EAST AND MID DEVON RIVER CATCHMENTS NATIONAL MAPPING PROGRAMME SURVEY

Historic England Project No. 6634
Phases 1 and 2
Final Report

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On behalf of:
Devon County Council Historic Environment Team

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East & Mid Devon River Catchments National Mapping Programme Survey

A National Mapping Programme Report

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Abbreviations

AP	Aerial Photography for Great Britain
APGB	Pan-Government Agreement
AONB	Area of Outstanding Natural Beauty
BGS	British Geological Survey
CUCAP	Cambridge University Committee for Aerial Photography
DAP	Devon Aerial Photograph
DBA	Desk Based Assessment
DCC	Devon County Council
DCA	Devon Character Areas
DCCHER	Devon County Council Historic Environment Record
DCCHET	Devon County Council Historic Environment Team
EA	Environment Agency
EMDRC	East and Mid Devon River Catchments
GIS	Geographical Information System
HE	Historic England (formerly English Heritage)
HEA	Historic England Archive (formerly the National Monument Record)
HLC	Historic Landscape Characterisation
HPC	Heritage Protection Commissions (formerly NHPCP)
LIDAR	Light Detection And Ranging
MORPHE	Management of Research Projects in the Historic Environment
NCA	National Character Areas
NE	Natural England
NHPP	National Heritage Protection Plan
NHRE	National Record for the Historic Environment
NMP	National Mapping Programme
NMR	National Monument Record (now renamed as Historic England Archive)
NNR	National Nature Reserve
OS	Ordnance Survey
PAO	Project Assurance Officer
PDF	Portable Document Format
RAF	Royal Air Force
RCHME	Royal Commission on the Historical Monuments of England
SAC	Special Area of Conservation
SPA	Special Protection Areas
SSSI	Sites of Special Scientific Interest
WHS	World Heritage Site

The First Edition Ordnance Survey 25 inch mapping dating to the 1880s-1890s is referred to throughout the document as ‘First Edition OS’, and similarly the 1904-1906 Second Edition Ordnance Survey 25 inch maps are referred to as ‘Second Edition OS’.

Acknowledgements

The East & Mid Devon River Catchments National Mapping Programme survey was funded by English Heritage. English Heritage split into two organisations on 31st March 2015. The new English Heritage is a charity which cares for and presents a portfolio of historic properties and archaeological sites open to the public. The organisation now known as Historic England is the public body which looks after England's historic environment. This includes the statutory protection of historic buildings and archaeological sites, development and promotion of national frameworks, policies and best practice in heritage protection. The English Heritage Archive is now the Historic England Archive.

All interpretations, transcriptions and HER records were created by Cain Hegarty, Richard Sims and Stephanie Knight. Helen Winton of Historic England Aerial Investigation and Mapping acted as NMP Quality Assurance Officer and Project Assurance Officer.

DCC HER support and quality assurance was provided by Graham Tait and Steph Knight. The project was overseen by Bill Horner, County Archaeologist at Devon County Council, who also provided advice on interpretation and invaluable local detail.

The project was primarily carried out using aerial photographs loaned by the Historic England (HE) Archive and Cambridge University Collection of Aerial Photographs (CUCAP). The HE Archive aerial photographic loans and digital geographical data for aerial photographic coverage were administered by Luke Griffin. The CUCAP loans were administered by Alan Martin. Environment Agency lidar imagery was provided in part by Simon Crutchley and Helen Winton of Historic England's Aerial Investigation and Mapping team. Recent vertical aerial photograph coverage was supplied to the survey in digital format via the Pan-Government Agreement (PGA) by David Gander of Historic England's Geographic Information and webGIS Team; latterly, Aerial Photography for Great Britain (APGB) images were supplied to Historic England through the APGB agreement by Next Perspectives.

Devon Aerial Photographs (DAPs) were essential to the survey and were made available by Devon County Council. They are not to be reproduced in any way without the prior written consent of Devon County Council Historic Environment Team. Most archaeological sites in Devon are on private land. Depiction of a site on an aerial photograph, or its inclusion in the Historic Environment Record, does not imply any right of public access.

We are indebted to a number of individuals and organisations that have provided images and information that has aided interpretation and been included in this report. In no particular order, these include; Nicky Smith at Historic England, Steve Trick at Exeter University, David Chambers and Mike Sampson of Blundell's School, Tiverton, and Whimple History Society.

(Historic Environment, Devon County Council). Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings.

The views and recommendations expressed in this report are those of the authors and are presented in good faith, on the basis of professional judgements derived from the evidence currently available.

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1 Summary

This document is the final report for the East and Mid Devon River Catchments (EMDRC) National Mapping Programme (NMP) interpretive aerial photograph survey (Historic England Project No. 6634). It takes the form of an illustrated report that is intended to summarise the archaeological highlights and themes to emerge from the survey and assess how the project has fulfilled its aims by meeting its stated objectives.

The survey was funded by the Historic England (formerly English Heritage) Heritage Protection Commissions (HPC) and was carried out by AC archaeology's NMP team based at the offices of the Devon County Council Historic Environment Team (DCCHET) at County Hall, Exeter.

The project area included 406 square kilometres of the catchments of the Exe, Culm and Clyst Rivers in Mid- and East-Devon, plus part of the Blackdown Hills AONB and the East Devon AONB (see Figure 1). The survey was divided into two phases of approximately 225 square kilometres (Phase One) and 181 square kilometres (Phase Two; see Figure 2).

The general aim of an NMP survey is "to enhance the understanding of past human settlement, by providing primary information and synthesis for all archaeological sites and landscapes visible on aerial photographs or other airborne remote sensed data. This comprehensive synthesis of the archaeological data available on aerial photographs is intended to assist research, planning, and protection of the historic environment" (Horne 2009).

The EMDRC survey area includes a zone of good quality agricultural land described as the 'agricultural heartland' of Devon. Enhancing the understanding of this area, one of the most productive areas for archaeological aerial reconnaissance in Devon, was a specific project driver. This area is also particularly vulnerable to threats arising from resource protection initiatives (Catchment Sensitive Farming and related programmes), regional housing and development growth-point targets. In addition it provides compelling opportunities for research and improving landscape management of an under-studied designated protected landscape, the Blackdown Hills AONB.

Almost 2400 archaeological sites and landscapes were identified, interpreted and recorded in the DCCHER, of which almost 1900 were previously unrecorded. Counting only those HER records for monuments, i.e. excluding buildings, this is an increase of almost 45% over pre-survey figures within the survey area. For further interpretation and quantification of the survey results see Section 5.1 and 5.2.

This report is not intended to be a comprehensive account of the survey results; for more exhaustive and detailed monument information, please consult the Devon HER. This report has been formatted for viewing as a digital document/pdf. If viewed in hard copy all embedded hyperlinks are listed in Section 10.

2 Introduction

2.1 Background to the Project

The survey takes as its starting point the catchments of the Rivers Exe, Culm, and Clyst. Devon County Council's Historic Environment Team had identified a number of overlapping project drivers that led to the definition of an area between Exeter and Tiverton as well suited to systematic survey from aerial photographs and other remotely sensed data to provide enhanced baseline data to aid the understanding of the archaeological resource in this area. The main project drivers can be summarised as:

2.1.1 Development Pressure

The Exeter and East Devon area was recognised by the Government as a Growth Point in 2006. The vision for Exeter and East Devon Growth Point was to "help Exeter and East Devon realise its full economic potential by providing a range of employment opportunities alongside new communities where people will have the ability to live close to where the majority of jobs will be provided." (http://www.exeterandeastdevon.gov.uk/What-is-a-Growth-Point/ consulted April 2014). In practical terms this equated to the expansion of commercial developments such as Exeter Skypark, Exeter Science Park and Exeter International Airport, housing developments such as the new community of Cranbrook in East Devon, urban extensions of Exeter at Newcourt, Monkerton/Hill Barton and an area covered by the South West Exeter Masterplan, plus associated improvements to the public transport network. The impact and current progress of the Exeter and East Devon Growth Point can be seen here.

Despite the abolition of the Regional Spatial Strategy, significant allocations of housing and industrial development remain in the East and Mid Devon Local Development Frameworks, particularly around Exmouth, Tiverton and Cullompton. Enhanced environmental baseline data provided by the NMP survey will help to mitigate the impact of these and future expansions, and inform positive management such as Green Infrastructure strategies.

2.1.2 Agricultural and Water Quality Pressure

Catchment Sensitive Farming (CSF) is a joint project between the Environment Agency and Natural England, funded by Defra and the Rural Development Programme for England. From 2015 CSF management options and Capital Works grants to address water quality issues will be delivered through Countryside Stewardship (CS) schemes.

The CS schemes continue to target support for farmers in priority catchment areas to reduce water pollution from agriculture by reducing soil erosion and water runoff. Unfortunately many of the solutions offered within and without of CS could potentially have a significant and detrimental effect on the historic environment. For instance, farmers have in the past been encouraged to use mechanical subsoilers to reduce soil compaction, improve drainage and root penetration. Subsoiling below the usual cultivation depth can be very destructive to buried archaeological remains. The extent and impact of subsoiling in Devon is

unquantified and it is not possible to visually identify which areas have been subsoiled, but it is certain this practise has taken place and has been actively encouraged by government agencies.

2.1.3 The Cropmark Resource

The EMDRC NMP survey area includes extensive areas of good quality agricultural land, largely grade 1-3, unusual in a county where the vast majority is grade 3-5. This area has historically shown good cropmark visibility and has benefited from high quality local aerial reconnaissance; the Devon Aerial Reconnaissance Program flew the area virtually every year from 1983 to 1999. This has produced a good local collection of specialist oblique aerial photographs and concomitant HER records.

Prior to the survey the Devon HER recorded almost 6500 monuments within, or intersecting with, the project area. Six percent of these had been identified from aerial photographic sources, including regionally significant prehistoric ritual landscapes, Roman military sites, widespread enclosed farmsteads and field systems of the later prehistoric and Romano-British tradition. Although valuable, this cropmark information was available to the HER largely as sketch plotted interpretations viewable digitally in a low resolution raster format. HER spatial monument data for many of these sites had not been fully or accurately polygonised or were located only as point data. One of the aims of the EMDRC NMP survey was therefore to carry out the first systematic assessment of this important local specialist oblique collection alongside other available sources of information, such as vertical aerial photography and other remote sensing data such as lidar. Recent NMP survey carried out immediately to the west had demonstrated the effectiveness of the methodology for significantly enhancing the understanding of known monuments even in relatively well studied areas (Went and Horne. 2007; Young, 2005).

2.1.4 Earthworks and AONBs

The county of Devon contains a high proportion of protected landscapes, including five AONBs. In these areas the local authority has a statutory duty to have regard to the protection and enhancement of the landscape and a responsibility to prepare and adopt management plans. The survey area took in the westernmost part of the East Devon AONB and the western scarp of the Blackdown Hills AONB.

In contrast to the majority of the project area (with the exception of localised survival such as the Upton Pyne barrow cemetery (see Section 6.3.1) the Blackdown Hills AONB was identified as having high potential for the identification of earthwork monuments.

To date the AONB has been subject to limited archaeological exploration, be it measured survey of the type undertaken by the Ordnance Survey Archaeological Division, or thematic study as carried out on the nearby protected landscapes of the Brendon Hills, Exmoor or Dartmoor. Aerial survey has also been confined to a limited survey project commissioned by English Heritage at the request of Devon and Somerset County Councils prior to the area's designation as an Environmentally Sensitive Area (ESA) in 1992-1993, which revealed a rich

diversity of earthwork monuments, but the products of which were limited to sketch plotted point data, not accurately transcribed or polygonised (Horner, pers. comm.; Weddell and Simpson 1993). In contrast, a recent community project on the Forest of Neroche (http://www.nerochescheme.org/) in the north Blackdown Hills effectively demonstrated the potential of lidar data for studying the heritage of this poorly understood area, a potential further emphasised by results achieved by the EMDRC NMP survey, albeit in a very limited area of the AONB (see Section 6.7.1 and 6.7.2).

2.2 The Project Area

The project covers a total area of 406 square kilometres between Tiverton in the north and Exmouth in the south, focusing on the catchments of the Rivers Exe, Culm, and Clyst (see Figure 1). The urban centre of Exeter, the County Town of Devon, was excluded from the survey.

For loan management purposes the survey was divided into two phases (see Figure 2). Phase One comprised 225 square kilometres, or 9 OS map quarter sheets. Phase Two totalled 181 square kilometres, or 6 complete and 2 partial map quarter sheets.

The survey area was designed to extend the NMP coverage in Devon by abutting two previous project areas; the east transect of the North-Devon Mapping Project (Young and Turner 2007) and the coastal study area of the South Devon Coast RCZAS NMP component. Subsequent survey phases have been designed to further extend the contiguous NMP baseline data into the Blackdown Hills AONB (Hegarty 2015), with future surveys envisaged as completing NMP survey of the East Devon AONB.

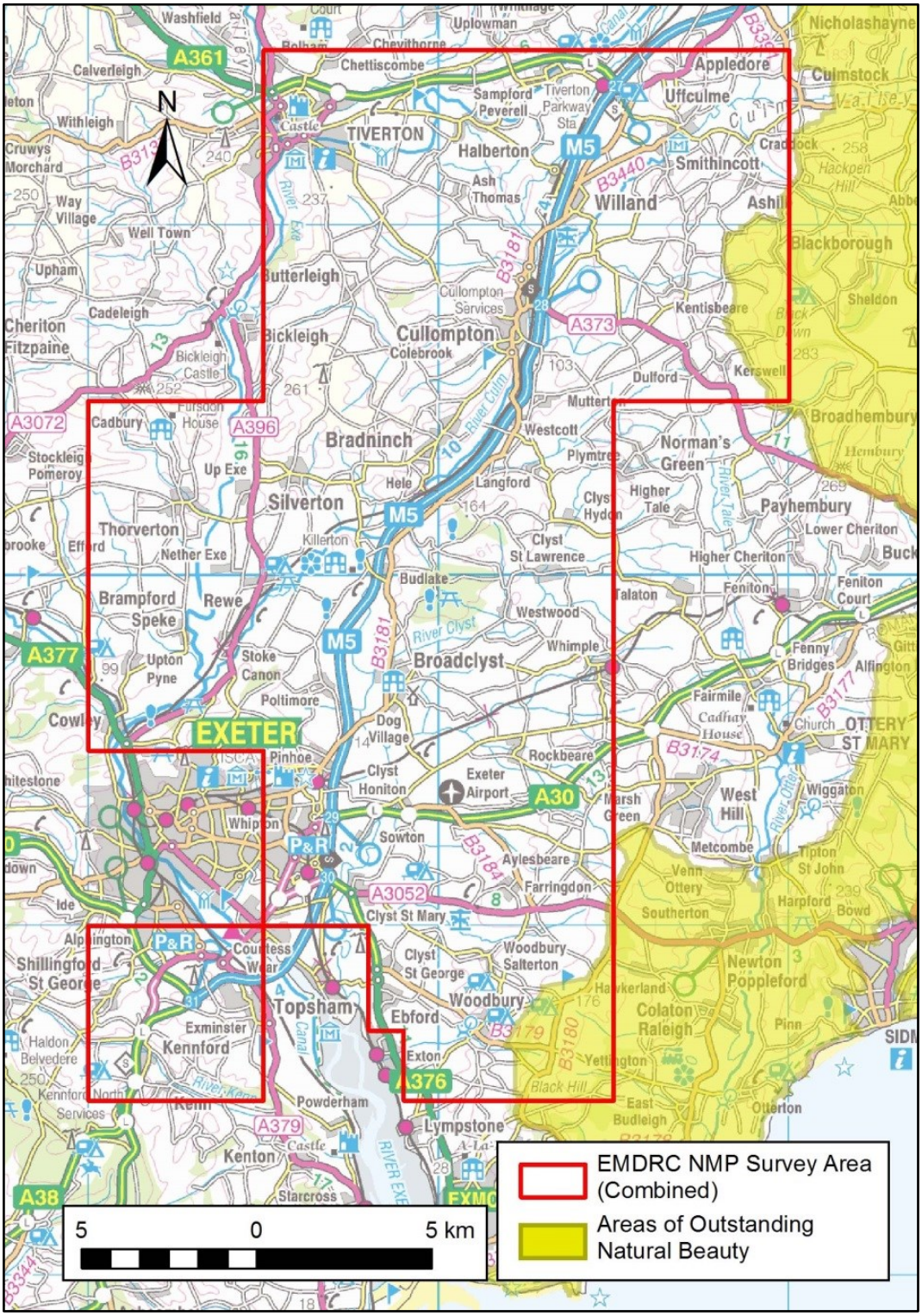

Figure 1. The East and Mid-Devon River Catchments survey area in relation to the Blackdown Hills Area of Outstanding Natural Beauty and East Devon Area of Outstanding Natural Beauty. Note the Rivers Exe, Culm and Clyst.

3 Aims and Objectives

3.1 Introduction

The general aim of any NMP survey can be summarised as:

"to enhance the understanding of past human settlement, by providing primary information and synthesis for all archaeological sites and landscapes visible on aerial photographs or other airborne remote sensed data. This comprehensive synthesis of the archaeological data available on aerial photographs is intended to assist research, planning, and protection of the historic environment" (Horne 2009). Further aims and objectives specific to this project are set out below:

3.2 Aims

The specific aims of this survey were:

1. To define, characterise and analyse the historic environment of the catchments of the rivers Exe, Culm and Clyst, and the western edge of the Blackdown Hills and East Devon AONBs by;
2. Facilitating the implementation of the Management Plans for the historic environment for Devon County Council, the East Devon AONB and the Blackdown Hills AONB.
3. Identifying and improving the management of Historic Environment assets threatened by resource protection initiatives as part of CSF (now delivered through Countryside Stewardship) in the catchments of the rivers Exe, Culm and Clyst.
4. Identifying and improving the management of Historic Environment assets threatened by the expansion of housing development, transport infrastructure and industrial development in the Exeter, Tiverton, Cullompton and Exmouth Development Growth Areas.
5. Establish a methodology appropriate for future surveys to Identify and improve the management of, and assist in the formulation of research objectives and strategies for, Historic Environment assets in poorly-understood and under-researched protected landscapes, such as the Blackdown Hills AONB.

3.3 Objectives

These aims have been achieved or facilitated through meeting the following objectives:

1. Completing digital transcription of archaeological landscape features within the proposed project area into Devon County Council's Geographic Information System (GIS) to current National Mapping Programme standards.
2. The incorporation of the data generated by the survey into Devon County Council's Historic Environment Record as monument records which form baseline environmental data. This data is now informing strategic, development management and agri-environment advice; since April 2014

over 40% of the SHINE records created or amended within the survey area have been informed by NMP and nearly a third were based on new NMP records. This number is likely to increase substantially.

3. Publication and dissemination of the survey results; this survey report will be made available via the HE website and information based on the project results is now available via the DCC HE webpages.

4. Provision of the project archive to Historic England in a format suitable for integration of project data into the Historic England Archive.

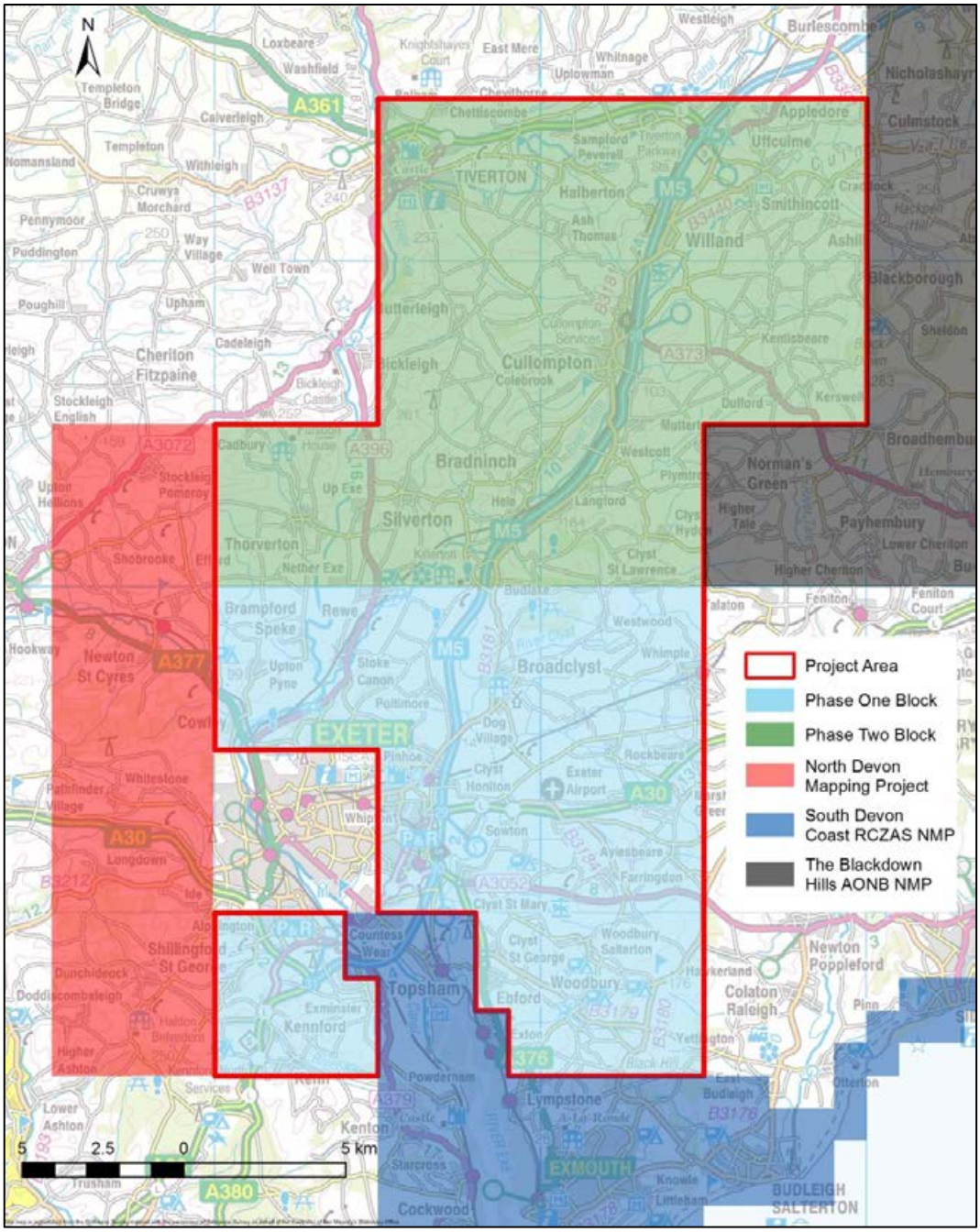

Figure 2. Phase 1 and Phase 2 East and Mid-Devon River Catchments survey area in relation to previous and subsequent National Mapping Programme Surveys.

