DigVentures

Under the Uplands

Assessment report for a community-based archaeological investigation at Victoria Camp and Settle Bank, Langcliffe Scar

Brendon Wilkins and Nigel Steel

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Prepared on behalf of:

Heritage Lottery Fund (Yorkshire and Humberside)

Compiled by:

Brendon Wilkins and Nigel Steel

with contributions by

Adam Stanford, Maiya Pina-Dacier, Anna Van Nostrand, Hugh Fiske, Rosalind McKenna, Mathilda Holmes and Johanna Ungemach

DigVentures
The Workshop
Victoria Yard
26 Newgate
Barnard Castle
County Durham
DL12 8NG

hello@digventures.com
0333 011 3990
@thedigventurers

Purpose of document

This document has been prepared as an Assessment Report and Updated Project Design for principle sponsor (Heritage Lottery Fund), landowner (Yorkshire Dales National Park Authority), statutory stakeholders (Natural England and YDNPA) and DigVentures' global crowdfunding community (stakeholder sponsors). The purpose of this document is to provide a comprehensive account of the 2016 field season, with specialist assessment of finds and samples.

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Executive summary

DigVentures undertook a community-based archaeological investigation within an area subject to a Limestone Pavement Order (LPO). The work was completed under planning permission decision number C/62/635 (issued on the 16th June 2016) and derogation agreement reference AG00346610 on land owned by the YDNPA. The proposed work was funded as part of the HLF supported 'Under the Uplands' digitisation and archiving project (HLF Project OH-14-07479), and was designed to contextualise the Romano British objects recovered from Victoria Cave with an investigation of the neighbouring Ben Scar Cave, Settle Bank (the Site). DigVentures developed a purpose built database of sites and artefacts recovered from Victoria Cave and Ben Scar Cave, supported by a landscape level photogrammetry survey of the research area (including Victoria Camp and Settle Bank). The overarching aim of the fieldwork was to provide baseline information to contribute to the future management, research and presentation of the Site, with public participation designed into every aspect of the investigation.

Results summary

The first stage of field work included a full metrically accurate 3D digital elevation model of Ben Scar Cave. This was supported with a low-level aerial photography survey using an Unmanned Aerial Vehicles (UAV) of the entirety of Settle Bank to place the site into its landscape context, which complemented the photogrammetry survey of Victoria Cave and Victoria Camp completed in August 2015. Two evaluation trenches were excavated: Trench 1, situated inside the drip line of Ben Scar Cave, was excavated to a depth of 0.70m. Four layers of sediment were excavated, all of which contained pieces of clastic material from roof fall and included clay and silt deposited by an active stream way. A darker sediment (1003) contained a number of bones from small mammals, the final excavated layer (1004) contained large fractured examples of flowstone. Trench 2 was situated to the south of the cave entrance in order to investigate a partially visible enclosure wall. A second wall was recorded which may be contemporaneous with the enclosure, though no datable archaeological material or stratigraphic evidence was able to support this hypothesis.

The project was supported by a comprehensive learning, engagement and activity plan, with a total of 2,267 people engaged at events and as part of the overall 'Under the Uplands' activity plan. A total of 52 3D photogrammetry models were created by public participants, comprising artefacts from the major phases of the Victoria Cave archive in several museum collections, with 3D modelling workshops held at the Yorkshire Museum, Saffron Waldon Museum, and the Craven Museum. Fieldwork was scheduled to take place during the 5th Annual Eurospeleo Congress, with dig and workshop activities scheduled into the official programming designed to offer practical advice and a toolkit for sporting cavers encountering potential archaeological material. An educational programme was delivered at local schools including, Austwick, Clapham, Giggleswick, Hellifield, Long Preston, Rathmell, Bentham and Settle, working with a total of 214 schoolchildren. The project also reached a substantial national audience via broadcast, social and print media, including local, regional and national papers as well as spots on both the BBC Breakfast programme and the Radio 4 Today show (10th October 2015), with a combined viewer/listenership of 11,598,578 people.
Victoria Cave Archive 3D Models: http://digventures.com/under-the-uplands/virtual-museum/
Dig Timeline: https://digventures.com/under-the-uplands/timeline/
Project Archive: https://digventures.com/under-the-uplands/ddt/browser.php
Landscape Models: https://digventures.com/under-the-uplands/background/the-landscape/

Acknowledgements

First and foremost, we would like to thank our project partners and current custodians of Ben Scar Cave, and in particular to Yorkshire Dales National Park Authority and Natural England who helped us throughout. Thanks are also extended to Miles Johnson, and Kat Hopwood-Lewis at Natural England for helpful advice and direction throughout the project and to the tenant farmer, Mr Robert Philip, for his permission to access the cave site. A special thanks to Robert Cowperthwaite of Stockdale Farm and the Yorkshire Subterranean Society for their continued help through the excavation.

The project was managed for DigVentures by Brendon Wilkins, with Lisa Westcott Wilkins in the role of Project Executive, supported by Nigel Steel, Manda Forster, Maiya Pina-Dacier, Raksha Dave, Hugh Fiske, Anna Van Nostram, Rosanna Ring, Johanna Ungemach, Shurbi Bhambri. Adam Stanford from Aerial-Cam managed aerial photography and photogrammetry. Specialist advice and assistance was provided by Rosalind McKenna and Mathilda Holmes. We are indebted to The Yorkshire Museum, Saffron Walden Museum, The Craven Museum, Tom Lord at Lower Winskill, The Yorkshire Subterranean Society and the organising committee at Eurospeleo 2016, all of whom provided assistance throughout the project.

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1 INTRODUCTION

1.1 Project background

1.1.1 This report details the results for a community-based research project focused on the Prehistoric and Romano-British landscape around Langcliffe Scar (hereafter 'the Site'). The investigation aimed to characterise the poorly understood archaeology associated with Victoria Camp and Settle Bank (Figure 1), helping to contextualise material from earlier excavations at Victoria Cave. A landscape-level aerial photogrammetry survey was undertaken, followed by targeted excavation at Ben Scar Cave (NGR SD 838644), a south facing cave and associated enclosure (Figure 1). The project design was devised according to the MoRPHE framework (Historic England 2006) outlining key archaeological research questions, roles, procedures, stages and outputs referenced throughout this document. Work was completed under a planning permission decision C/62/635 received on the 16th June 2016, and a derogation agreement issued by Natural England (No. AG 00346610) on the 24th March 2016. Field investigations took place between the 15th and the 23rd August 2016.

1.1.2 The results presented in this report detail the work undertaken in 2016, and provide an assessment of the results of the research. This report has been circulated for peer review and consultation with the wider specialist team. This report forms part of the archive and dissemination products which have been generated by the project, including the digital archive and metadata, the paper archive and the artefact and environmental material recovered, recorded and processed.

1.1.3 The results presented in this report detail that work and have been circulated for peer review and consultation with the wider specialist team (Review point 8). This report is one of a number of archive and dissemination products to have been generated by the project, including a digital archive and metadata, paper archive and artefact archives processed for temporary storage prior to discard/accession. All records are available on the 'Under the Uplands' project microsite, with links provided throughout this document where relevant: https://digventures.com/under-the-uplands/ddt/browser.php

1.2 Project scope

1.2.1 The overarching aim of the 'Under the Uplands' fieldwork was to provide baseline information to contribute to the future management, research and presentation of the Site, with public participation designed into every aspect of the investigation. Fieldwork undertaken in 2016 was designed to provide context for the Romano-British objects recovered from Victoria Cave during 19th and early 20th century excavations, seeking to understand the wider social and landscape context of this material. The excavation focussed on Ben Scar Cave on adjacent Settle Bank (NGR SD 838644), a previously unexcavated cave bounded by an enclosure of unknown origin, situated in close proximity to a complex of Romano-British settlement and field systems on Victoria Camp.

1.2.2 An assessment of all documentary sources concerning areas of archaeological significance in and around Langcliffe Scar defined a number of questions warranting further archaeological research (see Wilkins and Steel, Section 1.3, 2016). These included the need to define and establish the precise physical extent and condition of

the site with a programme of remote sensing and metric survey and to understand the chronological development of Ben Scar Cave refining its chronology, phasing and character with two targeted trenches (see Research Aims and Objectives, Section 3 below).

1.3 Public engagement and impact

1.3.1 The project was coordinated through a dedicated microsite hosted on the DigVentures website, including all site records, documentation and artefacts relating to the project – https://digventures.com/under-the-uplands/ This microsite is based on a bespoke Digital Dig Team recording system, facilitating the publication, presentation and archiving of data in real time from smartphones and tablets in the field - https://goo.gl/1B0HL2 The purpose of these dedicated pages was to augment offline workshops, such as the photogrammetry work shop held at The Yorkshire Museum on the 11th April 2016 https://goo.gl/S66NAk and Eurospeleo on Friday 19th August, with a package of interactive on-line resources – https://goo.gl/8dJw25

1.3.2 The project was funded with a grant from the HLF and supplemented through public crowdfunded contribution, with the professional excavation team assisted throughout by crowdsourced voluntary public participation. The volunteer dig team at Ben Scar Cave comprised 28 individuals in addition to 65 visitors to the site – a significant achievement given the remoteness and access issues. These included local residents as well as UK-wide and international visitors of all ages, walks of life, and different levels of archaeological experience and knowledge (Figure 8 Plate 8.7, 8.8 and 8.9). An audience evaluation was also undertaken (see Appendix 6) with 77% of site visitors indicating that the dig was the main reason for their visit. In addition, none of those who visited the site had previously been to the location, although 10% of all visitors identified themselves as living locally. Of the visitors who did not live locally, 60% indicated that they were staying in paid accommodation in the area.

1.3.3 The Digital Dig Team videos attracted an average mean reach of 18.1K on Facebook and tweets reached an average of 9.1K impressions per day during fieldwork – https://googl/Q1sV8G - helping to explain the archaeological aims of the project, as well as describing the site's history, to a wide and varied non-specialist audience.

1.4 Site description

1.4.1 Ben Scar Cave is situated within the Langcliffe and Attermire Local Nature Reserve (LNR), and lies within a larger area that has been designated as a Site of Special Scientific Interest (SSSI). The cave centres on SD843644 and comprises a solution cave in the Dinantian carbonate sequence (Gunn 1994, 14) with a 4.5m wide, overhanging entrance and associated curvilinear enclosure, defined by low stone and earthen banks utilising the natural 'basin and pavement' topography (Martlew 2007, 3; 2010) surrounding the entrance to the cave.

1.4.2 The land is owned by the Yorkshire Dales National Park Authority (acquired in 1972 on conservation grounds by West Riding County Council) and is leased for grazing under Environmental Stewardship terms (Higher Level Stewardship and Entry Level Stewardship: AG00346610). A road suitable for Vehicles lies approximately 750m from Ben Scar Cave, a public footpath is sited by the road and passes through the land owned by the YDNPA. The land is a 'basin and pavement' topography many of the

archaeological features use the scars and outcrops to enhance the edges of the encloses. The underlying soils consist of deep accumulations and shallow deposits which support the overlying vegetation consisting of Tufted Hair Grass (Deschampsia).

2 ARCHAEOLOGICAL BACKGROUND

2.1 Summary of previous work

2.1.1 Situated at an altitude of 455m OD, Victoria Camp (Figure 1 and Figure 4) and Settle Bank (Figure 2, Plate 8.2) command extensive views of the Ribble Valley to the south west, Pendle Hill to the south and, on a clear day, the Lake District fells. The Site comprises a complex of 14 hut circles and 20 associated enclosures in the absence of earthwork features yielding any closely datable finds (King 1970b, 47), the Site has been assigned to a general Iron Age/Romano-British settlement category on the basis of analogy with other rural Dales farmsteads (see Raistrick and Holmes 1962; and King 1986, 182). A basic relative chronology of successive abutting earthworks can be identified in the overall plan however, and it is entirely possible that this includes and masks earlier phases of use (for an example, see Fleming 1998, 148-53).

2.1.2 The 19 mounds identified within and between the Victoria Camp earthworks are all relevant to this question. Five of these are substantial enough to be burial mounds (one of which was previously excavated and found to contain bronze studded 'shield decorations'), with the remaining number likely to be clearance cairns or spoil heaps from previous excavations (see King, 1970b, 46-47). King's 1966 excavation (unpublished and unarchived) of one of three circular 'hollows' has been interpreted as a clay lined bowl furnace, associated with substantial quantities of barytes, malachite, haematite, slag and charcoal (ibid). Martlew's recent topographic survey (Figure 2) also provided indirect evidence for potential Romano-British mineral working, identifying small and large scale 'shafts' typically located where 'a mineral vein becomes visible in the natural outcrop' (Martlew 2007, 6).

2.1.3 Taking the Victoria Camp and Settle Bank complex as a whole, evidence for changing patterns of stock management, habitation and burial are regionally important, but the possibility of encountering well stratified Late Prehistoric/Romano-British mineral and metal working activity present a nationally important research opportunity. Evidence for organised extraction and early industry is extremely scarce in the region (Ottaway 2003, 149), evidence has been inferred from circumstantial evidence such as isolated lead pig finds (Raistrick 1973; Frere et al. 1990, 61-3) and presumed intensification as a consequence of Romanisation (White 2002, 40). If this dearth of evidence for industrial production is surprising, it is counterbalanced by a wealth of ritually deposited Romano-British material from cave sites on Brent and Attermire scar immediately adjacent to the Site (see Branigan and Dearne, 1992, 92; King 1970a, 450; Allen 1994).

2.1.4 Victoria Cave (SAM 13246 – 700m from the Site) is the principle site within this complex of subterraneous monuments, excavated in the mid 19th and early 20th century. The site has recovered the largest number of Romano-British artefacts from a cave site in the United Kingdom (Dearne and Lord 1998). Although these early investigative works substantially modified the cave's pre-excavation topography, a reassessment of the finds, photos and original site notebooks has enabled a reconstruction of the site's

excavation history, stratigraphy, and artefact distribution (Dearne and Lord 1998, 16). Access to the cave was restricted in the Romano British period to a narrow, potentially prospected, entrance outside Chamber A, necessitating a crawl until reaching a more spacious secondary Chamber B (*ibid,* 139). Numerous artefacts were deposited in areas of total darkness, with a combination of impressive natural features (stalagmite and standing water pools) and cultural modifications (a possible wall modifying the entrance into Chamber B) observed by the original excavators (*ibid,* 18).

2.1.5 Focussing on the artefactual evidence, a preponderance of personal adornment and dress items (37% of the 450 copper alloy items) and Mortaria (representing 21.5% of diagnostic rim sherds) deviate substantially from what would typically be expected of a rural settlement site (*ibid,* 141). Butchery patterns on recovered animal bone (such as the use of heavy bladed cleavers) are also indicative of a military presence, suggesting that the intensification of Romano-British cave use was an important factor in the transition from upland 'frontier' to 'militarised zone'. Brooches similar to the copper alloy spiral examples in Victoria Cave have been recovered from military contexts at both Ribchester and Newstead Forts (Oliver 2000), and all are redolent of fibulae and pendants originating from the Roman provinces of Illyricum and Dacia Trajana (Howard 2005, 33). Auxiliary troops from southeast Europe were garrisoned in the region, and historically documented practices of ritual deposition within caves in the Balkans may be a clue to the emergence and elaboration of this practice in the Dales (ibid, 53).

2.1.6 To address such questions at Victoria Cave, and in particular, explore the potential links between the military and civilian population, it will be necessary to assess the wider social and landscape context typified by the adjacent site at Victoria Camp and Settle Bank, which includes Attermire Camp. With no previous record of excavation, Ben Scar Cave is in a prime, south-facing setting with commanding views of significant hilltop sites (such as Pendle Hill). The likelihood of the cave being utilised during the Romano British period is high, considering the fact that the cave lies between, Victoria Camp and Attermire Camp.

2.1.7 Following Gell (1998, 222), the anthropological concept of biography could be usefully applied to any artefact recovered from here, emphasising the changing social relationships that connect people and things (as distinct from the 'use life' of things, or the 'narrative of events' that comprise a person's life). The notion of symbolic communication in this scheme is considered to reinforce the meaning derived from the object's materiality (the sensory impact of a pitch black cave for instance) combined with the object's capacity to perform as a proxy for its owner's social identity (such as a brooch, given, bequeathed or heir loomed). This approach can also be applied to entire landscapes – in effect, a collection of artefacts superimposed one on top of the other – and the notion of a managed 'wildscape' with symbolic and economic importance amplified by access to metals has been mooted for the Craven area (Taylor 2006).

2.1.8 Such insights offer many profitable research leads, however, these higher-level considerations depend on a sound, well-dated evidence base of which Victoria Camp, Settle Bank and Ben Scar Cave are unfortunately lacking. The following aims, objectives and methodologies were proposed to address this deficit, and evaluate the Site's potential research dividend.

3 PROJECT AIMS AND OBJECTIVES

3.1 Aim 1 – Define and establish the precise physical extent and condition of the Site with a programme of remote sensing and metric survey

- Q1. Determine the layout of the enclosure and any associated subsurface archaeology and refine this by remote survey.
- Q2: Identify topographic anomalies visible immediately adjacent to the structure and investigate whether this is evidence for anthropogenic activity.
- Q3: Identify any phasing in the topographic or remote sensing anomalies indicative of an extended period of use.

3.2 Aim 2 – To understand the chronological development of Ben Scar cave, refining its chronology, phasing and character with two targeted trenches

- Q4: Corroborate chronological phasing for the Site, including the presence of earlier and later features and structures, as defined in Aim 1.
- Q5: Identify the typical and atypical features of the enclosure and examine if these influence the functions and activities that took place.
- Q6: Understand the landscape setting and character surrounding the cave and enclosure and examine how its location, design and development was shaped by this.

3.3 Aim 3 – Understand the Site's archaeological and palaeoenvironmental conditions

- Q7: Identify the current state of the archaeological and palaeoenvironmental material across the site.
- Q8: Identify whether deposits and artefacts survive well, and if the depth of the artefacts has influenced the state of preservation.
- Q9: Substantiate the palaeoenvironmental data recovered from sampling in the trenches and whether this informs us about seasonal farming regimes, specialised food processing or industrial activities that may have taken place at the site.
- Q10: Identify the range and spatial patterning of artefacts recovered from the settlement, and if this can inform our understanding of the use of the upland Pennine landscape and utilisation of wider resources.
- Q11: Understand whether we can increase our understanding of the local environment in the Romano British period in terms of the environmental manipulation and differential exploitation of natural resources.

3.4 Aim 4 – Making recommendations, analysis and publication

- Q12: Determine what an integrated synthesis of the results of this work with previous interventions (such as King 1970a; and Martlew 2007) tell us about the Site and it's setting.
- Q13: Determine, whether we can articulate a link between Ben Scar Cave, Victoria Camp and Victoria Cave during the Romano/British period in the light of the evidence recovered from this and previous investigations.
- Q14: Identify what recommendations can be made to protect, conserve and enhance the heritage asset, in the light of the issues and opportunities identified under Aims 1 – 3.

4 METHODOLOGY

4.1 Introduction

4.1.1 The archaeological fieldwork was carried out in accordance with the methodology defined in the 'Under the Uplands Project Design for a community based archaeological investigation at Victoria Camp and Settle Bank, Langcliffe Scar' (Wilkins and Steel 2016). All work was undertaken in conjunction with best practice, national guidelines and published standards (*ibid*). Methodological summaries are presented below, following detailed descriptions in the Project Design linking specific techniques to aims and objectives (*ibid*, Section 10).

4.2 Aerial photogrammetry survey

4.2.1 Remote sensing work (completed on 18th August 2016) addressed the research questions associated with Aim 1 above (see also Wilkins and Steel 2016, Appendix 3). Five photogrammetry surveys were undertaken during the course of the project, Victoria Cave, Ben Scar Cave, Victoria Camp, Settle Bank and Victoria Cave Scar (Appendix 5). The survey of both the caves was undertaken using a Nikon D800 camera. In total, 136 images were taken in Victoria Cave – https://goo.gl/WPwfwp - with a focal length of 14mm. The Ben Scar cave survey included 183 images with a focal length of 16mm – https://goo.gl/nVWkJb A UAV mounted photographic survey using an FC350 camera was undertaken on the landscape surrounding Victoria Camp and Settle Bank to complete a metrically accurate 3D digital surface model (DSM). The survey at Victoria Camp comprised 251 images with a focal length of 3.61mm, flying at an altitude of 72.3m and covering 0.384km^2 – https://goo.gl/53f0cw - a comparable survey at Settle Bank covered a greater area (0.632km^2) consisting of 845 images at an altitude of 83m https://goo.gl/rIWAEO The resulting DSM (Figures 3, 4 and 5) is intended to provide researchers with an accurate and versatile record of the form and condition of the earthwork features for immediate analysis as well as providing a baseline dataset for comparison with future surveys to determine weathering rates and potential damage.

4.3 Excavation methodology

4.3.1 Excavation took place between 14th – 23rd August 2016, addressing the research questions associated with Aims 2 and 3. This incorporated a programme of targeted intervention designed to ground-truth the results of metric survey, identifying and investigating any archaeological features encountered, and obtaining appropriate samples for archaeological, artefactual and palaeoenvironmental assessment.

4.3.2 During 2016, two hand-dug trenches were excavated, with both trenches marked out on the ground using a DGPS prior to the commencement of work, and initially scanned for surface finds with a metal detector prior to excavation. Turf was removed by hand in 40cm x 60cm turves and carefully stacked away from the edge of the trench, the integrity of the turves was maintained by constant monitoring, covering with sheeting and regular watering, as described in the Project Design (Wilkins and Steel 2016, 37). On completion the subsoil was reinstated followed by the topsoil, the turves were carefully replaced and watered, leaving the trench and surrounding area in a similar condition to pre-excavation (*ibid*).

4.3.3 Trenches were hand-cleaned, planned and photographed prior to hand-excavation. Any archaeological features and deposits exposed in the evaluation trenches were

hand cleaned and excavated to determine their nature, character and date. Carefully chosen cross-sections were then excavated through features to enable sufficient information about form, development, date and stratigraphic relationships to be recorded. All excavated features were 100% dry-sieved for artefacts using a 5 mm gauge, and/or wet-sieved off site using a standard archaeological floatation device.

4.3.4 A complete drawn record of the evaluation trenches comprises both plans and sections, drawn to appropriate scales and annotated with coordinates and AOD heights. A single context recording system was used to record the deposits, and a full list of all records is presented in Appendix 1. Layers and fills are recorded (001). The cut of the feature is shown [001]. Each number has been attributed to a specific trench with the primary number(s) relating to specific trenches (i.e. Trench 1, 1001+, Trench 2, 2001+). Features were also specified in a similar manner, pre-fixed with the letter F (i.e. Trench 1, F101+, Trench 2, F201+).

4.3.5 All interventions were surveyed using a DGPS tied into the Ordnance Survey grid. During 2016 all recording was undertaken using the DigVentures Digital Dig Team recording system. Digital Dig Team is DigVentures' bespoke, cloud-based, open data recording platform, designed to enable researchers to publish data directly from the field using any web-enabled device (such as a smartphone or tablet) into a live relational database. Once recorded, the born-digital archive is instantly accessible via open-access on a dedicated website, and published to social profiles of all project participants (community, professional and specialist). Links to all individual trench, feature and context records are provided in Appendix 1 from where all associated finds, samples, plans, sections, photographic records and 3D models can also be explored.

