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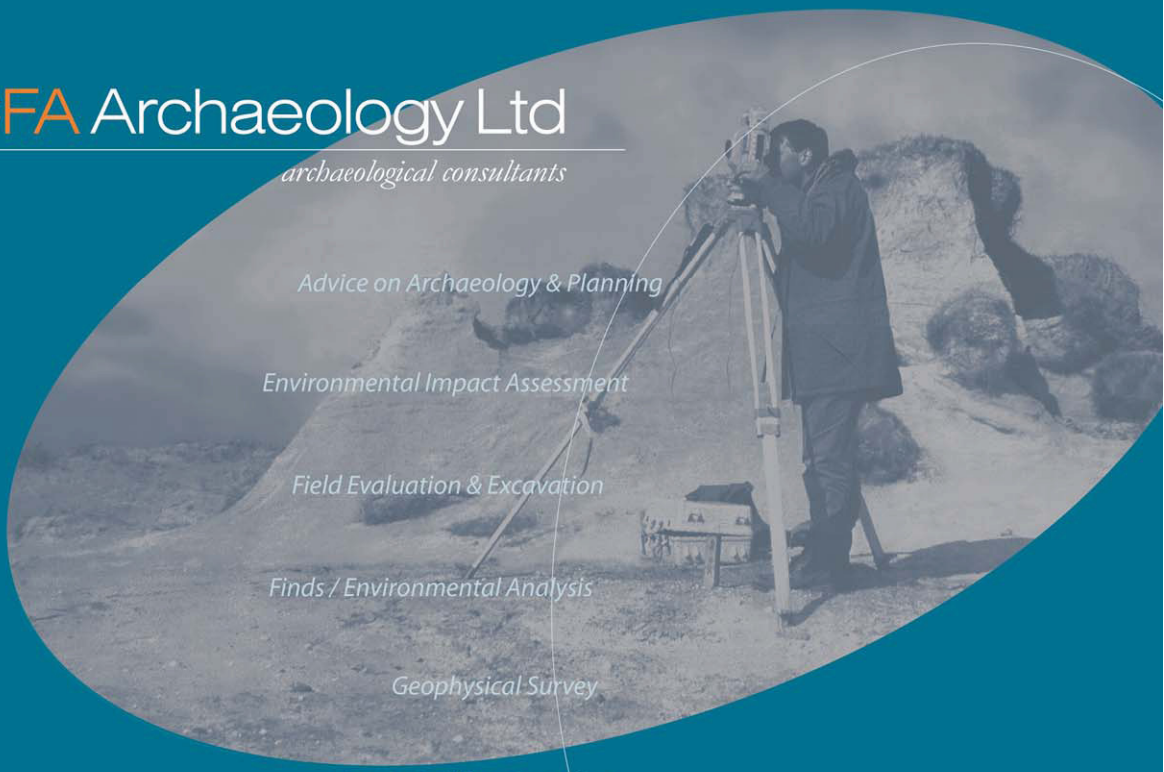
archaeological consultants



Advice on Archaeology & Planning

Environmental Impact Assessment

Field Evaluation & Excavation

Finds / Environmental Analysis

Geophysical Survey

Historic Building Recording

Site & Landscape Survey

Interpretation, Design & Display

Todmorden Wind Farm, Flower Scar Road, Todmorden, Calderdale

Auger Survey and Watching Brief

Report No. Y040/11

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Todmorden Wind Farm, Flower Scar Road, Todmorden, Calderdale

Auger Survey and Watching Brief

Report No. Y040/11

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Summary

CFA Archaeology undertook a programme of archaeological evaluation and watching brief prior to the construction of a windfarm at Todmorden Moor, Flower Scar Road, Todmorden, Calderdale, West Yorkshire. The evaluation was done by auger survey at the proposed locations of the crane pads, turbine bases and access roads. The watching brief monitored the excavation of test-pits during a geotechnical survey.

The purpose of the work was to gather information regarding the extent, condition and character of any surviving archaeological remains; namely prehistoric flint artefacts. The auger survey sampled peat and soil from regular transects across each proposed turbine base and crane pad. The transects were spaced at 5m intervals and samples were taken every 1.5m. The depth of the samples taken varied from 0.2m to 2.5m.

No archaeological deposits were recorded and no finds were recovered from either the auger survey or during the watching brief on the geotechnical investigation.

1. INTRODUCTION

1.1 General

This report presents the results of a watching brief undertaken during the excavation of geotechnical test pits by CFA Archaeology Ltd (CFA) in November 2011 and an auger survey undertaken between December 2011 and March 2012 at Todmorden Wind Farm, Flower Scar Road, Todmorden, Calderdale (NGR: 389644, 424785 Centred) (Fig. 1). The work was commissioned by Wind Prospect Ltd.

The work was undertaken in accordance with a specification produced by Rebecca Remmer of West Yorkshire Archaeology Advisory Service (WYAAS) on behalf of Leeds City Council (Appendix 1) in order to comply with a planning condition in advance of development (Ref. 01/01057/WDF). An investigation into the mining activity on the site will form a separate report. This report focuses on the impact upon potential Mesolithic activity on the site.

1.2 Site Location and Description

The proposed development area is located on Todmorden Moor and consists of 163.5 hectares of upland moorland forming an 'undulating ridge line which trends east to west' (Dulas 2010), it lies to the west of Todmorden and south of Cornholme (Fig.1; NGR SD 8989 2483). The site is bisected by Flower Scar Road which runs from east to west over the moor; it is constructed of hardcore upon sandstone bedrock, with drainage adjacent to the track. The land is undulating and is generally between 410 and 440m above the ordnance datum (AOD). The site is currently common land and used for grazing but has been mined and quarried for coal and stone in some areas. Evidence of industrial activity, such as disused pits, possible rakes; tramways and spoil heaps have scared the landscape (Figs 7, 8 and 9).

The underlying solid geology is Milnrow Sandstone and Pennine Lower Coal measures with inter-bedded mudstone and siltstone and sandstone. The superficial geology is assessed as peat (BGS 2012)

The peat on the site varied in depth from 0.3m to c. 2m in places and is described as 'well humified with little vegetation content' (Dulas 2010).

1.3 Archaeological and Historical Background

An archaeological desk-based assessment was produced in 2008 and updated in 2010 (Dulas 2010). The assessment identified the remains of post-medieval mining and quarrying and a Mesolithic flint site. Investigation of the mining activity is covered by a separated report.

The Mesolithic in Britain covers approximately the period 8000 – 3500 BC, starting broadly from the end of the glacial Pleistocene Epoch and the beginning of the more temperate Holocene. As the climate changed so did the types of animals hunted by humans, and the typology of flint tools changed to reflect this, with microliths being developed for hafting onto weapons such as harpoons and arrows. The manufacture and use of flint tools produced waste material and once the tools became redundant, they were discarded onto the contemporary ground surface. Mesolithic settlements are generally considered to have been seasonal and usually occupied for a short period of time. The artefactual assemblage at identified sites tends to be comparatively small. Flint scatters may be considered to be nationally important and are particularly important if clear boundaries are identified marking a recognisable discrete site (EH 2000, 2).

West Yorkshire is considered to have key role in the study of the Mesolithic period in Britain (Spikins 2010). The potential for the discovery of prehistoric activity within the site was demonstrated by an isolated find spot of Mesolithic flints plotted to be within the development area itself (0.2km to the east of Turbine 3). However, the accuracy of the location of this findspot is in question as the grid reference given is only to four figures, placing the finds within a 1km square; accuracy not sufficient to provide any confidence in the provenance of the finds.

The specification indicated discoveries of flint within the development area were considered possible as flint finds dating to the early prehistoric periods are typically concentrated at the base of upland peat deposits, with high visibility on south-facing slopes, such as those at Todmorden (Spikins 2010 and Remmer 2011).

1.4 Previous Archaeological Work

The archaeological desk-based assessment (Dulas 2010) included the consultation of aerial photographs, a map regression exercise and a field walkover survey. The assessment concluded that the archaeological potential of the site included post-medieval coal mining and quarrying. The extensive remains of this activity can be seen within the development area as trial and sink holes, possible rakes and denuded spoil heaps. Investigation of the mining and industrial landscape is also part of the archaeological planning condition and is being undertaken under a separate specification and will be reported separately. No intrusive archaeological fieldwork is known to have taken place within the proposed development area

1.5 Aims

In accordance with the specification (Appendix 1), the aim of the project was to 'gather sufficient information to establish the extent, condition, character and date (as far as

circumstances permit) of any archaeological features and deposits within the proposed development area.' (Remmer 2011).

2. METHODS

2.1 General

The geotechnical test pits and auger survey transects locations were identified using industry standard Global Positioning System. The excavation of the test pits were carried out by a mechanical excavator with a toothed bucket and were approximately 1m wide by 3-4m long.

The auger survey was carried out using a large bore (10cm diameter) Edelman soil auger (1.5m in length) at 1.5m intervals on transects spaced every 5m (Figs 2-6). In areas of deeper peat, such as Turbine 2, an extension was added to the auger, enabling sampling to a depth of up to 2.5m.

Each crane pad was sampled on 10 transects of 21 holes. Each circular turbine base was sampled on 4 transects (Fig. 2-6). One transect with samples at 5m intervals also ran down the centre of each access road from the crane pad edge to Flower Scar Road (Fig. 1).

Areas of disturbed ground were not sampled. This included Turbine Base 5, which had been previously assessed as disturbed ground during trial pit monitoring. Some areas within 20m of Flower Scar Road were also identified as having been disturbed and so were not sampled. Each sample taken was bagged and given a unique identifying number. The identifying number would allow the location of any flints recovered during sample processing to be plotted onto a site plan and the position re-located using GPS.

All samples were hand sieved over a 2mm steel mesh. Finds or lack of them were recorded and any finds would have been re-bagged, with their unique identifying number.

2.2 Standards and Guidance

CFA Archaeology is a registered organisation (RO) with the Institute for Archaeologists (IfA). All work was conducted in accordance with relevant IfA Standards and Guidance documents (IfA 1994, 1996 and 2001), English Heritage guidance (EH, 2000, 2005, 2006, 2008a and 2008b), the specification (Appendix) and CFA's standard methodology.

