impact of the Proposed Development, as detailed within the Settings Assessment. As described in Table 1-1, a comprehensive set of representative viewpoints photographs were taken from all directions around the Order Limits, based on the professional judgement of experienced landscape/visual and heritage experts and the guidance of consultation during the EIA process. Viewpoints 4, 10, 13, 17 and 31 were scoped out of being taken forward to wireline stage, as there was little or no intervisibility with the Proposed Development, and therefore no potential for significant effects in EIA terms.
- 1.19 Summer and winter photographs are provided for the representative viewpoints in Figs. 3.4-3.29 in ES Chapter 6. In terms of viewpoint 4 (Fig. 3.7), summer and winter photographs are presented, which demonstrate little or no intervisibility with Zone A regardless of the level of foliage. Viewpoint 10 was taken within the only gap along the footpath between Grade II listed Buckland and Bowater HAA battery: moving to the left or right the view is obscured by vegetation, even in the winter, as shown in Fig. 3.13. Viewpoint 13 is superseded by Viewpoints 12 and 14, and the specific photomontages taken from three locations within Tilbury Fort itself (from the Chapel, northeast bastion and northwest bastion). Viewpoint 17 (Fig. 3.18) was not taken forward for further assessment as in both winter and summer there would be little or no intervisibility with the Proposed Development: viewpoint 32 had been taken from a slightly different location and thus was taken forward to wireline stage. Viewpoint 31 was similarly scoped out due to the intervening landform resulting in little to no intervisibility with Zone A during summer or winter (as seen in Fig. 3.26). It would not be relevant nor proportionate to take these to wireline or photomontage stages.
- 1.20 Following the production of photowirelines (presented in Figs. 4.1-4.20 in ES Chapter 6), further viewpoints were then either scoped in or scoped out to be taken forward to produce photomontages for the proposed development. Photomontages are seen as desirable to complement the wireframes for the assessment of impact, as they represent a more realistic view of the scale, design and palette of the scheme and therefore aid a robust judgement of likely effects. At this point viewpoint 32 was scoped out, as the wireline demonstrated there would be no significant effect on Coalhouse Fort, as the proposed development would be barely visible in this view. The Settings Assessment (enclosed) concluded the same, due to the site making a very limited contribution to the wider setting of the monument, as well as intervening topography, vegetational cover and distance from the proposed development, resulting in a minor adverse effect, which is not significant.
- 1.21 As was set out in paragraphs 2.6.2 and 2.6.3 of ES Chapter 6 (LVIA), the maximum design envelope parameters are represented in the photowirelines. The design envelope includes options for spacing or clustering of the stacks and these options are shown in the photowirelines. The photomontages provide additional context that is useful to the assessment, showing a more realistically rendered appearance of the development based on one representative design from within the design envelope.

- 1.22 The HE letter also notes that the visualisations were made with summer rather than winter photographs. However, winter photographs were also taken and comparison of both shows that there is little to no difference in terms of views towards the proposed development, and therefore no change in its likely impact, as demonstrated by the wirelines and photomontages.
- 1.23 The HE letter of 4th December 2020 notes there are no visualisations from Bowaters Farm WWII HAA battery Scheduled Monument: this is due to the gun emplacements being firmly located within woodland, and therefore no visual impact is predicted from the development in Zone A or Zone D (where above ground structures are proposed). The importance of this monument in terms of its WWII role was its views of the sky in terms of intercepting enemy aircraft. Although the monument lies c.300m to the southwest of Zone D3 (gas connection compound) there will be no discernible impact to the scheduled monument. As set out in the ES project description, the development in Zone D3 will comprise a loop of pipework above ground where the connection to the gas national transmission network is made, together with metering and inspection instrumentation. As the monument is heavily overgrown, it would not be relevant nor proportionate to take this to wireline or photomontage stage of further assessment.
- 1.24 It is worth noting for some context to this assessment that an existing gas connection compound similar in nature but a little larger lies immediately adjacent to the scheduled monument at Coalhouse Fort.

### Archaeological Investigation

- 1.25 As set out above, the ExA's Procedural Decision Letter directed the Applicant to undertake further field surveys to fully characterise the historic environment baseline including below-ground archaeological deposits, on the advice of Historic England. Although not referenced by the ExA, Thurrock Council's Historic Environment Advisor for Archaeology also commented in the Relevant Representation that further archaeological fieldwork information is required.
- 1.26 Further field survey work has been undertaken, comprising geophysical survey of the remaining areas within the Order Limits where potentially ground-disturbing works would occur and which are accessible and surveyable. This geophysical survey has been undertaken using the same methodology as that previously undertaken for Zone A, using specialist contractors, and the results are set out in **Section 4** of this report. This type of survey is non-intrusive and therefore causes no harm to the known and potential below-ground archaeological resource, which is acknowledged to contain important, but non-designated, geoarchaeological deposits.
- 1.27 The non-intrusive geophysical survey has provided further useful information as to the extent and likely character of the below-ground archaeological deposits across the Order Limits, adding to existing knowledge but not changing the existing understanding of the baseline environment as was described in the ES. The preliminary interpretation of the geophysical survey results is presented in **Appendix 1**.
- 1.28 There have been additional, recent, intrusive archaeological investigations within and surrounding the Proposed Development site as part of the Lower Thames Crossing (LTC) project. Shortly before Procedural Deadline C, the Applicant was granted access by Highways England to this unpublished information and the results from these various field surveys have been referenced in the updated baseline characterisation where applicable.
- 1.29 No further intrusive archaeological investigations have been undertaken within the current Order Limits since the ExA letter dated 2<sup>nd</sup> November 2020. The justification for this is fourfold and has been set out in the Applicant's consultation letter to HE where the scope of non-intrusive geophysical survey was proposed. In summary, firstly, any intrusive archaeological evaluation should be guided by the results of the geophysical survey so that it is appropriately targeted. This is not possible before Procedural Deadline C and the appropriate stage for this work will be when the pre-construction Written Scheme of Investigation is carried out. Secondly, an archaeological evaluation across the whole Order Limits at this stage would be wholly disproportionate and damaging, especially in the context of repeating recent intrusive works within the surrounding area.

Investigation should be guided by where the potential impacts of the development would occur, as was set out in the letter to HE. Thirdly, an intrusive archaeological evaluation could not have been undertaken and completed within the timeframe set by the ExA, nor could it be completed on areas of Common Land. Lastly, it is argued here that there is already clear, sufficient and robust baseline information to be able to assess the impact of the Proposed Development on the below-ground archaeological resource. It was acknowledged in the ES that where there are groundworks, archaeological deposits where such may exist would be damaged. This would necessarily result in a major adverse effect on those deposits. This effect, which is significant in EIA terms, will be offset by a staged programme of archaeological works as set out in the Outline WSI, as is normal practice for development projects.

- 1.30 By their very nature, intrusive archaeological investigations are damaging and are disruptive to existing landuses. It is recognised that the archaeological deposits within certain parts of the Proposed Development site are important, but do not meet the criteria for scheduling. The Applicant has made a commitment to undertake the necessary archaeological investigation works post-consent and pre-commencement, via the Outline WSI, at which point the scheme will also be refined and the level of impact reduced through design solutions and refinements of elements, such as the narrowing of the pipeline route in Zone C.
- 1.31 As such, for example, archaeologically evaluating the whole of Zone C would be unnecessarily damaging at this stage, disproportionate to the level of impact arising within this part of the scheme, and would not reveal any more information than is already known about this landscape. We also reiterate that non-intrusive and the maximum possible intrusive archaeological investigation of Zone A, the main development site and primary area of potential impact, has already been undertaken.
- 1.32 There are numerous precedents for not undertaking intrusive archaeological evaluation sensitive areas until it is known that the proposed scheme is going ahead. A good example of this is the M4 Corridor around Newport (M4CaN) highways scheme in south Wales. This proposed scheme included an elevated six-lane motorway on embankment across 8 km of the Gwent Levels, registered as a Landscape of Outstanding Historic Importance in Wales and recognised as an area of considerable archaeological and geoarchaeological potential. There would have been considerable harm caused in undertaking such a programme of intrusive archaeological works within the Levels, thus the assessment presented at submission (Draft Orders) stage focused entirely on non-intrusive surveys and mitigation through design, a strategy which was accepted by Cadw (the national advisor to Welsh Government on the historic environment). This cautionary approach was vindicated by the subsequent decision by Welsh Government not to proceed with the scheme. Discretion should therefore be applied in terms of weighing up the balance of harm caused by undertaking large-scale intrusive archaeological investigations and the perceived gain of knowledge to inform the decision-making process.
- 1.33 In terms of this Proposed Development, the balance of harm from a widescale and indiscriminate archaeological evaluation prior to consent is considered to outweigh the potential knowledge transfer in terms of what it could additionally add to what is already known. The commitment to undertake the staged programme of archaeological works post-consent via the Outline WSI should be seen as an undertaking that the impact of the Proposed Development will be appropriately off-set through knowledge transfer and 'preservation by record'. Should the development not be consented, no unnecessary harm has been caused and the resource has been preserved *in situ* for future generations.

### **Existing field surveys, baseline information and mitigation**

- 1.34 In further response to the comments raised by the ExA, HE and other consultees, it is worthwhile recapping the field surveys and archaeological evaluation that have already been undertaken which informed the ES for the Proposed Development, and to reiterate the constraints at the location.
- 1.35 In advance of the production of a Preliminary Environmental Information Report (PEIR) in 2018, a geophysical survey of the main development site for the flexible generation plant and the route of its

access road from Station Road was undertaken by Wessex Archaeology in 2017. This focused on the main development site (Zone A) as the primary area of potential impact due to the earthworks and foundations required.

- 1.36 Following consultation on the PEIR and at the request of both Historic England and officers of Essex County Council (in liaison with Thurrock Council), further investigation of the main development site was undertaken using borehole samples to construct a geo-archaeological deposit model. This model, drawing from the borehole samples together with data from other ground investigations at locations along this section of the Thames, provides an enhanced understanding of the palaeo-environmental baseline of the site and its surroundings. This was set out in the report by Quest (2019), which accompanied the ES (Appendix 7.3) and was used to inform the assessment of the significance of effect of the Proposed Development, as well as inform the scope of the overarching pre-construction Outline Written Scheme of Investigation (WSI).
- 1.37 The main development site for the flexible generation plant (Zone A) is registered Common Land and there are strict restrictions set in the Commons Act 2006 on works that may be carried out in common land. In undertaking the geophysical survey in 2017, the Applicant has therefore carried out the absolute maximum of no/minimal-impact archaeological investigation works that are possible on this land and part of the development site.
- 1.38 Having taken legal and planning advice and consulted with interested parties including the West Tilbury Commons Conservators and the Open Spaces Society prior to submitting the DCO application, the Applicant does not believe that any greater scope of intrusive investigation works within Walton Common could lawfully be undertaken as this would be in breach of section 38 of the Commons Act 2006: the digging of trenches is specifically included in the list of works prohibited on common land by section 38(3).
- 1.39 Moreover, the Applicant was advised that an application to consent such works is not likely to be granted, taking into account the criteria in section 39, the guidance of Defra's Common Land Consents Policy (November 2015) and the fact that no development on this land (creating the need for the investigatory works) would at that point be consented.
- 1.40 In parallel with the DCO application, the Applicant is progressing an application under section 16 of the Commons Act to deregister Walton Common, which when granted would then enable further investigation works to be undertaken pre-construction as has been set out in the Outline WSI.
- 1.41 On the land outside the common, the Applicant by necessity included a wide corridor (Zone C) for its access road and much of the gas pipeline route to allow for routing flexibility. This is because the exact route of the pipeline until recently has been highly uncertain due to the Lower Thames Crossing (LTC) proposals. Further intrusive pre-application investigation in this corridor would have required a wholly disproportionate level of evaluation across the agricultural land, for an access route and what is typically a 1.5-2m trench depth and 1-2m width (where not horizontally directionally drilled (HDD)). Moreover, the LTC project has undertaken field surveys in this area, including evaluation trenches, and therefore there was considered to be no benefit to repeating field surveys of the same land.
- 1.42 Intrusive archaeological evaluation in Zone C via trenching can be most appropriately targeted pre-construction when the final route is narrowed down, and this will be informed by the results of the geophysical survey. HDD is also available as a mitigation technique (and will be used for watercourse crossings) should pre-construction investigation indicate that this is required.
- 1.43 Low-impact road construction (e.g. surface or floating tracks constructed on the existing ground surface using geogrid and aggregate layers) is also available as a mitigation technique, should pre-construction investigation indicate that this is necessary.

### Reasoning for taking a non-intrusive pre-determination approach

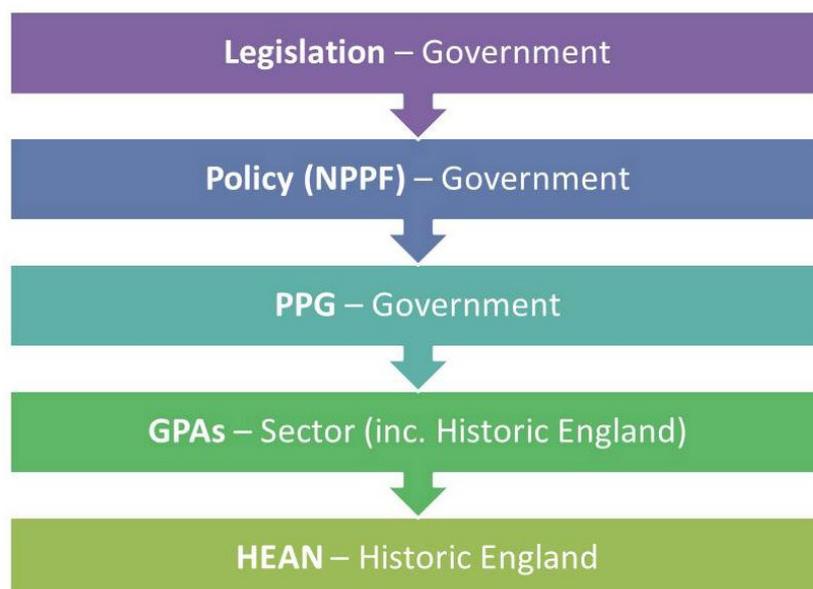
- 1.44 Sufficiently robust information was available from both the field surveys and existing published data, referenced in the Cultural Heritage Desk-Based Assessment (Appendix 7.1 of the ES), to give a clear understanding of the baseline historic environment for the purpose of EIA. The ES identified the sensitive receptors either known or considered likely to be present; it predicted the potential impacts and significance of effects; and set out a thorough mitigation strategy as detailed in the Outline WSI.
- 1.45 As argued above, by its very nature, archaeological field evaluation and excavation is necessarily damaging and ultimately destructive, and the latter should always be used as a last resort. This view is reflected in national planning policy where heritage assets are appreciated as being a finite and non-renewable resource.
- 1.46 In terms of undertaking intrusive archaeological field surveys in the area of Zone A, the issues prohibiting this happening in advance of the DCO application were discussed on several occasions with various statutory consultees, and most recently with Historic England in meetings and exchanges in October and November 2020.
- 1.47 Policy and guidance states that a proportionate approach is required for the assessment of the significance of effects of a proposed development on the known and potential historic environment resource, including impacts to setting. In assessing a large scheme such as this, it is not considered proportionate, nor necessary, to undertake significant amounts of pre-determination intrusive fieldwork, and therefore damage the finite heritage resource, unless there is some certainty that the scheme is going ahead. If the scheme is refused, then the resource would have been compromised and damaged to no real advantage. However, if the scheme is consented, any consent could be conditional on the implementation of the overarching Outline WSI, which can be made a condition of any DCO consent.
- 1.48 A balance needs to be struck between what is already known about a site pre-determination from desk-based and non-intrusive sources (i.e. archival research, HER data, previous archaeological work in the surrounding area, site walkover, visual assessment and use of photomontages, geophysical survey, analysis of historic maps and aerial photography), and what additional value or benefit would arise from undertaking intrusive fieldwork.
- 1.49 Archaeological evaluation as a technique is used to characterise below-ground archaeological deposits, where such information cannot reasonably be predicted. The baseline data available for the process of EIA was sufficiently extensive to be able to predict, using professional judgement, the nature and significance of any below-ground archaeological and palaeoenvironmental resource at the site. The addition of the further gradiometer survey now undertaken, covering a wider extent of the Order Limits, lends further weight to the assessment of impacts and significance of effects of the Proposed Development, and will inform possible mitigation by design.
- 1.50 Archaeological excavation necessarily involves the destruction of part of a finite heritage resource, but is made 'acceptable' by essentially preserving the archaeology 'by record' that a development would otherwise destroy. Whilst this knowledge transfer is a positive, archaeological excavation can never be a form of inherent mitigation for the harm caused by a proposed development. It instead offsets the damage but will always be an adverse significant effect in EIA terms. There is no inherent mitigation for below-ground archaeological deposits other than to design out any physical impacts on such deposits.
- 1.51 It is considered that sufficient, proportionate baseline information exists in order to confidently assess and "adequately understand" the significance of effect of the scheme on below-ground archaeological deposits, including their nature and extent as indicated by the results of geophysical survey, without recourse at this stage to extensive and intrusive field evaluation to the degree suggested by Historic England and Thurrock Council.