4.4 Health and safety

4.4.1 All work was carried out in accordance with its company Health and Safety Policy, to standards defined in The Health and Safety at Work Act 1974, and The Management of Health and Safety Regulations 1992, and in accordance with the SCAUM (Standing Conference of Archaeological Unit Managers) health and safety manual Health and Safety in Field Archaeology (1996), and DigVentures Health and Safety Policy.

5 REMOTE SENSING AND LANDSCAPE SURVEY

5.1 Results

5.1.1 The aerial photogrammetry work completed has enabled DigVentures to establish the precise physical extent and condition of the Site, and the complex of archaeological features which are extant at Victoria Camp and Settle Bank (Aim 1, see Figures 3 to 5). The difficulty of observing features masked by vegetation and geological features, has been substantially aided by the ability to view the landscape as a hillshade model (Figure 3). This model has markedly increased the visibility of features recognised by Martlew in his 2007 landscape survey (Figures 2). Martlew's extensive survey of 2007 not only provided a record of archaeological features as previously discussed (Section 2), but also recognised the worsening issue of visibility due to vegetation growth across the landscape. Archaeological evidence was noted as being seriously affected by the domination of established clumps of *deschampsia*, which Martlew suggested 'can only be expected to get worse' (2007). Indeed, from the ground in 2016, it would be difficult

to identify the relict landscape features, with vegetation actively hampering current and future research which aims to build on Martlew's important work. The intention of the remote sensing survey undertaken in 2016 was to use the aerial photogrammetry work to relocate these previously identified archaeological features, and locate them within an accessible 3D model. The resulting model can be found on the project microsite – https://goo.gl/dVugOw alongside an online database which includes the results of Martlew's original survey work – https://goo.gl/P5NzD9

5.1.2 The landscape-level survey work has successfully shown that areas known to be challenging due to vegetation growth, can be investigated remotely and in fine detail using aerial photogrammetry. An important gazetteer of data relating to the multi-period landscape at Victoria Camp and Settle Bank (Martlew 2007) has, as a result, been made both accessible and once again visible for scrutiny and further investigation. The annotated model provides a direct link between the archaeology visible and the descriptions and features which Martlew identified, providing an interactive view of the relict landscape.

6 EXCAVATION RESULTS

Brendon Wilkins, Nigel Steel and Johanna Ungemach

All digital context and feature records have been archived on the Digital Dig Team system and can be reviewed here: https://goo.gl/scqeWa

6.1 Introduction

6.1.1 Two hand-excavated evaluation trenches were investigated, with the location determined in response to the work completed with remote sensing and informed by Martlew's earlier topographic study (Martlew 2007, 13). One trench was situated within the cave entrance area; the second was dug at the intersection of an enclosure wall outside the cave. The principle purpose of these excavations was to understand the chronological development of Ben Scar Cave refining its chronology, phasing and character (Aim 2) and to understand the Site's archaeological and palaeoenvironmental conditions (Aim 3).

6.1.2 Each trench was designed to address a specific research objective, and these are discussed with the excavation results below. Figure 1 shows the overall location of each targeted area, and Figures 6 and 7 provide illustration of individual trenches containing archaeological features. Detailed descriptions of each and every context are included in Appendix 1, organised by trench number.

6.2 Stratigraphic sequence

6.2.1 The stratigraphic sequence fluctuated in depth across the site predominantly due to natural height variation with natural sloping topography. Trench 1 comprised four successive layers of sediment and clay (Figure 6), while Trench 2 contained two wall features (2003 & 2004) with underlying and adjacent layers of soil mixed with scree (Figure 7) and (Appendix 1).

6.3 Ben Scar Cave

6.3.1 Ben Scar Cave (NGR SD843644) was investigated with a small hand-excavated trench within the confines of the cave entrance close to the drip line, set in the central area towards the northeast wall of the cave. A pronounced area of cattle tread was observed against the northwest wall; the trench was situated in order to avoid conflict with cattle using the cave during the evening (Plates 8.1-8.3). This investigation also afforded the opportunity to examine evidence for anthropogenic use of the cave by excavating an area that was higher than the cattle thoroughfare at the northwest wall, in an area that seemed to benefit from extended period of sunlight in the south facing location.

Trench 1 (Figure 6) https://goo.gl/CtyVg4

6.3.2 Trench 1 measured 2m x 2m, and was excavated down to a depth of 0.70m before bad weather and an active water course halted excavation. The deposits comprised four overlying layers of both endogenetic and exogenetic substrates which contained limestone clastic material, angular pebbles (diameter 0.10m–0.30m) and many large limestone blocks, a result of break down or roof collapse. Trench 1 was situated within the mouth of the cave (at 452m OD) just behind the drip line. It was hand dug in order to maintain a strict regime of dry sieving that facilitated recovery of all artefactual and dating evidence within the depositional sequence. Bulk samples were taken for further recovery of artefactual and palaeoenvironmental evidence. Unfortunately, no diagnostic or datable artefacts were recovered during the excavation. A relative stratigraphic sequence could be determined, however, and the narrative below provides a description of what was observed.

6.3.3 The earliest stratigraphic layer (1004) was a soft mid yellowish brown clay extending 0.15m in depth to the limit of excavation. It contained abundant limestone clasts and angular cobbles formed by breakdown from the cave roof and water laid sediments from a stream active in times of heavy rain. Small mammal bone and gastropod shell was recovered from the deposit, in addition to large fragments (diameter 0.10m–0.15m) of flowstone.

6.3.4 Overlying (1004) was a dark greyish brown fine silty clay (1003) which contained frequent limestone clasts and angular cobbles. The deposit was 0.10m thick and contained animal bone. A firm light greyish brown clay (1002) was overlying (1003). This contained limestone clasts, angular pebbles and a small boulder. The depth of (1002) was variable throughout the trench, ranging from 0.12m in the south to 0.35m in the east suggesting possible erosion along the western edge of the excavated deposit. Animal bone and a small ferrous object were recovered from this deposit (see Appendix 3). This deposit was overlay by the most recent layer in Trench 1, comprising a firm mid orange brown silty clay (1001) extending to a depth of 0.10m – 0.30m, containing frequent inclusions including limestone clasts and angular pebbles.

6.3.5 A small number of finds were recovered from the excavation at Ben Scar cave (Appendix 4). Animal Bone (Appendix 3, and Section 8) recovered from Trench 1 included three small animal bones from (1002), (1003) and (1004); the elements were from small mammals, the condition of the bone from the upper deposits was in a better state of preservation than bone recovered from the water-logged deposit (1004). A good example of laminated flowstone was recovered from (1004) along with terrestrial mollusc shell. A highly damaged and corroded ferrous object recovered from (1002)

was unrecognisable, the location of this artefact in the upper deposits suggests that it was comparatively modern.

6.4 Enclosure wall

6.4.1 The enclosure wall was identified in Roger Martlew's survey (2007) and consists of roughly hewn limestone extending as a sub-circular feature approximately 27m long around the entrance to Ben scar cave. The purpose of the excavation was to explore the relationship between the wall, the surrounding landscape and Ben Scar Cave, the recovery of any finds may provide dating evidence.

Trench 2 (Figure 7) https://goo.gl/xUxb4q

6.4.2 Trench 2 measured 2m x 8m and was situated at the intersection of an enclosure wall previously investigated through an aerial and topographic survey by Roger Martlew (2007, 13). It was excavated by hand in order to assess the enclosure's structural character and its stratigraphic relationships, as well as to recover dating evidence. Archaeological features were investigated and appropriate samples for archaeological, artefactual and palaeoenvironmental assessment were recovered.

6.4.3 Natural limestone pavement (2006) was recorded at 447m OD to the south and central area of the trench, where it had not been truncated by archaeological features. A clastic layer of mid orange brown silty clay (2005) and (2002) containing a high percentage of scree, 0.15m and 0.20m thick, was found to overlie the unmodified natural subsoil in the northern, central and southern area of the trench. This layer extended beyond the limit of excavation to the east and west. The scree was built up beneath the enclosure walls and could have been used as a foundation structure. A soft mid greyish brown calcareous silt (2007) overlay the scree in the northern section of Trench 2, with an average depth of 0.10m. This layer contained less that 5% limestone clasts, and no archaeological finds were recovered from either dry sieve or floatation.

6.4.4 A secondary wall (2003) was constructed onto layer (2007), and was made up of large limestone cobbles and boulders. It survived to a height of around 0.41m and width of 0.60m, comprising two roughly lain drystone courses. The wall extended east–west and was situated in the northern end of the trench, terminating in the eastern side of the trench and extending beyond the limit of excavation at the west. Dating evidenced was not recovered from this feature but due to location and alignment was assumed to be either contemporaneous with the enclosure wall, or a later subdivision potentially to construct a lean-to shieling.

6.4.5 A large, limestone semi-circular enclosure wall (2004) overlay a silt clay layer (2005). The exposed wall was aligned east–west and measured 2.75m x 2m x 0.45m. The limestone blocks were undressed, with no evidence of mortar, and the blocks on the lower bedding laid along a stretcher course. To the immediate south there was evidence of wall tumble that extended for two metres. No diagnostic finds were Dating recovered from this feature, and it was overlaid by a dark greyish brown fine silty calcareous topsoil deposit.

6.4.6 Three artefacts were recovered from Trench 2 (Appendix 4), a fragment of clay tobacco pipe and vertebrate remains from (2002). The tobacco pipe did not retain any identifying features and the fragmented animal bone from a small mammal remained in good condition due to the calcareous nature of the deposit. A large rounded stone

(diameter 80mm, length 100mm) of millstone grit was recovered from (2005), a distal end rubbed smooth, suggests possible evidence of grinding.

7 PALAEOENVIRONMENTAL RESULTS

Rosalind McKenna

All digital records relating to palaeoenvironmental samples from the Site can be reviewed on Digital Dig Team: https://goo.gl/5r8CYp

7.1 Introduction

7.1.1 A programme of soil sampling was implemented during the excavation, which included the collection of soil samples from sealed contexts. A list of samples can be found in Appendix 2. The aim of the sampling was to:

- assess the type of preservation and the potential of the biological remains (Aim 3, Q7 and Q8)
- inform understanding of the local environment in the Romano British period in terms of the environmental manipulation and differential exploitation of natural resources (Aim 3, Q11)
- assess the state in which the palaeoenvironmental remains are being successfully preserved in-situ and the level of impact from agriculture and bioturbation (Aim 3, Q7).

7.2 Results

7.2.1 Seven samples are the basis of this investigation (see Table 1, Appendix 2). Charred plant macrofossils were not present in any of the samples. What is thought to be modern plant remains were present in six of the samples, where grass (POACEAE), nettle (Utrcia sp.), dock (Rumex sp.), dandelion (Arctium sp.) and tufted hair grass (Deschampsia sp.) were recorded in small numbers (see Appendix 2). These probable modern contaminants indicate disturbance of the archaeological features. The presence of root / rootlet fragments within all of the samples further confirms this, and it may be due to the nature of some features being relatively close to the surface, as well as deep root action from vegetation that covered the site. The presence of earthworm egg capsules, together with the remains of insect fragments within some of the samples, further confirms this. Charcoal fragments were present in two of the samples, scoring a '1' on the semi quantitative scale. The preservation of the charcoal fragments was very poor. There were only singular fragments in the two samples, and these were both too small in size and too poorly preserved to contain any identifying morphological characteristics.

7.3 Conclusion

7.3.1 The samples produced very little environmental material of interpretable value – only to state the presence of a small amount of charcoal in two samples. This may indicate that preservation is very poor and thus material does not survive, or the absence may reflect a lack of palaeoenvironmental material in the contexts that were excavated.

7.4 Recommendations and archive

7.4.1 The samples have been assessed, and interpretable data has been retrieved and is the basis of this report. No further work is required on any of the samples. Extracted fossils and flots are currently stored with the site archive in the stores at DigVentures, along with a paper and electronic record pertaining to the work described here.

8 FAUNAL REMAINS

Mathilda Holmes

8.1 Introduction and method

8.1.1 A small assemblage of animal bone was recovered from Trench 1, in Ben Scar cave and Trench 2, the associated enclosure. The absence of dating evidence makes the assemblage hard to place temporally. All bones and teeth were recorded, although for some elements a restricted count was employed to reduce fragmentation bias: vertebrae were recorded when the vertebral body was present; and maxilla, zygomatic arch and occipital areas of the skull were identified from skull fragments. A basic recording method was employed to assess the potential of the animal bone assemblage (Aim 3, Q7 and Q8). The number of bones and teeth that could be identified to taxa were noted, as were those that could be used to age the major domesticates (tooth wear and bone fusion).

8.1.2 The quantity of bones likely to be used for metrical data were also recorded. Other information included condition (good, fair or poor) and the incidence of gnawing and butchery marks (Appendix 3, Table 2). All fragments were recorded by context including those that could not be identified to taxa. Recording methods and analysis are based on guidelines from Baker and Worley (2014). All contexts were sieved which means that the chances of recovering the bones of small mammals, birds and fish is good.

8.2 Results

8.2.1 Bones were generally in good condition, although those in context (1004) were slightly less well preserved (Appendix 3, Table 1). There were no signs of butchery or gnawing on the bones, and only one fragment (a sheep pelvis from context 2001) was blackened, which could have resulted from staining or burning. This implies that there was little processing by humans in the form of either butchery or burning. Similarly, the assemblage seems to have been buried rapidly before canids or rodents could access the bones. A number of Associated Bone Groups (ABGs) were recovered from the cave trench which also indicates that there was minimal disturbance to the assemblage.

8.2.2 Despite the very small sample size, there was considerable diversity in the range of taxa recorded. While cattle and sheep/ goat remains came from domestic animals there were a number of wild taxa (Appendix 3, Table 3). Rabbit bones were most common overall, although many belonged to ABGs, and occasional finds of micromammals (including field vole), passerine (small bird such as a robin) and frog or toad were testament to the extensive sampling programme. It was not possible to determine whether the canid remains came from dog or fox. A number of rabbit ABGs were

recovered from a minimum number of three individuals, all recovered in the top layers of Trench 1:

- Context (1001): Rabbit pelvis, femur, tibia and fibula.
- Context (1002): Rabbit hind limb (pelvis to metapodials), forelimb (scapula to metapodials), skull, mandible and vertebrae and the humerus from a separate juvenile.
- Context (1003): Rabbit pelvis, tibia and metapodials.

8.3 Potential and significance

8.3.1 Good use of sieving and sampling means that the animal remains are representative of past fauna living in and around the area. However, the sample is too small to be useful as comparative data, and the presence of rabbit leads to the possibility that much of the assemblage is intrusive. As rabbits were only widely introduced into Britain in the 12th century, and only in the parks of the aristocracy, the earliest likely date for these remains at Ben Scar cave is the high medieval period. However, the rabbit bones are not fresh either, which further suggests that they were not incorporated recently.

8.3.2 At its most basic the zooarchaeological remains indicate that cattle, sheep/goat and dogs or foxes populated the landscape in the past. Although there are dog or fox remains, they do not appear to have been the agents of accumulation given the absence of evidence for gnawed bones, and number of ABGs. The presence of rabbit, field vole, frog/ toad and small bird bones adds further definition to the understanding of the environment of the site in the past, indicating the existence of damp areas with a source of standing water, open grass, heath or moorland, and scrub or trees nearby. There is little potential for these animal remains to be useful when considering human occupation of the site, given the small sample size, although they do indicate the presence of domestic animals in the area. As such they will be of limited value for use as comparanda with other sites in the region.

8.4 Recommendations and archive

8.4.1 Given the small sample size quantification of the assemblage would be unrepresentative, and of little use for the better understanding of human-animal relationships in the region. On a site-specific level, however, there is some value in the assemblage for environmental reconstruction. It is not recommended that further work is carried out on the animal remains from Ben Scar cave.

9 ARTEFACTS

9.1 Finds summary

9.1.1 No small finds were recovered during the excavations, and only a small quantity of artefactual material was recovered as bulk finds (see Table 4, Appendix 4). The majority of finds were modern, such as the gun shell from (2001), or the iron and other metal recovered from (1002). Only one find may be of an older date, a possible worked stone recovered from (2005) which could be a rubbing stone from a quern. The stone appears to be a waterworn cobble with some indication of use-wear, perhaps from

grinding. The stone measures 100mm in length with a diameter of 80mm, and weighs 398g. A similar example was recorded at Laithes Farm, Yorkshire (see Forman 2015, 38). The objects have been fully recorded, and given their relatively low information value, it is not recommended that they are accessioned, but will be retained for use in DigVentures school teaching collections.

10 DISCUSSION

10.1 Introduction

10.1.1 The work presented here details the excavation at Ben Scar Cave, undertaken between the 14th – 23rd August 2016. These results are intended to provide the site custodians with baseline information on Ben Scar Cave, and are presented with a high degree of confidence that archaeological features or significant deposits within the trenches were recognised and recorded where present. The conclusions drawn from this data is summarised below, with potentially fruitful research objectives and specific recommendations for further work to encompass other potential targets in the Settle Bank/Victoria Camp complex will be detailed in an Update Project Design.

10.2 Aim 1 – Define and establish the precise physical extent and condition of the Site with a programme of remote sensing and metric survey

10.2.1 Aim 1 focussed on non-intrusive remote sensing, setting out to define and establish the physical extent of previous surveyed and unsurvey areas (Settle Bank, Victoria Camp and Langcliffe Scar). A mix of different methodologies were employed, including low-level unmanned aerial vehicle (UAV) aerial photography, photogrammetry and digital terrain modelling. Two main areas were selected for survey, addressing research questions Q1, Q2, Q3, Q4 and Q6. The purposes of this work was to establish whether the layout of the enclosure and associated sub-surface structures could be established by remote sensing, and help to target hand and machine dug trenches to 'ground truth' any significant anomalies. The focus was on establishing the position of unidentified topographical anomalies visible immediately adjacent to the structure in addition to identifying any phasing in the topographic results that may be indicative of an extended period of use. Low-level aerial photography and targeted trench excavation has helped to further define the enclosure in relation to the Ben Scar Cave, and it is highly recommended that this area is subject to protective measures to guard against the impacts of grazing.

10.2.2 The project has accumulated a substantial body of remote sensing data, including topographic 3D digital terrain modelling and low level aerial photography (using Unmanned Aerial Vehicle mounted cameras). No further data capture is proposed, and the results have been collated into a site-wide GIS and synthesised into a metrically accurate visualisation animation. Further analysis of this data will assist with providing a landscape context to any future archaeological intervention. Of particular interest are potential landscape 'zones' enclosing industrial and domestic activities, such as Victoria Camp, Settle Bank and Attermire Camp, alongside distinct topographical features such as 'the mere', the east-west valley along the mid Craven fault at Stockdale Beck and the cave sites along Brent Scar, Attermire Scar and Ben Scar.

10.2.3 Further targeted ground-based remote sensing would be beneficial to complete magnetometry and resistivity survey of Victoria Camp and Attermire Camp this would

enable a comparison with the digital terrain model and could support further fieldwork including targeted trenches at Victoria camp, Attermire camp and Ben Scar Cave which would explore issues surrounding land use in the Romano-British period.

10.2.4 Previous excavation undertaken at Victoria Camp and Attermire Camp by Alan King postulated a connection between the ore smelting in a possible bowl furnace at Victoria Camp and the extraction of ore from surface hollows or shallow pits in the surrounding area (King 1970b). Further targeted ground-based remote sensing in this area supported by targeted trench interventions would help support these linkages, and provide further understanding of the Romano-British metalworking industry in this area, and eventual deposition in cave sites.

10.3 Aim 2 – To understand the chronological development of Ben Scar cave, refining its chronology, phasing and character with two targeted trenches

10.3.1 Aim 2 was devised to characterise the results of the non-invasive survey, with a programme of hand-dug test trenches (Q4, Q5, Q6 and Q7). Trenches were designed to understand the chronological development of Ben Scar Cave and the enclosure that borders the cave scar, refining the chronology, phasing and character. To these ends, Trench 1 was located inside the mouth of the cave and excavated to a depth of 0.70m. Large pieces of laminated flowstone were recovered from the earliest archaeological deposit (1004) indicating that the calcite was transported or it developed in situ during a period where the climate had ameliorated, and potentially sealing undisturbed archaeological horizons contemporary with surface earthworks. Unfortunately, severe weather and site flooding meant that excavation could not proceed beyond this point, and though further excavation would be worthwhile, these logistical constraints will require mitigation.

10.3.2 Trench 2 targeted the enclosure wall surrounding the entrance to Ben Scar Cave. The earliest deposits (2002) and (2005), were angular scree that formed as the talus slope which fronts Ben Scar Cave. The scree beneath the wall (2003) had been worked to provide a level platform onto which the wall was sited. Excavation in 2016 uncovered the enclosure wall (2004) and a further wall (2003). The small number of artefacts recovered did not give any reliable dating evidence which could have provided chronological phasing or any association with Ben Scar Cave. It is not unreasonable to suggest that the short section of wall exposed (2003) at the north end of Trench 2 is contemporaneous with the enclosure wall (2004) and may have been a small holding pen for livestock.

10.4 Aim 3 – Understand the Site's archaeological and palaeoenvironmental conditions

10.4.1 Aim 3 was designed to increase understanding of the palaeoenvironmental conditions and burial environment of the site. To these ends targeted interventions were undertaken to establish the impacts of farming and bioturbation on the subsurface archaeological deposits (Q8), supported by a systematic sampling strategy with floatation undertaken on samples from all features and dry sieving of all excavated deposits through a 5mm gauge. Though comprising a relatively stable burial environment, the presence of root / rootlet fragments within excavated deposits indicated deep root action, with earthworm egg capsules and insect fragments reflecting an ecologically active, bioturbated environment. This was also reflected by the animal bone assemblage, wit rabbit bones, field vole, passerine and frog or toad

all attesting to an active environment. No evidence for large burrowing animals (such as Badger) was observed, with the principle impacts derived from anthropogenic activities, including cattle grazing and climbing.

10.5 Aim 4 – Updated Project Design

10.5.1 The Ben Scar Cave excavation has been successful in collating the data from Aims 1-3 (Q11), providing evaluative data on which to baseline future management of the site. Though further comparative and landscape analysis will be necessary to put these results into a broader landscape context, this project has added to our existing knowledge base for the site (established by King 1970b; and Martlew 2010). By collating the results from previous investigations (Q13), in addition to creating a new record for previously unpublished and unarchived interventions (Q14), the results presented here will assist the current site custodians with baseline data on the condition and character of the Site, and lead to improvements in how the site is actively managed and presented.