4 Scope of the Survey

4.1 The NMP Methodology

The project followed current NMP standards and methodology, with a few minor variations arising from the use of ArcMap GIS as mapping software (Winton 2015; Hegarty 2014). The NMP is a standard for transcribing and recording archaeological sites and landscapes from aerial photographs and other airborne remote sensed data, such as Lidar.

The methodology involves the systematic examination of all readily available aerial photographs and other airborne remote sensed data to compile a comprehensive synthesis of the archaeological information interpreted from the aerial photographic resource to a nationally agreed standard.

NMP's archaeological and chronological scope is generally accepted as including archaeological sites and landscapes visible as cropmarks, earthwork banks and ditches and buildings or structures, interpreted as dating from the Neolithic period onwards, up to and including the 20th century. The most recent sites and landscapes recorded under the NMP methodology are usually associated with the major conflicts of the 20th century, including the Cold War. The full archaeological scope of the project is outlined in the project design (Hegarty 2015) and will not be repeated here.

The standard products of an NMP survey should include a digital archaeological map and a linked database containing archaeological interpretations and descriptions of the transcribed features, plus a means of disseminating the project results, usually a report. The archaeological interpretations generated by the NMP survey and recorded on the Devon HER are the primary product of the survey. The HER monument records, accessible via Heritage Gateway and in the near future via DCC's Environmental Data Online, are the primary means of disseminating the survey results. This report comprises an additional dissemination product providing an overview and synthesis of the survey results.

For this survey the synthetic NMP data was recorded directly onto the DCC HER, making it instantly available and accessible to enquiries from researchers, planning consultations and to enhance protection of the historic environment. The Devon HER is on the ExeGesIS HBSMR platform and all spatial data (interpretive transcriptions and monument polygons) was created in Esri ® ArcMap 10.1.

In line with standard NMP surveys, this project did not include a systematic field element, but provided valuable baseline historic environment data for further research or follow-on field investigations.

Further general background to the NMP methodology and details on technical requirements of best-practice is available in the Strategy for the National Mapping Programme (Horne 2009) and the Management of Research in the Historic Environment (MoRPHE) Project Management Planning Note 7 Interpretation and mapping from aerial photographs and other aerial remote sensed data.

4.2 Topography, Geology and Soils

The geology of the project area is dominated by the easterly dipping Permian New Red Sandstone, composed mainly of the Aylesbeare Mudstone Group, Exmouth Mudstone and Sandstone Formations, Crackington Formation, Exeter Group Sandstone and Exeter Group Breccia. Some Carboniferous Culm Measures, notably the Holsworthy Group Mudstone, Siltstone and Sandstone extend into the project area from the west (Figure 3).

The eastern edge of the project area crosses into the Triassic Budleigh Salterton Pebble Bed and Otter Sandstone Formations. These geologies have contributed to the formation of heathland. Outcrops of volcanic rocks are found around Exeter, with a volcanic plug in the city centre. Superficial Deposits of Alluvium and river terrace deposits dominate along the major watercourses (Natural England; Devon County Council *et al* 2002).

For much of the project area the distinctive red sandstone bedrock has degraded into slightly acid loamy or sandy soils, of limited fertility for arable cultivation, but generally very freely draining. Less well drained but very fertile loams and clays dominate the south and east of the project area, but can be found throughout the survey area. There is a strong correspondence between these less freely draining soils and the occurrence of features interpreted as having an agricultural drainage function, such as numerous broad ditches associated with removed field boundaries and earthwork banks interpreted as made to improve drainage for orchard tree planting, although this relationship is not exclusive (for instance similar orchard banks were also recorded on well drained soils and might have a range of functions or derive from traditional techniques – see Section 6.4.6).

The well-drained soils and relatively level topography have resulted in a very agriculturally productive area, described as an 'agricultural heartland' for Devon (Devon County Council *et al* 2002). The project area includes extensive areas of good quality arable agricultural land, largely grade 1-3, unusual in a county where the vast majority is grade 3-5. These soil conditions and the resultant arable practices have played a major role in the high proportion of archaeological monuments identified as cropmarks from aerial reconnaissance and historic aerial photography outside of the urban centres. Conversely, in those areas where the geological and deriving soils conditions have resulted in a landscape more appropriate to a pastoral economy, with concomitantly less intensive ploughing regimes, the proportion of monuments recorded from earthwork evidence was correspondingly higher (see Figure 3).

This bedrock (formerly solid) geological information has been taken from the BGS Web Map Service resources (© NERC) and Environment Agency National Character Area information. Basic soil information for the project area has been taken from Cranfield University's Soilscapes website.

4.3 Landscape Character

4.3.1 National Character Areas

The project area falls almost entirely within National Character Area (NCA) 148: Devon Redlands, with small areas to the east and west touching upon NCA 147, Blackdowns, and NCA 149, The Culm.

The landscape of this NCA area has been shaped by two million years of erosion and is dominated by the River Exe and its tributaries, including the Culm, Clyst, Yeo and Creedy Rivers. The landscape in the north of the NCA is made up of steeply rolling hills cut by the sharply incised tributaries of the Exe. To the south more gently rolling hills and convex valley slopes falling to major river valley floors dominate. To the south-west of the proposed project area the Haldon Ridge marks a major change in landform and geology. It reflects the national line of transition between lowland and highland Britain, traditionally said to run from the Exe to the Tees. Tributaries of the River Exe and the River Teign incise the Haldon Ridge in narrow and steep sided combes. The River Teign flows eastwards to the sea between Shaldon and Teignmouth. Higher ground borders the eastern side of the NCA, from the slopes of the Culm valley to the north and the edge of the Blackdown Plateaux. A narrow plateau forms a spur extending north to south from Budleigh Salterton.

The Exe Estuary is also the focus of many overlapping international, national and local nature conservation designations. Including Ramsar (1, the Exe Valley), Special Protection Areas (SPA, 2), Special Areas of Conservation (SAC, 2), National Nature Reserves (NNR, 1) and Sites of Special Scientific Interest (SSSI, 27). There are over 200 Local sites within the Devon Redlands.

Woodland is scattered throughout the NCA. Large mixed and broadleaf woodland is found mainly on the steeper valley slopes, with smaller copses throughout the area but particularly the upper valleys. Coniferous plantations are concentrated in the west of the NCA, and are a feature of the Haldon Hills beyond the project area. Ancient woodland makes up less than 2% of the NCA but some historic orchards do survive (planted orchards amount to less than 0.7%).

The NCA is largely rural in character but is relatively well populated. It contains a number of sizeable towns; in decreasing order of size from the largest, the county city of Exeter, which falls on the western limit of the project area, the market towns of Tiverton, which falls on the north-western tip of the project area, Cullumpton situated within the project area to the north-east and Crediton which sits approximately 5km to the west of the project area. The coastal town of Exmouth falls within the NCA less than 2km to the south of the project area. Throughout the remainder of the NCA a dispersed settlement pattern of farmsteads, small hamlets and villages dominates, connected by field patterns of medieval origin with some post-medieval enclosure (see HLC below). The historic settlements are characterised by buildings of thatch and cob as well as local volcanic stone. Between these settlements with their origins in the medieval cloth industry, the landscape is crossed by modern communications infrastructure, including the M5 motorway, major rail links and the expanding regional airport to

the east of Exeter. This information is taken largely from the Natural England leaflet; NCA 148: Devon Redlands Key Facts & Data V1.0.

The results of the EMDRC NMP can potentially inform future revisions of the NCA. In relation to the character of woodland within the survey area, the NMP project has built upon the work of Historic Landscape Characterisation (HLC) to define the landscape legacy of the previously regionally, and arguably nationally important cider orchard industry (see Section 6.4.6). The survey has also demonstrated how the spread of coniferous plantations within the survey area can in part be seen to have grown from, and is an extension of, the desire for designed landscapes in the 19th century, in particular in association with Poltimore House (see Section 6.9.2).

By the same token, the forces of 'improvement' embodied by the expansion of the formal parkland at Poltimore House can be seen to be a part of the historic changing settlement pattern within the survey area up to the mid-19th century. Place name evidence of grouped farms such Lower Southbrook and Higher Southbrook in Killerton (SY0296: MDV15892) and the neighbouring Higher, Lower, Little and Middle Cobden in Whimple (SY0396: MDV19228) might indicate a degree of post-medieval settlement shrinkage, and the mid-19th century clearance of settlements such Bargain Farm, Pitt Farm (MDV113064) and Home Farm (MDV113754) for increased emparkement south of Poltimore House can be seen as a continuation of this process (see Section 6.4.5), resulting in the settlement pattern currently characterising the NCA.

4.3.2 Devon Character Areas

The NCA is further divided into smaller Devon Character Areas (DCAs), each named for an area sharing a unique and distinct identity, recognisable on a county scale and reflecting the topography of the DCA. The project area partly falls within or intersects nine DCAs, listed below. Detailed summaries and descriptions of the DCAs can be found at: http://www.devon.gov.uk/index/environmentplanning/natural_environment/landscape/devon-character-areas/dca-east-devon.htm

District	Devon Character Area
East Devon	Pebblebeds Heaths and Farmland
	Clyst Lowland Farmlands
Mid Devon	Yeo Culm and Exe Lowlands
	Crediton Rolling Farmland
	Exe Valley
	Cullompton Rolling Farmland
	Culm Valley Lowlands
Teignbridge	Exe Estuary and Farmlands
	Exeter Slopes and Hills

4.3.3 Historic Landscape Character

The Historic Landscape Characterisation (HLC) mapping for Devon has characterised the landscape of the survey area as comprising a heavily intermixed pattern of 33 landscape elements. The results can be summarised as follows. Fourteen of the HLC categories account for less than 1% of the landscape each. Modern settlement makes up approximately 3.5 % of the project area. Parks and gardens account for roughly 2%, as does rough ground, including commons or heathland. Enclosure of 18th or 19th century date makes up around 10% of the landscape whilst nearly 65% is enclosure derived from medieval field patterns.

Following on from the kind of landscape and economic historical analysis carried out by Thirsk (1967) and Roberts and Wrathmell (2000), Turner has further characterised or 'generalised' the Devon HLC types to derive 'Local Historic Character Areas' (LHCAs), and define which character types may have shaped and defined the landscape of the county at two points in time, the late 19th century and at the end of the 20th century (Turner 2007).

Using this method the late 19th century landscape of Devon was categorised into 55 discrete LHCAs. In contrast, the 20th century landscape was categorised into 41 LHCAs. In addition to the reduction in number of LHCAs, the extent and boundaries of many also altered. The reasons for this are complex but can be summarised as a trend for the amalgamation of earlier character area types and a resultant simplification of the LHCA pattern. Although the principal HLC type in a LHCA may remain an 'ancient' type (for instance one of the most commonly defined in the project area was 'medieval enclosures based on strip fields), "the explanation is normally that several HLC types have been altered within a particular area, leading to a situation where the balance between different HLC types is different now to what it was in the past" (Turner 2007, 125-126).

The decrease in gross percentages of two HLC types from the late 19th century and at the end of the 20th century illustrates the general trend. From 1890 to 2000 the area of fields of extant medieval type within the survey area fell from 16,528ha to 9270ha, (35% of the project area) to less than 20%. Similarly orchards fell from 4% of the project area to less than 1% (1729ha to 314ha).

This decrease in the complexity and diversity of landuse was often visible to the NMP survey. For instance, the loss of medieval field boundaries was recorded extending into areas that could have been perceived, on the basis of the HLC data, as having suffered low levels of boundary loss prior to the 1840s (see Section 6.4.4). Similarly, the loss of orchard planting, the levelling of orchard banks and conversion of the former orchard to arable or other agricultural landuse was clearly visible around many farmsteads, and the NMP results indicate that the loss of orchards may in fact be greater than suggested in the HLC figures (see Section 6.4.6).

Any future refinement of HLC methodology in Devon could also be informed by the results of NMP surveys. In particular, the current characterisation of parcels as water meadows appears to focus solely on valley bottom situations, and does not take into account the much more widespread and locally distinctive hillside

catch meadow tradition, which is often depicted, albeit fragmentarily, on Ordnance Survey First Edition 25 inch maps. A greater understanding of the topographic requirements of this technology could be gained from the NMP transcriptions, which demonstrate an almost mutually exclusive relationship with the current 'valley-bottom' HLC water meadow types. The NMP results do coincide in part with the current HLC characterisations of valley-bottom' HLC water meadow types, but here too HLC could be informed by NMP (see Section 6.6.1 and 6.6.2, Figure 90).

5 Overview of the Survey Results

5.1 Interpretation of Results

The EMDRC NMP survey recorded 2371 monuments with the project source (SDV356883) in the DCC HER, although monument and evidence term double indexing has resulted in higher figures for some of the analyses (see Table 1). Numerous additional records will have been affected by the survey (e.g. duplicates deleted; relationships created), but these changes do not make substantive enhancements to the records and have not been counted here.

Of the 2371 just over a fifth (507) are amended pre-existing records, for which the survey added to and refined the information already held in the HER. The remaining 1864 new entries bring the total number of historic assets in the project area to 8347, an increase of 29% on the pre-project number (a 45% increase of those recorded as monuments). Records created or substantially amended by NMP now comprise 22% of the total number of heritage assets (and 31% of monuments).

5.2 Quantification of Results

5.2.1 Monument Types

Several dominant themes noted during the survey are illustrated by analysis of the monument records (Table 1). Orchard banks, former field boundaries and watermeadow systems are conspicuously abundant on the mapping in parts of the project area.

Conversely, monuments related to military defence and fortification were not frequently encountered, especially in comparison to the coasts of north and south Devon, heavily defended during 20th century conflicts (Knight & Hegarty 2013; Hegarty, Knight & Sims 2014), although several previously unrecorded sites were observed. Fortified sites of later prehistoric and Roman date were also low in number, but survived as significant and imposing landscape features; additional detail was often recorded and a number are suggested as candidates for designation assessment and for follow-on work (see Section 7 and Appendix A and B).

Industrial sites were frequently observed, with extractive pits, quarries and mines found across many parts of the project area, as well as concentrated in the Blackdown Hills; the latter focus is the subject of case studies in section 6.7.1 and 6.7.2.

Cropmarks that formed over the buried ditches of enclosed sites (possibly settlements and farms) of probable late prehistoric to Roman date were frequent in the southern parts of the survey area (see section 6.4.2), and prehistoric funerary monuments were also widespread (see section 6.3.1 and 6.3.3).

Table 1: Most frequently recorded monument types. 'Other' combines the remainder of the monument types recorded during the project.

A number of previously recorded cropmarks have been reassessed, and many of these are considered to have a geological rather than archaeological origin accounting for the relatively high incidence of *Non-Antiquity* and *Geological Feature* monument types.

5.2.2 Assessment by Date

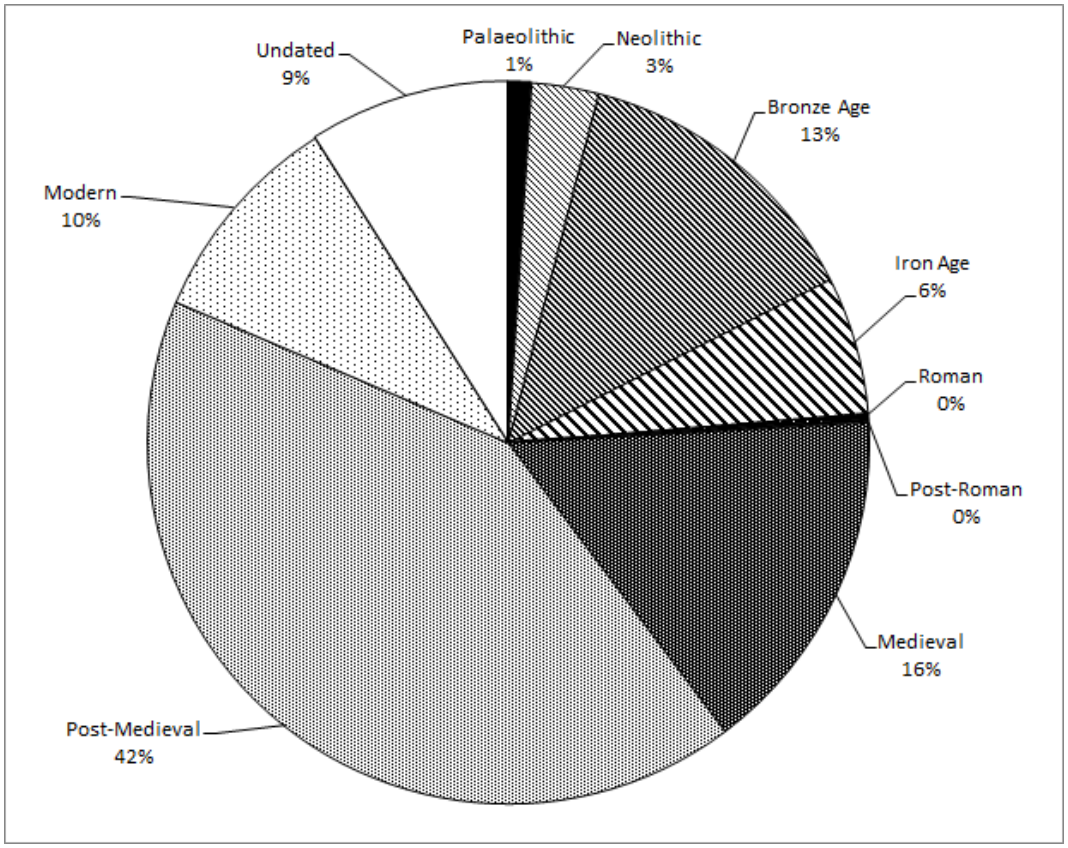

Chart 1: Monuments by period; the 'from' date has been used, so later periods may be under-represented, for instance an enclosure dated from the Bronze Age to the Iron Age will be categorised here as Bronze Age. Undated legacy monument types have been omitted; the Palaeolithic 'from date' also originates from legacy monument types. Figures rounded to the nearest full number.

The prevalence of agricultural features such as orchard banks and water meadows is reflected in the high proportion of post-medieval features, which make up almost half of all monuments recorded (Chart 1). Former field boundaries account for many of the medieval features, which comprise a sixth of the monuments recorded during the survey. The paucity of First and Second World War remains visible on the aerial photography is reflected by the relatively small proportion of modern monuments. However monuments of prehistoric date

are fairly well represented, at nearly a quarter of the total, although closer dating from excavation would be likely to result in changes to the relative proportions (see section 6.4.3).

The number of monuments confidently interpreted as Roman in date is low but the sites themselves are significant (see section 6.5.2). This period is likely to be under-represented, as many of the cropmark enclosures may be of Romano-British origin, but have been included in the later prehistoric categories because the 'period from' value in the HER defined the terms of the analysis.

Undated records include natural features, as well as some features that it was not possible to confidently assign a period to. Previously recorded monuments did not always have an assigned date, and double indexing of these during re-interpretation by the NMP survey probably goes some way to accounting for the relatively high 'undated' value.

5.2.3 Assessment by Survival

In contrast to the recently surveyed coastal areas of Devon, the proportion of features recorded from cropmarks is relatively high at nearly a third of all records (Table 2). This is particularly the case in the lower lying areas and the most south-western parts of the survey area; earthwork evidence types comprise a higher proportion of those recorded, and are especially dense, at higher elevations and in northern and eastern parts of the project area. Earthwork survival is generally good, with nearly three quarters of earthworks probably or partially extant, compared to 28% that appear to have been levelled during the timespan covered by the photographic evidence. Structures are not particularly well represented and this is probably a reflection of to the relatively low proportion of 20th century military remains observed.

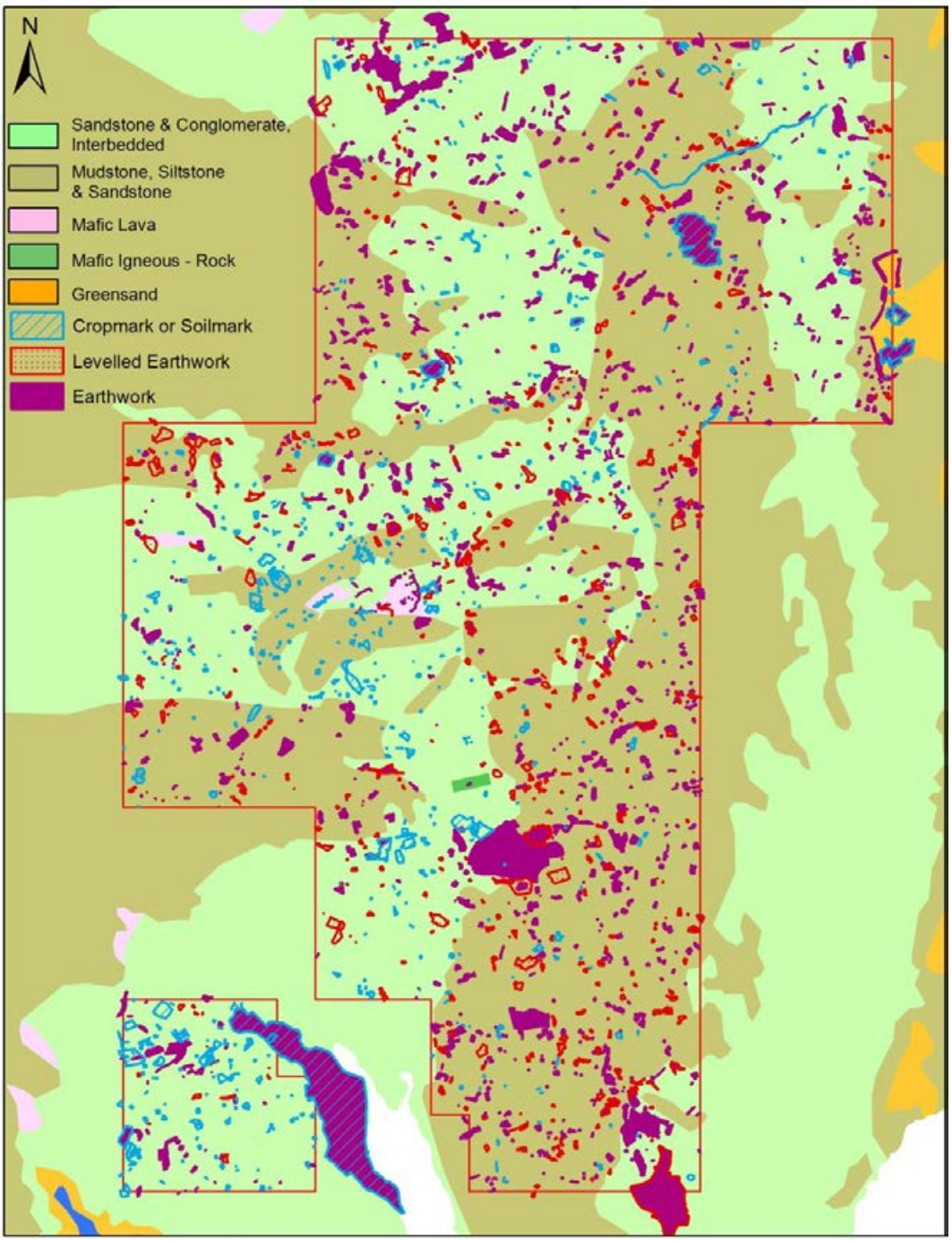

Figure 3. Distribution map of monuments recorded by the project: surviving as earthworks (purple), levelled earthworks (red) or cropmarks (blue). It is clear from this figure that monuments recorded from cropmark evidence are more numerous in those areas where the soils derive from predominantly sandstone geologies. Conversely earthwork and levelled earthworks were recorded in greater numbers on the mudstone and siltstone geologies. British Geological Survey materials © NERC 2015.