2.3 Archiving

The project archive, comprising all CFA record sheets, finds, plans, reports, and photographs will be ordered according to WYAAS instructions and to nationally recognised standards (IfA 2001 and Brown 2011) and deposited at the West Yorkshire Historic Environment Record. The archive resulting from the investigation into the post-medieval mining activity on the site (governed by a separate specification), also be incorporated and will be deposited with Calderdale Museums, Bankfield Museum, Akroyd Park, Boothtown Road, Halifax, HX3 6HG. A copy of all reports will also be offered to Todmorden Local Studies Library.

The archive currently consists of:

Digital Photographs and Survey and other files	1 x CD
Notes and Research materials	1 x A4 folder
Topographic and Survey Plans	
All non-confidential correspondence	
Report x1	-

3. RESULTS

3.1 Test Pit Watching Brief Results

Eleven test pits were excavated. The stratigraphy of the excavated areas typically consisted of a dark grey silty or humic peat topsoil overlying sand and silty-clay subsoils over the natural sandstone or shale bedrock at a depth of 0.75 to 3m (Figs 10 and 11). Turbine Base 5 was identified as made/disturbed ground possibly associated with previous mining or other industrial activity. No archaeological remains were recorded in any of the test pits.

Test Pit 1 (SD 90079 25016)

Fibrous turf/topsoil 0.25m in depth overlay 0.4m of dark-greyish brown, soft humic peaty-soil. Mid-grey sandy stony deposit overlay a 0.15m thick band of dark grey clay, which then overlay an iron pan, indicating the archaeological horizon. Occasional roots material present throughout, as were inclusions comprising degrading sandstone fragments. The limit of excavation was c. 2m onto bedrock.

Test Pit 2 (SD 89211 25150)
A 0.35m deep deposit of very dark-grey, humic and fibrous peat overlay greyish-brown sandy-subsoil 0.15m in depth. Iron pan was reached at 0.5m below the ground surface and this represented the archaeological horizon. Excavation continued and removed sandy deposits and an increasing amount of sandstone fragments which became progressively more tabular before termination at 2.2m below the ground surface.

Test Pit 3 (SD 89469 24708)

Fibrous, very dark greyish-black peat, c. 0.4m in depth overlies 0.25m of coarse yellowy sandy hillwash giving way to an iron pan. Natural sand deposits with increasing amounts of sandstone overlie Tabular sandstone bedrock at c. 2m.

Test Pit 4 (SD 90324 25019)

Sandy-silty humic, peaty topsoil 0.2m in depth with fibrous roots overlay tabular sandstone bedrock which was excavated to a depth of 3m.

Test Pit 5 (SD 90124 24645)

A deposit of very dark-grey, peaty material which was 0.5m in depth, with roots throughout, overlay the archaeological horizon. Natural deposited grey silty clays with inclusions of sandstone cobbles, flecks and fragments were excavated to 1.4m where a 0.3m band of coal

fragments was noted. Gravels and shales were removed to 2.9m below the archaeological horizon, where bedrock was encountered. No archaeological remains.

Test Pit 6 (SD 89334 25010) 25019

Dark grey, humic, peaty topsoil, with abundant roots 0.25m in depth overlay sandy, organic subsoil, with root material within its matrix. The archaeological horizon was c.0.4m below the ground surface, at which point natural deposits of sandstone were excavated to a depth of 1.4m below the ground surface.

Test Pit 7 (SD 89390 24870)

A deposit of topsoil comprising 0.3m of mid-brown sandy topsoil with roots and occasional lenses of sand, overlie a dark-grey humic peat c. 0.2m in depth at the archaeological horizon. Natural deposits were removed to a depth of 1.6m below the ground surface.

Test Pit 8 (SD 895181 24840)

Fibrous turf with abundant roots over very dark-grey silty humic topsoil 0.2m in depth, overlie mid-dark brown silty-sand overlying sandy-clay with some sandstone fragments c.5m below the ground surface. Solid geology was reached at a depth of c. 2m.

Test Pit 9 (SD 89810 24827)

A deposit of humic fibrous, very dark-grey peaty-soil overlie a thin (0.05) band of mid-brown silty subsoil. Light-grey sand-clay was noted which was possibly made ground was recorded c. 0.75m below the ground surface; this gave way to natural, weathered and degraded shale with bands of iron panning. Solid shale encountered at 2.6m below the ground surface.

Test Pit 10 (SD 90455 24788)

The topsoil comprised 0.4m deep deposit of soft, dark-grey peaty material which overlie a 0.5m deep deposit of banded silt-clay. Natural sandstone was reached at 0.9m below the ground level.

Test Pit 11 (SD 90324 25019)

A 0.3m deep deposit of fibrous humic topsoil covered soft, silty subsoil 0.35m in depth with bands of sand noted onto an iron pan horizon. A 0.1m deep, soft, silty mid-grey clay, with further bands of humic, rooty, clayey material to 1.4m below the ground surface. The above deposits were interpreted as made ground. Beyond this were stonier layers of clay and gravel, which turned into a shale and mudstone.

3.2 Auger Survey Results

In total, 1376 samples were taken from the proposed turbine locations, crane pads and access roads. The peat varied in depth at the sampled locations, from c. 0.3m to 2m below the ground surface. No archaeological finds were recovered from any of the samples.

Turbine Base 1 Crane Pad and Access Road

The area around Turbine Base 1 was covered by moorland scrub and grass. The soils were generally the same as those encountered during geotechnical investigation. No areas of previous ground disturbance were noted, except in proximity to Flower Scar Road. No archaeological deposits were identified during the auger survey and no finds were recovered during the processing of samples.

Turbine Base 2, Crane Pad and Access Road

The peat was well preserved and heavily waterlogged at Turbine 2 and along much of the access road. The maximum depth of auger penetration was up to 2m in places. No archaeological deposits were identified during the auger survey and no finds were recovered during the processing of samples.

Turbine Base 3, Crane Pad and Access Road

The depth of the peat at Turbine Base 3 was up to 0.75m. The survey encountered waterlogged, well humified peat deposits. The deepest of which was encountered at the turbine base and southern end of the crane pad. The deposits became progressively shallower to the north (c. 0.4m), in the direction of Flower Scar Road. The area close to Flower Scar Road was assessed as disturbed and was not surveyed. No archaeological deposits were identified during the auger survey and no finds were recovered during the processing of samples.

Turbine Base 4, Crane Pad and Access Road

This was the shallowest area surveyed, and the results were similar to those recorded during test pit monitoring. The auger depth rarely exceeded c. 0.4m often with sand or gravel-based subsoil directly beneath the grass and moss cover. The peat cover that was encountered was thin and had dried out. The only waterlogged deposits were encountered in the location of the turbine base. No archaeological deposits were identified during the auger survey and no finds were recovered during the processing of samples.

Turbine Base 5, Crane Pad and Access Road

Turbine Base 5 was excluded from sampling due to the area being identified as disturbed ground during the watching brief on the geotechnical works. Further test augering confirm this. The south end of the crane pad also appeared to be disturbed but was still sampled to systematically cover the whole pad. The disturbed deposits encountered were probably of mining or quarrying origin, possibly from up-cast material. The north end of Crane Pad 5 was covered with large sandstone boulders, which may have originated from quarrying activity in the area. The auger depth for the recovery of samples from the archaeological horizon was occasionally up to 1mtr. However, more typically samples were retrieved from depths of 0.4 to 0.5m. The survey of the access road ceased near Flower Scar Road due to the presence of disturbed ground. No archaeological deposits were identified during the auger survey and no finds were recovered during the processing of samples.

4. DISCUSSION

Areas of modern made ground were identified at Turbine 5. This is likely to have been produced by mining, quarrying or the extraction of clay. The peripheral edges of Flower Scar Road had been banked, possibly during augmentation of the road. These areas were assessed as disturbed and of no potential and were not surveyed.

The peat probably formed in the early Holocene but as yet the contact zone between the base of the peat and the underlying subsoil has not been dated. Flint objects laid down in the Mesolithic may have been lost to erosion, particularly if the soils in which they were deposited were prone to erosion.

The auger survey, together with the monitoring which took place during the ground investigation represents a thorough and a systematic study across areas of the proposed development which will be impacted on when the windfarm is constructed. The auger survey was of a sufficient resolution to have recorded the presence of flints had they been present.

The area with probably the best preserved peat was around Turbine 2, however, this area would have been a less than ideal site for Mesolithic activity as it is over the crest of the ridge and is north facing. The same is true for turbines 1 and 4, with Turbine 4 having a poor level of peat preservation. The area around Turbine 5, though on the south-facing slope was highly disturbed by made ground, probably as a result of mining activity.

The only previously recorded flint finds within the development area appears to be to the south-east of the location of Turbine 3. This small assemblage consisted of one worked flint, one chert flake and one chert pebble (Dulas 2010, Vol. 4 Appendix 6). However, no further description is provided of the flints themselves or the circumstances of their discovery and though the finds are plotted to be within the development area in the Environmental Statement (fig. 10.1), the grid reference given is only to four figures, placing the finds within a 1km square, an accuracy not sufficient to provide any confidence in the provenance of the finds.

5. CONCLUSION

Given the results of the sampling and the watching brief on geotechnical works and the lack of previous flint finds on the site, it is considered that evidence of Mesolithic activity is unlikely to be found at the site of the turbine bases, crane pads and along the access tracks and no further work is considered to be necessary.