## Compliance

- 1.52 In accordance with the directions issued by PINS on 2<sup>nd</sup> November 2020 the baseline conditions across the Proposed Development have been updated with the results of a supplementary Settings Assessment and the results of additional geophysical field survey work, which is considered to be a proportionate response for the reasons set out above.
- 1.53 The results of both elements of additional assessment have been incorporated within this overarching document, which updates the baseline and the significance of effects assessment. A detailed geophysical survey report will be submitted as a Technical Appendix once available.
- 1.54 This assessment has been produced with reference to the non-statutory guidance *The Setting of Heritage Assets* published by Historic England in 2017 (Historic Environment Good Practice Advice in Planning Note 3 (Second Edition), GPA3), adhering to the recommended five-stage approach for the assessment of setting.
- 1.55 This assessment has also been prepared in accordance with relevant legislation, policy and guidance on archaeology, historic buildings, landscape and planning, and in accordance with the '*Standard and Guidance for Historic Environment Desk-Based Assessment*' (Chartered Institute for Archaeologists (CIfA), January 2017, updated October 2020) and the '*Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment*' (CIfA, December 2014, updated October 2020).

**2 LEGISLATION, PLANNING POLICY AND GUIDANCE**

- 2.1 There is primary and secondary legislation, supported by guidance, which provide the basis for decision-making within the planning system.
- 2.2 The *Planning Act 2008* sets out the framework for the planning process for Nationally Significant Infrastructure Projects (NSIPs). NSIPs require a Development Consent Order (DCO) application that is determined by UK Government. On 1<sup>st</sup> April 2012, under the [Localism Act 2011](#), the Planning Inspectorate became the government agency responsible for operating the planning process for NSIPs.
- 2.3 Planning policy for fossil fuel generation NSIPs is contained in the Overarching National Policy Statement (NPS) for Energy (EN-1; DECC, 2011a) and the NPS for Fossil Fuel Electricity Generating Infrastructure (EN-2, DECC, 2011b).
- 2.4 As stated in NPS EN-1 *“Applicants should provide a description of the significance of the heritage assets affected by the proposed development and the contribution of their setting to that significance. The level of detail should be proportionate to the importance of the heritage assets and no more than is sufficient to understand the potential impact of the proposal on the significance of the heritage asset.”(para. 5.8.8).*
- 2.5 The policies relevant to the historic environment as stated in NPS EN-1 reflect the considerations stipulated in the NPPF and within the legislative framework applicable to the historic environment.
- 2.6 In respect of the historic environment, there is national legislation, planning policy and guidance relating to the protection of, and development on, or near, important archaeological sites, historic landscapes or historical buildings within planning regulations as defined under the provisions of the *Town and Country Planning Act 1990*. In addition, local authorities are responsible for the protection of the historic environment within the planning system.
- 2.7 The planning system comprises a number of different elements, both local and national: legislative frameworks provide statutory protection to the historic environment, while planning policy and other guidance provides non-statutory advice concerning how the historic environment should be addressed within the planning process. The hierarchy of the planning system at a national level is shown in the infographic below.



- 2.8 The purpose of the planning system is to contribute to the achievement of sustainable development, through social, economic and environmental objectives as set out by UK Government.

- 2.9 In March 2012, the government published the *National Planning Policy Framework* (NPPF), and it was last updated in June 2019. The NPPF is supported by the National Planning Practice Guidance (NPPG), which was published 10<sup>th</sup> April 2014 and last updated 23<sup>rd</sup> July 2019 (<https://www.gov.uk/guidance/conserving-and-enhancing-the-historic-environment>).
- 2.10 The NPPF and NPPG are additionally supported by four non-statutory Good Practice Advice (GPA) documents published by Historic England:
- GPA 1: The Historic Environment in Local Plans (March 2015);
  - GPA 2: Managing Significance in Decision-Taking in the Historic Environment (March 2015).
  - GPA 3: The Setting of Heritage Assets (second edition, December 2017); and,
  - GPA 4: Enabling Development and Heritage Assets (June 2020).
- 2.11 In addition, Historic England have produced various Advice Notes (HEANs), of which Note 12: *Statements of Heritage Significance* (published October 2019) is relevant.

### Legislation relevant to the historic environment

- 2.12 Statutory protection for archaeology, including Scheduled Monuments, is contained in the *Ancient Monuments and Archaeological Areas Act 1979*, amended by the National Heritage Act 1983 and 2002, and updated in April 2014.
- 2.13 For other components of the historic environment, the *Planning (Listed Buildings and Conservation Areas) Act* (1990) and the *Town and Country Planning Act* (1990) provides statutory protection to listed buildings and their settings, and presents measures to designate and preserve the character and appearance of Conservation Areas.
- 2.14 Section 66 of the *Planning (Listed Buildings and Conservation Areas) Act* 1990 imposes a general duty as respects listed buildings in the exercise of planning functions. Subsection (1) provides that:
- “In considering whether to grant planning permission for development which affects a listed building or its setting, the local planning authority or, as the case may be, the Secretary of State shall have special regard to the desirability of preserving the building or its setting or any features of special architectural or historic interest which it possesses.”*
- 2.15 The setting of a Conservation Area is not enshrined in legislation and therefore does not attract the weight of statutory protection, and should be assessed in respect of relevant national and local planning policies.
- 2.16 Historic England (formerly English Heritage) is enabled by the *Historic Buildings and Ancient Monuments Act* 1953 (as amended) to maintain a register of historic parks, gardens and battlefield sites which appear to HE to be of special historic interest. Registration in this way makes the effect of proposed development on these types of sites and their settings a material consideration.
- 2.17 Under the *Hedgerow Regulations 1997*, as amended by *The Hedgerows (England) (Amendment) Regulations* 2002, hedgerows are deemed to be historically Important if they are over 30 years old and either: incorporate, or are associated with, a Scheduled archaeological feature or site; mark the Boundary of a pre-1600 estate or manor recorded at the relevant date in a Sites and Monuments Record [now more commonly known as Historic Environment Records, maintained by local authorities]; or forms an integral part of a pre-1845 field system. However, this does not mean that historic hedgerows which are deemed 'Important' are designated heritage assets.

### National Planning Policy

- 2.18 Section 16 of the NPPF, entitled 'Conserving and enhancing the historic environment' provides guidance for planning authorities, property owners, developers and others on the conservation and investigation of heritage assets. Overall, the objectives of Section 16 of the NPPF can be summarised as seeking the:

- Delivery of sustainable development;
- Understanding the wider social, cultural, economic and environmental benefits brought by the conservation of the historic environment;
- Conservation of England's heritage assets in a manner appropriate to their significance; and
- Recognition that heritage makes to our knowledge and understanding of the past.

2.19 Section 16 of the NPPF recognises that intelligently managed change may sometimes be necessary if heritage assets are to be maintained for the long term. Paragraph 189 states that planning decisions should be based on the significance of the heritage asset and that level of detail supplied by an applicant should be proportionate to the importance of the asset and should be no more than sufficient to review the potential impact of the proposal upon the significance of that asset.

2.20 *Heritage Assets* are defined in Annex 2 of the NPPF as: a building, monument, site, place, area or landscape positively identified as having a degree of significance meriting consideration in planning decisions. They include designated heritage assets (as defined in the NPPF) and assets identified by the local planning authority during the process of decision-making or through the plan-making process.

2.21 Annex 2 also defines *Archaeological Interest* as a heritage asset which holds or potentially could hold evidence of past human activity worthy of expert investigation at some point.

2.22 A *Nationally Important Designated Heritage Asset* comprises a: World Heritage Site, Scheduled Monument, Listed Building, Protected Wreck Site, Registered Park and Garden, Registered Battlefield or Conservation Area.

2.23 *Significance* is defined as: The value of a heritage asset to this and future generations because of its heritage interest. This interest may be archaeological, architectural, artistic or historic. Significance derives not only from a heritage asset's physical presence, but also from its setting.

2.24 *Setting* is defined as: The surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or may be neutral.

2.25 In short, government policy provides a framework which:

- Protects nationally important designated Heritage Assets;
- Protects the settings of such designations;
- In appropriate circumstances seeks adequate information (from desk based assessment and field evaluation where necessary) to enable informed decisions;
- Provides for the excavation and investigation of sites not significant enough to merit in-situ preservation.

### **National Planning Practice Guidance**

2.26 The National Planning Practice Guidance (NPPG) has been published by the Government in order to aid the application of the NPPF.

2.27 The NPPG reiterates that the conservation of heritage assets in a manner appropriate to their significance is a core planning principle, requiring a flexible and thoughtful approach. Furthermore, it highlights that neglect and decay of heritage assets is best addressed through ensuring they remain in active use that is consistent with their conservation. The guidance states that if complete, or partial loss of a heritage asset is justified, the aim should then be to capture and record the evidence of the asset's significance and make the interpretation publicly available.

2.28 Key elements of the guidance relate to assessing harm. An important consideration should be whether the proposed works adversely affect a key element of the heritage asset's special

architectural or historic interest. Additionally, it is the degree of harm, rather than the scale of development, that is to be assessed. The level of 'substantial harm' is considered to be a high bar that may not arise in many cases. Essentially, whether a proposal causes substantial harm will be a judgment for the decision taker, having regard to the circumstances of the case and the NPPF.

- 2.29 Harm may arise from works to the asset or from development within its setting. Setting is defined as the surroundings in which an asset is experienced and may be more extensive than the curtilage. A thorough assessment of the impact of proposals upon setting needs to take into account, and be proportionate to, the significance of the heritage asset and the degree to which proposed changes enhance or detract from that significance and the ability to appreciate it.

### **Conservation Principles, Policies and Guidance (English Heritage, April 2008)**

- 2.30 Conservation Principles outlines Historic England's approach to the sustainable management of the historic environment. While primarily intended to ensure consistency in Historic England's own advice and guidance, the document is recommended to LPAs to ensure that all decisions about change affecting the historic environment are informed and sustainable. The document sets out six high-level principles:

- The historic environment is a shared resource
- Everyone should be able to participate in sustaining the historic environment
- Understanding the significance of places is vital
- Significant places should be managed to sustain their values
- Decisions about change must be reasonable, transparent and consistent
- Documenting and learning from decisions is essential.

- 2.31 The guidance describes a range of heritage values which enables the significance of assets to be established systematically, with the four main heritage values being: evidential value; historical value; aesthetic value; and communal value.

- 2.32 On 10<sup>th</sup> November 2017 HE consulted on their revised Conservation Principles, which was being updated to reflect the language used in the NPPF and legislation. Consultation closed on 2<sup>nd</sup> February 2018, but a revised version has yet to be published. However, in this draft document, 'Significance' was given a suggested definition of "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."

### **Overview: Historic Environment Good Practice Advice in Planning**

- 2.33 The PPS5 Practice Guide was withdrawn in March 2015 and replaced with three Good Practice Advice in Planning Notes (GPAs) published by Historic England. GPA 3: The Setting of Heritage Assets replaces guidance published in 2011. These are complemented by the Historic England Advice Notes in Planning (HEANs) and other technical guidance.

### **GPA1: The Historic Environment in Local Plans (March 2015)**

- 2.34 This document provides information to assist local authorities, planning and other consultants, owners, applicants and other interested parties in implementing historic environment policy in the NPPF and NPPG.

- 2.35 The advice in this document, in accordance with the NPPF, emphasises that all information requirements and assessment work in support of plan-making and heritage protection needs to be proportionate to the significance of the heritage assets affected and the impact on the significance of those heritage assets, and recognises the primacy of the NPPF and NPPG.

**GPA2: Managing Significance in Decision-Taking in the Historic Environment (March 2015)**

- 2.36 This document provides advice on numerous ways in which decision making in the historic environment could be undertaken, emphasising that the first step for all applicants is to understand the significance of any affected heritage asset and the contribution of its setting to that significance. In line with the NPPF and NPPG, the document states that early engagement and expert advice in considering and assessing the significance of heritage assets is encouraged. The advice suggests a structured, staged approach to the assembly and analysis of relevant information:
- Understand the significance of the affected assets;
  - Understand the impact of the proposal on that significance;
  - Avoid, minimise and mitigate impact in a way that meets the objectives of the NPPF;
  - Look for opportunities to better reveal or enhance significance;
  - Justify any harmful impacts in terms of the sustainable development objective of conserving significance balanced with the need for change; and
  - Offset negative impacts to significance by enhancing others through recording, disseminating and archiving archaeological and historical interest of the important elements of the heritage assets affected.

**GPA3: The Setting of Heritage Assets (Second Edition; December 2017)**

- 2.37 This advice note focuses on the management of change within the setting of heritage assets. This document replaces GPA3: The Setting of Heritage Assets (March 2017) and Seeing History in the View (English Heritage, 2011) in order to aid practitioners with the implementation of national legislation, policies and guidance relating to the setting of heritage assets found in the 1990 Act, the NPPF and PPG. The guidance is largely a continuation of the philosophy and approach of the 2011 and 2015 documents and does not present a divergence in either the definition of setting or the way in which it should be assessed.
- 2.38 As with the NPPF the document defines setting as ‘the surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve’. Setting is also described as being a separate term to curtilage, character and context. The guidance emphasises that setting is not a heritage asset, nor a heritage designation, and that its importance lies in what it contributes to the significance of the heritage asset, or the ability to appreciate that significance. It also states that elements of setting may make a positive, negative or neutral contribution to the significance of the heritage asset, including below-ground archaeological remains.
- 2.39 While setting is largely a visual term, with views considered to be an important consideration in any assessment of the contribution that setting makes to the significance of an asset, and thus the way in which an asset is experienced, setting also encompasses other environmental factors including noise, vibration and odour. Historical and cultural associations may also form part of the asset’s setting, which can inform or enhance the significance of a heritage asset.
- 2.40 This document provides guidance on practical and proportionate decision making with regards to the management of change within the setting of heritage assets. It is stated that the protection of the setting of a heritage asset need not prevent change and that decisions relating to such issues need to be based on the nature, extent and level of the significance of a heritage asset, further weighing up the potential public benefits associated with the proposals. It is further stated that changes within the setting of a heritage asset may have positive or neutral effects.
- 2.41 The document also states that the contribution made to the significance of heritage assets by their settings will vary depending on the nature of the heritage asset and its setting, and that different

heritage assets may have different abilities to accommodate change without harming their significance. Setting should, therefore, be assessed on a case-by-case basis.

2.42 Historic England recommends using a series of detailed steps in order to assess the potential effects of a proposed development on significance of a heritage asset. The 5-step process is as follows:

- Identify which heritage assets and their settings are affected;
- Assess the degree to which these settings and views make a contribution to the significance of a heritage asset(s) or allow significance to be appreciated;
- Assess the effects of the proposed development, whether beneficial or harmful, on the significance or on the ability to appreciate it;
- Explore ways to maximise enhancement and avoid or minimise harm; and
- Make and document the decision and monitor outcomes.

### **HEAN 12 Statements of Heritage Significance: Analysing Significance in Heritage Assets (October 2019)**

2.43 The purpose of this HEAN is to provide information on the analysis and assessment of heritage significance in line with the NPPF to assist owners, applicants, local planning authorities (LPAs), planning and other consultants, and other interested parties in implementing historic environment legislation, the policy in the NPPF and the related guidance given in the Planning Practice Guidance (PPG).

2.44 In this document, HE states that “Alternative approaches may be acceptable, provided they are demonstrably compliant with legislation and national policy.”

2.45 The advice in this document, in accordance with the NPPF, emphasises that the level of detail in support of applications for planning permission and listed building consent should be no more than is necessary to reach an informed decision, and that activities to conserve the asset(s) need to be proportionate to the significance of the heritage asset(s) affected and the impact on that significance. At the same time those carrying out this work need enough information to understand the issues (NPPF, paragraphs 43-44 and 189).

### **Local Planning Policy**

2.46 The development plan for the proposal site comprises policies from the Thurrock Local Development Framework, adopted in 2011. Relevant policies are set out in the ES and not revisited here.

### **Guidance on Landscape and Visual Impact Assessment (GLVIA3)**

2.47 This assessment has also been undertaken in accordance with the guidance published by the Landscape Institute and Institute of Environmental Management & Assessment (IEMA), now in its 3<sup>rd</sup> edition (‘GLVIA3’, 2013) and the more recent technical guidance note on visual representation of development proposals, published by the Landscape Institute (‘TGN 06/19’, September 2019).

2.48 As stated at para 1.17 in GLVIA3, “...the emphasis is on identification of likely significant environmental effect....Identifying significant effects stresses the need for an approach that is in proportion to the scale of the project that is being assessed and the nature of its likely effects.” Taking a proportionate approach is also set out in more detail in TGN 06/19.