Evidence	Incidence	Percentage
EARTHWORK	1345	43
CROPMARK	981	31
LEVELLED EARTHWORK	540	17
DEMOLISHED STRUCTURE	54	2
STRUCTURE	29	1
DESTROYED MONUMENT	10	<1
EXCAVATED FEATURE	5	<1
EXTANT BUILDING	5	<1
DEMOLISHED BUILDING	3	<1
CROPMARK SOILMARK	2	<1
NATURAL FEATURE	2	<1
ENHANCED NATURAL FEATURE	1	<1
EXTANT STRUCTURE	1	<1
SOILMARK	1	<1
Pre-existing term	173	5
Total	3152	100

Table 2: Broad categories of evidence type recorded. Evidence types not used during the survey, but already attached to pre-existing records amended by the survey, are combined here as 'pre-existing term'. The inflated numbers apparent in this analysis are a result of double indexing of evidence terms.

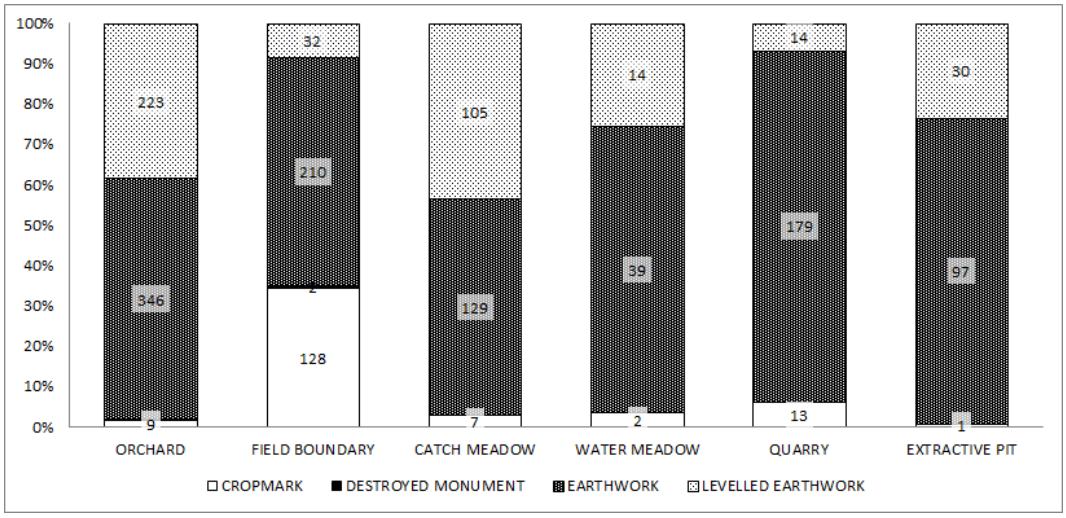

Chart 2: Evidence terms for some of the most frequently recorded monument types.

The recorded evidence terms demonstrate some interesting differences in survival between the most frequently observed monument types (Chart 2). Of these, field boundaries stand out as the monument type most frequently visible as cropmarks (approximately a third of those recorded). In contrast, the proportion recorded as levelled earthworks is relatively low, perhaps because a number of these were slight and only visible on images derived from lidar data.

A much higher proportion of orchards and water meadows (including catchmeadows) were recorded as levelled earthworks. This could well be

because many were extant and still in use when first observed from the 1940s aerial photographs, becoming disused as ever more intensive agricultural practises were adopted during the second half of the 20th century. The higher proportion of field boundaries first visible as cropmarks could also relate to a difference in their date of origin; 80% are recorded as medieval, meaning that once disused they could have been ploughed level by many centuries of non-intensive farming practices, leaving below-ground remains that manifested as cropmarks until deeper ploughing in the later 20th century fully truncated the deposits. In contrast only 1% of water meadows and 2% of orchards have been assigned a likely medieval origin.

The majority of quarries and extractive pits have been interpreted as of post-medieval origin, and a similarly high proportion was recorded from earthwork remains. As with the field boundaries, many of these were interpreted most often from lidar-derived images.

5.2.4 Assessment of Sources Used

Transcriptions were made from a wide range of sources. As would be expected, the main source was Historic England's archive collection, and for surviving earthworks lidar was extremely useful (Table 3). APGB images were some of the most recent available to the survey and were useful for assessing near-current form and survival of monuments, but less useful for transcription purposes. Specialist obliques were used to map many of the cropmark sites. In addition to HEA images these included a significant proportion from Devon County Council (including a small number mistakenly recorded in the HEA as Somerset County Council photography), as well as the Cambridge University Collection. A few sites were best, or only visible on other (less well-known) collections such as DCC vertical aerial photographs.

Collection	Number of Transcriptions	% of Transcriptions
CUCAP	55	1.4
DAP	469	12.3
DCC Other	52	1.4
HEA Oblique	115	3.0
HEA Vertical	2047	53.6
Lidar	930	24.4
APGB	151	4.0

Table 3: Sources used for transcription, broadly grouped.

Although the RAF photographs dominate the dataset, the range of sources and collections in Table 4 demonstrates the importance of the specialist oblique aerial photographs (mainly Devon Aerial Photographs). Whilst the HEA copies of the DAPs were habitually used when available, the collection held by the HEA is incomplete and was occasionally supplemented by photographs held in the Devon HER. The number of DCC prints used suggests that HEA is missing some important images. Other HEA obliques and, to a lesser extent, CUCAPs were

also important sources for certain sites, although the focus of a significant number of the HEA obliques was of built-up areas in historic settlements.

As outlined above, a high proportion of earthworks have been recorded from images derived from lidar data, whilst the specialist obliques tend to have been used for areas where remains have been levelled and only the buried ditches of archaeological sites are visible as cropmarks. Lidar data visualised as digital surface models (DSM) were used nearly twice as often as their digital terrain model (DTM) counterparts, since the additional processing involved in the removal of vegetation and other surface features can also lessen detail for some archaeological features. However DTMs played an important role in wooded and scrubby areas, and a combination of the two iterations of the data was necessary in certain cases (see section 6.7.1 on whetstone mining for an example).

Ordnance Survey and some of the less prolific photographic organisations (particularly BKS) also proved useful for specific sites, often used for instance to record earthwork features that have been levelled since the 1960s. Assessing other hard copy sources held in the HER (e.g. Geonex and GetMapping coverage) added to the survey timescale but proved valuable, providing the best images for transcribing 41 features, the runs flown in July 1999 being the most productive.

Source Type	Number of Transcriptions	% of transcriptions
APGB	151	4.0
CUCAP	27	0.7
DCC CAP	22	0.6
DCC DAP	161	4.2
DCC DPRFP	1	0.0
DCC Geonex	2	0.1
DCC GetMapping	39	1.0
DCC mosaic	3	0.1
DCC RAF	4	0.1
HEA CAP	9	0.2
HEA DAP	308	8.1
HEA Oblique	115	3.0
HEA Vertical (BKS)	128	3.4
HEA Vertical (FSL)	37	1.0
HEA Vertical (MAL)	65	1.7
HEA Vertical (OS)	288	7.5
HEA Vertical (RAF)	1521	39.8
HEA Vertical (US)	5	0.1
HEA Vertical (WAP)	3	0.1
Lidar	3	0.1
Lidar DSM	607	15.9
Lidar DTM	320	8.4
Total	3819	100

Table 4: Sources used for transcriptions, grouped into broad categories. The symbols indicate frequency (up to 99; 100-249; 250-499; 500-999 and 1000 or greater).

The most frequently used vertical sorties supplied by HE are displayed in order of prominence in Table 5. The RAF sorties were very well used, particularly those taken on the 4th November 1946, providing evidence of some of the earthwork remains before they were levelled. Area coverage for this run was fairly comprehensive and the time of year the sortie was flown meant the ground was less obscured by vegetation, contributing to the value of this source. This is also the case for two April 1947 sorties. Many of the military remains removed soon after the end of the Second World War will also have appeared on the 1940s, but perhaps not later, sources.

A number of 1960s sources were used, and in many cases these provided the best evidence for orchard banks, taken after the orchards themselves became disused and tree cover reduced, but before the ground surface had been levelled and turned over to cultivation or other uses.

These, and more recent photographs taken by the Ordnance Survey in the summer months in the 1980s and 1990s, also provided additional evidence for below-ground remains manifesting as cropmarks. This proved invaluable in some cases when additional features or elements could be identified, supplementing the specialist oblique sources.

Sortie (verticals)	Number of Transcriptions
RAF/CPE/UK/1823 04-NOV-1946	569
RAF/106G/UK/1412 13-APR-1946	340
RAF/CPE/UK/1974 11-APR-1947	225
BKS/2822 V 14-MAR-1967	128
RAF/543/2332 26-JUL-1963	96
RAF/CPE/UK/1995 13-APR-1947	91
RAF/106G/UK/996 12-NOV-1945	63
MAL/69014 05-MAR-1969	54
FSL/6412 V 07-FEB-1964	37
OS/67039 V 18-APR-1967	37
RAF/3G/TUD/UK/221 V 11-JUL-1946	35
RAF/106G/UK/1273 V 23-MAR-1946	26
RAF/106G/UK/865 30-SEP-1945	24
OS/00981 V 19-MAR-2000	21
OS/89276 V 14-JUN-1989	19
OS/66184 V 22-JUL-1966	18
OS/66185 V 22-JUL-1966	18
OS/67040 V 18-APR-1967	17
OS/00980 V 19-MAR-2000	16
OS/92359 V 20-JUN-1992	15
OS/89277 V 14-JUN-1989	13
RAF/106G/UK/780 09-SEP-1945	13
OS/92197 V 14-JUN-1992	11
OS/96567 08-MAY-1996	11
OS/84168 V 03-Jul-1984	10
OS/89162 V 08-MAY-1989	10
OS/92196 V 14-Jun-1992	10

Table 5: Vertical aerial sources most frequently attributed to transcriptions (10 or more transcription elements). 36 sources account for the remaining 121 (6%) of transcriptions.

6 Illustrated Highlights

6.1 Introduction

This report provides an illustrated overview of the archaeological themes to emerge the survey. It is not intended as a comprehensive account with full interpretation of the survey's results. The full monument records created or amended by the survey are available on the DCCHER via Heritage Gateway.

Highlights of the survey are discussed thematically below. Each thematic summary can include case studies describing monuments from multiple periods. The chosen case studies have a variety of purposes; they will illustrate sites typical of a theme as well as more atypical sites, previously unknown sites, and sites where NMP has made a contribution to the understanding, interpretation or reinterpretation of the historic landscape, as well as sites potentially of national importance.

6.2 The Historic Environment of the Survey Area: Potential and Outcomes, a Summary

The project area, roughly centred on the Exe Valley, contains a rich archaeological resource. As the agricultural 'heartland' of Devon this area was subject to intense arable cultivation in the years following the Second World War. As such, a high proportion of monuments in the project area that would until the 20th century have survived as embanked and/or ditch defined earthwork features, have since probably been levelled, although retaining potential for survival of sub-surface deposits.

Prior to the survey, the Devon HER recorded a total of 6483 Historic Environment Assets within the project area. Excluding monument types unlikely to be recorded by aerial survey techniques (find spots, buildings, Parks and Gardens and so on), 11% of the remaining historic environment assets had been indexed either as cropmarks or as having been identified from aerial photographic evidence, illustrating the value of the aerial photographic resource in this area.

Within the project area the DCC HER held records for sites and landscape features dating from the Palaeolithic to the twentieth century. Taking into consideration the scope of the National Mapping Programme (see Section 4), an assessment of the HER indicated that the NMP survey had good potential to add to the record for most periods from the Neolithic onwards.

It was in the Neolithic period that landscape scale monuments that left significant archaeological traces were first constructed in Britain. Examples of monuments characteristic of the period were recorded within the survey area; a long barrow at Tiverton (MDV1364) and possible cursus and mortuary enclosure complex at Nether Exe (MDV57143), both previously identified from the air. Mortuary enclosures, often called long mortuary enclosure, elongated ditched enclosures without evidence for a mound but sometimes associated with human remains, are monuments thought to be related to long barrows in form and function (Field 2011, 3; English Heritage 2012). Six had been recorded in Devon prior to the survey, and the NMP survey has added significantly to this number, identifying two previously unrecorded examples (MDV111027 & MDV112719, see Section

6.3.1). Potentially the most significant monument of potentially Neolithic to Bronze Age date to be recorded by the survey is a small embanked oval enclosure of possible ceremonial function located in the grounds of Blundell's School, Tiverton (MDV108465). This is discussed in more detail in Section 6.3.2.

A large ditched oval enclosure at Rewe (MDV1279) identified as a cropmark less than a kilometre from the Nether Exe Cursus complex has been tentatively interpreted as potentially of Neolithic date. Not readily categorised into established classes of prehistoric monument, this interpretation was based largely on field walked artefactual evidence. Recent geophysical survey and excavation has confirmed, clarified and enhanced the understanding of this monument's form as interpreted from the air, but also provided somewhat inconclusive dating evidence (Bayer, 2011). In this instance, the survey's contribution has predominantly been in the area of data enhancement, as demonstrated in Section 6.4.1.

Barrows are funerary or ceremonial monuments of earth or stone dating from the Late Neolithic period to the Late Bronze Age (Woodward 2000, 16). Collectively they are the most numerous and arguably the most enduring class of monument surviving from prehistoric Britain (Woodward 2000, 8). On the basis of their visible remains barrows have historically been characterised into long and circular types.

Long barrows were the earlier type to manifest, dating from around 3800BC (Field 2011, 3). Although sharing the descriptive term 'barrow', they are a distinct monument type both culturally and chronologically from round barrows, and display a range of complexity and scale. Often solitary constructions, finds and human remains associated with long barrows have led many to conclude that they were monuments related to 'transforming' the dead as a group, but retaining close, if symbolic connections to mundane, communal tasks (Woodward 2000, 36; Smith and Brickley 2009, 138). They may be closely related to other linear Neolithic monuments such as long mortuary enclosures.

Round barrows date from around 3000BC, with most examples belonging to the period 2400-1500BC, the Early Bronze Age. Unlike most long barrows, round barrows are recorded both in isolation and in groups, sometimes in 'barrow cemeteries' of great numbers. They also display a greater variation in form, which has led to the identification of groups of 'fancy barrows' or 'Wessex barrows' (due to perceived rarity or regional grouping), including the 'bowl, bell, disc, saucer and pond' types. This is now thought to simply reflect differential visibility rather than real bias and a RCHME survey of Salisbury Plain revealed that the profiles of round barrows even in the Wessex heartland displayed a greater range of profiles even than suggested by this five-fold classification (Woodward 2000, 16-19).

Bowl barrows, the simplest and most frequently recorded type, are "some of the commonest field monuments of lowland Britain" (Wilson 2000, 101). However, this unassuming and apparently homogenous monument type can conceal 'complex biographies' including an enormous range of variety in construction techniques, local distinctiveness, complexity and function, even within a single

group (Woodward 2000, 19, 23-28). Examples with no evidence for burials, and others apparently planned for multiple internments may argue against the common perception that round barrows universally expressed an individualistic approach to burial (ibid).

Over fifty examples of this monument type were previously recorded in the project area, from a variety of elevations and topographic situations, thirteen of which had been indexed with evidence terms of *cropmark* or *aerial photographic* evidence. A further 20 or so barrows have been recorded with some degree of confidence by the survey, as cropmarks of ring ditches or the remains of earthwork mounds. A further 60 circular features were visible only as cropmarks of ring ditches; it is probable that a good proportion of these were evidence of levelled round barrows but as a wide range of alternative interpretations are possible caution must be shown in ascribing a date and function to these monuments (Wilson, 2000; 102, 104-115). Despite the increase in number, and improved understanding of nationally significant barrow cemeteries (see Section 6.3.3), the survey has not significantly altered the distribution pattern or changed our perception of Bronze Age barrows in Devon (see Figure 8).

Several ditched enclosures were previously recorded on the HER as being of possible Bronze Age date, five of which had been identified from aerial photographs as cropmark evidence (MDV28624, MDV28627, MDV28628, MDV30168, MDV40079). However, little or no supporting artefactual dating evidence had been recorded for these monuments and on the basis of site morphology the NMP survey has redefined two as more likely to be Iron Age to Romano-British in date whilst a third was not identified during the survey.

However, excavation is confirming a Bronze Age date for an increasing number of ditched enclosures in Devon, of both curvilinear and rectilinear plan, many with extensive associated field systems, (Fitzpatrick et al 1999; Gilbert 2012). For instance, Bronze Age dates have been returned for a small number of ditched enclosures with associated fields within, and close to, the survey area (see Steinmetzer & Valentin 2008 (MDV79721); Barber 2000 (MDV67498); Sheldon 2010 (MDV67532); Gilbert 2012 (MDV29091)). As a consequence, over 80 further enclosures recorded largely from cropmark evidence, more than a quarter of which are newly identified, have been recorded by the survey as potentially of Bronze Age or later date.

The greatest potential was anticipated for the later prehistoric to Roman periods. 170 enclosures of possible Iron Age to Romano British date were previously recorded on the HER, of which 161 had been indexed with evidence terms of *cropmark* or *aerial photographic* evidence. In purely numerical terms this potential has been fulfilled, with over 140 newly created HER monument records for enclosures or related monument types ascribed to this date range. This figure includes enclosures of varying plan, area and complexity, including those ring ditch monuments indexed as possible round houses; the data might therefore be interpreted as indicative of a varied settlement pattern.

However, possibly in contrast with the Bronze Age, the survey has recorded very little new evidence of wider agricultural landscape features, such as field

boundaries or field systems that could be associated with the ditched enclosure sites. There may be methodological and interpretative issues surrounding the confident identification of enclosures of this period from cropmark evidence alone, as described above and below. Nonetheless, whilst a few Iron Age and Romano-British settlement enclosures have demonstrable associations with small scale field systems west of the Blackdown Hills (for instance see Jarvis and Maxfield 1975; Passmore 2005; Wilkes 2009), most do not, "the crop marks of ditched enclosures usually lying in splendid isolation" (Rippon et al 2015, 299). Evidence from excavated sites throughout the region does appear, currently, to support this view (Reed and Manning 2000; Riley 2006, 60-72; Simpson et al 1989) and it may therefore be possible that the numerous, apparently isolated cropmarks of ditched enclosures do in fact date largely to the Iron Age to Romano-British periods. However, the newly recorded enclosure monuments have not altered our perception of the settlement pattern for later Prehistory or the Roman period. Possible settlement evidence from this period is illustrated in Section 6.4.2 and 6.4.3.

Hillforts are the most visible class of later prehistoric monuments. In the South-West they have long been divided into several classes or types, which can be summarised as: simple univallate forms on hilltops or hillslopes; the relatively simple 'south-western' type with multiple but widely spaced and relatively slight ramparts; and the more massive multivallate 'Wessex' form, found only to the east of the county (Fox 1952, 1969; Griffith 1988, 24).

The four 'hillforts' previously recorded within the project area include Dolbury Hillfort at Killerton (MDV1312), Cranmore Castle at Tiverton (MDV1360), a hillfort at Stoke Hill near Exeter (MDV10196) and Bury Castle at Bradninch (MDV12340). A fifth monument, an unnamed ditched enclosure recorded only as a cropmark near Silverton (MDV59040), had been tentatively identified as being a hilltop defensive enclosure of later prehistoric to Roman date. These monuments include examples of both of the relatively simple 'hillslope enclosure' type and possibly the 'south-western' type. NMP's potential to enhance our understanding of the form of these relatively well known sites is demonstrated in Section 6.5.1).

Including the Legionary Fortress of Isca at Exeter, 13 Roman military sites are known in Devon. Most are situated further north or west in the county, but aerial survey has proved very effective for the Roman period in the survey area, identifying four military sites potentially of Roman date; Bolham Roman Fort at Tiverton (MDV12371) was identified from aerial photographs as were two Roman Forts to the north of Cullompton (MDV29189) and a smaller Fortlet or Signal Station at Stoke Hill to the north of Exeter (MDV10188). A possible fort was also recorded east of Killerton Park (MDV29190). The potential for further sites of this type to be discovered within the project area was therefore thought to be reasonable, but none were identified by the survey. Nonetheless, increased accuracy of transcription and significant new detail was recorded at these sites, as illustrated in Section 6.5.2.

