Appendix 14-H Geoarchaeology: Method Statement (Oxford Archaeology 2006)

East Sussex County Council

Bexhill to Hastings Link Road, East Sussex

Method Statement
Geoarchaeological Investigation

1 Location and scope of work

1.1.1 Oxford Archaeology (OA) has been commissioned by East Sussex County Council (Landscape Group) to a prepare a method statement for a geoarchaeological investigation along the route of the proposed Bexhill to Hastings Link Road.

1.1.2 The geoarchaeological investigation will be undertaken as part of a proposed two stage evaluation strategy for the development. This document outlines the geoarchaeological investigation which forms the first part of this strategy and is intended to assess the archaeological and palaeoenvironmental potential of the four valley sequences that cross the route. This work will help to assess the archaeological potential of these areas within the scheme, and identify what if any further mitigation may be necessary.

1.1.3 The second part of the evaluation will consist of archaeological trial trenching which will target particular features or areas of potential in addition to providing good overall coverage of the impact area of the proposed development and will be outlined in a further method statement at a later date.

1.1.4 This method statement details how OA would implement a geoarchaeological field investigation involving boreholes and trial pits, with excavation and recording as necessary. The first part is site specific while the Appendices detail general OA standards and procedures.

2 Geology and topography

2.1.1 The proposed development runs along the lower slopes of the Battle-Hastings ridge that forms an intricate pattern of minor valleys and ridges. The scheme crosses the river valleys of the Combe Haven (Zone C), Watermill Stream (Zone E), Pondmill Stream (Zone G) and Decoy Pond Stream (Zone I); skirting around the main Combe Haven basin. It consists of a series of broad low ridges that separate three deeply incised river valleys, which in turn gradually extend down into the low lying area of the main Combe Haven Valley.

2.1.2 The Combe Haven Valley itself is a low lying, poorly drained, flat wetland, where much of the land lies just above sea level. The Combe Haven River runs through the main valley, towards Bulverhythe, from where it flows into the sea. The majority of the land is unimproved pasture with small farmsteads located on the higher ridges of the valleys. To the west and east are the major coastal urban areas of Bexhill and Hastings.

2.1.3 The British Geological Survey of Great Britain (BGS 320/321) maps the underlying geology of the area as predominantly floodplain valley deposits, surrounded by ridges of predominately Wadhurst Clay overlying Ashdown Sands. These are part of the Hastings Beds formation, that were former Cretaceous sea bed deposits, uplifted through tectonic movement into what now forms parts of south east England.

3 Archaeological and historical background

3.1 The proposed development route has been subject to a detailed programme of both non-invasive and invasive archaeological investigations. An overview of the archaeological and historical potential of the route has been outlined in the cultural section of the Environmental Impact Assessment for the project.

4 Aims

4.1.1 The main objective of the borehole/trial pit assessment will be to identify the main sediment packages within the valley sequence, assess its archaeological significance and test this against the information provided by the geotechnical ground investigations.

4.1.2 The main aims of the assessment will be to:

- Characterise the sequence of sediments and patterns of accumulation across the valley sequences, including the depth and lateral extent of major stratigraphic units, and the character of any basal land surface pre-dating these sediments;
- Identify significant variations in the deposit sequence indicative of localised features such as topographic highs or palaeochannels;
- Identify the location and extent of any waterlogged organic deposits and address the potential and likely location for the preservation of archaeological and palaeoenvironmental remains;
- Clarify the relationships between alluvial/fluvial sediment sequences and other deposit types, including periods of 'soil' development, peat growth and archaeological deposits;
- To identify any archaeological remains (if present) or deposits that the development may remove or impact during the construction of the scheme;
- Attempt to develop a comprehensive overview of these sequences that brings together the changing sedimentary, environmental and anthropogenic evidence of the proposed route;
- Establish a chronology framework for the sequence using radio-metric techniques;
- To assess the archaeological significance of the sequences and whether further work should be recommended;

5 Methodology

5.1 General

5.1.1 All boreholes and trial pits will be excavated in previously undisturbed ground to ensure the integrity of the recorded deposit sequence. In order to ensure that no previous areas of ground disturbance, such as the locations of former geotechnical investigations, are targeted by the survey, an assessment of the detailed locations of each borehole/trial pit will be made against the recorded data of test pit locations from previous geotechnical works. If disturbed ground is encountered during an investigation the excavation will be relocated if practical to do so.