2.49 Figure 6.1 in GLVIA3 illustrates the steps in assessing visual effects (GLVIA3, p,99). Para 6.5 sets out the interrelationships between LVIA and cultural heritage topics within the EIA process. The steps set out mirror those for addressing the assessment of the settings of heritage assets set out above.

### 3 ASSESSMENT METHODOLOGY

#### Introduction

- 3.1 In accordance with the requirements of national planning policy, and in particular NPS EN-1 (section 5.8), the NPPF (para 189) and national guidance (NPPG; GPA1, GPA2 and GPA3), an applicant should describe the significance of any heritage assets affected by the proposed development, 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 be consulted, and the heritage assets assessed using appropriate expertise where necessary.
- 3.2 There is no single accepted or standard guidance for the assessment of the likely effects of development on the historic environment resource. Although developed for use on trunk road schemes, the former Design Manual for Roads and Bridges (DMRB) (Highways Agency 2007) set out a detailed methodology for considering the historic environment which, to date, represents the most comprehensive published guidance and has been used to inform this assessment.
- 3.3 The importance/sensitivity of some heritage assets is formally recognised through designation (Scheduling of a monument, or the Listing of a built structure). The following terminology has been adopted within this assessment for classifying and discussing the historic environment:
- A Heritage Asset is a building, monument, site, place, area or landscape identified as meriting consideration in planning decisions because of its heritage interest. It includes designated heritage assets and assets identified by the local planning authority (including local listing) (NPPF, Annex 2 Glossary).
  - The Setting of a heritage asset is the surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the importance of an asset, may affect the ability to appreciate that importance or may be neutral (NPPF, Annex 2 Glossary).
  - Importance (sensitivity) is used in place of 'Significance' (for heritage policy): this substitution of terms is used to avoid confusion with established EIA terminology. 'Significance' for heritage policy is defined in the NPPF (Annex 2, Glossary), as 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.
  - Value is used in reference to the components of a heritage asset that determines its importance, as described in **Table 3.1**.
  - Significance is used when referring to the significance of effect resulting from impacts of the proposed development on the importance of heritage assets.
- 3.4 Conservation Principles (English Heritage, 2008) introduced the concept of values when weighing the significance of heritage assets with reference to the following value criteria (bracketed terms indicate corresponding values identified in NPPF):
- Evidential (Archaeological) value. Deriving from the potential of a place to yield evidence about past human activity (worthy of expert investigation at some point).
  - Historical value. Deriving from the ways in which past people, events and aspects of life can be connected through a place to the present. It tends to be illustrative or associative (An interest in past lives and events, including prehistoric. Heritage assets can illustrate or be associated with them and provide a material record of our nation's history).
  - Aesthetic (Architectural and Artistic) value. Deriving from the ways in which people draw sensory and intellectual stimulation from a place. (These are interests in the design and

general aesthetics of a place. They can arise from conscious design or fortuitously from the way the heritage asset has evolved. More specifically, architectural interest is an interest in the art or science of the design, construction, craftsmanship and decoration of buildings and structures of all types. Artistic interest is an interest in other human creative skill, like sculpture).

- **Communal** value. Deriving from the meanings of a place for the people who relate to it, or for whom it figures in their collective experience or memory. Communal values are closely bound up with historical (particularly associative) and aesthetic values, but tend to have additional and specific aspects. (Heritage assets can also provide meaning for communities derived from their collective experience of a place and can symbolise wider values such as faith and cultural identity).

3.5 The overall importance of heritage assets is expressed on a 6-point scale of: Very High, High, Medium, Low, Negligible and Unknown, using the criteria presented in Table 3.1 taken from the assessment guides in the former DMRB (HA 2007) and ICOMOS 2010.

**Table 3-1 Criteria used to determine the importance (sensitivity) of heritage assets.**

Heritage Importance (sensitivity)	Criteria
Very High	<p><i>Heritage assets of international importance. World Heritage Sites and the individual attributes that convey their Outstanding Universal Value. Areas associated with intangible historic activities as evidenced by the register and areas with associations with particular innovations, scientific developments, movements or individuals of global importance.</i></p>
High	<p><i>Heritage assets of national importance. Scheduled Monuments, Listed Buildings (Grade I, II*), Registered Historic Parks and Gardens (Grade I, II*), Registered Battlefields, Protected Wrecks, Protected Military Remains. Also includes unscheduled sites and monuments of schedulable quality and/or importance discovered through the course of evaluation or mitigation.</i></p> <p><i>Designated and undesignated historic landscapes of outstanding interest, or high quality and importance and of demonstrable national value Well-preserved historic landscapes, exhibiting considerable coherence, time-depth or other critical factors.</i></p> <p><i>Palaeogeographic features with a demonstrable high potential to include artefactual and/or palaeoenvironmental material, possibly as part of a prehistoric site or landscape.</i></p> <p><i>Undesignated sites of wrecked ships and aircraft that are demonstrably of equivalent archaeological importance to those already designated.</i></p>
Medium	<p><i>Heritage assets of regional importance. Conservation Areas, Grade II Listed Buildings and Registered Historic Parks and Gardens Historic townscapes and landscapes with reasonable coherence, time-depth and other critical factor(s).</i></p> <p><i>Unlisted assets that can be shown to have exceptional qualities or historic association.</i></p> <p><i>Designated special historic landscapes. Undesignated historic landscapes that would justify special historic landscape designation, landscapes of regional value. Averagely well-preserved historic landscapes with reasonable coherence, time-depth or other critical factors.</i></p> <p><i>Prehistoric deposits with moderate potential to contribute to an understanding of the palaeoenvironment.</i></p> <p><i>Undesignated wrecks of ships or aircraft that have moderate potential based on a formal assessment of their importance in terms of build, use, loss, survival and investigation.</i></p>

Heritage Importance (sensitivity)	Criteria
Low	<p><i>Heritage Assets with importance to local interest groups or that contributes to local research objectives.</i></p> <p><i>Locally Listed Buildings and Sites of Importance within a district level.</i></p> <p><i>Robust undesignated assets compromised by poor preservation and/or poor contextual associations.</i></p> <p><i>Robust undesignated historic landscapes. Historic landscapes with importance to local interest groups. Historic landscapes whose value is limited by poor preservation and/or poor survival of contextual associations.</i></p> <p><i>Prehistoric deposits with low potential to contribute to an understanding of the palaeoenvironment.</i></p> <p><i>Undesignated wrecks of ships or aircraft that have low potential based on a formal assessment of their importance in terms of build, use, loss, survival and investigation.</i></p>
Negligible	<p><i>Assets with little or no archaeological or historical interest due to poor preservation or survival. Landscapes with little or no significant historical interest.</i></p>
Unknown	<p><i>The importance of asset has not been ascertained from available evidence.</i></p>

**Assessment methodology**

- 3.6 The Historic England guidance GPA3 advocates a systematic and staged approach to the assessment of the implications of development in terms of their effects on the settings of heritage assets.
- 3.7 **Stage 1** of the approach is ‘identifying the heritage assets affected and their settings’. This initial step was carried out by undertaking documentary research, assessing data sourced from the HER and national heritage datasets, and by undertaking a field visit to the Site and its wider surrounds.
- 3.8 **Stage 2** requires consideration of ‘whether, how and to what degree these settings make a contribution to the significance of the heritage asset(s)’. The guidance states that this stage of the assessment should first address the key attributes of the heritage asset itself and then consider:
  - 1) the physical surroundings of the asset, including its relationship with other heritage assets;
  - 2) the way the asset is appreciated; and
  - 3) the asset’s associations and patterns of use.
- 3.9 Elements of a setting may make a positive or negative contribution to the value of a heritage asset, may affect the ability to appreciate that value, or may be neutral. The criteria for grading the contribution made by the setting to the importance of a heritage asset is set out in Table 3.2 (based on the assessment guides in the former DMRB (HA 2007)).
- 3.10 **Stage 3** involves assessing the effect of the proposed development on the importance<sup>3</sup> of the asset(s). This stage of the assessment addresses the key attributes of the proposed development, such as its:
  - Location and siting;
  - Form and appearance;

<sup>3</sup> Importance is used in place of ‘significance’ (as used in heritage policy) to avoid confusion with EIA terminology

- Additional effects; and
- Permanence.

3.11 **Stage 4** of the guidance should explore opportunities for ‘maximising enhancement and minimising harm’, while **Stage 5** is to ‘make and document the decision and monitor outcomes’.

**Table 3-2: Criteria for grading the contribution of setting to the importance of heritage assets**

Contribution of Setting to Heritage Importance (sensitivity)	Criteria
High	<i>A setting which possesses key attributes that make a strong positive contribution to the understanding and/or appreciation of the values that embodies its importance</i>
Medium	<i>A setting which possesses some key attributes that make a positive contribution to the understanding and/or appreciation of the values that embodies its importance</i>
Low	<i>A setting which possesses some attributes that make some/little positive contribution to the understanding and/or appreciation of the values that embodies its importance.</i>

3.12 As a result of the application of the staged approach, heritage assets are either ‘scoped in’ or ‘scoped out’ of further assessment. Where it has been identified that the setting of the heritage asset is such that there is no potential for its setting, and therefore the importance of the asset, to be affected by the presence of the proposed scheme, the asset is not considered further in the assessment.

3.13 The assessment of views, which often play a key part in assessing the perceived settings of heritage assets, was undertaken in accordance with the Landscape Institute’s *Guidelines for Landscape and Visual Impact Assessment (GLVIA3)* and TGN 06/19.

3.14 The assessment of the magnitude of change (impact) is the identification of the degree of change arising from the proposed scheme. The assignment of a magnitude of impact is a matter of professional judgement. Effects may be adverse, neutral or beneficial.

3.15 The magnitude of change (impact) on heritage assets has been assigned a value of Major, Moderate, Minor, Negligible and No Change, which can be either adverse or beneficial, as shown in **Table 3.3**, based on the assessment guides in DMRB (HA 2007).

3.16 The assessment of effect results from a consideration of the importance/potential of the asset, the contribution of its setting to that importance, and the degree of impact upon it as a result of the proposed scheme. Expressed as a simple equation:

$$\text{Heritage Importance} \times \text{Impact (of development)} = \text{Effect}$$

3.17 The interaction of the magnitude of change (impact) and the importance of the heritage asset results in the significance of effect, which is expressed as Substantial, Major, Moderate, Minor, Negligible, or No Change. The effect can be adverse, beneficial or neutral.

3.18 The matrix used for the assessment of the significance of effect is shown in **Table 3-4**.

3.19 For the purpose of this report, the intention of the environmental impact assessment (EIA) is to identify likely significant effects, although there is no published guidance on what level of effect is considered significant. As such, the methodology for this assessment has taken the view that any effects with a significance level of minor or less are considered to be **not significant** in EIA terms. It is not the purpose of EIA to identify all effects.

3.20 The assessment applies the ‘Rochdale’ envelope, which assesses the significance of effect based on the ‘worst-case’ scenario of the scheme, i.e. the design which causes the greatest magnitude of change. This is to ensure effects of greater adverse significance are not predicted to arise should

any other development scenario within the proposed development design envelope be taken forward in the final design scheme.

- 3.21 Where the matrix provides a split in the level of effects, e.g. minor or moderate, the assessor has exercised professional judgement in determining which of the levels is most appropriate.
- 3.22 The approach detailed here to assessing impacts, receptor sensitivity and significance of effect is consistent with that used for the assessment work already undertaken in Chapter 7 of the ES. The methodology has been presented again here for ease of reading this supplementary document and was followed afresh to identify and correct any errata in the ES chapters.

**Table 3-3 Criteria for determining the magnitude of change (impact) – adverse**

Magnitude of Impact	Physical	Setting
Major	Complete destruction or a fundamental, substantial change of an asset or historic environment feature. Change to most or all key elements of the historic environment, such that the resource is totally altered.	A comprehensive and fundamental change to the key positive attributes of a heritage asset's setting, such that the setting is substantially or totally altered.
Moderate	A considerable change or appreciable difference to the existing baseline. Changes to many key elements of the historic environment, such that the resource is clearly modified.	A considerable change to the key positive attributes of a heritage asset's setting such that its contribution to the importance of the asset is appreciably reduced.
Minor	A minor change to the baseline condition of a heritage asset. Changes to the key elements of the historic environment, such that the asset is slightly altered.	A limited change to the key positive attributes of a heritage asset's setting resulting in a slight but discernible reduction to its contribution to the asset's importance.
Negligible	A barely distinguishable change to the historic environment baseline	A very slight change to the key positive attributes of a heritage asset's setting such that the change is barely distinguishable
No change	No loss or alteration or characteristics, features or elements; no observable impact in either direction	No loss or alteration or characteristics, features or elements; no observable impact in either direction

**Table 3-4 Matrix used for the assessment of the significance of an effect**

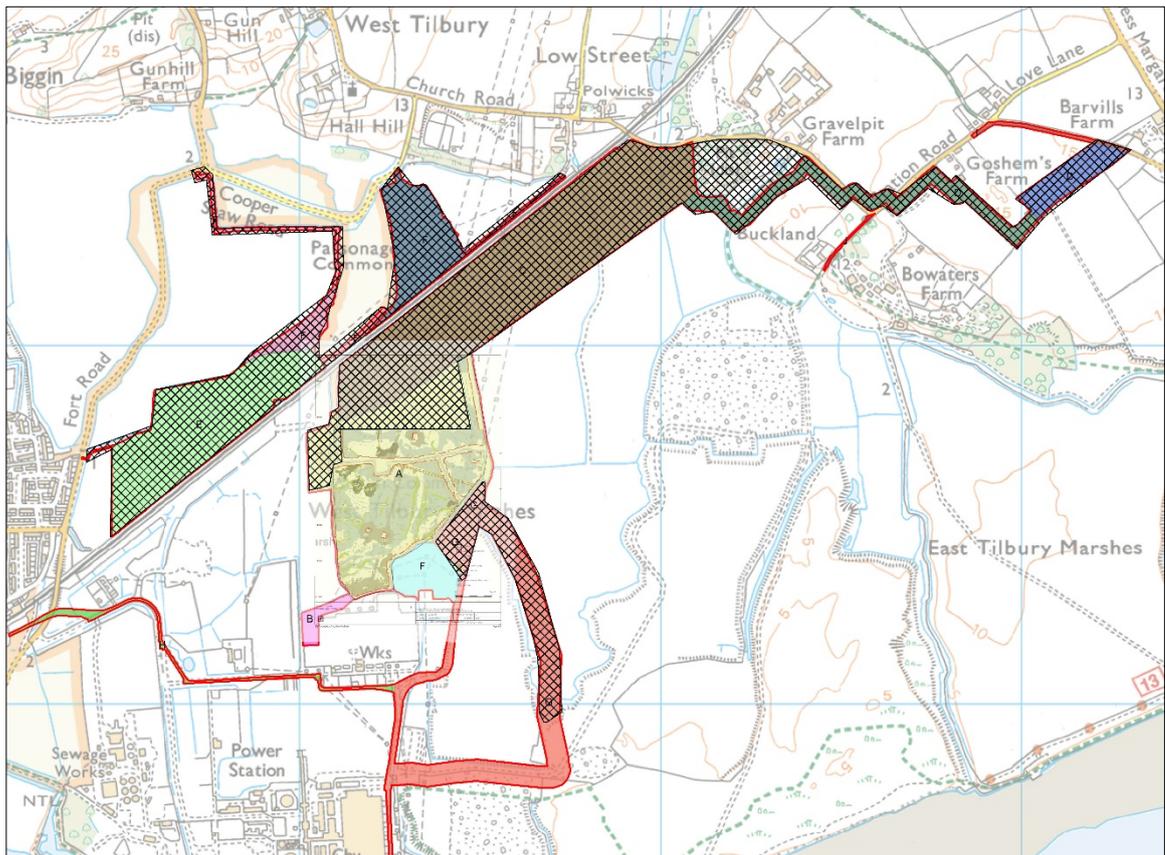
	Magnitude of impact					
		No change	Negligible	Minor	Moderate	Major
Sensitivity of receptor	Negligible	No change	Negligible	Negligible or minor	Negligible or minor	Minor
	Low	No change	Negligible or minor	Negligible or minor	Minor	Minor or moderate
	Medium	No change	Negligible or minor	Minor	Moderate	Moderate or major
	High	No change	Minor	Minor or moderate	Moderate or major	Major or substantial
	Very high	No change	Minor	Moderate or major	Major or substantial	Substantial
		No change				

- 3.23 It is important to note that there is no such thing as an impact or effect on the setting of a heritage asset: the impact is on the importance of the asset as a result of a change within its setting. Moreover, the setting of a designated heritage asset is not part of the designation. As GPA3 states (2017, para.9, p.4), “Setting is not itself a heritage asset, nor a heritage designation...its importance lies in what it contributes to the significance of the heritage asset or to the ability to appreciate that significance.”
- 3.24 It is also important to not make a direct correlation between EIA and NPPF processes in assessing impacts from a proposed development. The role of EIA is to identify likely significant effects, which can arise from Low, Medium, High or Very High impacts, and depends on the value/importance of the heritage asset. The NPPF looks at harm to, or loss of, the heritage significance of an asset, asking if the harm is substantial, or less than substantial, and sets up tests depending on the value/importance of the asset. Substantial harm is a particularly high test. There is no direct correlation between the results and terminology of the NPPF process and those of the EIA process, and no published guidance on this issue.