The survey was also thought to have good potential to increase the record for non-military Romano-British settlements. Several sites identified from the air as cropmarks have subsequently been demonstrated to have been occupied in the Roman period, for example at Thorverton (MDV20709, Uglow 2000) and Hayes Farm, Clyst Honiton (MDV43217, Simpson, Griffith and Holbrook 1989). More have been discovered in recent years by geophysical survey, and dated by subsequent excavation or evaluation prior to development, for example at Cullompton (MDV78245, Hughes and Firth 2011), and Hill Barton (MDV78352, Farnell 2009). However, it is generally recognised that South West England did not have the same extensively Romanised character as other lowland areas of England (Turner 2006; Rippon *et al* 2015). The recent discoveries tend to reinforce the view that settlements of this period fall towards the end of a local settlement tradition that retains many characteristics of earlier periods – themselves morphologically varied - and that 'their external characteristics do not permit their attribution to a particular period with any degree of certainty" (Griffith and Quinnell 1999a). As such, it is probable that a proportion of the potentially Iron Age settlement sites discussed below in Section 6.4.2 and 6.4.3, date to or continue in use to some point within the Roman period.

Few high status Roman settlements are known in the county. Of the four villa sites recorded (MDV11429, MDV36156. MDV42065 and MDV58771), none are within the project area and all are towards the east of the county, with the site at Downes, Crediton (MDV42065) the most western. Prior to the survey the potential for this monument type within the cropmark zone was felt to be reasonably good. No new evidence for possible villa sites was confidently identified during the survey, but it is possible that one or more of the as yet undated ditched enclosures might have been a focus for an inserted villa site, a pattern that was identified at Magor in Cornwall (PastScape number 426186; Griffith and Quinnell 1999a) and Holcombe, one of the villas in East Devon listed above (MDV11429, Pollard 1974).

Many Roman roads have been tentatively identified in Devon by Margary (1973), comprising over 180 current records in the HER, but few have been confirmed in the field (MDV1875 and associated monuments). The NMP survey had reasonably high expectations for identifying further monuments of this type but none were recorded.

Saxon and early medieval sites are poorly represented in Devon as a whole despite the presence of *burhs* at Barnstaple and Totnes, a mint at Axminster, the minster at Kingsteignton, and settlement at Cullompton. The potential for sites of this period to be confidently identified by the survey was thought to be low, and indeed this proved to be the case. However, it is probable that some cropmark sites identified during the survey could prove to be of post-Roman date, as with the curvilinear enclosure, first recorded as part of a multi period cropmark complex, cutting a Roman ditched enclosure at Hayes Farm (MDV43233; see section 6.4.3).

Few monuments of post-Roman to early-medieval date are known in Devon from archaeological evidence alone; excluding sites known or surmised from documentary evidence, such as Domesday settlements, only forty are confidently

recorded on the Devon HER. Ten times as many sites are recorded for the medieval period, and ten times this number again if all evidence types are considered. However, the longevity and lasting influence of the medieval settlement pattern in Devon as a whole, and the survey area in particular, meant the potential for identifying additional previously unrecorded high-status medieval sites and monuments was thought to be low, and again this proved to be the case. No landscape evidence of suggested large-scale sites, such as the deerpark at Aylesbeare (MDV64327) or at Raddon near Thorverton (MDV64358) were identified, and a potential deserted or shrunken medieval settlement previously noted from the air at Burrow, Stoke Canon (MDV10275), was interpreted as probably evidence of much earlier, prehistoric settlement. The greatest contribution the aerial photograph and remotely sensed data made to our understanding of the medieval landscape of Devon was undoubtedly in relation to the rural/agricultural landscape, with field boundaries and field systems being among the most numerous monument types recorded (See Section 6.4.4)

The potential for post-medieval to modern industrial monuments was indicated by place name evidence such as 'brickfield', and new communications networks such as the Exeter canal (MDV18147) were directly associated with expanding industries, represented by sites such as four limekilns near Exminster, just beyond the survey area (MDV14843). The post-medieval to modern periods did see, arguably, the greatest degree of landscape change recorded by the NMP survey. Whilst some can be directly connected with significant, if geographically limited industrial processes (see Section 6), the most significant changes to the landscape were related to developments that can be described as the landscape archaeology of improvement (see Section 6.6.1), or the expansion and industrialisation of what previously had been farm-scale rural crafts in the medieval to post-medieval periods, changes facilitated by the expansion of rail infrastructure from the 19th century (see Section 6.4.2).

NMP surveys consistently significantly enhance the record for sites and features of modern date and military function. The potential for this survey area was anticipated to be lower than for previous NMP surveys carried out in Devon (Knight and Hegarty 2013; Hegarty, Knight and Sims 2014). Nonetheless records for notable military foci such as RAF Exeter, now Exeter Airport, and other more ephemeral and temporary known military sites, such as Second World War military camps, training areas and bombing decoys to the south of the survey area, at Bicton and Woodbury Commons (MDV15101, MDV72068) indicated scope for NMP to demonstrate the value of the methodology for this topic. The main trends and most significant results for this topic are summarised in Section 6.5.3.

6.3 Ceremonial and Funerary: Prehistoric

This section summarises the evidence for ceremonial and funerary monuments interpreted as being of probable Neolithic to Bronze Age date. For much of the Neolithic period into the Early Bronze Age, evidence for permanent settlement and associated traditions of domestic architecture are rare in the South-West (Pollard and Healy, in Webster (ed), 2008). Consequently in this period where the

first monumental constructions were made as foci for funerary or ceremonial behaviour, these are the principal class of landscape monuments recoded by the survey (Kain and Ravenshill 1999, 51). The results of the NMP survey for these periods must be seen as reflecting a continuum of ceremonial monuments beginning with long barrows, the local context for which is summarised above.

No previously unrecorded long barrows were identified by the survey. However, two monuments that have been interpreted as remains of a related monument type, the long mound or long mortuary enclosure were recorded from cropmark evidence.

6.3.1 Long Mounds or Mortuary Enclosures

The first of these is a previously unrecorded ditched oblong enclosure 85 metres long and 13 metres wide was transcribed from a cropmark visible on the gentle south-east facing lower slopes of a shallow combe north of Stevenstone Barton, Upton Pyne. The cropmark (MDV111027: Figure 4) was aligned along a slight hollow in the irregular and undulating combe floor of a tributary to the River Creedy to the south. The north-western terminus of the enclosure is curved in plan; the south-eastern terminus, while less clear, appears more regular in form, possibly incorporating an entrance.

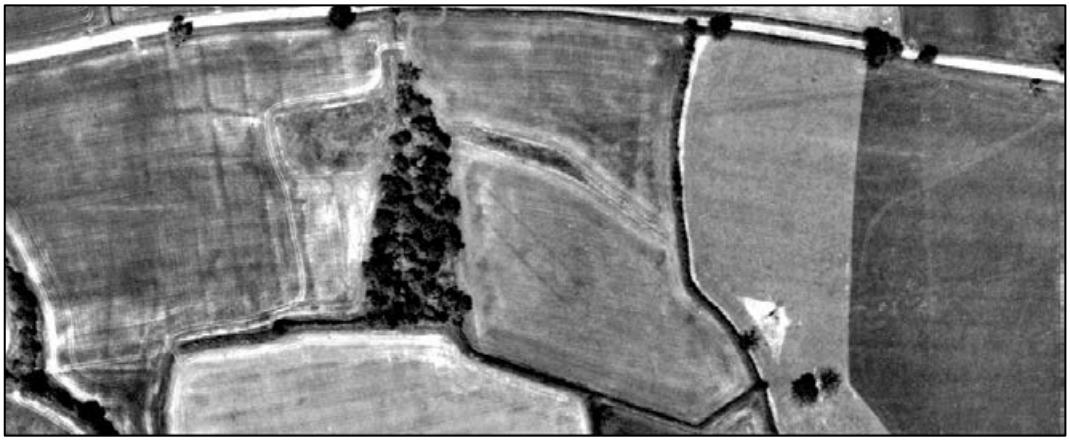

Figure 4. Cropmarks forming over the ditches of a possible Neolithic long mortuary enclosure or levelled long mound, Upton Pyne (centre of image). The grid-like pattern of ditched features to the west (left) of the enclosure is interpreted as evidence of recent drainage features.

The enclosure has been tentatively interpreted as a possible mortuary or ceremonial enclosure of Neolithic date. Such monuments are rare in Devon with only six other examples currently recorded on the HER. Several round barrows of probable early Bronze Age date form a small cemetery complex near Fordy Bridge, roughly 1 to 2 kilometres to the east, but significantly a similar, albeit slightly shorter and narrower example of a possible long mortuary enclosure or long mound had been recorded from the air almost 7 kilometres to the east near Rewe (MDV57143), forming part of a Neolithic ceremonial or ritual landscape, including a cursus in the floodplain of the River Exe. Geophysical survey has confirmed the sub-surface survival of the Rewe monuments and further work may have similarly positive results for this example (Bayer, 2008).

It is thought that long barrows did not have any simple or direct relationship with settlements or temporary camps, but instead acted as markers in the landscape, on paths or routes that linked camps to seasonal resources and/or activity zones (Woodward 2000, 51). If long mounds or long mortuary enclosures had a similar function this site may have played a symbolic role signposting the natural resources in the Neolithic landscape of the River Creedy.

The second possible Neolithic long mortuary enclosure was visible only on a single run of aerial photographs taken in the summer of 1999 (MDV112719; Figure 5). A faint, dark cropmark roughly 2 metres in width defined an elongated oval enclosure circa 33 metres long and 11 metres wide, making it the shorter of the possible mortuary enclosures recorded during the survey, but not the shortest monument of this type in the county, ranging as they do from 150 metres long at Bratton Down (MDV104876) to 23 metres long at Silverton (MDV79093).

Devon County Council GetMapping/102/99 56 25-JUL-1999. © Getmapping Plc.

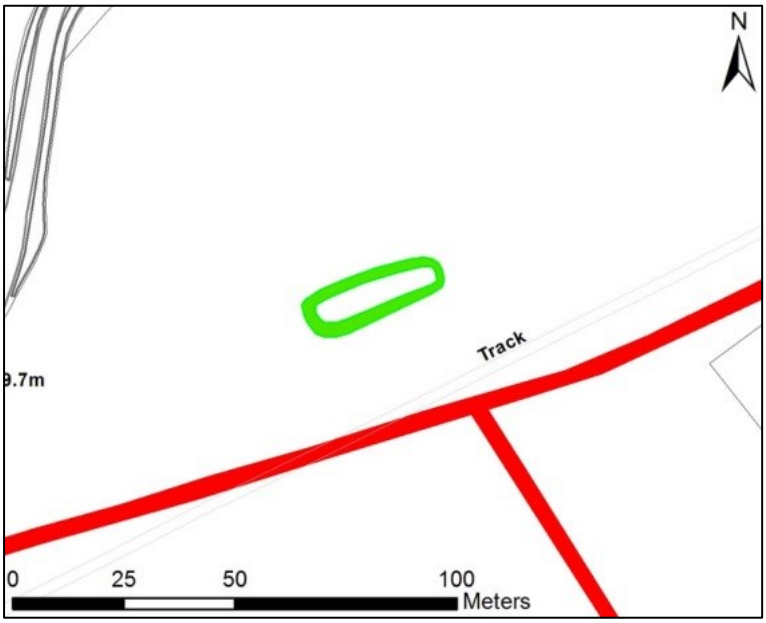

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Figure 5. Top: the ditch of a possible mortuary enclosure (MDV112719) was visible as a slightly darker green cropmark on aerial photographs taken in summer 1999. Bottom: the survey transcription of the cropmark enclosure is shown in green. The red transcription to the south marks the line of a later field boundary bank.

In contrast to the Upton Pyne example, this monument was situated on, and aligned along, the sharp edge of an east-facing spur overlooking the confluence of two tributaries to the Exe Estuary, roughly three kilometres to the north-east. Such a situation is not unusual in Devon, with the previously known examples ranging from valley floors, as described above, to ridgetop and upland settings, as at Bratton Fleming. In common with all the known possible long mound or mortuary enclosures in Devon, this site is also closely co-located with a watercourse, typically a tributary to a larger river.

The limited visibility of this site on the available sources makes this interpretation somewhat tentative. In addition, the cropmark is relatively isolated from other contemporary or later funerary monuments or ceremonial landscapes; fewer than 50 monuments of Neolithic to Bronze Age date are recorded on the HER within a 7 kilometre radius, and only five possible isolated barrows are recorded within 2 kilometres. A notable exception is a Bronze Age linear round barrow cemetery less than two kilometres to the north-east, that is potentially intervisible with the long mortuary enclosure (MDV17714). Nonetheless, alternative interpretations for the visible evidence must be considered, such as the remains of a levelled pillow mound, as at The Giant's Grave at Malborough (MDV7033).

6.3.2 Blundell's School 'Henge' Enclosure

A previously un-recorded earthwork enclosure (MDV108465) was recorded within the playing fields of Blundell's School, on the eastern outskirts of Tiverton. The earthworks were visible as subtle embanked features on aerial photographs of 1946 onwards, but were most apparent on images derived from lidar data (Figure 6).

The enclosure has been tentatively interpreted as being of prehistoric origin and shares a number of characteristics in common with henge monuments. Henges are usually interpreted as ritual or ceremonial centres dating to the Middle and Late Neolithic periods (3000-2000 BC), typically divided into those constructed as roughly circular enclosures with a single entrance (Class I) or oval-shaped enclosures with two opposing entrances (Class II) providing access to the interior, both comprising an interior flat area over 20m in diameter enclosed by a bank and ditch, the ditch most characteristically within the bank. A lowland situation is also seen as typical, in good agricultural landscape and often close to one or more watercourses, with which some suggest a symbolic association (Richards 1996; Pollard and Healey 2008).

The classification of henges as a single class of monument has, however, come under scrutiny in recent years. The term 'henge' has been applied to circular or oval monuments that have varied dramatically in most other aspects of their construction, composition, location and size since the term was first applied in the early 1930s, with some arguing that the varied scale and setting of monuments grouped as henges – including the classification of smaller monuments as hengi-form and larger as henge-like enclosures - renders the term obsolete and meaningless (Gibson 2012).

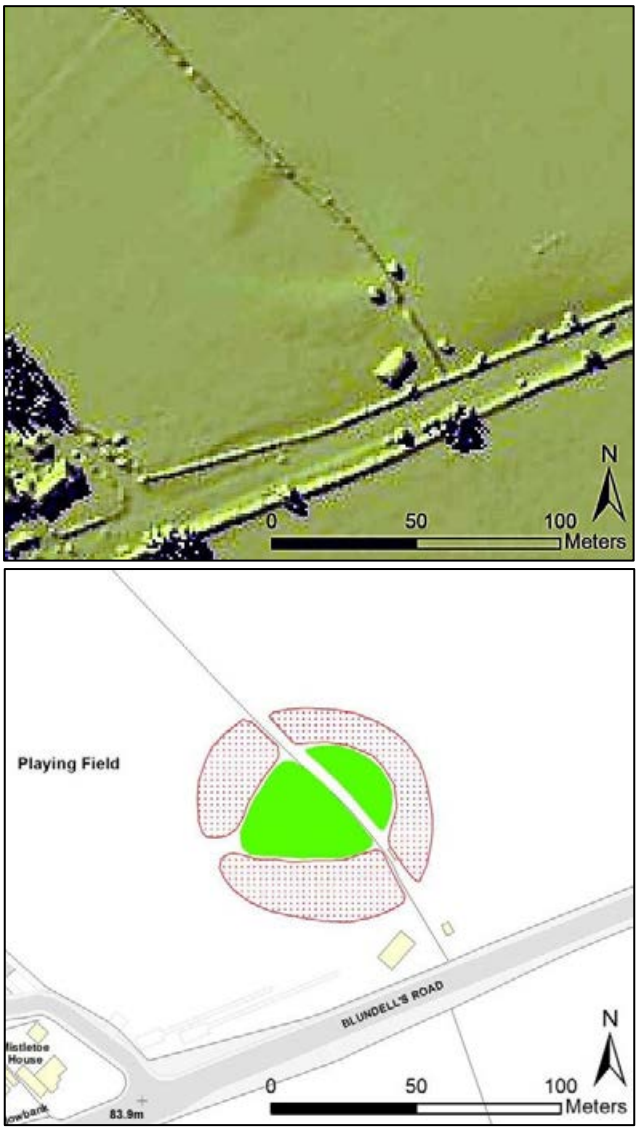

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Figure 6. The earthwork enclosure at Blundell's School (MDV108465), showing the earthwork bank as visible on the lidar-derived image (Top) and the resultant NMP transcription of the earthworks (Bottom).

Nonetheless, it is generally agreed that 'henges'- whatever they may be - are part of a move towards circular ceremonial monuments, perhaps paralleled by stone and timber circles, demonstrating a 'profound break' with the linear monuments that characterised the Early to Middle Neolithic, such as those discussed above (Last 2011, 6; Gibson 2012, 15-17). The largest were probably made early in the sequence, but circular monuments continued to be built through the so-called Beaker period into the Early Bronze Age, with those made in the early second millennium BC on a scale similar to contemporary round barrows (Last 2011, 5).

The Blundell's site is situated on a slight rise on an otherwise level spur of land between watercourses, the River Lowman less than 300 metres to the north and tributaries to the Exe that rise a similar distance to the south. Low and broad earthwork banks defined a roughly circular enclosure, encompassing an internal, possibly levelled or sunken roughly oval area approximately 55 by 42 metres in size (0.16 hectares in area). A subtle break in the western edge of the earthwork bank was interpreted as a possible entrance (Figure 6B). Using the conventional monument classification system, these features and the single possible entrance could define it as a Class I Henge. It is similar in size to the Class II henge seen

as cropmarks at Bow and is comparable in siting, form and survival to the possible henge on Parracombe Common, North Devon (MDV2071, SM 1002578), although larger and more substantial. It is however, significantly smaller than the 'Class II' Henge near Nethercott Cross (MDV53226). The occurrence of prehistoric cropmark ring ditches and enclosures recorded to the east and north-east may support the interpretation that it was part of a significant ceremonial landscape of Neolithic or Bronze Age date.

Photograph: S. Knight, 17th December 2014.

Figure 7. The northern edge of enclosure MDV108465, facing north, visible as a slight earthwork bank, more pronounced where it intersects with the field boundary.

Some of its characteristics are less representative of the 'typical' henge. The internal area of the enclosure appears lower than the surrounding playing field, a levelled area cut into the gentle south-west facing slope. It has clearly been subject to some landscaping but whether this indicates reuse in antiquity - henges and stone circles were frequently reused in later periods (Last 2011, 6-7), perhaps as a pond barrow – or a more recent function, perhaps simply as a pond or the result of medieval quarrying activity, only further work will reveal.

As highlighted by both aerial photographs and lidar images, differential land use has rendered the earthworks on the eastern side of the field boundary barely perceptible, and the current survival of the earthwork is probably due to its location within the school's playing fields. With the cooperation of the school, which has permitted further investigations in the form of geophysical survey to take place, it is hoped some light will be shed on this enigmatic monument.

6.3.3 Bronze Age Ceremonial Landscapes

Round barrows are often perceived to be the archetypal Bronze Age monument type, but their first appearance was in fact contemporary with the linear monuments of the Early to Middle Neolithic (Grinsell 1979, 10-11; Woodward 2000, 36). From the later Neolithic the construction of larger round barrows has been suggested by some to represent a shift from a communal to a more individualistic way of life and death (such as Smith and Brickley 2009, 138), although this assertion has been much debated. Some monuments have been interpreted as memorials with no evidence for burials, whilst others seem to have been intended for the successive internment of multiple individuals, perhaps over several generations, perhaps expressing levels of individuality and personal wealth or status through grave goods, but within a wider framework of communal monumentality (Woodward 2000, 23-28, 36-7; Smith and Brickley 2009, 138).

Barrows of the Beaker period and Early Bronze Age tended to be smaller than the large Neolithic monuments and it is to this period that most of the excavated examples in Devon belong (Griffith and Quinnell 1999). However, reuse of round barrows in the Middle Bronze Age is well known and smaller barrow construction also continued into this period; in Devon some examples are known to extend to the Middle/Late Bronze Age (Griffith and Quinnell 1999).

The recorded distribution of barrows on Dartmoor and Exmoor, and in north, south and east Devon, including the NMP survey area, was greatly enhanced in the later 20th Century by Leslie Grinsell (Grinsell 1970, 1978 and 1983). Excluding the uplands of Dartmoor and Exmoor, and associated upland funerary monuments recorded as cairns, of which there are over 1000 on the Devon HER, currently 665 barrows of Neolithic to Bronze Age date are recorded in Devon; (429 ascribed to the Bronze Age period only, 749 if those monuments double indexed as ring ditches of potentially of Bronze Age to Roman date are included). Over one hundred possible barrows (15% of the county total) of Neolithic to Bronze Age date are recorded within the survey area; 40 from earthwork evidence, 62 from cropmark evidence. Typically they range in size from 3 to 30 metres in diameter, with or without evidence for outer banks and ditches.

However, this resource is sparsely dated. By the end of the 20th century 25 barrows had produced securely datable material, concentrated in the early Bronze Age, with limited evidence towards monuments of late second millennium date (Griffith and Quinnell 1999). Recent development-led work has resulted in the identification of several previously unknown ring ditches, but few of these have been confidently dated to the Neolithic or Bronze Age and interpreted as the remains of barrows (Valentin 2010; Pears and Hughes, 2014). Further synthetic study is required to ascertain the precise number of dated barrow monuments in Devon.

Prior to NMP, aerial survey had improved the known distribution of probable round barrows in Devon largely by identifying ring ditches as cropmarks in lower lying areas such as the Taw valley, complementing the previously recorded round barrow distribution (Quinnell 1988; Griffith and Quinnell 1999). The EMDRC survey has recorded 96 round barrows. Half were newly recorded by the

survey; 38 from cropmark evidence, 11 with earthwork evidence. This is a significant increase and although the results have not drastically changed the perception of this monument type's distribution, they have strengthened the known pattern (see Figure 8). Both newly recorded and amended monuments were frequently located within or on the periphery of known cemetery groups, such as the Upton Pyne group (discussed below). This group falls within a wider concentration of barrow monuments in the centre of the survey area, which may echo the later prehistoric settlement pattern that appeared to be densest around the confluence of the Rivers Exe and Culm (see Section 6.4.3). This possible correlation might support the interpretation that the pattern shown in Figure 8 is, to an extent, a reflection of the true distribution of this monument type. The identification of a small number of previously unrecorded monuments also supports the assertion that aerial reconnaissance extending beyond this possible settlement and ceremonial nucleus could, in optimum conditions, further extend the distribution.