10.5.2 Although no securely datable archaeological finds were recovered, the sedimentary record suggests a high potential for encountering archaeological remains beyond the depth of the flowstone encountered in the lowest layer in Ben Scar Cave (1004). Given the wealth of Romano-British surface remains surrounding the cave, in addition to the record of contemporary cave deposition in adjacent sites along Attermire and Langcliffe Scar, further excavation at Ben Scar cave is recommended. To achieve this goal, substantial logistical constraints will need to be overcome, in addition to the goodwill and support of all stakeholders. That the project attracted such substantial media coverage, alongside success in both crowd and lottery funding, is testament to the depth of public interest in seeing such work happen.

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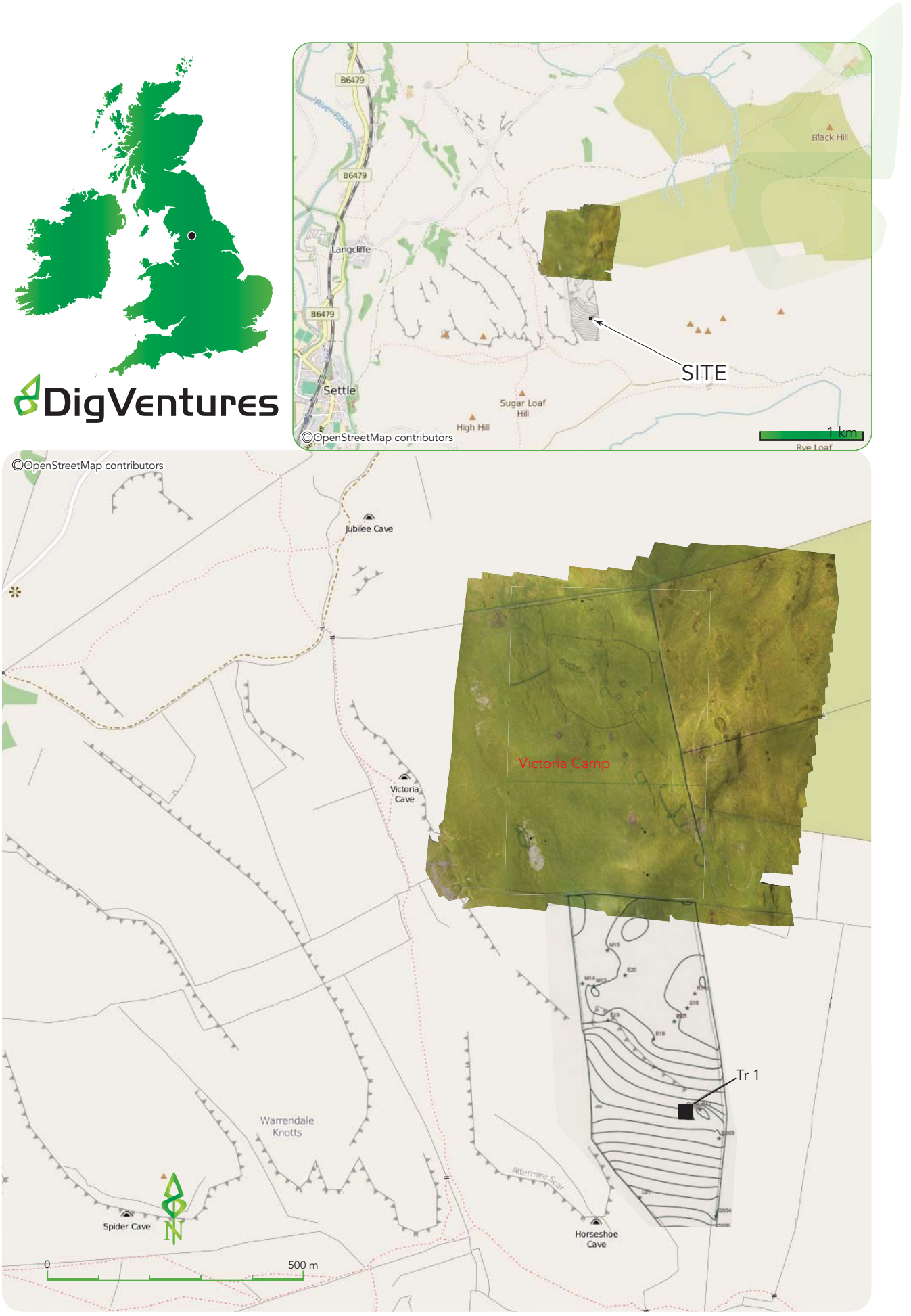


Figure 1 - Under the Uplands: Site and trench location Settle Bank and Victoria Camp.

Figure 2 - Under the Uplands: Plan of Settle Bank (from Martlew 2007).

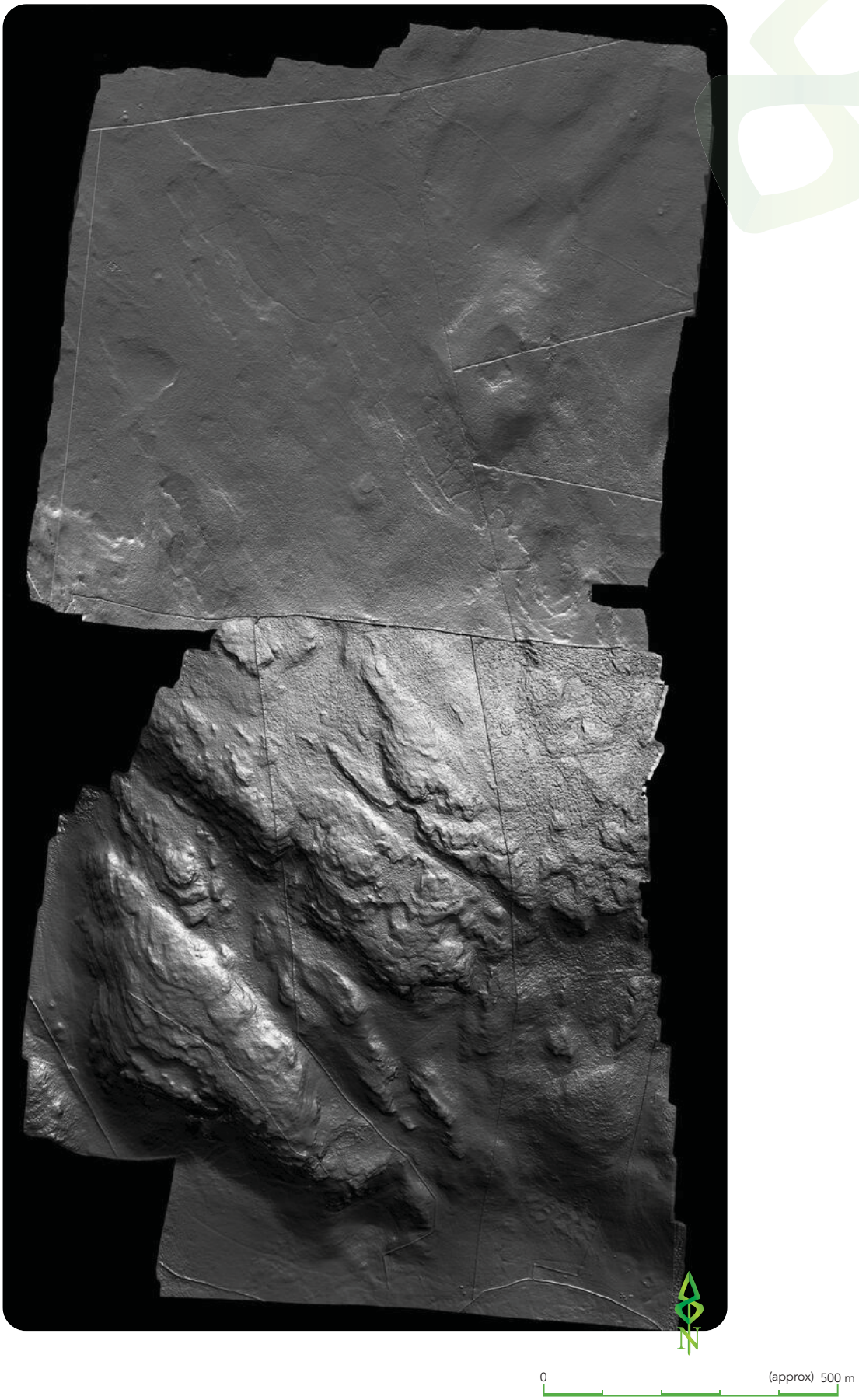


Figure 3 - Under the Uplands: Aerial photogrammetry hillshade model of Victoria Camp and Settle Bank.

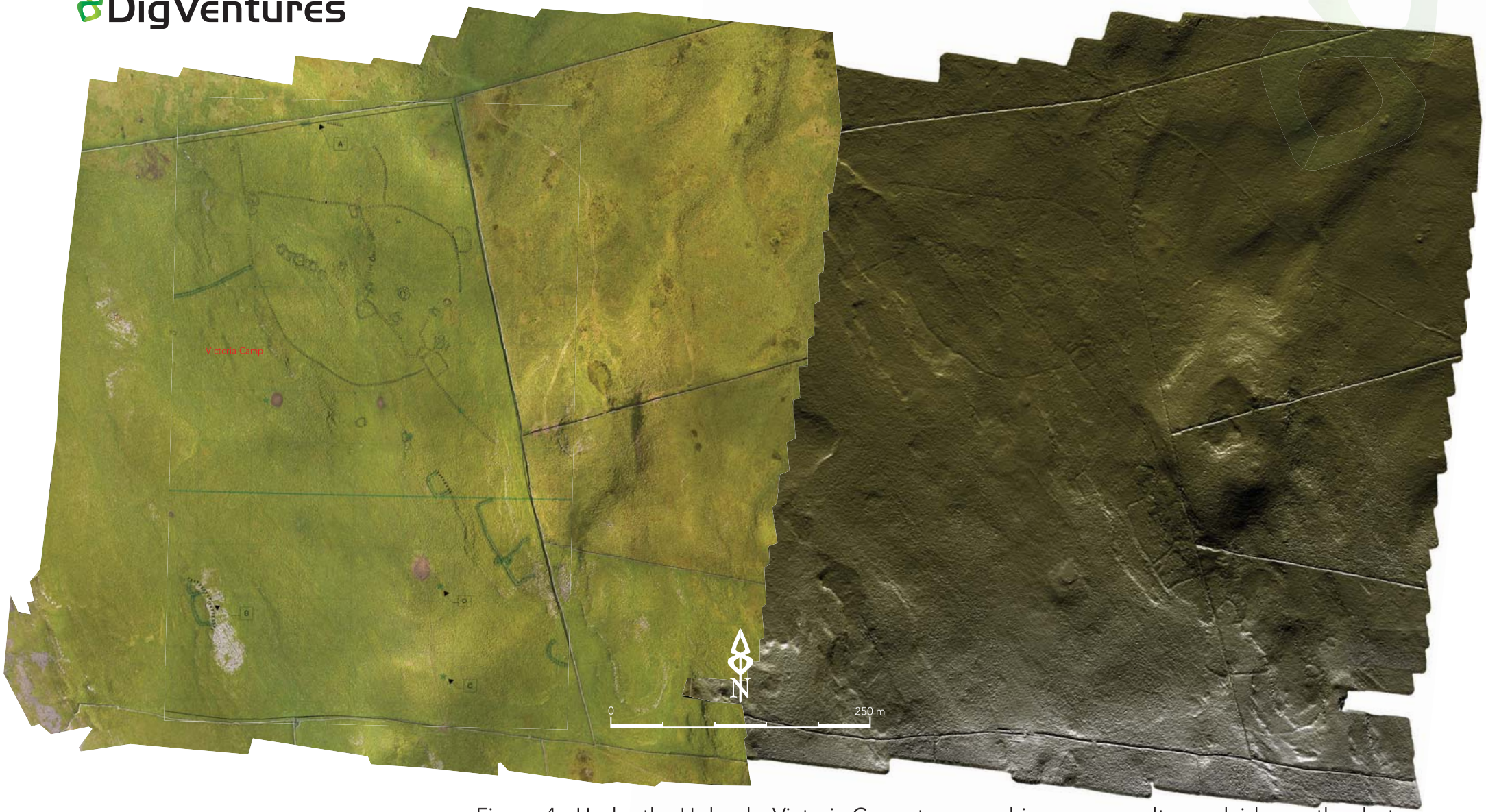


Figure 4 - Under the Uplands: Victoria Camp topographic survey results overlaid on orthophoto, set alongside hillshade model (after Martlew 2007).

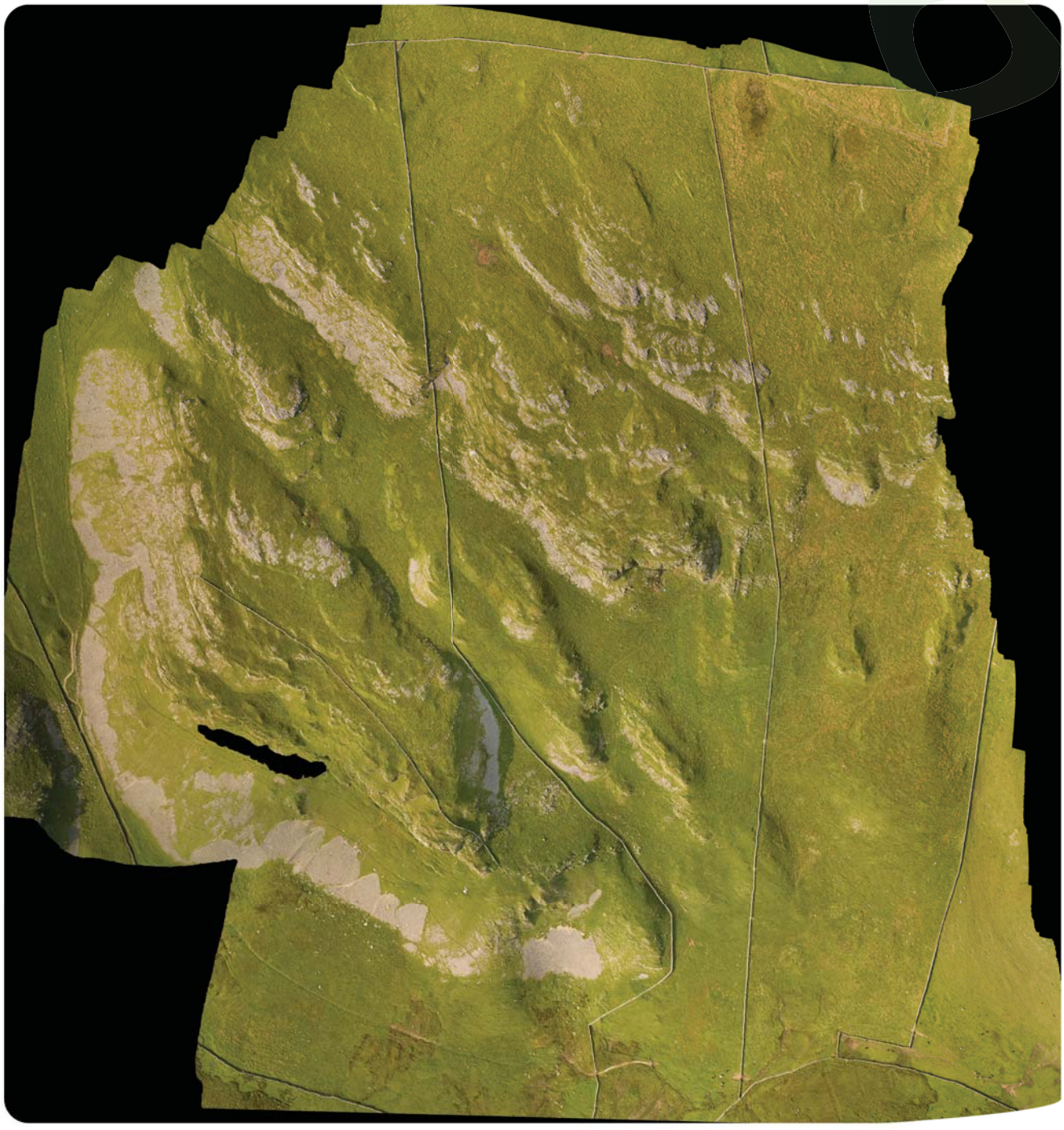
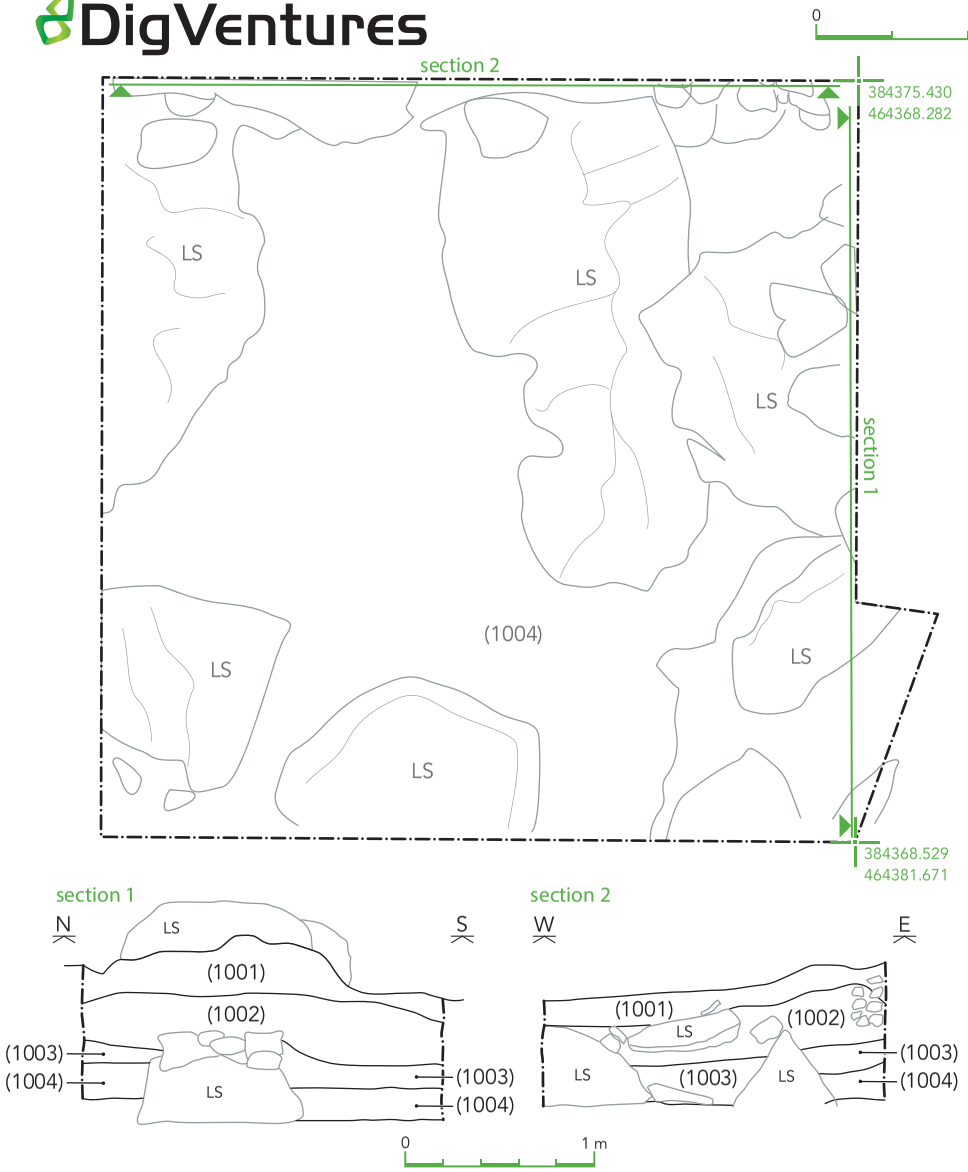


Figure 5 - Under the Uplands: Settle Bank photogrammetry orthophoto, showing Ben Scar Cave (centre) and Attermire Camp (bottom right).



West-facing section of Trench 1

South-facing section of Trench 1

Plate 6.1 - Mid-excavation photograph of trench 1, facing north showing (1001), (1002), (1003).

Plate 6.2 - Trench 1 section, facing north showing (1001), (1002), (1003), (1004).

Figure 6 - Under the Uplands: Trench 1 excavation results.

DigVentures

Mid-excavation Orthophoto

Post-excavation plan

384355.334
464368.282

384356.722
464366.935

384349.460
464362.699

384350.971
464361.314

east facing section

(2002)
[2003]
(2002)
(2006)
[2004]
(2005)
(2005)
[2004]

Post-excavation Orthophoto

(2002)
[2003]
(2002)
(2006)
[2004]
(2005)
[2004]
(2005)
[2004]

N

0 2 m

section

S N

[2004]
[2004]
(2001)
(2005)
(2002)
(2005)
(2006)
(2002)
[2003]
(2001)
(2007)
(2002)

0 1 m

East-facing section of Trench 2

Plate 7.1 - North-facing photograph of north wall [2003]

Plate 7.2 - South-facing photograph of north wall [2003]

Plate 7.3 - West-facing photograph of north wall [2003]

Plate 7.4 - North-facing photograph of south wall [2004]

Plate 7.5 - West-facing photograph of south wall [2004]

Figure 7 - Under the Uplands: Trench 2 excavation results.

Plate 8.1 - Looking north east showing the relationship between Ben Scar Cave, Attermire Scar and environs with the 'Mere' in the foreground.

Plate 8.2 - North facing view, showing approach to Ben Scar cave. Attermire Camp is situated to the right of the image, Victoria Camp is on the high ground above the horizon.

Plate 8.3 - View looking north towards the Entrance to Ben Scar Cave with the enclosing bank visible in the centrground.

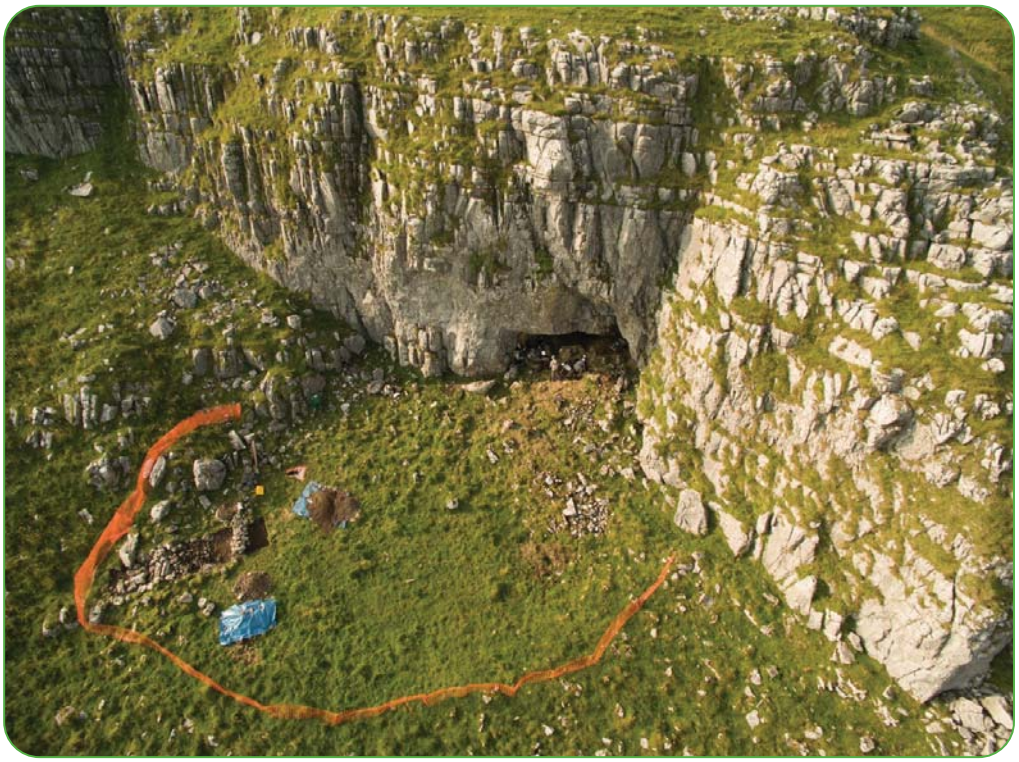


Plate 8.4 - North west facing photograph showing Ben Scar Cave under excavation, with the enclosing bank indicated with orange fencing.

