Aldington and Bonnington Parish Council Written Representation 10 December 2024

APPENDIX B - LIDAR ASSESSMENT OF ARCHAEOLOGICAL POTENTIAL

STONESTREET GREEN SOLAR

LAND AT ALDINGTON, SOUTHEAST OF ASHFORD

LiDAR Assessment of Archaeological Potential

REPORT

VERSION 1

Commissioned by Aldington & Bonnington Parish Council

November 2024

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PROJECT INFO:

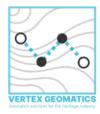
Site Code SGS24 | OSGB36 COORDS: E606118, N137629 | NGR TR 06118 37629

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PROJECT TEAM:

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Author Peter Spencer [CIfA6388] | Graphics Peter Spencer





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PROJECT SUMMARY

The following document represents the final project report relating to the assessment of LiDAR data in relation to the proposed development of the Stonestreet Green Solar project (EPL 001 Ltd / EN010135). The report has been produced by Peter Spencer BA MA MCIfA on behalf of the Aldington & Bonnington Parish Council (ABPC) and assesses the evidence for archaeological potential in relation to the proposed development area (hereafter referred to as PDA), a 191ha are of land situated within the civil parishes of Sellindge, Aldington, Mersham, and Smeeth.

The project comprised a review of existing LiDAR data derived from the Department for Environment, Food, and Rural Affairs (DEFRA). The data comprised a 1m resolution DSM/DTM captured in 2022 that was subsequently processed to highlight topographic and morphological variation. Where possible results of the assessment were compared with a range of proximal earth observation data and historic environment records to provide further information and validation.

The assessment identified a rich variety of possible archaeological features, sites, and/or deposits within the PDA. The majority of these pertain to former land boundaries and agricultural practices ranging in date from the Medieval-Modern Period. Within the local area of the Aldington Ridge the LiDAR assessment identified several areas of morphological variance which when reviewed in conjunction with the existing geophysical survey data and results of the archaeological evaluation potentially depict a zone of anthropogenic activity possibly associated with a roadside settlement dating from the Iron Age / Romano-British (IA/RB) transition phase onwards.

Within the East Stour River basin, in which the northern extent of the PDA is situated assessment of the LiDAR data identified a number of relict fluvial channels associated with the East Stour and earthworks which may be associated with agriculture and water management.

Taken with the growing body of evidence derived from the KCC HER, PAS Database, Geophysical Survey, and limited evaluation it is clear the PDA is situated within an area of continuous anthropogenic activity dating from the Prehistoric Period onwards with a particular emphasis upon the IA/RB-Medieval Periods

The assessment was undertaken by a professional archaeologist suitably trained and experienced in earth observation and remote-sensing investigation. This Report details essential project information and methodology, whilst highlighting potential areas of interest and study. It has been produced by Peter Spencer on behalf of the ABPC and conforms to the standards set out in the Chartered Institute for Archaeologists 'Code of Conduct' (CIfA 2019); 'Standard for archaeological field evaluation' (CIfA 2020a); and the 'Standard and Guidance for the creation, compilation, transfer and deposition of archaeological archives' (CIfA 2020b) and 'Using Airborne LiDAR in Archaeological Survey' (HE2018). Where possible management and execution of the project is in accordance with the Historic England 'Management of Research Projects in the Historic Environment [MoRPHE]: Project Manager's Guide' (HE2016).

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GLOSSARY OF ABBREVIATIONS

ABC	Ashford Borough Council
ABPC	Aldington & Bonnington Parish Council
ВА	Bronze Age
CIfA	Chartered Institute for Archaeologists
COORDS	Coordinates
DBA	Desk Based Assessment
DEFRA	Department for Environment, Food, and Rural Affairs
DEM	Digital Elevation Model
DSM	Digital Surface Model
DTM	Digital Terrain Model
EA	Environment Agency
EIA	Environmental Impact Assessment
EPSG	European Petroleum Survey Group
ha	Hectare
HE	Historic England
HER	Historic Environment Record
IA	Iron Age
КСС	Kent County Council
LiDAR	Light Detection and Ranging
MoRPHE	Management of Research Projects in the Historic Environment
NGR	National Grid Reference
OS	Ordnance Survey
PAS	Portable Antiquities Scheme
PDA	Proposed Development Area
PM	Post-Medieval
RB	Romano-British
RMSE	Root Mean Squared Error
TP	Test Pit
TR	Trench
UKBAP	UK Biodiversity Action Plan
WS	Window Sample

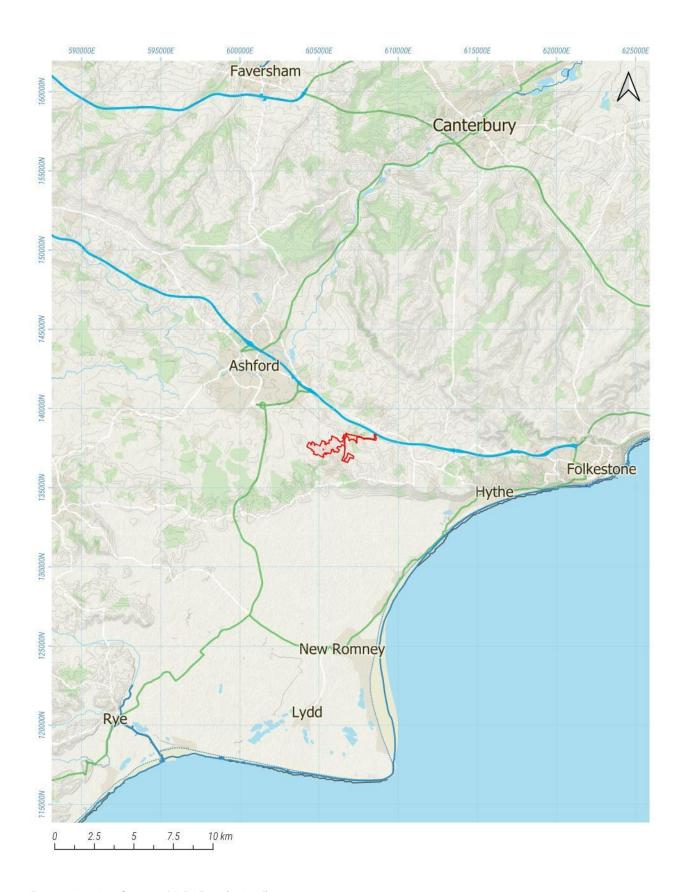


Figure 1: Location of proposed Solar Farm (regional)

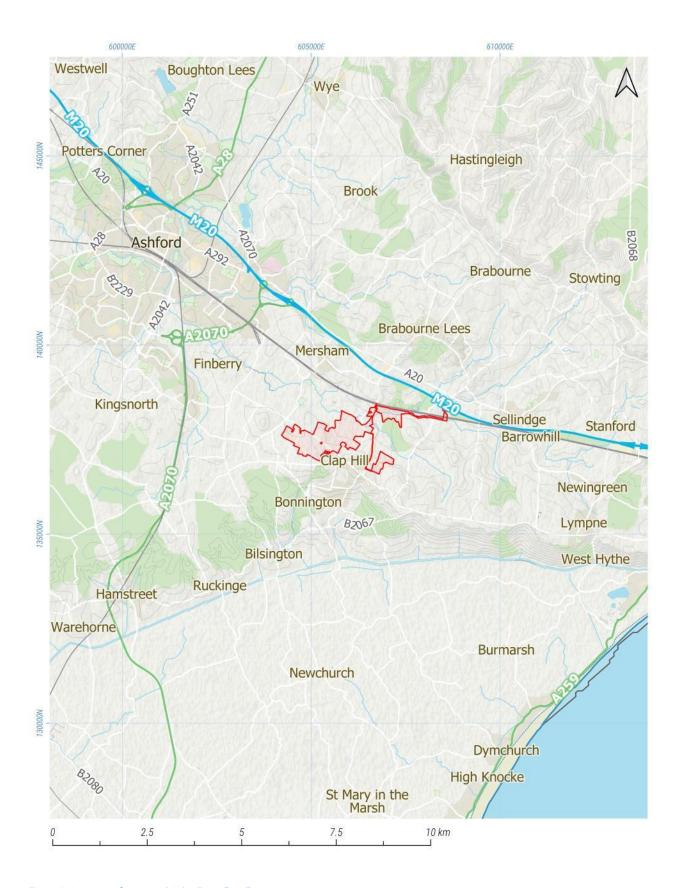


Figure 2: Location of proposed Solar Farm (local)

STONESTREET GREEN SOLAR

LAND AT ALDINGTON, SOUTHEAST OF ASHFORD, KENT

LiDAR Assessment of Archaeological Potential
REPORT
VERSION 0.1

1. INTRODUCTION

The following document represents the project report arising from the assessment of LiDAR data for indicators of archaeological potential in relation to the proposed development area (PDA) of the Stonestreet Green Solar project (EPL 001 Ltd / EN010135; 191ha situated within the civil parishes of Sellindge, Aldington, Mersham, and Smeeth, hereafter referred to as the 'work').

The project comprised a review of existing LiDAR data derived from the Department for Environment, Food, and Rural Affairs (DEFRA). The primary dataset consulted as part of this project was a 1m resolution DSM/DTM captured in 2022 that was subsequently processed to highlight topographic and morphological variation.

The resulting visualisations were systematically reviewed for indicators of archaeological potential by an accredited and experienced archaeologist. Where possible, the results of the assessment were compared with a range of proximal earth observation data and historic environment records to provide context and information.

This Report details essential project information and methodology, whilst highlighting potential areas of interest and study. It has been produced by Peter Spencer on behalf of the ABPC and conforms to the standards set out in the Chartered Institute for Archaeologists 'Code of Conduct' (CIfA 2019); 'Standard for archaeological field evaluation' (CIfA 2020a); and the 'Standard and Guidance for the creation, compilation, transfer and deposition of archaeological archives' (CIfA 2020b) and 'Using Airborne LiDAR in Archaeological Survey' (HE2018).

Where possible management and execution of the project is in accordance with the Historic England 'Management of Research Projects in the Historic Environment [MoRPHE]: Project Manager's Guide' (HE2016).

Please note coordinates are given in the OSGB36 coordinate system (ESPG:27700) and where possible asset and event information is given using the Kent County Council HER reference system.

2. SITE DESCRIPTION

LOCATION AND EXTENT

The site in question comprises the PDA (as of July 2024) associated with the proposed Stonestreet Green Solar project, a 192 hectare area of land (approximately 474 acres) of irregular shape within the civil parishes of Sellindge, Aldington, Mersham, and Smeeth centred upon OSGB36 COORDS: E606118, N137629 (NGR TR 06118 37629).

