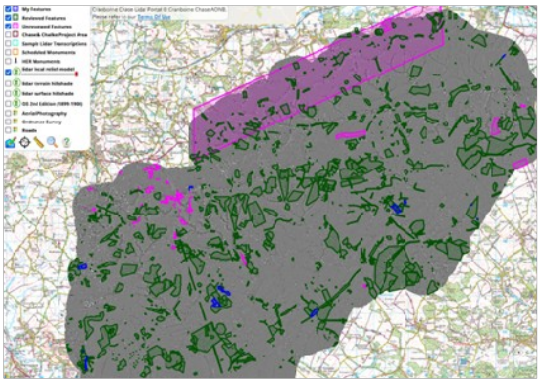
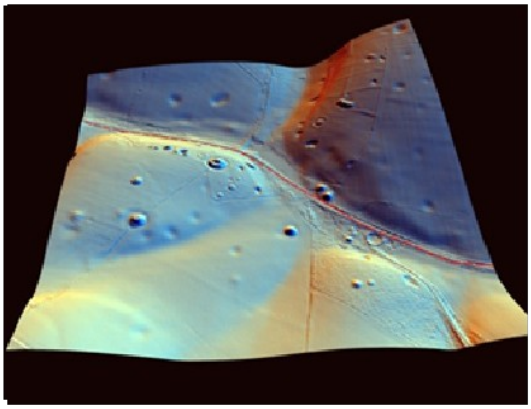
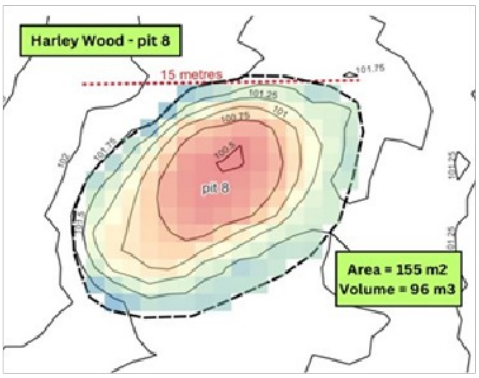
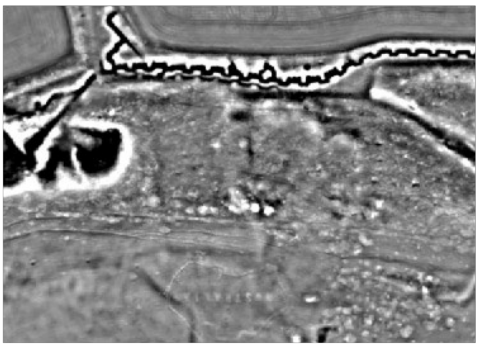
Chase and Chalke: Champions of the Past

Volunteer Lidar Project Report









Rebecca Bennett, PTS Consultancy

May 2026

CHASE & CHALKE LANDSCAPE PARTNERSHIP

Made possible with Heritage Fund

Chase and Chalke: Volunteer Lidar Project Report

Rebecca Bennett

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Acknowledgements

Thanks first and foremost to the community of volunteers who have given their time, knowledge and good humour to this project. Working with you has been a real joy and I hope that your enthusiasm and care for this landscape is reflected in this summary report of the tremendous work you've done.

Thanks also to the staff at Cranborne Chase National Landscape, specifically LPS Scheme managers Jonathan Monteith and Robert Lloyd and rangers Roland Smith and Melissa Howell. We are grateful for the practical and moral support of the whole Chase and Chalke partnership team. Thanks are also due to the Champions of the Past Stakeholders, Martin Papworth, Claire Pinder, Roland Smith and David Hopkins for professional guidance and support in instigating the project.

I extend heartfelt appreciation for the professional support given by Emily La Trobe-Bateman in feature transcription, delivery of in person training sessions and supporting the all important write-up phase for myself and the volunteers. I promise I will be able to vault field gates as well as you some day!

The Cranborne Chase Lidar Portal and all associated volunteer projects were made possible by support from the Lottery Fund and Cranborne Chase National Landscape. Specific thanks to Linda Nunn for recognising the unique value of the community and the projects they have developed and ensuring that the lidar portal can continue to live on beyond the initial funding.

You can visit the portal via this link https://cranbornechaselidar.org.uk/

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May 2026

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Top Row: Rebecca Bennett / Yvonne and Alan Crossley
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Introduction

The Cranborne Chase Lidar Portal was developed in 2022 and launched in 2023 as a citizen science project in the heritage strand of the Chase and Chalke Landscape Partnership (see Appendix 1). The online mapping system was developed to allow access for volunteers to 351km^2 of high resolution airborne laser scanning (lidar) data captured by the project in 2020.

The initial phase of the project ran for two years with volunteers identifying over 1200 potential archaeological features within the area of the National Landscape that was the focus of the project (Figure 1). This was complemented by a baseline professional transcription of 2761 features for three sample areas (Figure 4) and point locations for 2951 surface extraction pits. More than 2500 volunteer hours were logged against this project for the Lottery Fund.

This report summarises the work undertaken as part of the project and provides the paradata (information about the process of collecting data) to support the transfer and integration of volunteer derived geospatial records to the Historic Environment Records in Wiltshire, Dorset and Hampshire.

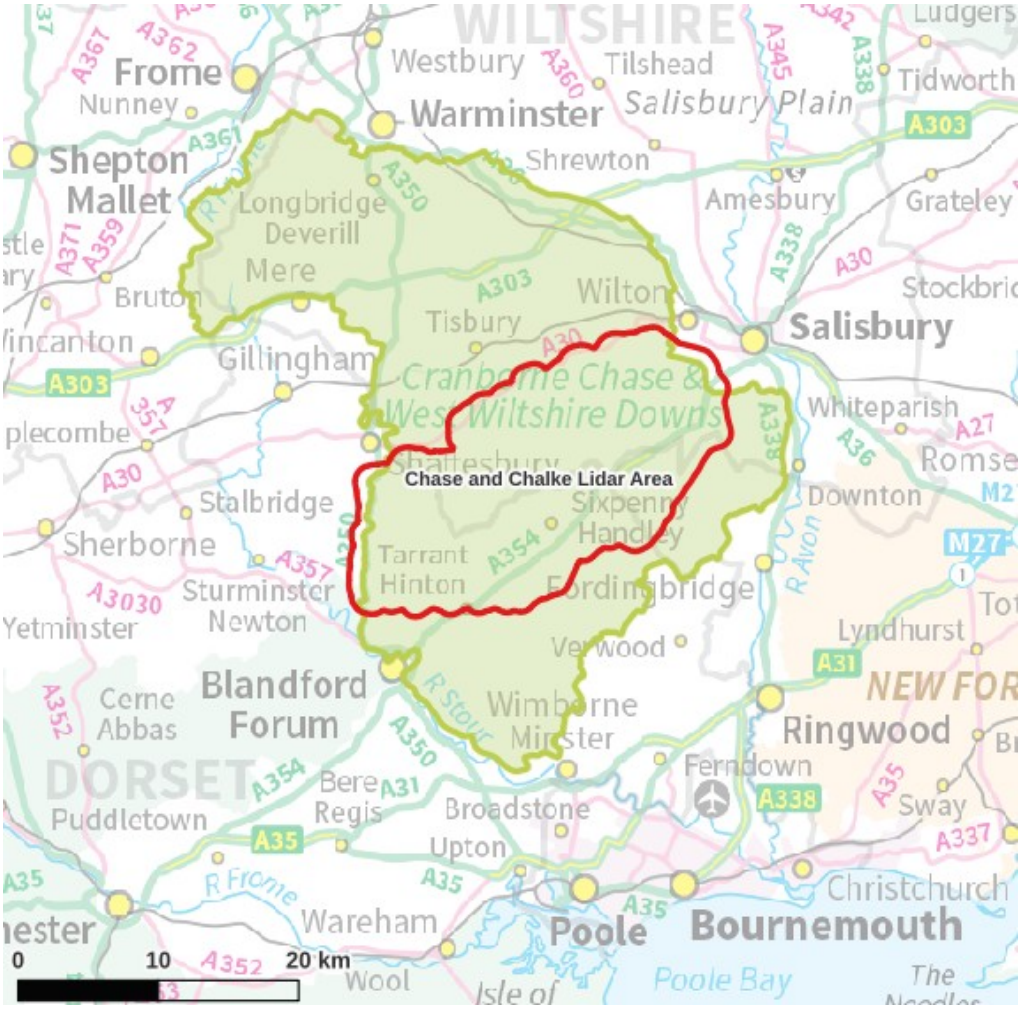


Figure 1: Location of the Chase and Chalke Lidar Project (red boundary) within the Cranborne Chase National Landscape (green area). Contains Ordnance Survey open data © Crown copyright and database right [2026]

About the Portal

The Cranborne Chase Lidar portal was built by PTS Consultancy based on the HEROS software developed for the Welsh Archaeological Trusts. The 0.25m lidar data captured for the project was processed by PTS Consultancy into specialist visualisations, (multidirectional shaded relief and local relief models see Appendix 1: Summary of the Chase and Chalke Landscape Partnership Archaeological Projects) that allow better identification of the microtopographic changes in the land surface that can represent past human activities.