5.2 Boreholes

5.2.1 A program of up to 10 boreholes (depending on site conditions and access issues) will be drilled using a Commachio MC300 rig. The drilling rig will be operated by a specialist sub-contractor who will be suitably qualified in operating this type of equipment. Each borehole will be drilled to the Pleistocene gravels or bedrock, or until a maximum depth of 20 metres is reached. A continuous sequence of core samples (0.125 m in diameter and 1.4 metres in length) will be retrieved from each location suitable for palaeoenvironmental assessment.

5.2.2 The boreholes will be located within the four valley sequences as shown on the attached figure and are targeted on specific deposits (i.e. the thickest peat deposits). They are as listed below;

- Borehole OA1 - located within the Combe Haven Valley (Zone C);
- Borehole OA2 - located within the Watermill Stream Valley (Zone E);
- Borehole OA3 - located within the Watermill Stream Valley (Zone E);
- Borehole OA4 - located within the Watermill Stream Valley (Zone E);
- Borehole OA5 - located within the Watermill Stream Valley (Zone E);
- Borehole OA6 - located within the Powder Mill Stream Valley (Zone G);
- Borehole OA7 - located within the Powder Mill Stream Valley (Zone G);
- Borehole OA8 - located within the Powder Mill Stream Valley (Zone G);
- Borehole OA9 - located within the Decoy Pond Stream Valley (Zone I);
- Borehole OA10 - located within the Decoy Pond Stream Valley (Zone I);

5.2.3 The boreholes will be monitored and recorded by one of OA's in house geo-archaeologists. The deposit sequence observed at each location will be recorded and logged using standard sediment terminology and sedimentary pro-formas. Samples for further description and palaeoenvironmental remains will be retrieved. These descriptions will be used to confirm correlations of stratigraphic units between the previous geotechnical investigations and the new data set. This information will also be used to refine and update the geoarchaeological route cross section.

5.2.4 A geoarchaeological assessment will be undertaken in order to determine the distribution and depth of the sub-surface stratigraphy; to assess the palaeoenvironmental potential of the sequence, and identify any archaeological sites or deposits buried by alluvium. The assessment will be based on the information provided by the monitoring and recording of boreholes and referenced back to the previous archaeological and geo-technical investigations. The investigation would focus on the potential of the valley sequences and would aim to provide detailed information on the archaeological significance of these deposits.

5.2.5 The palaeoenvironmental assessment will assess the potential preservation from two borehole sequences for pollen, waterlogged plant remain, insect and diatom and/or snail samples where appropriate. Radio-carbon dates will be used if required to help correlate the sequence with previous palaeoenvironmental studies. Further sequences may be recommended for assessment and dating depending on the significance of the deposits and nature of any archaeology uncovered.

5.2.6 This work will help to bring together the changing sediment sequence, the vegetation history and identify anthropogenic impacts within the sequences and place known or newly discovered archaeological sites within a wider landscape context. The work will provide an evidence-base for decision making about the nature and value of this resource and enable further assessment of possible impacts.

5.3 Trial pitting

5.3.1 Trial pitting will consist of the excavation of up to eight 1.5 m wide by 5 m long by 5 m maximum deep trenches with a JCB excavator. The location of the test pits will be adjacent to the four valley edges as shown on the attached figure. They are as listed below;

- Trial pit OA1 - located at the southern edge of Combe Haven Valley (Zone C);
- Trial pit OA2 - located at the northern edge of Combe Haven Valley (Zone C);
- Trial pit OA3 - located at the western edge of Watermill Stream Valley (Zone E);
- Trial pit OA4 - located at the eastern edge of Watermill Stream Valley (Zone E);

- Trial pit OA5 - located at the western edge of Powder Mill Stream Valley (Zone G);
- Trial pit OA6 - located at the eastern edge of Powder Mill Stream Valley (Zone G);
- Trial pit OA7 - located at the eastern edge of Decoy Pond Stream Valley (Zone I);
- Trial pit OA8 - located at the eastern edge of Decoy Pond Stream Valley (Zone I);

5.3.2 The excavation of all trial pits will be monitored and recorded by a suitably qualified OA geoarchaeologist. Should archaeological remains be encountered within the first 1.2 m, then Appendix 7 will form the basis of the methodology for excavation and recording.