The PDA is located approximately 6.5km to the south east of Ashford Town Centre and 13.7km to the west of Folkestone Town Centre. Locally it is situated upon land located to the north of the villages of Aldington and Clap Hill and to the east of the settlement of Broad Oak. The site itself sits within the administrative boundaries of Ashford Borough Council (ABC) and Kent County Council (KCC).

The land within the PDA primarily comprises agricultural fields delineated by hedgerows, tree belts, and drainage channels.

DESCRIPTION OF PROPOSED WORKS

The Stonestreet Green Solar Project comprises the proposed construction, operation, maintenance and decommissioning of a solar photovoltaic array. The proposed development will include erection of solar PV arrays and on-site energy storage, associated infrastructure, an underground cable connection to the grid, and enabling works.

The existing EIA scoping documents divide the PDA into 29 parcels of land (Fields 1-29) where development of infrastructure associated with the solar farm is planned. These have subsequently been grouped as the following:

Table 1: Project areas referenced within report

AREA NAME	AREA REF.
South Western Area	Fields 1-9
Central Area	Fields 10-19;23-25
South Eastern Area	Fields 20-22
Northern Area	Fields 26-29
Project Substation	Location of project substation located in the north-western extent of Field 26
Cable Route Corridor Cable route connecting project substation to sellindge substation	
Sellindge Substation	Location of existing sellindge substation

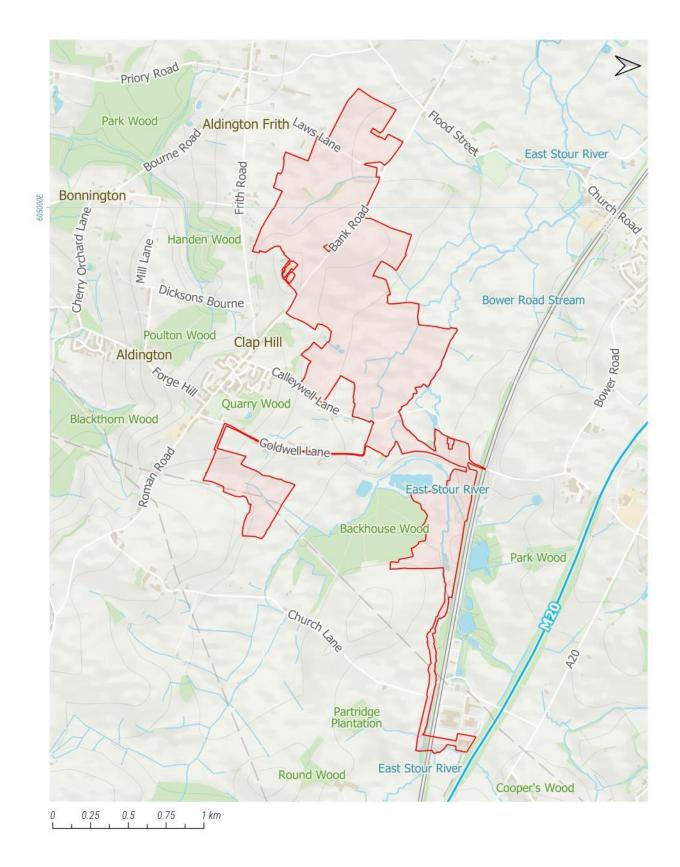


Figure 3: Location and extent of PDA

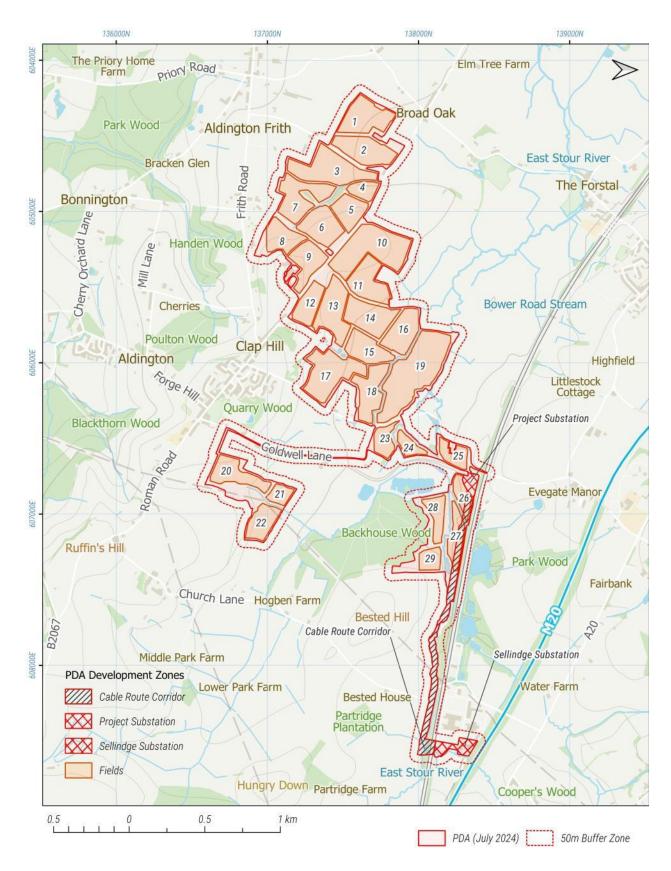


Figure 4: PDA divided into areas referenced in EIA scoping documentation

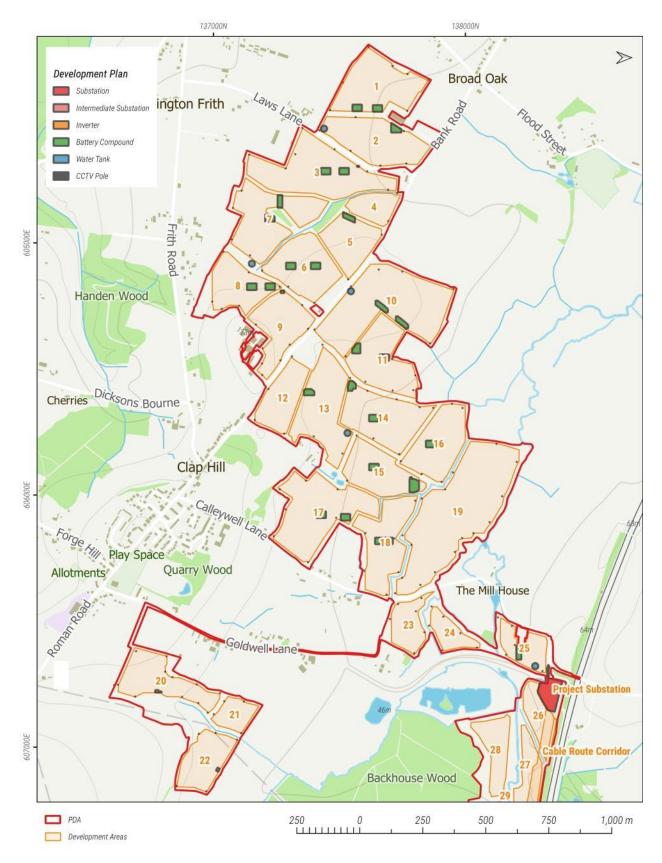


Figure 5: Structural Elements of Development (not including Solar Panels)

There are several areas within the PDA that have not been identified via field numbers, according to existing EIA scoping documentation these are proposed for landscape and biodiversity enhancements rather than infrastructure development.

In regards to the scheme of works the existing EIA documentation describes the following:

Table 2: Overview of proposed scheme of works

WORK REF.	DESCRIPTION	
Work No. 1	A ground mounted solar photovoltaic generating station with a gross electrical	
WOIK NO. 1	output capacity of over 50 megawatts	
Work No. 2	Balance of system and battery energy storage system ('BESS') works	
Work No. 3	Project substation and associated works	
Work No. 4	Works to lay high voltage electrical cables and extend Sellindge Substation to	
WOIK NO. 4	facilitate grid connection	
Work No. 5 Associated works		
Work No. 6 Works to provide site access		
Work No. 7	Construction and decommissioning works	
Work No. 8	Works to create, enhance and maintain green infrastructure, boundary treatments	
VVOIR NO. O	and crossing structures	
Site Wide Works	orks Further associated development in connection with the Project	

It should be noted that at the time of writing the extent and impact of several of the works elements (No.4-6; Site Wide Works) are poorly described within the existing EIA documentation and as such the impact upon archaeological remains and existing heritage assets cannot be adequately assessed.

LANDCOVER

The following description is derived from the Living England 2022-23 (LE22-23) dataset published by Natural England. The dataset is a satellite-derived national habitat map showing the extent and distribution of England's broad habitats, aligned to the UK Biodiversity Action Plan (UKBAP) habitat classification framework.

The predominant land cover within the PDA comprises arable and horticultural agriculture with smaller pockets of scrubland, improved and semi-improved grassland, built-up areas and gardens. Within the northern extent of the PDA there also exist pockets of low-lying marshland primarily associated with East Stour River.

HYDROLOGY

The PDA lies within the East Stour and Romney Marsh and comprises eight watersheds each associated with main Stour Upper catchment area. Detailed mapping of the overland flow pathways indicates the

majority of the landmass within the PDA drains to the north / northwest into the East Stour River through a complex network of surface channels. The East Stour River itself flows though the northern extent of the PDA.

It is of note that the northern half of the PDA sits within the East Stour from Sellinge to South Ashford flood warning zone (Flood Zone 1, 2, and 3). This zone primarily comprises land associated with communities on the Great Stour from Charing Heath to the A2070 including Ashford, communities on the East Stour, communities on the Whitewater and Ruckinge Dykes and the Aylesford Stream.

The location and extent of the said flood zone corresponds well to areas of potential Palaeolithic remains as mapped within the Stour Basin Palaeolithic Project.

TOPOGRAPHY

Elevation within the PDA varies from 43-76m AOD with the majority of land forming low-lying, relatively flat areas associated with the Rother and Stour catchment areas situated to the south and north of the project respectively. The remaining land comprises undulating ridges of raised land primarily associated with the Aldington Ridge. These ridges form part of a larger pattern of striated sand and limestone ridges stretching from the south-east to the north-west which are in-turn intersected by a number of water-ways and river valleys.