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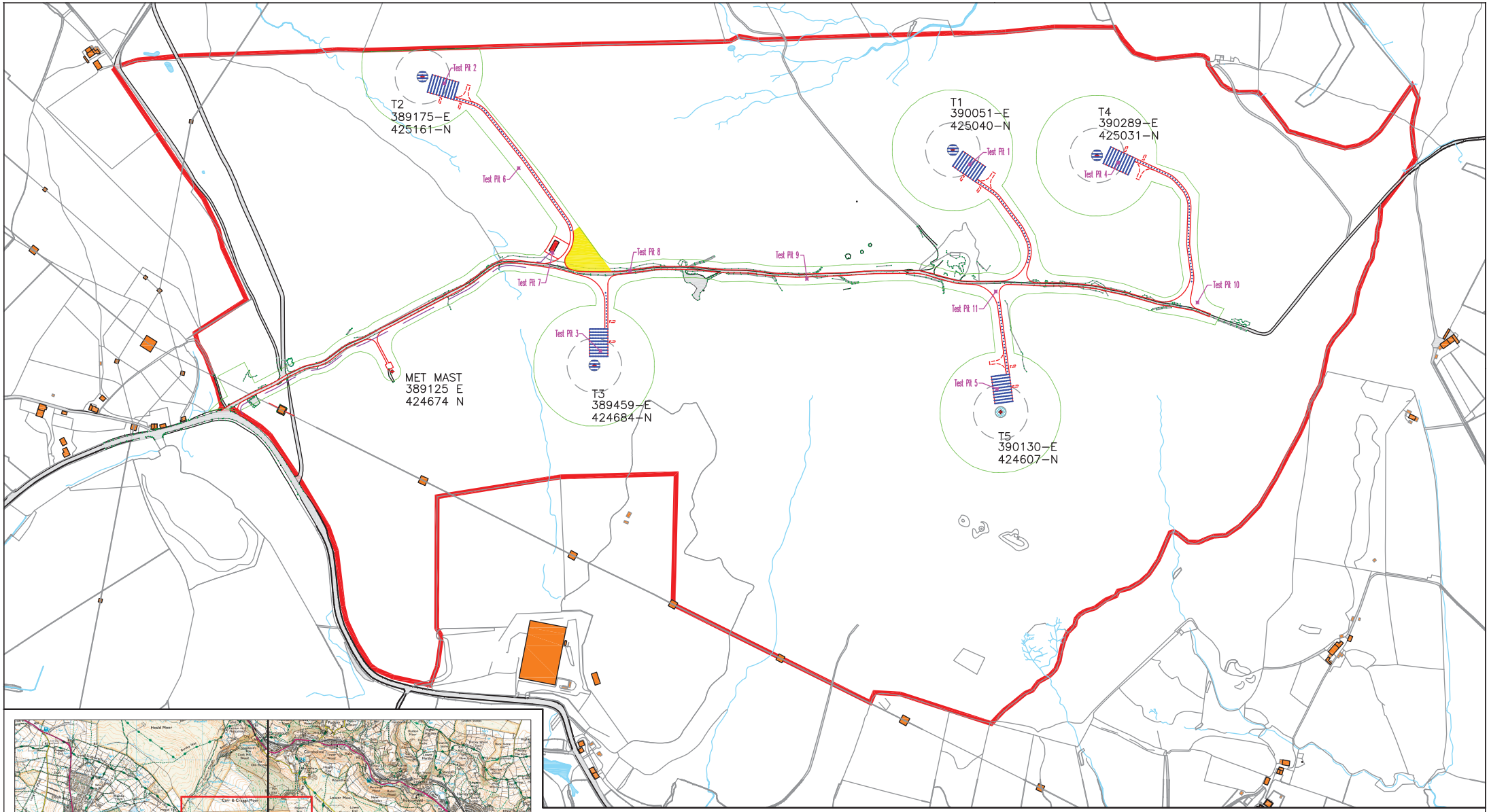

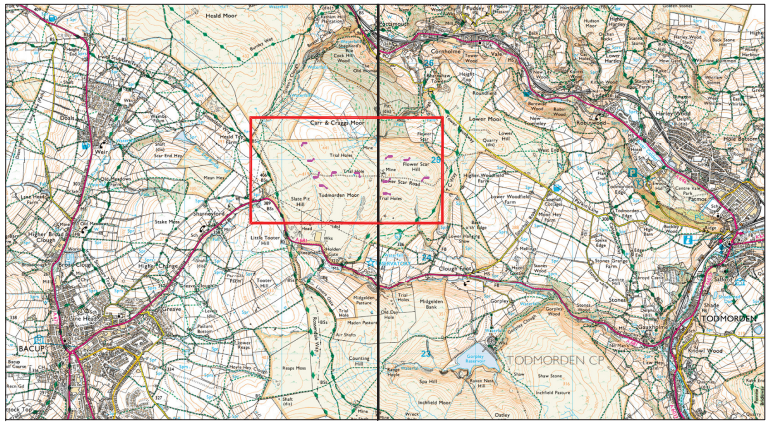

LOCATION PLAN
N.T.S

LEGEND

TURBINE POSITION
BLADE SWEPT AREA
T5
PLANNING BOUNDARY
CONSTRUCTION COMPOUND
TEST PIT
SITE TRACKS
TEMPORARY TURNING HEAD
SWITCHGEAR BUILDING
AUGER POSITION

REGISTERED ORGANISATION IfA

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Fig. No:	Revision:	Drawn by:	Checked:	Report No:	Client:
1	A	KH	LW	2041	Wind Prospect Ltd

Title: Site layout with auger positions

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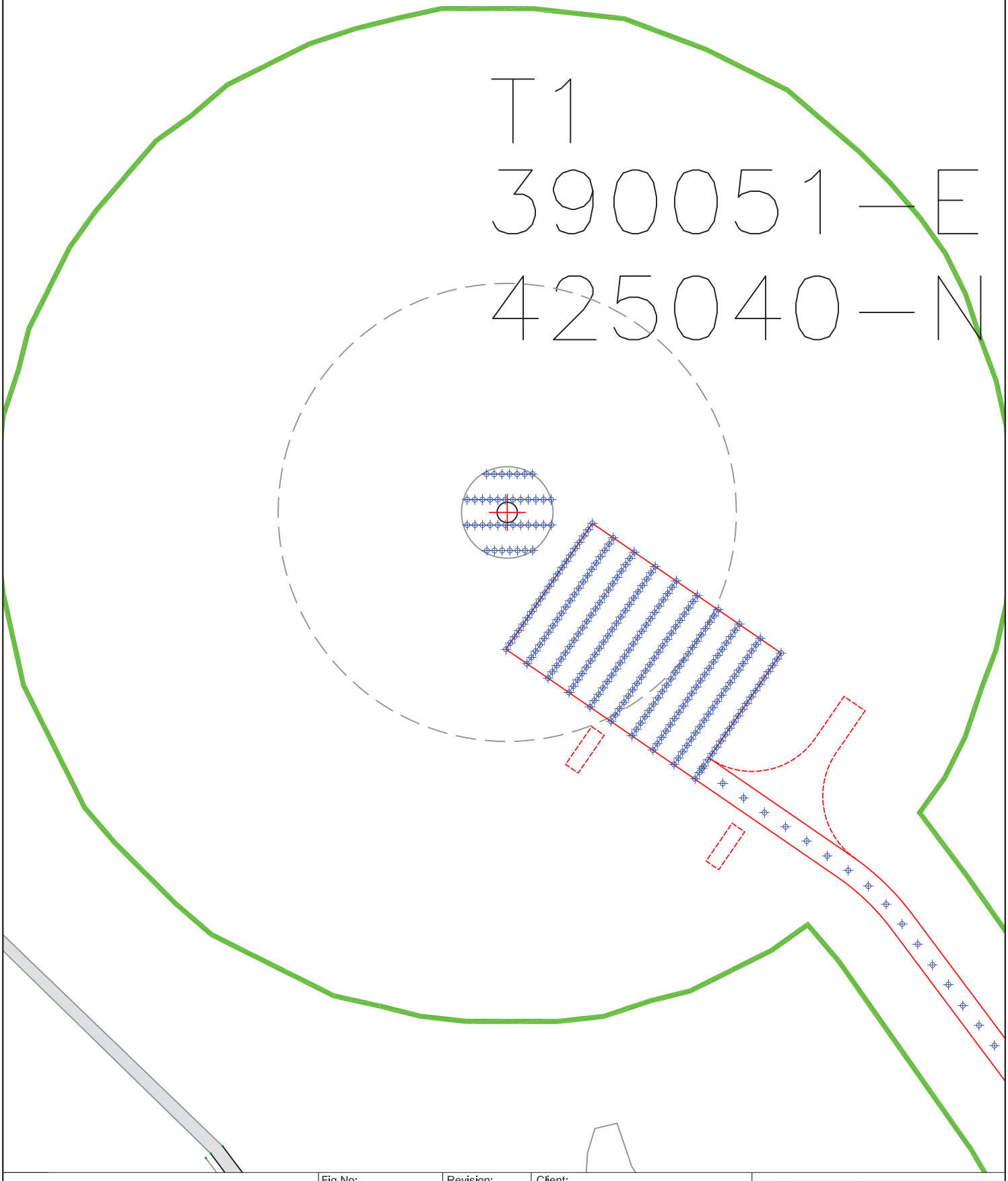

Key:

Auger transect and position

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Fig No: 2

Revision: A

Client: Wind Prospect Ltd

Title: Plan of transects at Turbine 1

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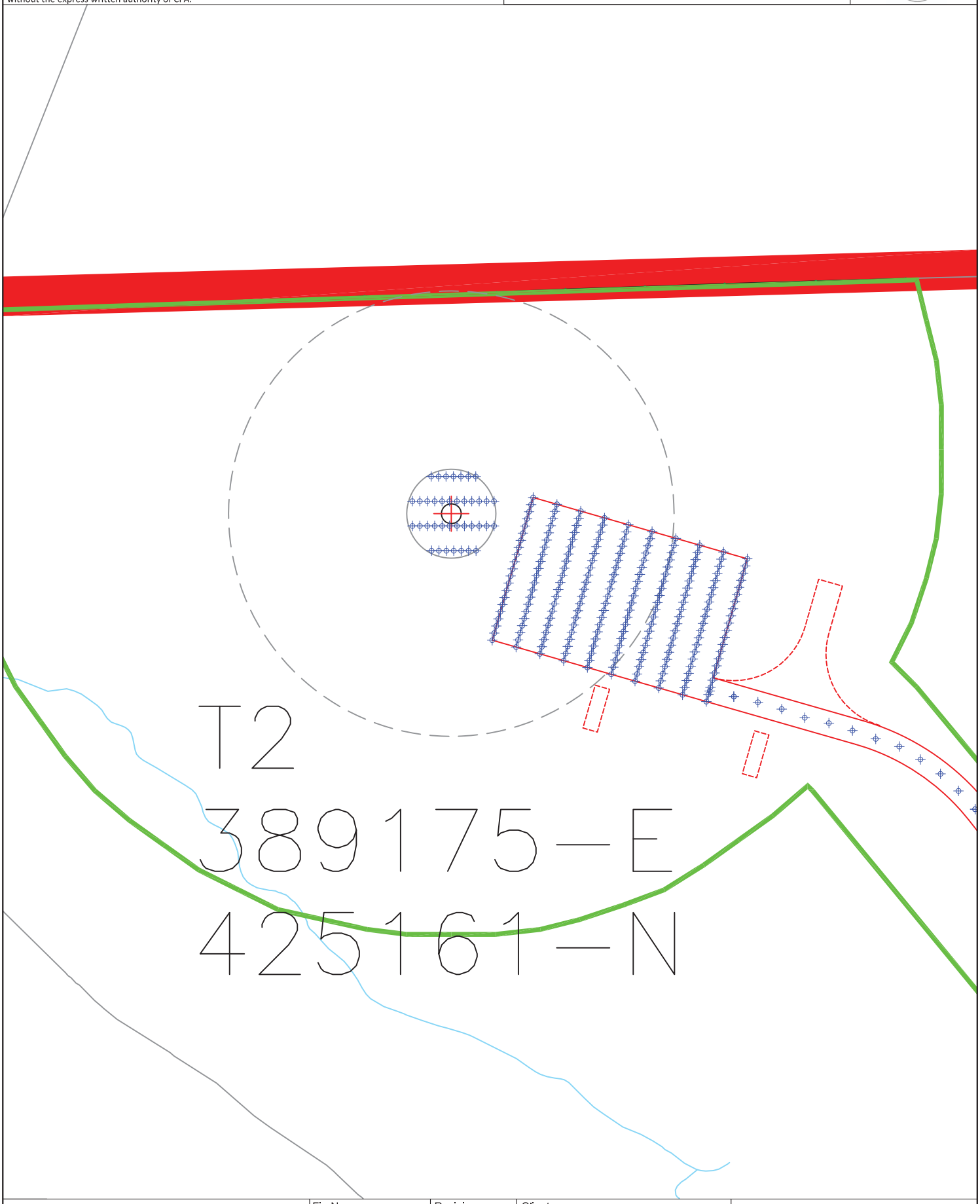

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Fig No: 3

Revision: A

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Title: Plan of transects at Turbine 2

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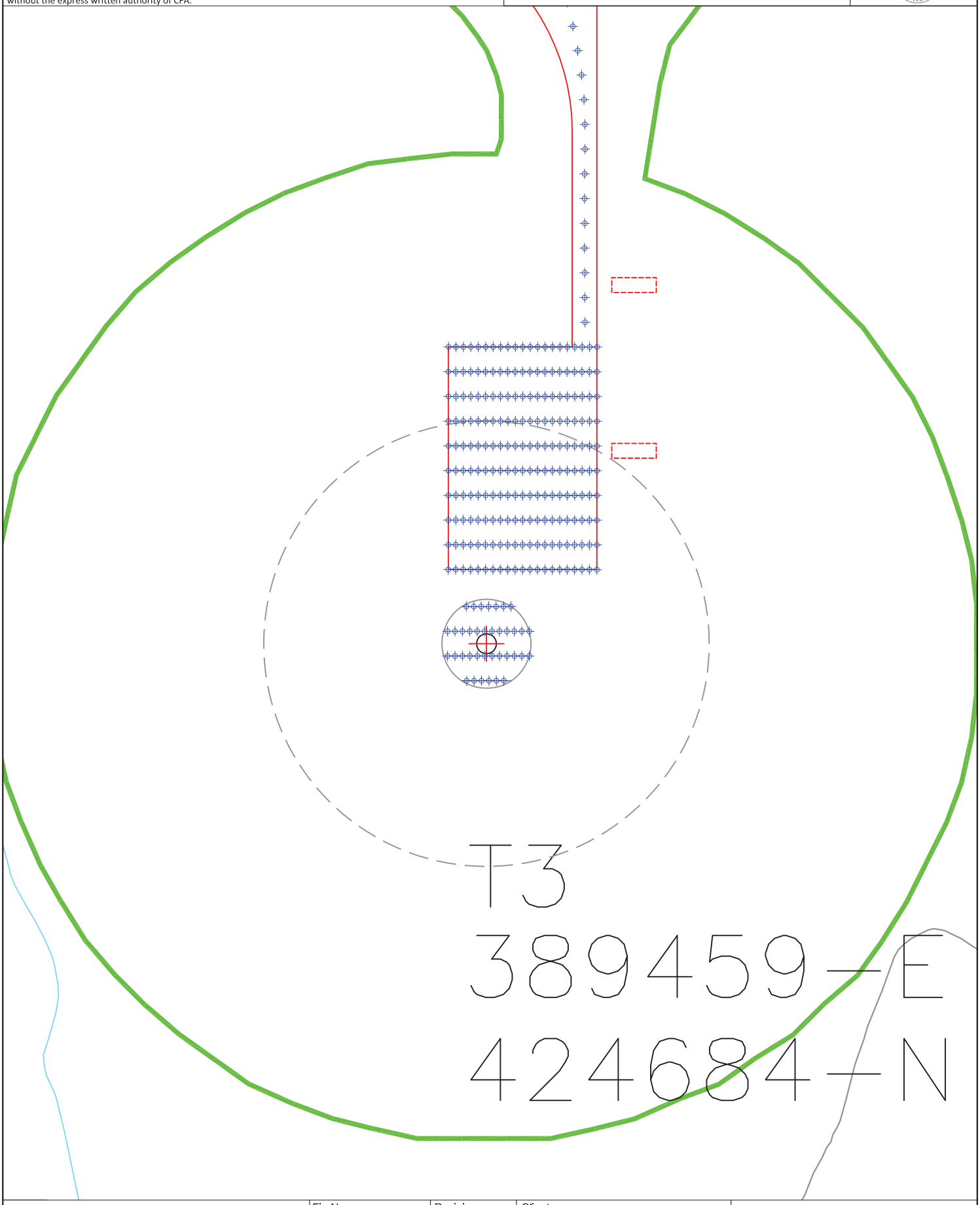

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Fig No: 4

Revision: A

Client: Wind Prospect Ltd

Title: Plan of transects at Turbine 3

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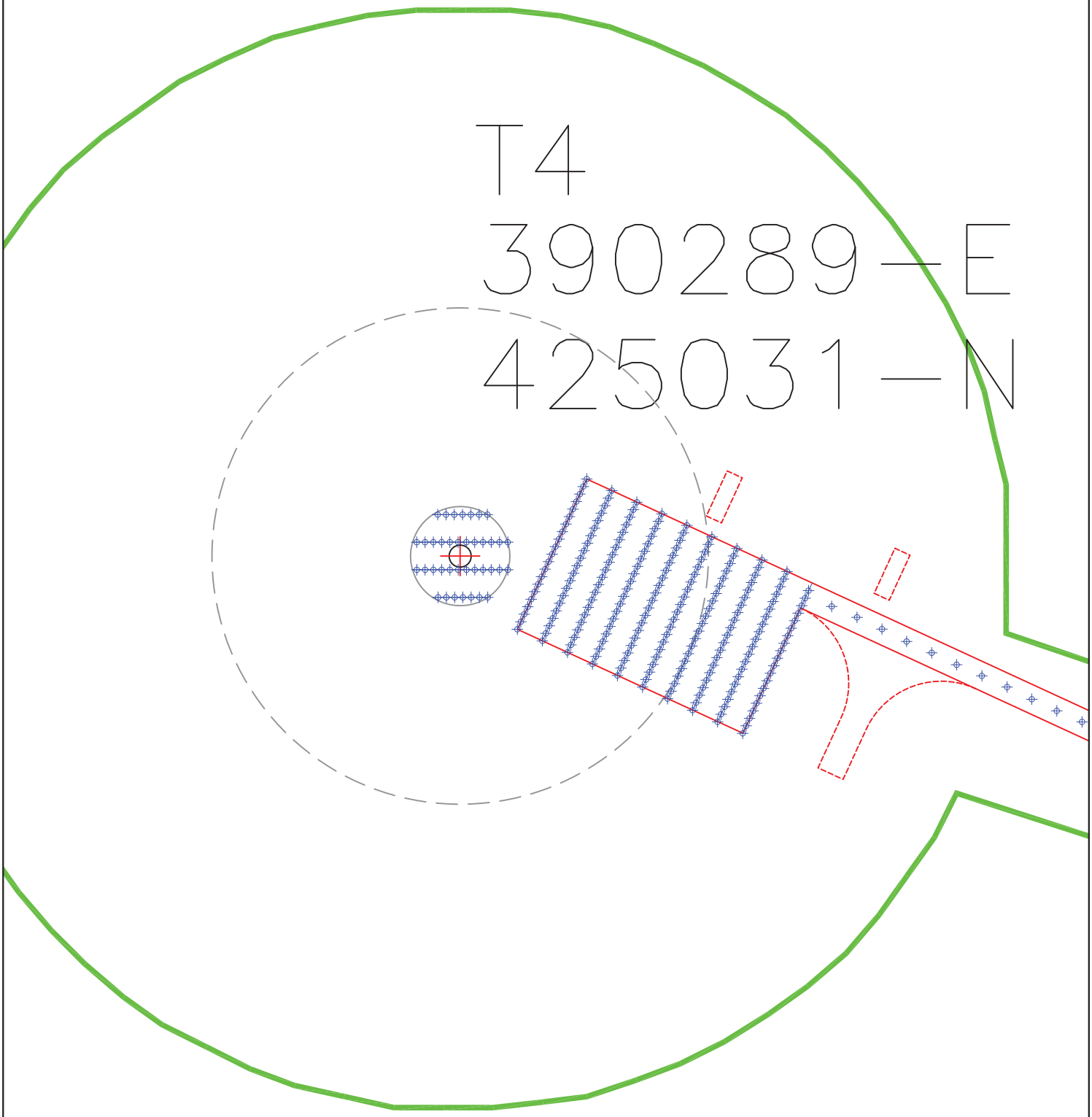

Key:

Auger transect and position

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Fig No: 5 | Revision: A | Client: Wind Prospect Ltd