Plate 8.5 - North east facing view of Victoria Cave and Penyghent (centre left). Victoria camp lies on the high ground above the cave.

Plate 8.6 - South facing view from Ben Scar Cave showing the valley connecting the high ground to the lowland plain. The 'mere' (centre left) and Pendle Hill in the far background.

Plate 8.7 - Volunteers at Ben Scar Cave.

Plate 8.8 - Volunteers helping at Ben Scar Cave.

Plate 8.9 - Volunteers excavating Trench 2 at Ben Scar Cave.

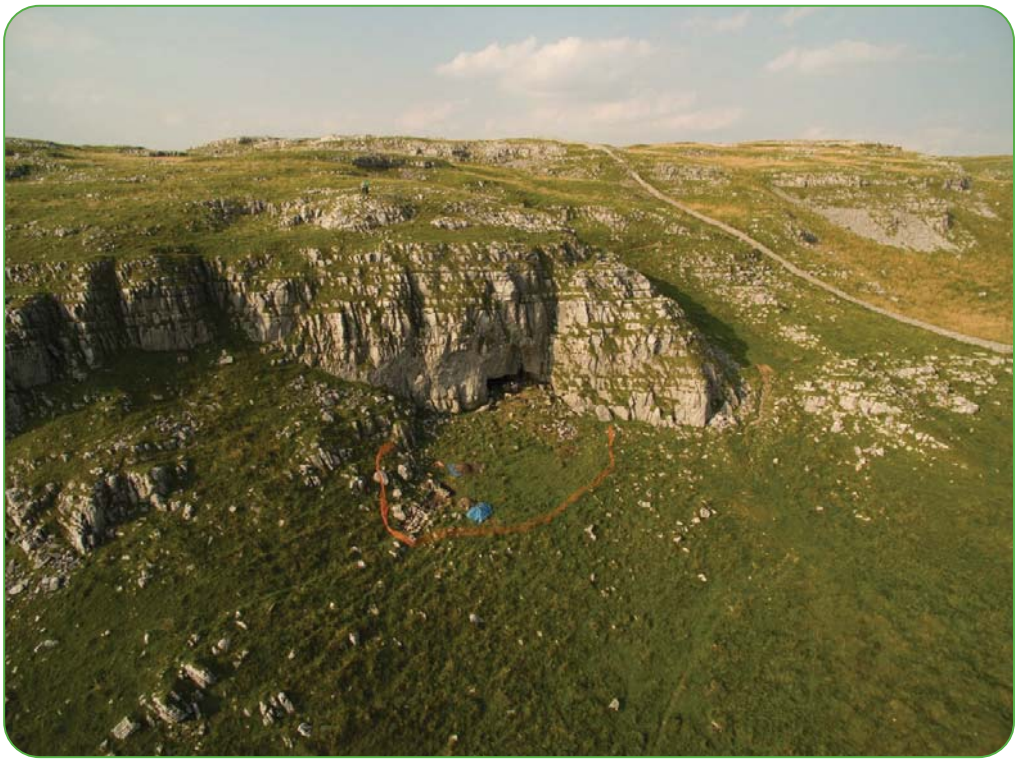


Plate 8.10 - North facing view of Ben Scar Cave with Victoria Camp on the horizon.

12 APPENDIX 1 – TRENCH AND CONTEXT DESCRIPTIONS

Trench 1	Dimensions: (2m x 2m)			
	Orientation: NE-SW			
	Reason for Trench: To contextualise Ben Scar Cave with the surrounding landscape, to define the phasing and character of the deposits and to examine the enclosure wall and its relationship with the cave.			
	Digital Record Link: https://goo.gl/kO6dFt			
Context	Description	Interpretation/ Process of deposition	Dimensions (m)	Link
1001	Firm mid orange brown silty clay with limestone clasts	Upper cave deposit – Layer	2m x 2m x 0.10m	https://goo.gl/dHmho2
1002	Firm light greyish brown clay with limestone clasts and angular cobbles	Cave deposit – Layer	2m x 2m x 0.35m	https://goo.gl/o5UIfe
1003	Dark greyish brown silty clay with limestone clasts and angular cobbles	Cave deposit – Layer	2m x 2m x 0.10m	https://goo.gl/MLpZjs
1004	Mid yellowish brown fine clay with limestone clasts and angular cobbles	Cave deposit - Layer	2m x 2m x 0.15m	https://goo.gl/Bb7EoA

Trench 2	Dimensions: 2m x 8m			
	Orientation: NE-SW			
	Reason for Trench: Assess the enclosure's potentially structural character, its stratigraphic relationships, the association with Ben Scar Cave, contextualise the enclosures with the surrounding landscape and to recover dating evidence.			
	Digital Record Link: https://goo.gl/gc8y9Z			
Context	Description	Interpretation/ Process of deposition	Dimensions (m)	Link
2001	Dark greyish brown fine silty calcareous deposit	Topsoil	Length 8m Width 2m Depth 0.10m	https://goo.gl/8Uq3Zw
2002	Mid orange brown fine sandy silt	Subsoil	Length 4m Width 2m Depth 0.15m	https://goo.gl/BnzIsg
2003	Large limestone blocks	Linear wall structure possibly associated with F201	Length 4.75m Width 2m Depth 0.41m	https://goo.gl/eiJ5Xp
2004	Large limestone blocks	Enclosure wall, part of F202	Length 2.75m Width 2m Depth 0.45m	https://goo.gl/Ry7jn0
2005	Small layer of clastic scree	Limestone scree	Length 1.5m Width 2m Depth 0.20m	https://goo.gl/xQTMhe
2006	Limestone natural	Limestone natural		https://goo.gl/AbJisT
2007	Soft medium greyish brown calcareous silt, 5% angular limestone clasts	Buried soil	Lengt6h 3m Width 2m Depth 0.10m	https://goo.gl/X4Y05J

13 APPENDIX 2 – BEN SCAR CAVE PALAEOENVIRONMENTAL DATA

Methodology

A programme of soil sampling was implemented during the excavation (Wilkins & Steel 37, 2016), which included the collection of soil samples from sealed contexts. Following selection, subsamples of raw sediment from the selected samples were processed. The samples were examined in the laboratory, where they were described using a pro forma (See Appendix 2). The subsamples were processed by staff at DigVentures using their standard water flotation methods. The flot (the sum of the material from each sample that floats) was sieved to 0.5mm and air dried. The heavy residue (the material which does not float) was not examined, and therefore the results presented here are based entirely on the material from the flot. The flot was examined under a low-power binocular microscope at magnifications between x12 and x40.

A four-point semi quantitative scale was used, from '1' – one or a few specimens (less than an estimated six per kg of raw sediment) to '4' – abundant remains (many specimens per kg or a major component of the matrix). Data were recorded on paper and subsequently on a personal computer using a Microsoft Access database. Identification was carried out using published keys (Jacomet 2006, Biejerinkc 1976, Jones (unpublished), Zohary & Hopf 2000), online resources (http://www.plantatlas.eu/za.php), and the authors own reference collection. Taxonomy and nomenclature follow Stace (1997). The flot was then sieved into convenient fractions (4, 2, 1 and 0.3mm) for sorting and identification of charcoal fragments. Identification was made using the wood identification guides of Schweingruber (1978) and Hather (2000). Taxa identified only to genus cannot be identified more closely due to a lack of defining characteristics in charcoal material.

Table 1 Palaeoenvironmental data

Sample Number	1	2	3	4	6	7
Context Number	1001	1002	1003	2005	2007	2004
Feature type	Upper cave deposit	Cave deposit – layer	Cave deposit – layer	Limestone scree	Limestone natural	Enclosure wall
Bone fragments				1		
Charcoal	1			1		
Earthworm egg capsules	1	1	1	3	2	1
Insect fragments	1	1		3	1	1
Plant macrofossils – modern contaminants	1	1	1	2	1	
Root / rootlet fragments	4	3	3	3	3	3
Sand	3	4	4	8	4	4
Snails	1		1	2	1	

14 APPENDIX 3 – ANIMAL BONE

Table 2 Preservation and bone modifications observed on the bones for each context

Context	Trench	Preservation
1001	1	Good
1002	1	Good
1003	1	Good
1004	1	Fair
2001	2	Good
2005	2	Good

Table 3 Number of fragments recorded by taxa

Context	Trench	Cattle	Sheep/ goat	Canid	Rabbit	Micro mammal	Field Vole	Passerine	Frog/ toad
1001	1	1			3				
1002	1		4	1	35				
1003	1		4		5		1	1	
1004	1					1			
2001	2		1						
2005	2								1

APPENDIX 4 – FINDS CATALOGUE

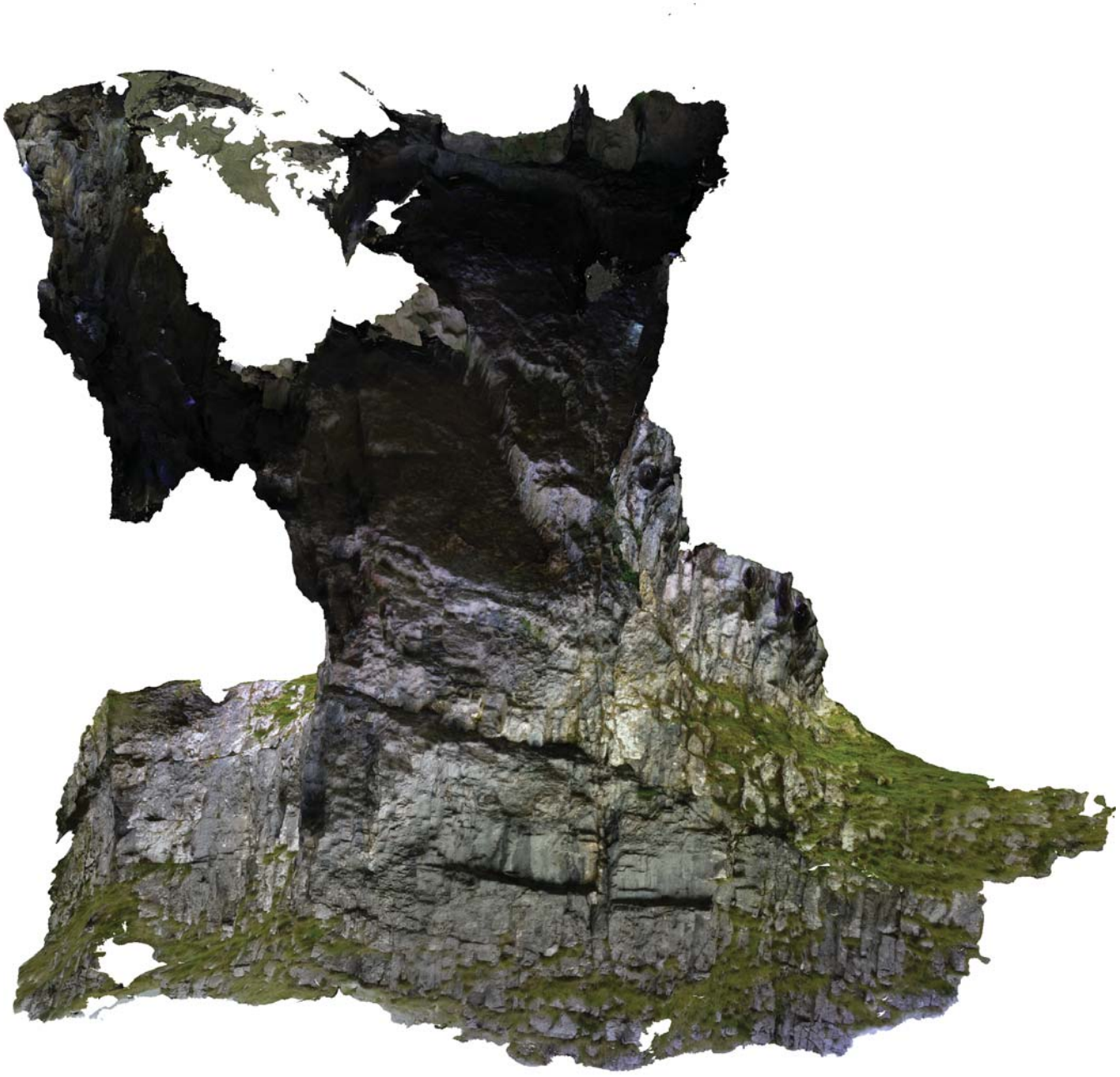
Table 4 Finds assemblage summary

Context number	Find type	Quantity	Weight (g)
1002	Iron	5	1
1002	Fossil	1	1
1002	Metal	2	8
2001	Gun shell	1	10
1001	Pot	4	3
1004	Shell	1	1
1002	Stone	2	1
1004	Stone	4	1
2005	Rubbing stone	1	398

15 APPENDIX 4 – PHOTOGRAMMETRY PROCESSING REPORTS

Victoria Cave

Processing Report
12 January 2017



Survey Data

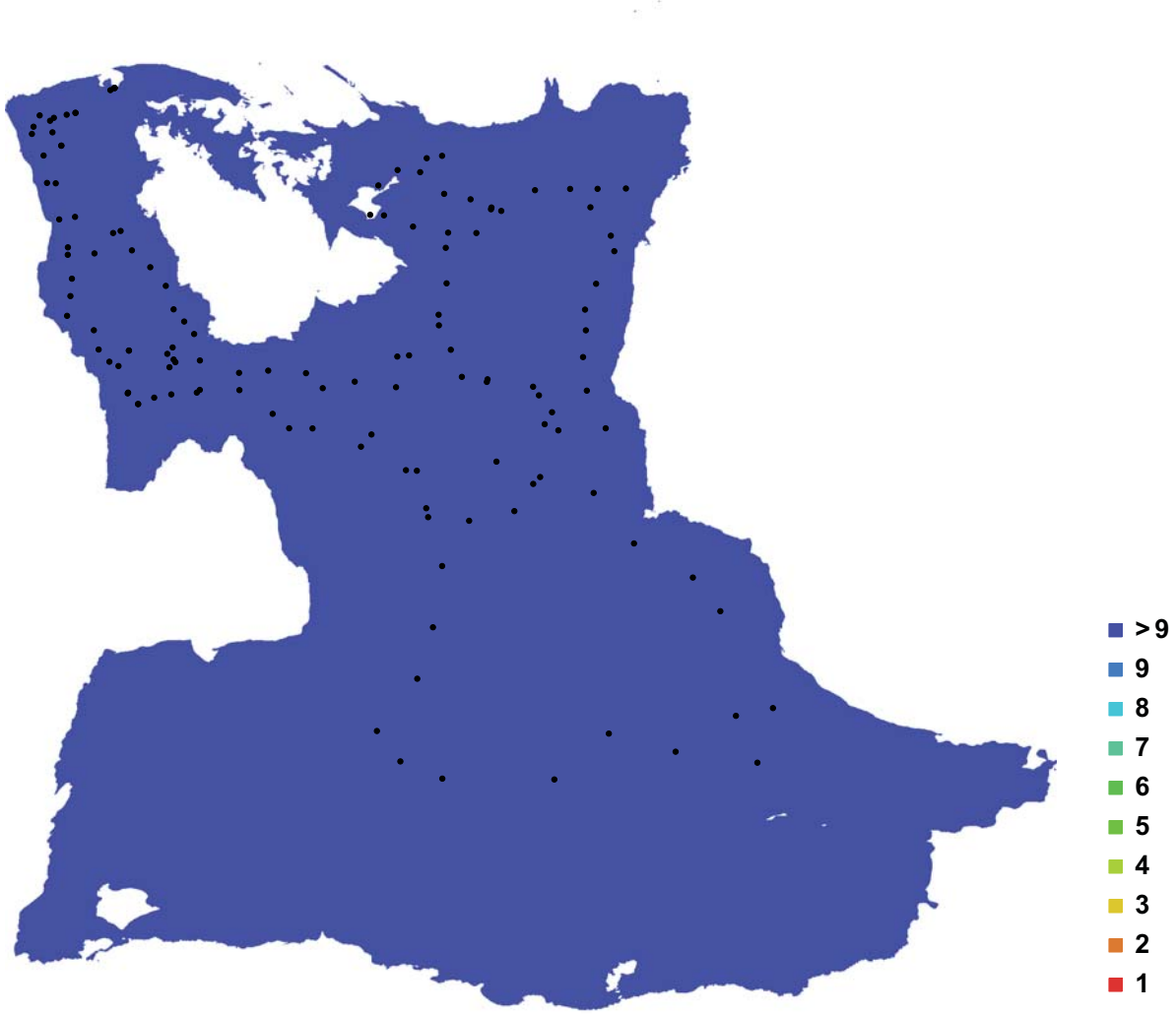


Fig. 1. Camera locations and image overlap.

Number of images:	136	Camera stations:	134
		Tie points:	19,039
		Projections:	62,660
		Reprojection error:	1.11 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
NIKON D800 (14 mm)	7360 x 4912	14 mm	4.89 x 4.89 µm	No
NIKON D800 (14 mm)	4912 x 7360	14 mm	4.89 x 4.89 µm	No

Table 1. Cameras.

Camera Calibration

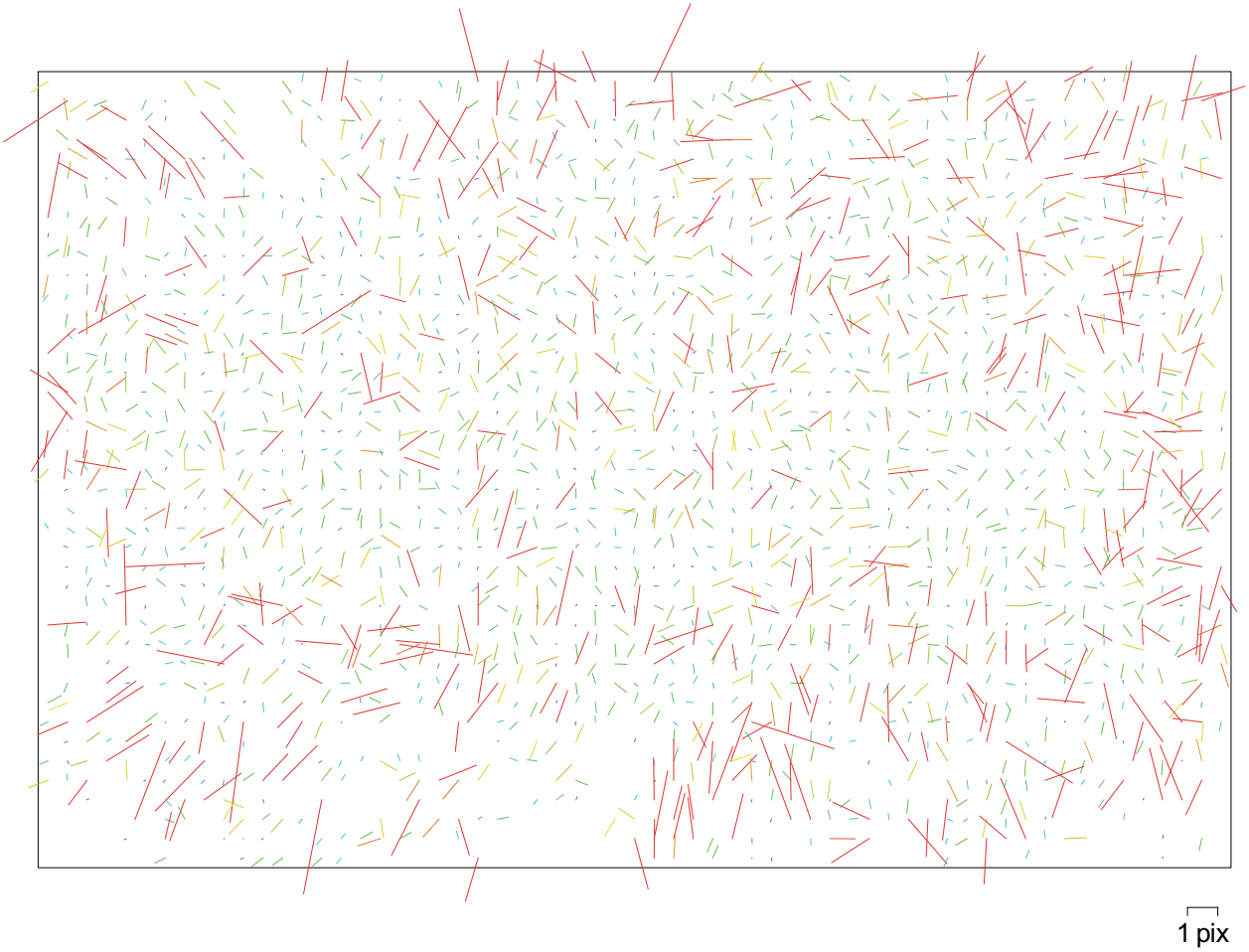


Fig. 2. Image residuals for NIKON D800 (14 mm).