The portal provided a user-friendly interface for viewing the lidar visualisations alongside other key layers such as aerial imagery and historic maps and feature data supplied from the Historic Environment Records (Figure 2). Table 2 details the layers that were made available to the volunteers via the portal. The portal also had an integrated attribute form with drop down values and tool tips that guided volunteer data entry for each feature as it was digitised. The MIDAS compliant data schema was created in collaboration with the Champions of the Past project stakeholders group and agreed by representatives of the Historic Environment records in December 2022.[1]

In addition to the interactive feature data layers and base mapping, the volunteers had access to measurement tool, coordinate capture, layer transparency and layer overlay window tools to assist the interrogation of the landscape. An introduction to the project and demonstration of the portal was recorded on 30th March 2023 and is available to view here https://cranbornechaselidar.org.uk/introductory-webinar/.

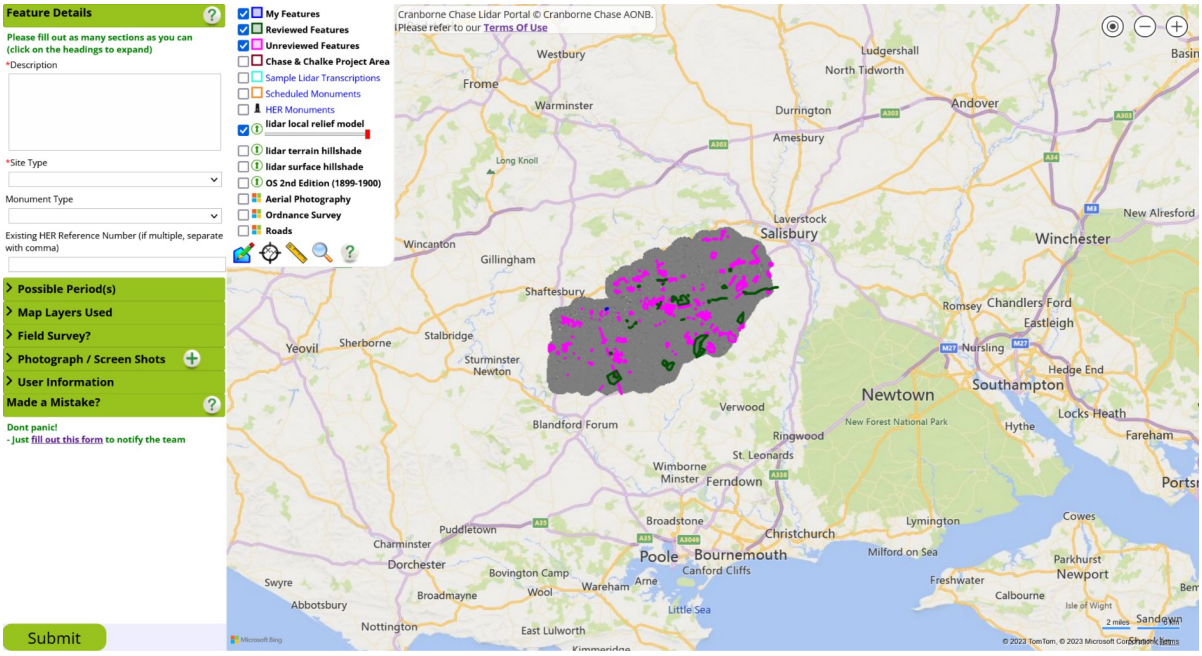


Figure 2: Screenshot of the Chase and Chalke Portal Interface

1 The stakeholder representatives were Claire Pinder (Dorset HER), David Hopkins (Hampshire HER), Roland Smith (Wiltshire HER), Martin Papworth (The National Trust).

Table 1: Data Layers Available via the Cranborne Chase Lidar Portal

Data Type	Details	Format
Lidar Layers	Digital Surface Model, visualised as a multidirectional hillshade Digital Terrain Model, visualised as a multidirectional hillshade Local Relief Model	AWS hosted web mapping layers See Appendix 2 for processing details
Historic Environment Layers	Point data with URL links to full online record hosted by the source organisation	Monument and findspot feature data supplied by Dorset, Hampshire and Wiltshire Historic Environment Records
Scheduled Monument extents	Polygon data with URL links to full online record hosted Historic England	
Sample Lidar Transcriptions	Professional digitisations from the lidar as examples to support volunteer training	
Historic Mapping	Ordnance Survey 2nd Edition (1899-1900) (from 2025) Ordnance Survey 1st Edition Mapping (1851-1888) (from 2025) Wiltshire Tithe Maps	Web mapping service supplied via National Library of Scotland https://maps.nls.uk/os/ From Know Your Place West of England https://maps.bristol.gov.uk/kyp/?edition=wilts
Base maps	Aerial Imagery Ordnance Survey 1:25,000 Bing Road Map	Bing Satellite web feed Bing Maps feed, then Wiltshire CC from 2025 Bing Satellite web feed

Part 1: Initial Volunteer Lidar Project

The Volunteer Role

The identification of archaeological features was undertaken by volunteers supported by Rebecca Bennett and Emily La Trobe-Bateman. Volunteers were recruited via the Chase and Chalke project communications and joined the project by self-enrolment on the website. As a Lottery Funded project, the emphasis was on the provision of high quality training and volunteer experience with the identification of archaeological features playing a key role in connecting communities to their landscape. The feature identification task was undertaken between March 2023 to September 2025 and was significantly enhanced by additional volunteer projects that ran in parallel during this time. (see below).

Once a volunteer registered they were enrolled in the online training course. This course comprised seven modules that stepped the volunteer through everything that was needed to begin the task of reading the landscape and mapping features (Figure 3). Volunteers had to complete the training before being allowed access to the portal, and had access to the materials including instructional videos and an illustrated gazetteer of features throughout their time as a volunteer. They also had access to a collation of additional archaeological resources gathered about the area or from similar projects (https://cranbornechaselidar.org.uk/resource-list/). In total 84 volunteers completed the training course during the project, exceeding the original aim "to support 25 volunteers to develop skills in the interpretation of lidar and landscapes".

Volunteers were supported throughout the project by monthly online meetings where progress and event news could be shared, volunteers could raise any issues for troubleshooting and features of interest could be discussed in the round. We also invited guest speakers to share their expertise. This communication was initially necessary due to lingering covid restrictions and anxiety around in-person meetings but proved a hugely advantageous way of supporting a broader range of volunteers. Any concerns about creating group identity were shown to be unfounded as volunteers have connected in multiple ways to work on projects of interest inspired by the lidar.

Volunteers were also invited to join one of five field training sessions run in Autumn 2023 and Spring 2024. Focusing on three different field sites, this training was an important opportunity to understand the impact of different environmental conditions on the presentation of archaeological features. In addition to opportunities directly linked to the portal, in 2024 volunteers also had the opportunity to experience hands on archaeology through two digs held on Cranborne Chase under a different strand of the Chalke and Chase project. These have been reported separately.

Feature Identification Methodology

The approach taught was that of "description first, interpretation second" methodology where identifying and describing the physical features visible in the lidar data is emphasised as the first step both in assessing the landscape and making the record. Once the topography was described then a possible interpretation recorded. This has two principle advantages when working on citizen science projects. Firstly it provides a more holistically consistent dataset that prioritises new knowledge derived from the lidar and secondly it removes a perceived intellectual and experience barrier for the volunteers who require uncertainty and mistakes to be treated as learning opportunities.

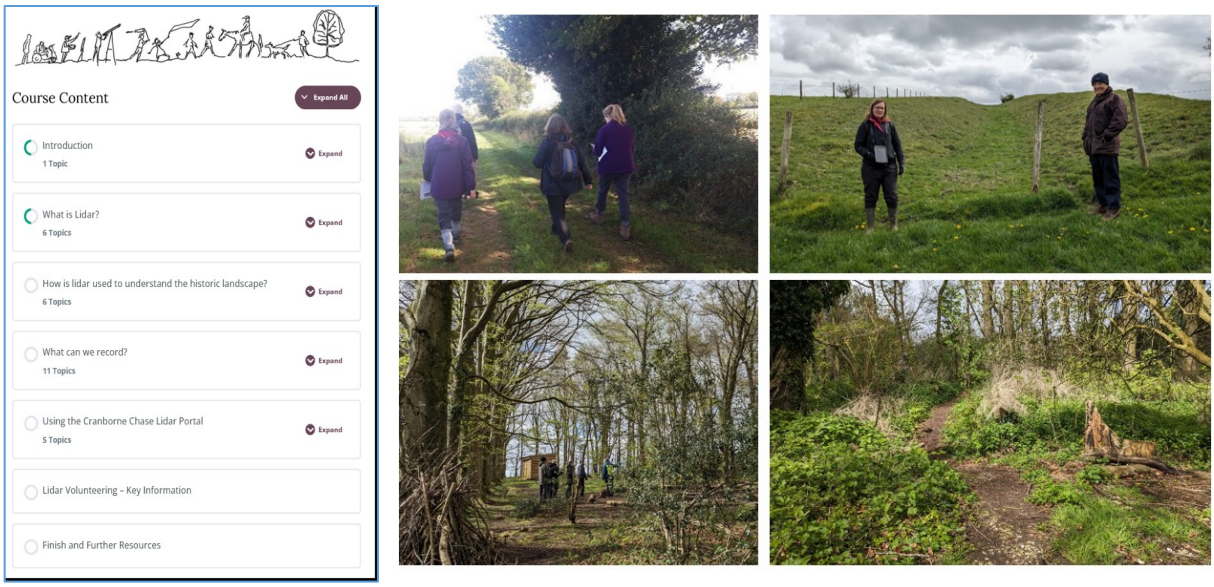


Figure 3: Modules provided as part of the volunteer training course and volunteer training days

People who are learning a complex new skill such as reading historic landscapes need the space to develop their skills without judgement or pressure to create a "perfect record". It is also important to provide a data collection interface that minimised data entry mistakes via the use of dropdown menus and checkbox items.