Title: Plan of transects at Turbine 4

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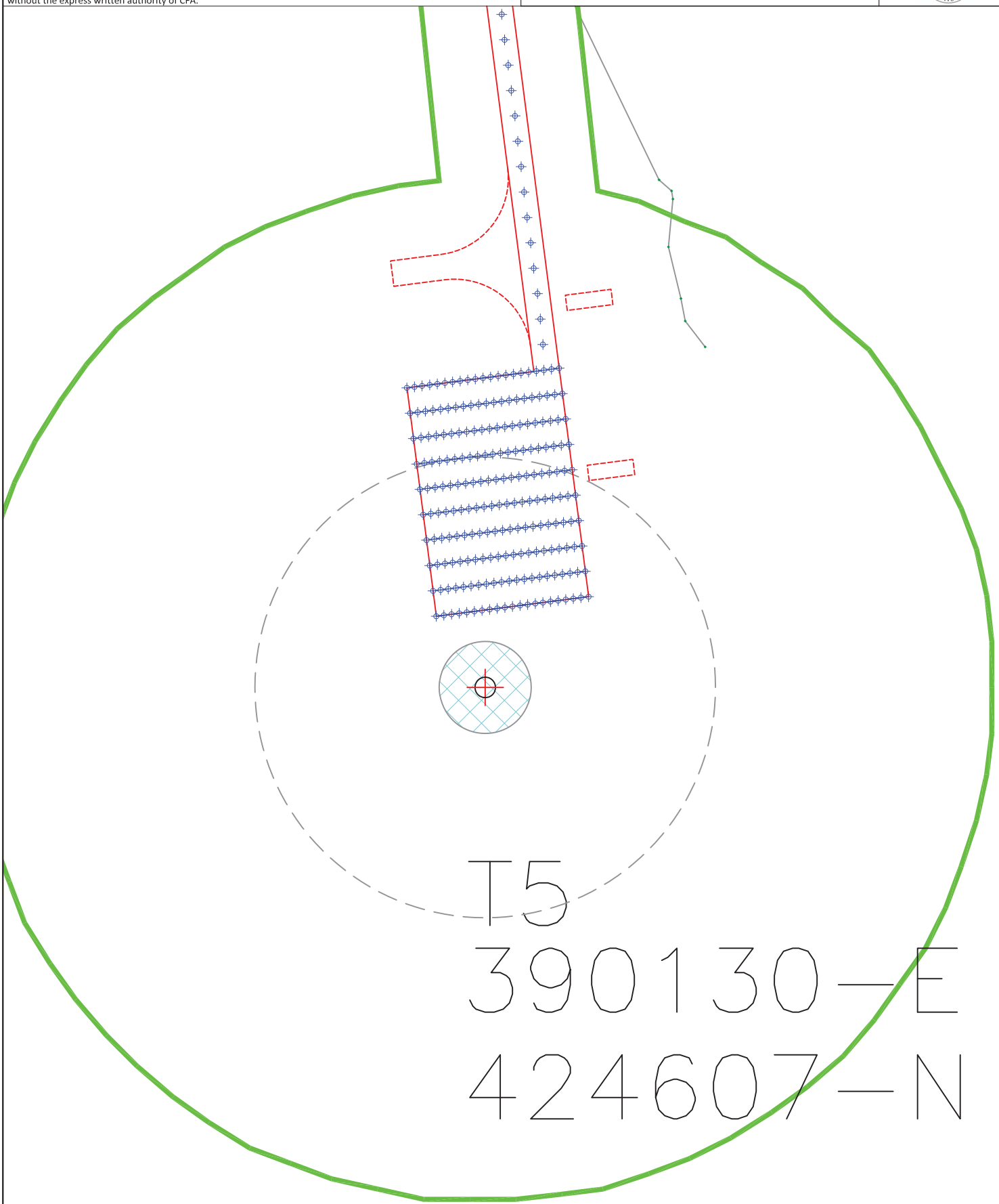

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Assessed as made ground

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Title: Plan of transects at Turbine 5

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Figure 7 - General shot of site and Flower Scar Road

Figure 8 - General shot overlooking Turbine 3 access road

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Figure 9 - Working shot of conditions during test-pit excavation

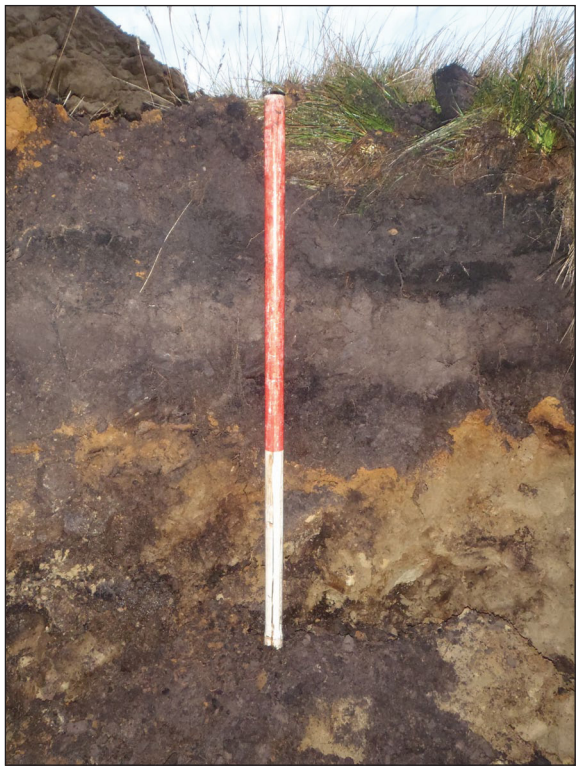

Figure 10
Shot of excavated test-pit no.1

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	Title: Report plates		
Fig. No: nts	Project: TODMORDEN WIND FARM		

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Figure 11 - Shot of excavated test-pit no.5

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Fig. No: nts

Fig. No: 11 | Revision: A | Client: Wind Prospect Ltd

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Appendix 1: Specification

WEST YORKSHIRE ARCHAEOLOGY ADVISORY SERVICE (WYAAS): SPECIFICATION FOR ARCHAEOLOGICAL EVALUATION TO EVALUATE AND RECORD ARCHAEOLOGICAL REMAINS IN ADVANCE OF DEVELOPMENT AT TODMORDEN MOOR (10/01057/WDF)

Specification prepared on behalf of Calderdale Council, at the request of Martin Lightfoot of CFA Archaeology

1.0 **Summary**

1.1 A limited amount of archaeological work consisting of an archaeological evaluation is proposed to help establish the below ground archaeological survival at the above site and to record it if encountered. **Any significant additional work that may be necessary will be covered by a supplementary specification.** This specification has been written by the West Yorkshire Archaeology Advisory Service (WYAAS), the holders of the West Yorkshire Historic Environment Record..

1.2 Please note that a separate specification will be prepared by David Hunter of WYAAS with regard to the mining remains.

NOTE: The requirements detailed in paragraphs 6.3, 6.4, 6.5, 6.6 and 8.1 are to be met by the archaeological contractor **prior** to the commencement of fieldwork by completing and returning the attached form to the WY Archaeology Advisory Service.

2. Site Location & Description

Grid Reference: SD 8989 2483

2.1 The proposed site is located on Todmorden Moor and consists of an area of moorland measuring 163.5 hectares, which lies to the west of Todmorden and south of Cornholme. The site is bisected by Flower Scar Road which runs from east to west. Three wind turbines proposed north of Flower Scar Road and two turbines are proposed to the south of the road. The entire site is surrounded by open moorland.

2.2 The geology of the site consists of mudstone, siltstone and sandstone of the Pennine Lower Coal Measures. This is overlain by peat deposits.

2.3 The site lies in the district of Calderdale and in the historic township of Todmorden and Walsden.

3. Background

3.1 Planning permission has been granted by Calderdale Council for the construction of five wind turbines at Todmorden Moor (10/01057/WDF). The proposed wind turbines will be 125m tall. New access roads, borrow pits and cable trenches will also be required as part of the wind development.

3.2 WYAAS advised the Planning Authority that there is reason to believe that archaeological remains may be affected by the proposed development and that an archaeological evaluation/mitigation is required in advance of development.

3.3 This specification has been prepared by WYAAS, at the request of Martin Lightfoot of CFA Archaeology (mlightfoot@cfa-archaeology.co.uk 01274 864245), to detail what is required for the evaluation.

4. Archaeological Interest

4.1 A desk based assessment of the site was prepared in 2008 and updated in 2010 by AOC Archaeology entitled Todmorden Moor Windfarm Archaeological Assessment. This assessment identified a number of sites within the proposed development site. These sites consisted of remains associated with post medieval mining and quarrying, boundary stones and a mesolithic flint site.

4.2 It is likely that similar remains survive throughout the site. Flint finds dating to the early prehistoric periods are typically concentrated at the base of peat deposits on the uplands, with a higher probability of finding flint sites in areas which are situated 380-430m, at plateau edges with high visibility, on south facing slope. The development site lies between 410m and 430m and on a gentle south facing slope. Flint sites from the early Mesolithic and later Mesolithic differ in size, with the early Mesolithic sites possibly extending over tens of metres and the later Mesolithic sites extending over a couple of metres (a highly significant rod microlith site at March Hill measured only 2m by 2m). Flint sites from both periods can also be associated with ochre, anvils, hearths and structural evidence in the form of post or stake holes.

4.3 The early prehistoric period in the north of England has received relatively little attention or focus. However, in 2010 Dr Penny Spikins from the University of York produced a research agenda for the Palaeolithic and Mesolithic Periods in West Yorkshire where she set out a number of research questions which could usefully be asked from detailed investigations of early prehistoric sites in the region. Research should focus on the following;

- The significance of differences in assembledge types.
- The nature of settlement patterns (whether summer/winter or all year round).
- Social territories and the meaning of stylistic differences in early and later Mesolithic microlith zones.
- The environmental impact of Mesolithic communities.
- The relationship between functional and symbolic worlds and the identification of ‘meaning’ associated with artefacts, features and structures.
- Research into the nature of and the potential locations of highly sensitive sites (ie high resolution sites in the uplands and sites with a range of preservation conditions on the wetlands and lowlands). Significant survey and trial excavations of potentially significant sites would be invaluable.
- Paleoenvironmental work is limited to certain locations and accurately dated pollen cores, particularly associated with archaeological sites, are needed to build up our understanding of Mesolithic landscapes.
- Raw material studies are urgently needed to inform discussions of mobility patterns.
- Detailed analysis of Mesolithic-Neolithic transition sites is needed to inform us of the regional impact of the Neolithic.