5.3.3 Where practicable, all archaeological features will be hand sampled. In practice, no test pits will be entered by OA staff if the groundworks are at a depth greater than 1.2 m. General site procedures are as defined in the Appendices to this document. All features and deposits will be issued with unique context numbers, and context recording will be in accordance with OA systems for fieldwork recording and archiving of projects. All contexts, and any small finds and samples from them will be allocated unique numbers. Bulk finds will be collected by context.

5.3.4 Colour transparency and black-and-white negative photographs will be taken during the ground-works and of any archaeological features and deposits. Plans will be drawn at an appropriate scale (normally 1:50 or 1:100) with larger scale plans of features as necessary. Section drawings of features will be drawn at a scale of 1:20 and 1 m wide sample sections of stratigraphy will be drawn at a scale of 1:10. All section drawings will be located on the appropriate plan/s. The absolute height (m. OD) of all principal strata and features, and the section datum lines shall be calculated and indicated on the appropriate plans.

5.3.5 In the event that human remains (inhumation or cremation) are encountered they shall initially be left *in situ*. If removal is deemed to be necessary these shall be removed under an appropriate Home Office licence and in accordance with local environmental health regulations.

5.3.6 The County Archaeological Officer will be kept informed as to the progress of the fieldwork; site visits for monitoring purposes will be arranged as required.

6 Access and timing

6.1.1 All works are dependent on suitable access being granted by the relevant landowners. In the event that this is denied consideration will be given to whether the project aims can be satisfied using alternative locations.

6.1.2 It is proposed that the geoarchaeological investigation should be conducted prior to any public enquiry into the Link Road proposals as the valley sequence areas are of high potential and constitute significant 'unknown' quantities in terms of the impact from development. Due to the nature of the ground conditions the ideal time for carrying out excavations would be the summer months of 2007 but timing will also be conditional on appropriate access and it is probable that the investigation will be attempted at the earliest available opportunity.

6.1.3 The archaeological trial trenching will take place after the scheme receives final approval as present indications are that any positive results from this work can adequately be dealt with by a programme of mitigation prior to or during construction.

7 Report and archive

7.1 A report detailing the findings of the investigation will be completed within six months of completion of the fieldwork. Copies of the report will be forwarded to the client and the County Archaeological Officer for East Sussex County Council. The content of the report will be as defined in Appendix 8. The site archive will be integrated with the current project archive and deposited, at an appropriate time, with East Sussex County Museum.

8 Health and Safety

All OA project fieldwork is undertaken in accordance with relevant current Health and Safety Legislation. This includes in particular the following regulations (the list is not intended to be exhaustive):

Health and Safety at Work Act 1974
Construction (Design and management) Regulations 1994
The management of Health and Safety at Work Regulations 1992
Personal Protective Equipment at Work Regulations 1992
Work Equipment Regulations 1992
Manual Handling Operations Regulations 1992
Workplace (Health, Safety and Welfare) Regulations 1992

8.1 OA has its own Health and Safety Policy which refers to the manual Health and Safety in Field Archaeology (SCAUM 1997), and these two documents constitute the Health and Safety arrangements of OA. The Director of OA is ultimately responsible under the terms of the Health and Safety Act (1974) for ensuring the safety of employees. He must know the broad requirements of relevant legislation; attend meetings of OA Health and Safety Committee;

ensure that responsibility for health and safety is properly assigned and accepted at all levels. The Director and Chief Executive of OA is David Jennings.

8.2 The Safety Co-ordinator of OA: represents the director on matters of health and safety; keeps abreast of relevant legislation and approved practice, and disseminates this information to OA staff; advises staff as required on matters of health and safety; maintains OA health and safety records; calls and chairs meetings of the OA Health and Safety Committee. The Safety Co-ordinator of OA is Dan Poore.

8.3 The Project Director is the person delegated to take overall charge of a particular project. She/he is responsible for health and safety matters on the projects that they manage, reporting to the Safety Co-ordinator in the first instance, and ultimately to OA's Director. She/he must be satisfied that an adequate safety plan has been drawn up for the project, or for each phase of the project. The Project Director may also be the Project Manager in some cases (see below).