The evidence type most commonly associated with amended barrow monument records was the cropmark ring ditch. Earthwork mounds recorded from lidar evidence were more typical of newly recorded monuments. Nonetheless, notable improvements in our understanding of nationally important sites have been made, and are summarised below.

Barrow monuments with evidence of more than one ring ditch have been interpreted as indicating several phases of barrow construction and reuse, probably by the same community, potentially indicating collective memory over an extended period of time (Woodward 2000, 36-39). A possible example of a double-ditched ring ditch was recorded by the survey as a cropmark on military RAF vertical photographs of 1946, to the south-west of Uplowman (MDV110019: Figure 9). At 30 metres in diameter this previously unrecorded monument falls towards the larger end of the typical barrow size range in Devon, and was situated on gentle north-west facing slope, between an enclosure of probable prehistoric date to the north-east and a group of four ring ditches to the west, possibly a small nucleated barrow cemetery of which it might be an outlying element.

The Upton Pyne barrow cemetery, largely discovered in the 1930s, is a much larger group of over 30 previously recorded monuments situated on relatively low lying ground adjacent to the River Exe. The group has in fact been interpreted as comprising a dispersed cemetery extending for a distance of almost 4 kilometres across the River Exe to the east, although the main focus is to the west of the river, north of Upton Pyne (see Figure 10). The cemetery displays traits of both dispersed and linear cemeteries, and may fall into Woodward's class of 'row cemetery', including as it does several linear elements on differing alignments, possibly with individual foci (Woodward 2000, 85-8). Fox had interpreted a number of these linear groups as evidence of individual community focus, but also took the alignment of several of the east-west rows within the group to indicate the direction of a route through the cemetery, aligned on a ford across the river (Fox 1969), connecting with the eastern extension to the group, identified from the air by St Joseph's aerial photography in 1952 (ibid).

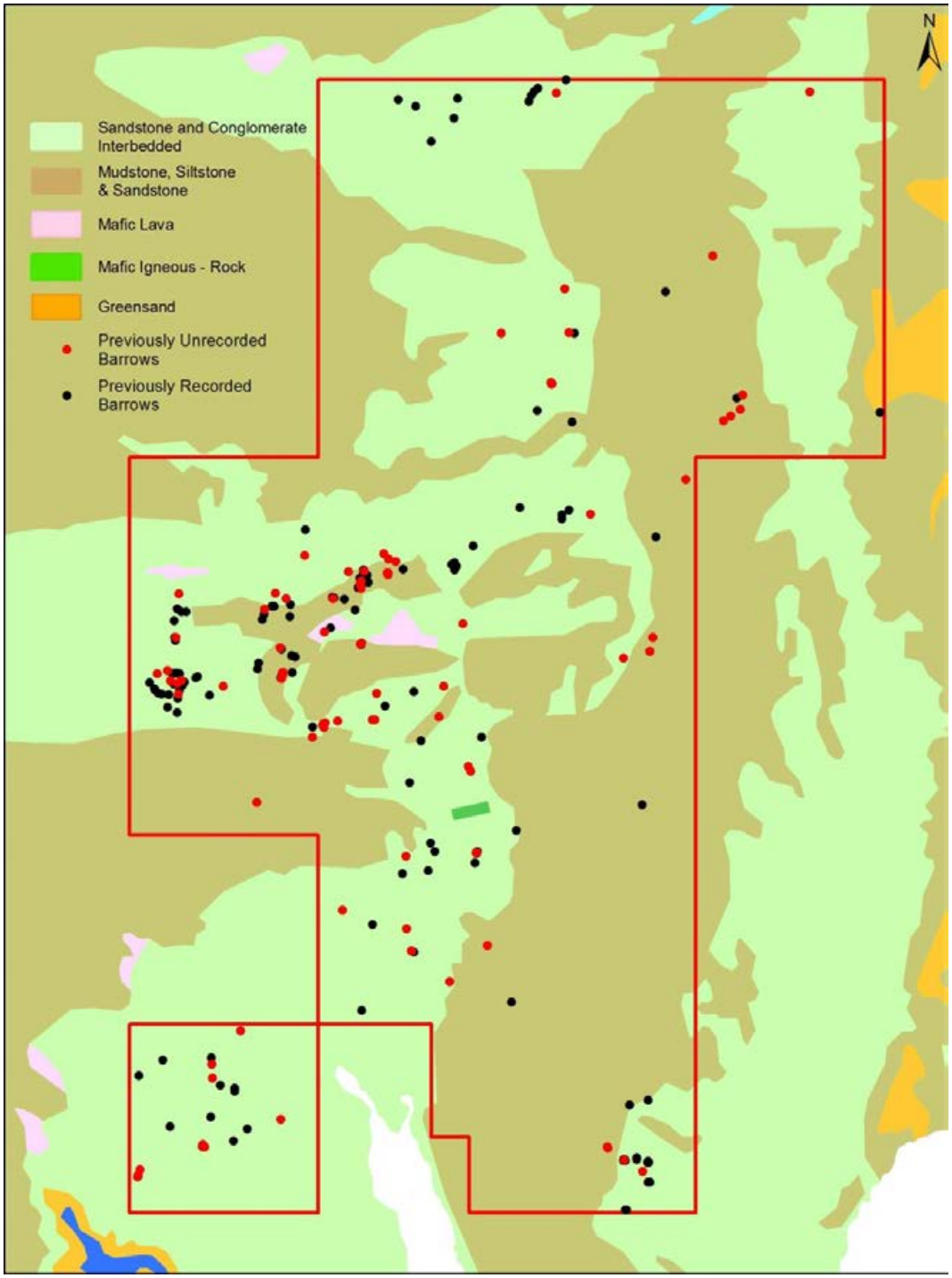
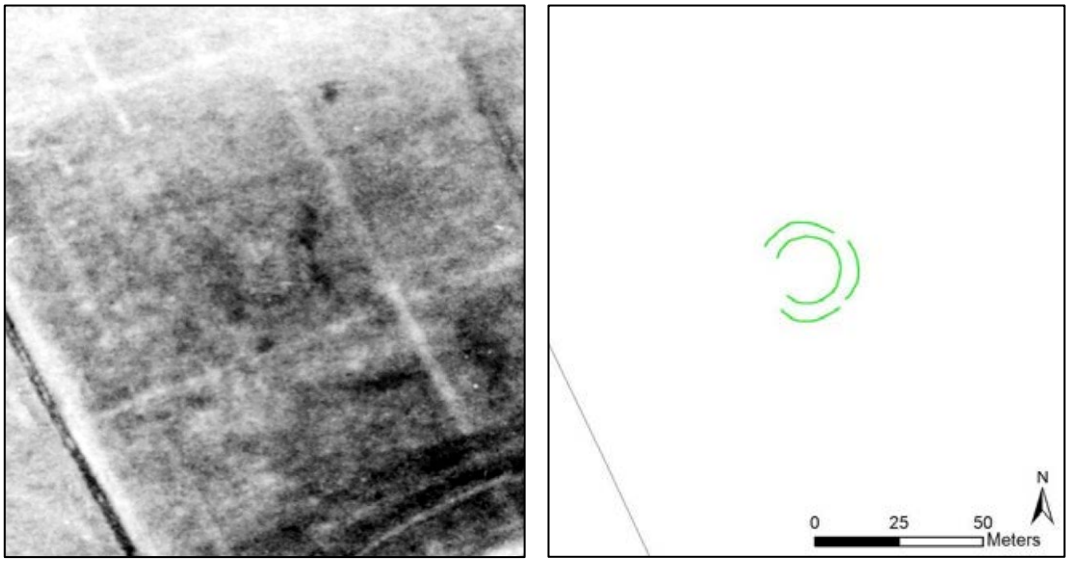


Figure 8. The distribution of monuments interpreted as round barrows (including ring ditches) recorded by the survey. The record is biased towards cropmark evidence visible on the well-draining soils derived from the sandstone geology. Although the survey has extended the distribution slightly, the survey results largely reinforce the previously recorded distribution.



RAF/3G/TUD/UK/221 V 5361-62 11-JUL-1946 Historic England RAF Photography.

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Figure 9. Possible prehistoric ring ditch (MDV110019) visible as a cropmark on rectified RAF photographs (Left), with NMP transcription (Right).

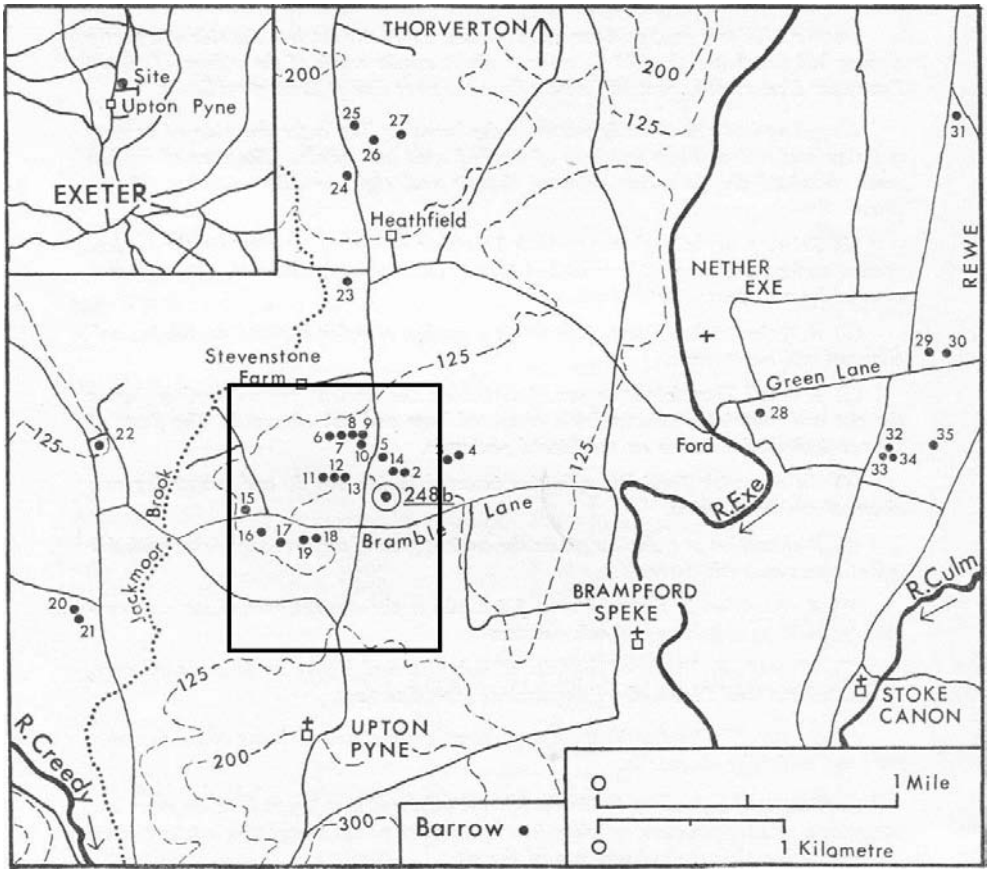


Figure 10. The Upton Pyne cemetery, from Fox, 1969. Box marks extent of Figure 11 below.

The NMP survey provided the opportunity for a rapid reassessment of the evidence for the cemetery. Most of the possible barrows noted above by Fox and recorded on the HER were transcribed by the survey, but a number were not observed. Focusing on the core of the cemetery (see Figure 11) examples of these included one depicted by the Ordnance Survey to the south of Bramble Lane (MDV10208; see Figure 11) and two monuments entered on the Schedule of nationally important monuments adjacent to Long Plantation (MDV14738/SM1010639 and MDV14743/SM1010638). Whilst it is probable that some of the earthwork mounds had been levelled by the 1950s, it is also possible that in some cases, such as (MDV14738/SM1010639 and MDV14743/SM1010638), that non-archaeological features had been recorded.

Conversely, the assessment of lidar data has identified possible previously unrecorded barrows. Arguably the most significant discovery is MDV113839, illustrated in Figure 12, an earthwork mound recorded after revisualisation of the lidar data; the NMP survey has probably identified the first additions to the cemetery, including a possible designation candidate, for over 60 years.

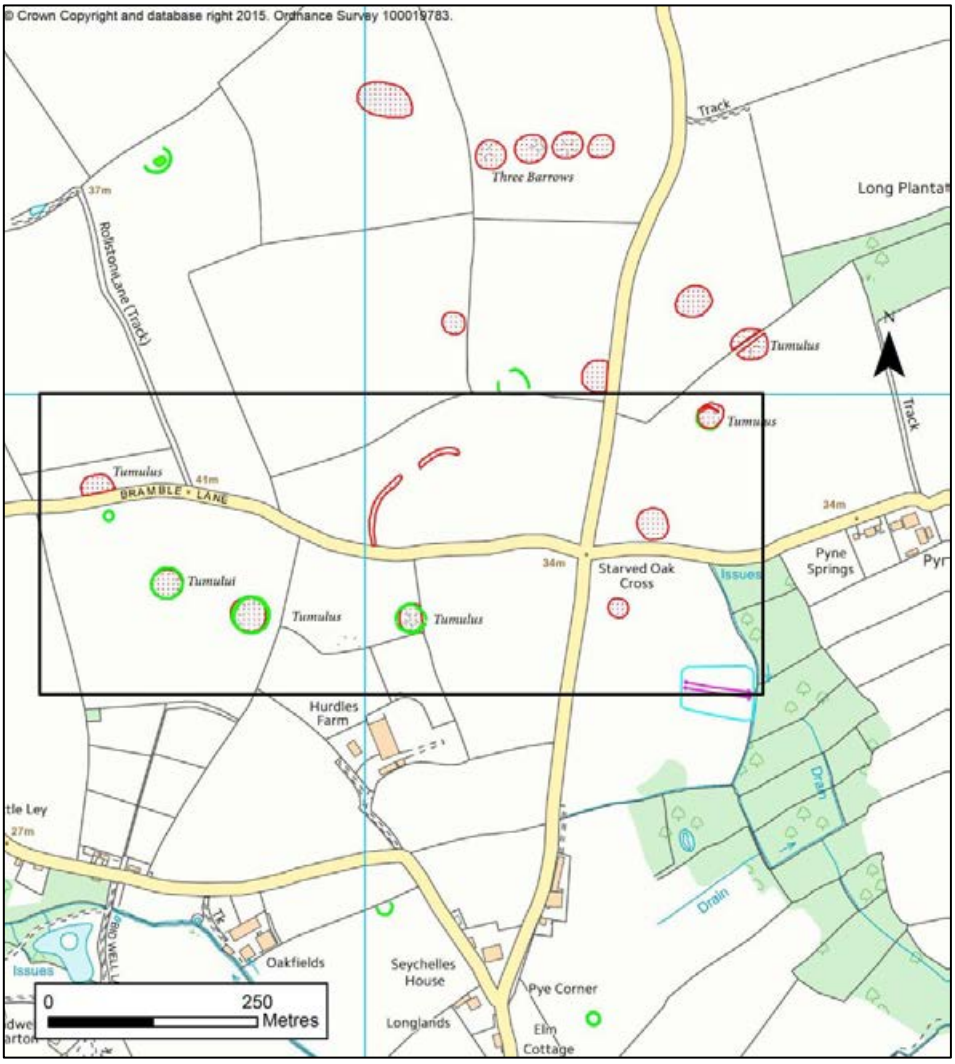


Figure 11. The core of the Upton Pyne cemetery as transcribed by the NMP survey. Box marks extent of Figure 11 below.

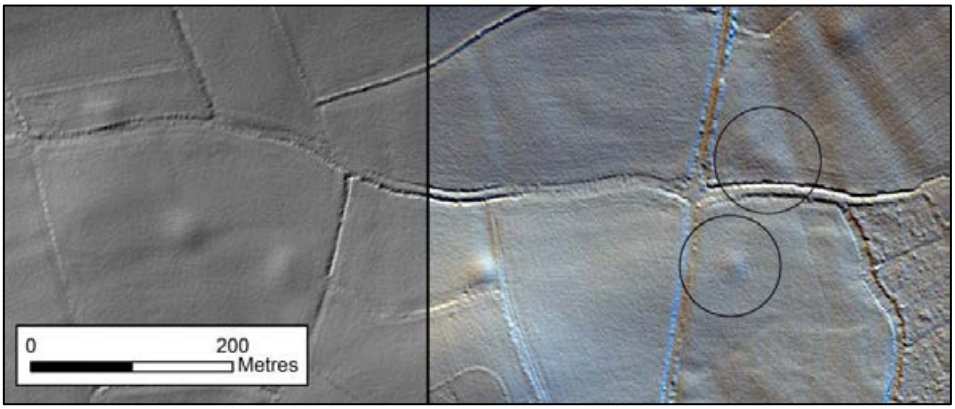
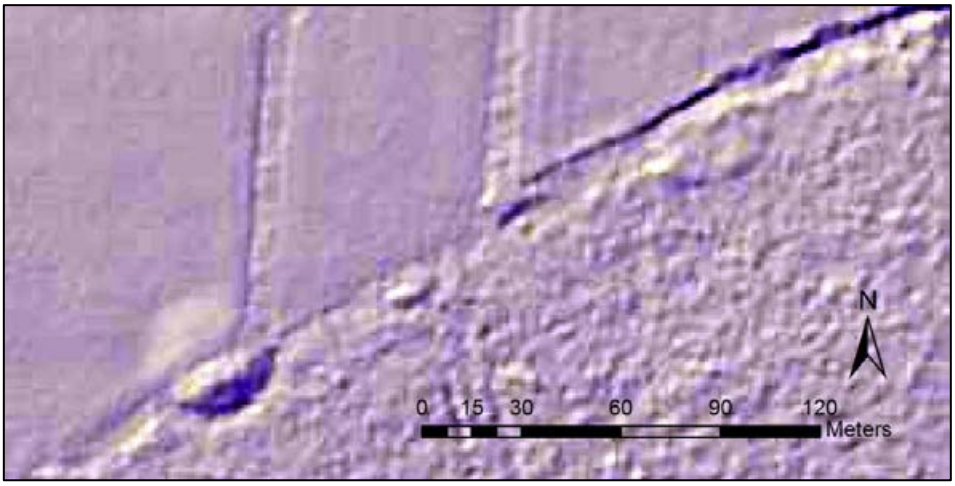


Figure 12. The circles mark the location of newly recorded possible barrows; the upper circle marks MDV29595, which had been recorded but not firmly located; the lower circle marks mound MDV113839, newly recorded. LIDAR ST0606 Environment Agency JPEG DTM 05-MAR-2010. Environment Agency copyright 2015. All rights reserved.



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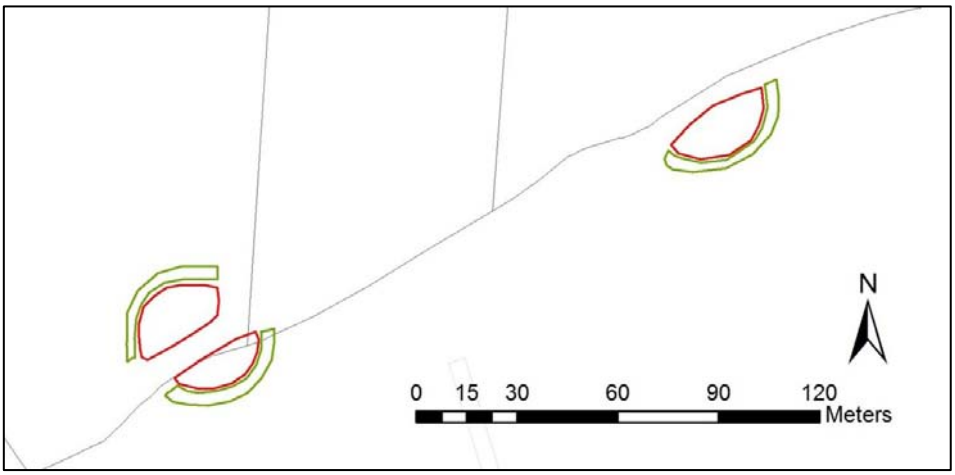

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Figure 13. Two probable barrows on Kentismoor (MDV11453 and MDV109822) visible as earthwork mounds on lidar images (Top) and NMP transcription (Bottom).

Lidar data has also proved equally valuable in enhancing our understanding of historical monument data. For instance, two barrows were recorded on Kentsmoor by Polwhele in 1797, but by 1910 Chalk recorded that a barrow was 'carted away… to enrich the neighbouring soil'. The barrows were not depicted on any of the available historic mapping and the approximate location of only one of the barrows had been recorded on the HER (MDV11453). They were not visible on the available aerial photographs due to tree cover, and there are few available sorties of this area dating to the mid-20th century before the woodland matured. However the barrow that had been recorded was visible as a clear earthwork on images derived from lidar data captured in 2010. It had been cut by two field boundaries dividing it into three, the mound perhaps used as a landscape feature during the laying out of enclosure boundaries in the 19th century. More notable was a semi-circular mound with partial external ditch approximately 130 metres to the east (MDV109822). This was also bisected by a field boundary, and may be the remains of the other barrow referred to by Polwhele (Figure 13); geophysical survey / archaeological evaluation would help to clarify this interpretation. The barrows should be considered for scheduling to reduce the risk of further accidental or avoidable degradation.

6.3.4 Sub-Roman Cemeteries

It is unusual to identify post-Roman settlement from remotely sensed sources and burial evidence even more so. The coincidence of specialist Devon Aerial Photograph sorties with a watching brief on a gas pipeline construction project in south Devon therefore provided a valuable opportunity to record the extent of a partially exposed post-Roman cemetery (MDV55042; see Figure 14). Although rare in Devon, this site has been included in a growing group of sites in the South-West, termed 'Sub-Roman Cemeteries'. These are sites that might demonstrate some degree of continuity from the Roman period, and possibly association with nearby settlements, potentially high status, that also continue from the Roman into the post-Roman period (Rippon 2012, 302).