Descriptions obtained from an assessment of the DEFRA 1m resolution LiDAR Digital Terrain Model derived from survey data captured in 2018. (DEFRA 2022)

GEOLOGY

The underlying basal geology is predominantly composed of Weald Clay formation mudstone (WC-MDST), a sedimentary rock type derived from a fluvial riverine and/or coastal setting. In the areas of aforementioned high ground the mudstone is replaced by outcroppings of Hythe formation sandstone and limestone (HY-SDLM) bounded by discrete deposits of Atherfield Clay formation sandy mudstone (AC-SAMDST).

Superficial geological deposits are primarily associated with the river valley of the East Stour and comprise deposits of Holocene Alluvium (ALV-XCZSV); a variable sediment of mud, sand, and gravel with isolated peat in places.

The overlying soil primarily comprises slightly acidic silt-loam or heavy clay-rich soils and subsoil interspersed with clay, silt and sand in areas of higher elevation. Previous archaeological work within the PDA has shown the overlying topsoil and subsoil to be present to a depth of 0.5-1.5m BGL.

Descriptions obtained from the BGS Geology of Britain geoportal (BGS2021).

EXISTING EIA SCOPING DOCUMENTATION

Please note a full description of the site and proposed works can be found in the following documentation:

Table 3: EIA Site and Project information documentation

DOC REF.	TITLE
5.2	Environmental Statement Vol. 2: Main Text; Chapter 2: Site & Context
5.2	Environmental Statement Vol. 2: Main Text; Chapter 3: Project Description

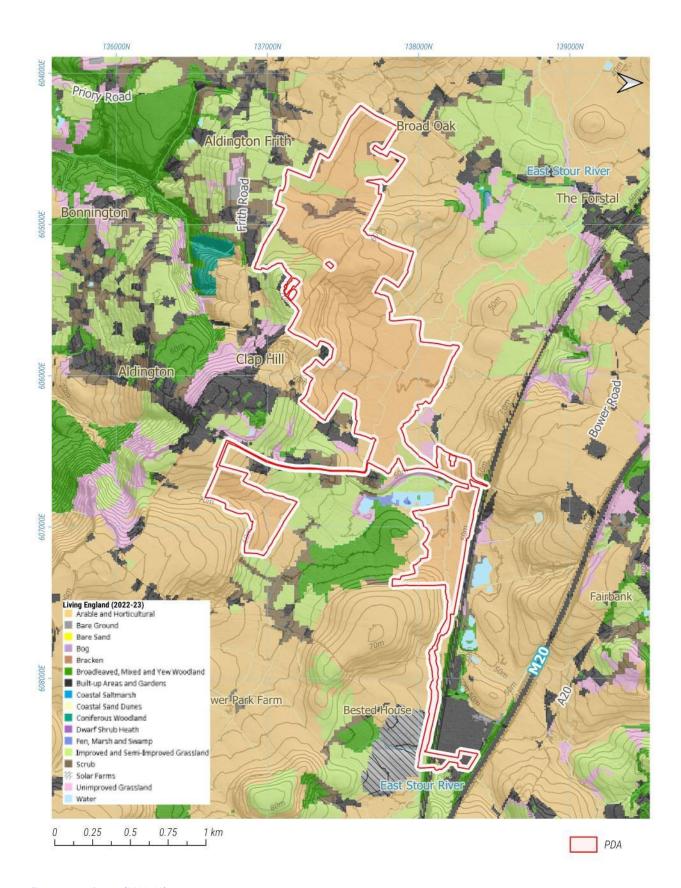


Figure 6: Landcover (2022-23)

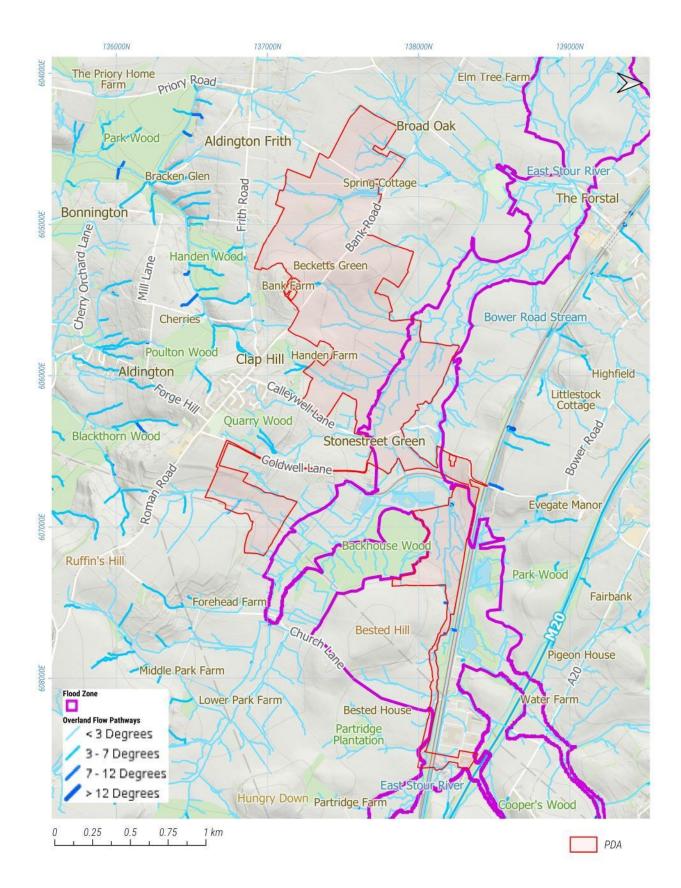


Figure 7: Hydrology

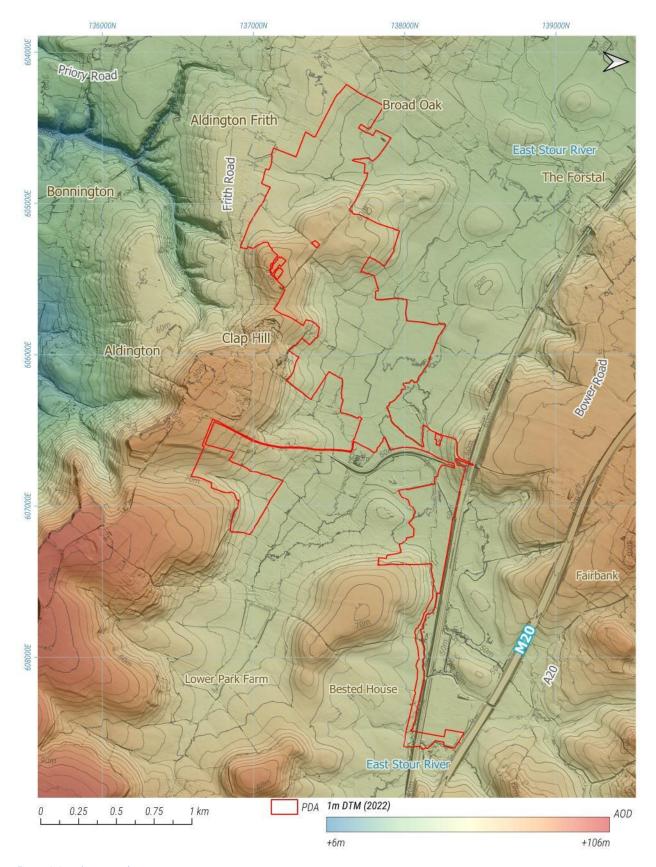


Figure 8: Local topography

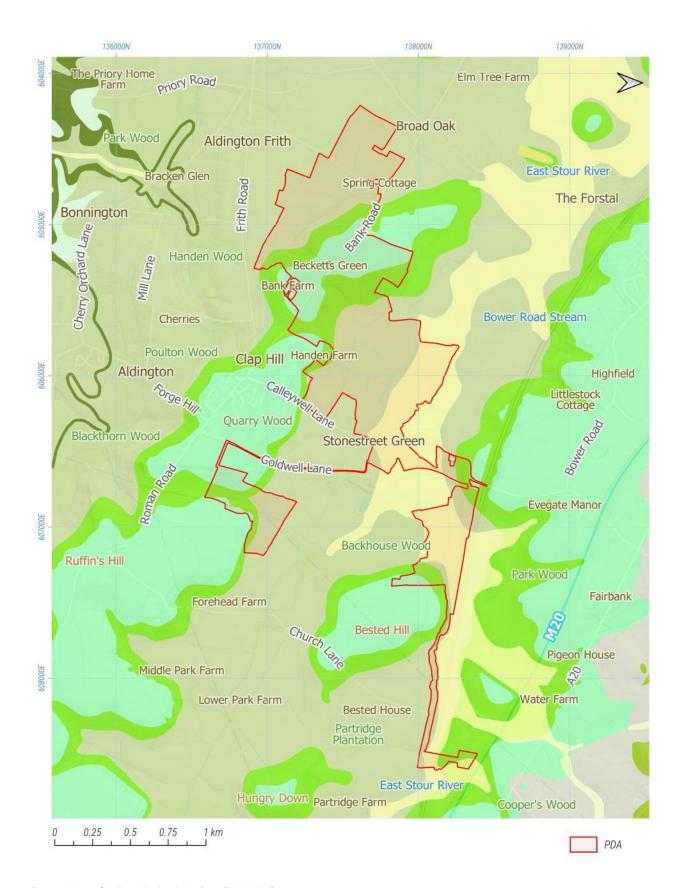


Figure 9: Superficial and Bedrock Geology (BGS 2024)

ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

A full description of the archaeological and historical background has been produced by Wardell Armstrong following a Desk Based Assessment (DBA). The DBA lists and describes known archaeological and heritage assets within the PDA whilst assessing archaeological potential through the holistic examination of archaeological geophysics (magnetometry); DEFRA LiDAR data; Historic Mapping; and Cultural Inventory records.

The results can be found in the following EIA documentation:

Table 4: EIA Documentation - Cultural Heritage

DOCUMENT OF ORIGIN	TITLE	URL
Environmental Statement	5.2 Environmental Statement Volume 2: Main Text Chapter 7: Cultural Heritage	<u>APP-031</u>
Environmental Statement	5.3 Environmental Statement Volume 3: Figures Chapter 7: Cultural Heritage Figures 7.1 - 7.11	<u>APP-048</u>
Environmental Statement	5.4 Environmental Statement Volume 4: Appendices Chapter 7: Cultural Heritage Appendix 7.1: Archaeological Desk Based Assessment Part 1 of 2	<u>APP-070</u>
Environmental Statement	5.4 Environmental Statement Volume 4: Appendices Chapter 7: Cultural Heritage Appendix 7.1: Archaeological Desk Based Assessment Part 2 of 2	<u>APP-071</u>
Environmental Statement	5.4 Environmental Statement Volume 4: Appendices Chapter 7: Cultural Heritage Appendix 7.2: Heritage Statement	<u>APP-072</u>
Archaeological Management Strategy	7.17 Archaeological Management Strategy	<u>APP-162</u>
Environmental Statement	Post Submission Changes - 5.2(A) Environmental Statement Volume 2: Main Text Chapter 7: Cultural Heritage	<u>AS-011</u>

PRIOR ARCHAEOLOGICAL WORK

Several phases of archaeologically orientated assessment work have been undertaken as part of the existing EIA Scoping stage for the proposed development.