8.4 Individual Project Supervisors/Managers are the persons delegated to take charge of a particular phase or part of the overall project. They are responsible for ensuring that for each site that they are in charge of an adequate Risk Assessment and any amendments or additions to the Site Safety Plan have been drawn up prior to work starting on site, and they are immediately responsible for the Health and Safety of employees and sub-contractors under their supervision. They report directly to the Project Director and OA Safety Co-ordinator. The manager for this project will be Steve Weaver.

8.5 The OA Health and Safety Committee consists of the Director, Safety Co-ordinator, OA Manager and the Site Staff Representative. The Safety Co-ordinator normally calls meetings of the Committee when there is business for discussion, but may be called by other members of the committee.

8.6 OA's independent Health and Safety Consultants are Safety Services Ltd, Stanton Harcourt, Oxon, who are consulted with regard to matters such as deep trenching, shoring and working in confined spaces.

8.7 Prior to the project a pro-forma OA Health and Safety Risk Assessment is produced by the project manager/supervisor and passed to the OA Safety Co-ordinator for approval. The Project Manager/supervisor ensures that the following information is available to the excavation team copy of the HSE poster `Health and Safety Law - What You should Know', copy of the Safety Plan and Risk Assessment, Emergency Information Sheet giving details of nearest hospital etc, copy of the Notification of Project to HSE, location of an accident book.

9 General

9.1 General appendices relating to OA practices apply. Appendices 7, 8 and 11 are

relevant to this particular project.

Carl Champness / David Score
Oxford Archaeology
November 2006

OAU Standard Fieldwork Methodology Appendices

The following methods and terms will apply, where appropriate, to all OA fieldwork unless varied by undertakings specified in a detailed Written Scheme of Investigation.

7 WATCHING BRIEFS

7.1 Ground disturbances (demolition, general site strip and levelling, reduction for roads, excavation for service trenches and foundation trenches) will be monitored by an archaeological supervisor assisted, where necessary, by archaeological technicians and under the overall guidance of a project manager.

7.2 All archaeological features and deposits exposed will be recorded.

7.3 Where only the tops of features or deposits are exposed, these will be located on a site plan, planned, and recorded by written description and by photographs.

7.4 Visible artefacts will be collected in order to assist in the dating of features and deposits.

7.5 Where trenches are excavated through cut features (pits, ditches, etc.) and vertical stratigraphy is not present, the features will be recorded in section with appropriate collection of finds.

7.6 Where ground disturbance exposes stratified remains or significant features, these will be hand excavated by the archaeologist and recorded.

7.7 The archaeological curator will be advised at the earliest opportunity of any archaeological features or deposits that appear worthy of preservation *in situ*.

7.8 On completion of the fieldwork the site archive will be compiled and security copied.

7.9 Proposals for analysis and publication will be determined in the light of the results of the fieldwork.

RECORDING

7.10 All on-site recording will be undertaken in accordance with the *OAU Field Manual* (ed. D Wilkinson 1992).

7.11 A continuous unique numbering system will be operated. Written descriptions will be recorded on proforma sheets comprising factual data and interpretative elements.

7.12 Plans will normally be drawn at 1:50 but in urban or deeply stratified sites a scale of 1:20 will be used. Detailed plans will be at an appropriate scale. Burials will be drawn at 1:10.

7.13 A register of plans will be kept.

7.14 Sections of features or trenches showing stratigraphy will be drawn at 1:20 or 1:10.

7.15 A register of sections will be kept.

7.16 All sections will be tied in to Ordnance Datum if possible or into the contractors TBM.

7.17 A black and white and colour (35 mm transparency) photographic record, illustrating in both detail and general context the principal features and finds discovered will be maintained. The photographic record will also include working shots to illustrate more generally the nature of the archaeological work.

7.18 Photographs will be recorded on OA Photographic Record Sheets.

7.19 All identified finds and artefacts from stratified archaeological deposits will be retained, although certain classes of building material or post medieval pottery may sometimes be discarded after recording if an appropriate sample is retained.

8 EVALUATION AND WATCHING BRIEF REPORTS

8.1 Style and format of the report will be determined by OA, but will include as a minimum the following:

- A location plan of trenches and/or other fieldwork in relation to the proposed development.
- Plans and sections of features as appropriate located at an appropriate scale.
- A section drawing showing depth of significant deposits (if encountered) including present ground level with Ordnance Datum, vertical and horizontal scale.
- A summary statement of the results.
- A table summarising per trench the features, classes and numbers of artefacts contained within, spot dating of significant finds and an interpretation.
- A reconsideration of the methodology used, and a confidence rating for the results.
- An interpretation of the archaeological findings both within the site and within their wider landscape/townscape setting.