## 4 UPDATED HISTORIC ENVIRONMENT BASELINE CHARACTERISATION

### Geophysical Survey

- 4.1 Historic England in their letter dated 12<sup>th</sup> November 2020 commented that they welcomed the proposal to undertake further geophysical survey, and recommended the use of GPR (ground penetrating radar) survey. They also stated that the techniques selected for each area should be discussed with a specialist to ensure that they will address the questions and deposits relevant to each area/zone.
- 4.2 The methodology was discussed with Wessex Archaeology (WA) as specialist contractors, who recommended the use of detailed gradiometer survey as opposed to GPR. This was on the basis of this method having been successfully applied by WA previously in Zone A, and also their other extensive geophysical survey work in the surrounding area, which has demonstrated a high level of confidence in the results obtained by using this type of magnetometry. Moreover, given the scale of the area to be surveyed within the Proposed Development site, and the timescales imposed by the ExA for the submission of additional information, a GPR survey would have taken at least eight weeks to complete, and therefore would not have provided the additional information required in the time available. The ability to complete the geophysical survey across the whole site using a tried and tested method within a timeframe that matched that of the ExA’s Procedural Deadline C was therefore decided as the most effective course of action.



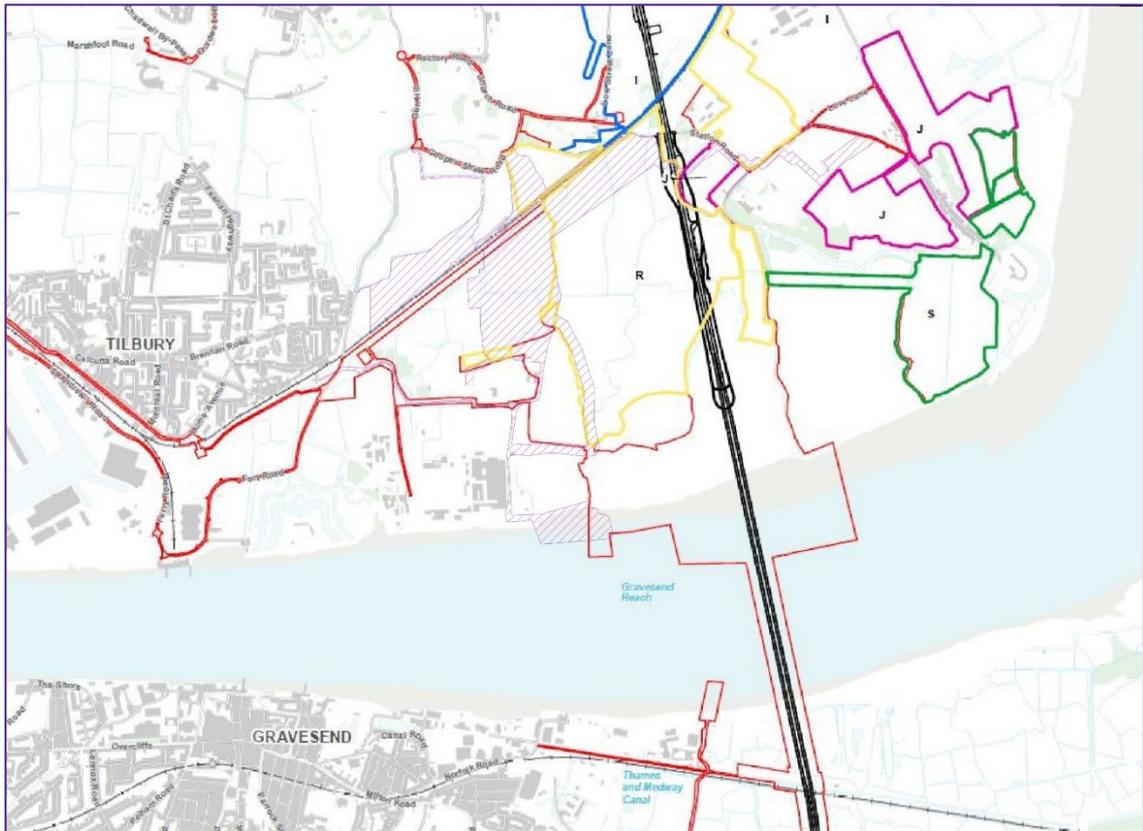
**Plate 1** Additional geophysical survey areas in relation and former Zone A results

- 4.3 The recent survey comprised a detailed gradiometer survey over Zones C, D, E, F and part of G, as shown in **Plate 1** above, comprising an area of c.67 hectares, and ties in with the previous survey work within Zone A, comprising c.17 hectares (Wessex Archaeology 2017). The remaining areas in part of Zone G and Zones H, I and J were excluded because no ground-disturbing development is proposed (e.g. for access routes on existing roads) or because extensive ground disturbance has already occurred from landfilling and past development.

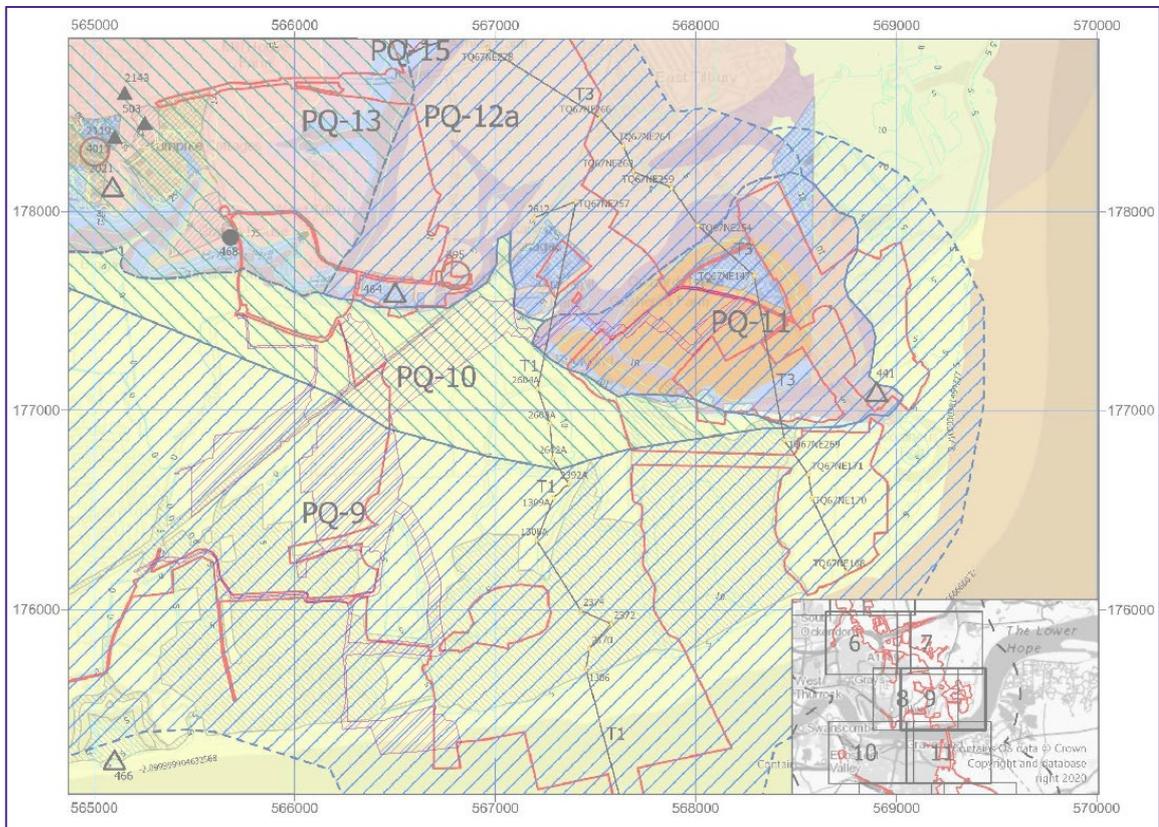
- 4.4 The preliminary results from the recent suite of geophysical survey works comprise greyscale figures plotting the results of the detailed gradiometer survey and a first draft interpretation of the greyscale results to identify probable and possible archaeological features, as well as what is considered to be natural geology (see **Appendix 1, Figures 1-21**).
- 4.5 The greyscale results are pending detailed interpretation, which has not been possible to fully complete in the time available between field survey and Procedural Deadline C, but are clearly comparable with the previous results obtained from Zone A. They show the same level of possible features, which are largely linear and rectilinear, in tandem with a high prevalence of geological responses. Gaps in the plots are the result of magnetic interference from the overhead powerlines crossing the site, wire fences and the electrified railway.
- 4.6 These plots demonstrate that the landscape in Zones C, E, F and G is in keeping within the topography and geology within Zone A, and comprises reclaimed land which has been gradually exploited and actively managed since the later prehistoric period. Natural channels are prevalent within the landscape (as seen particularly in Zones E and F, **Appendix 1, Figures 3 and 5**) as well as man-made land drains. There are also possible enclosure features as shown Zone C and Zone D (**Appendix 1, Figures 9, 11 and 17**).
- 4.7 Of note is the noticeable difference in the survey results within Zone D, which show a different geological pattern. Moreover, the scarring from the recent evaluation trenches dug as part of the LTC project is clearly visible in Zone D1 and part of D2 (see **Appendix 1, Figures 14 and 15**). The archaeological potential of this area is as yet undefined, but the results of the trial-trenching by the LTC project would inform this when they become available. As previously assessed in the ES, this potential is considered to relate to later prehistoric, Roman and medieval activity relating to landscape reclamation and management.
- 4.8 The use of GPR in specific, targeted locations has not been ruled out for the future, and may be suitable for further pre-construction investigation (under the Outline WSI) should the geophysical survey identify any features of potential interest that could be affected by the proposed development which would benefit further investigation by GPR.

### LTC available information

- 4.9 Shortly before Procedural Deadline C the Applicant has been granted access by Highways England to the withdrawn LTC ES information, which has been reviewed for baseline information that can contribute to this assessment. We are grateful to Highways England for sharing this information, which has the potential to be valuable for a joined-up understanding of the historic environment in this area and how it may be affected by each development.
- 4.10 The documents set out the LTC project's extensive trial trenching in areas overlapping with and immediately adjacent to Zones A, C, D and F of the Thurrock Flexible Generation Plant development. These LTC trial trenching areas are referred to as Trench Areas R and J in Figure 6.7 of LTC ES Appendix 6.2 (see **Plate 2**).
- 4.11 However, the results of these LTC archaeological trial trench evaluations (provided in their ES Appendix 6.3) are incomplete and as yet do not provide information on the outcomes of the trenching within and adjacent to the Thurrock Flexible Generation Plant Development Order Limits.
- 4.12 A geophysical survey was undertaken on land to the north and south of the Thames as part of the LTC's baseline field survey work. At present, only the results from the survey to the south of the Thames are available (provided in ES Appendix 6.7), and no results are available for the north of the Thames which would be relevant to the wider baseline character of the Thurrock FGP site and surroundings.



**Plate 2** LTC trial trench areas in relation to Thurrock FGP site (shown as hatched) – reproduced by permission of Highways England.



**Plate 3** PQDM report results, showing areas of potential and tranches of boreholes – reproduced by permission of Highways England.

- 4.13 A series of geotechnical boreholes have been drilled as part of the LTC project, and informed a Palaeolithic and Quaternary Deposit Model (PQDM) (LTC Application Document 6.3, Appendix 6.5) (see **Plate 3**). Wessex Archaeology are undertaking the geotechnical analysis of the cores, but their reported information is not currently available: none of the LTC boreholes are within the Order Limits of the Thurrock FGP site, but would be relevant to the wider baseline character of the Thurrock FGP site when they become available.
- 4.14 The results of the PQDM also suggests a low-moderate potential in area PQ9 and moderate to high potential in area PQ10.
- 4.15 In terms of visualisations (wirelines and photomontages) there were none produced as part of the LTC LVIA or Cultural Heritage chapters pertaining to heritage assets: Bowaters Farm HAA battery was scoped out due to the overgrown nature of the site, despite its close proximity to the scheme, which is proposed to run to the west of the HAA battery and to the east of Zone A.

### Updated baseline character

- 4.16 The non-intrusive geophysical survey has provided further useful information as to the extent and likely character of the below-ground archaeological deposits across the Order Limits, adding to existing knowledge but not changing the existing understanding of the baseline environment as was described in the ES.
- 4.17 It is considered that sufficient, proportionate baseline information exists in order to confidently assess and “adequately understand” the significance of effect of the scheme on below-ground archaeological deposits, including their nature and extent as indicated by the results of geophysical survey, without recourse to extensive and intrusive field evaluation to the degree suggested by Historic England and Thurrock Council.
- 4.18 The current site conditions and the design of the proposed development are summarised below, against which the updated significance of effect assessment has been made.

### Site Conditions

- 4.19 The main development site for the generating plant and battery storage facility (Zone A) currently comprises open fields crossed by drainage ditches and three overhead power lines with steel lattice electricity pylons. Land for access routes (including a causeway for barge deliveries during construction) and connections to the gas and electricity grid within the Order Limits comprises farmland, previously developed industrial sites, and the north bank of the River Thames.
- 4.20 The gas connection compound (Zone D) would be located within an agricultural field south of Station Road, bounded by mature hedgerow and farm buildings.

### Proposed Development

- 4.21 In overview, the proposed development comprises the construction and operation of:
- reciprocating gas engines with rated electrical output totalling 600 MW;
  - batteries with rated electrical output of 150 MW and storage capacity of up to 600 MWh;
  - gas and electricity connections;
  - creation of temporary and permanent private access routes for construction haul and access in operation, including a causeway for delivery of abnormal indivisible loads by barge; and,
  - designation of exchange Common Land and habitat creation or enhancement for protected species translocation and biodiversity gain.
- 4.22 The main development site of the flexible generation plant in Zone A is constrained by the existing overhead power lines; the ecological value of the existing ditches to the site boundary; the flat topography of the site and surrounding landscape, meaning that any tall structures may be visible

both close to the site and further away; the location of the site in relation to the Tilbury Substation; and, the available site area and adjacent land uses.

- 4.23 Zone D comprises as a design envelope a maximum 50x50m compound containing structures that may be up to 5m in height, including a perimeter security fence, screening planting, and access track to the public highway.
- 4.24 The Design Principles for the proposed development are detailed in application document **A8.4**.
- 4.25 The rationale for the siting and arrangement of Zone A was to locate the development as close as possible to the existing Tilbury Substation to the south of the site to minimise the grid connection distance and minimise impact in the Green Belt by being as close as possible to the existing built-up industrial development immediately west of the site.
- 4.26 The Illustrative Cross Section Plans (Application document **A2.8**) show indicative elevations for the gas reciprocating engine houses, stacks and battery storage houses or containers. Buildings forms are proposed to be simple, with pitched roofs and considered façade treatment. It is proposed to minimise the visual mass of the buildings throughout the site by means of horizontal tonal colour banding.
- 4.27 The concept design of the buildings as set out in Application document **A8.4** has been used to produce illustrative photomontages of the development set in its landscape and visual context, which are shown in the Environmental Statement, Volume 3, Chapter 6: Landscape and Visual Resources. As noted in that chapter, visual and landscape impacts of the proposed development with this type of façade treatment applied would be reduced compared to the worst-case design envelope that has been assessed for the EIA.

#### **Updated Significance of Effect Assessment**

- 4.28 The site conditions and proposed concept design have been judged in accordance with the assessment methodology set out in Section 3, to arrive at a magnitude of change (impact) and to assess this in EIA terms, as presented in tabular form in **Appendix 2**.
- 4.29 The visual impact of the proposed development will be ameliorated where possible through detailed design principles, external treatments and landscaping proposals, as was set out in the application documents.
- 4.30 The direct physical impact on known and potential below-ground archaeological deposits will be offset by a staged programme of archaeological works as set out in the Outline WSI, which is a requirement in the draft DCO.

## 5 SUMMARY AND CONCLUSIONS

- 5.1 The settings of above-ground built heritage assets and scheduled monuments within a 3km radius of the proposed development Zone A that are considered to be sensitive receptors to the proposed development have been assessed. The impact of the proposed development on below-ground archaeological remains within the Order Limits has also been assessed.
- 5.2 The assessment has been undertaken using national policy and guidance and taking a proportionate approach to applying a methodology for scoping in and scoping out assets.
- 5.3 Effects on sensitive receptors to the proposed development are tabulated in **Appendix 2**.
- 5.4 There are identified effects arising from the proposed development and the majority of these are minor adverse, and therefore not significant in EIA terms. However, there is considered to be a moderate adverse effect on the West Tilbury Conservation Area as a result of the change within its setting, which is deemed significant in EIA terms.
- 5.5 The visual impact of the proposed development will be ameliorated where possible through detailed design principles, external treatments and landscaping proposals. The physical impact of the scheme will be offset through a staged programme of archaeological works as set out in the revised Outline WSI.