NIKON D800 (14 mm)

21 images

Resolution	Focal Length	Pixel Size	Precalibrated
7360 x 4912	**14 mm**	**4.89 x 4.89 µm**	**No**

Type:	Frame	F:	2928.41
Cx:	5.58202	B1:	0
Cy:	-41.1905	B2:	0
K1:	-0.0119037	P1:	0
K2:	-0.00779081	P2:	0
K3:	0.0020932	P3:	0
K4:	0	P4:	0

Camera Calibration

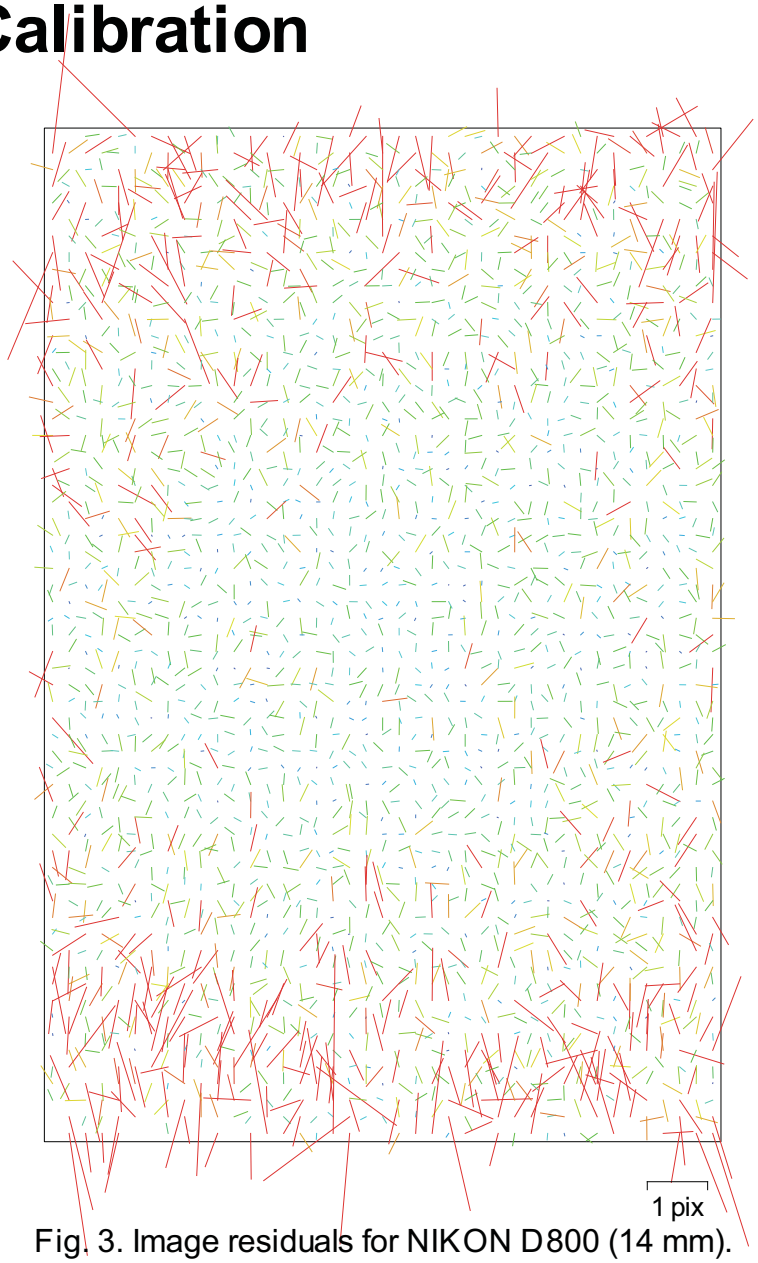


Fig. 3. Image residuals for NIKON D800 (14 mm).

NIKON D800 (14 mm)

113 images

Resolution	Focal Length	Pixel Size	Precalibrated
4912 x 7360	**14 mm**	**4.89 x 4.89 µm**	**No**

Type:	Frame	F:	2929.15
Cx:	43.9109	B1:	0
Cy:	5.78452	B2:	0
K1:	-0.0106973	P1:	0
K2:	-0.00874387	P2:	0
K3:	0.00234446	P3:	0
K4:	0	P4:	0

Digital Elevation Model

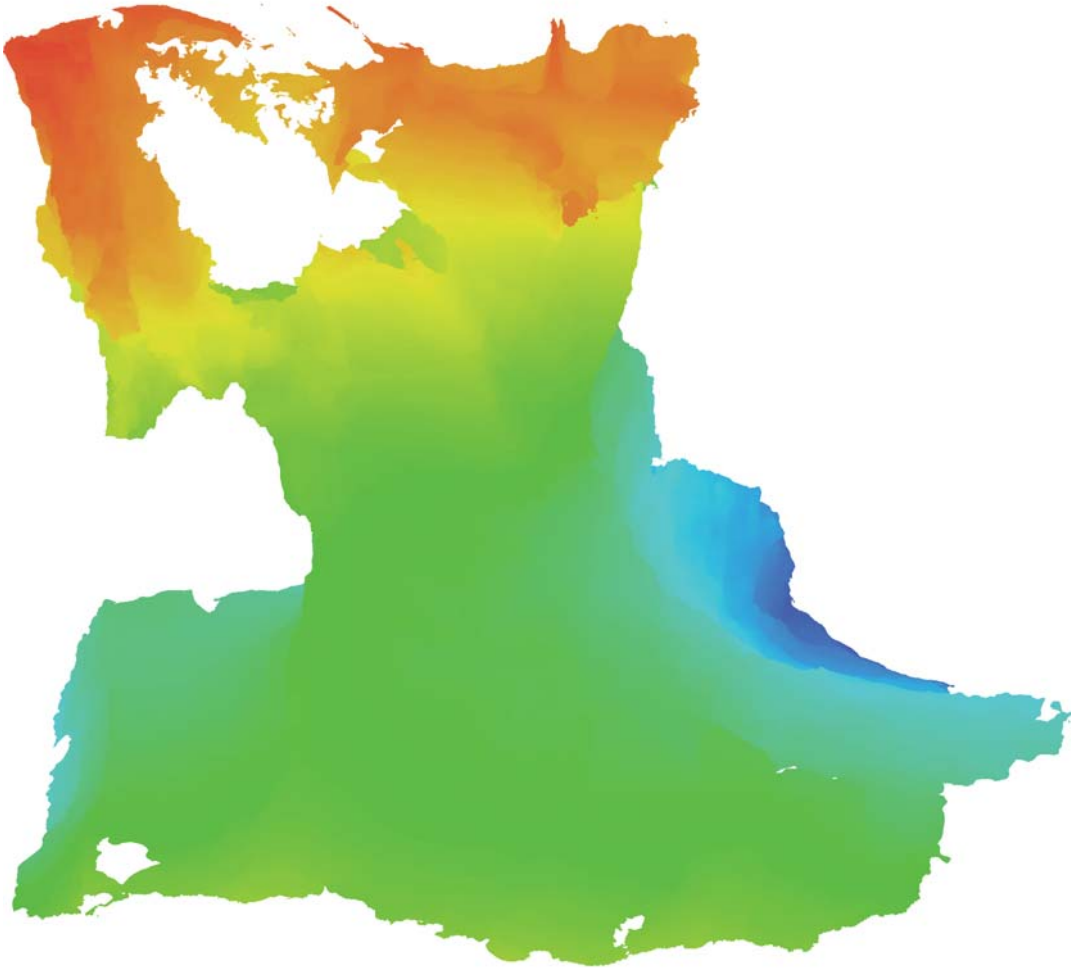


Fig. 4. Reconstructed digital elevation model.

Processing Parameters

General	
Cameras	136
Aligned cameras	134
Coordinate system	Local Coordinates (m)
Point Cloud	
Points	19,039 of 44,430
Reprojection error	1.10785 (3.36152 max)
Effective overlap	3.44711
Alignment parameters	
Accuracy	Medium
Pair preselection	Disabled
Key point limit	40,000
Tie point limit	1,000
Constrain features by mask	No
Matching time	53 minutes 17 seconds
Alignment time	33 seconds
Depth Maps	
Count	132
Reconstruction parameters	
Quality	Medium
Filtering mode	Aggressive
Processing time	26 minutes 10 seconds
Dense Point Cloud	
Points	35,152,229
Reconstruction parameters	
Quality	Medium
Depth filtering	Aggressive
Dense cloud generation time	24 minutes 29 seconds
Model	
Faces	1,000,000
Vertices	507,659
Texture	4,096 x 4,096, uint8
Reconstruction parameters	
Surface type	Arbitrary
Source data	Dense
Interpolation	Enabled
Quality	Medium
Depth filtering	Aggressive
Face count	2,341,336
Processing time	33 minutes 8 seconds
Texturing parameters	
Mapping mode	Generic
Blending mode	Mosaic
Texture size	4,096 x 4,096
UV mapping time	40 seconds
Blending time	13 minutes 19 seconds
Software	
Version	1.2.6 build 2834
Platform	Windows 64 bit

Victoria Cave Scarp

Processing Report

12 January 2017

Survey Data

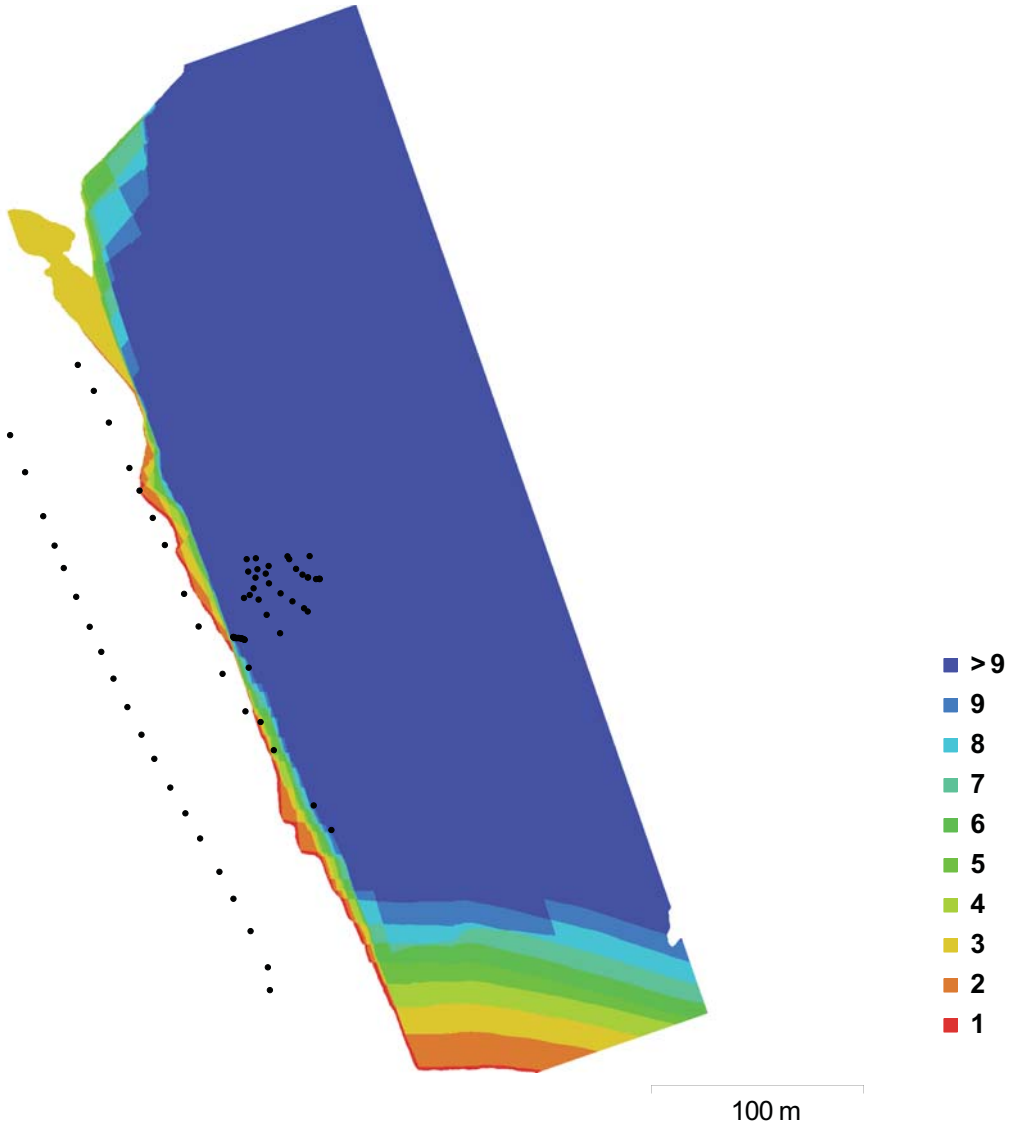


Fig. 1. Camera locations and image overlap.

Number of images:	83	Camera stations:	83
Flying altitude:	90.8 m	Tie points:	5,456
Ground resolution:	3.43 cm/pix	Projections:	92,196
Coverage area:	0.0765 km²	Reprojection error:	0.789 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
FC350 (3.61 mm)	3992 x 2242	3.61 mm	1.71 x 1.71 µm	No

Table 1. Cameras.

Camera Calibration

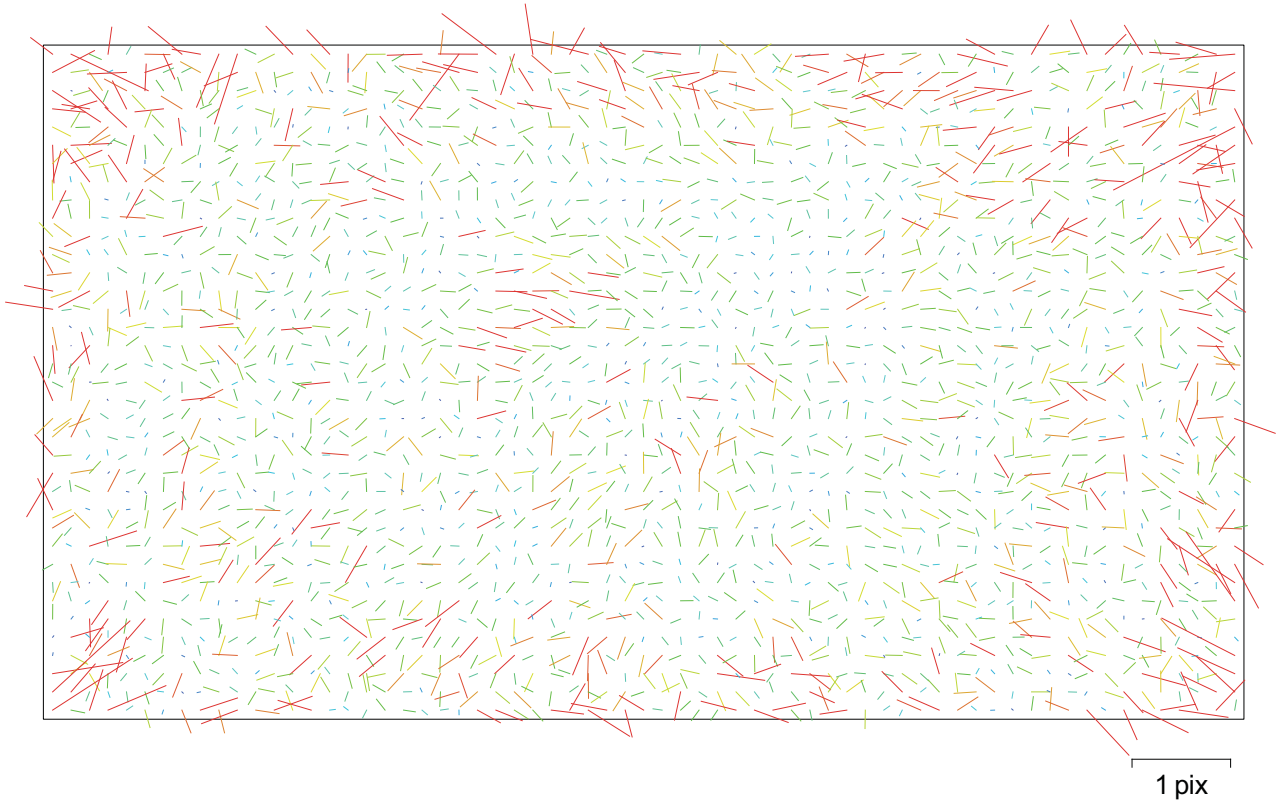


Fig. 2. Image residuals for FC350 (3.61 mm).

FC350 (3.61 mm)

83 images

Resolution	Focal Length	Pixel Size	Precalibrated
3992 x 2242	**3.61 mm**	**1.71 x 1.71 µm**	**No**

Type:	Frame	F:	2331.03
Cx:	-18.4414	B1:	0
Cy:	-11.5902	B2:	0
K1:	-0.133437	P1:	0
K2:	0.114852	P2:	0
K3:	-0.0205175	P3:	0
K4:	0	P4:	0

Camera Locations

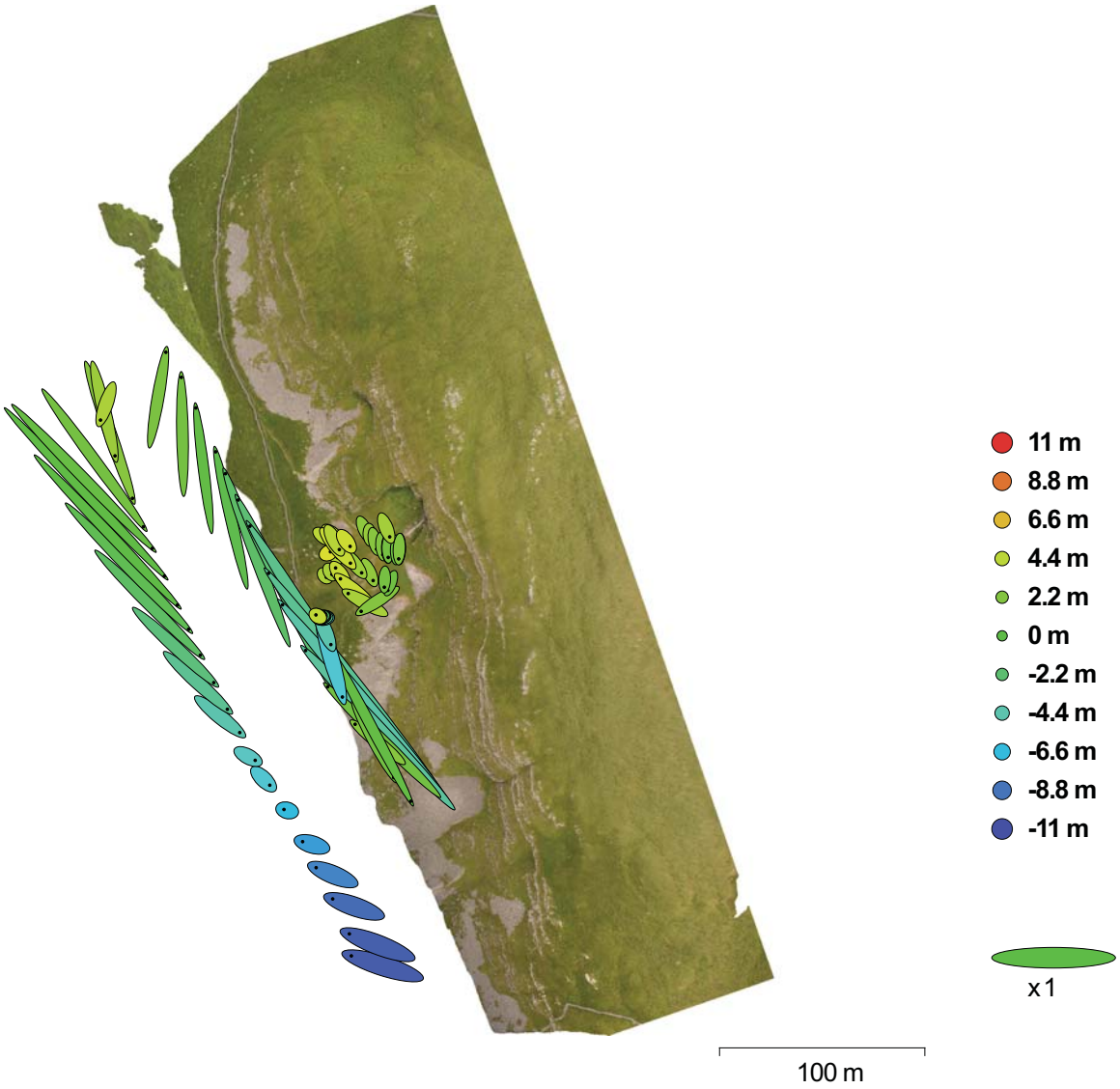


Fig. 3. Camera locations and error estimates.
Z error is represented by ellipse color. X,Y errors are represented by ellipse shape.
Estimated camera locations are marked with a black dot.

X error (m)	Y error (m)	Z error (m)	XY error (m)	Total error (m)
27.4466	37.3158	3.79054	46.3226	46.4775

Table 2. Average camera location error.

Digital Elevation Model

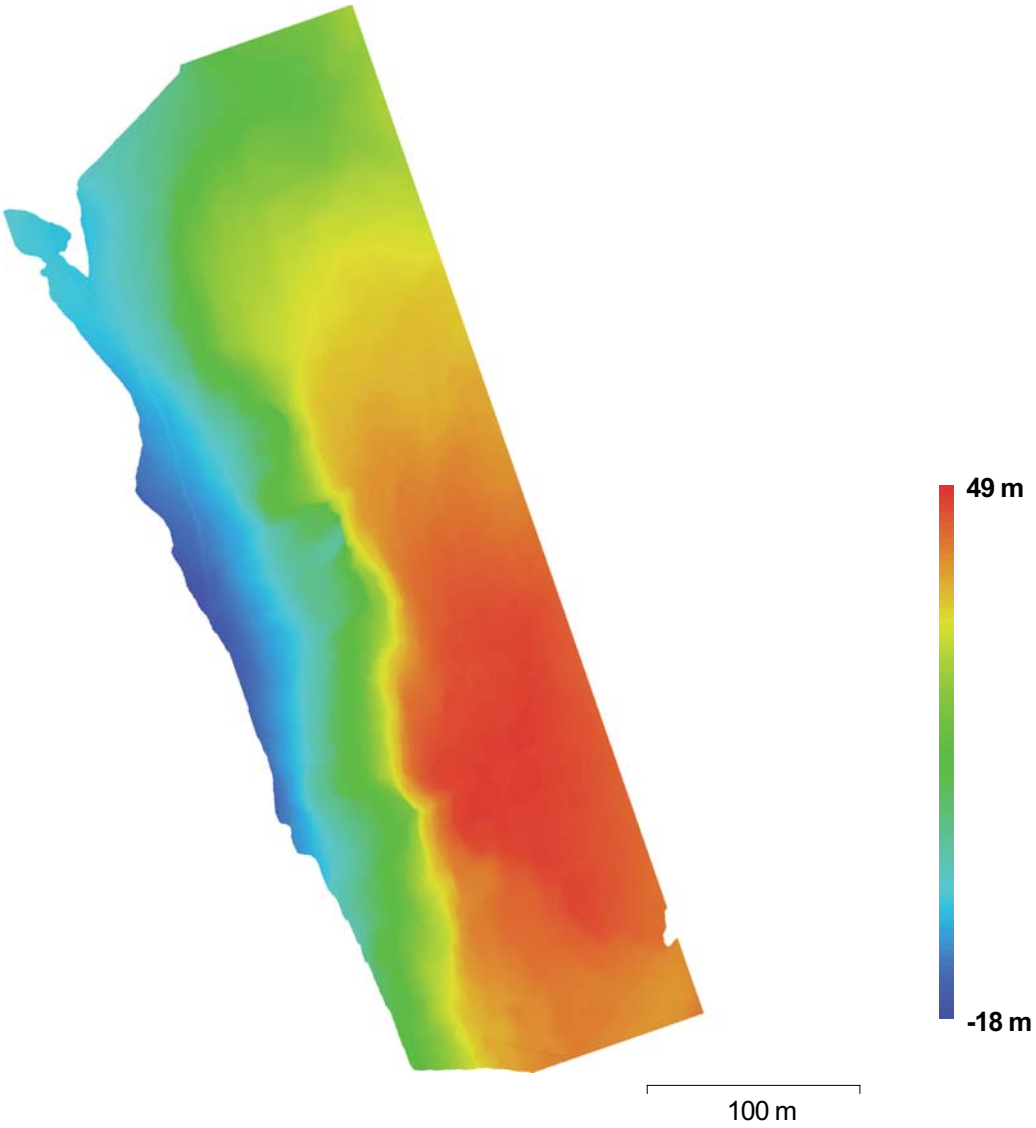


Fig. 4. Reconstructed digital elevation model.