8.2 Copies of the report will be supplied to the client and the Archaeological Officer monitoring the works. Copies of the report will also be supplied to the County Sites and Monuments Record on the understanding that it will become a public document after an appropriate period of time (normally six months).

8.3 If the evaluation works generate archaeological results of importance which merit wider publication, the client will be consulted about further arrangements.

ARCHIVES

8.4 The site archive, including finds and environmental material, will be ordered, catalogued, labelled and conserved and stored according to the UKIC Guidelines for the preparation of excavation archives for long-term storage.

8.5 The site archive will be prepared to at least the minimum acceptable standard defined in Management of Archaeological Projects 2, English Heritage 1991.

8.6 The site archive will be microfilmed by the RCHME National Archaeological Record as a safeguard against the accidental loss and the long-term degeneration of paper records and photographs.

8.7 The site archive will be deposited with the relevant receiving Museum at the earliest opportunity unless further archaeological work on the site is expected within one year of completion of the archive. OA will advise the landowner that any artefacts resulting from the project work should be given to the relevant Museum.

11 GENERAL

11.1 The requirements of the Brief will be met in full where reasonably practicable.

11.2 Any significant variations to the proposed methodology will be agreed with the local authority's archaeological representative in advance.

11.3 The scope of work detailed in the main part of the Written Scheme of Investigation is aimed at meeting the aims of the project in a cost effective manner. Oxford Archaeology attempts to foresee possible site specific problems and resource these. However there may be unusual circumstances which have not been included in the costing and programme.

- Unavoidable delays due to extreme bad weather, vandalism, etc.
- Complex structures or objects, including those in waterlogged conditions, requiring specialist removal.
- Extensions to specified trenches or feature sample sizes requested by the archaeological curator.
- Trenches requiring shoring or stepping, ground contamination, unknown services, poor ground conditions requiring additional plant, specialist reinstatement of surfaces (i.e. tarmac, turf).

HEALTH AND SAFETY and INSURANCE

11.4 All work will be carried out to the requirements of *Health and Safety at Work, etc. Act 1974*, *The Management of Health and Safety Regulations 1992,* the SCAUM (Standing Conference of Archaeological Unit Managers) H & S manual *Health and Safety in Field Archaeology 1991*, OA Health and Safety Policy, and any main contractors requirements.

11.5 A copy of OA's Health and Safety Policy is available on request. OA will require copies of the H & S policies of all other contractors and operators present on site in compliance with *The Manual of H & S Regulations 1992.*

11.6 OA holds Employers Liability Insurance, Public Liability Insurance and Professional Indemnity Insurance. Details will be supplied on request.

11.7 OA will not be liable to indemnify the client against any compensation or damages for or with respect to:

- Damage to crops being on the Area or Areas of Work (save in so far as possession has not been given to the Archaeological Contractor);
- The use or occupation of land (which has been provided by the Client) by the Project or for the purposes of completing the Project (including consequent loss of crops) or interference whether temporary or permanent with any right of way, light, air or water or other easement or quasi easement which are the unavoidable result of the Project in accordance with the Agreement;
- Any other damage which is the unavoidable result of the Project in accordance with the Agreement;
- Injuries or damage to persons or property resulting from any act or neglect or breach of statutory duty done or committed by the client or his agents, servants or their contractors (not being employed by Oxford Archaeology) or for or in respect of any claims demands proceedings damages costs charges and expenses in respect thereof or in relation thereto.

COPYRIGHT and CONFIDENTIALITY

11.8 Oxford Archaeology will retain full copyright of any commissioned reports, tender documents or other project documents, under the Copyright, Designs and Patents Act 1988 with all rights reserved; excepting that it will provide an exclusive licence to the client in all matters directly relating to the project as described in the Written Scheme of Investigation.

11.9 Oxford Archaeology will assign copyright to the client upon written request but retains the right to be identified as the author of all project documentation and reports as defined in the Copyright, Designs and Patents Act 1988 (Chapter IV, s.79).