Once they had completed the online training, volunteers were tasked with identifying common features that related to past human use of the landscape as defined in the data schema. They were free to chose their own focus areas and feature types. Unlike a traditional citizen science project, volunteers were able to see each other's transcriptions (alongside the professional examples prepared for them). Volunteers were encouraged to identify the sources they had used to map the feature and recommend sites for field survey. They were also asked to list cross-references of existing monuments to aid transfer of the data back to the Historic Environment record.

Review and Quality Assurance

The quality assurance assessment of the data was undertaken in two stages. Firstly the data were reviewed by Rebecca Bennett alongside a group of volunteers who were given additional training and support as reviewers. The features were checked for consistency and correctness of both attributes and the geospatial entities. The description was updated where necessary and comments were also added by the reviewer if needed. The reviewed features were instantly shared back to the main volunteer portal so that feedback could be seen by the volunteers.

The initial review was completed in Autumn 2025 and the results published as an interactive map on the portal in October 2025 alongside a series of volunteer articles sharing experiences of the project.

Following this a period of data quality assurance and management was undertaken in QGIS by Rebecca Bennett in order to prepare the results of the volunteer work for handover to the Historic Environment Records.

Specifically this consisted of creating a set of geospatial files of the potential archaeological features:

- concatenation of descriptive fields (from recorder and reviewer) into a single feature description
- sorting and amending cross-references to existing HER entries
- removal of any identifying personal information (e.g email addresses used as usernames)
- addition of county information via geospatial query
- summarising binary data for period and sources used into human readable fields
- geospatial validation of all entities
- creation of metadata and paradata

Results of the Volunteer Transcription Project

After review and QA the datasets produced by the volunteers comprise 1209 known and potential archaeological features and 2591 chalk pits. While extensive archaeological analysis was not within the scope of the project, the following summary statistics and table of feature types below give a flavour of the data collected.

- 857 of the features mapped could be linked to an existing HER record, meaning that 352 potential new features were identified.
- 220 sites were identified as having potential for field visits to enhance the attributes collected from the desk-based data in the portal.
- Features of all periods were recorded, but the majority of the features were assigned to period Unknown (628), followed by Prehistoric (191). 183 features were assigned multiple periods.
- The features were assigned by county boundary as depicted in the table below (including 71 linear or cross-border features)

Table 2: Sites recorded by county

County	Feature Count
Dorset	499
Dorset, Hampshire	10
Dorset, Hampshire, Wiltshire	10
Dorset, Wiltshire	39
Hampshire	57
Hampshire, Wiltshire	22
Wiltshire	572
Total Result	**1209**

Table 3: Sites recorded by broad and narrow type

Site Type	Site Type (Narrow)	Count
Bank (earthwork)	Bank	27
	Bombing Range Target	2
	Cross Dyke	12
	Cursus	3
	Curvilinear Earthwork	2
	Earthwork	29
	Field Boundary	4
	Large Multivallate Hillfort	1
	Linear Boundary	1
	Linear Earthwork	69
	Linear Feature	16
	Rifle Range	2
	(empty)	7
Ditch	Boundary Ditch	3
	Ditch	74
	Dyke (Defence)	2
	Fox Warren	2
	Hollow Way	1
	Practice Trench	2
	Routeway	1
	Water Channel	2
	(empty)	4
Enclosure	Curvilinear Enclosure	1
	Enclosure	45
	Formal Garden	1
	Hillfort	3
	Multiple Ditched Enclosure	1
	Rectangular Enclosure	1
	Rectilinear Enclosure	3
	(empty)	2
Field System	Aggregate Field System	1
	Broad Ridge and Furrow	1
	Coaxial Field System	2
	Cultivation Marks	1
	Enclosed Field System	20
	Field System	178
	Lynchet	8
	Narrow Ridge and Furrow	1
	Ridge and Furrow	20
	Strip Lynchet	38
	Water Meadow	21
	(empty)	1
Garden Feature	Linear Earthwork	1
	Other - Enter details in description	1
Landslip		1
Mound	Barrow	4
	Barrow Cemetery	7
	Bowl Barrow	6
	Bowl Barrows	1
	Long Barrow	15
	Mound	49
	Mound (other)	1
	Pillow mound	7
	Pillow Mound (Warren)	1
	Round Barrow	52
	(empty)	3
Other / Uncertain	Hill Figure	2
	Other - Enter details in description	65

Table 3: Sites Recorded by Broad and Narrow Type Cont...

Site Type	Site Type (Narrow)	Count
Pit / Hollow	Building Platform	1
	Dew Pond	10
	Extractive Pit	56
	Marl Pit	21
	Pit / Hollow	88
	Pond	4
	Quarry	18
	Village Pound	1
	Water Storage Site	1
	(empty)	2
Pit/Hollow	Bull Pit	1
	Extractive Pit	4
	Hollow	2
	Lime Works	1
	Marl Pit	5
	Pit (other)	2
	Pit/Hollow	3
	Quarry	1
Routeway	Hollow Way	8
	Road	14
	Roman Road	2
	Routeway	8
	Trackway	25
Settlement	Settlement (other)	1
	Building Platform	15
	Church	1
	Deserted Medieval Settlement	3
	Deserted Settlement	20
	Enclosed hut circle settlement	2
	Enclosed Settlement	1
	Farmstead	6
	Military Camp	4
	Park / Garden	3
	Settlement	11
	Site	4
	Villa	2
	(empty)	1
Uncertain	Aggregate Field System	1
	Building Platform	5
	Deserted Settlement	1
	Enclosure	2
	Field System	1
	Hill Figure	1
	Other - Enter details in description	1
	Settlement	9
	(empty)	5

Discussion

While the data have been collected with great care, work undertaken by the volunteers cannot be seen as comparable to a professional, systematic assessment of the lidar data such as that produced by an Aerial Information Mapping Programme (formerly National Mapping Programme) project. This is not a realistic expectation of a citizen science project and was not the main aim of the Chase and Chalke Partnership.

Unlike other disciplines within the historic environment sector (e. building and landscape survey), there is currently no agreed criteria for levels of transcription from aerial survey below the very detailed standards used internally by Historic England. However work is progressing in this area, and as an interim guide one could look to Historic Environment Scotland who have published following levels for survey using remotely sensed data (Table 4). By this scale the data produced by the Chase and Chalke volunteer project can be viewed as meeting the criteria for Level 3: Basic record.

Table 4: Summary of Historic Environment Scotland levels of remote sensing survey as published in the Journal of Computer Applications In Archaeology, 2020[2]

Level of survey	**Scale**	**Map accuracy**	**Outputs**
1: Landscape characterisation (broad-brush assessment)	1:25,000	+/– *c*. 25m	- Location polygons - Classification - Period
2: Core information for NRHE	1:10,000	+/– *c*. 10m	As Level 1, plus: - Project event (description of why and how a project was undertaken, including statement of methodology and accuracy)
3: Basic record	1:10,000 1:2500	+/– *c*. 10m +/– *c*. 1m	As Levels 1 and 2, plus: - Recording event (description of how a record was created, including source data and personnel/organisation) - Brief written description - Survey at a scale that indicates monument or landscape form
4: Detailed record	1:2500 1:1000 or larger	+/– *c*. 1m	As Levels 1, 2 and 3, plus: Detailed analysis and interpretation Survey at a scale suitable to depict character and complexity of the monument Photographic record as appropriate

2 Cowley, D., Banaszek, L., Geddes, G., Gannon, A., Middleton, M., & Millican, K. (2020). Making LiGHT work of large area survey? Developing approaches to rapid archaeological mapping and the creation of systematic national-scaled heritage data. *Journal of Computer Applications in Archaeology*, 3(1), 109–121. https://doi.org/10.5334/jcaa.49

Professional Sample Transcriptions

Professional feature transcriptions were commissioned to support the volunteer training. Three sample areas of 2km^2 were agreed with the Chase and Chalke team: Chase Woods, Knighton Hill and Martin Down (Figure 4).