OASIS REF	Description	Туре	Originator	Date
N/A	Desk Based	DBA	Wardell	OCT 2022; FEB
	Assessment (DBA)		Armstrong	2024
magnitud1-	Magnetometry	Geophysics Survey	Magnitude	JAN 2022-DEC
508316	Survey		Surveys	2022
wardella2-	Archaeological Trial	Archaeological	Wardell	AUG 2023
518093	Trenching	Evaluation	Armstrong	
wardella2-	Palaeoenvironmental	Archaeological	Wardell	AUG 2023
518093	Sampling	Evaluation	Armstrong	
wardella2-	Watching Brief	Archaeological	Wardell	FEB 2023
513328		Monitoring	Armstrong	
N/A	Archaeological	DBA	Wardell	MAY 2024

OASIS REF	Description	Туре	Originator	Date
	Landscape		Armstrong	
	Assessment			

SUMMARY

Several phases of archaeological research and investigation have been undertaken as part of the EIA scoping process. Reference to and discussion of the results thereof can be found within the chapter 6: 'Archaeological Potential and Value' of the 'Environmental Statement Vol.4 Appendix 7.1: Archaeological Desk Based Assessment', whilst a discussion of archaeological potential across the PDA can be found in Chapter 7: 'Assessment Conclusion' of the same volume.

Table 5: EIA Sources of Archaeological Information

DOCUMENT OF ORIGIN	T OF ORIGIN CHAPTER		
5.2 Environmental Statement Volume 4: Appendix 7.1 5:Baseline Information (5.5-5.17)		27-55	
Archaeological Desk based Assessment	3.Baseline illioilliation (3.3-3.17)	27-33	
5.2 Environmental Statement Volume 4: Appendix 7.1	6: Archaeological Potential and	ntial and 56-66	
Archaeological Desk based Assessment	Value	30-00	
5.2 Environmental Statement Volume 4: Appendix 7.1	7: Assessment Conclusion	67-69	
Archaeological Desk based Assessment	7. Assessment Conclusion	07-09	

The potential for archaeological activity within the site has been demonstrated through the following:

- The existence of 109 Find Spots and 35 Known sites of archaeological interest within 1km of the PDA as recorded within the KCC Historic Environment Record (HER). These primarily relate to Romano-British, Early Medieval, and Medieval settlement and agricultural activity, with distinct clustering around the former Roman Road (MKE75998 - Fields 6, 10, 12, 13), Field 29 and the proposed Cable Route Corridor.
- 2. The existence of 2 find spots comprising treasure within 1km of the PDA as recorded in the Portable Antiquities Scheme (PAS) database. Of these KENT-110E2C (ID: 1175209) consists of an incomplete 1st Century AD cast silver Roman finger ring of Guiraud type 3g found via metal detector approximately 985m south of Fields 7 and 8 near the village of Bonnington.
- 3. Vertical aerial photography and satellite imagery have previously shown the existence of a variety of potential cropmarks and soil shadows present across the PDA, these include MKE44044 a 42x44m square enclosure situated within field 15 first identified in 2010; MKE90760 a ring-ditch situated 140m to the east of Field 20.
- 4. Magnetometry survey undertaken in 2022 identified a wide variety of features within the PDA including former field boundaries, enclosures, route-ways, and former fluvial channels associated with the East Stour River.
- 5. Subsequent archaeological evaluation of the aforementioned geophysical survey results confirmed the presence of Romano-British features and/or material remains within the vicinity of the former Roman Road (MKE75998). Prior archaeological investigation has identified a clustering a Romano-British remains near the settlement of Clap Hill; a possible Romano-British iron works north of Round Wood 100m to the south of the PDA; Prehistoric flint and pottery

scatters, BA/IA/RB field systems, and Medieval remains within and around the footprint of the Sellingde Substation site.

Potential for archaeological activity was found to primarily relate to the Iron Age- Medieval periods with a particular emphasis upon Romano-British settlement, industrial, and agricultural activity centred upon the Aldington Ridge.



Figure 10: Silver Roman period finger ring recovered near the village of Bonnington [PAS Database]

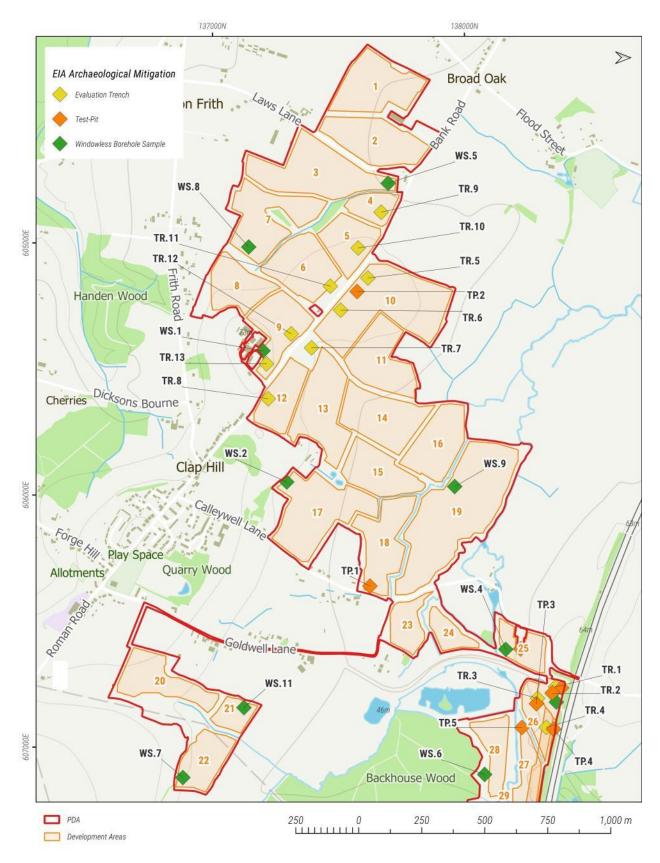


Figure 11: EIA Archaeological Mitigation

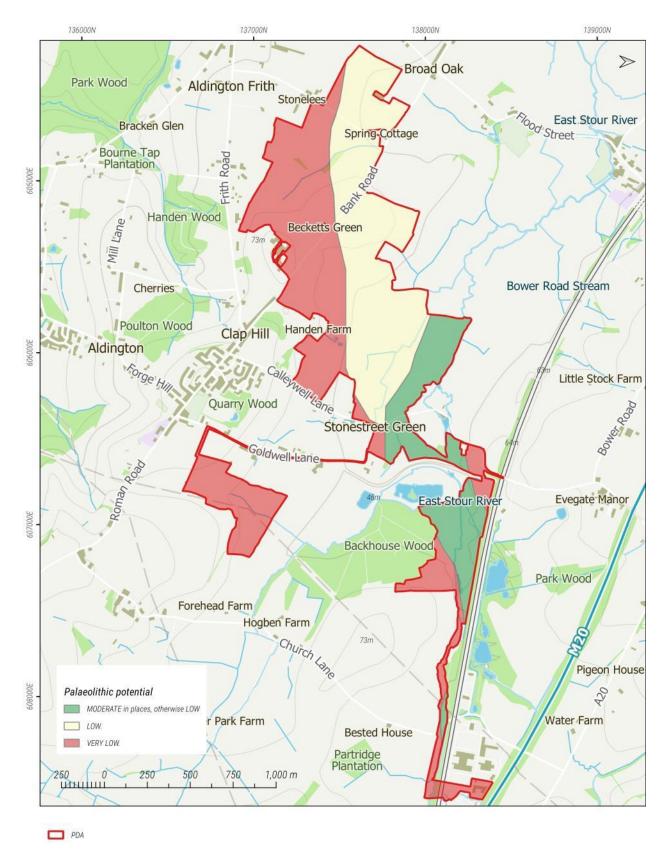


Figure 12: Palaeolithic Potential (Derived from Stour Basin Palaeolithic Project)

3. LIDAR ASSESSMENT METHODOLOGY

SOURCES OF DATA

The LiDAR assessment utilised data published by DEFRA on behalf of the Environment Agency (EA). This comprised two composite Digital Terrain Models (DTM) published in 2022.

The composite DTM's depict the underlying land surface of a 50km² area defined by the OS NGR Tile references TR03ne and TR03nw.

A DTM is a terrain model depicting just the land surface with surface objects such as structures and vegetation removed. This is achieved by isolating the last (or only) laser pulse returned to the LiDAR sensor through the use of algorithms and manual editing. A composite DTM represents a surface that has been compiled from multiple data sources.

The original data sources used within the composite DTM's were produced by the Environment Agency in 2022, they comprise 25 individual point clouds captured via aerial survey. The date range for capture of the original data is 2017-2020 and is derived from Time Stamped archival data and National LIDAR Programme surveys, which have been merged and re-sampled to give the best possible coverage. Where repeat surveys have been undertaken the newest, best resolution data is used. Where data was resampled a bilinear interpolation was used before being merged.

All data used within this assessment is available to download as GeoTiff raster files in 5km tiles aligned to the OS National grid. The data is presented in metres, referenced to Ordinance Survey Newlyn and using the OSTN'15 transformation method.

All individual LIDAR surveys going into the production of the composite had a vertical accuracy of +/- 15cm RMSE.

Table 6: Location of LiDAR data used within assessment

DEFRA LiDAR Portal	
https://environment.data.gov.uk/survey	

PRIMARY CONTACT DETAILS

Table 7: Contact details of the person(s) who undertook LiDAR assessment

NAME	Peter Spencer	
POSITION	Geospatial Specialist, Vertex Geomatics	
CONTACT DETAILS	38 Edinburgh Rd, Oldbury, West Midlands, B68 OSR; Mobile: ; @vertexgeomatics.com	
EXPERIENCE	20 years' experience in development-led archaeology in the UK and Internationally. Specialist in the application of geomatics to archaeological prospection, survey, and management. Founder of Vertex Geomatics.	