At Kenn the cemetery was not fully exposed within the pipeline corridor, but over 100 graves were identified, of which forty-seven were excavated. The dark fills of the east-west orientated grave cuts and enclosures are clearly visible on the aerial photography as the excavation progressed from early to mid-September 1995.

None of the features were visible on the available aerial photographs before the topsoil had been stripped, and there is clearly potential for more to be discovered though groundworks as well as remote survey. It is tempting to surmise that a possible double-ditched rectilinear enclosure 100 metres to the north (MDV113039) that was identified by the survey from aerial photographs taken in the 1980s could be evidence of the settlement associated with the cemetery.

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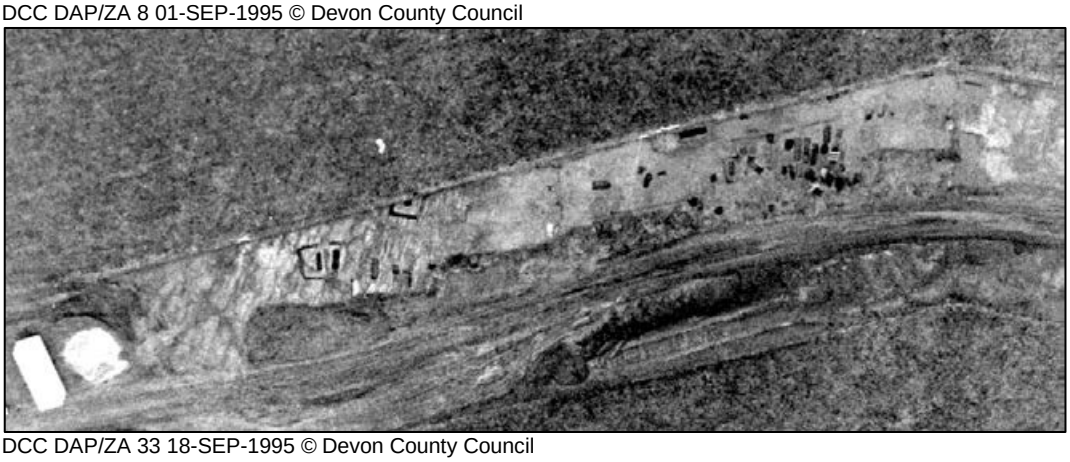


DCC DAP/ZA 33 18-SEP-1995 © Devon County Council

Figure 14. Progress of post-Roman cemetery excavation near Kenn in 1995, in advance of pipeline works

6.4 Settlement and Agriculture

The archaeological evidence for settlement and agricultural activity recorded within the survey area was limited largely to pre-Roman and post-medieval settlement traditions.

As summarised in Section 6.2 for the Bronze Age to Roman periods, recent evidence gained through excavation is throwing into relief the limitations in attempting to ascribe close dates on the basis of morphological traits alone, for ditched enclosures visible as cropmarks. Conversely, patterns are emerging that

might allow some limited generalisations to be made on a Bronze Age and Iron Age/Romano British division, on the basis of visibility of extensive associated field patterns. For this reason, case studies for the Bronze Age to Roman periods will be summarised together.

Devon's extant field and settlement pattern is derived largely from a long-lived and persistent medieval landscape pattern, established following a significant break with the pre-Roman tradition at some point between the seventh and ninth centuries AD (see Turner 2006 (ed) for a comprehensive summary). The NMP survey evidence for medieval and later settlement and agricultural activity is therefore somewhat limited and better reflects very localised social and economic drivers, not widespread landscape change (see Section 6.4.1).

First, however, the logistical impact of the survey on the known prehistoric cropmark resource will be illustrated in relation to a monument potentially of Neolithic date.

6.4.1 Consolidating the Neolithic?

In addition to enhancing the accuracy and detail for monument records of previously identified ditched enclosures recorded from cropmarks, the NMP methodology enabled the consolidation of data from multiple sources for more complex cropmark monuments on a wider landscape scale.

This can be illustrated with a large oval ditched enclosure (MDV1279) that had been previously recorded from aerial photographic sources in the flood plain of the River Exe, north-east of Netherexe Barton (Figure 15).

This enclosure had been interpreted as potentially Neolithic in date, but the cropmark evidence had been recorded in a somewhat piecemeal fashion. The aerial photographic information had accreted over time and from a range of aerial sources, the unusual scale and atypical character of the enclosure for Devon possibly hindering its identification. Consequently, elements of this site had been recorded across several individual HER monument records. During this process, other buried archaeological remains identified as cropmarks, such the largest possibly 'internal' enclosure (MDV111099, shown in blue in Figure 15) were identified and, due to proximity, were recorded in association with elements of the outer perimeter ditch.

The NMP survey was able to unify these disparate enclosure elements into a single HER monument record. New individual records were created for the largest internal enclosure (MDV111099, shown in blue) and two previously unrecorded small circular enclosures (MDV110718 and MDV111089 shown in red), plus several previously unrecognised linear ditched features (MDV110719 also shown in red).

It is possible that the small oval enclosures in close proximity to, or located 'within' the larger oval enclosure are the remains of oval barrows and had a ritual or ceremonial function contemporaneous with it, as was implied by the previous grouping of multiple ditched features recorded as cropmarks into composite HER monument records. However, it is also possible that they, and the nearby ring ditches, included ritual ceremonial or funerary monuments of later, Bronze Age

date, clustering around and within an earlier landscape feature. It must also be considered possible that these smaller features were coincidentally co-located settlements or stock enclosures of Iron Age to Roman date, perhaps associated with the rectilinear multiple ditched enclosure and field systems to the north-west of the large oval enclosure (MDV1280).

Recent geophysical survey and targeted excavation of the large oval enclosure (not accessioned into the HER at the time of writing) confirmed the character, survival as a buried archaeological feature, and extent of the ditched enclosures indicated by the cropmark evidence (Bayer 2011). Samples taken from secondary ditch fills for radiocarbon dating returned ambiguous results, perhaps indicative of intrusive material, confirming a prehistoric and pre-Iron Age date, but raising doubts about the posited Neolithic origin (Bayer 2011, 170-171).

In such a complex example, separating elements of potentially different date and function into individual records provides an evidence base on the HER that can more flexibly adapt to new data as it arises.

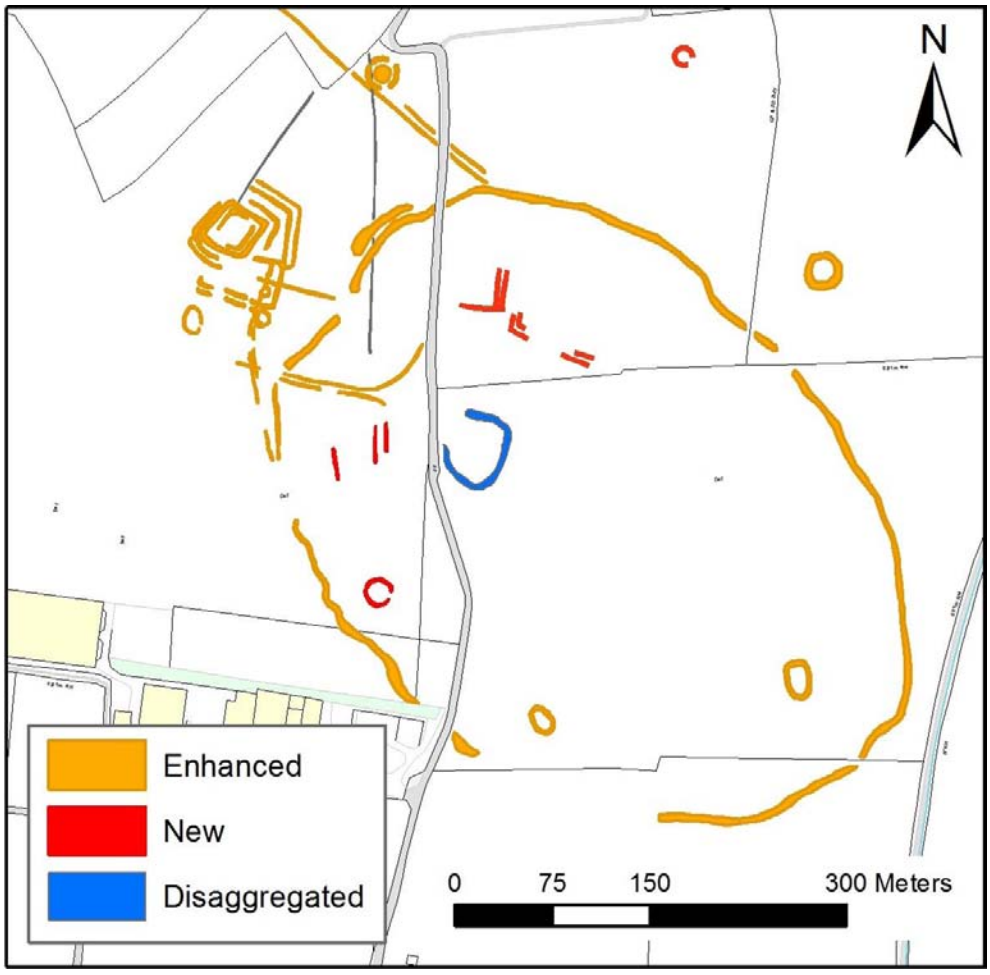


Figure 15. Enhanced, disaggregated and newly identified cropmark features recorded to the north-east of Netherexe Barton. NMP transcription; NMP mapping © Historic England. The base map is © Crown Copyright and database right 2015. Ordnance Survey 100019783.

6.4.2 Bronze Age to Roman Settlement: Form, Survival and Function

As anticipated the NMP survey has identified a number of previously unrecorded enclosure monuments of probable Bronze Age to Roman date. The vast majority (circa 98%) were recorded from cropmark evidence, but a small number (6, or 2.5%) were recorded with partial or significant earthwork evidence. These figures exclude monuments interpreted as ring ditches.

In total the survey has transcribed evidence for 236 possible enclosures of probable Bronze Age to Roman date, 85 (or 36%) of which were previously unrecorded. The distribution of these monuments is illustrated in Figure 16; the cropmark resource is overwhelmingly concentrated on the sandstone geologies and resultant better draining soils, although a small number of possible enclosures have been identified on the mudstone geologies. This relationship is not exclusive, however, as demonstrated by the concentration of enclosures across the centre of the survey area on both sandstone and mudstone deposits. Other factors probably influenced this settlement pattern; this grouping is probably focused on the confluence of two of the major rivers in the survey area, the Exe and Culm. Gilbert (2012) suggested that the valley of the River Otter was a focus for settlement in the Bronze Age and Yates (2007) speculated in a similar vein for the Axe valley. The apparent density of later prehistoric settlement in the centre of the survey area might support the suggestion that this pattern can be extended to the well-drained and fertile alluvial deposits of the broad floodplains of the lower Exe and Culm and their immediate environs. Nonetheless, the survey results have largely confirmed and extended the previously known pattern, rather than significantly amended it.

Identified mostly as incomplete or partially visible enclosures, the newly recorded enclosures have nonetheless largely conformed to the pattern noted by Griffith (1994) and also seen in the NMP survey of Exmoor and its immediate environs (Hegarty and Toms 2009), whereby a difference in size and morphology is apparent between those enclosures identified as cropmarks and those recorded as upstanding earthworks, however slight. Specifically, the monuments identified from cropmark evidence tend to be smaller in area and show a higher proportion of single or double ditched rectilinear forms than those recorded as upstanding earthworks, which tend to be significantly larger and more curvilinear in plan. A small selection of such sites is illustrated in Figures 17 and 19.

However, a relatively small number of circular or curvilinear enclosures of possible prehistoric to Roman date were recorded from cropmark evidence (see Figure 18). Only one of these (MDV108749) was visible as both a cropmark and slight earthwork. Of the remaining circular enclosures visible as upstanding, if subtle earthworks, only two were interpreted as potentially of prehistoric date to Roman date (Figure 17): the newly recorded enclosure MDV107942 and a possible annexe to the previously recorded enclosure MDV1311, which was visible more as a terraced area than enclosure proper. Evidence from limited excavation of similar sites might support the interpretation that the remainder are medieval in origin (Silvester 1980b). Suggestively, one of these is situated in the plot named Castle Field, overlooking the village of Bradninch (MDV108251).

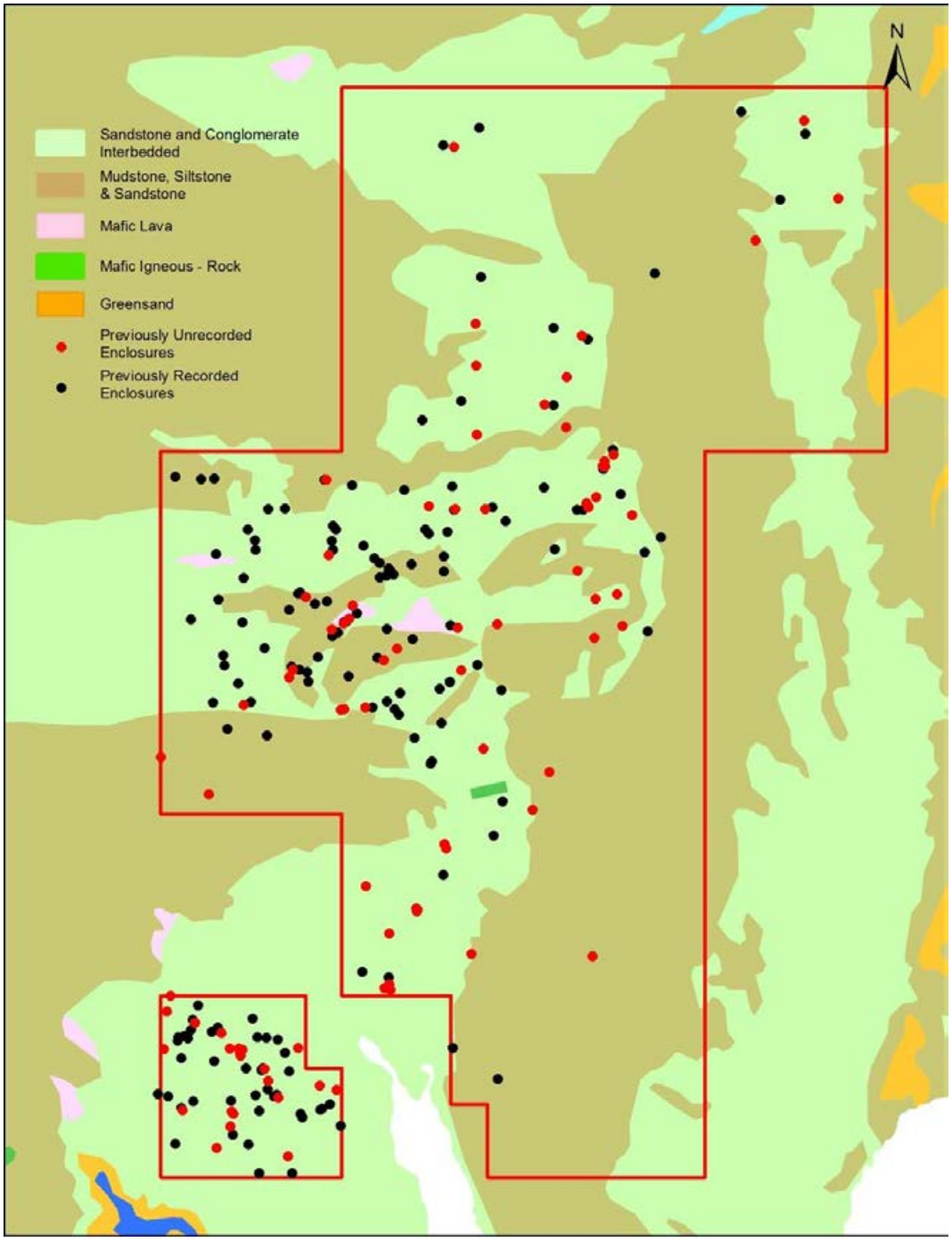


Figure 16. The distribution of enclosures (excluding ring ditches) recorded by the survey. The record is clearly biased towards cropmark visibility on the soils derived from the sandstone geology that are well-draining and more suited to arable cultivation. This relationship is not exclusive, however, as demonstrated by the concentration across the centre of the survey area.

The reason for the variation in monument survival is not clear. Recent excavation evidence would support the assertion that the plan of the enclosure provides little indication of the date (see Section 6.4.2). Rather, it has been suggested that the smaller, more frequently rectilinear enclosures may have originally been less robust in character than the curvilinear examples; the latter constructed perhaps for more pragmatic uses, such as stock enclosures, and less for defence. The smaller enclosures might therefore have had a less enduring presence in the

landscape (Griffith 1994, 93), particularly in an agriculturally rich landscape that has potentially experienced millennia of cultivation. It is also noteworthy that of those newly recorded monuments identified from earthwork evidence, 75% are interpreted as potentially of historic rather than prehistoric date, although the sample for the latter in this survey is too small to be statistically significant.

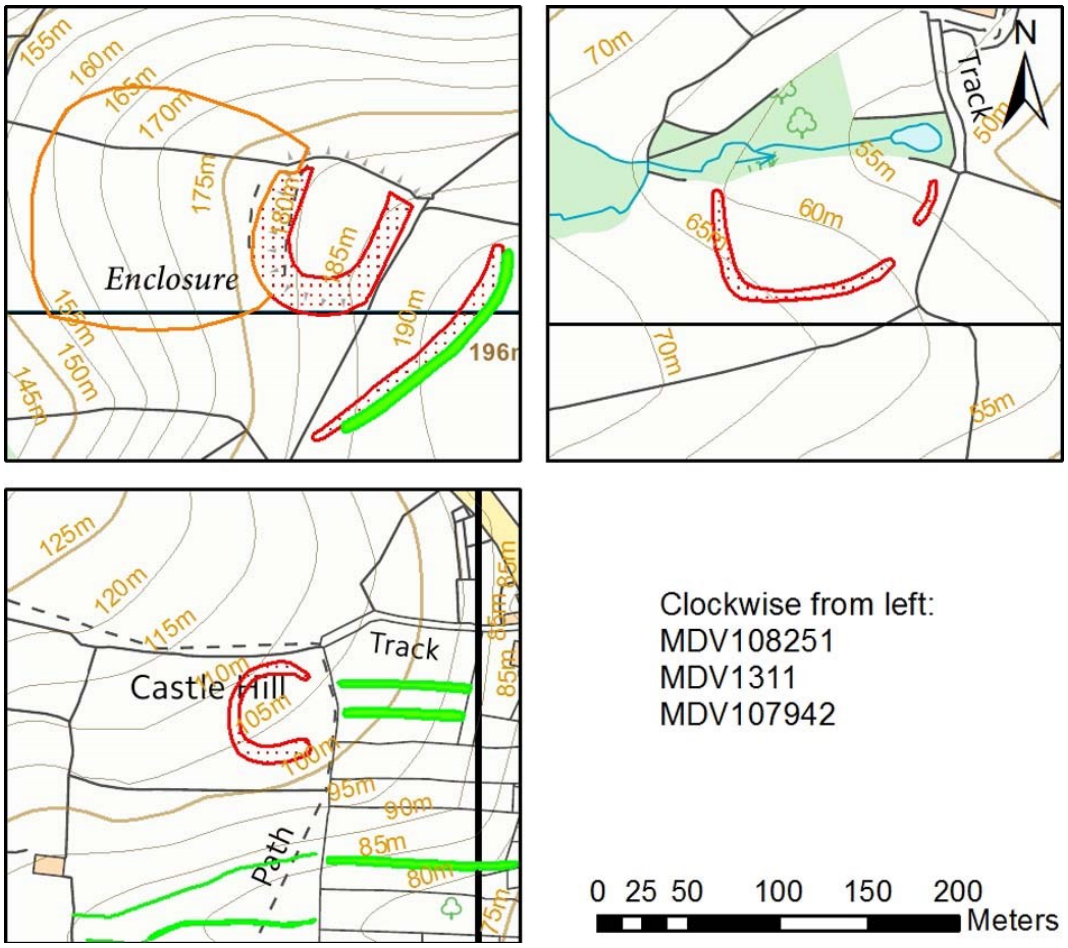


Figure 17. Curvilinear enclosures recorded as earthwork banks by the survey. Note the subtle circular site located on Castle Hill above Bradninch (MDV108251). The base maps are © Crown Copyright and database right 2015. Ordnance Survey 100019783. NMP transcriptions © Historic England.

6.4.3 Bronze Age to Roman Settlement: Settlements and Agriculture

The evidence for Bronze Age to Romano-British rural settlement and agriculture in Devon cannot be fitted into a readily definable framework based on site morphology, and is consequently difficult to date from limited aerial survey. As summarised above (see Section 6.2), recent work suggests that some discontinuity or change in the settlement pattern might have occurred between the Bronze Age and that of the Iron Age to Romano-British period. This is exemplified by the multi-period settlement site at Hayes farm, Clyst Honiton. Aerial survey and development-led excavation here has informed an interpretation as enclosures within a pastoral Bronze Age agricultural fieldscape, succeeded by an unenclosed Iron Age settlement, in turn followed by an enclosed Roman settlement. The enclosures of both the Bronze Age and Roman

phases were defined by rectilinear elements (Simpson et al 1989; Hart, Wood, Barber, Brett and Hardy 2014).