11.10 OA will advise the client of any such materials supplied in the course of projects which are not OA's copyright.

11.11 OA undertakes to respect all requirements for confidentiality about the client's proposals provided that these are clearly stated. It is expected that such conditions shall not unreasonably impede the satisfactory performance of the services required. OA further undertake to keep confidential any conclusions about the likely implications of such proposals for the historic environment. It is expected that clients respect OA's general ethical obligations not to suppress significant archaeological data for an unreasonable period.

OA STANDARDS AND PROCEDURES

11.12 OA shall conform to the standards of professional conduct outlined in the Institute of Field Archaeologists' Code of Conduct, the IFA Code of Approved Practice for the Regulation of Contractual Arrangements in Field Archaeology, the IFA Standards and Guidance for Field Evaluations, Desk Based Assessments, etc. and the British Archaeologists and Developers Liaison Group Code of Practice.

11.13 OA is a member of the Institute of Environmental Assessment and the Council for British Archaeology.

11.14 Project Directors normally will be recognised as MIFA by the IFA (or equivalent in demonstrable experience). For more extensive and complicated evaluation projects especially where they are part of large-scale programmes of work in historic urban centres, the procedures outlined in English Heritage's *Management of Archaeological Projects* 2nd Edition 1991 (MAP 2) will be followed for immediate post-field archive preparation and initial assessment. Agreement to then be reached, in collaboration with the local authority's archaeological representative, about what aspects will need to be taken forward to provide a report in the required format containing the information needed for planning purposes.