AREA SURVEYED

Table 8: Areas of LiDAR Assessment

REF	AREA (m²)	CENTROID POINT (OSGB36)
Stonestreet Green Solar Farm PDA (July 2024)	1925660.328	E606118, N137629
50m Buffer Zone surrounding PDA		E606118, N137629

DATASETS UTILISED IN ASSESSMENT

Table 9: Composite DTM's used in LiDAR Assessment

FILENAME	OS_5K_REF	OS_10K_REF	OS100K_REF	VERSION
TR03ne_DTM_1m	TR03ne	TR03	TR	2022
TR03nw_DTM_1m	TR03nw	TR03	TR	2022

Table 10: EA Data used in production of composite DTM's

FILE NAME	TILE NAME	POLYGON ID	RES. (m)	SURVEY YEAR	VERSION
F_DTM_P_10798	n/a	P_10798	1	2018	2022
F_DTM_P_10789	n/a	P_10789	1	2018	2022
F_DTM_P_10798	n/a	P_10798	1	2018	2022
F_DTM_P_11894	n/a	P_11894	1	2020	2022
F0205335.asc	TR0035	P_11327	0.5	2017	2022
F0205336.asc	TR0036	P_11327	0.5	2017	2022
F0205337.asc	TR0037	P_11327	0.5	2017	2022
F0205338.asc	TR0038	P_11327	0.5	2017	2022
F0205339.asc	TR0039	P_11327	0.5	2017	2022
F0205350.asc	TR0135	P_11327	0.5	2017	2022
F0205351.asc	TR0136	P_11327	0.5	2017	2022
F0205352.asc	TR0137	P_11327	0.5	2017	2022
F0205353.asc	TR0138	P_11327	0.5	2017	2022
F0205354.asc	TR0139	P_11327	0.5	2017	2022
F0205364.asc	TR0235	P_11327	0.5	2017	2022
F0205365.asc	TR0236	P_11327	0.5	2017	2022
F0205366.asc	TR0237	P_11327	0.5	2017	2022
F0205367.asc	TR0238	P_11327	0.5	2017	2022
F0205368.asc	TR0239	P_11327	0.5	2017	2022
F0205378.asc	TR0337	P_11327	0.5	2017	2022
F0205379.asc	TR0338	P_11327	0.5	2017	2022
F0205380.asc	TR0339	P_11327	0.5	2017	2022
F0205389.asc	TR0438	P_11327	0.5	2017	2022

FILE NAME	TILE NAME	POLYGON ID	RES. (m)	SURVEY YEAR	VERSION
F0205390.asc	TR0439	P_11327	0.5	2017	2022
F0205400.asc	TR0539	P_11327	0.5	2017	2022

METHODOLOGY FOR THE ARCHAEOLOGICAL ASSESSMENT OF LIDAR DATA

The data sourced from DEFRA represents only the elevation values of the points surveyed via laser altimetry. These values have been interpolated by the environment agency to produce a surface mesh representing a contiguous surface layer rather than individual heights. This surface mesh is stored as a raster file (GEO TIFF) for use in GIS applications.

This initial surface layer can be symbolised using colour ramps and contours to represent the varying elevation of an area, however it is difficult to visualise the underlying topographic morphology of the area without further processing and visualisation of this initial surface layer.

The visualisation of such morphology is central to the identification of potential archaeological assets. As such a variety of visualisations of the original surface layer targeting specific aspects such as slope and aspect have been produced and subsequently combined to extract the maximum level of morphological information.

Table 11: Post-processing applied to DEFRA LiDAR data during assessment

Visualisation	Description	
Multi-Directional Hillshade	A multidirectional hillshade model in GIS is an artificial visualization technique that combines light from multiple directions to enhance the details and texture of data. It's more dramatic than a traditional hillshade, which uses a single light source	
Slope Model	A slope model in a geographic information system (GIS) is a raster surface that shows the steepness of each cell. The slope model is calculated from a digital elevation model (DEM) and represents the rate of change in elevation for each cell. The output slope raster can be displayed in degrees or percent rise.	
Sky-View Factor	A sky view factor (SVF) model is a tool used in GIS to quantify the amount of sky that can be seen from a given point on the ground	
Local Dominance	A local dominance model measures the average steepness of the angle at which the observer looks down at the surrounding land surface. It is higher for points on local elevations and lower for points in local depressions.	

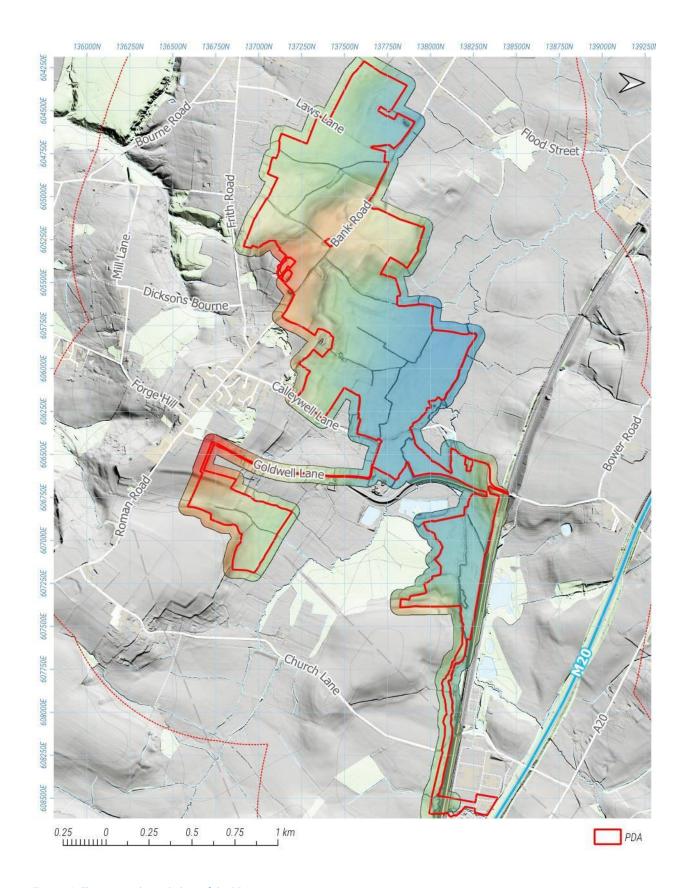


Figure 13: Elevation and morphology of the PDA

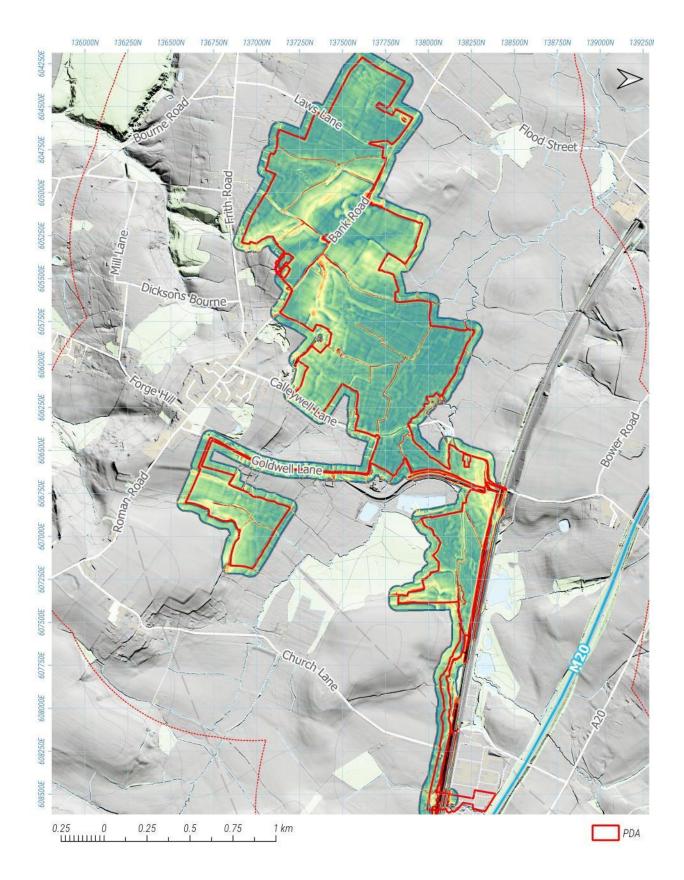


Figure 14: TOPO Stack derived from DTM highlighting potential archaeological features

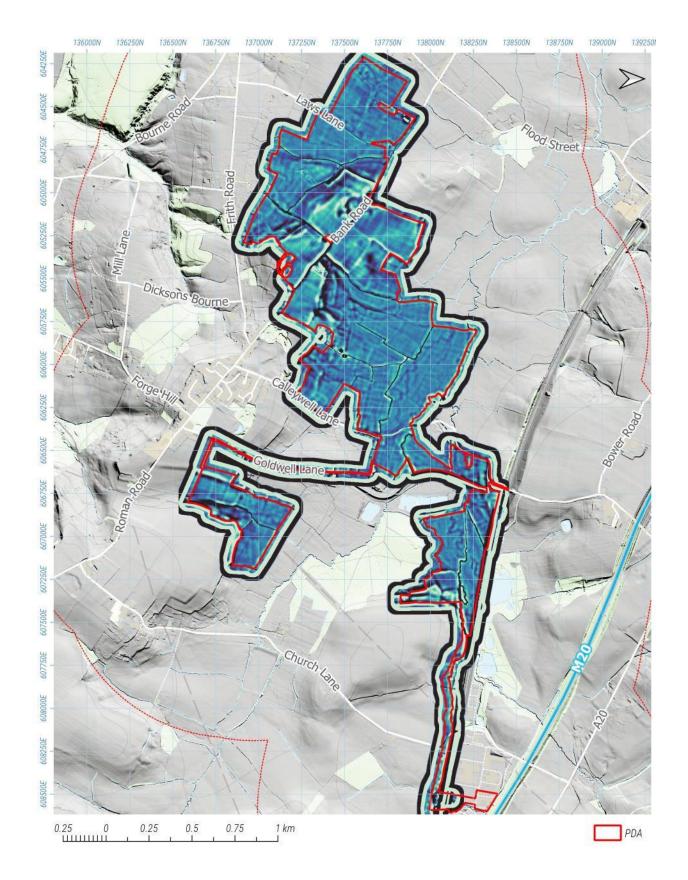


Figure 15: Local Relief visualisation of DTM data highlighting potential archaeological features

4. RESULTS

The LiDAR assessment identified a total 386 features of potential archaeological interest. Of these 63 represented areas of potential with the remaining 323 features being linear in form. Of the areas of interest identified the majority were either situated upon the Aldington Ridge and represent possible enclosures, earthworks, and route-ways or were situated within the river valley of the East Stour and represent former fluvial channels and earthworks that appear to be associated with water management and agriculture.