## 6 SOURCES CONSULTED

### General

British Library

Historic Environment Record (provided by Essex and Kent County Councils)

The National Archive

### Internet

British Geological Survey – <http://www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html>

British History Online – <http://www.british-history.ac.uk/>

Domesday Online – <http://www.domesdaybook.co.uk/>

Historic England: The National Heritage List for England – <http://www.historicengland.org.uk/listing/the-list/>

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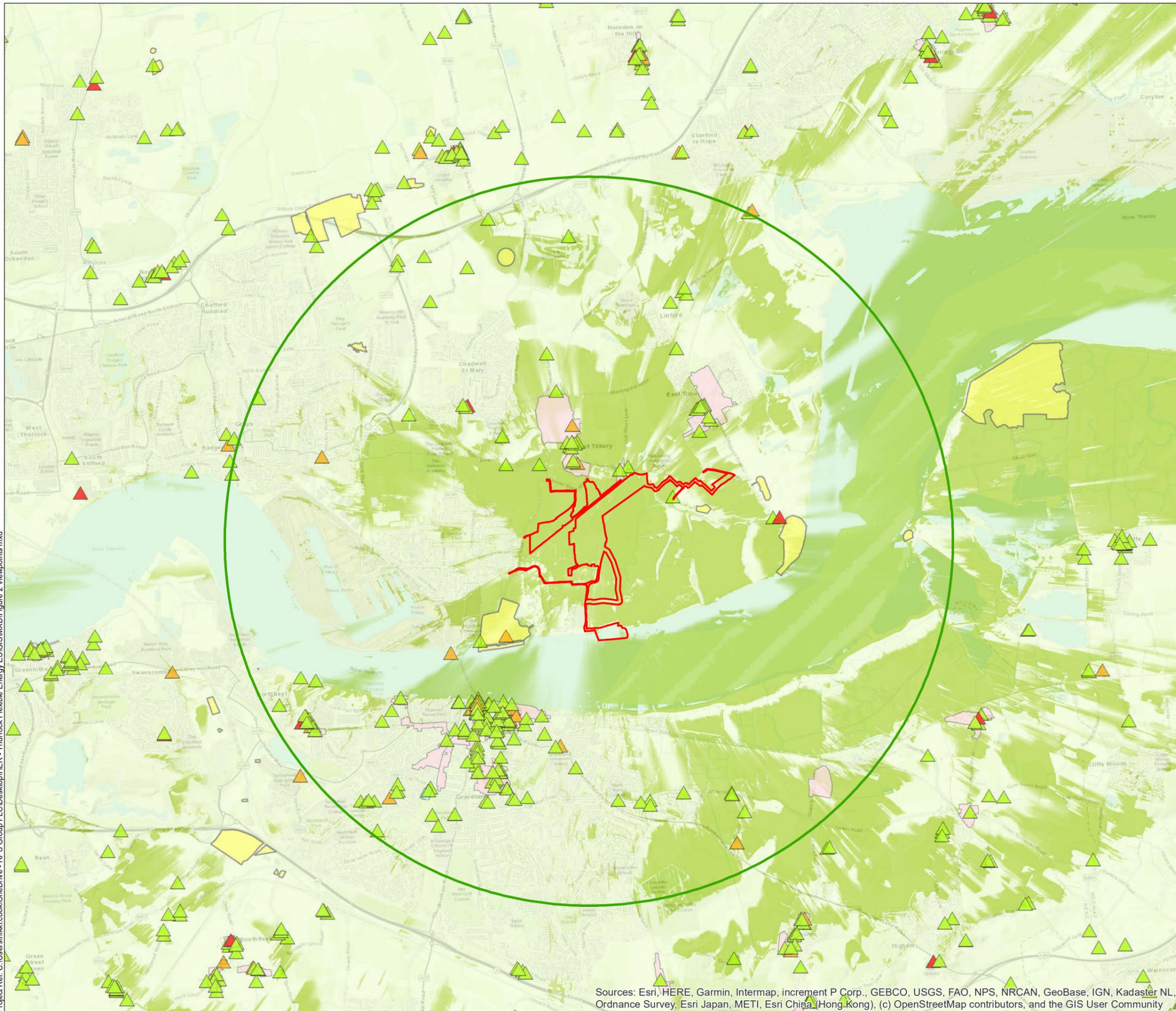
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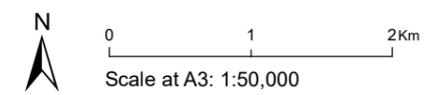
Wessex Archaeology 2020-2021 (in preparation): Geoarchaeological assessment, LTC

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**Legend**

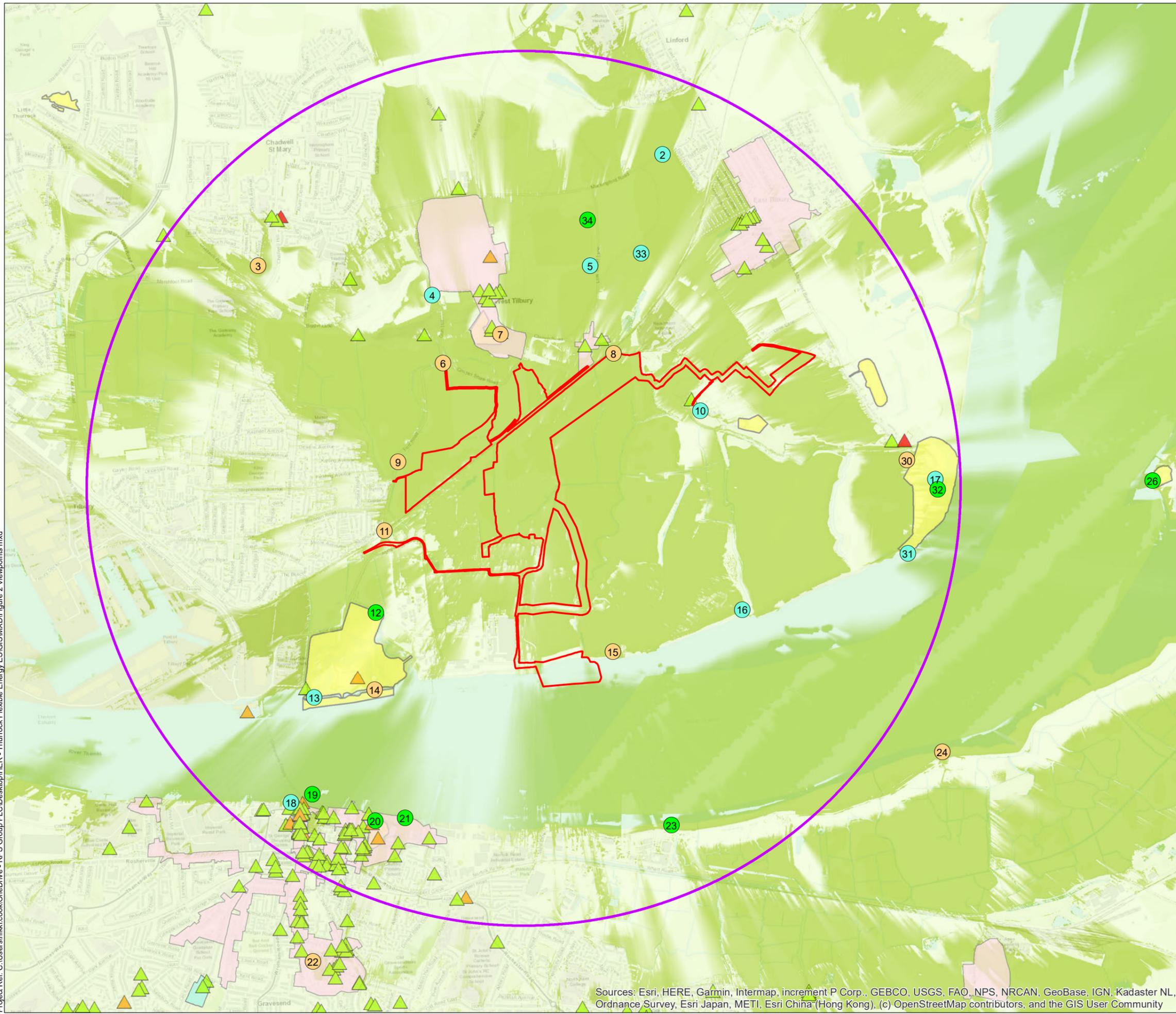
- Site Boundary
- Conservation Areas
- Grade I Listed Building
- Grade II\* Listed Building
- Grade II Listed Building
- Scheduled Monuments



**Figure 1**  
ZTV and heritage designations

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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**Legend**

- Site Boundary
- Conservation Areas
- ▲ Grade I Listed Building
- ▲ Grade II\* Listed Building
- ▲ Grade II Listed Building
- Scheduled Monuments
- 3 Photomontage and wire line viewpoint
- 4 Viewpoint Representative
- 34 Wire Line Viewpoint
- 3 3km buffer

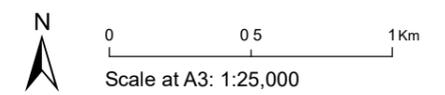
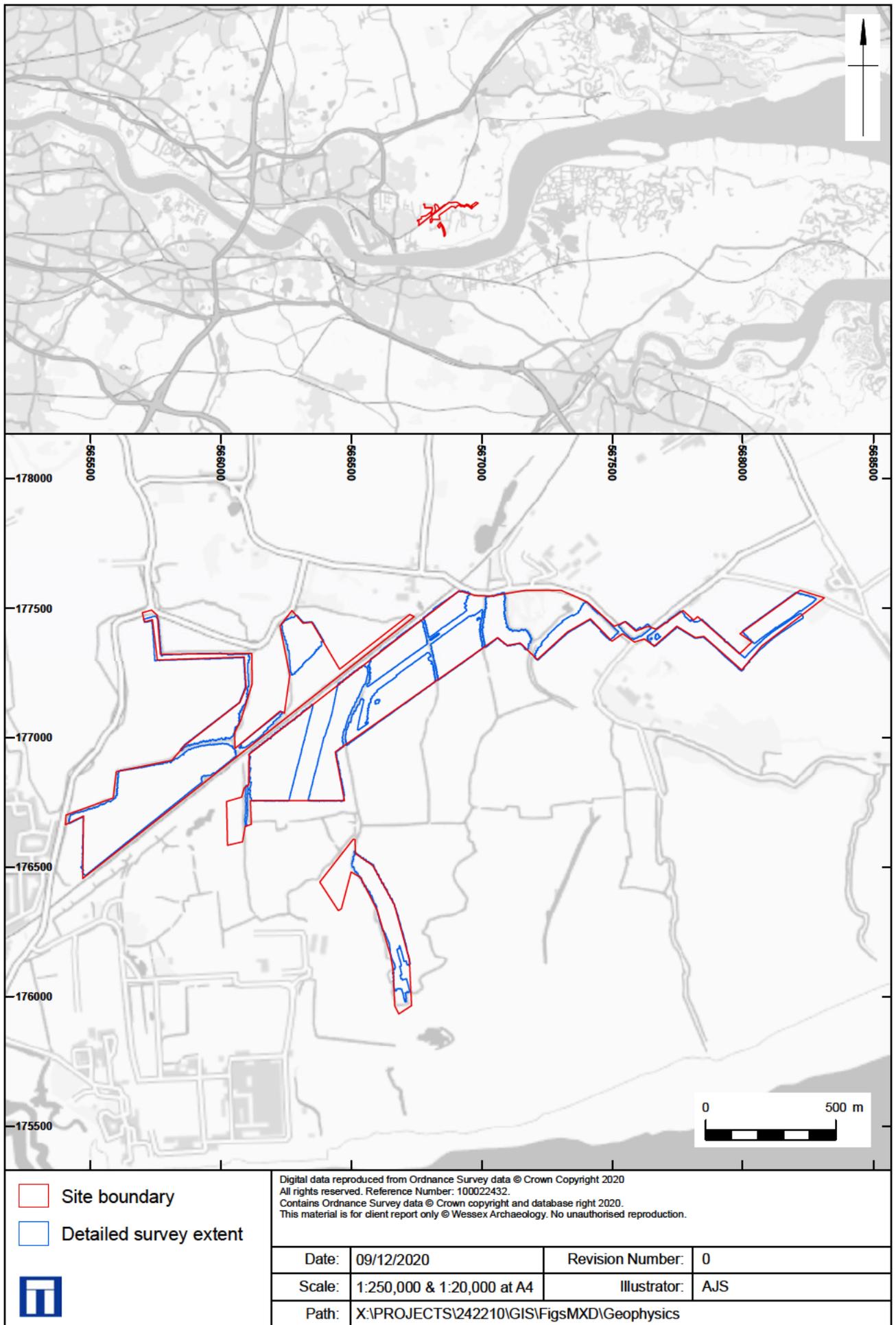


Figure 2  
Viewpoint locations

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

**7 APPENDIX 1 GEOPHYSICAL SURVEY (PRELIMINARY RESULTS)**



Site location and survey extents

Figure 1



 <ul style="list-style-type: none"> <li><span style="color: red;">□</span> Site boundary</li> <li><span style="color: blue;">□</span> Detailed survey extent</li> </ul>	<p>-2 nT <span style="display: inline-block; width: 100px; height: 10px; background: linear-gradient(to right, white, black);"></span> +3 nT</p>	<p>Date: 11/12/2020      Revision Number: 0</p>	
	<p><small>Contains OS data © Crown Copyright and database right 2020 This material is for client report only © Wessex Archaeology. No unauthorised reproduction.</small></p>	<p>Scale: 1:2,000 at A3      Illustrator: AJS</p>	
			<p>Path: X:\PROJECTS\242210\GIS\Figs\MXD\Preliminary</p>

Detailed gradiometer survey results: greyscale plot

Figure 2



	Possible archaeology		Field Path		Uncertain trend
	Natural channels		Modern service		Land drain
	Geology		Ferrous		Detailed survey extent
	Former field boundary		Previous trenching		Site boundary

Date:	11/12/2020	Revision Number:	0
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Detailed gradiometer survey results: interpretation

Figure 3




 Site boundary  
 Detailed survey extent

-2 nT  +3 nT

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Detailed gradiometer survey results: greyscale plot

Figure 4



	Possible archaeology		Field Path		Uncertain trend
	Natural channels		Modern service		Land drain
	Geology		Previous trenching		Detailed survey extent
	Former field boundary		Site boundary		

Date:	11/12/2020	Revision Number:	0
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Detailed gradiometer survey results: interpretation

Figure 5




 Site boundary  
 Detailed survey extent

-2 nT  +3 nT

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Detailed gradiometer survey results: greyscale plot