- There is an urgent need for detailed excavations to characterise activities and move away from 'assemblage only' focused research.

For more detail see the research agenda at http://www.archaeology.wyjs.org.uk/documents/archaeology/Palaeolithic-and-Mesolithic-Research-Agenda-for-West-Yorkshire.pdf

4.4 Post medieval coal mining remains within the development site consist of pits and shafts. Mine buildings and tramways have been demolished and removed. It is possible that groundworks associated with the wind farm development may uncover below ground remains and features associated with this mine complex. Archaeological mitigation for these mining remains will be the subject of a separate specification.

5. Aim of the Specified Work

5.1 The aim of this project is to gather sufficient information to establish the extent, condition, character and date (as far as circumstances permit) of any archaeological features and deposits within the proposed development area, and to record at an appropriate level, archaeological features encountered in the excavation trenches, with the aim of elucidating the issues discussed in section 4.

5.2 It is conceivable that a larger, more open area excavation may be identified as being warranted. All possibilities will be considered depending upon the results of this exercise and it would be anticipated that if further significant fieldwork is required, then the contractor would draft the specification and agree it with the WYAAS. It is a primary aim of the specified work that all aspects should be placed in the public domain by depositing the results with the WY Historic Environment Record (Registry of Deeds, Newstead Road, Wakefield WF1 2DE)

6. General Instructions

6.1 Health and Safety

6.1.1 The archaeologist on site will naturally operate with due regard for Health and Safety regulations. This work may require the preparation of a Risk Assessment of the site, in accordance with the Health and Safety at Work Regulations. The WYAAS and its officers cannot be held responsible for any accidents or injuries that may occur to outside contractors while attempting to conform to this specification. Any Health and Safety issues which may hinder compliance with this specification should be discussed with WYAAS at the earliest possible opportunity (see section 13.2).

6.2 Location of Services, etc.

6.2.1 The archaeological contractors will be responsible for locating any drainage pipes, service pipes, cables *etc*. which may cross any of the trench lines, and for taking the necessary measures to avoid disturbing such services.

6.3 Confirmation of Adherence to Specification

6.3.1 Prior to the commencement of *any work,* the archaeological contractor must confirm adherence to this specification in writing to the WYAAS, or state (with reasons) any proposals to vary the specification. Should the contractor wish to vary the specification, then written confirmation of the agreement of the West Yorkshire

Archaeology Advisory Service to any variations is required prior to work commencing. Unauthorised variations are made at the sole risk of the contractor. **Modifications presented in the form of a re-written specification/project design will not be considered by the WYAAS.** Any technical queries arising from the specification detailed below should be addressed to the WYAAS *without delay*.

6.4 Confirmation of Timetable and Contractors' Qualifications

6.4.1 Prior to the commencement of *any work*, the archaeological contractor **must** provide WYAAS **in writing** with:

- a projected timetable for the site work;
- details of the staff structure and numbers;
- names and *CVs* of key project members (the project manager, site supervisor, any proposed specialists, sub-contractors *etc.*),

6.4.2 All project staff provided by the archaeological contractor must be suitably qualified and experienced for their roles. The timetable should be adequate to allow the work to be undertaken to the appropriate professional standard, subject to the ultimate judgement of WYAAS.

6.5 Notification

6.5.1 WYAAS should be provided with **as much notice as possible in writing** (and certainly not less than one week) of the intention to start work. A copy of the archaeological contractor's risk assessment of the site should accompany the notification.

6.5.2 The Calderdale Museums curator, Jeff Wilkinson, should be notified of the date of commencement of fieldwork (Tel.: 01422 352334; email: jeff.wilkinson@calderdale.gov.uk).

6.5.3 As a courtesy, English Heritage's Regional Science Adviser, Andy Hammon, should also be notified of the intention to commence fieldwork. (Tel.: 01904 601983; email: andy.hammon@english-heritage.org.uk).

6.6 Documentary Research

6.6.1 Prior to the commencement of *fieldwork*, the HER should be visited by either the project manager or the site supervisor, in order to gain an overview of the archaeological/historical background of the site and environs. In addition to providing a knowledge base for the work in hand, the results of this assessment may be incorporated into the contractor's report where they are considered to contribute to that report, but any extraneous material should be omitted. Please note that the HER makes a charge for consultations of a commercial nature. The results of this exercise should be used to inform the whole project. A formal desk-based report has already been produced, and the contractor should obtain a copy of this report or consult it at the HER.

7.0 Evaluation Methodology

7.1 Auger Survey

7.1.1 All areas proposed for ground disturbance (turbine bases, access roads, borrow pits, service or cable trenches etc.) should be subject to a large bore auger survey, in advance of any groundworks, to test for the presence of flints and previous ground surfaces. The archaeological contractor will need to identify areas of high and low potential for the survival of early prehistoric remains as defined in the research agenda produced by Penny Spikins. In areas of high potential, samples will need to be taken at 1.5m intervals. In areas of low potential samples should be taken at 5m intervals. The diameter of the augers bore is to be agreed with WYAAS and English Heritage but should be as large as practically possible.

7.1.2 To improve the recovery rates of very small artefacts, the sieved samples should allowed to dry before sorting. Flints are typically concentrated in section at the base of the peat (to a maximum of 10cm either side) so it is recommended that only auger samples taken from this horizon, with an additional 25cm either side for error, should be sieved.

7.1.3 The auger survey will allow a artefact distribution map to be drawn up, which may identify areas with concentrations of flints, ochre, heaths or anvil stones which will need to be investigated further prior to development. It is anticipated that the location and extent of further excavation will be agreed in writing with WYAAS before commencement, and be subject to a further specification. However, to aid the contractor, it would be anticipated that any excavation will be based on the paragraph below.

7.2 Detailed excavation

If the auger survey shows areas of concentrations of flints then detailed excavation of these areas will be required. A detailed specification will need to be agreed in writing covering any area of detailed excavation. However, the following approach is to be anticipated.

7.2.1 The areas can be opened by machine, under archaeological supervision, down to 15cm above the level of identified finds. The following excavation methodology is taken from the research agenda '*Palaeolithic and Mesolithic West Yorkshire'* written by Dr Penny Spikins of the University of York (2010);

- Given the possibility of very high integrity assemblages all finds should be piece plotted and a covering tent is necessary to ensure recovery of highly significant small finds in difficult weather conditions. However, if a low integrity of deposits is proven, finds can be plotted according to 50cm squares, otherwise piece plotting is the most appropriate method, coupled with stratigraphic recording

- Particular attention should be paid to burnt finds and their location and to any ephemeral traces of burning and its plotting. All of these elements should be plotted.

- For all hearths or burnt features charcoal samples should be taken and dated (AMS may be particularly useful) with a sequence of dates. Micromorphology and charcoal identification should be carried out and particular care should be taken with recording phases of use. Charcoal samples should also be taken

from within layers containing diagnostic lithics as this technique has proven effective for dating sites in other contexts. Typological, metrical and raw material analyses are essential.

- Particular attention should be paid to the possibility of structural features and to the recording of stake and post holes.

- Microwear analysis is recommended where this is likely to yield useful results i.e. where suitably large areas of cutting edge can be analysed on artefacts, and soil processes have not overly affected wear patterns. Lithics should be analysed in detail and tested for refit patterns.

- Environmental evidence found in association with artefactual material should be collected and dated.

7.2.2 Following machine excavation, all archaeological remains will be hand excavated in an archaeologically controlled and stratigraphic manner sufficient to meet the aims and objectives of the project. The **complete** stratigraphic sequence, down to naturally occurring deposits will be excavated and the work will investigate and record **all** inter-relationships between features. The contractor should make provision for the use of shoring/stepping to accomplish this if necessary. All trenches are to be the stated dimensions at their base. The following strategy will be employed:

- Linear boundary features: a minimum sample of 20% of each linear boundary feature such as ditches and trackways. Each section should be at least 1m wide and, where possible, sections will be located and recorded adjacent to the trench edge. All intersections will be investigated to determine the relationship(s) between the component features. All termini will be investigated.

- Other linear and discrete features: all stake-holes, post-holes, pits, ring ditches, kilns, and other structural/funerary/industrial features will be 50% excavated in the first instance, recorded in section, and then fully excavated. All intersections will be investigated to determine the relationship(s) between the component features. Where possible, sections will be located and recorded adjacent to the trench edge.

- Built structures: walls, floors etc will be excavated sufficient to establish their form, phasing, construction techniques. All intersections will be investigated to determine the relationship(s) between the component features.

7.2.3 All artefacts are to be retained for processing and analysis except for unstratified 20th-century material, which may be noted and discarded. Finds will be stored in secure, appropriate conditions following the guidelines in First Aid for Finds (3rd edition).

7.3 Method of Recording

7.3.1 The areas of excavation are to be recorded according to the normal principles of stratigraphic excavation. The stratigraphy of each area is to be recorded.

7.3.2 Section drawings (at a minimum scale of 1:20) must include heights A.O.D. Plans (at a minimum scale of 1:50) must include O.D. spot heights for all principal strata and any features. At least one section of each trench edge, showing a representative and complete sequence of deposits from the modern ground surface to the natural geology, will be drawn.

7.3.3 Each auger hole and all areas of excavation and all archaeological (and possibly archaeological) features should be accurately located on a site plan and recorded by photographs, scale drawings and written descriptions sufficient to permit the preparation of a detailed archive and report on the material. The trench locations, as excavated, will be accurately surveyed, tied into the O.S. National Grid and located on an up-to-date 1:1250 O.S. map base.