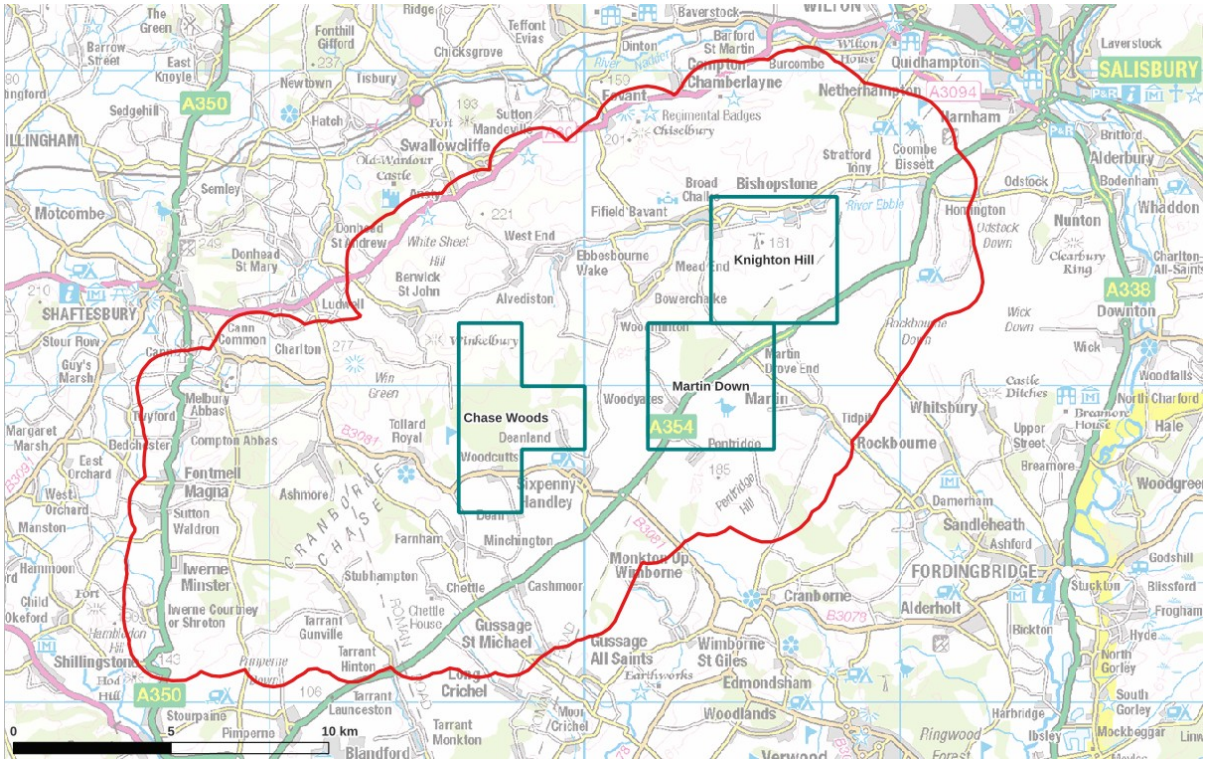


Figure 4: Locations selected for professional transcription. Contains Ordnance Survey open data © Crown copyright and database right [2026]

Emily La Trobe-Bateman completed the transcription of 2761 individual features at 1:1000 scale using the same base maps available to the volunteers. The schema varied slightly from the volunteer transcriptions (see Part 3: Data Delivery), giving only a single field for monument type (rather than also including sub-type). The summary of features is given in Table 5.

For each feature, data was also collected on the evidence observed (e.g. Bank (Earthwork), Building, Complex, Cultivation Marks) and the nature of the dating evidence (e.g a morphological analogy with a specific (relative) dated site, documentary evidence, excavation and/or excavated finds, map evidence). The schema and values for these attributes layer are derived from the FISH Evidence Thesaurus.

The relatively higher feature count in the professional transcription vs the volunteers' transcription is accounted for by the nature of the professional digitisation which focussed on defining individual feature extents to highlight the evidence in the lidar data that the volunteers could use to aid their interpretations Figure 5: Comparative example of professional (yellow) and volunteer (blue) transcriptions, Chase Woods ST970192. There was no expectation that volunteers would map to individual feature level in most instances rather that they would create a record akin to the Aerial Information Mapping Programme monument boundary where individual features are grouped under a bounding polygon.

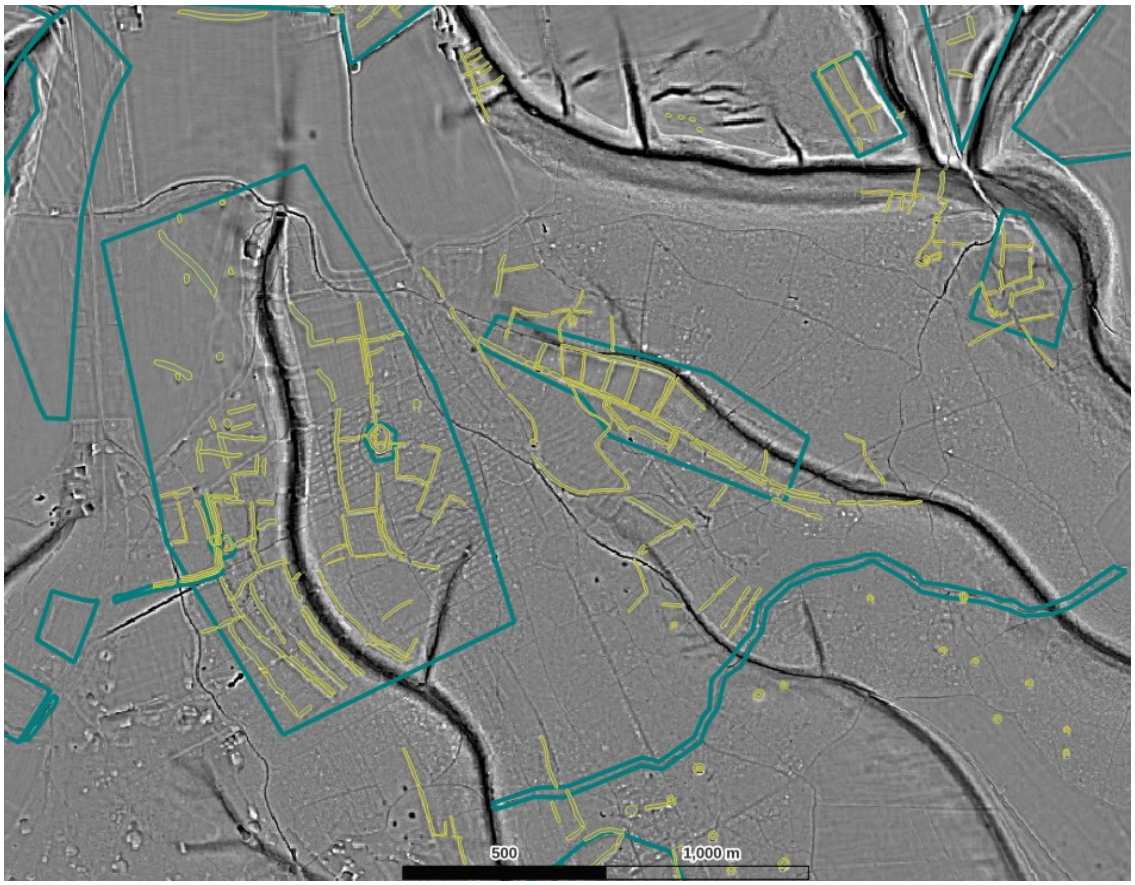


Figure 5: Comparative example of professional (yellow) and volunteer (blue) transcriptions, Chase Woods ST970192

Table 5: Sites recorded in the professional transcription exercise by type

Monument Type	***Count***
Barn	6
Barrow	2
Boundary	40
Boundary Bank	140
Bowl Barrow	49
Chalkpit	13
Cross Dyke	1
Cultivation Terrace	1
Cursus	4
Deserted Settlement	26
Dewpond	5
Dyke Defence	162
Enclosure	99
Farmstead	1
Field System (Enclosed)	491

Monument Type	***Count***
Fieldsystem	771
Firing Range	82
Hillfort	2
Lodge	1
Long Barrow	10
Lynchet	10
Orchard	3
Quarry	12
Ridge And Furrow	17
Road	50
Roundbarrow	4
Settlement	11
Surface Extraction Site	396
Trackway	11
Unassigned	341

Part 2: Subsidiary Projects

Introduction

Throughout the project volunteers were encouraged to identify themes of interest relating to the lidar data and historic landscape to the group. This collaborative approach resulted in three sub-projects alongside the general mapping task:

1. investigating pit features found in high numbers in open fields (Chalke Pits Project)
2. mapping relict field boundaries as a distinct monument class (Field Boundary Project)
3. assessing Scheduled Monuments (in collaboration with Historic England)

While the Chase and Chalke project formally ended in 2025, legacy funding was granted to the lidar volunteer project to continue work until the end of 2026. Consequently only the Chalk Pits Project is fully reported here, with interim updates provided on the other two ongoing projects.

Chalk Pits

The predominance of oval pit features in geometric patterns clustered in fields across the area covered by the lidar data was immediately apparent. While surface extraction pits are a common feature and have been widely observed from aerial mapping programmes in other chalk landscapes (e.g. Secrets of the High Woods and Upon the Chalk in the South Downs), the high intensity and pattern of the features distinguished them from surface extraction seen in other areas.

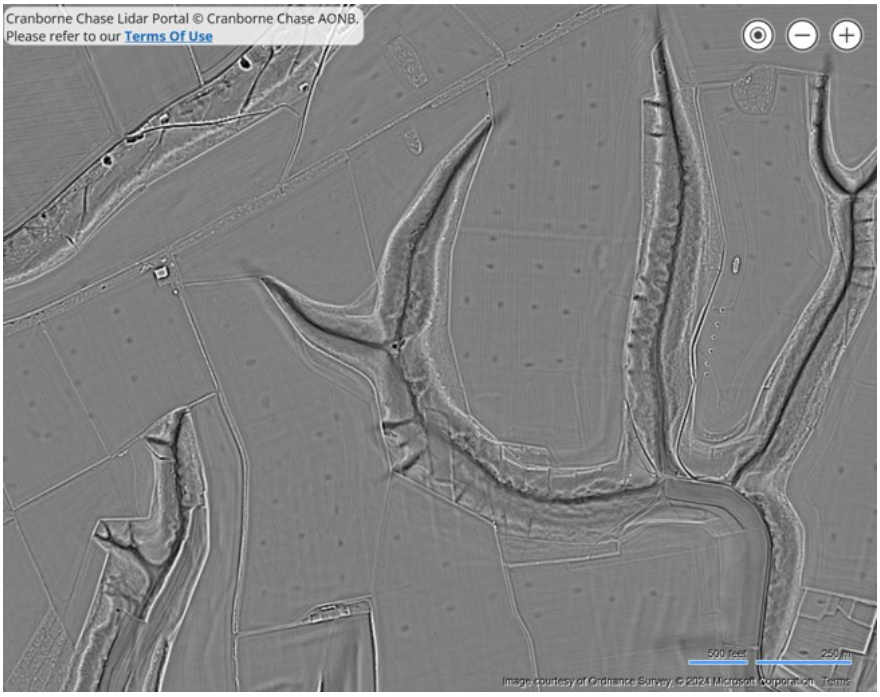


Figure 6: Pit features can been seen in multiple clusters in the lidar local relief model

Several theories emerged as to their origin with the two most likely being agricultural or WWII defensive features but to explore these hypotheses it was necessary to map the distribution of the features and to gather other evidence (geological, documentary and oral history). A separate mapping portal was set up in spring 2024 and 10 volunteers digitised the location of 2591 pits as point data with simplified attributes.