Figure 6



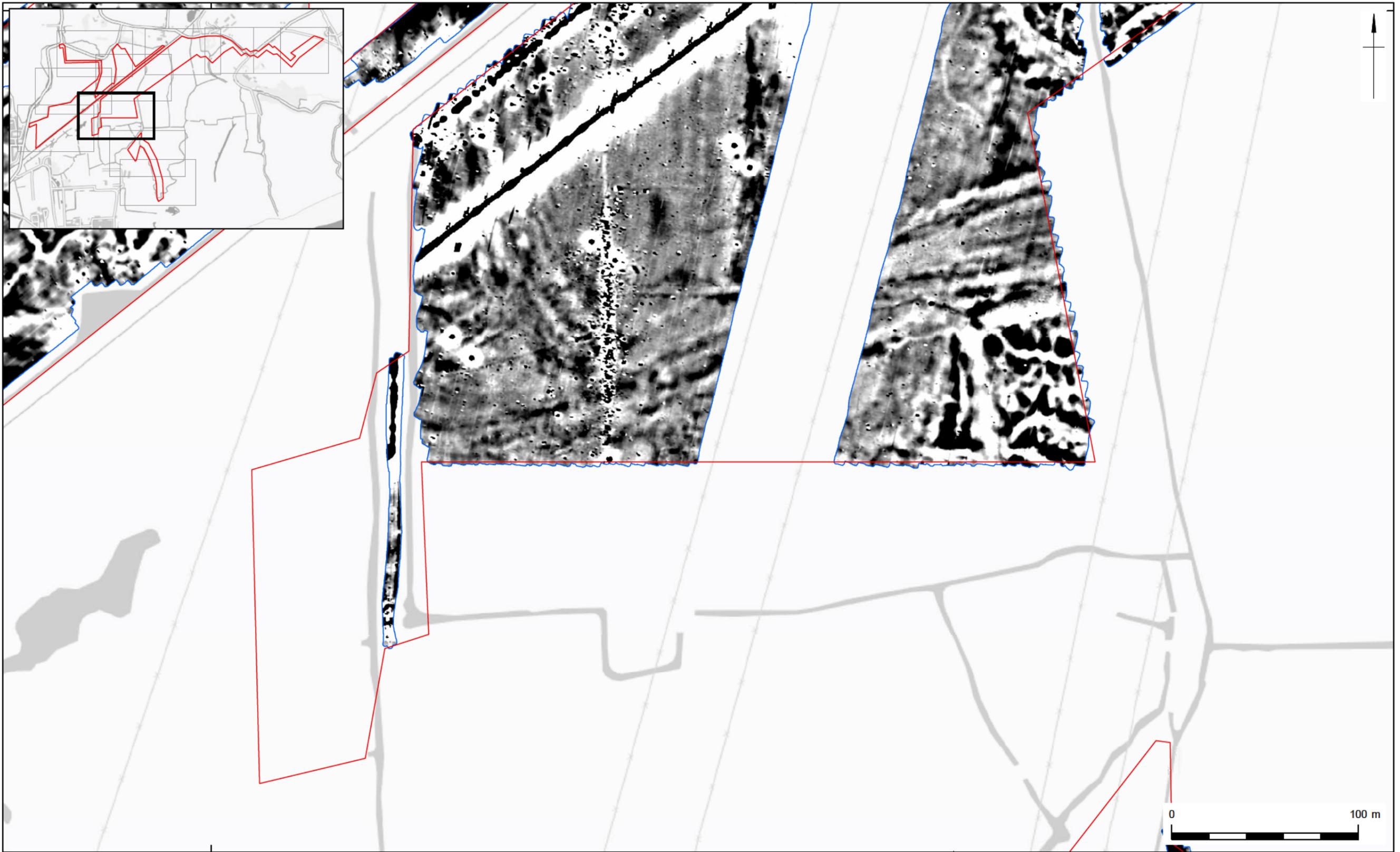
	Possible archaeology		Field Path		Uncertain trend
	Natural channels		Modern service		Land drain
	Geology		Ferrous		Detailed survey extent
	Former field boundary		Previous trenching		Site boundary

Date:	11/12/2020	Revision Number:	0
Scale:	1:2,000 at A3	Illustrator:	RP
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Detailed gradiometer survey results: interpretation

Figure 7




 Site boundary  
 Detailed survey extent

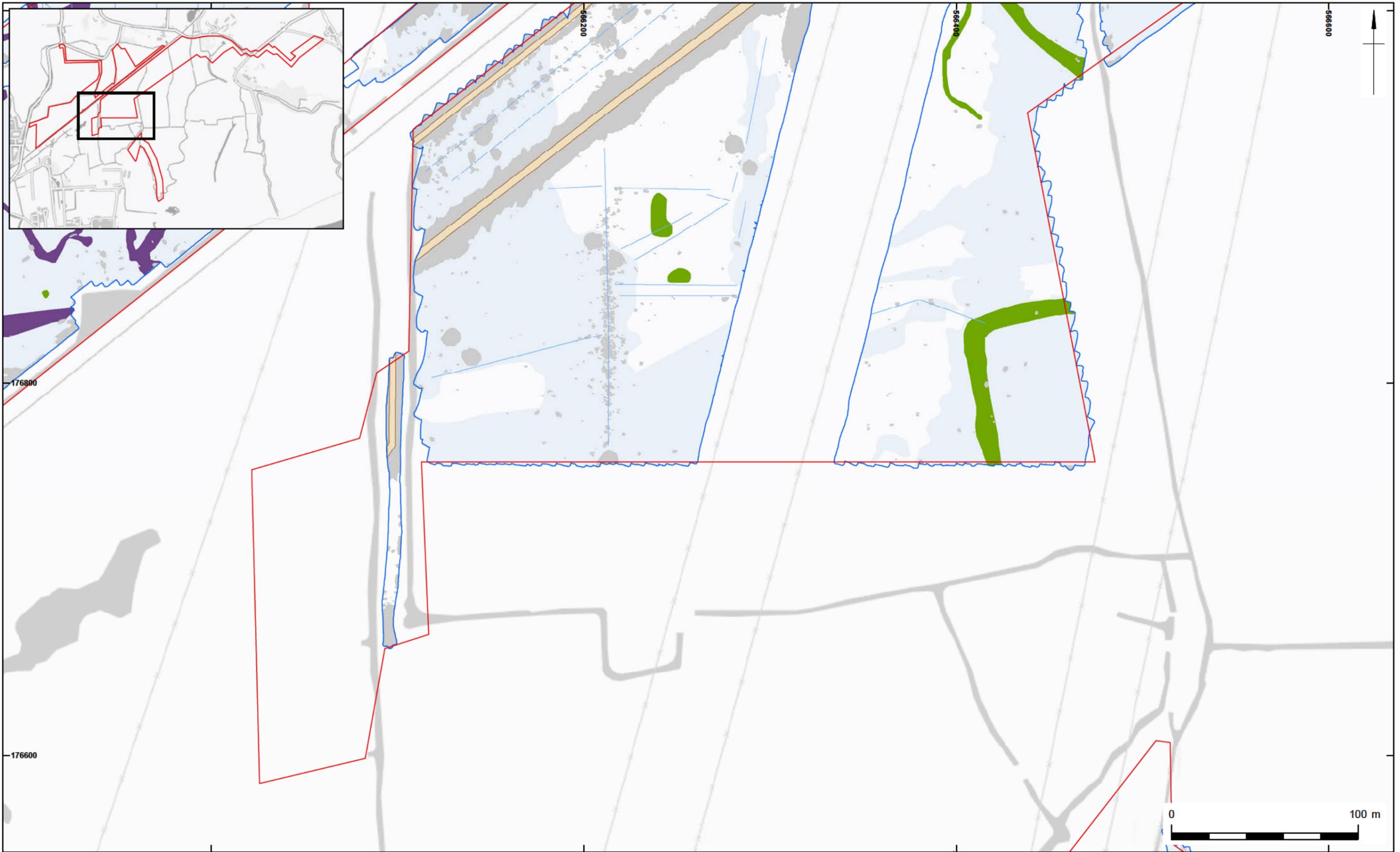
-2 nT  +3 nT

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Detailed gradiometer survey results: greyscale plot

Figure 8



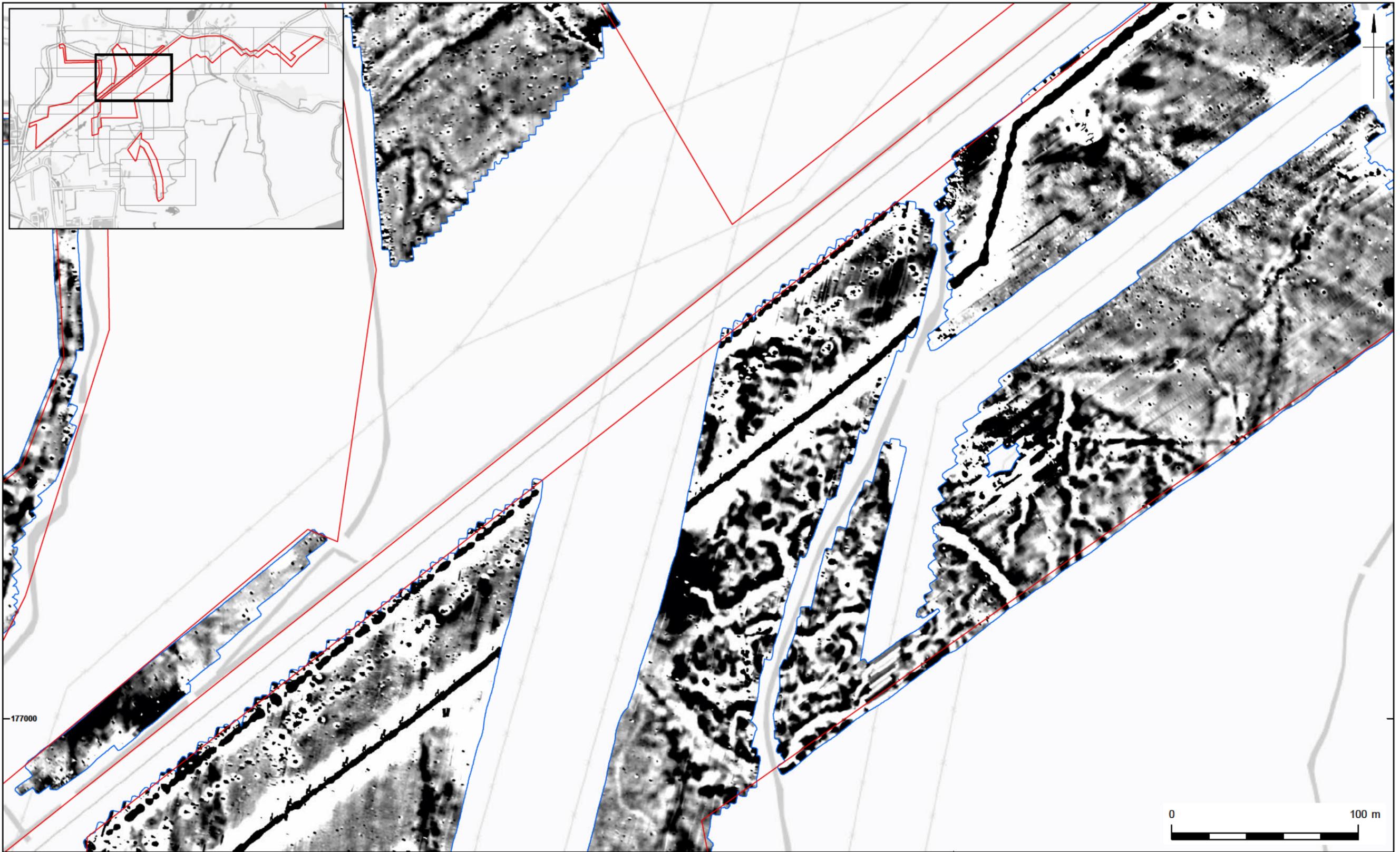
	Possible archaeology		Field Path		Uncertain trend
	Natural channels		Modern service		Land drain
	Geology		Ferrous		Detailed survey extent
	Former field boundary		Previous trenching		Site boundary

Date:	11/12/2020	Revision Number:	0
Scale:	1:2,000 at A3	Illustrator:	RP
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Detailed gradiometer survey results: interpretation

Figure 9




 Site boundary  
 Detailed survey extent

-2 nT  +3 nT

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Detailed gradiometer survey results: greyscale plot

Figure 10



	Possible archaeology		Field Path		Uncertain trend
	Natural channels		Modern service		Land drain
	Geology		Ferrous		Detailed survey extent
	Former field boundary		Previous trenching		Site boundary

Date:	11/12/2020	Revision Number:	0
Scale:	1:2,000 at A3	Illustrator:	RP
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Detailed gradiometer survey results: interpretation

Figure 11




 Site boundary  
 Detailed survey extent

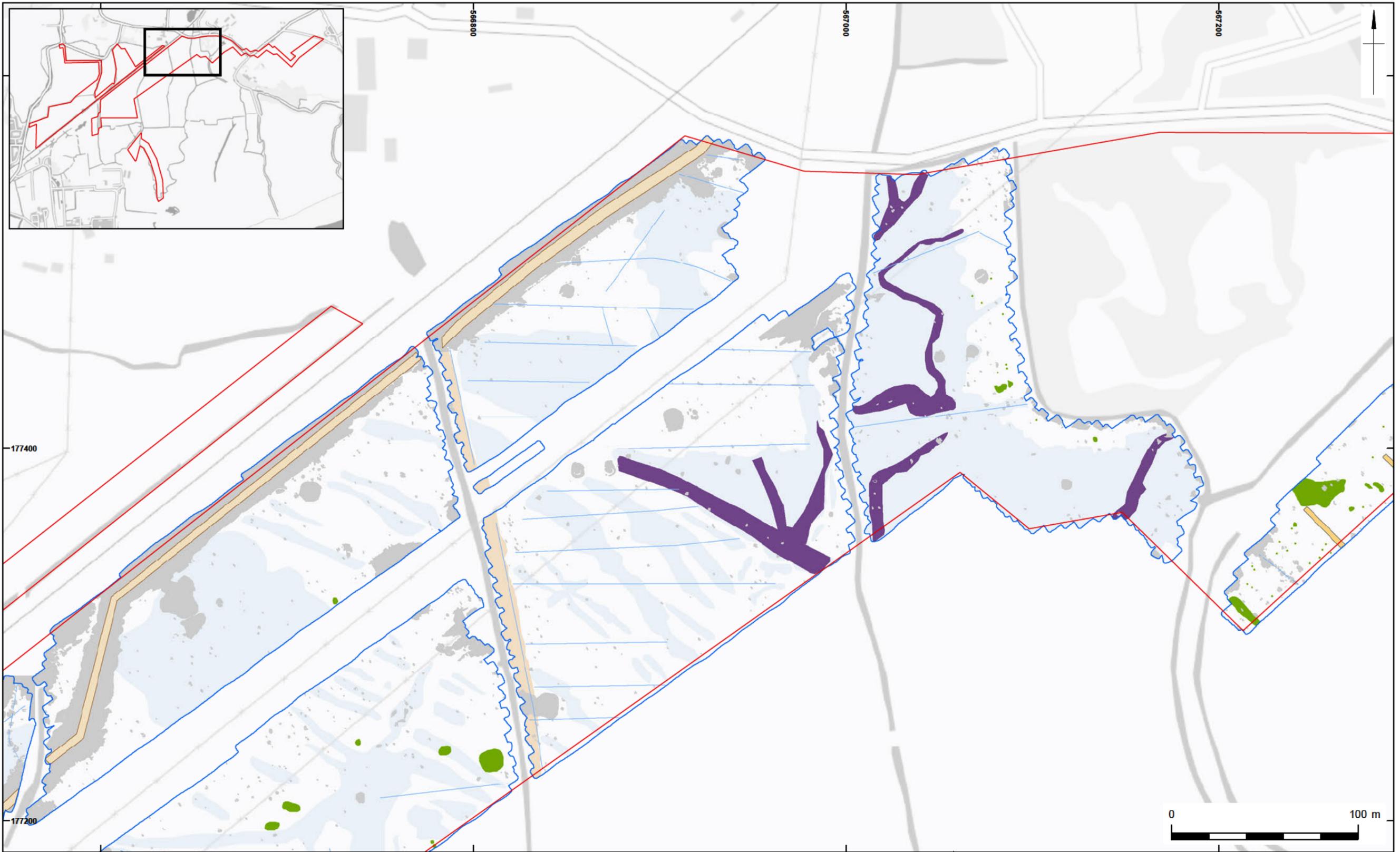
-2 nT  +3 nT

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Date:	11/12/2020	Revision Number:	0
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Detailed gradiometer survey results: greyscale plot