Resolution:	6.85 cm/pix
Point density:	213 points/m²

Processing Parameters

General	
Cameras	83
Aligned cameras	83
Coordinate system	WGS 84 (EPSG::4326)
Point Cloud	
Points	5,456 of 9,612
Reprojection error	0.788611 (2.38921 max)
Effective overlap	21.1469
Alignment parameters	
Accuracy	High
Pair preselection	Disabled
Key point limit	40,000
Tie point limit	1,000
Constrain features by mask	No
Matching time	20 minutes 42 seconds
Alignment time	12 seconds
Depth Maps	
Count	83
Reconstruction parameters	
Quality	High
Filtering mode	Aggressive
Processing time	4 hours 18 minutes
Dense Point Cloud	
Points	16,743,702
Reconstruction parameters	
Quality	High
Depth filtering	Aggressive
Dense cloud generation time	54 minutes 48 seconds
Model	
Faces	3,374,498
Vertices	1,689,978
Texture	4,096 x 4,096, uint8
Reconstruction parameters	
Surface type	Arbitrary
Source data	Dense
Interpolation	Enabled
Quality	High
Depth filtering	Aggressive
Face count	3,374,498
Processing time	13 minutes 44 seconds
Texturing parameters	
Mapping mode	Generic
Blending mode	Mosaic
Texture size	4,096 x 4,096
UV mapping time	41 seconds
Blending time	3 minutes 41 seconds
Software	
Version	1.2.6 build 2834
Platform	Windows 64 bit

Victoria Camp-BenScar

Processing Report

12 January 2017

Survey Data

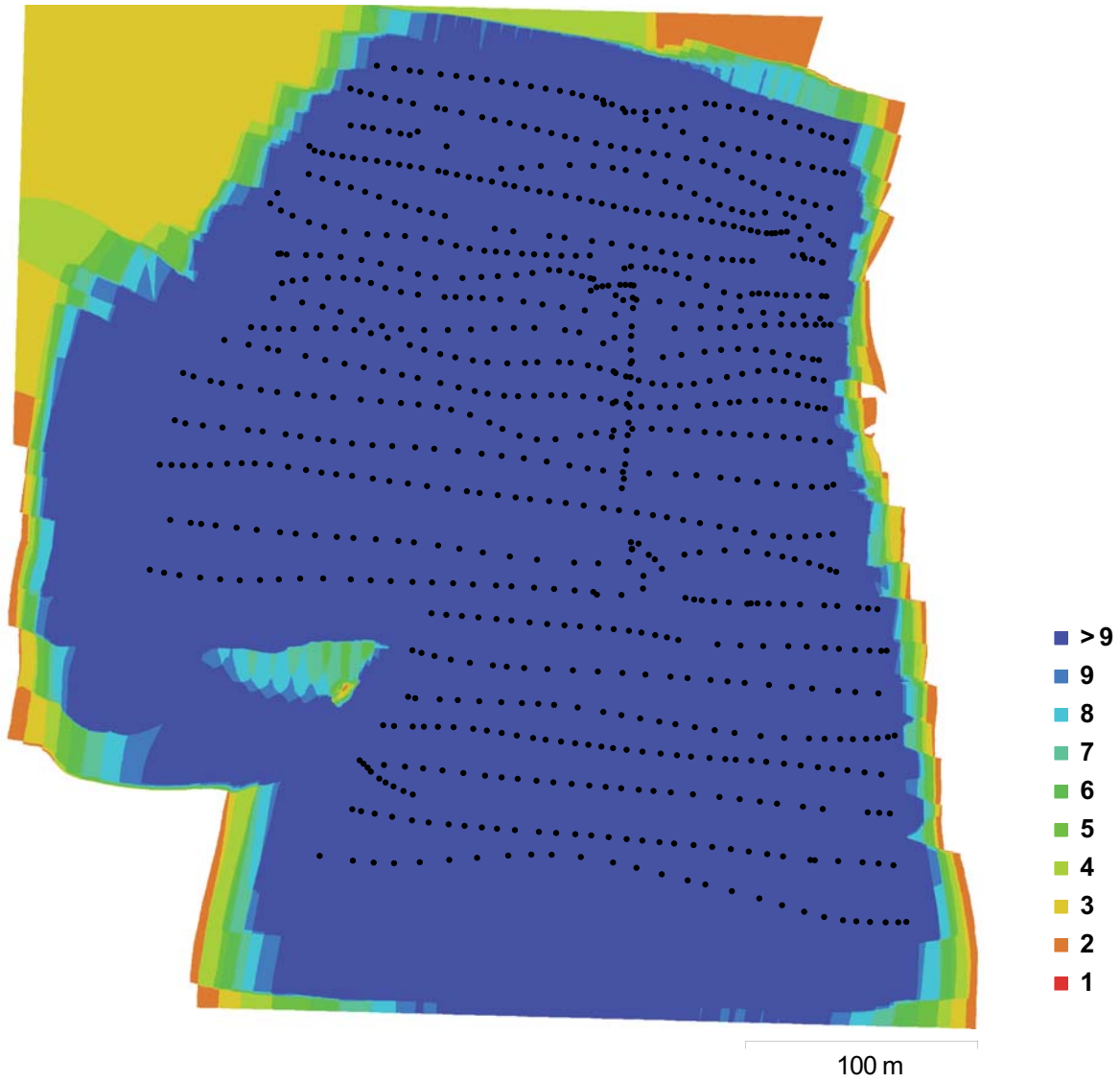


Fig. C. a emr le oct enicsd esv imegr cpr loeN.

u bmf r l c: imegr d8	3y9	a emr le dreenicsd8	3y9
FoGsg eoinbvr 8	34 m	Tir Ncisnd8	43x,051
/ lcbsv lr dcobnics8	4.0x t m7N6	Plcjr t nicsd8	1,343,51x
a cpr legr elr e8	0.541 km²	2 r Nlcjr t nics r llcl8	C.94 N6

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
Fa 490 R4.5Cmm(	4xx1 6 1xx1	4.5Cmm	C.9) 6C.9) µm	u c

Tef o C. a emr led.

Camera Calibration

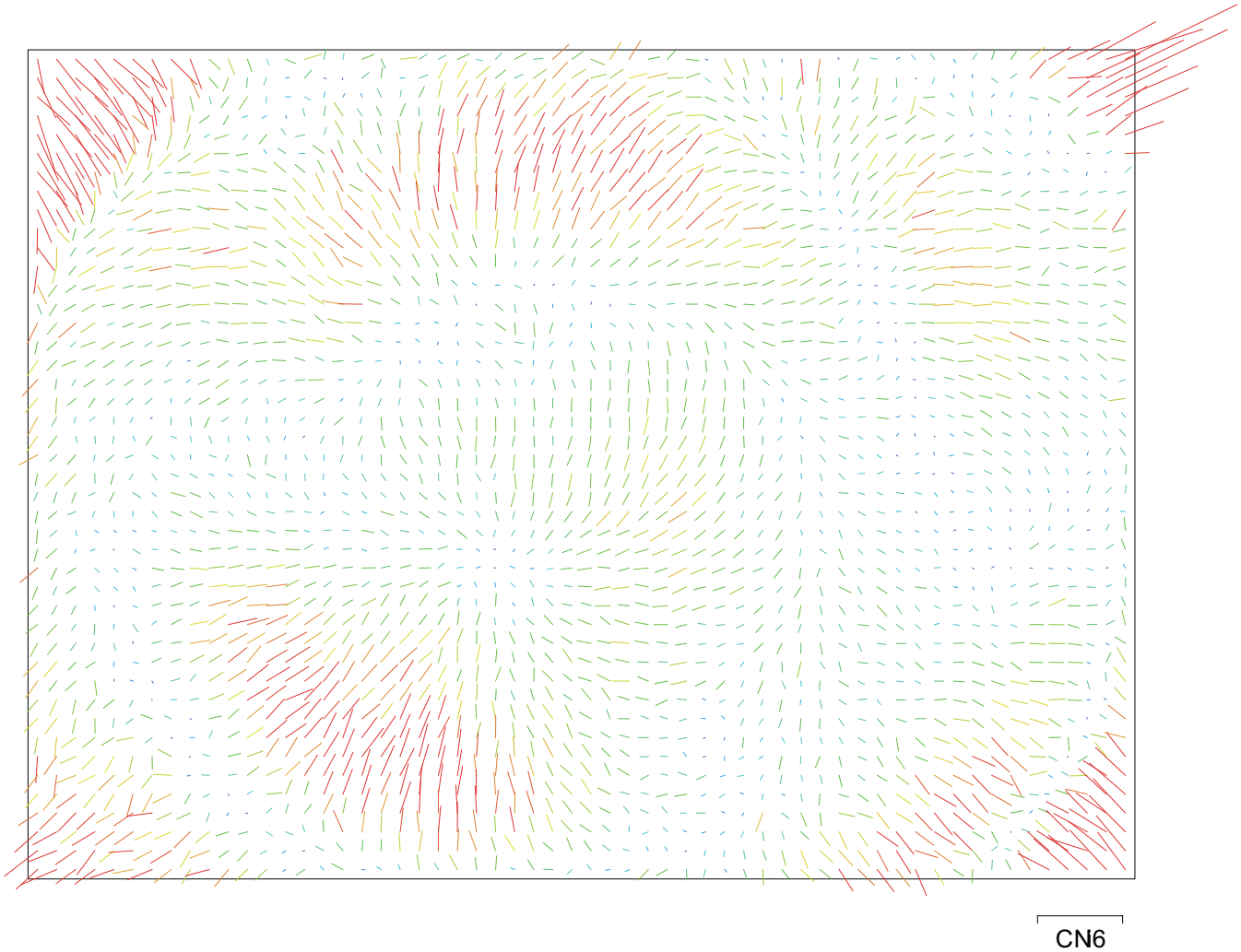


Fig. 1. Imegr Ir divbeod :cl Fa 490 R4.5Cmm(.

FC350 (3.61 mm)

3y9 imegr d

2 r dcdonics	Fct eoLr sgrh	Pi6r oSizr	Plr t eodf lemr v
3992 x 2992	**3.61 mm**	**1.57 x 1.57 µm**	**No**

TGNr 8	Flemr	F8	145y.5)
a 68	-C4.0yx	BC8	C.3x9) 1
a G8	-15.C3) 5	B18	11.11x1
KC8	-0.CyC4y	PC8	-0.000) 4x4) 9
K18	0.C4)) 94	P18	0.001C49) C
K48	-0.0y3y315	P48	0
Ky8	0.0C4x914	Py8	0

Camera Locations

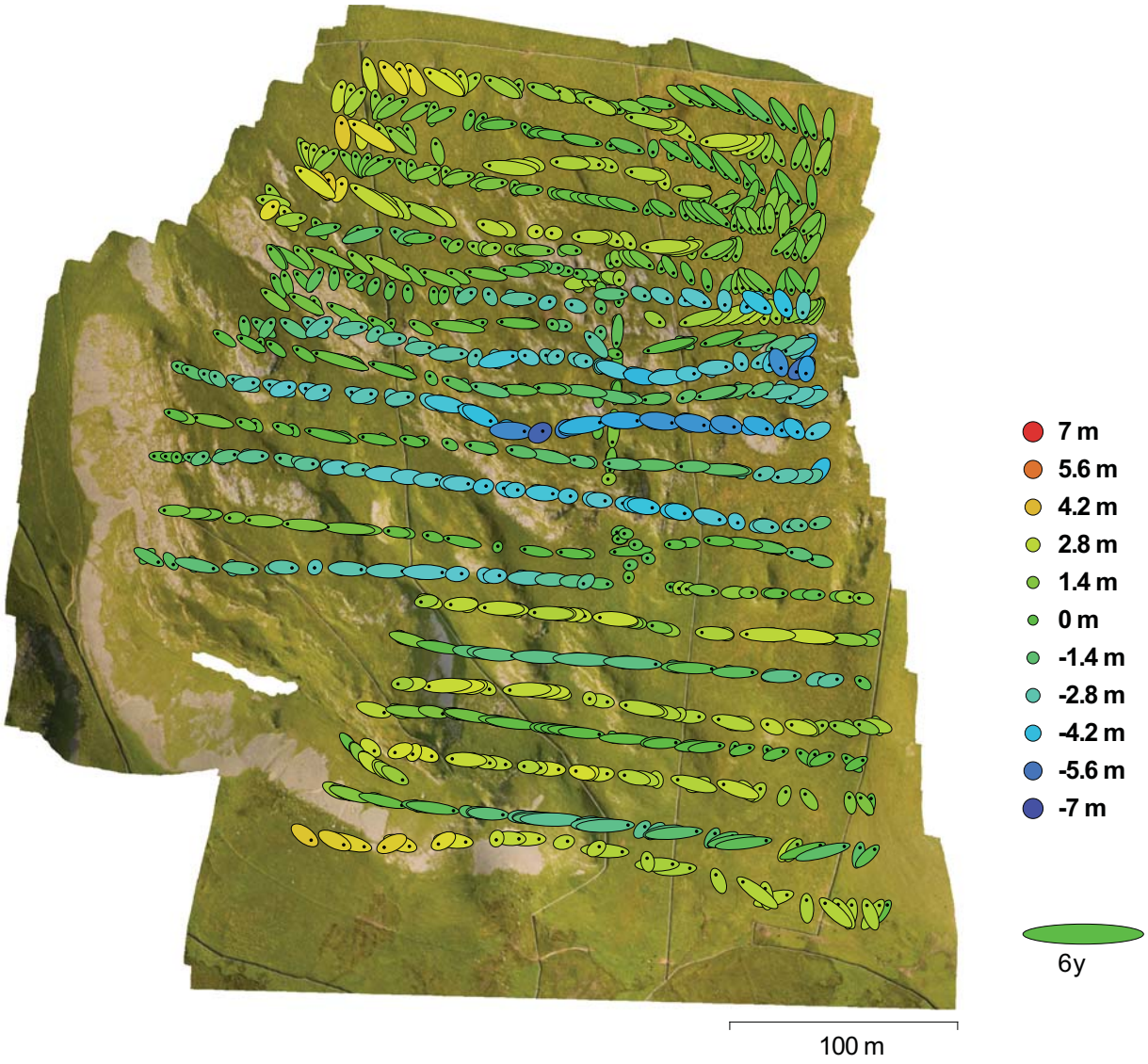


Fig. 4. a emr le oct enicsd esv r llcl r dnimemr d.
Z r llcl id lr Nlr dr sm v f Gr oiNdr t coc l. X,Y r llcld elr lr Nlr dr sm v f Gr oiNdr dheNlr .
Ednimemr v t emr le oct enicsd elr melkr v wirh e f oet k vcn

X error (m)	Y error (m)	Z error (m)	XY error (m)	Total error (m)
4.) 1xOy	C.x3C1C	1.C0y4C	y.111) 5	y.) C304

Tef o 1. Apr legr t emr le oct enics r llcl.

Digital Elevation Model

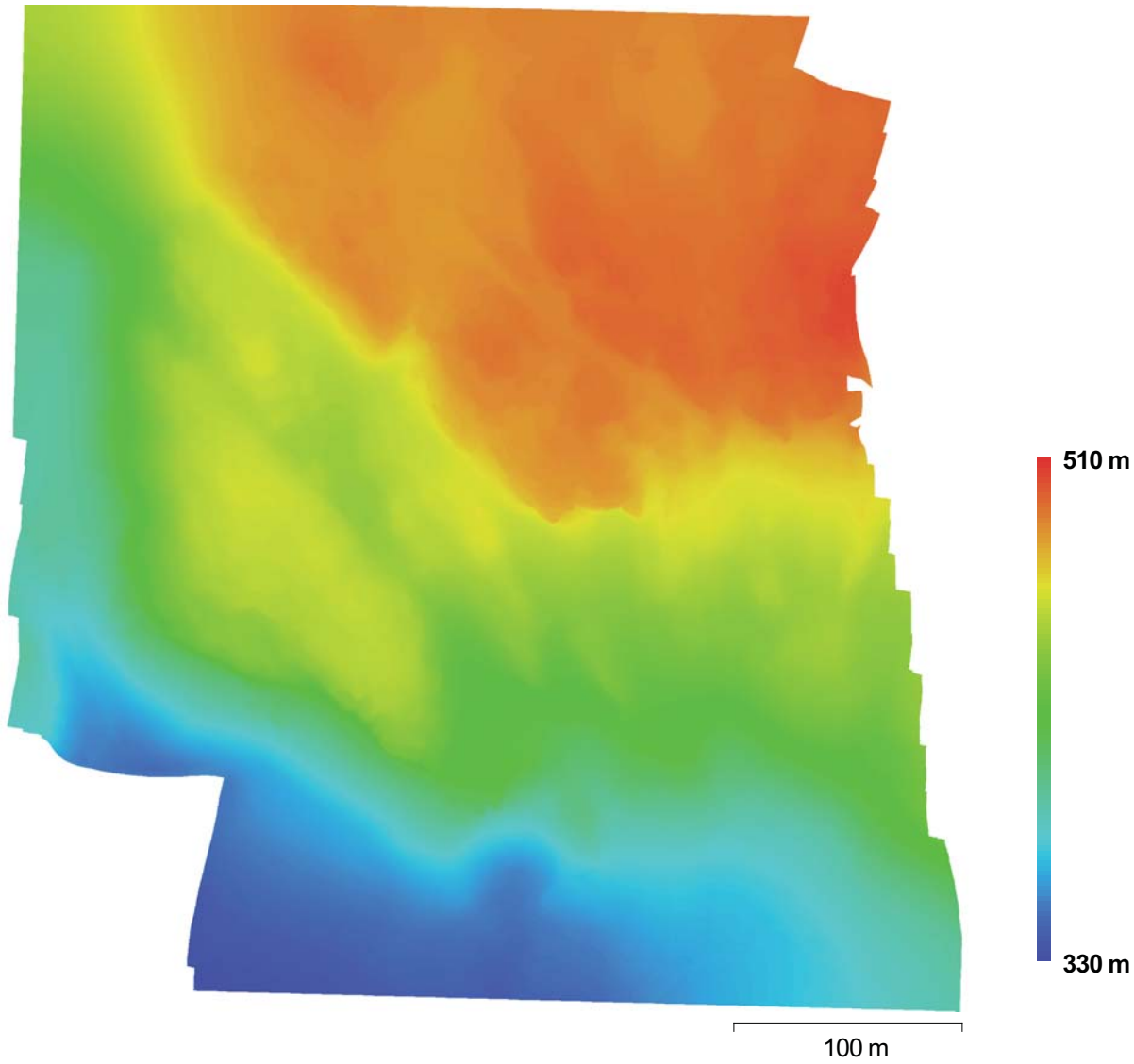


Fig. y. 2 r t csdnlbt m v vigireor o penics mcvr o

2 r dcobnics8	C1.y t m7N6
Pcisnvr sdinG8	59.y Ncisnd7m²

Processing Parameters

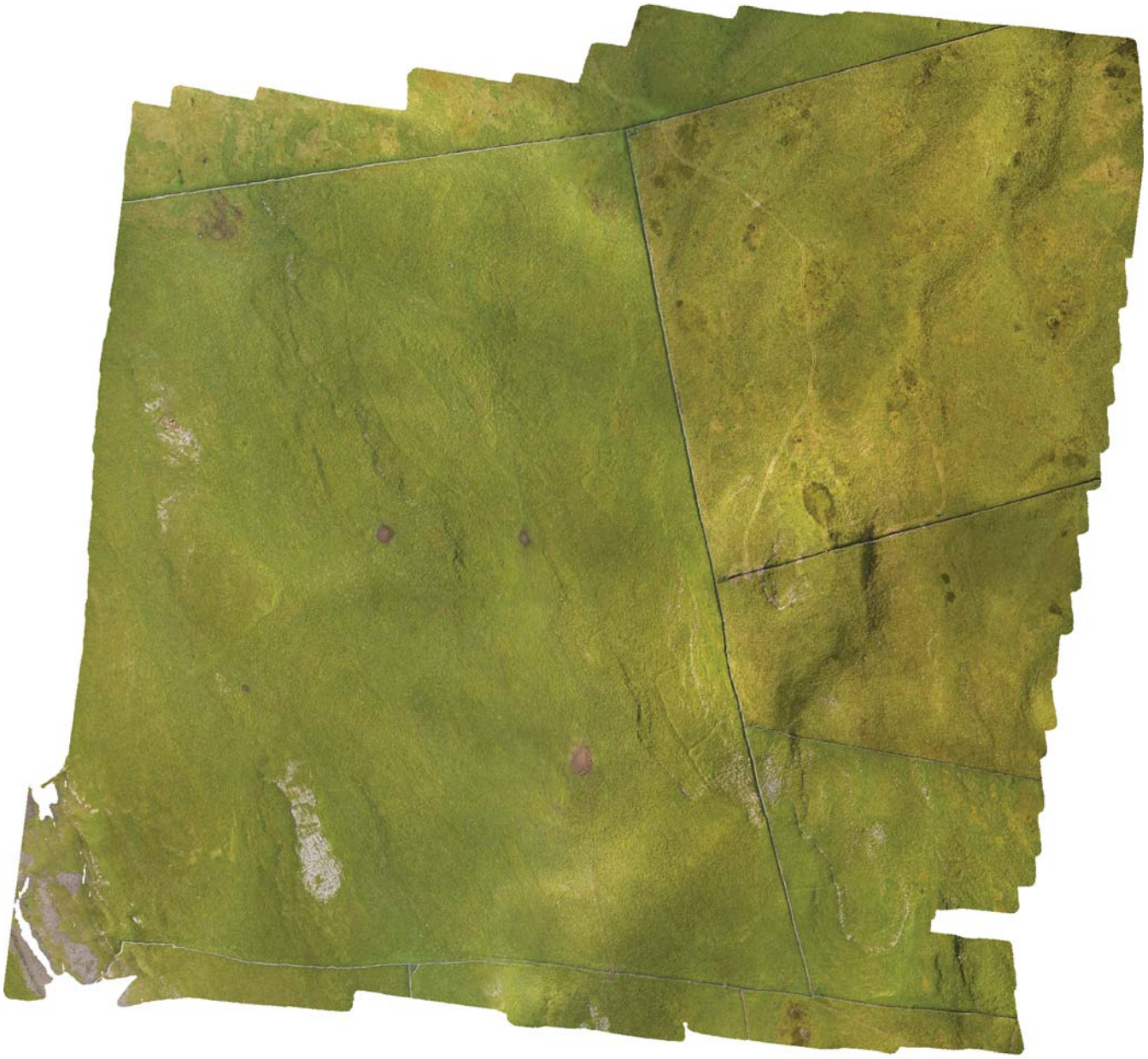
General	
aemr led	3y9
Aoigsr v t emr led	3y9
acclvisemr dGdmr m	W/ S 3y REPS/ 8y415(
Point Cloud	
Pcisrd	43x,051 c: y9y,001
2 HS lr Nicjr t rics r llcl	0.y) 1) 31 RC.941) y Ni6(
He6lr Nicjr t rics r llcl	C.y5y4y R15.yCyy Ni6(
Hr es kr GNcisndizr	4.44559 Ni6
E::r t ripr cpr loeN	3.94) 5
Alignment parameters	
At t blet G	Digh
Peil Nr dr or t rics	2r :r lr st r
Kr GNcisnoimin	y0,000
Tir Ncisnoimin	y,000
acsdrheis :r emblr d fGmedk	u c
AveNripr t emr le mcvr o:imisg	Yr d
Hent hisg rimr	Chcbld Cmisbmr d
Aoigsmr snrimr	x misbmr d 4 dr t csvd
Depth Maps	
acbsn	3y9
Reconstruction parameters	
MbeoinG	Hr vibm
Fiomr lisg mcvr	Agglr ddipr
Plct r ddisg rimr	Chcbld 13 misbmr d
Dense Point Cloud	
Pcisrd	y5,533,5x1
Reconstruction parameters	
MbeoinG	Hr vibm
Qr Nrh :iomr lisg	Agglr ddipr
Qr Nrh meNd gr sr lenics rimr	Chcbld 13 misbmr d
Qr sdr t ocbv gr sr lenics rimr	y0 misbmr d y5 dr t csvd
Model	
Fet r d	4,CC1,95x
Vr lmit r d	C,950,0) C
Tr 6mblr	C5,43y 6C5,43y, bisr8
Reconstruction parameters	
Sbl :et r nGNr	Alf imhelG
Scblt r vere	Qr sdr
Ismr lNcoenics	Esef or v
MbeoinG	Hr vibm
Qr Nrh :iomr lisg	Agglr ddipr
Fet r t cbsn	4,CC1,95x
Plct r ddisg rimr	4y misbmr d y9 dr t csvd
Texturing parameters	
HeNNisg mcvr	/ r sr lit
Bor svisg mcvr	Hcdeit
Tr 6mblr dizr	C5,43y 6C5,43y
Esef or t cocl t cllr t rics	Yr d
Esef or hcor :iooisg	Yr d
UVmeNNisg rimr	4y dr t csvd
Bor svisg rimr	Chcbld 1x misbmr d
DEM	
Sizr	5,xx) 6) ,Cx5
acclvisemr dGdmr m	W/ S 3y REPS/ 8y415(
Reconstruction parameters	