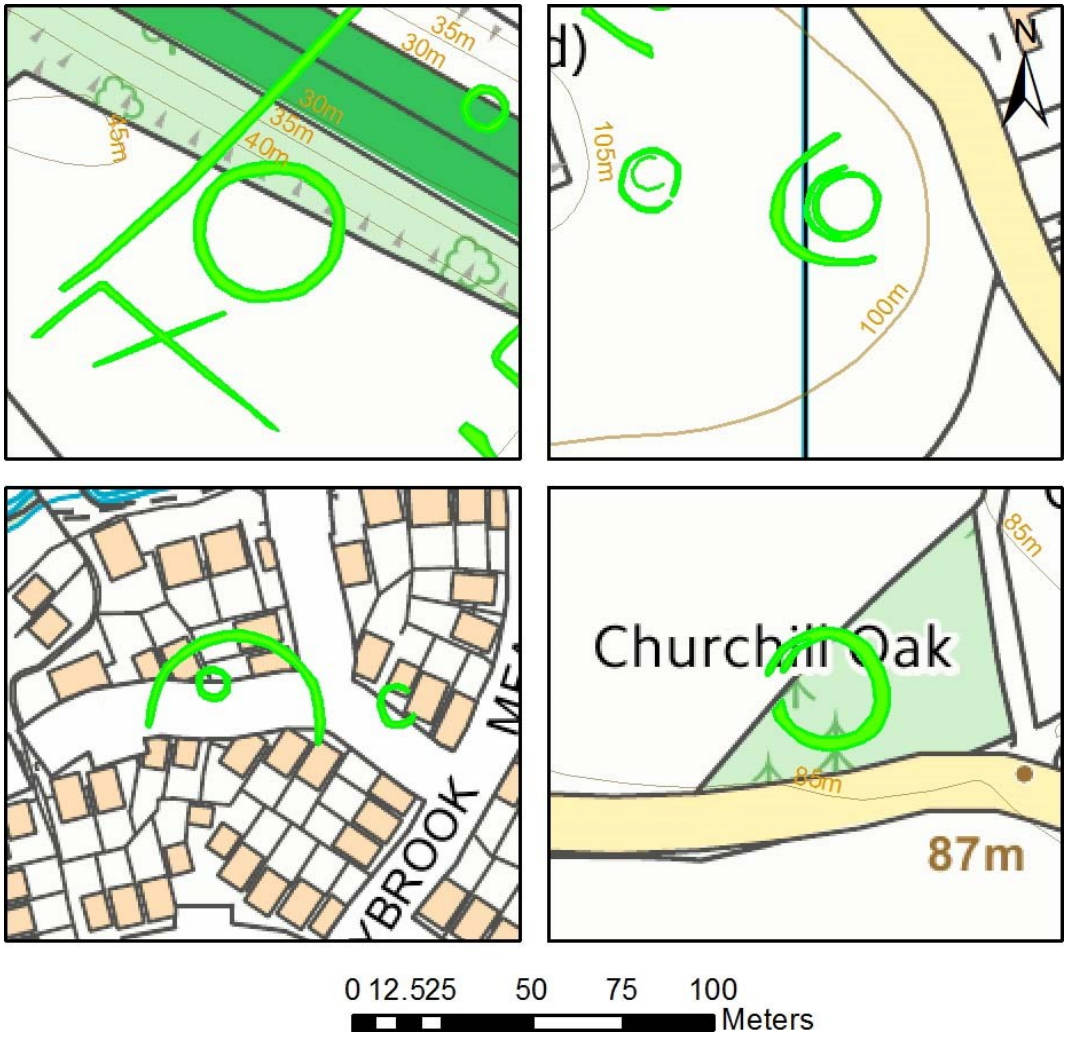


Figure 18. Curvilinear enclosures recorded as cropmarks by the survey. Clockwise from top left: MDV113017; MDV12745 and MDV112746; MDV108749; MDV 113240. The base map is © Crown Copyright and database right 2015. Ordnance Survey 100019783. NMP transcriptions © Historic England.

Associations between Middle Bronze Age planned field systems and enclosures are well recorded in upland fringe locations in Devon, such as on Dartmoor and Exmoor (Silvester, 1980; Fleming 1988; Riley and Wilson-North 2001), with extensive field systems in currently marginal coastal settings at Decklers Cliff in the South Hams and Walls Hill, Torbay (Hegarty, Knight and Sims 2014), and to a lesser extent those known from fieldwork and aerial survey in lowland settings, such as at Hayes Farm mentioned above and at Castle Hill, Ottery St. Mary (MDV62748; Fiztpatrick et al 1999). To illustrate the lowland evidence, a rectilinear ditched enclosure with associated linear features, previously identified from aerial photography, fell within the NMP survey area at Old Rydon Lane, Exeter (MDV MDV29091). The cropmark features were excavated in advance of roadbuilding, confirming the validity of the interpretation, but also dating the enclosure to the Bronze Age and confirming the association between the enclosure and the probable field boundary ditches (see Figure 19).

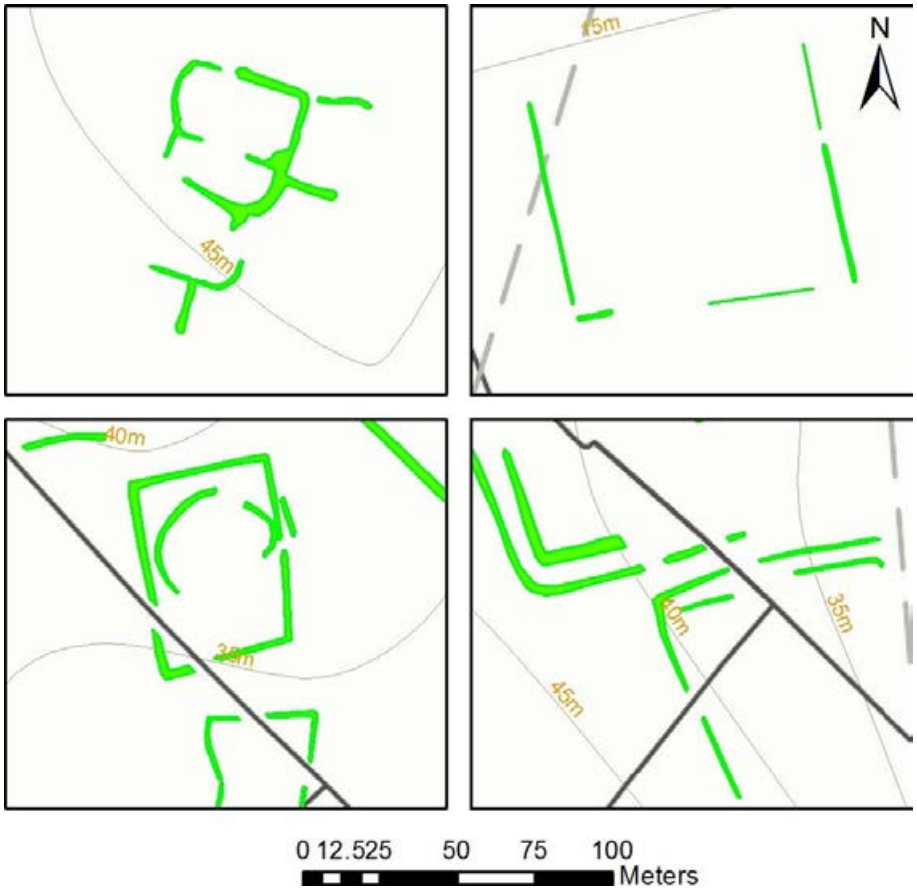


Figure 19. A selection of rectilinear ditched enclosures recorded from cropmark evidence. NMP transcriptions © Historic England. Clockwise from top left: MDV112852; MDV112238; MDV10026 & MDV113198; MDV113016 & 113014.

Figure 20. NMP transcription of cropmarks forming over the remains of a Bronze Age farmstead enclosure and slight cropmark evidence of associated field boundary ditches at Old Rydon Lane, Exeter (MDV MDV29091). The base map is © Crown Copyright and database right 2015. Ordnance Survey 100019783. NMP transcriptions © Historic England.

However, a very limited number of previously unrecorded or unrecognised enclosures with possible associated field systems, interpreted in the light of the above precedents as potentially evidence for Bronze Age farmsteads and agricultural activity, were recorded by the survey. A selection of these is illustrated in Figure 21. Monument MDV10023, for instance, is a previously recorded enclosure to the south-west of Alphington (see also Figure 104 in 6.8). Although ditched features on a number of orientations were visible, possibly indicative of several phases of activity, these cropmarks have been interpreted as evidence for fields associated with the enclosure. The remaining illustrated cropmark sites, less coherent and more fragmentary in nature, were more typical of the previously unrecorded monuments transcribed by the survey, and possibly more akin to the Old Rydon Lane site (Figure 20).

The Iron Age to Romano-British agricultural landscapes and settlement pattern in Devon is poorly understood (Brunning *et al*, 2008). Limited and very localised evidence for small scale field systems has been recorded in association with a small number of Iron Age and Romano-British excavated sites, such as at Topsham (Jarvis and Maxfield, 1975), Mount Folly (Wilkes, 2009), and within the survey area at Pond Farm, Exminster (Jarvis 1976; See Figure 22), but by and large both the county and the NMP survey data is dominated by isolated enclosures.

As described above, a convincing and growing body of excavation data appears to support the assertion that this pattern reflects the actuality of the settlement pattern to some degree; some sites, such as Blackhorse to the east of Exeter (MDV28620, SX 9782 9336), did indeed sit in 'splendid isolation' (Fitzpatrick *et al* 1999). This is not to say that no evidence for arable cultivation exists at such apparently isolated sites. For instance, palynological evidence from the ditch of rectilinear Romano-British enclosure at North Tawton (MDV55836) indicated that the apparently solitary enclosure sat in a largely open landscape with some degree of cereal cultivation in the vicinity (Passmore, 2005). Similarly the Roman enclosure at Hayes Farm produced evidence for grain processing (Simpson *et al* 1989). Nonetheless, although it is possible that relatively shallow ditch-defined field boundaries would not be apparent as cropmarks in association with more substantial enclosure ditches, this seems unlikely, and it is possible that different methods were used to enclose or define cultivated areas in association with such settlements.

Griffith and Quinnell (in Kain and Ravenhill, 1999, 62-68) cite excavation evidence for sites in which the boundary could have played a more ceremonial function and it is tempting to interpret some of the more elaborate enclosures, of both 'native' and possible Romanised character, in such a role (see Figure 23). However, it is likely that a proportion of the less elaborate and superficially undistinguished isolated enclosure sites could also have had a non-domestic character.

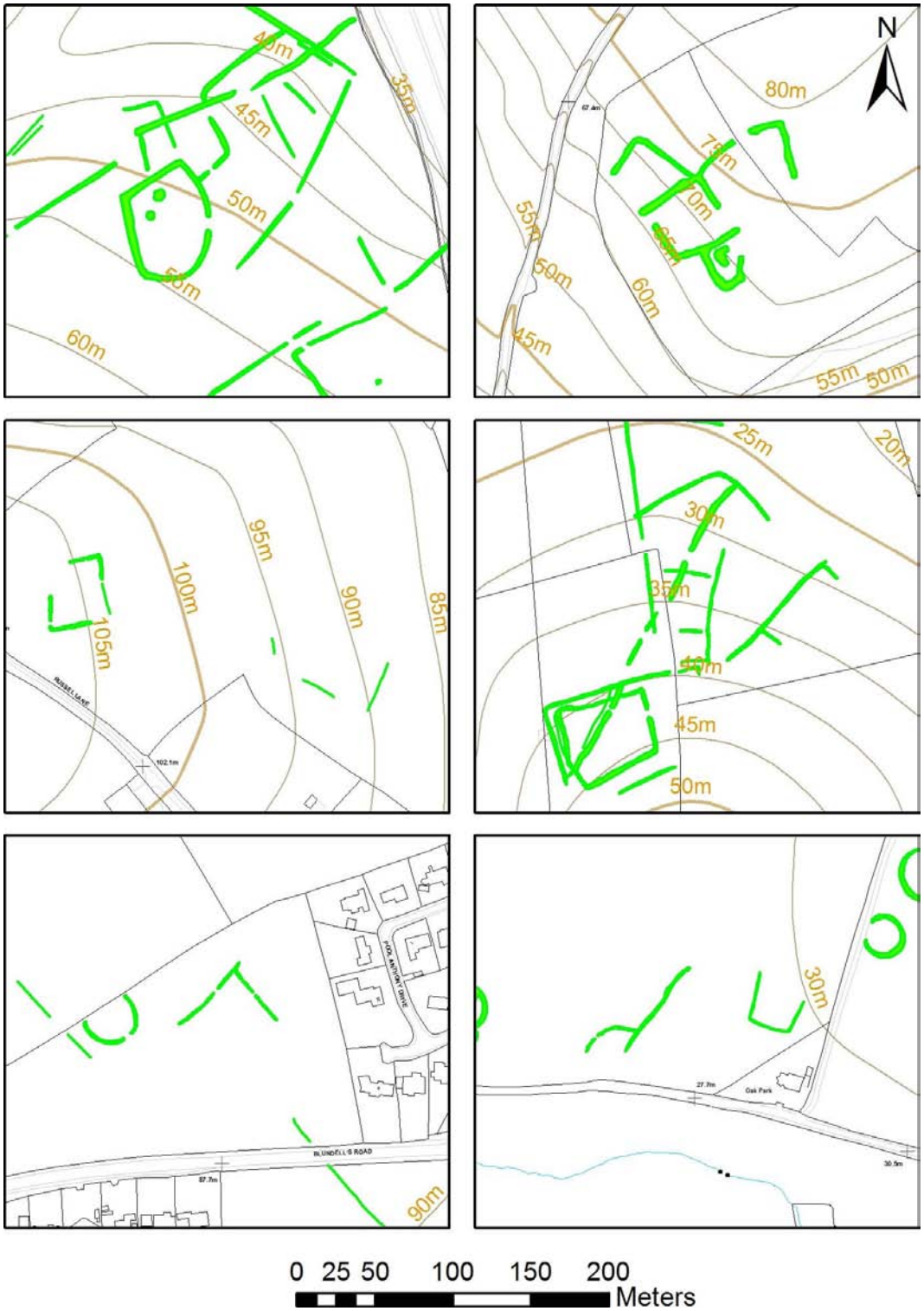
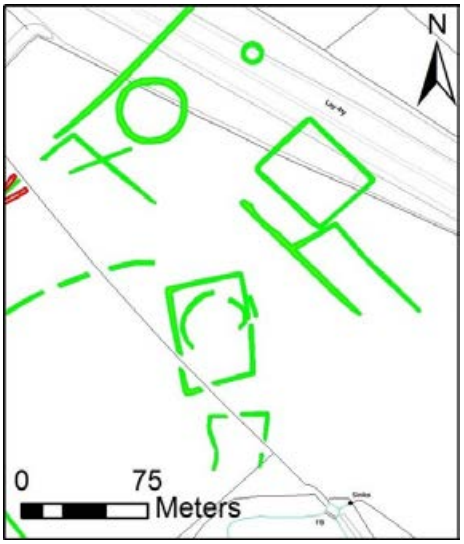


Figure 21. Enclosures recorded from cropmark evidence with possible evidence of associated field boundaries or field systems. Clockwise from top left: MDV10023; MDV112642; Enclosure MDV10018 and linears MDV113183; MDV113010 and MDV28637; Enclosure MDV56027 and linears MDV108469-70; Enclosure MDV107857 and linears MDV107858. The base map is © Crown Copyright and database right 2015. NMP transcriptions © Historic England.

CUCAP BTS057 03-JUL-1975. © Cambridge University Collection of Aerial Photography.



The base map is © Crown Copyright and database right 2015. NMP transcriptions © Historic England.

Figure 22. A 2nd to 3rd century Romano-British farmstead at Pond Farm, Exminster, comprising rectilinear and circular ditched enclosures with slight evidence of possible field boundaries (MDV10043, MDV113011, MDV113013-14, MDV113016-18). The northernmost rectilinear enclosure was partly destroyed during construction of the M5 motorway.

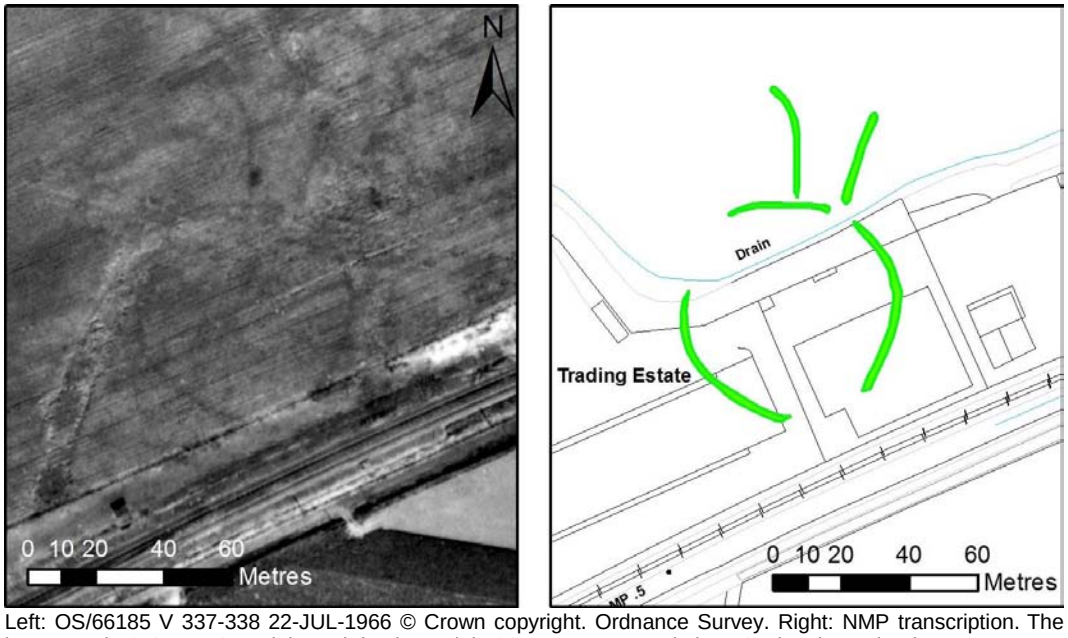
More prosaically, enclosures that fulfilled purely pastoral roles might not have been associated with earthwork field boundaries substantial enough to remain visible as cropmarks. However, the survey has good potential to enhance the interpretation of such enclosures. For example, reinterpretation of the cropmarks of a previously recorded oval or roughly circular enclosure in the flood plain of the Clyst Valley, typical of the isolated cropmark enclosure recorded in the survey area (MDV10169, see figure 24), identified a pair of external 'antennae' ditches possibly aligned on the enclosure entrance. This might support the interpretation that this site was similar to other 'antennae enclosures' recorded elsewhere in central-southern England, such as Gussage All Saints in Dorset or Little Woodbury in Wiltshire (Darvill 1996, 67-69). These have been interpreted as moderately high status settlements operating in a mixed farming economy with high levels of livestock management.

It might be, therefore, that many such isolated enclosures were simply part of a wider Iron Age and/or Romano-British mixed agricultural landscape in which a higher proportion of enclosures with an arable focus were concentrated in the River valleys, and more pastoral elements were predominant elsewhere (Darvill 1996; Jarvis 1976).

A: CUCAP MH73 05-JUL-1953 © Cambridge University Collection of Aerial Photography.

B: SOM 13177/1-2 30-JUN-1989 (NE) © Devon County Council

Figure 23. Complex multiple ditched isolated enclosures of probable Iron Age to Roman date near Netherexe Barton (A: MDV1280) and at Kersewell Farm, near Exminster (B: MDV17717). The cropmarks of such elaborate former earthworks might be expressions of non-domestic function.



Left: OS/66185 V 337-338 22-JUL-1966 © Crown copyright. Ordnance Survey. Right: NMP transcription. The base map is © Crown Copyright and database right 2015. NMP transcriptions © Historic England.

Figure 24. Previously recorded as a simple circular isolated enclosure, reassessment of the cropmark evidence for this site has led to reinterpretation as a possible antenna enclosure. Much of the site has now been developed but the possible antennae might survive as buried ditches.

6.4.4 Medieval to Post-Medieval Field Boundaries

In some parts of the project area field boundary loss since the late-19th century, as measured by Devon's HLC project, has been very high. This can be displayed cartographically (Figure 25), but only tells part of the story; 13% of the monuments recorded during the EMDRC NMP project are former field boundaries visible as cropmarks or earthworks. Only those not depicted on the OS First Edition Tithe map were transcribed and recorded, so many more that were removed from use in the second part of the 19th century have not been transcribed. The true scale of field boundary loss in the modern period is therefore very much higher than suggested by the HLC figures.

Chart 3 shows a perhaps surprisingly low number of recorded field boundaries in areas characterised by HLC as having suffered very high levels of loss during the 20th century. The majority are located in areas with relatively low field boundary loss in this period. As recorded boundaries are assumed to have gone out of use by the mid-19th century, it seems feasible that subsequent cultivation of the latter areas more thoroughly removed any earthworks and below-ground remains, prior to the commencement of systematic aerial photography in the mid-20th century.

Aerial survey can also illustrate the loss of other landscape features. Figure 26 shows the area east of Exton in 1946. The small irregularly-shaped fields are surrounded by mature hedgerow trees, but by 2010 it is clear that the vast majority of these had been lost, with the consequent reduction of biodiversity and erosion of landscape character. This is of great concern to conservation groups: "the number of isolated hedgerow trees fell by as much as 3.9% just between 1997 and 2007. A further 15,000-20,000 new hedgerow trees need to be recruited to the population each year just to keep the population stable"

(Hedgelink 2015). Such images illustrate this phenomenon and help to provide a view of a different, more diverse and sustainable landscape to the one we know today.