7.3.4 Digital photography: as an alternative to colour slide photography, good quality digital photography may be supplied, using cameras with a minimum resolution of 4 megapixels. Note that conventional black and white print photography is still required and constitutes the permanent record. Digital images will only be acceptable as an alternative to colour slide photography if each image is supplied in three file formats (as a RAW data file, a DNG file and as a JPEG file). The contractor must include metadata embedded in the DNG file. The metadata must include the following: the commonly used name for the site being photographed, the relevant centred OS grid coordinates for the site to at least six figures, the relevant township name, the date of photograph, the subject of the photograph, the direction of shot and the name of the organisation taking the photograph. Images are to be supplied to WYAAS on gold CDs by the archaeological contractor accompanying the hard copy of the report.

7.4 Use of Metal Detectors

7.4.1 Spoil heaps are to be scanned for non-ferrous metal artefacts using a metal detector capable of making this discrimination, operated by an experienced metal detector user (if necessary, operating under the supervision of the contracting archaeologist). Modern artefacts are to be noted but not retained (19th-century material and earlier should be retained.)

7.4.2 If a non-professional archaeologist is to be used to carry out the metal-detecting, a formal agreement of their position as a sub-contractor working under direction must be agreed in advance of their use on site. This formal agreement will apply whether they are paid or not. To avoid financial claims under the Treasure Act a suggested wording for this formal agreement with the metal detectorist is: "In the process of working on the archaeological investigation at [*location of site*] between the dates of [*insert dates*], [*name of person contributing to project*] is working under direction or permission of [*name of archaeological organisation*] and hereby waives all rights to rewards for objects discovered that could otherwise be payable under the Treasure Act 1996."

7.5 Environmental Sampling Strategy

7.5.1 Bulk samples must be taken from **all** securely stratified deposits using a strategy which combines systematic and judgement sampling, but which also follows the methodologies outlined by English Heritage (2011), “Environmental Archaeology. A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-excavation (second edition)”.

7.5.2 Samples for specialist environmental analysis and scientific dating (soil profiles, archaeomagnetic dating, dendrochrology etc.) should be taken if suitable material is encountered during the excavation. The English Heritage Regional Science Advisor should be consulted (Dr Andy Hammon, tel.: 01904 601983, email: andy.hammon@english-heritage.org.uk) and provision should be made for an appropriate specialist(s) to visit the site, take samples and discuss the sampling strategy. The sampling strategy used must to presented in the evaluation report.

7.6 Conservation Strategy

7.6.1 A conservation strategy must be developed in collaboration with a recognised laboratory. All finds must be assessed in order to recover information that will contribute to an understanding of their deterioration and hence preservation potential, as well as identifying potential for further investigation. Furthermore, all finds must be stabilised and packaged in accordance with the requirements of the receiving museum. As a guiding principle, only artefacts of a "displayable" quality would warrant full conservation, but metalwork and coinage from stratified contexts would be expected to be x-rayed if necessary, and conservation costs should also be included as a contingency.

7.7 Human Remains

7.7.1 Any human remains that are discovered must initially be left *in-situ*, covered and protected. WYAAS will be notified at the earliest opportunity. If removal is necessary the remains must be excavated archaeologically in accordance with the *Guidance for Best Practice for Treatment of Human Remains Excavated from Christian Burial Grounds in England* published by English Heritage (2005), a valid Ministry of Justice licence , if appropriate, and any local environmental health regulations.

7.8 Treasure Act

7.8.1 The terms of the Treasure Act 1996 must be followed with regard to any finds that might fall within its purview. Any finds must be removed to a safe place and reported to the local coroner as required by the procedures as laid down in the "Code of Practice". Where removal cannot be effected on the same working day as the discovery, suitable security measures must be taken to protect the finds from theft.

7.9. Unexpectedly Significant or Complex Discoveries

7.9.1 Should there be unexpectedly significant or complex discoveries made that warrant, in the professional judgement of the archaeologist on site, more detailed recording than is appropriate within the terms of this specification, then the archaeological contractor should urgently contact the WYAAS with the relevant information to enable them to resolve the matter with the developer.

7.10 Access/Monitoring Arrangements

7.10.1 The representative of the WYAAS will be afforded access to the site at any reasonable time. It is usual practice that the visit is arranged in advance, but this is not always feasible. The WYAAS' representative will be provided with a site tour and an overview of the site by the senior archaeologist present and should be afforded the opportunity to view all trenches, any finds made that are still on site, and any

records not in immediate use. It is anticipated that the records of an exemplar context that has previously been fully recorded will be examined. Any observed deficiencies during the site visit are to be made good to the satisfaction of the WYAAS' representative, by the next agreed site meeting. Access is also to be afforded at any reasonable time to English Heritage's Regional Archaeological Science Advisor.

7.10.2 Please note that WYAAS now make a charge for site monitoring visits. An invoice will be raised on the archaeological contractor. One monitoring visit will be charged for the evaluation phase of the project. Please contact us for the current charge.

8. Excavation Archives Deposition.

8.1 Before commencing any fieldwork, the archaeological contractor must contact the relevant District museum archaeological curator to determine the museum's requirements for the deposition of an excavation archive. In this case the contact is Calderdale Museums, Bankfield Museum, Akroyd Park, Boothtown Road, Halifax HX3 6HG; telephone 01422 352334; Curator: Jeff Wilkinson. Agreement for deposition should be confirmed in writing by the archaeological contractor; this correspondence is to be copied to the WYAAS.

8.2 The archaeological contractor will contact Calderdale Museums to determine its policy on the acceptance of completed excavation archives, including primary site records and research archives and finds, from all excavations carried out in the District that it serves.

8.3 It is the responsibility of the archaeological contractor to endeavour to obtain consent of the landowner, in writing, to the deposition of finds with Calderdale Museums.

8.4 It is the responsibility of the archaeological contractor to meet Calderdale Museums requirements with regard to the preparation of excavation archives for deposition

9. Post-Excavation Analysis and Reporting

9.1 Requirement for Further Fieldwork

9.1.1 It is anticipated that upon (or approaching) completion of fieldwork a meeting with WYAAS will be arranged by the archaeological contractor, either at the WYAAS offices or on site, to discuss the results and agree what, if any, additional work may be warranted. The developer should also be invited to attend this meeting. The meeting may take the form of a telephone discussion at WYAAS' discretion. Following the meeting the archaeological contractor will either produce a report (if no further archaeological work is warranted), or draft a specification (if further work is required) to be submitted to WYAAS for written approval prior to the commencement of any further work.

9.1.2 If further fieldwork is required, the results of the evaluation will be integrated into an overall report encompassing all stages of work. However, if a different

contractor is employed by the developer to undertake subsequent works, then a full, formal evaluation report (see paragraph 9.3 below) should be prepared and accepted by WYAAS before further fieldwork commences.

9. Post-Excavation Analysis and Reporting

9.1 Finds and Samples

9.1.1 On completion of the fieldwork, any samples taken shall be processed and any finds shall be cleaned, identified, assessed/analysed, dated (if possible), marked (if appropriate) and properly packed and stored in accordance with the requirements of national guidelines.

9.1.2 Samples should be processed for the recovery of artefactual material, animal/fish/human bones, industrial residues (including hammerscale), shell, molluscs, charcoal and mineralised plant remains as a minimum. 'Specialist' samples (e.g. monoliths, cores, plant/invertebrate macrofossils) should be processed separately as appropriate.

9.1.3 Material suitable for scientific dating (e.g. charcoal) should be identified to species and assessed for suitability by an environmental specialist prior to submission to a dating laboratory. Any human remains submitted for C14 dating should also have carbon (delta 13C) and nitrogen isotope analysis carried out by the radiocarbon laboratory.

9.1.4 All finds and biological material must be analysed by a qualified and experienced specialist.

9.1.5 Following identification, finds of 20th-century date should be noted, quantified and summarily described, but can then be discarded if appropriate. All finds which are of 19th century or earlier date should be retained and archived.

9.2 Field Archive

9.2.1 A fully indexed field archive shall be compiled consisting of all primary written documents, plans, sections, photographic negatives and a complete set of labelled photographic prints/slides. Standards for archive compilation and transfer should conform to those outlined in *Archaeological Archives – a guide to best practice in creation, compilation, transfer and curation* (Archaeological Archives Forum, 2007). The contractor should also take account of any additional requirements imposed by the recipient museum (see section 9.1 above). An index to the field archive is to be deposited with the West Yorkshire Archaeology Advisory Service (preferably as an appendix in the report).

9.2.2 Prints may be executed digitally from scanned versions of the film negatives, and may be manipulated to improve print quality (but **not** in a manner which alters detail or perspective). All digital prints must be made on paper and with inks which are certified against fading or other deterioration for a period of 75 years or more when used in combination. If digital printing is employed, the contractor must supply details of the paper/inks used in writing to the WY Archaeology Advisory Service, with supporting documentation indicating their archival stability/durability. Written

confirmation that the materials are acceptable must have been received from the WYAAS prior to the commencement of work on site.

9.2.3 The original archive is to accompany the deposition of any finds, providing the landowner agrees to the deposition of finds in a publicly accessible archive (see para. 8.4 above). In the absence of this agreement the field archive (less finds) is to be deposited with the West Yorkshire Archaeology Advisory Service.

9.3 Report Format and Content

9.3.1 A report should be produced, which should include background information on the need for the project, a description of the methodology employed, and a full description and interpretation of results produced. It is not envisaged that the report is likely to be published, but it should be produced with sufficient care and attention to detail to be of academic use to future researchers.

9.3.2 Location plans should be produced at a scale which enables easy site identification and which depicts the full extent of the site investigated (a scale of 1:50,000 is not regarded as appropriate unless accompanied by a more detailed plan or plans). Site plans should be at an appropriate scale showing trench layout (as dug), features located and, where possible, predicted archaeological deposits. Upon completion of each evaluation trench all sections containing archaeological features will be drawn. Section drawings (at a minimum scale of 1:20) must include heights O.D. Plans (at a minimum scale of 1:50) must include O.D. spot heights for all principal strata and any features. Where no archaeological deposits are encountered at least one long section of each trench will be drawn.

9.3.3 Artefact analysis is to include the production of a descriptive catalogue, quantification by context and discussion/interpretation if warranted, with finds critical for dating and interpretation illustrated.

9.3.4 Environmental analysis is to include identification of the remains, quantification by context, discussion/interpretation if warranted, and a description of the processing methodology. Radiocarbon results must be presented in full (laboratory sample number, conventional radiocarbon age, delta C13 value, calibration programme). Copies of the laboratory-issued dating certificates must be included as an appendix to the report.