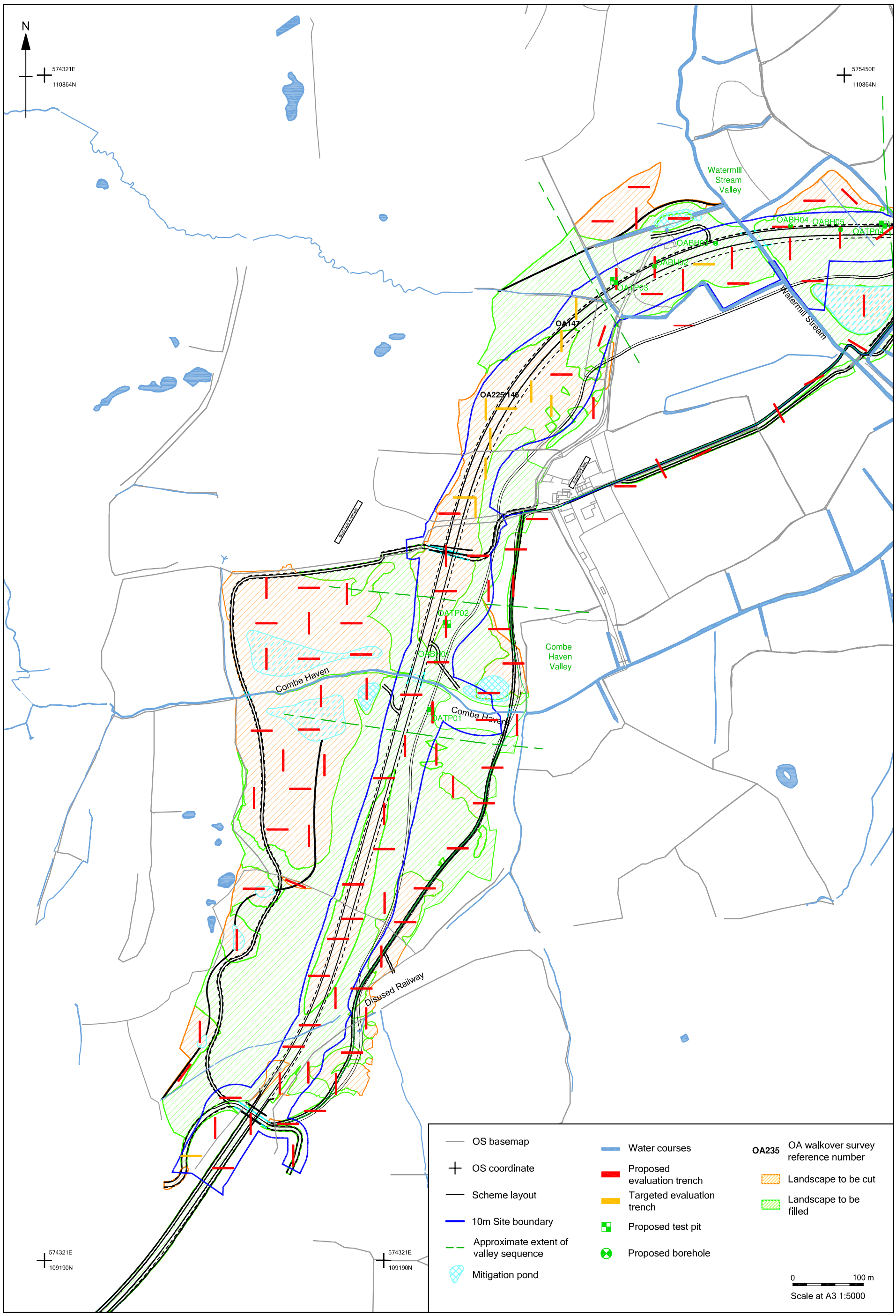

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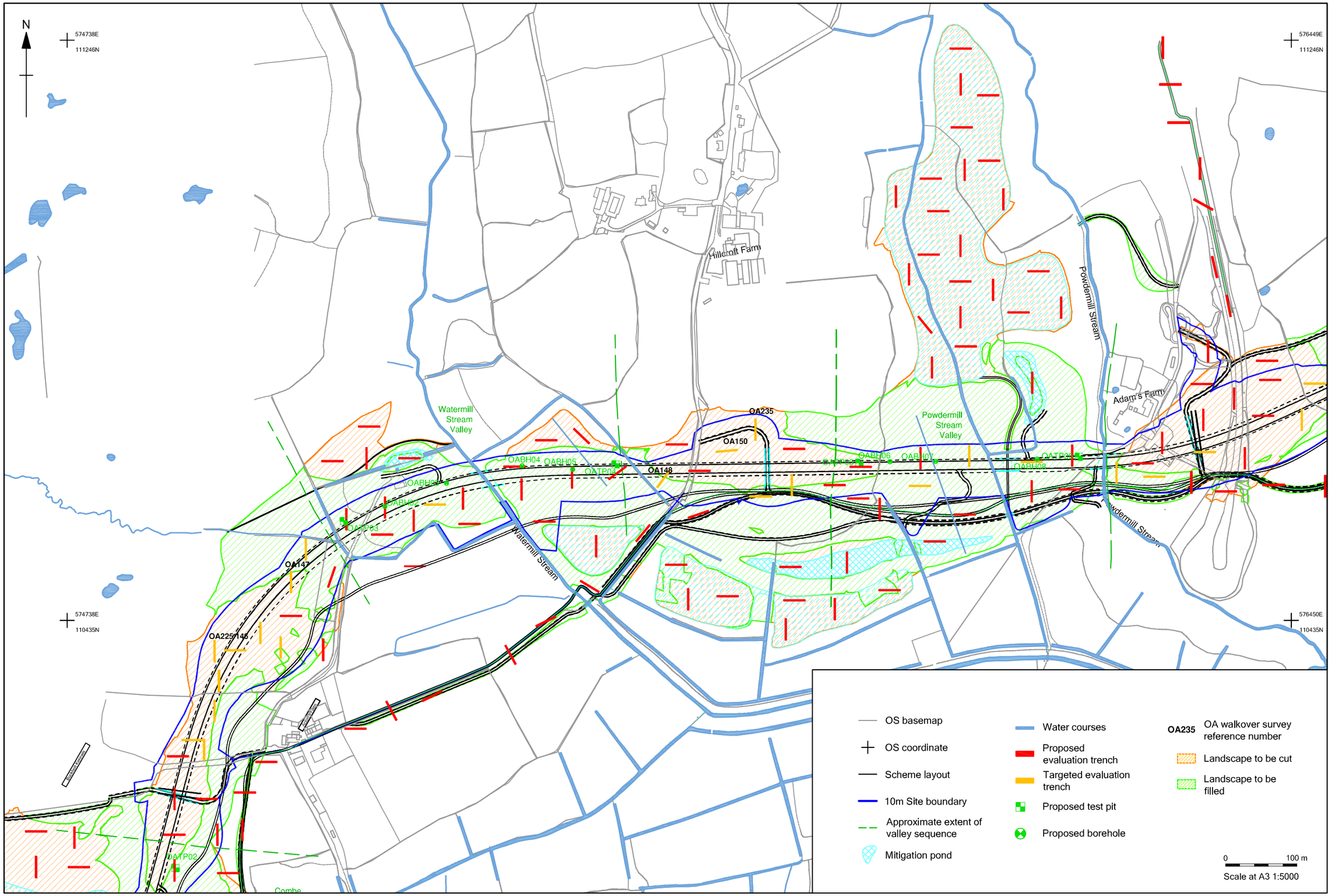
Figure: Appendix 14.8 a