Please note where EIA archaeological mitigation locations are presented the following pertains:

TR.	Evaluation Trench (50m L)
TP.	Test-Pit
WS.	Windowless Borehole Sample

FIELD 1

Situated to the southwest of the Roman Road (Bank Road) Field 1 lies within the western extreme of the PDA and is approximately 5.7ha in size. 10 features of potential interest were identified; of these 9 were possible linear features which appear to relate to former field boundaries and/or agricultural activity. When compared with the magnetometry results several fall within the same area and alignment of features interpreted as archaeological.

The single area depicts a possible sub-rectangular enclosure approximately 70x40m oriented NW-SE, again the magnetometry depicts the presence of several potential anthropogenic features within this area.

Considering the results of the scoping phase archaeological evaluation within the nearby Field 4 it is probable these features may be of Romano-British origin and associated with former agricultural activity. The prior magnetometry survey highlighted a number of similar linear features within the field which appear to outline a series of enclosures and boundaries.

FIELD 2

Situated immediately to the East of Field 1, Field 2 also lies within the western extreme of the PDA and is approximately 5.5ha in size. 10 linear features were identified, all of which appear to relate to a former agricultural activity. The prior magnetometry survey highlighted a number of linear / curvilinear features within this field which as with field 1 appear to outline possible enclosures and boundaries.

A single area of interest was identified within the north extreme of the field immediately to the south of Bank Road. The sub-circular feature is approximately 12m in diameter and falls within the general southeast-northwest alignment of known earthworks situated at the Mount, Aldington and the Knoll near Postling Green both of which are thought to be probable burial mounds.



Figure 16: LiDAR assessment results for Fields 1 and 2

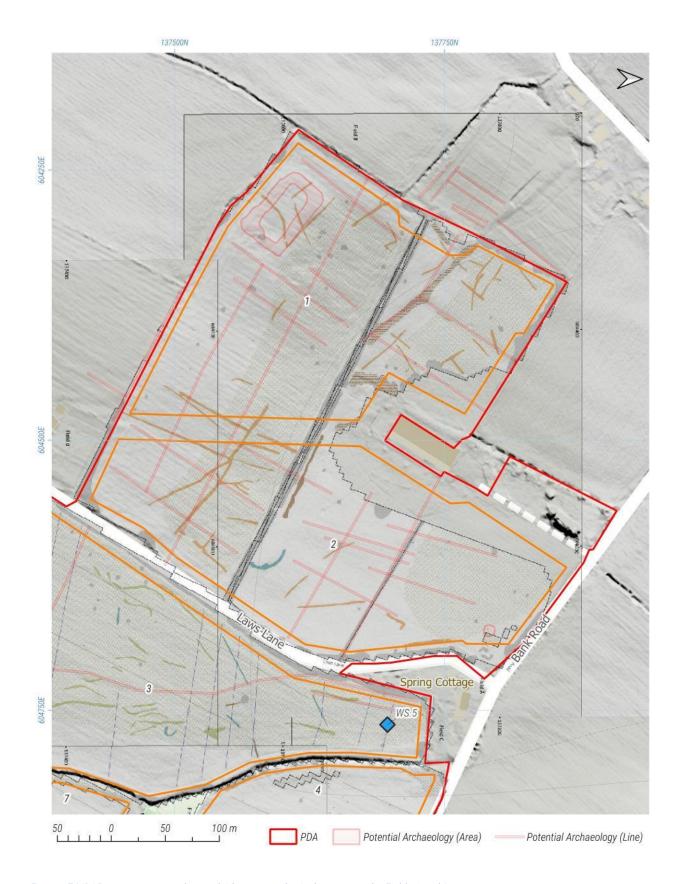


Figure 17 LiDAR assessment results overlaid upon geophysical survey results Fields 1 and 2

FIELD 3

Situated immediately to the East and Southeast of Field 2, Field 3 is approximately 8ha in size. 6 linear features were identified which in regards to morphology appear to define a former field system and/or boundary line.

This corresponds well with Magnetometry data of the area which highlighted a number of linear / curvilinear features upon the same general alignment.

FIELD 4

Situated immediately to the northeast of Field 3, Field 4 is approximately 2ha in size. Whilst the LiDAR assessment identified a number of amorphous and/or irregular land forms within the field characterisation was difficult. Magnetometry survey and Archaeological evaluation have identified a Romano-British enclosure and associated features within Field 4 and as such the aforementioned irregular features may pertain to boundaries and/or ditches associated with the RB activity.

It should be noted that the remains in Field 4 mark the edge of a large area of topographic variation situated upon the brown of the Aldington Ridge. Visible within Fields 5, 6, 9, and 10 it is possible that such variation marks a continuation of the anthropogenic activity associated with the RB remains in Field 4.

FIELD 5

Situated immediately to the southeast of Field 4 and southwest of Bank Road Field 5 is approximately 3.6ha in size and contains a variety of linear, curvilinear, and sub-circular features. Of particular interest is a 30m diameter sub-circular mound situated within the northwest extreme of field 5 immediately to the south of Bank Road taken with similar features identified in Field 6 and 9 it is possible said features represent former Burial Mounds.

Within the central extent of the field are a number of irregular / sub-circular features which may define a series of quarrying sites, earthworks, or enclosures. Based upon nearby findspots and the evidence retrieved during evaluation these may be RB-Medieval in origin. Of these the largest is a 125m diameter sub-circular feature situated upon E605079.41, N137562.64. It should be noted that LiDAR data shows a continuation of these features to the northwest following the brow of the Aldington Ridge.

It is of note that both the LiDAR analysis and Geophysical survey identified a series of large linear features situated upon the southern slope of the Aldington Ridge. Whilst these have been identified as natural in origin it may be that such features represent earthworks associated with and defining the edge of a RB roadside settlement such as that identified at Westhawk Farm approximately 5.7km to the northwest and also located alongside the Roman Road (as represented by Bank Road).

Situated immediately to the southeast of Field 5, Field 6 is located upon the brow of the Aldington ridge immediately to the south of the former Roman Road, it is approximately 5ha in size. 6 features of potential archaeological interest were identified comprising 2 areas and 4 linear features.

Of the linear features, 2 oriented northeast-southwest appear to be the residual remains of former agriculture. The remaining 2 curvilinear features situated upon the south facing slope of the Aldington Ridge may be evidence of relict earthworks associated with the enclosure of settlement and/or agricultural areas.

The two represent discrete sub-circular mounds approximately 30m in diameter.

FIELD 7

Situated immediately to the southwest of fields 5 and 6, field 7 is approximately 6.1ha in size. It is located upon relatively flat low-lying land immediately to the south of Aldington Ridge. Assessment of the LiDAR data identified a series of linear features transecting the field on a E-W / SE-NW alignment regularly spaced at 40m intervals.

A single area of interest was identified in the southeast corner of the field. As with field 1 it appears to outline a sub-rectangular enclosure approximately 80x60m.

FIELD 8

Situated within the same area of low-lying ground as field 7, field 8 is located approximately 200m to the southwest of Bank Farm and is approximately 3.7ha in size. The field is bisected by a number of linear features several of which appear to be contiguous with those identified in Field 7. The linear features taken as a whole appear to define a former field system.

FIELD 9

Situated immediately to the north of Field 8 and to the West of Bank Farm field 9 is approximately 4.3ha in size. Assessment of the LiDAR data identified a continuation of the possible earthworks visible within Fields 5 and 6 within this area whilst a number of linear features associated with former agriculture were also identified.

Geophysical survey within the field identified a number of smaller curvilinear features which may be the remnants of former enclosures or other associated anthropogenic activity.

To date two evaluation trenches were opened within the northern extent of field 9 (TR12+13) as well as a single borehole (WS1). No archaeological features were recorded in either trench, however a single prehistoric flint scraper was recovered during excavation of TR12.

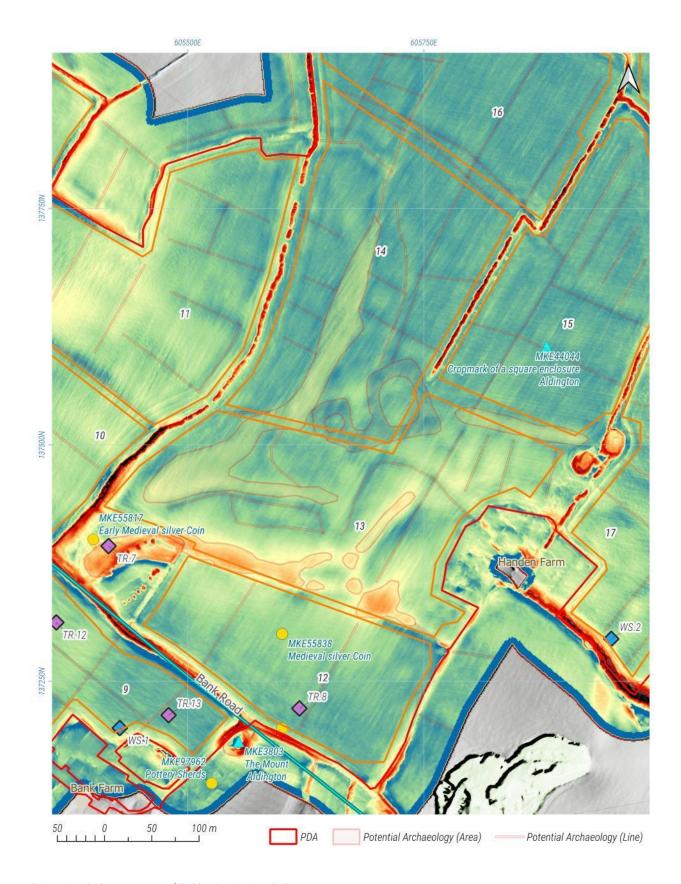


Figure 18: LiDAR assessment of Fields 12, 13, 14, and 15



Figure 19: LiDAR assessment of Fields 12, 13, 14, and 15 overlaid with geophysics survey

Situated immediately to the north of the former Roman Road (Bank Road) field 10 is located upon the brow of the Aldington ridge and is relatively flat in nature. As with other fields a series of linear features oriented on NW-SE and NE-SW alignments were identified, some of these appear to be remnants of the earlier 19th century field system as seen in early OS mapping of the area whilst others may relate to former route-ways or footpaths.