The method of data collection differed from feature mapping in the main portal in the following key ways:

- a single point was recorded for each feature instead of a polygon
- Only pits with the distinct shallow oval and clustered group presentation were mapped (so other forms of quarrying were excluded or removed at the review stage)
- Attributes were limited as follows
  - Approximate Diameter (four categories: 5-10m, 20-30m, 10-20m, >30m)
  - Ploughed (checkbox)
  - Visible on 2nd Edition historic maps (checkbox)
  - Visible on aerial photograph (checkbox)
- Each volunteer was assigned a number of 2km^2 grid squares to assess, ensuring that we had captured total coverage of the area.
- Pits could be recorded as a group of points in the same field allowing for attributes to be assigned at group level

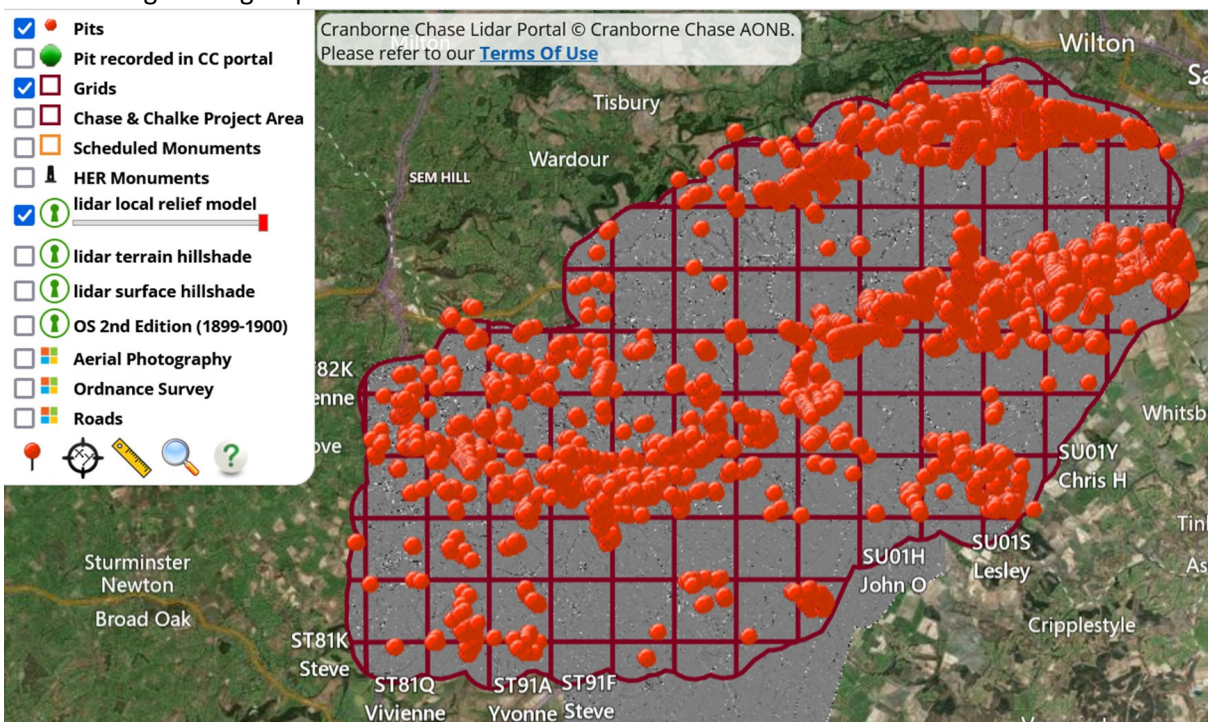


Figure 7: The pits mapping portal showing the grid allocation system and distribution of surface extraction pits mapped

The data collected were then reviewed and analysed in QGIS using the BGS 1:10,000 scale mapping to compare the pit locations to the underlying geology (BGS licence 2004/001).

Results

A total of 2591 pits were mapped (representing 1091 “groupings”). The “grids of pits” were observed as strongly regular to the north east of the Chase Chalke area, less to the south west. The observed clustering is statistically significant (Nearest Neighbour Index 0.46 Z score or -51.02), showing that the pattern of pits is not random. When compared to the geological maps, 90% of the pits are on chalk geology at the 1:10k scale (partnership with BGS facilitated this). Just 27% of these pits correlate with superficial deposits of clay / silt, which indicates that the material being targeted for extraction was chalk.

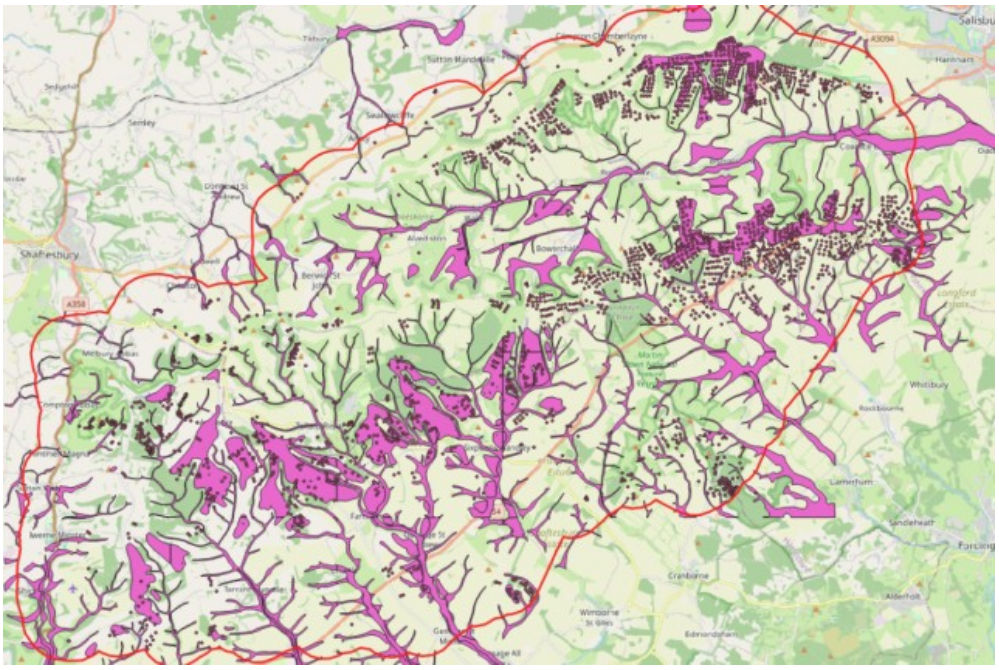
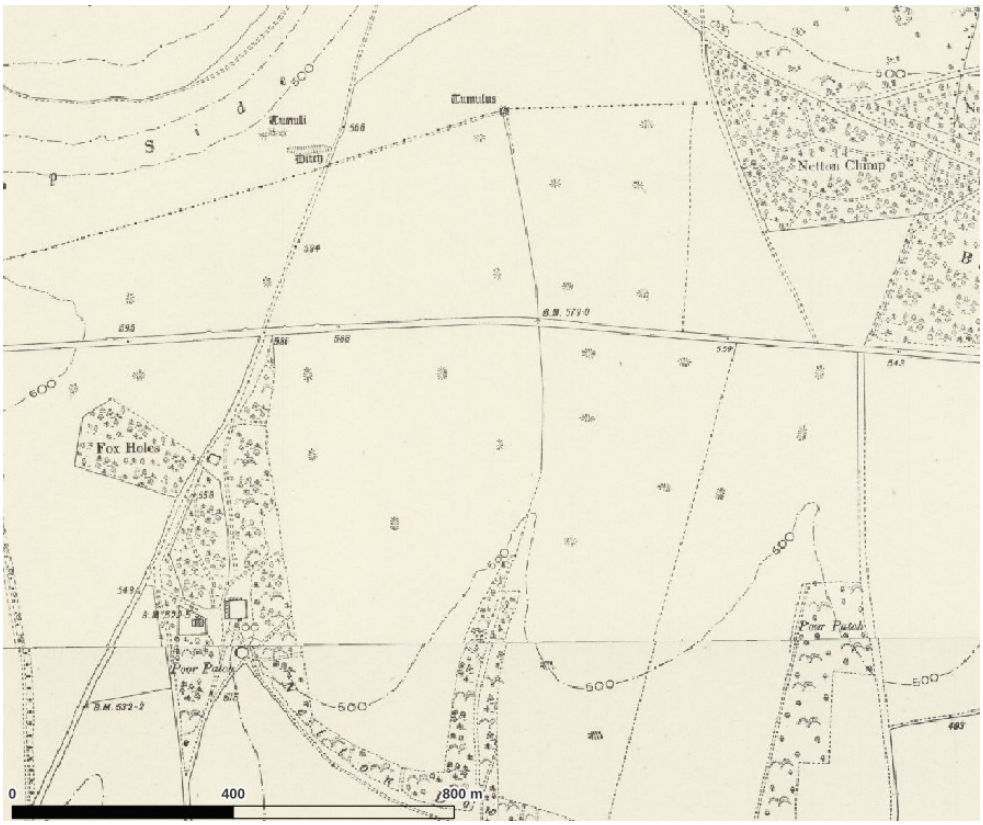


Figure 8: Chalk pits over the areas mapped as clay / silt according to the BGS (in pink) contains © British Geological Survey data used under licence Agreement No. 2024/001A

Pits are not mapped consistently as individual features on historic mapping so analysis was undertaken at group level. 11% of groups (roughly representing fields) had one or more pits marked on the historic map from c.1900 demonstrating that they were extant features at this time. While an integrated web feed wasn’t available at the time of mapping, volunteers used the National Library of Scotland web maps to look over the 1st Edition OS layer for some areas noting that the pits are marked as “old chalk pits” on the 1844-88 map.