Scbltr vere	Qrsdr tccbv
IsmrlNcoenics	Esefor v
Plctr ddisg rimr	Cmisbmr d 5 dr t csvd
Orthomosaic	
Sizr	C9,9yC6C5,43y
acclviserr dGdmr m	W/ S 3y REPS/ 8y415(
ahessr od	4, bisn3
Bor svisg mcvr	Hcdeit
Reconstruction parameters	
Sbl:et r	Hr dh
Esefor tccclltcllr tnics	uc
Plctr ddisg rimr	3 misbmr d C9 dr t csvd
Software	
Vrldics	C.1.5 f biov 134y
Poenclm	Wisvcwd 5y f in

Victoria Cav e

SrocpPPisn g peort

R1 2asJaru 1yR0



7 JrDpu 3 ata

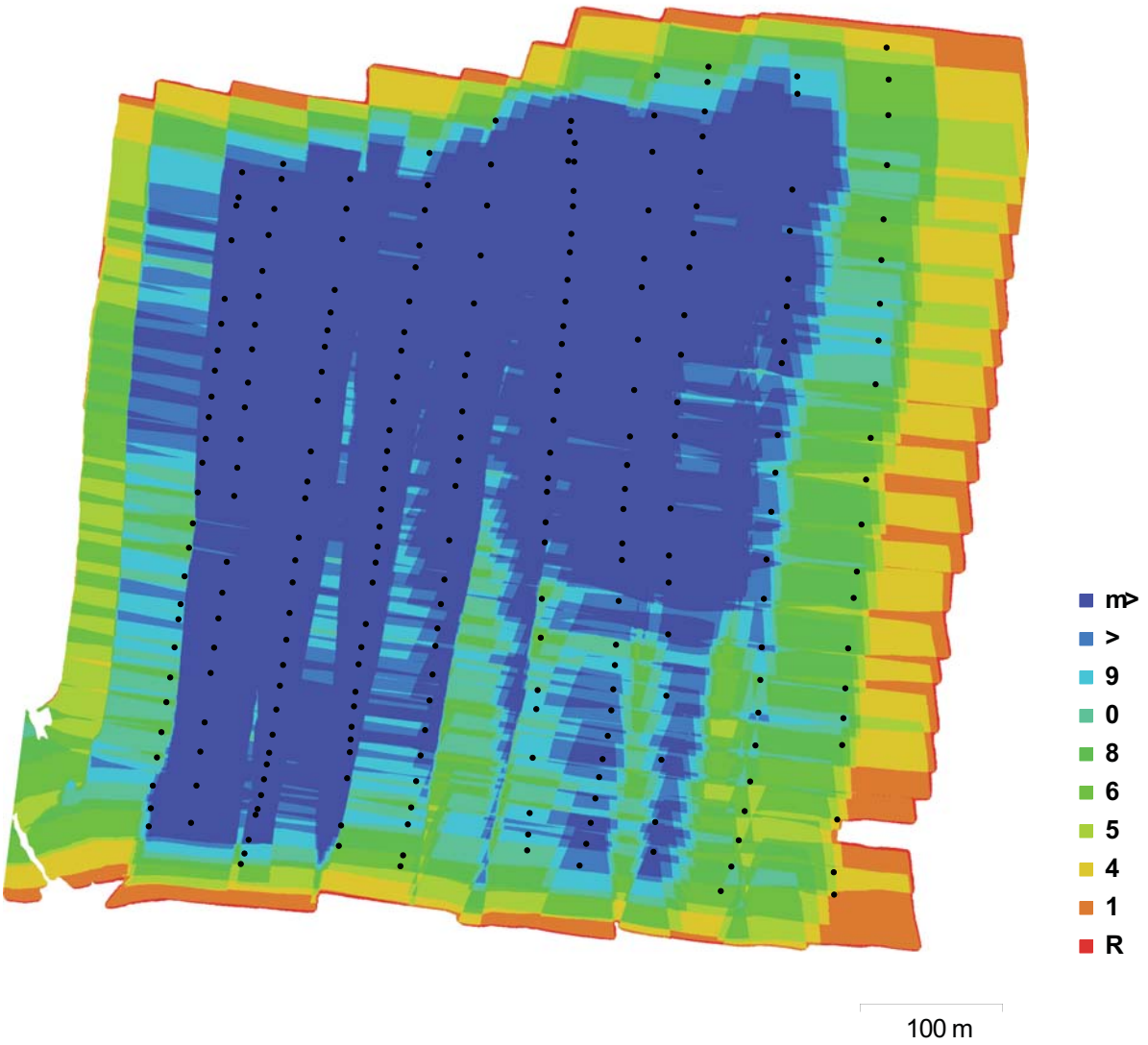


Fig. 1. Camera locations and image overlap.

Number of images:	831	Camera stations:	831
Flying altitude:	98.Gm	² ie points:	66T39,
4 round resolution:	G3/ cmxpi7	Projections:	81, T2G0
Coverage area:	0.G/ 6 5mk	Reprojection error:	0./ 3/ pi7

Cav pra Modpl	g pPolJtios	Focal Lpsnth	Sixpl 7 izp	Srpcalibratpd
FCG30 (G21 mm)	G, , 8 7 8868	G21 mm	1.91 7 1.91 µm	No

²able 1. Cameras.

Cav pra Calibratios

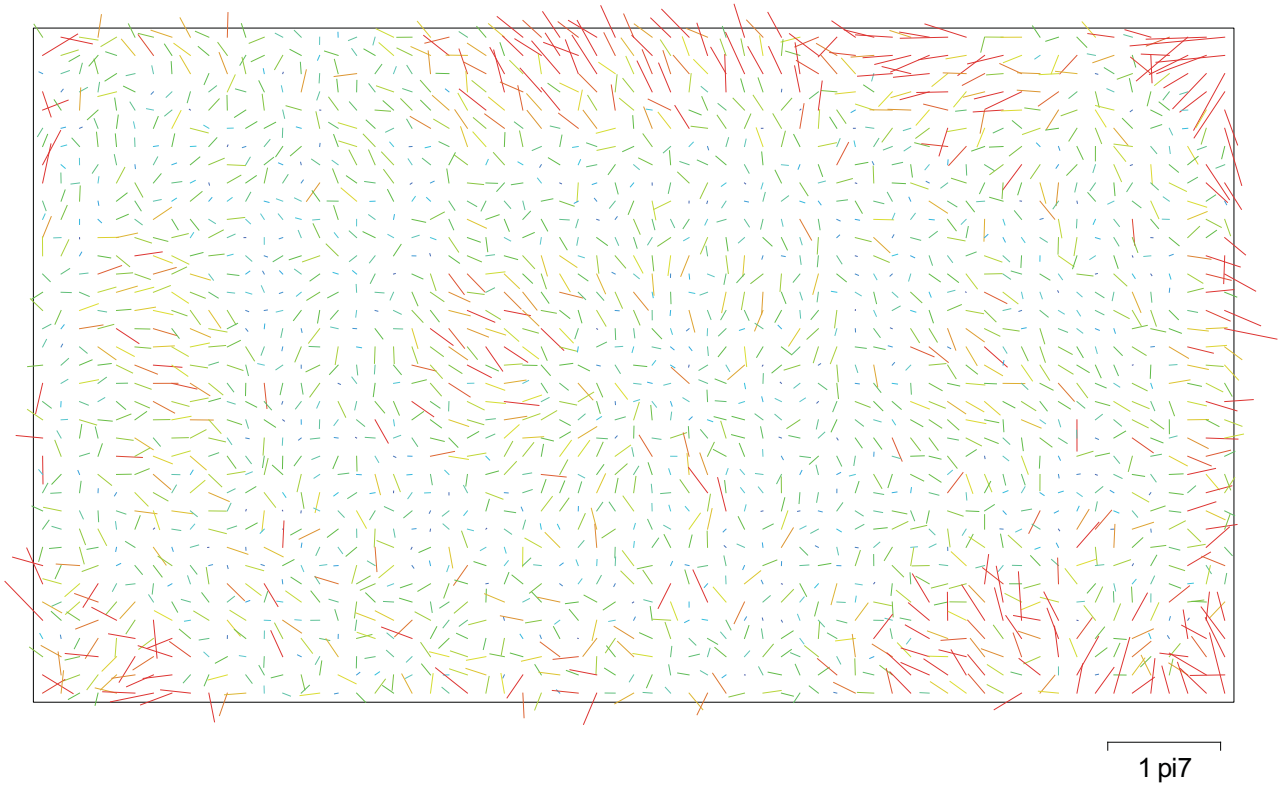


Fig. 8. Image residuals for FCG30 (G21 mm).

FC46y (4.8Rv v)

831 images

Resolution	Focal Length	Pi7el Size	Precalibrated
4>>1 x 1151	**4.8Rv v**	**R0Rx R0Rµv**	**No**
² ype:	Frame	F:	13/ 9.22
C7:	-13.8212	B1:	0
Cy:	-12., 8G1	B8:	0
K1:	-0.0289G32	P1:	0
K8:	0.0866831	P8:	0
KG	-0.001, 2, 11	PG	0
K6:	0	P6:	0

Cav pra LocatiosP

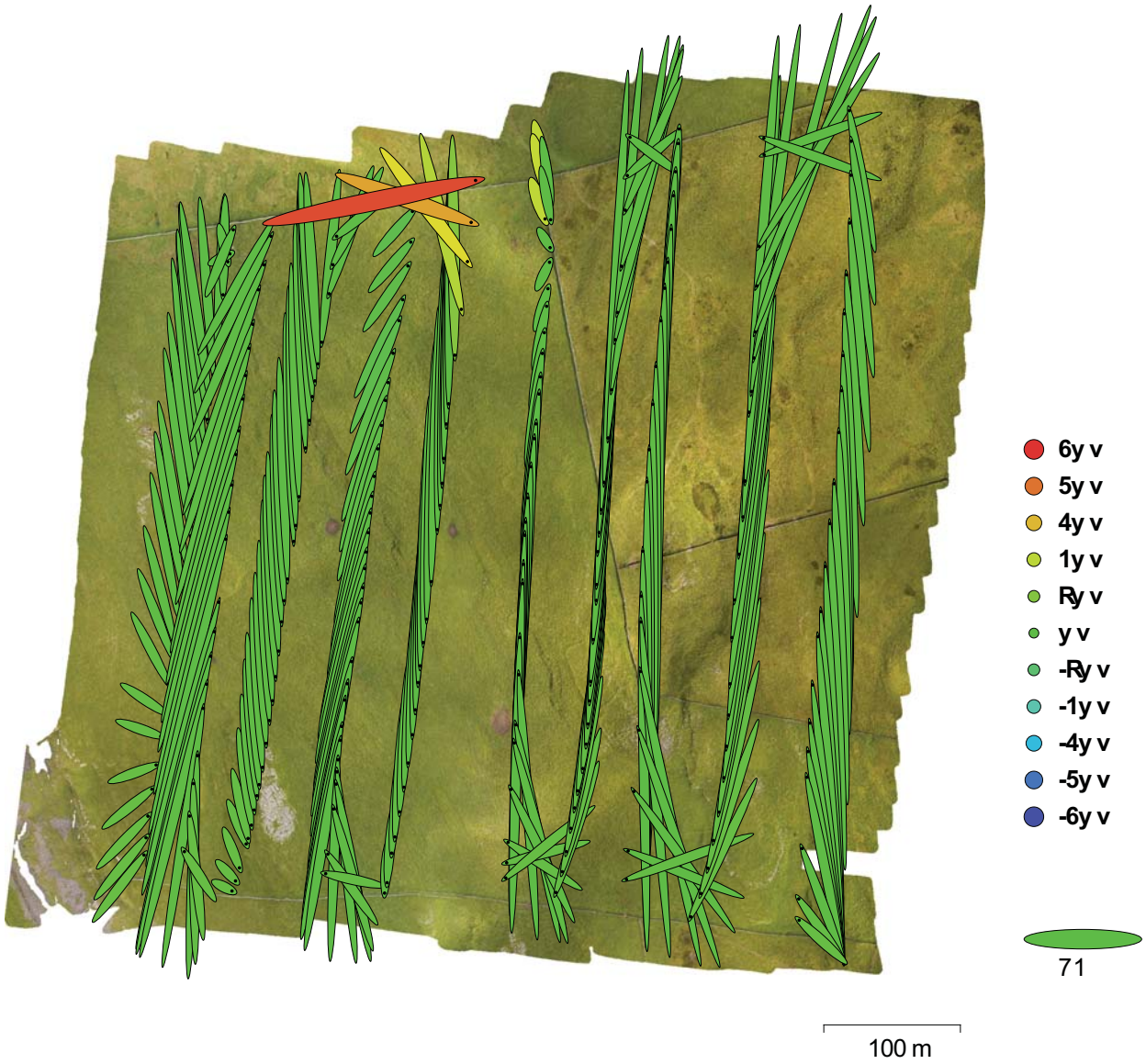


Fig. G Camera locations and error estimates.
Z error is represented by ellipse color. XTY errors are represented by ellipse shape.
Estimated camera locations are mar5ed with a blac5 dot.

X prror (v)	Y prror (v)	Z prror (v)	XY prror (v)	Total prror (v)
G8.G086	128.82/	3.10G0G	123.638	123.3G1

² able 8. Average camera location error.

3inital ElpDatios Modpl

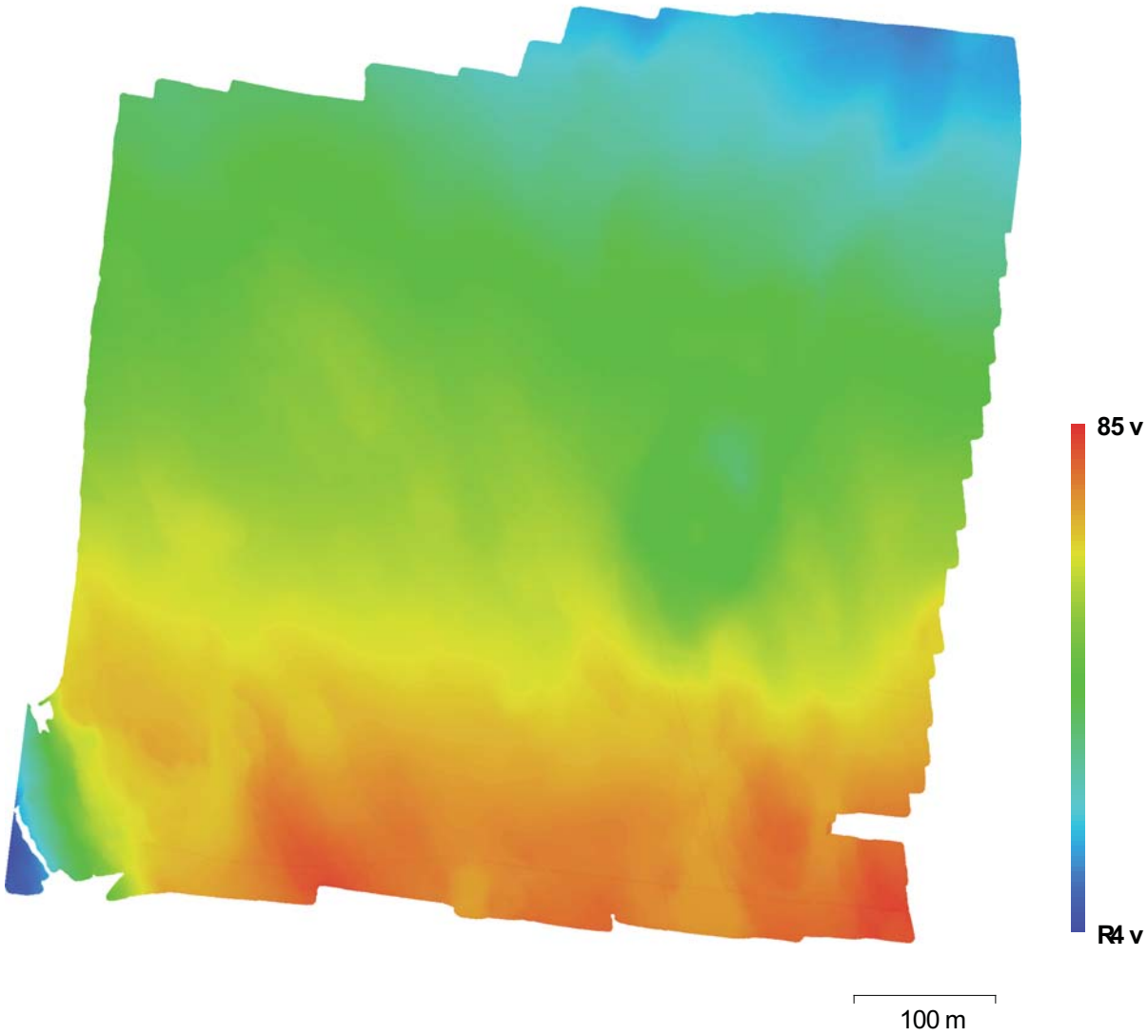


Fig. 6. Reconstructed digital elevation model.

Resolution:	9.19 cmxpi7
Point density:	1, 3 pointsxmk

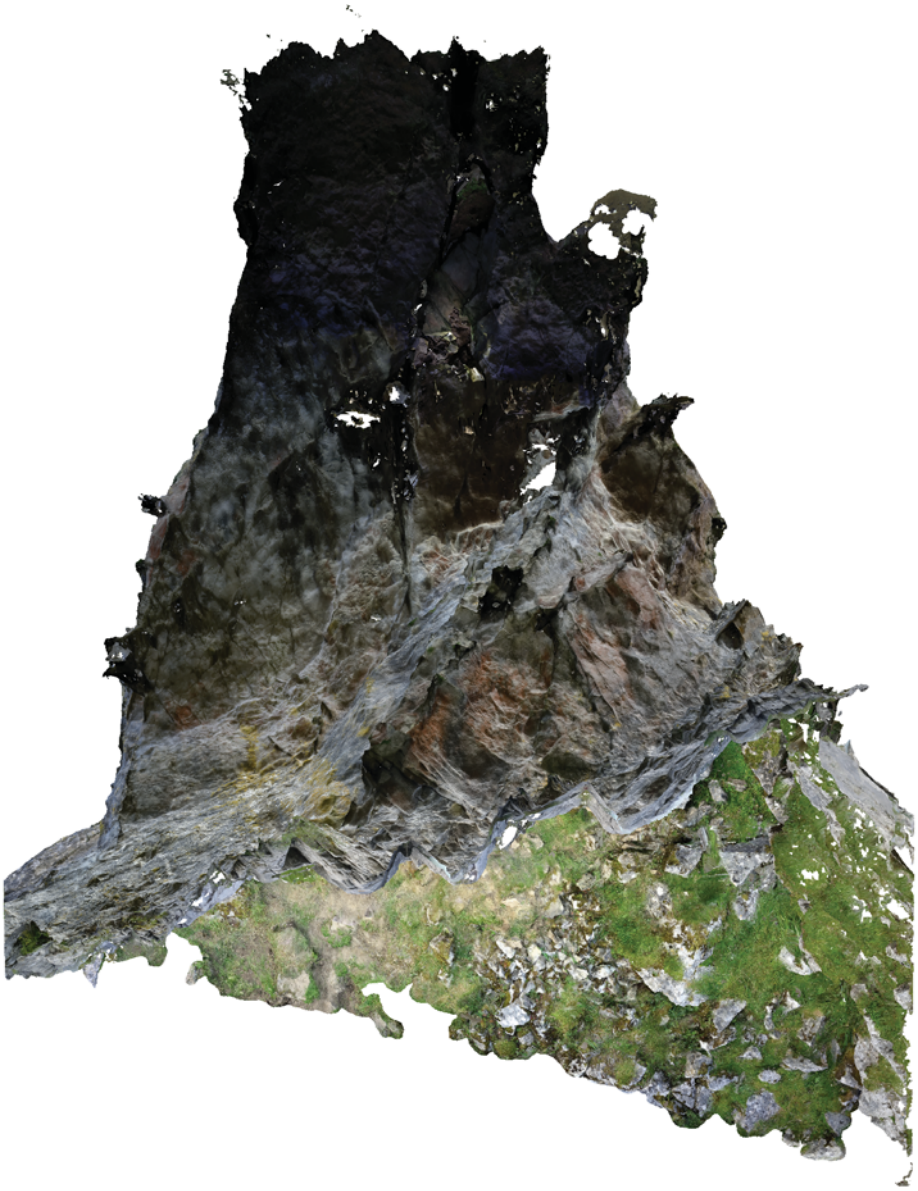
SrocpPPisn Sarav ptprP

Gpspral	
Cameras	831
Aligned cameras	831
Coordinate system	W4 S / 6 (EPS4 ::6GB2)
Soist CloJd	
Points	66T39, of 6, T 33
Reprojection error	0./ 39982 (8.3, / 2Gma7)
Effective overlap	3.83981
Alinsv pst earav ptprP	
Accuracy	High
Pair preselection	Disabled
Key point limit	60T000
² ie point limit	1T000
Constrain features by mas5	No
Matching time	8 hours 6Gminutes
Alignment time	8 minutes 6, seconds
3peth MaeP	
Count	831
gpcosPtrJctios earav ptprP	
Quality	High
Filtering mode	Aggressive
Processing time	1 hours 10 minutes
3psPp Soist CloJd	
Points	/ 0TBG1T118
gpcosPtrJctios earav ptprP	
Quality	High
Depth filtering	Aggressive
Dense cloud generation time	19 minutes G8 seconds
Modpl	
Faces	12TlG/ Tl, ,
Vertices	/ T096T969
² e7ture	6T0, 2 76T0, 2Tuint/
gpcosPtrJctios earav ptprP	
Surface type	Arbitrary
Source data	Dense
Interpolation	Enabled
Quality	High
Depth filtering	Aggressive
Face count	12TlG/ Tl, ,
Processing time	8 hours 8 minutes
TpxtJrisn earav ptprP	
Mapping mode	4eneric
Blending mode	Mosaic
² e7ture size	6T0, 2 76T0, 2
UV mapping time	8 minutes 19 seconds
Blending time	10 minutes 69 seconds
7oftwarp	
Version	1.8.2 build 8/ G6
Platform	Windows 26 bit