2 areas of interest were identified, a sub-circular mound approximately 35m in diameter and a possible sub-square enclosure 60x60m.

As with fields 5 and 6 geophysical survey within field 10 identified a number of linear features following the alignment of the Aldington Ridge. Whilst these have interpreted as natural in origin it may be they have a relation to anthropogenic settlement and agricultural activity.

Two evaluation trenches were opened within field 10 (TR5+6) and a single Test-pit (TP2). A feature within Trench 6 was interpreted as possible evidence of the remains of a RB sunken floored building. The geoarchaeological test pit (TP2) also identified remnants of a possible palaeosoil within the area.

Finally the KCC HER records three find spots within field 10 comprising the following:

- An Early Medieval Copper Alloy Brooch
- A Medieval Silver Coin
- A Medieval Pottery Vessel

FIELD 11

Situated immediately to the East of field 10, field 11 is located upon the northern facing slope of the Aldington Ridge, overlooking the East Stour river valley. Assessment of the LiDAR data identified a series of linear features which appear to depict a former field system, these overlay a series of curvilinear features interpreted as surface drainage channels of natural origin.

FIELD 12

Situated to the north of Bank Farm and southwest of Handen Farm field 12 is approximately 3.5ha in size. It is located upon the relatively flat brow of the Aldington ridge. 2 linear features were identified apparently relating to former land divisions. It is also possible that several fainter signatures are the remnants of natural surface drainage channels.

Geophysical survey identified a possible 50m diameter circular enclosure within the field (interpreted as natural in origin) whilst the KCC HER records 2 Medieval Silver Coins to have been recovered.

Situated immediately to the north of Field 12 and to the East of field 10, field 13 is approximately 6.2ha in size. Assessment of the LiDAR data identified a dense grouping of amorphous curvilinear features running E-W across the field. It is unclear at this time as to whether they represent natural drainage channels, earthworks, and/or route-ways or a mixture of the three. Several appear to be situated upon the edge of the brow of Aldington Ridge marking the transition from flat land to slope.

FIELD 14

Situated immediately to the East of field 11 and north of field 13, field 14 is approximately 5.7ha in size. It is located upon the northern facing slope of the Aldington Ridge with its northernmost extent lying partially within the flood plain of the East Stour River.

As with other fields a number of linear features were identified within field 14these primarily appear to relate to former field boundaries and agricultural activity.

A large irregular linear depression oriented SW-NE is the likely remnants of a relict fluvial channel (surface run-off).

A single area of amorphous morphology is situated at the south-eastern extreme of the field, at present it is unclear if this is further evidence of fluvial erosion / activity or whether these are the remains of former earthworks (a crop mark *MKE44044* of an enclosure is registered within the KCC HER 200m to the East within field 15).

FIELD 15

Situated immediately to the East of field 14 and to the North of field 13, field 15 is approximately 4.3ha in size.

As with field 14 LiDAR assessment identified a series of linear features transecting the field on NW-SE and NE-SW axis. Whilst it is probable that some of these pertain to agricultural activity and former field boundaries it is of note that the KCC HER records a possible square enclosure centred upon E605881.36, N137603.72 (MKE44044) identified from satellite imagery in 2010.

FIELD 16

Situated immediately to the north of fields 11, 14, and 15, field 16 is approximately 4.8ha in size and is located within the river valley of the East Stour. LiDAR Assessment identified a number of linear features, the morphology of which suggests a relict agricultural landscape comprising former field boundaries and associated activity.

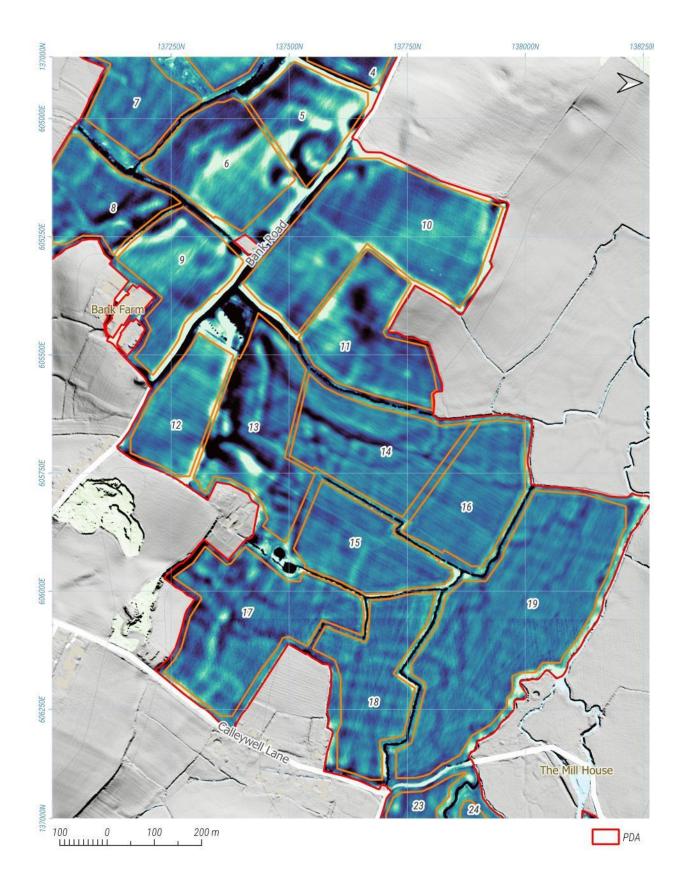


Figure 20: Local Relief mapping of Aldington Rldge and the East Stour river basin

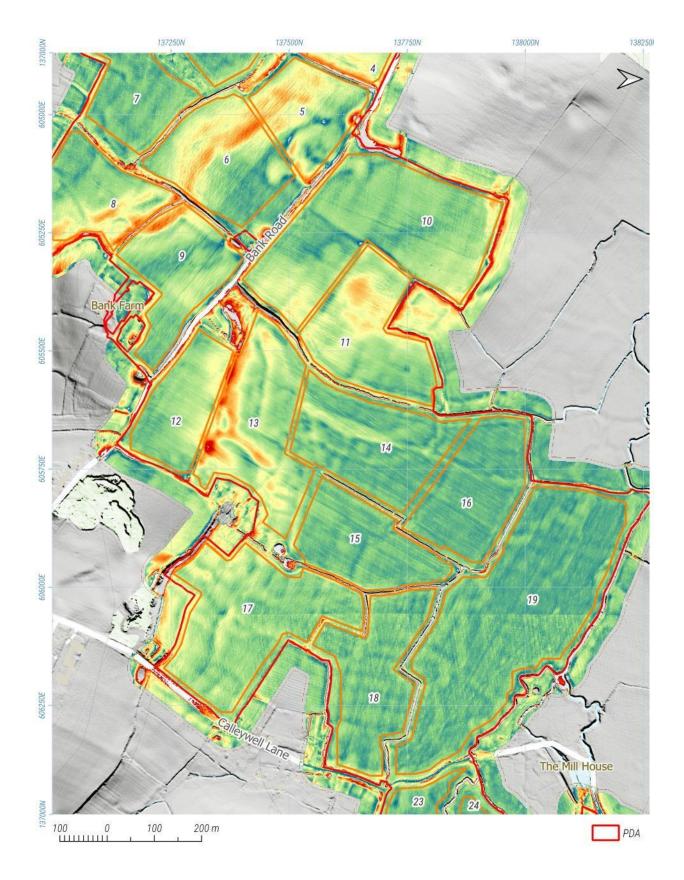


Figure 21: LiDAR assessment mapping of Aldington Ridge and the East Stour river basin

Situated within the central-southern extent of the PDA field 17 is approximately 7.6ha in size and is located upon northern facing slopes of the Aldington Ridge. As with field 13, 17 contains a dense spread of linear / curvilinear features within in its southern extent. Whilst comparison with the EA's projected overland flow pathways dataset confirms some of these are fluvial in origin, several appear to define possible earthworks or former Pleistocene terracing whilst others relate to former agricultural activity. Of particular note is a possible 80x80m square enclosure situated within the fields' south-eastern extreme and the partial remnants of a possible secondary enclosure straddling the boundary between fields 17 and 18.

FIELD 18

Situated immediately to the north of field 17, field 18 is approximately 5.1ha in size and is located within the river valley of the East Stour. Assessment of the LiDAR data identified multiple linear features across the breadth of the field which taken together form a series of long parcels of land. It is possible these are the remnants of former Selions associated with Medieval strip farming.

As previously mentioned the partial remnants of a possible enclosure sit within the southern extent of field 18.

Test Pit 1 was located in the eastern extreme of field 18 and identified a possible former palaeosoil.

FIELD 19

Situated immediately to the north of fields 15, 16, and 18 field 19 is located within the base of the river valley of the East Stour, being bounded by the river at its northern edge. Approximately 13.4ha in size assessment of the LiDAR data identified a complex network of curvilinear features transecting the field. The morphology of the features taken in conjunction with the geophysical survey suggests these are former river channels associated with the East Stour; however the date of origin is as of yet unclear.

FIELD 20, 21, AND 22

Fields 20-22 form a distinct parcel of land approximately 600m to the southeast of the main PDA and are located upon the northern facing slopes of the Aldington Ridge. A number of linear features were identified which primarily appear to relate to former agricultural divisions of land and associated activity. A number of these features when taken with the geophysical survey data identify a probable former route way extending northwards from the former Roman Road.

It should be noted that the KCC HER records a possible ring-ditch (MKE90760) approximately 360m to the south of the aforementioned fields.

Two geoarchaeological boreholes / test-pits are located within fields 21 and 22 (WS11 and WS7 respectively) however at the time of writing no information as to the results of these investigations could be found.

FIELD 23 AND 24

Situated immediately to the east of field 19, fields 23 (2.3ha) and 24 (1.6ha) are likewise located within the river valley of the East Stour.

Assessment of the LiDAR data highlighted a sequence of NE-SW and SE-NW linear features visible in a cross-hatch formation. These have been tentatively identified as possible drainage channels. Geophysical survey within the fields identified a number of partial curvilinear features, it is unclear as to whether these relate to anthropogenic activity or more likely represent the partial remnants of former fluvial channels.

FIELD 25, 26, AND THE PROJECT SUBSTATION

Situated immediately to the north of field 24 within the northern central extent of the PDA, field 25 (2.2ha) and field 26 (2ha) border the proposed location for the Project Substation (11ha). All three areas are located within the East Stour river basin.