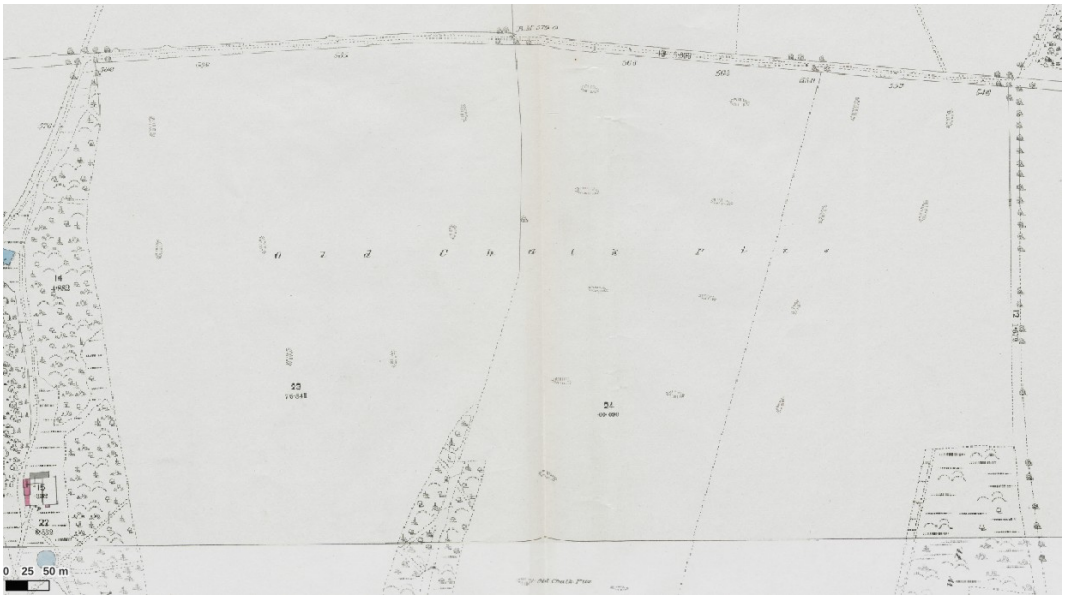


Figure 9: The pits at SU068285 shown on 2nd Edition Ordnance Survey Mapping (top), and marked on the 1st Edition as "Old Chalk Pits"

Preliminary Geoarchaeology – Michael J Allen

In August 2024 Mike Allen led two days of hand augering with the volunteers to define the nature, character and potentially depth of the infill of two pits in the environs of Netton Clump. The pits were chosen as they represented two different landuses, woodland and ploughed arable field so that the impact of these on the form of the pits could be examined. The following is extracted from Mike Allen's report and presentation to the volunteer group. The full report can be downloaded here Preliminary Geoarchaeology of the Netton Clump Depressions.

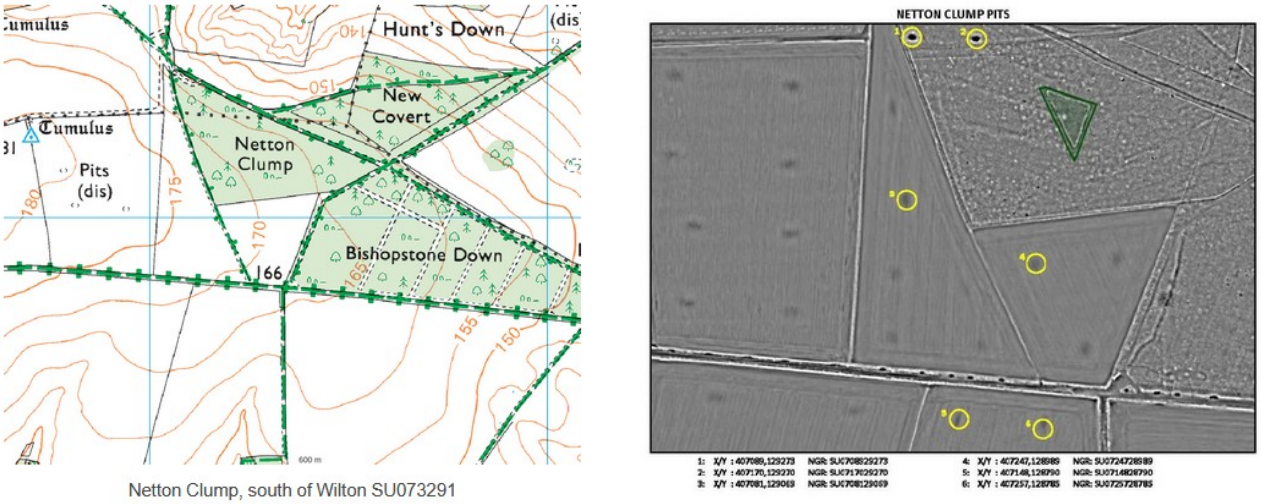


Figure 10: Location of the pits at Netton Clump, pits 1 and 3 in the right image were sampled. Contains Ordnance Survey data © Crown copyright and database right [2026]

A walkover survey was conducted and initial test augering to demonstrate the negligible intervention and lack of damage to any tree roots, and to the Chase and Chalke, LP Scheme Manager (Robert Lloyd), and some the volunteers, the viability of augering. The walkover survey examined four features; two in Netton Clump itself (1 & 2) and two in the adjacent arable field (3 & 4). Preliminary test augering in three of these revealed deposits in all. Two were selected for more detailed augering with a team of volunteers: feature1 within Netton Wood, and feature 3 in the adjacent arable field. The pits were also measured and planned to scale to support analysis.

Pit Feature 1 (woodland): The feature was oval and approximately 12m (E-W) and 9m (N-S) steep-sided and about 1 to 1.55m deep. A number of flint nodules had rolled in to the base and lay amongst the leaf litter. A north-south transect line was set out across the feature and 4 auger holes recorded; two on the lip or land adjacent to the depression and two in its base. On its edges the woodland soil was a thin (c. 30cm) azonal rendzinaform humic soil over chalk to the north and Clay-with-Flints to the south. Neither of the two auger holes in the base were bottomed due the presence of flints, but were 0.4m and 0.6m deep and encountered deposits presumed to be derived from Clay-with Flints.

Pit Feature 3 (arable field): A more detailed auger survey was undertaken of this very shallow (max 0.44m) c. 25m diameter depression in the ploughed field west of feature 1. A series of 7 auger points

were conducted along over a distance of 33.5m along the N-S orientated transect. The plough soil at the ends of the transect were 0.35m thick over chalk to the north (at 1.25m) and 0.42m thick of weathered Clay-with-Flints over chalk to the south (at 34.7m). The fill on the inner edges overlay weathered chalk to 0.4m and 0.6m depth. The inner two auger points (at 8.7m and 22m) revealed a Clay-with-Flints derived material to a depth of greater than 1.4m; the flinty nature prevented hand augering further.

The augering refined the present distribution of Clay-with-Flints over the chalk showing it to be much reduced by ploughing and almost totally removed from the area of F3 and F4. The augering is not conclusive, but the shape and character of the features and the presence of Clay-with-Flints derived deposits and of flinty, stony fills tends to suggest that this is remnant of either backfill or weathered material into an open pit. As such, although this could be fills such as those in the holes at Fir Tree Field, the evidence tends to suggest an anthropogenic origin, probably quarries. The fact the better preserved feature in the woods are oval, and have a possible entrance also tends to support this hypothesis. The augering has assisted in characterising the features and also helps also toward a tentative interpretation.

Additional Research – Oral History, Aerial Imagery, Defence of Britain, 3D mapping

In addition to the mapping exercise and augering, the volunteer group undertook to review the pits and hypotheses over their origin using a range of other sources including:

- meeting with Fiona Small and Katy Whittaker at Historic England to discuss surface extraction and comparative sites in other areas.
- an informal oral history Q&A session with Alan Chalk, who began farming in the Chase aged 14 in the late 1940s
- researching modern liming / soil ph management practices
- reviewing the evidence for WWII home front activity in the area
- using 3D modelling to estimate how many wheelbarrows it would take to extract the material in a typical chalk pit
- reviewing the comparative archaeological evidence for surface extraction elsewhere e.g the Chilterns and the Sizewell excavations

Many of these research topics are reported on the Volunteer News section of the portal. In addition Yvonne and Alan Crossley are currently writing an article research for the Wiltshire Archaeological and Natural History Magazine summarising the team's research into chalk pits.