Figure 12



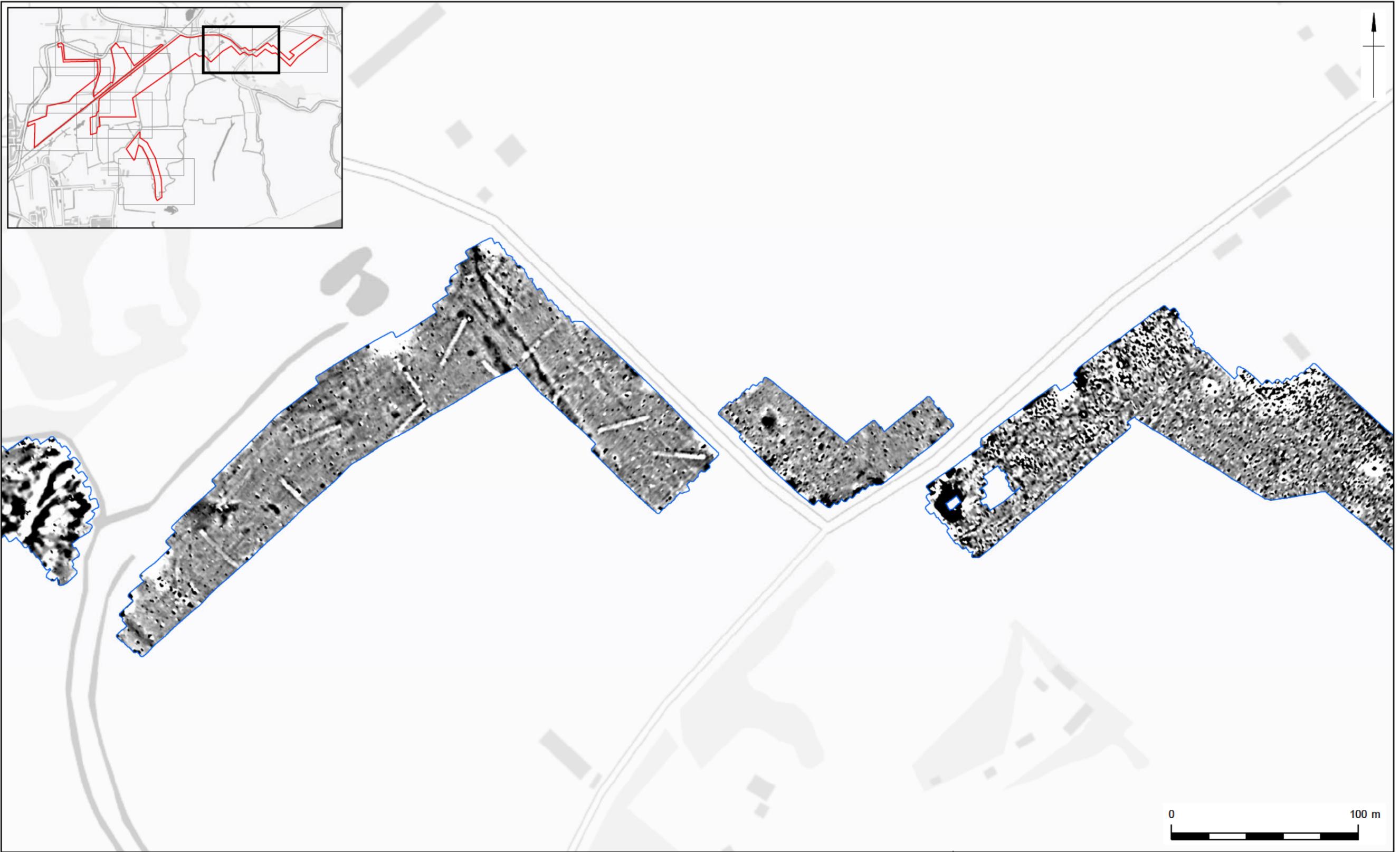
 Possible archaeology	 Field Path	 Uncertain trend
 Natural channels	 Modern service	 Land drain
 Geology	 Ferrous	 Detailed survey extent
 Former field boundary	 Previous trenching	 Site boundary

Date:	11/12/2020	Revision Number:	0
Scale:	1:2,000 at A3	Illustrator:	RP
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Detailed gradiometer survey results: interpretation

Figure 13



	 Site boundary			Date:	11/12/2020	Revision Number:	0
	 Detailed survey extent			Scale:	1:2,000 at A3	Illustrator:	AJS
			Path:	X:\PROJECTS\242210\GIS\Figs\MXD\Preliminary			

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Detailed gradiometer survey results: greyscale plot

Figure 14



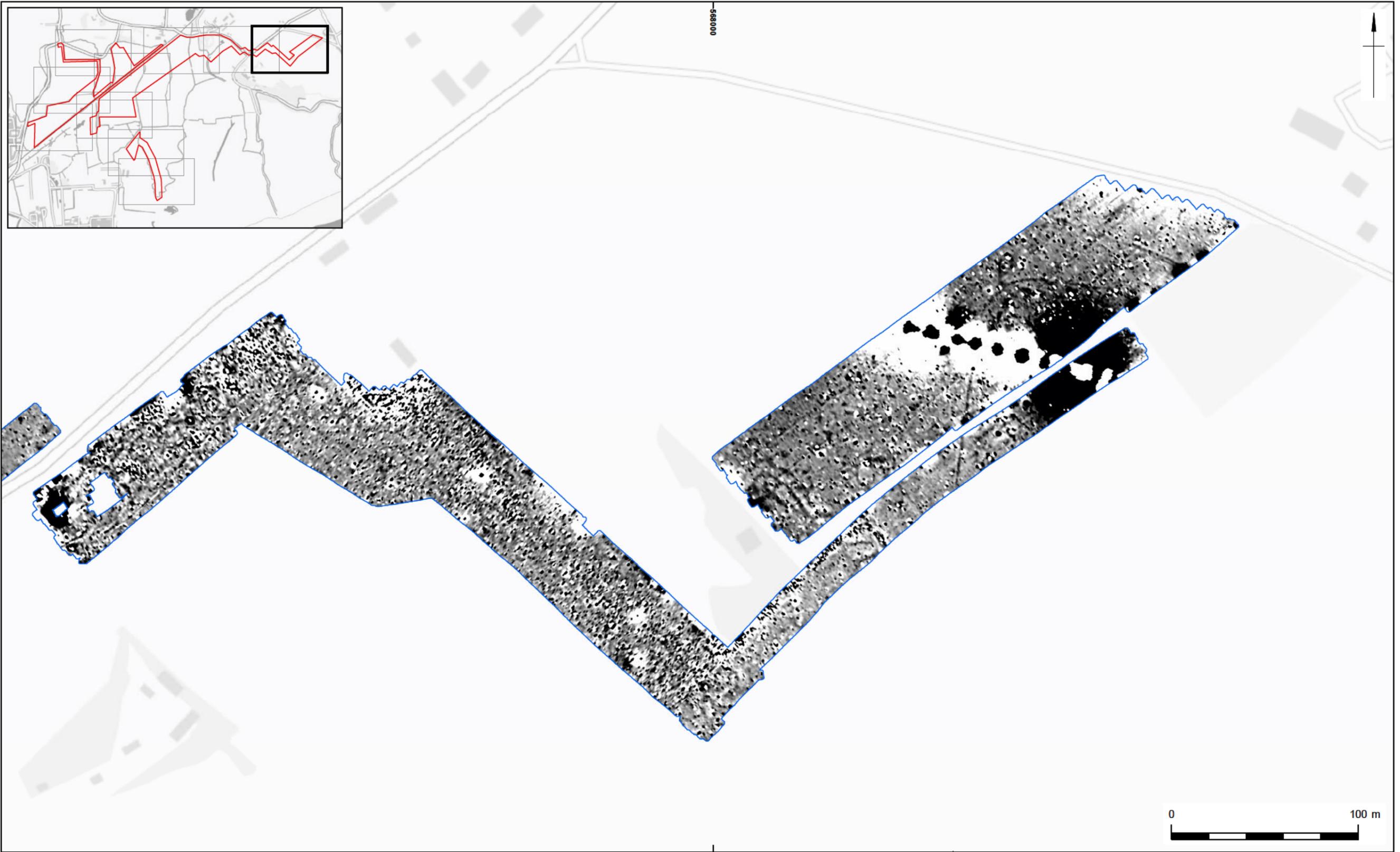
	Possible archaeology		Field Path		Uncertain trend
	Natural channels		Modern service		Land drain
	Geology		Ferrous		Detailed survey extent
	Former field boundary		Previous trenching		Site boundary

Date:	11/12/2020	Revision Number:	0
Scale:	1:2,000 at A3	Illustrator:	RP
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Detailed gradiometer survey results: interpretation

Figure 15



□ Site boundary  
□ Detailed survey extent

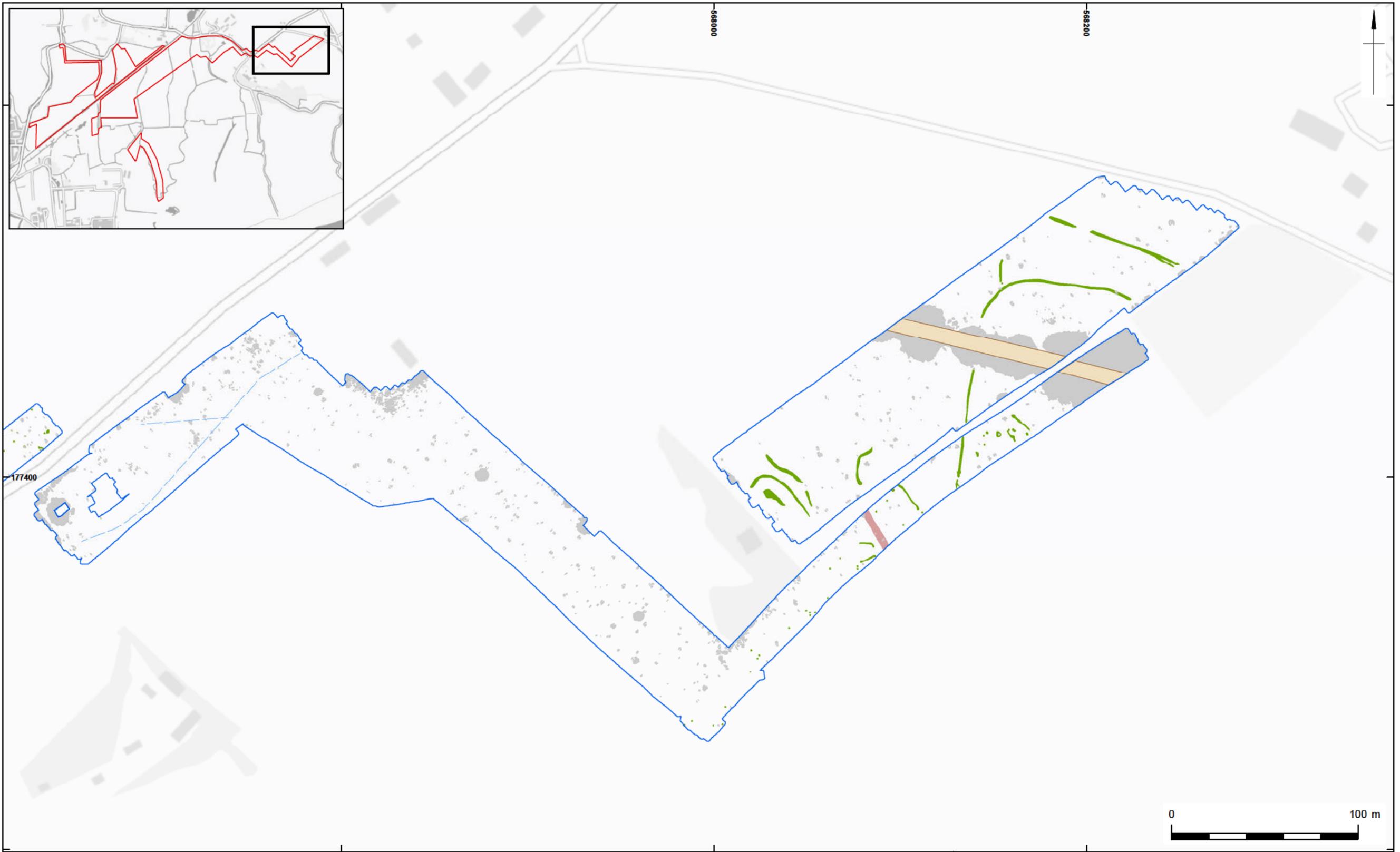


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Date:	11/12/2020	Revision Number:	0
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Detailed gradiometer survey results: greyscale plot

Figure 16



	Possible archaeology		Field Path		Uncertain trend
	Natural channels		Modern service		Land drain
	Geology		Ferrous		Detailed survey extent
	Former field boundary		Previous trenching		Site boundary

Date:	11/12/2020	Revision Number:	0
Scale:	1:2,000 at A3	Illustrator:	RP
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Detailed gradiometer survey results: interpretation

Figure 17




 Site boundary  
 Detailed survey extent

-2 nT  +3 nT

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Detailed gradiometer survey results: greyscale plot

Figure 18



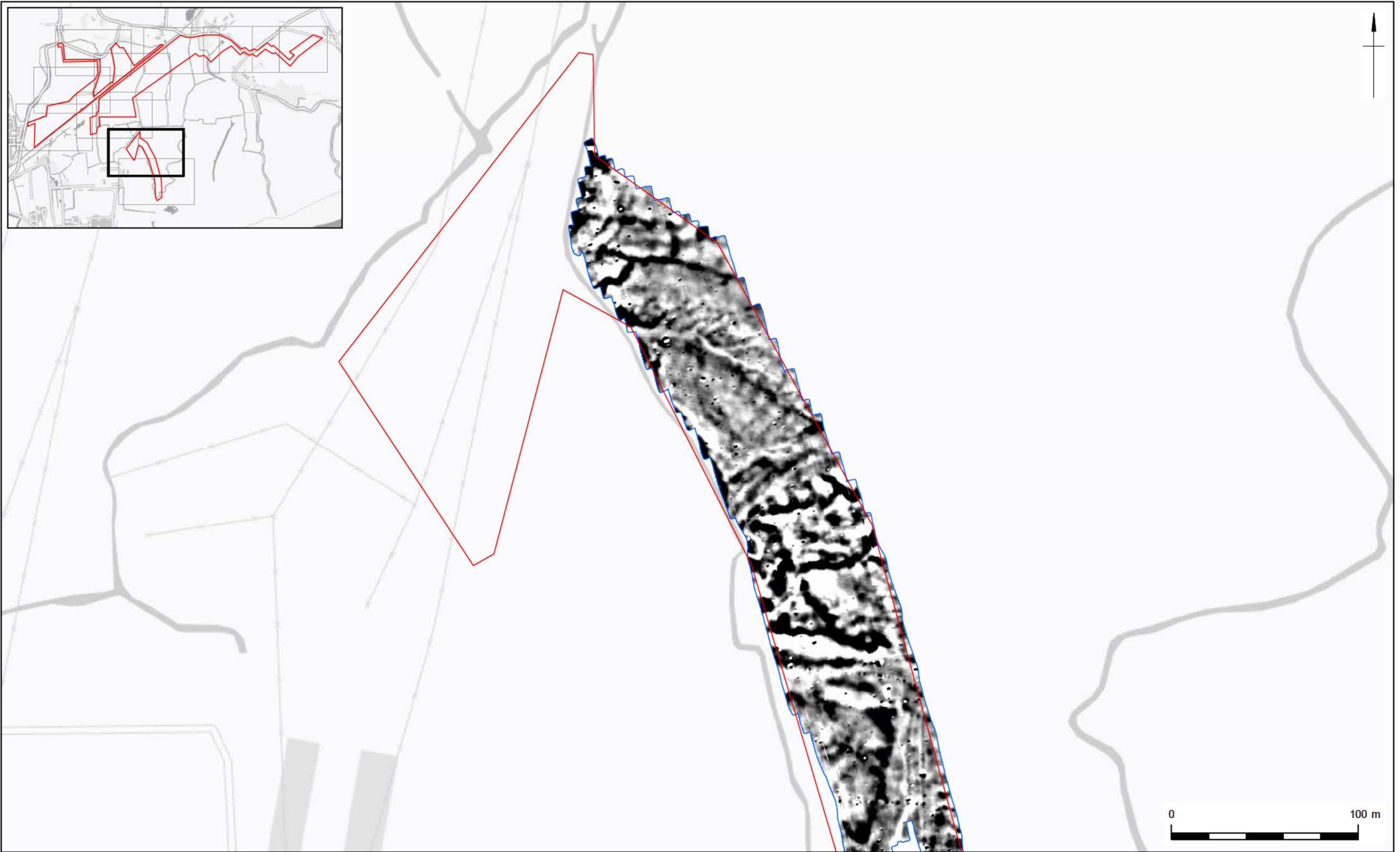
 Possible archaeology	 Field Path	 Uncertain trend
 Natural channels	 Modern service	 Land drain
 Geology	 Ferrous	 Detailed survey extent
 Former field boundary	 Previous trenching	 Site boundary

Date:	11/12/2020	Revision Number:	0
Scale:	1:2,000 at A3	Illustrator:	RP
Path:	X:\PROJECTS\242210\GIS\Figs\MXD\Preliminary		

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Detailed gradiometer survey results: interpretation