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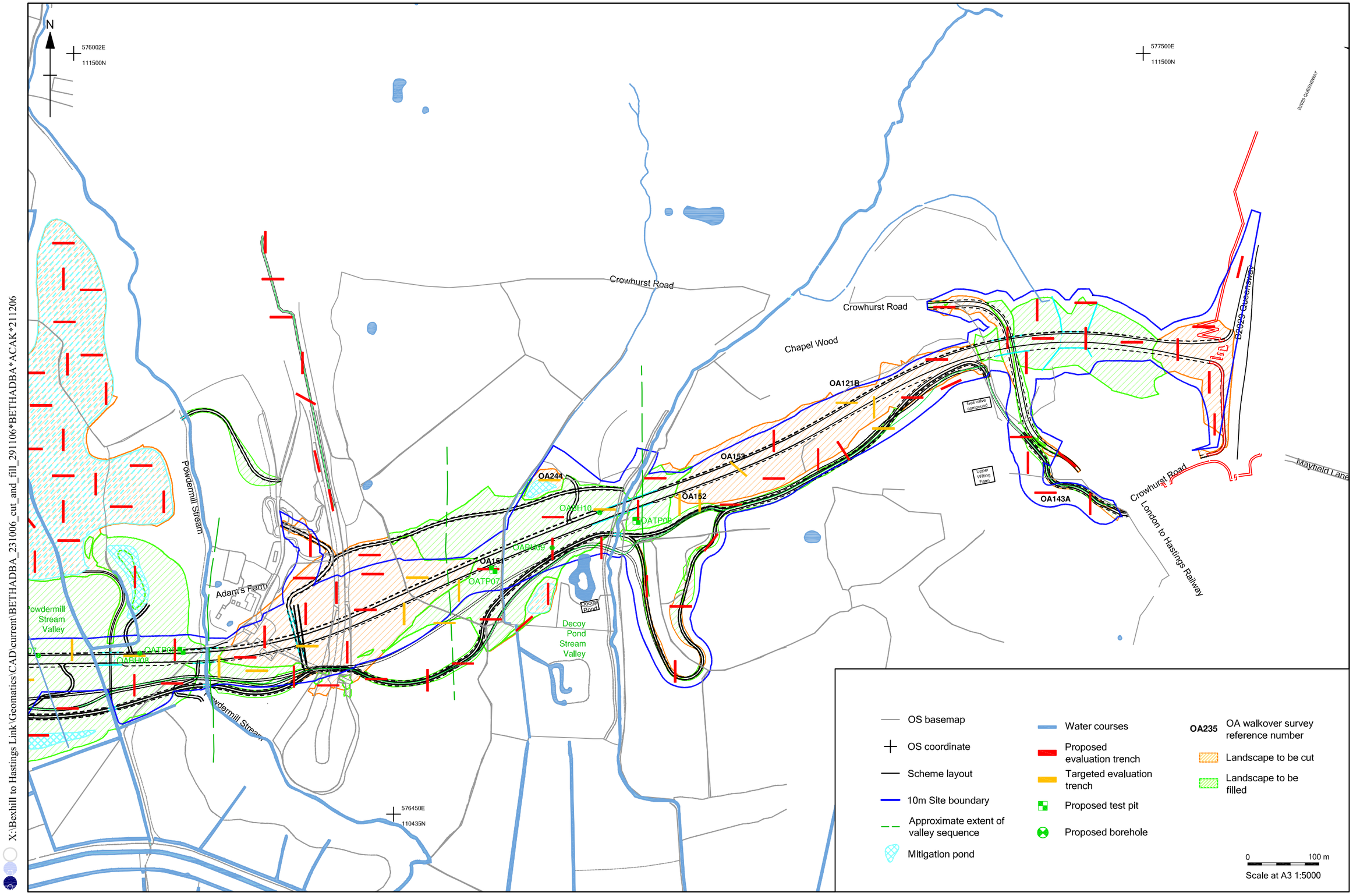

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