Ben Scar Cave

Processing Report

12 January 2017



Survey Data

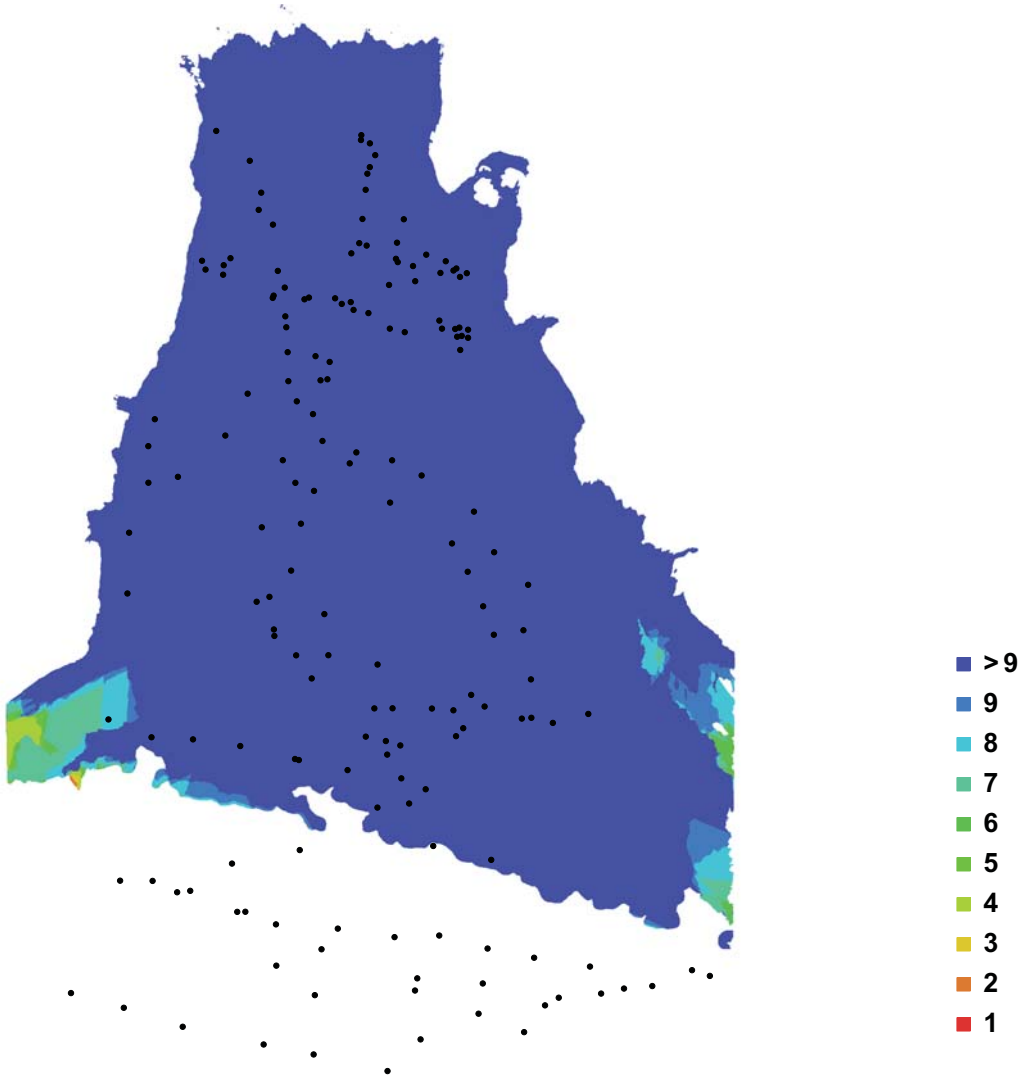


Fig. 1. Camera locations and image overlap.

Number of images:	183	Camera stations:	171
		Tie points:	160,147
		Projections:	543,258
		Reprojection error:	1.28 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
NIKON D5300 (16 mm)	6000 x 4000	16 mm	4 x 4 µm	No

Table 1. Cameras.

Camera Calibration

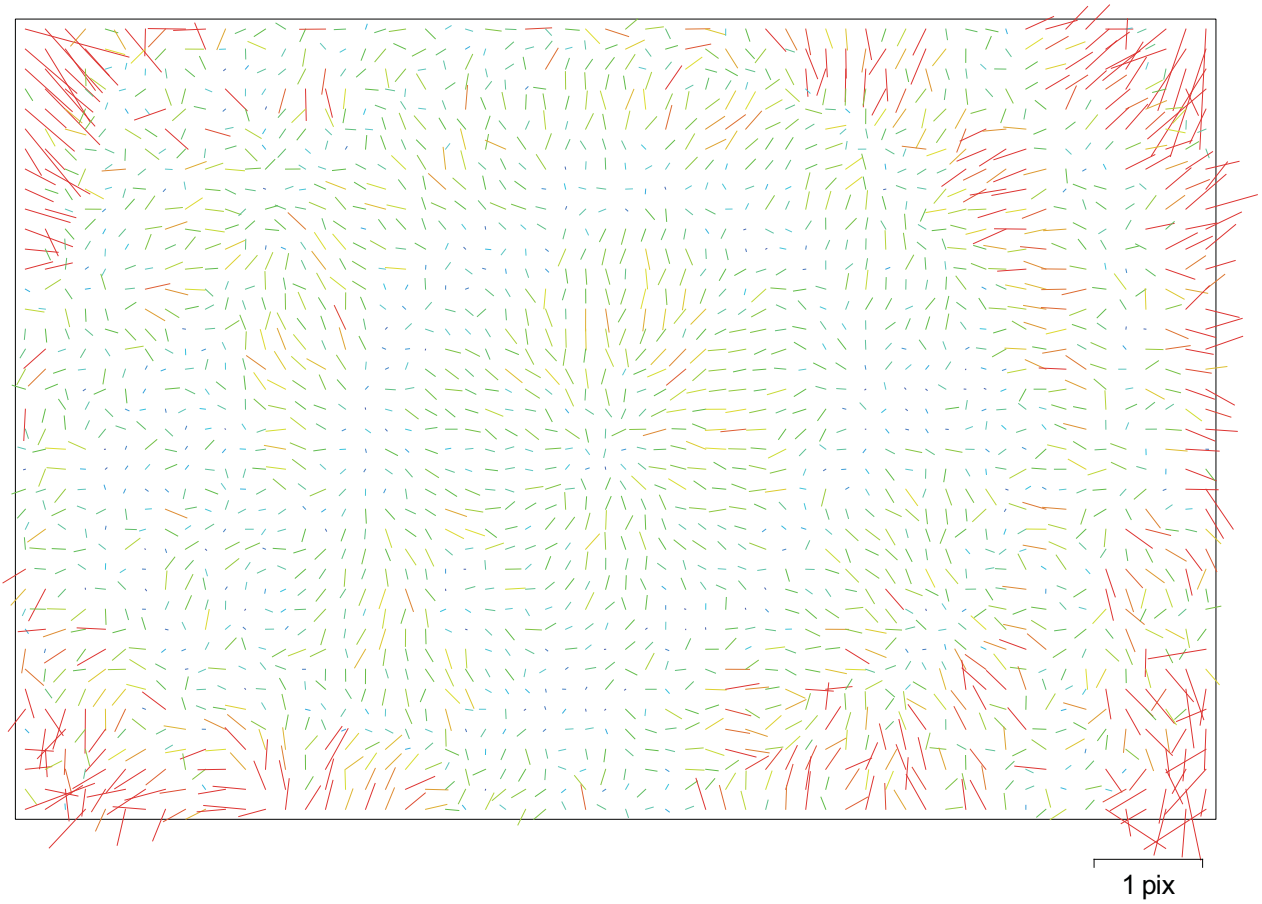


Fig. 2. Image residuals for NIKON D5300 (16 mm).

NIKON D5300 (16 mm)

183 images

Resolution	Focal Length	Pixel Size	Precalibrated
6000 x 4000	**16 mm**	**4 x 4 µm**	**No**

Type:	Frame	F:	4139.32
Cx:	-5.47047	B1:	-1.09473
Cy:	19.7708	B2:	-2.01431
K1:	-0.130063	P1:	-0.0011081
K2:	0.121098	P2:	0.000163374
K3:	-0.0351372	P3:	0
K4:	0	P4:	0

Digital Elevation Model

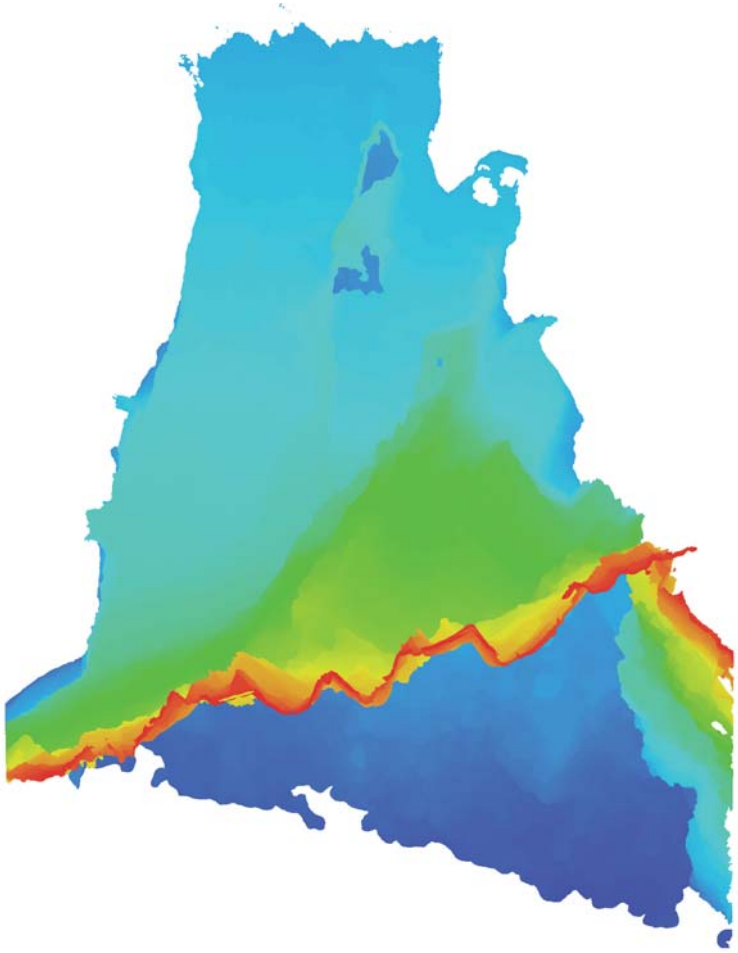
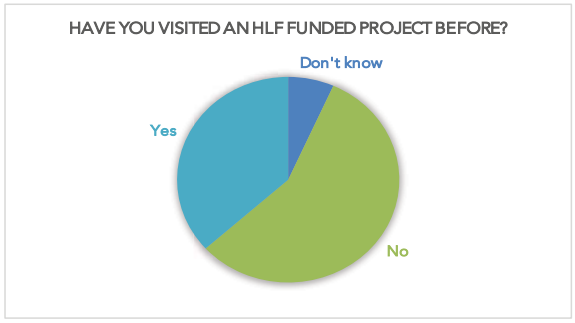


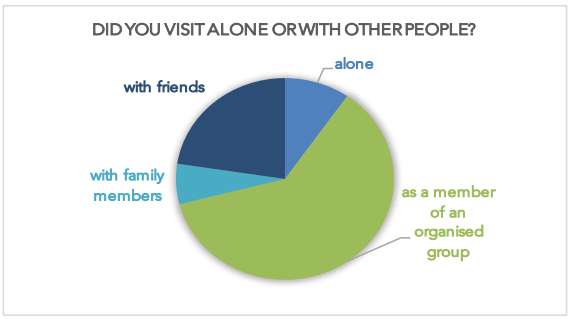
Fig. 3. Reconstructed digital elevation model.

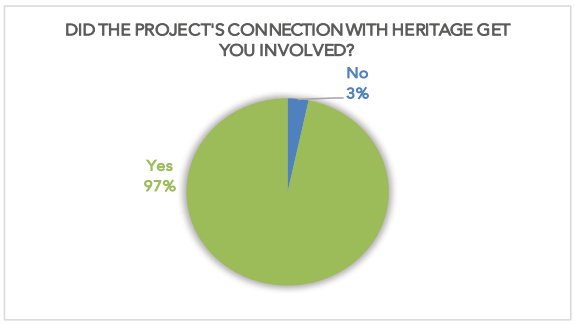
Processing Parameters

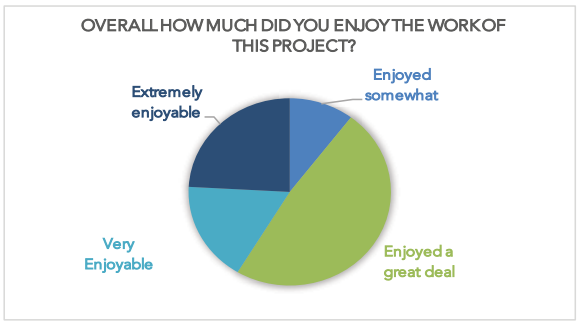
General	
Cameras	183
Aligned cameras	171
Coordinate system	Local Coordinates (m)
Point Cloud	
Points	160,147 of 203,190
RMS reprojection error	0.262146 (1.27756 pix)
Max reprojection error	0.832855 (46.3079 pix)
Mean key point size	4.41538 pix
Effective overlap	3.96224
Alignment parameters	
Accuracy	High
Pair preselection	Generic
Key point limit	40,000
Tie point limit	4,000
Constrain features by mask	No
Adaptive camera model fitting	Yes
Matching time	11 minutes 36 seconds
Alignment time	1 minutes 41 seconds
Depth Maps	
Count	171
Reconstruction parameters	
Quality	High
Filtering mode	Aggressive
Processing time	1 hours 52 minutes
Dense Point Cloud	
Points	115,419,470
Reconstruction parameters	
Quality	High
Depth filtering	Aggressive
Depth maps generation time	1 hours 52 minutes
Dense cloud generation time	3 hours 22 minutes
Model	
Faces	2,487,076
Vertices	1,251,666
Texture	8,192 x 8,192, uint8
Reconstruction parameters	
Surface type	Arbitrary
Source data	Dense
Interpolation	Enabled
Quality	High
Depth filtering	Aggressive
Face count	2,515,999
Processing time	1 hours 49 minutes
Texturing parameters	
Mapping mode	Generic
Blending mode	Mosaic
Texture size	8,192 x 8,192
Enable color correction	Yes
Enable hole filling	Yes
UV mapping time	1 minutes 23 seconds
Blending time	1 hours 15 minutes
Software	
Version	1.2.6 build 2834
Platform	Windows 64 bit

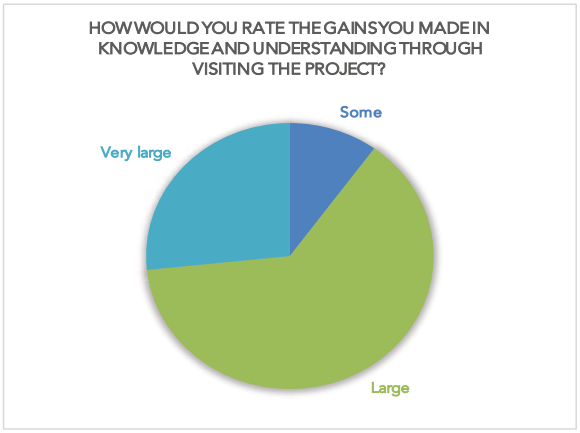
17 APPENDIX 5 – UTU PARTICIPATION EVALUATION CHART

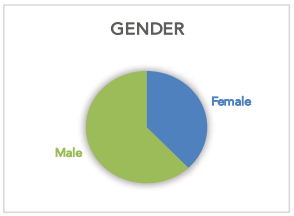


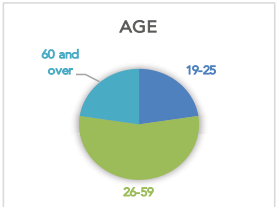


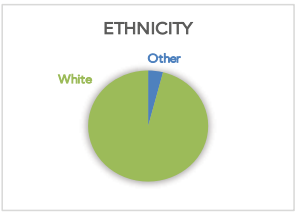


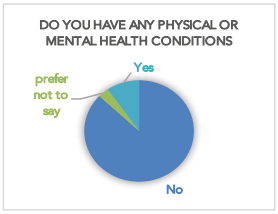


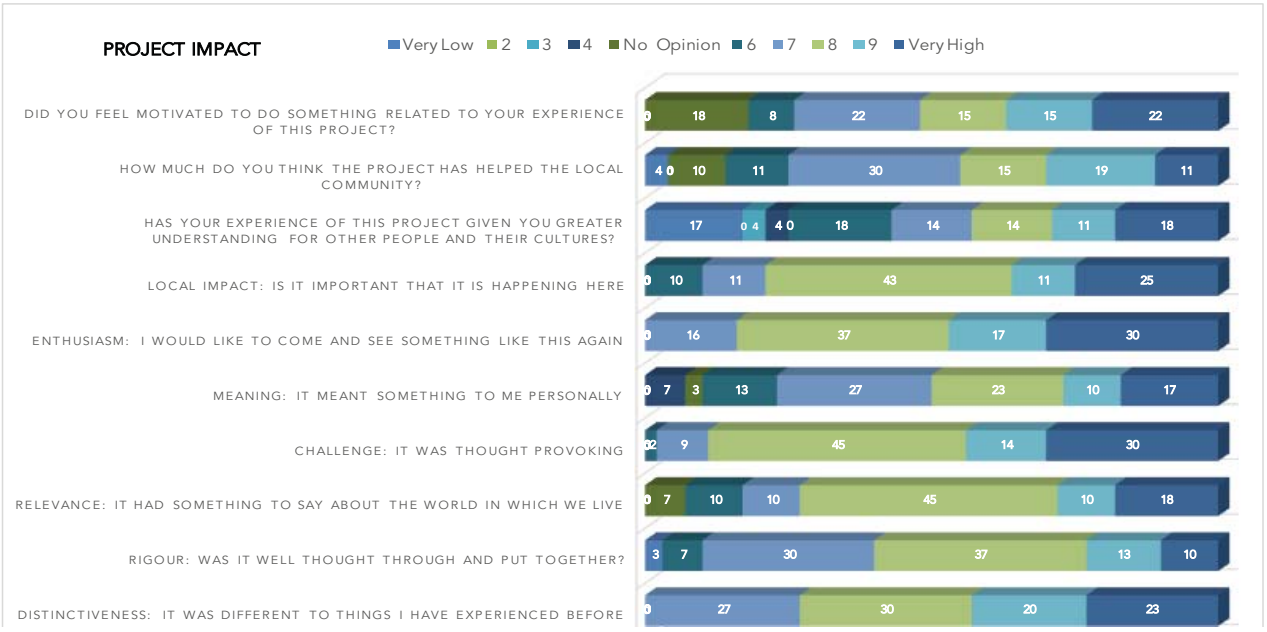












Source: DigVentures 2016

18 APPENDIX 6 – OASIS FORM

OASIS ID: digventu1-290989

Project details

Project name	Under the Uplands
Short description of the project	DigVentures undertook a community-based archaeological investigation within an area subject to a Limestone Pavement Order (LPO). The work was completed under planning permission decision number C/62/635 (issued on the 16th June 2016) and derogation agreement reference AG00346610 on land owned by the YDNPA. The proposed work was funded as part of the HLF supported 'Under the Uplands' digitisation and archiving project (HLF Project OH-14-07479), and was designed to contextualise the Romano British objects recovered from Victoria Cave with an investigation of the neighbouring Ben Scar Cave, Settle Bank (the Site). DigVentures developed a purpose built database of sites and artefacts recovered from Victoria Cave and Ben Scar Cave, supported by a landscape level photogrammetry survey of the research area (including Victoria Camp and Settle Bank). The overarching aim of the fieldwork was to provide baseline information to contribute to the future management, research and presentation of the Site, with public participation designed into every aspect of the investigation.
Project dates	Start: 01-03-2016 End: 01-07-2017
Any associated project reference codes	UTU16 - Sitecode
Any associated project reference codes	C/62/635 - Planning Application No.
Type of project	Field evaluation
Site status	Site of Special Scientific Importance (SSSI)
Current Land use	Grassland Heathland 2 - Undisturbed Grassland

Project location

Country	England

Site location	NORTH YORKSHIRE CRAVEN SETTLE Victoria Camp and Settle Bank, Langcliffe Scar
Postcode	BD24 9LD
Study area	0 Square metres
Site coordinates	SD 843 622 54.055331508888 -2.2398550128 54 03 19 N 002 14 23 W Point
Lat/Long Datum (other)	54.075284/-2.2414326
Height OD / Depth	Min: 440m Max: 450m

Project creators

Name of Organisation	DigVentures
Project brief originator	Local Planning Authority (with/without advice from County/District Archaeologist)
Project design originator	DigVentures
Project director/manager	Brendon Wilkins
Project supervisor	Nigel Steel
Type of sponsor/funding body	Other Charitable Trust
Name of sponsor/funding body	Heritage Lottery Fund

Project archives

Physical Archive Exists?	No

Digital Archive recipient	Yorkshire Dales National Park Authority
Digital Archive notes	In addition to the project report, the digital archive is currently viewable online at https://digventures.com/under-the-uplands/
Paper Archive Exists?	No