Tithe Apportionment Transcription

The collaborative research into the pits included much discussion about land ownership specifically with regard to whether the pits were dug in this magnitude and density at the behest of specific landowners. Volunteers approached the Wilton Estate archive to look for further information but did not find any conclusive leads. Nick King and John Blake were however inspired to digitise the tithe apportionments from scanned pdfs to a spreadsheet to enable them to identify more clearly owners and tenants across a larger area and identify the larger estates in Wiltshire.

The resulting spreadsheet covered 23 parishes, digitising 26,848 apportionments (equivalent to 858 pdf pages) and was completed in spring 2025 and accessioned to Wiltshire HER. Due to the high levels of interest shown in the Tithe Apportionment spreadsheet, which covered the Wiltshire Tithes, the volunteers are looking to expand this into the Dorset area of Cranborne Chase. The Dorset County archaeologist showed interest in assisting at the initial meeting of the Dorset Archaeology & Heritage Forum and their assistance will be invaluable in gathering the relevant base data.

The aspiration continues to be to show the tithe data visually on maps. Macros have been developed for getting the grid references for the Tithes and then the tithe data can be associated with the grid references and the data all shown on the mapping. This will enhance the legacy of the Cranborne Chase project.

Field Boundaries

In addition to the extensive work on the chalk pits, starting in 2025 the volunteers also undertook a mapping exercise to identify relict field boundaries across the area. The aims of the project are to:

- create a comprehensive map of all the relict field boundaries that are extant in the LiDAR data.
- compare the boundaries mapped from the LiDAR to those noted in the HER from cropmark evidence
- interpret the pattern, orientation and style of boundaries with the aim of depicting contemporary field systems
- compare these systems to evidence for settlement and routeways across the Chase

Features were mapped as lines and the following attributes were recorded:

- topography (positive / negative)
- preservation (ploughed / unploughed / in woodland)
- width
- existing HER references
- description

Unlike the main portal where HER data were summarised to points, volunteers on the field boundary project also had access to linear data (largely representing crop mark features). To date 7833 boundaries have been mapped with review ongoing (currently at 54% reviewed).

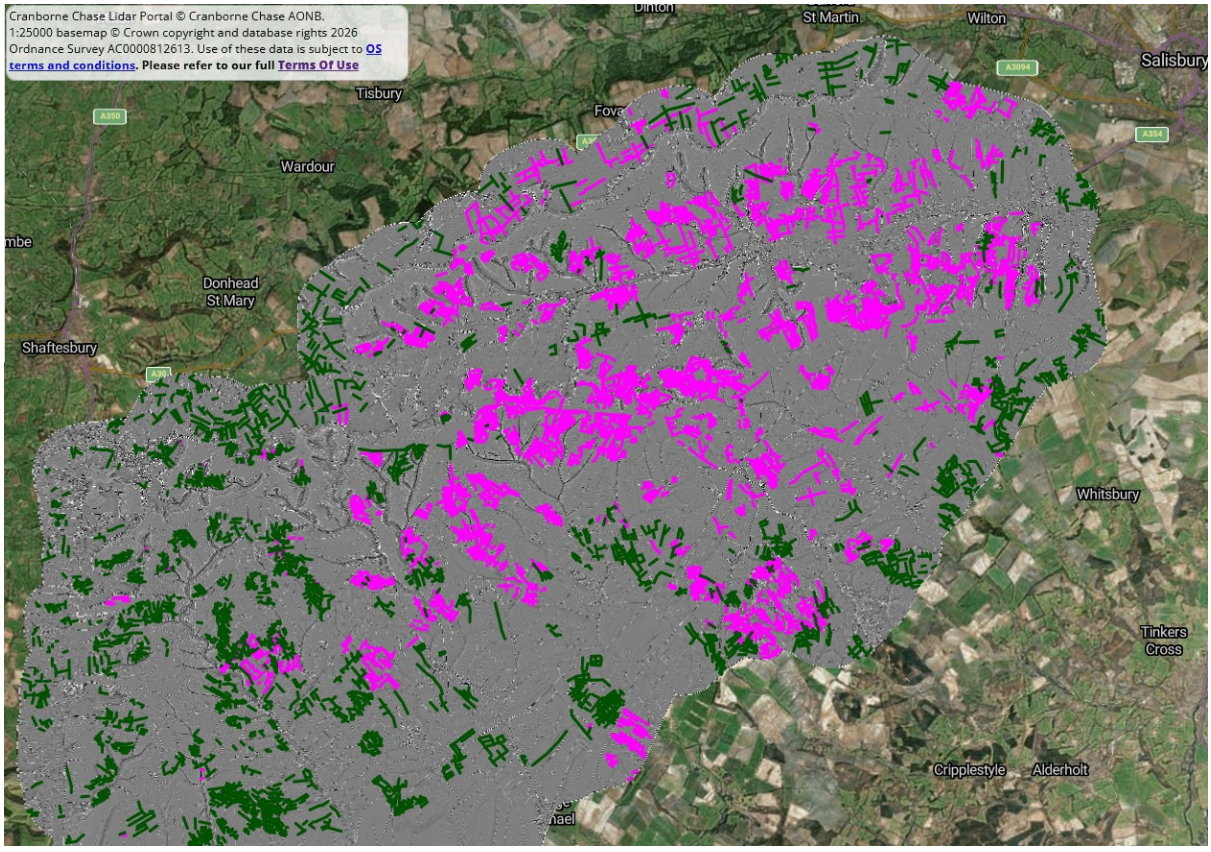


Figure 11: Screenshot from the field boundary project mapper with reviewed boundaries coloured green

Scheduled Monument Assessment and Monitoring Project

During the lidar assessment it was recognised that many of the scheduled monument descriptions would benefit from updating with the evidence from the lidar survey. In May 2025 the volunteer team partnered with Nick Croxson, Historic England Heritage at Risk Projects Officer to begin a project to systematically assess the 198 scheduled monuments in the Chase and Chalke area.

We undertook two days of training covering the origins of scheduling, what the current descriptions tell us about the site and what analysis of the lidar could add. We also trained the volunteers in field survey to take on-the-ground observations.

Through the course of 2025 and spring 2026 volunteers assessed all the monuments using the lidar data. They recorded geospatial extents of related features that lay outside the current scheduled boundary and the following attributes:

- presentation of the feature in the lidar (description)
- spatial extent edit required? (yes / no)
- topography (multiselect from none / positive / negative)
- map layers used
- public access (with details)

To date all 198 features have been assessed and the data will next be reviewed and consolidated into a strategy for field visit and observations, prioritising publicly accessible monuments in the first instance.

Part 3: Data Delivery

Data and Metadata Summary

The data provided with this report are summarised as follows (with CC in the file name standing for Chase and Chalke). The metadata is provided as a spreadsheet CC_lidar_export_metadata.ods which includes tables 6, 7, 8, 9 and 10.

Table 6: Core Project Geospatial Files of Potential Archaeological Features (PAF)

File Name	Description	Original HEROS Table Name	Topology	Format	Feature Count
CC_LiDAR minimum_area.shp	Lidar Coverage shapefile / project extent		polygon	.shp / .cpg /. prj / .shx / .qmd / .dbf	1
CC_lidar_features_attributes.csv	Attribute data for potential archaeological features	cl_field	polygon	csv	1209
CC_Lidar_features.shp	Geospatial data for potential archaeological features (attributes will be clipped to 255characters)	geo_cl_field	polygon	.shp / .cpg /. prj / .shx / .qmd / .dbf	1209
CC_Lidar_features.gpkg	Combined geospatial and attribute data for potential archaeological feature records	cl_field and geo_cl_field linked by chi_fid	polygon	.gpkg	1209

Table 7: Chalk Pits Project Geospatial Feature Files

File Name	Description	Original HEROS Table Name	Topology	Format	Feature Count
CC_pits.csv	Attribute data for potential archaeological features	cl_field_pits	point	csv	2951
CC_pits.shp	Geospatial data for potential archaeological features	geo_cl_field_pits	point	.shp / .cpg /. prj / .shx / .qmd / .dbf	2951
CC_pits.gpkg	mapping of individual pit locations, grouped by modern field (chi_fid)	cl_field_pits and geo_cl_field_pits linked by chi_fid	point	.gpkg	2951

Table 8: Fields List for Geospatial Files of Potential Archaeological Features (PAF)