9.3.5 Details of the style and format of the report are to be determined by the archaeological contractor, but should include a full bibliography, a quantified index to the site archive, and as an appendix, a copy of this specification.

9.4 Summary for Publication

9.4.1 The attached summary sheet should be completed and submitted to the WYAAS for inclusion in the summary of archaeological work in West Yorkshire to be published on WYAAS' website.

9.5 Publicity

If the project is to be publicised in any way (including media releases, publications etc.), then it is expected that the WYAAS will be given the opportunity to consider

whether it wishes its collaborative role to be acknowledged, and if so, the form of words used will be at the WYAAS' discretion.

10. Report Submission and Deposition with the HER

10.1 A copy of the report is to be supplied **directly** to the WYAAS within a period of **two months** following completion of fieldwork, unless specialist reports are awaited. In the latter case a revised date should be agreed with the WYAAS. Completion of this project and advice from WYAAS on an appropriate mitigation strategy are dependant upon receipt by WYAAS of a satisfactory report which has been prepared in accordance with this specification. Any comments made by WYAAS in response to the submission of an unsatisfactory report will be taken into account and will result in the reissue of a suitably edited report to all parties, within a timescale which has been agreed with WYAAS.

10.2 The report will be supplied on the understanding that it will be added to the West Yorkshire Historic Environment Record where it will be publicly accessible once deposited unless confidentiality is explicitly requested, in which case it will become publicly accessible six months after deposition.

10.3 Copyright - Please note that by depositing this report, the contractor gives permission for the material presented within the document to be used by the WYAAS, in perpetuity, although The Contractor retains the right to be identified as the author of all project documentation and reports as specified in the *Copyright, Designs and Patents Act* 1988 (chapter IV, section 79). The permission will allow the WYAAS to reproduce material, including for non-commercial use by third parties, with the copyright owner suitably acknowledged.

10.4 A copy of the final report shall also be supplied to English Heritage's Regional Science Advisor (Dr Andy Hammon, English Heritage, 37 Tanner Row, YorkY01 6WP).

10.5 The West Yorkshire HER supports the Online Access to Index of Archaeological Investigations (OASIS) project. The overall aim of the OASIS project is to provide an online index to the mass of archaeological grey literature that has been produced as a result of the advent of large-scale developer funded fieldwork. The archaeological contractor must therefore complete the online OASIS form at **http://ads.ahds.ac.uk/project/oasis/**. Contractors are advised to contact the West Yorkshire HER officer prior to completing the form. Once a report has become a public document by submission to or incorporation into the HER, the West Yorkshire HER may place the information on a web-site. Please ensure that you and your client agree to this procedure in writing as part of the process of submitting the report to the case officer at the West Yorkshire HER.

11. General Considerations

11.1 Authorised Alterations to Specification by Contractor

11.1.1 It should be noted that this specification is based upon records available in the West Yorkshire Historic Environment Record and on a brief examination of the site by the WYAAS. Archaeological contractors submitting tenders should carry out

an inspection of the site prior to submission. If, on first visiting the site or at any time during the course of the recording exercise, it appears in the archaeologist's professional judgement that

i) a part or the whole of the site is not amenable to recording as detailed above, and/or
ii) an alternative approach may be more appropriate or likely to produce more informative results, and/or

then it is expected that the archaeologist will contact WYAAS as a matter of urgency. If contractors have not yet been appointed, any variations which the WYAAS considers to be justifiable on archaeological grounds will be incorporated into a revised specification, which will then be re-issued to the developer for redistribution to the tendering contractors. If an appointment has already been made and site work is ongoing, WYAAS will resolve the matter in liaison with the developer and the Local Planning Authority.

11. 2 Unauthorised Alterations to Specification by Contractor

11.2.1 It is the archaeological contractor's responsibility to ensure that they have obtained WYAAS' consent in writing to any variation of the specification prior to the commencement of on-site work or (where applicable) prior to the finalisation of the tender. Unauthorised variations may result in WYAAS being unable to recommend determination of the planning application to the Local Planning Officer based on the archaeological information available and are therefore made solely at the risk of the contractor.

11.3 Technical Queries

Similarly, any technical queries arising from the specification detailed above, should be addressed to WYAAS without delay.

11.4 Valid Period of Specification

This specification is valid for a period of one year from date of issue. After that time it may need to be revised to take into account new discoveries, changes in policy or the introduction of new working practices or techniques.

West Yorkshire Archaeology Advisory Service
Rebecca Remmer **November 2011**

Historic Environment Record
West Yorkshire Archaeology Advisory Service
Registry of Deeds
Newstead Road
Wakefield
WF1 2DE

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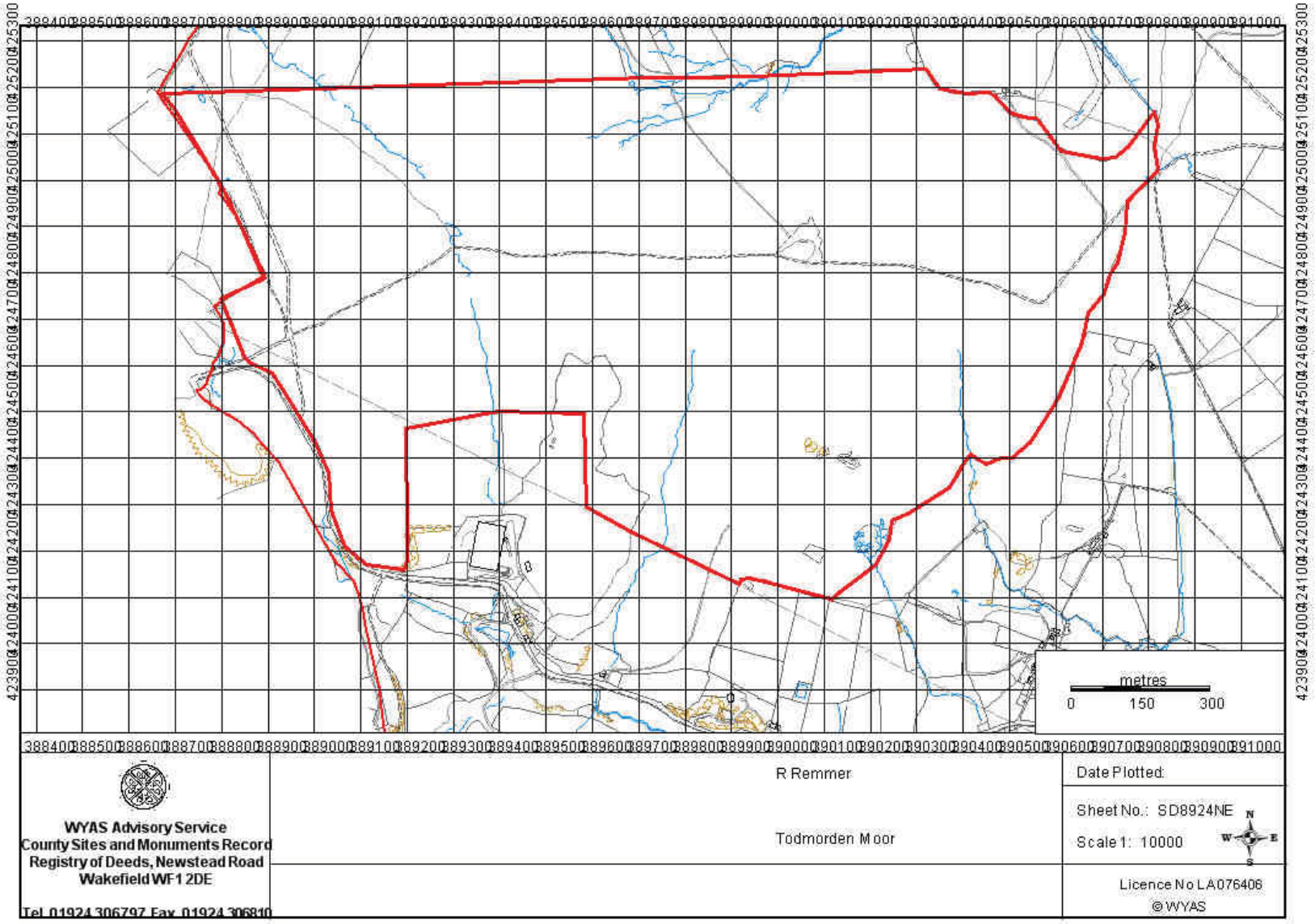
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WYAS Advisory Service
County Sites and Monuments Record
Registry of Deeds, Newstead Road
Wakefield WF1 2DE
Tel 01924 306797 Fax 01924 306810
R Remmer
Todmorden Moor
Date Plotted:
Sheet No.: SD8924NE
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WEST YORKSHIRE ARCHAEOLOGY ADVISORY SERVICE SUMMARY SHEET
ARCHAEOLOGICAL FIELDWORK IN WEST YORKSHIRE

Site name/ Address Todmorden Moor Windfarm	
Township Todmorden and Walsden	**District** Calderdale
National Grid Reference (to six or eight figures *depending on the archaeological sensitivity of the site*) SD 8989 2483	
Contractor CFA Archaeology	
Date of Work December 2011 to May 2012	
Title of Report (in full) Todmorden Wind Farm, Flower Scar Road, Todmorden, Calderdale, Auger Survey and Watching Brief	
Date of Report May 2012	

SUMMARY OF FIELDWORK RESULTS (100 WORDS OR LESS)

CFA Archaeology undertook a programme of archaeological works consisting of an auger survey and the monitoring of test-pits during a geotechnical survey at the proposed locations of the crane pads, turbine bases and access roads.

The purpose of the work was to gather information regarding the extent, condition and character of any surviving archaeological remains; namely prehistoric flint artefacts. The auger survey sampled peat and soil from regular transects across each proposed turbine base and crane pad. The transects were spaced at 5m intervals and samples were taken every 1.5m. The depth of the samples taken varied from 0.2m to 2.5m.

No archaeological deposits were recorded and no finds were recovered from either the auger survey or during the watching brief on the geotechnical investigation.

Author of summary Martin Lightfoot	**Date of summary** 08/05/12