The LiDAR assessment identified a sequence of contiguous linear and curvilinear features across the three areas in question. These appear to primarily derive from the East Stour and may represent a former river channel and associated water management earthworks.

FIELD 27 AND 28

Situated immediately to the East of field 26, fields 27 (3ha) and 28 (2.6ha) are located within the East Stour River basin. LiDAR assessment identified a 600m section of a former fluvial channel associated with the East Stour transecting both fields on a NE-SW axis.

This corresponds well with the geophysical survey which identified a number of small curvilinear and irregular features interpreted as natural in origin.

FIELD 29

Situated immediately to the East of field 28, field 29 (1.9ha) is located immediately to the northeast of Backhouse Wood. LiDAR assessment identified a sequence of anthropogenic earthworks aligned N-S these appear to be associated with land boundaries and water management with the presence of several ponds, compartments, or enclosures visible.

THE CABLE ROUTE CORRIDOR

The cable route corridor is a 7.8ha corridor of land stretching eastwards from the Project Substation to the Sellindge Substation.

LiDAR assessment identified a sequence of partial curvilinear features within the area which appear to be the remnants of a relict watercourse. This is most likely a former channel of the East Stour River at present its date of formation is unknown.

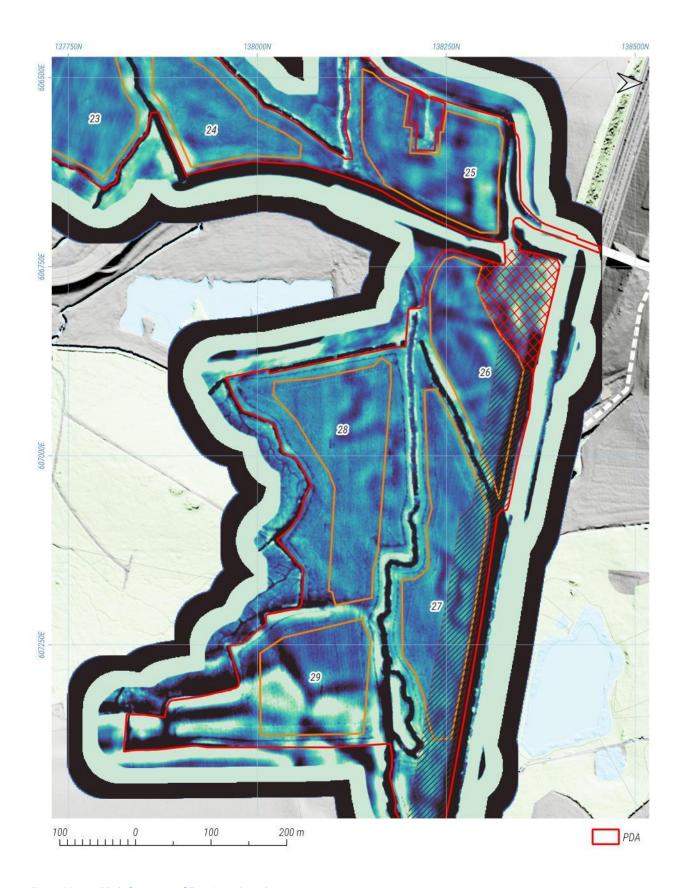


Figure 22: Local Relief mapping of East Stour River Basin



Figure 23: LiDAR assessment mapping of East Stour River Basin

5. DISCUSSION

The assessment identified a rich variety of possible archaeological features, sites, and/or deposits within the PDA. The majority of these pertain to former land boundaries and agricultural practices ranging in probable date from the Medieval-Modern Period. Within the local area of the Aldington Ridge the LiDAR assessment identified several areas of morphological variance which when reviewed in conjunction with the existing geophysical survey data and results of the archaeological evaluation potentially depict a zone of anthropogenic activity possibly associated with a roadside settlement dating from the IA/RB transition phase onwards.

Within the East Stour River basin, in which the northern extent of the PDA is situated, assessment of the LiDAR data identified a number of relict fluvial channels associated with the East Stour and earthworks which may be associated with agriculture and water management. The probable date of origin for these features is currently unknown, however evidence from past archaeological investigations within the local surrounding area has identified a rich landscape of Prehistoric-Medieval period anthropogenic activity with find spots in the immediate area denoting several IA/RB and Medieval period artefacts.

Taken with the growing body of evidence derived from the KCC HER, PAS Database, Geophysical Survey, and limited evaluation it is clear the PDA is situated within an area of continuous anthropogenic activity dating from the Prehistoric Period onwards with a particular emphasis upon the IA/RB and Medieval Periods

THE ALDINGTON RIDGE

The LiDAR assessment identified a contiguous area of morphological variation upon the brow and upper slopes of the Aldington Ridge immediately adjacent to the projected route of the former Roman Road (MKE4713). This 46.3ha area extends across Fields 4, 5, 6, 8, 9, 10, 12, 13, and 17.

The area is also located within the extent of the aforementioned Wealdon Clay, a substrate that previous archaeological investigation within the region has identified as displaying a high preponderance of IA/RB period settlement remains.

Archaeological geophysics within this area has identified at least one IA/RB enclosure and associated anthropogenic activity within this area (Field 4). Further evidence for activity during this period has been recovered through archaeological evaluation and suggests the potential presence of a agricultural community engaged in arable farming and Iron working with settlements being located upon areas of higher ground away from annual flooding whilst the low-lying river basins were farmed.

PLEISTOCENE TERRACING OR ANTHROPOGENIC EARTHWORKS

A number of linear features were identified through LiDAR assessment and geophysical survey. Situated upon the southern and northern slopes of the Aldington Ridge they follow the natural morphology of the ridge and appear to define the edges of the relatively flat ground situated upon the ridge's brow.

At present it is unclear whether these features originate naturally as a result of Pleistocene Terracing within the area or as the result of anthropogenic activity. Either way such features are of archaeological interest, Pleistocene terracing has previously been identified as a source of material evidence of Palaeolithic activity, whilst dating of the terraces themselves can provide proximal dating evidence for nearby prehistoric sites. If they are anthropogenic in origin they may denote the edges of previous settlement activity within the PDA and the morphology of prior transport networks.

MOUNDS AND MILLS

A number of mounded sub-circular features have been identified upon the brow of the Aldington Ridge (Fields 5, 6, 9, and 10) it is unclear at the time of writing whether such features represent natural deposition, glacial moraines, or anthropogenic features.

Previous archaeological investigation in the surrounding area has identified the brows of such ridges as being the location for barrows, beacons, and windmill mounds. Within the immediate area of the PDA exist two barrows:

- The Mount, Aldington (MKE53803), situated immediately adjacent to Field 9 is an artificial barrow. Prior excavation has retrieved material evidence dating from the Mesolithic period.
- Aldington Knoll (SAM 1012216), situated approximately 2.5km southeast of Field 9. Prior excavation identified the knoll as a Romano-British period burial mound.

Both the aforementioned sites and sub-circular features identified during LiDAR assessment align with one another suggesting the sub-circular mounds may be the remnants of burial mounds or associated site types.

FORMER AGRICULTURAL LANDSCAPE

To the South and North of the Aldington Ridge the land is relatively flat, LiDAR assessment and geophysical survey identified a range of predominantly linear features within these areas that morphologically are reminiscent of land boundaries, field systems, and possible route-ways. Whilst the existing DBA identified that many of these originate in the Post-Medieval agricultural landscape several features may relate to early Medieval Strip Farming or earlier agricultural practices. The KCC HER records a possible ring-ditch in the fields immediately to the southeast of Fields 20-22 whilst a review of the existing satellite imagery reveals a complex sequence of linear features denoting a possible prehistoric field system within the same area.

Several possible sub-rectangular enclosures of varying dimensions have also been identified within this landscape from the LiDAR data. This corresponds well with mapping of potential sites derived from satellite imagery of the area with the KCC HER recording an enclosure in Field 15 (MKE44044) and a large sub-rectangular enclosure being identified during development works upon Bested Hill immediately to the southeast of field 29.

EAST STOUR RIVER BASIN

Situated within the northern extent of the PDA the East Stour River Basin is characterised by a series of relict fluvial channels, anthropogenic earthworks, and the probable remains of prior field systems. Archaeological investigation within the local area has identified a rich background of activity stretching from the Prehistoric period to Modern day with evidence of the basin being farmed in the past.

The area has been characterised by the Stour Basin Palaeolithic Project as being of interest, although the incidence of encountering artefactual material of this period is considered low. At the time of writing the aforementioned fluvial channels have not been considered within the existing scoping framework and as such the date of origin for such features is currently unknown.

Within fields 25, 26, and 29 there is evidence of anthropogenic earthworks denoting a managed riverine landscape. Find spots within field 29 suggest this may be of IA/RB origin (KME55807, MKE55802).

CONCLUSION

The LiDAR assessment has identified a potentially rich archaeological landscape within the PDA with evidence for a variety of possible site-types and periods being identified. Such interpretation sits well within the larger framework of archaeological evidence collected as part of the EIA scoping phase for the Solar Farm project, with the LiDAR assessment, Geophysical survey, and limited archaeological evaluation complimenting one another to deliver a holistic view of an area of IA-Medieval period agricultural settlement and activity.

In particular the PDA's location along the projected Roman Road connecting the settlements and industrial activity in Ahsford with those in Lympne and Dover suggests the area may have played a role during the period in the establishment of the Iron industry of the time (A possible RB-Medieval Iron Works has been identified Just north of Rabbits wood MKE3825 immediately outside the PDA, whilst evidence of Iron working was recovered from evaluation trenching in field 4).

Roman roadside settlements are now well known from archaeological investigation in the UK with one having previously been identified at Westhawk Farm in Ashford. As such it is entirely possible that the remains identified during the scoping phase may indicate a similar settlement within the immediate-local area.

Furthermore artefactual evidence recorded in the KCC HER identifies the area as of having continued anthropogenic activity in the Early Medieval-Medieval periods with particular concentrations of material having been identified at Harringe Court Farm, Aldington, Clap Hill, and south of Evegate Manor.

6. REFERENCES

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7. APPENDICES

LIDAR ASSESSMENT MAPPING

*Please note: All figures are presented in groups of three comprising the following:

- LiDAR Interpretation overlying hillshade model
- LiDAR Interpretation overlying VAT model
- LiDAR Interpretation overlying interpreted magnetometry results and VAT model.