Field	Description	Values (comma separated for lists)	Original Table
fid	Row ID		cl_field
chi_fid	Unique identifier		cl_field
geo_fid	Unique geoidentifier		geo_cl_field
compiler	Record Creator		cl_field
compiledon	Creation Date		cl_field
Site_type	Broad Type	Bank (earthwork), Ditch, Enclosure, Field System, Garden Feature, landslip, Mound, Other, Pit / Hollow, Routeway, Settlement, Uncertain	cl_field
Site_type_sub	Narrow Type	Settlement (other), Aggregate Field System, Bank, Barrow, Barrow Cemetery, Bombing Range Target, Boundary Ditch, Bowl Barrow, Bowl Barrows, Broad Ridge and Furrow, Building Platform, Bull Pit, Church, Coaxial Field System, Cross Dyke, Cultivation Marks, Cursus, Curvilinear Earthwork, Curvilinear Enclosure, Deserted Medieval Settlement, Deserted Settlement, Dew Pond, Ditch, Dyke (Defence), Earthwork, Enclosed Field System, Enclosed hut circle settlement, Enclosed Settlement, Enclosure, Extractive Pit, Farmstead, Field Boundary, Field System, Formal Garden, Fox Warren, Hill Figure, Hillfort, Hollow, Hollow Way, Large Multivallate Hillfort, Lime Works, Linear Boundary, Linear Earthwork, Linear Feature, Long Barrow, Lynchet, Marl Pit, Military Camp, Mound, Mound (other), Multiple Ditched Enclosure, Narrow Ridge and Furrow, Other - Enter details in description, Park / Garden, Pillow mound, Pillow Mound (Warren), Pit (other), Pit / Hollow, Pit/Hollow, Pond, Practice Trench, Quarry, Rectangular Enclosure, Rectilinear Enclosure, Ridge and Furrow, Rifle Range, Road, Roman Road, Round Barrow, Routeway, Settlement, Site, Strip Lynchet, Trackway, Villa, Village Pound, Water Channel, Water Meadow, Water Storage Site	cl_field
Reviewer	Reviewer Initials	JM, RB, ELTB	cl_field
Lastupdate	Date of Last Update		cl_field
Site_Visit_Rec	Site visit recommendations		cl_field
Description	Description of feature and reviewers comments		cl_field

County	County, Automatically allocated via intersection query with county boundary data. *Features within 100m of the county boundaries are allocated both county names as a comma separated value. Features within 500m of the intersection of all three counties are allocated a comma separated value of all relevant counties e.g.Dorset, Hampshire, Wiltshire*	*Dorset, Hampshire, Wiltshire (n10)* *Dorset (n499)* *Dorset, Hampshire (n10)* *Dorset, Hampshire, Wiltshire (n10)* *Dorset, Wiltshire (n39)* *Hampshire (n57)* *Hampshire, Wiltshire (n22)* *Wiltshire (n572)*	autogenerated
sm_links	List of Scheduled Monument UIDS relating to the feature		cl_sm_link
her_links	List of HER UIDS relating to the feature		cl_her_link
Periods	Possible periods	Unknown,Prehistoric,Roman,Early Medieval,Medieval,Post-Medieval,Modern	cl_field
Sources	Sources used to map and describe the features	Lidar Local Relief Model,Lidar DSM Hillshade,Lidar DTM Hillshade,Historic Map,Aerial Photos	cl_field
Easting	Easting of polygon centroid		autogenerated
Northing	Northing of polygon centroid		autogenerated

Table 9: Fields List for Geospatial Files from the Professional Transcription

Field	Description	Values (comma separated for lists)	Original Table
fid	Row Id		geo_trans_final_clean
description	Description Of Feature		geo_trans_final_clean
evidence	Evidence Observed	Bank (Earthwork), Building, Complex, Cultivation Marks, Ditch, Hollow, Linear Feature, Mound, Pit, Platform, Unassigned	geo_trans_final_clean
site_type	Site Type	Anti Aircraft Obstacle, Barn, Barrow, Boundary, Boundary Bank, Bowl Barrow, Chalkpit, Cross Dyke, Cultivation Terrace, Cursus, Deserted Settlement, Dewpond, Dyke Defence, Enclosure, Farmstead, Field System (Enclosed), Fieldsystem, Firing Range, Hillfort, Lodge, Long Barrow, Lynchet, Orchard, Quarry, Ridge And Furrow, Road, Roundbarrow, Settlement, Trackway, Unassigned	geo_trans_final_clean
layers	Sources Used To Map And Describe The Features	Lidar Local Relief Model,Lidar DSM Hillshade,Lidar DTM Hillshade,Historic Map,Aerial Photos	geo_trans_final_clean
her_number	List Of HER Monument UIDs Relating To The Feature		geo_trans_final_clean
scale	Digitisation Scale	5-10m, 20-30m, 10-20m, >30m	geo_trans_final_clean
period	Possible Periods	Unknown,Prehistoric,Roman,Early Medieval,Medieval,Post-Medieval,Modern	geo_trans_final_clean
dating	Dating Evidence	a morphological analogy with a specific (relative) dated site, documentary evidence, excavation and/or excavated finds, map evidence, morphological analogy with a specific (absolute) dated site, morphological association with other features, Date based or partly based on stratigraphic relationship to dated sites, No dating evidence	geo_trans_final_clean
Easting	Easting of polygon centroid		autogenerated
Northing	Northing of polygon centroid		autogenerated

Table 10: Fields List for Chalk Pits Project Geospatial Feature Files

Field	Description	Values (comma separated for lists)	Original Table
fid	Row ID		cl_field_pits
chi_fid	Group identifier (pits grouped by geographical area typically modern field)		cl_field_pits
geo_fid	Unique geoidentifier for each pit		geo_cl_field_pits
description	Description of feature		cl_field_pits
ploughed	Has the pit been ploughed?		cl_field_pits
on_historic_map	Is the pit visible on historic maps?	Yes / Null	cl_field_pits
on_aerial_photos	Is the pit visible on aerial photos?	Yes / Null	cl_field_pits
lastupdate	Date of Last Update		cl_field_pits
diameter	Approximate diameter of pit	5-10m, 20-30m, 10-20m, >30m	cl_field_pits
Easting	Easting of point		autogenerated
Northing	Northing of point		autogenerated

Appendix 1: Summary of the Chase and Chalke Landscape Partnership Archaeological Projects

In 2019 The **Chase & Chalke Landscape Partnership Scheme** hosted by Cranborne Chase National Landscape was awarded a **£1.68million grant from The National Lottery Heritage Fund**. With match-funding from partners, the five-year scheme totalled £2.7 million. The projects aimed to do the following:

- Conserve, enhance and restore key features of natural, historic and cultural heritage.
- Offer opportunities to develop awareness, understanding and enjoyment together with knowledge, skills and volunteering to provide a lasting legacy for the future.
- Provide opportunities for individuals and communities, near and far, young and old, to care for local heritage.
- Foster pride in the unique and rich heritage of this landscape.

Within this scheme the Champions of the Past theme sought to provide opportunities for all communities around and within the Chase & Chalke area to learn about and engage with the archaeology beneath their feet

Champions of the Past was a major archaeological project that aimed to raise awareness and inspire new volunteers by identifying and exploring new archaeological sites and features, put in place better management and help improve the condition of many sites in the area.

Project aims

- To engage with communities and individuals around and within the Chase & Chalke area to raise awareness and inspire many new volunteers who will be trained in new skills across survey, research and conservation.
- To identify, investigate and ground truth more than 200 new archaeological sites and features across the area.
- Use LiDAR to gather new archaeological information about the heritage of Cranborne Chase and Chalke Valley area.
- To leave a legacy where the remarkable archaeology of the area will be better understood, recorded, protected and managed with involvement and pride by local communities.

Project Topics: The Cranborne Chase LiDAR portal, On-site surveys and ground-truthing opportunities, Geophysical survey and excavation and Archaeology at risk

Our 'citizen scientists' helped to discover, understand and preserve the natural and cultural heritage of the Chase & Chalke landscape, by exploring the LiDAR mapping and identifying new and exciting historical sites. The Portal contains a series of training modules with step-by-step instructions of how to recognise and interpret archaeological features on LiDAR images to help us digitally record unmapped archaeology. The Portal hosts historic maps, aerial photographs and information on known archaeological records and gives everyone the opportunity to explore the archaeological sites of this amazing landscape.

On-site surveys and ground-truthing opportunities: Once new sites had been identified on the LiDAR Portal our volunteers carried out systematic, on-site surveys to find and record these new features on the ground. Volunteers were trained in 'ground-truthing' survey techniques and worked together with local archaeological societies, local museums and our experts to record hundreds of newly identified sites. This included visiting the site and completing a pre-prepared survey, taking photographs, and even making sketches of the site and recording observations.

Geophysical survey and excavation: Where possible, more targeted archaeological investigation of key sites were carried out. Working with farmers and landowners, training was provided to volunteers in earthwork surveys, geophysical surveys and field walking in order to explore several sites of interest in more depth, potentially leading to small-scale excavations in key areas.

Archaeology at risk: Many monuments and known sites in our area are at risk of damage through neglect and farming practices. Working with farmers and landowners we carried out practical conservation work to sites to improve their condition and help protect them for the future. Our volunteers carried out tasks such as light clearance of scrub and fencing off neglected monuments while working with communities and landowners to develop better knowledge, appreciation and pride in the special features of their landscape.

Appendix 2: Lidar Processing Details

Summary

The 0.25m lidar data digital terrain (DTM)and digital surface (DSM) models were processed into two different visualisations by Rebecca Bennett and Will Roper. Parameters are detailed in Table 11 below. The output was saved in COG format so that the visualisations could be served as wms layers to the Cranborne Lidar Portal.

The DTM, DSM and Local Relief (LRM) models were prepared for archive with the Archaeological Data Service as 5km tiles (to be deposited in 2026 ref 1013435).

Table 11: Lidar Visualisation Parameters

Visualisation	Lidar Model Used	Description	Parameters
Multi-directional Hillshade	DSM and DTM	A 3 band shaded relief raster representing three azimuths calculated at a sun elevation angle of 35°	Elevation angle: 35° Azimuth: Red band:315° Green Band:22.5° Blue Band:90° Null value:255
Local Relief Model (LRM)	DTM	A trend removal visualisation to support interpretation of microtopography from lidar derived terrain models.	Radius: 10 metres (equivalent to 40 pixels) Null value:255