Figure 19




 Site boundary  
 Detailed survey extent

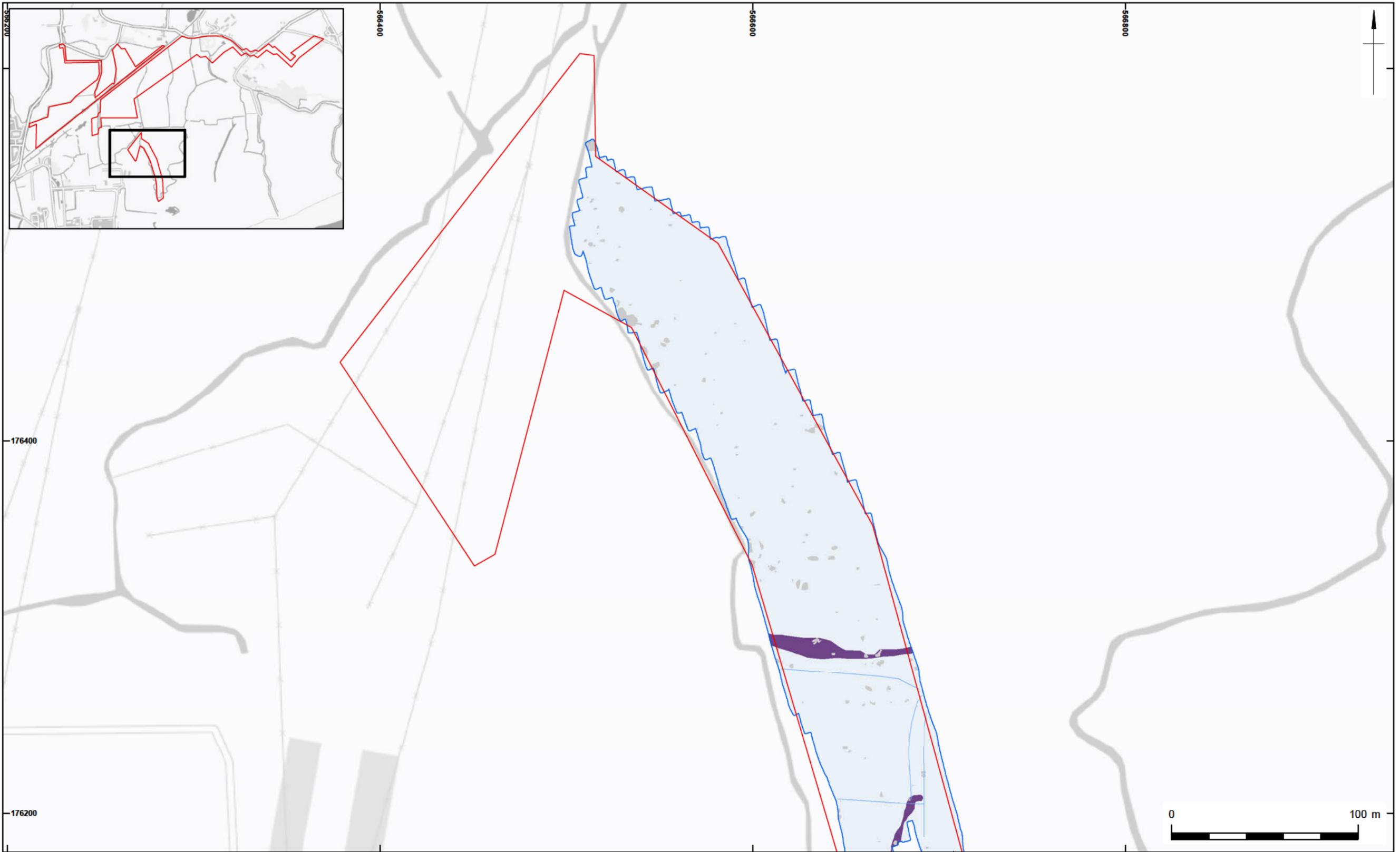
-2 nT  +3 nT

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Date:	11/12/2020	Revision Number:	0
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Detailed gradiometer survey results: greyscale plot

Figure 20



 Possible archaeology	 Field Path	 Uncertain trend
 Natural channels	 Modern service	 Land drain
 Geology	 Ferrous	 Detailed survey extent
 Former field boundary	 Previous trenching	 Site boundary

Date:	11/12/2020	Revision Number:	0
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Detailed gradiometer survey results: interpretation

Figure 21

**8 APPENDIX 2**

Table 8.1: Summary of potential environment effects, mitigation and monitoring.

Description of impact	Measures adopted as part of the project	Magnitude of impact	Sensitivity of receptor	Significance of effect	Additional measures	Residual effect	Proposed monitoring
<b>Construction</b>							
Construction of Thurrock Flexible Generation Plant (including any stripping required for storage, compounds and accesses) could result in permanent loss of or damage to, heritage assets comprising buried archaeological, geoarchaeological and palaeoenvironmental remains	As set out in the Outline Written Scheme of Investigation	Major (where present)	Medium to high	Moderate to major adverse (significant)	As set out in the Outline Written Scheme of Investigation Possibility of refined design solutions (e.g. micro-siting or 'no dig' solutions for some aspects of the scheme)	Minor adverse (not significant)	Monitoring during construction as set out in the Outline Written Scheme of Investigation
Temporary change within the setting of West Tilbury Earthworks Scheduled Monument	n/a	Minor	High	Minor adverse (not significant)	None	Minor adverse (not significant)	None
Temporary change within the setting of Tilbury Fort Scheduled Monument	n/a	Minor	High	Minor adverse (not significant)	None	Minor adverse (not significant)	None
Temporary change within the setting of Gravesend Blockhouse Scheduled Monument	n/a	Minor	High	Minor adverse (not significant)	None	Minor adverse (not significant)	None
Temporary change within the setting of New Tavern Fort Scheduled Monument	n/a	Minor	High	Minor adverse (not significant)	None	Minor adverse (not significant)	None
Temporary change within the setting of Coalhouse Fort Scheduled Monument	n/a	Minor	High	Minor adverse (not significant)	None	Minor adverse (not significant)	None
Temporary change within the setting of Bowaters Farm Battery Scheduled Monument	n/a	Minor	High	Minor adverse (not significant)	None	Minor adverse (not significant)	None
Temporary change within the setting of Cliffe Fort Scheduled Monument	n/a	Minor	High	Minor adverse (not significant)	None	Minor adverse (not significant)	None
Temporary change within the setting of West Tilbury Conservation Area	n/a	Minor	High	Moderate adverse (significant)	None	Moderate adverse (significant)	None
Temporary change within the setting of East Tilbury Conservation Area	n/a	Minor	High	Minor adverse (not significant)	None	Minor adverse (not significant)	None
Temporary change within the setting of Grade II* Riverside Station	n/a	Minor	High	Minor adverse (not significant)	None	Minor adverse (not significant)	None
Temporary change within the setting of Grade II* Officers' Barracks	n/a	Minor	High	Negligible to minor adverse (not significant)	None	Minor adverse (not significant)	None
Temporary change within the setting of Grade II* St James' Church, West Tilbury	n/a	Minor	High	Minor adverse (not significant)	None	Minor adverse (not significant)	None

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Description of impact	Measures adopted as part of the project	Magnitude of impact	Sensitivity of receptor	Significance of effect	Additional measures	Residual effect	Proposed monitoring
Temporary change within the setting of Grade I St Mary's Church	n/a	Minor	High	Negligible to Minor adverse (not significant)	None	Minor adverse (not significant)	None
Temporary change within the setting of Grade II Chadwell House	n/a	Negligible	Medium	Minor adverse (not significant)	None	Negligible (not significant)	None
Temporary change within the setting of Grade II Sleepers Farmhouse	n/a	Negligible	Medium	Minor adverse (not significant)	None	Negligible (not significant)	None
Temporary change within the setting of Grade II Sunspan	n/a	Negligible	Medium	Negligible	None	Negligible (not significant)	None
Temporary change within the setting of Grade II West Tilbury Hall	n/a	Minor	Medium	Negligible to minor adverse (not significant)	None	Minor adverse (not significant)	None
Temporary change within the setting of Grade II Barn to north of West Tilbury Hall	n/a	Negligible	Medium	Negligible	None	Negligible (not significant)	None
Temporary change within the setting of Grade II Gun Hill Farmhouse	n/a	Negligible	Medium	Negligible	None	Minor adverse (not significant)	None
Temporary change within the setting of Grade II Biggin Farmhouse	n/a	Negligible	Medium	Negligible	None	Negligible (not significant)	None
Temporary change within the setting of Grade II Polwicks Farmhouse	n/a	Minor	Medium	Minor adverse (not significant)	None	Minor adverse (not significant)	None
Temporary change within the setting of Grade II Walnut Cottage	n/a	Minor	Medium	Minor adverse (not significant)	None	Minor adverse (not significant)	None
Temporary change within the setting of Grade II Buckland	n/a	Minor	Medium	Minor adverse (not significant)	None	Minor adverse (not significant)	None
Temporary change within the setting of Grade II Worlds End Inn	n/a	Negligible	Medium	Negligible	None	Negligible (not significant)	None
Construction works at Thurrock Flexible Generation Plant could result in change within the overall historic landscape	n/a	Minor	Medium	Minor adverse (not significant)	None	Minor adverse (not significant)	None
<b>Operation and maintenance</b>							
Loss of or damage to, heritage assets comprising buried archaeological remains	n/a	No change	Medium	No change	None	No change	None
Long-term change within the settings of scheduled earthworks at West Tilbury	n/a	Minor	High	Minor adverse (not significant)	None	Minor adverse (not significant)	None
Long-term change within the setting of Tilbury Fort Scheduled Monument	n/a	Minor	High	Minor adverse (not significant)	None	Minor adverse (not significant)	None

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Description of impact	Measures adopted as part of the project	Magnitude of impact	Sensitivity of receptor	Significance of effect	Additional measures	Residual effect	Proposed monitoring
Long-term change within the setting of Gravesend Blockhouse Scheduled Monument	n/a	Minor	High	Minor adverse (not significant)	None	Minor adverse (not significant)	None
Long-term change within the setting of New Tavern Fort Scheduled Monument	n/a	Minor	High	Minor adverse (not significant)	None	Minor adverse (not significant)	None
Long-term change within the setting of Coalhouse Fort Scheduled Monument	n/a	Minor	High	Minor adverse (not significant)	None	Minor adverse (not significant)	None
Long-term change within the setting of Bowaters Farm Battery Scheduled Monument	n/a	Minor	High	Minor adverse (not significant)	None	Minor adverse (not significant)	None
Long-term change within the setting of Cliffe Fort Scheduled Monument	n/a	Minor	High	Minor adverse (not significant)	None	Minor adverse (not significant)	None
Long-term change within the setting of West Tilbury Conservation Area	n/a	Minor	High	Moderate adverse (significant)	None	Moderate adverse (significant)	None
Long-term change within the setting of East Tilbury Conservation Area	n/a	Minor	High	Minor adverse (not significant)	None	Minor adverse (not significant)	None
Long-term change within the setting of Grade II* Riverside Station	n/a	Minor	High	Minor adverse (not significant)	None	Minor adverse (not significant)	None
Long-term change within the setting of Grade II* Officers' Barracks	n/a	Minor	High	Negligible to minor adverse (not significant)	None	Minor adverse (not significant)	None
Long-term change within the setting of Grade II* St James' Church, West Tilbury	n/a	Minor	High	Minor adverse (not significant)	None	Minor adverse (not significant)	None
Long-term change within the setting of Grade I St Mary's Church	n/a	Minor	High	Negligible to Minor adverse (not significant)	None	Minor adverse (not significant)	None
Long-term change within the setting of Grade II Chadwell House	n/a	Negligible	Medium	Minor adverse (not significant)	None	Negligible (not significant)	None
Long-term change within the setting of Grade II Sleepers Farmhouse	n/a	Negligible	Medium	Minor adverse (not significant)	None	Negligible (not significant)	None
Long-term change within the setting of Grade II Sunspan	n/a	Negligible	Medium	Negligible	None	Negligible (not significant)	None
Long-term change within the setting of Grade II West Tilbury Hall	n/a	Minor	Medium	Negligible to minor adverse (not significant)	None	Minor adverse (not significant)	None
Long-term change within the setting of Grade II Barn to north of West Tilbury Hall	n/a	Negligible	Medium	Negligible	None	Negligible (not significant)	None
Long-term change within the setting of Grade II Gun Hill Farmhouse	n/a	Negligible	Medium	Negligible	None	Minor adverse (not significant)	None

ES SUPPLEMENTAL INFORMATION: HISTORIC ENVIRONMENT UPDATED BASELINE REPORT

Description of impact	Measures adopted as part of the project	Magnitude of impact	Sensitivity of receptor	Significance of effect	Additional measures	Residual effect	Proposed monitoring
Long-term change within the setting of Grade II Biggin Farmhouse	n/a	Negligible	Medium	Negligible	None	Negligible (not significant)	None
Long-term change within the setting of Grade II Polwicks Farmhouse	n/a	Minor	Medium	Minor adverse (not significant)	None	Minor adverse (not significant)	None
Long-term change within the setting of Grade II Walnut Cottage	n/a	Minor	Medium	Minor adverse (not significant)	None	Minor adverse (not significant)	None
Long-term change within the setting of Grade II Buckland	n/a	Minor	Medium	Minor adverse (not significant)	None	Minor adverse (not significant)	None
Long-term change within the setting of Grade II Worlds End Inn	n/a	Negligible	Medium	Negligible	None	Negligible (not significant)	None
The operation and maintenance of Thurrock Flexible Generation Plant could result in long-term change within the overall historic landscape	Landscape planting including the gapping up of hedgerows	Minor	Medium	Minor adverse (not significant)	None	Minor adverse (not significant)	None
<b>Decommissioning</b>							
Temporary change within the setting of West Tilbury Earthworks Scheduled Monument	To be defined in decommissioning plan	Negligible	High	Minor adverse (not significant)	None	Minor adverse (not significant)	None
Temporary change within the setting of Tilbury Fort Scheduled Monument	To be defined in decommissioning plan	Negligible	High	Minor adverse (not significant)	None	Minor adverse (not significant)	None
Temporary change within the setting of Gravesend Blockhouse Scheduled Monument	To be defined in decommissioning plan	Negligible	High	Minor adverse (not significant)	None	Minor adverse (not significant)	None
Temporary change within the setting of New Tavern Fort Scheduled Monument	To be defined in decommissioning plan	Negligible	High	Minor adverse (not significant)	None	Minor adverse (not significant)	None
Temporary change within the setting of Coalhouse Fort Scheduled Monument	To be defined in decommissioning plan	Negligible	High	Minor adverse (not significant)	None	Minor adverse (not significant)	None
Temporary change within the setting of Bowaters Farm Battery Scheduled Monument	To be defined in decommissioning plan	Negligible	High	Minor adverse (not significant)	None	Minor adverse (not significant)	None
Temporary change within the setting of Cliffe Fort Scheduled Monument	To be defined in decommissioning plan	Negligible	High	Minor adverse (not significant)	None	Minor adverse (not significant)	None
Temporary change within the setting of West Tilbury Conservation Area	To be defined in decommissioning plan	Negligible	High	Minor adverse (not significant)	None	Minor adverse (not significant)	None
Temporary change within the setting of East Tilbury Conservation Area	To be defined in decommissioning plan	Negligible	High	Minor adverse (not significant)	None	Minor adverse (not significant)	None

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Description of impact	Measures adopted as part of the project	Magnitude of impact	Sensitivity of receptor	Significance of effect	Additional measures	Residual effect	Proposed monitoring
Temporary change within the setting of Grade II* Riverside Station	To be defined in decommissioning plan	Minor	High	Minor adverse (not significant)	None	Minor adverse (not significant)	None
Temporary change within the setting of Grade II* Officers' Barracks	To be defined in decommissioning plan	Minor	High	Negligible to minor adverse (not significant)	None	Minor adverse (not significant)	None
Temporary change within the setting of Grade II* St James' Church, West Tilbury	To be defined in decommissioning plan	Minor	High	Minor adverse (not significant)	None	Minor adverse (not significant)	None
Temporary change within the setting of Grade I St Mary's Church	To be defined in decommissioning plan	Minor	High	Negligible to Minor adverse (not significant)	None	Minor adverse (not significant)	None
Temporary change within the setting of Grade II Chadwell House	To be defined in decommissioning plan	Negligible	Medium	Minor adverse (not significant)	None	Negligible (not significant)	None
Temporary change within the setting of Grade II Sleepers Farmhouse	To be defined in decommissioning plan	Negligible	Medium	Minor adverse (not significant)	None	Negligible (not significant)	None
Temporary change within the setting of Grade II Sunspan	To be defined in decommissioning plan	Negligible	Medium	Negligible	None	Negligible (not significant)	None
Temporary change within the setting of Grade II West Tilbury Hall	To be defined in decommissioning plan	Minor	Medium	Negligible to minor adverse (not significant)	None	Minor adverse (not significant)	None
Temporary change within the setting of Grade II Barn to north of West Tilbury Hall	To be defined in decommissioning plan	Negligible	Medium	Negligible	None	Negligible (not significant)	None
Temporary change within the setting of Grade II Gun Hill Farmhouse	To be defined in decommissioning plan	Negligible	Medium	Negligible	None	Minor adverse (not significant)	None
Temporary change within the setting of Grade II Biggin Farmhouse	To be defined in decommissioning plan	Negligible	Medium	Negligible	None	Negligible (not significant)	None
Temporary change within the setting of Grade II Polwicks Farmhouse	To be defined in decommissioning plan	Minor	Medium	Minor adverse (not significant)	None	Minor adverse (not significant)	None
Temporary change within the setting of Grade II Walnut Cottage	To be defined in decommissioning plan	Minor	Medium	Minor adverse (not significant)	None	Minor adverse (not significant)	None
Temporary change within the setting of Grade II Buckland	To be defined in decommissioning plan	Minor	Medium	Minor adverse (not significant)	None	Minor adverse (not significant)	None
Temporary change within the setting of Grade II Worlds End Inn	To be defined in decommissioning plan	Negligible	Medium	Negligible	None	Negligible (not significant)	None
The decommissioning of Thurrock Flexible Generation Plant could result in long-term change within the overall historic landscape	To be defined in decommissioning plan	Minor	Medium	Minor adverse (not significant)	None	Minor adverse (not significant)	None



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