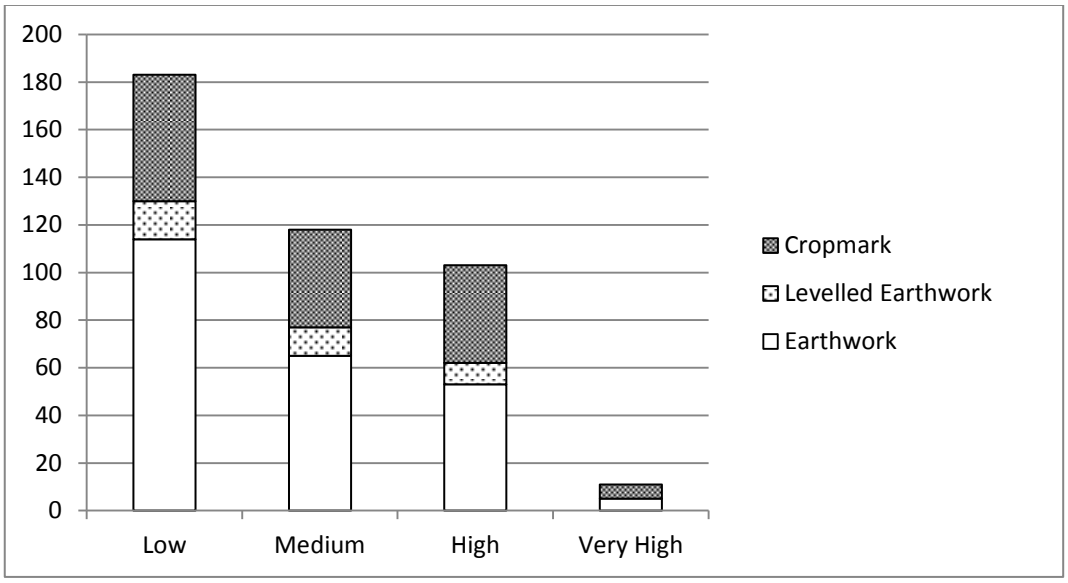
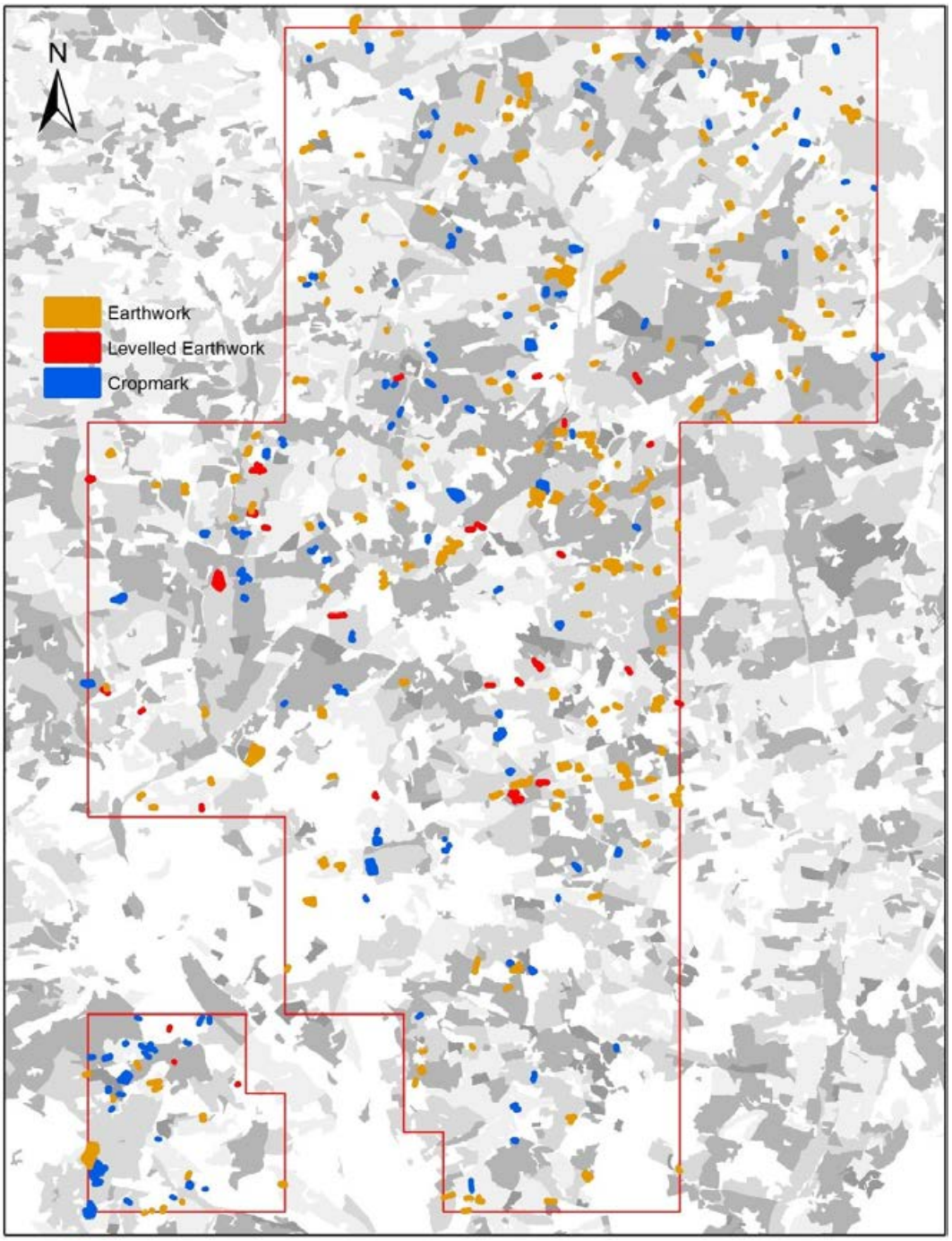


Chart 3: Evidence for field boundaries recorded by the survey, displayed by field boundary loss categories as defined by HLC: low 0-25%; medium 24-49%; high 50-74% and very high 75-100%. NB Some field boundaries will have more than one associated evidence term.

Another characteristic, noted in the north of the project area, is the predominance of wide shallow ditches that seem to have resulted from the removal of historic field boundaries. Some of these can be up to circa 25m in width. In form and layout they resemble similar broad linear earthworks that often correspond to the location of field boundaries depicted on the Tithe Map, since removed. They are interpreted as the remains of medieval or post-medieval field boundaries that passed out of use prior to the mid-19th century.

A good example is the complex northeast of East Manley (MDV108402), where former field boundaries are visible as earthwork ditches on aerial photographs taken from 1966 onwards, and on digital images derived from lidar data captured between 2005 and 2010 (Figure 27). The broad, linear earthworks measure up to 24m in width and may form part of a medieval field system, although the ditches appear to have largely passed out of use by the time of the parish Tithe Map of approximately 1838-48. Parallel earthwork ditches that did correspond to boundaries depicted on the historic maps were not transcribed as part of this survey.

A further distinctive feature relating to field boundaries is the incidence of double linear ditches, sometimes very widely spaced at up to 15m apart. Often these correspond to the location of field boundaries depicted on the First Edition OS map, and they are likely to have formed over drainage ditches either side of a former boundary feature, although with no evidence of a bank (Figures 28 and 29). Such features may have been more common to the north and east of the Phase 1 survey area.



HLC and monument data © Devon County Council.

Figure 25. Field boundary loss derived from HLC data, graded from low (pale grey), to very high (dark grey) relative incidence. The location of former field boundaries recorded during the NMP project is overlain, colour coded by evidence term.

RAF/CPE/UK/1823 RS 3007 04-NOV-1946. Historic England RAF Photography.

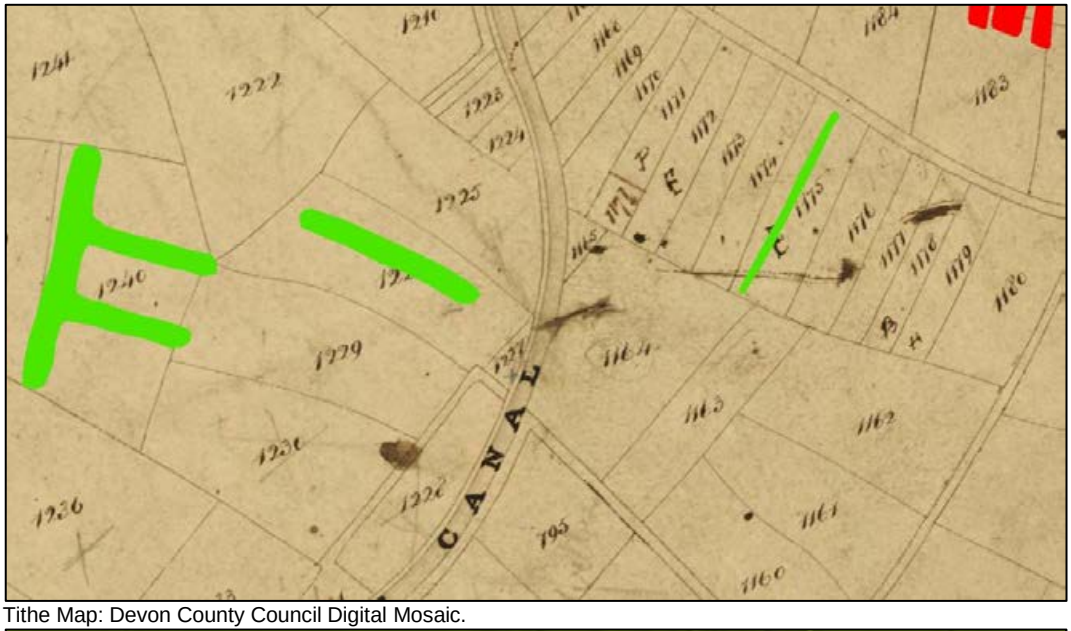
Next Perspectives PGA Imagery SX9887-SX9987 22-MAY-2010. © Bluesky International/Getmapping PLC

Figure 26. Hedgerow tree loss east of Exton. Compare the deep shadows cast by numerous mature trees in 1946 (top) to the sparse scatter of veteran trees surviving in farmland by 2010 (bottom). Nonetheless, hedgerow trees are still considered a distinctive characteristic of this Landscape Character Area (Devon County Council 2015).

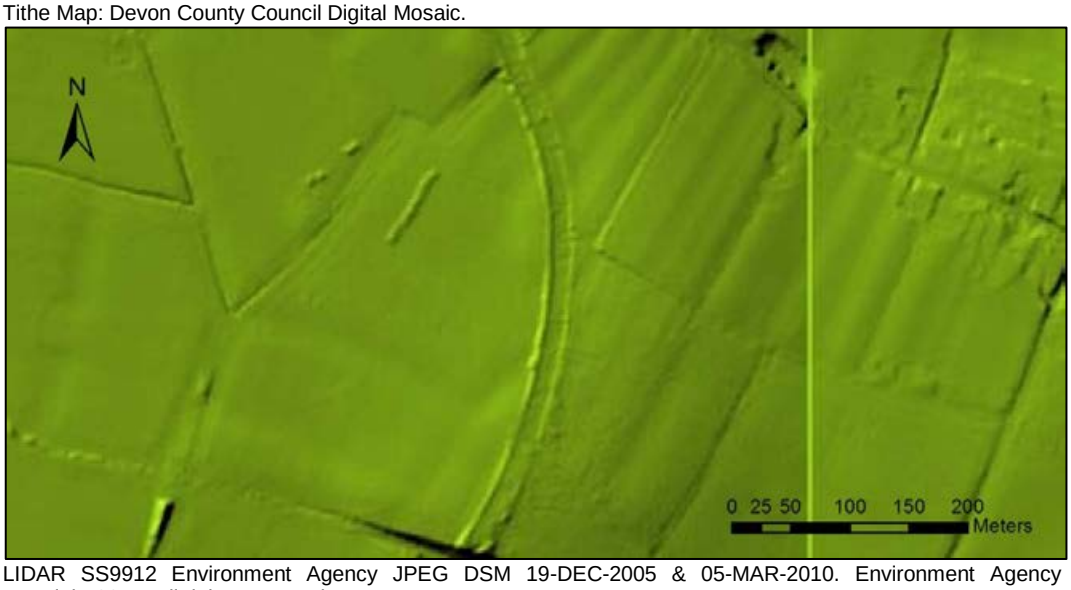
In other parts of Devon, disused boundaries often show most clearly as low banks or pale cropmarks that have formed over the remains of banks. This suggests a different tradition: were bank-less hedgerows, still bound by ditches on both sides, more common in this project area than in other parts of the county? The broad ditches could have been created when the hedgerow was grubbed out, and the softer silts of the drainage ditches settled or perhaps suffered greater erosion during subsequent cultivation. Or perhaps a stronger

desire for good drainage resulted in hedgebanks with very deep ditches, only the base of which has survived subsequent agricultural operations.

Over half of the removed field boundaries are recorded as extant earthworks, with only 9% levelled earthworks and 34% identified from cropmarks. As would be expected, the cropmarks are generally visible in, and recorded from, areas of more freely draining soils (Figure 30). Former field boundaries recorded as relict earthworks are scattered across the area, although their often broad and shallow nature indicates that they have been much reduced and may be difficult to distinguish at ground level.

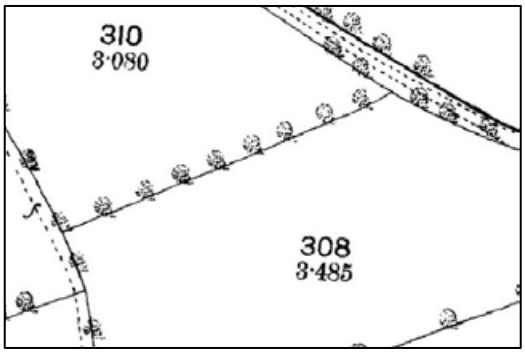


Tithe Map: Devon County Council Digital Mosaic.

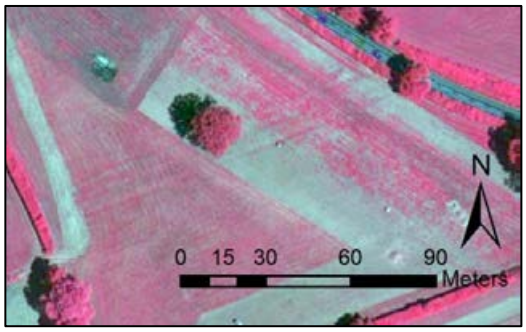


LIDAR SS9912 Environment Agency JPEG DSM 19-DEC-2005 & 05-MAR-2010. Environment Agency copyright 2015. All rights reserved.

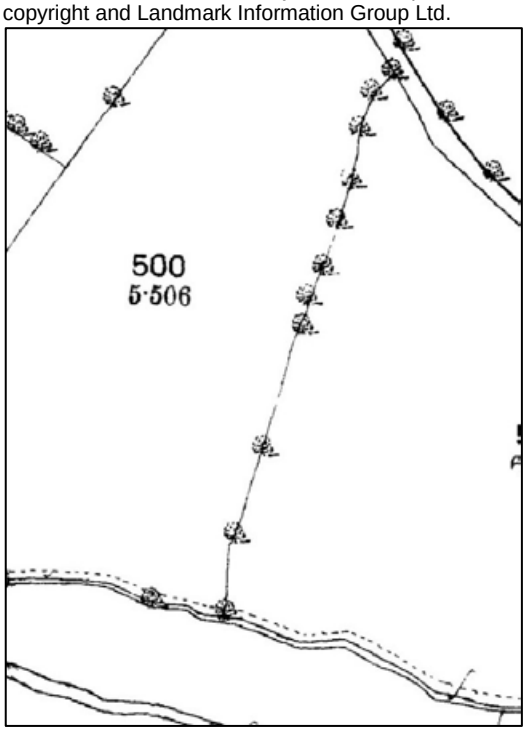
Figure 27. Broad curvilinear earthworks, mainly ditches, many of which correspond to removed boundaries depicted on the Tithe Map or First Edition OS map (MDV108402).



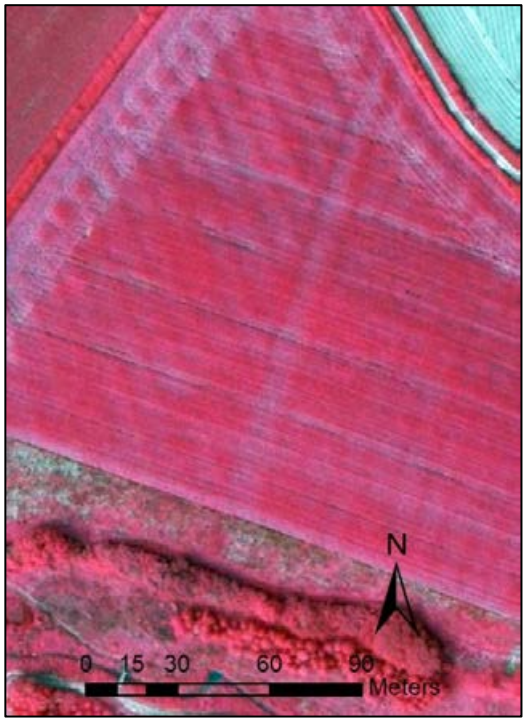
First edition Ordnance Survey 25 inch map © Crown copyright and Landmark Information Group Ltd.



Next Perspectives PGA Imagery ST0705 24-JUL-2006. © Bluesky International/Getmapping PLC.



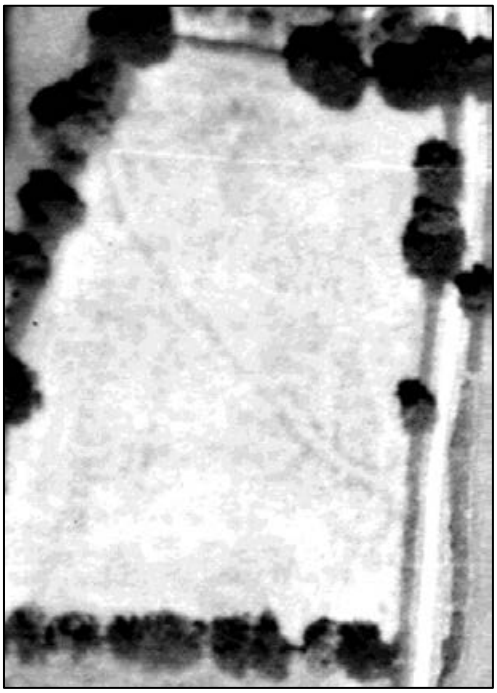
First edition Ordnance Survey 25 inch map © Crown copyright and Landmark Information Group Ltd.



Next Perspectives PGA Imagery ST0608 10-AUG-2007. © Bluesky International/Getmapping PLC.

Figure 28. Double linear cropmarks at ST0752405375 (top) and ST0627008488), interpreted as having formed over ditches associated with removed field boundaries depicted in the First Edition OS map.

RAF/CPE/UK/1823 RP 4323 04-NOV-1946. Historic England RAF Photography.



RAF/3G/TUD/UK/221 V 5387 11-JUL-1946. Historic England RAF Photography.

Next Perspectives PGA Imagery ST0514 22-MAY-2010. © Bluesky International/Getmapping PLC.

Figure 29. Double ditches on the mudstone north of Uffculme (MDV107612 top left, MDV107621 top right, MDV107624 bottom), probably drainage relating to removed field boundaries.

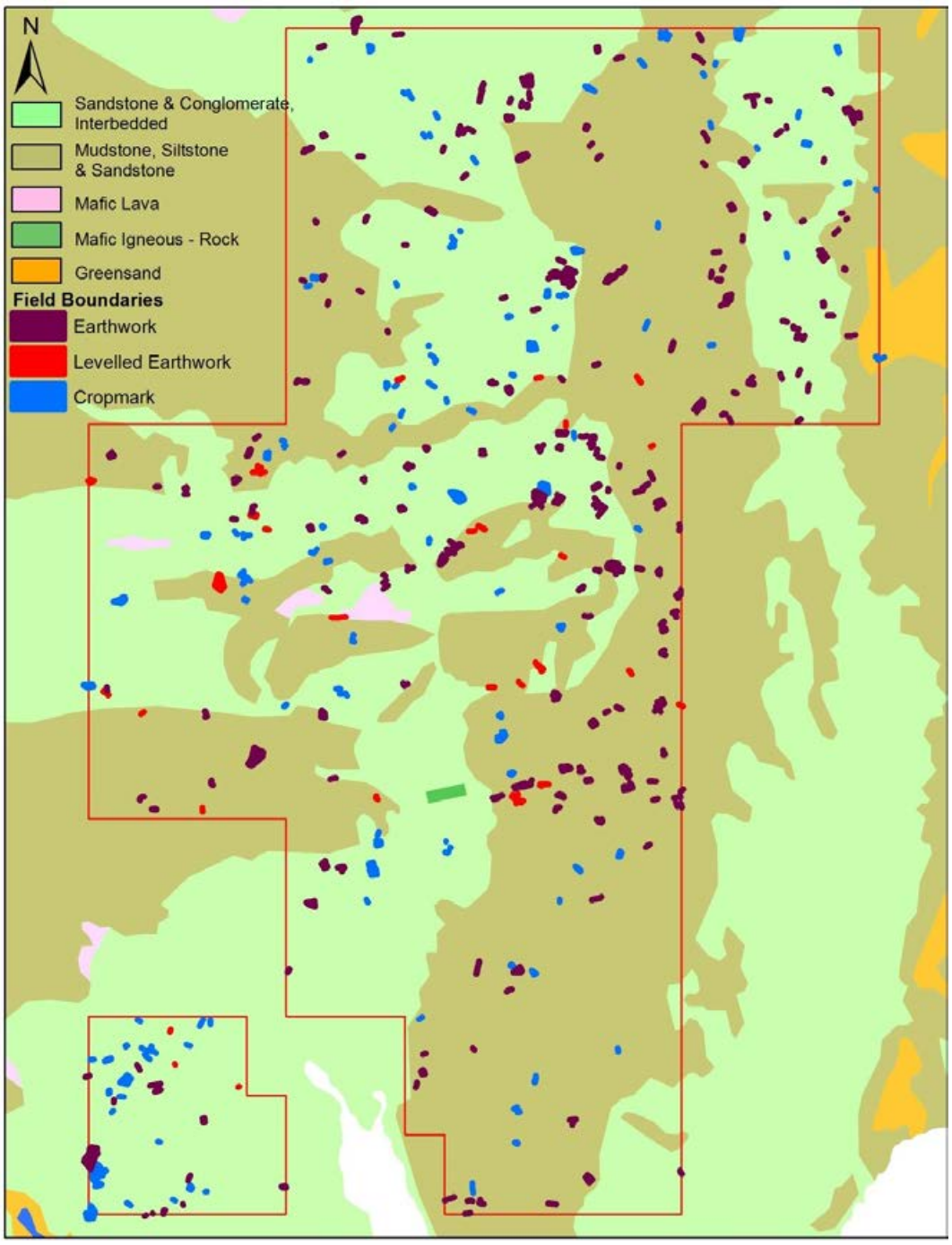


Figure 30. Distribution map of field boundaries recorded by the project: surviving as earthworks (purple), levelled earthworks (red) or cropmarks (blue). Field boundaries recorded from cropmark evidence are more numerous in those areas where the soils derive from sandstone geologies. Conversely earthwork and levelled earthworks were recorded in greater numbers on the mudstone and siltstone geologies. Contains British Geological Survey materials © NERC 2015.

6.4.5 Settlement Desertion, Clearance and Contraction

Many of the field systems and settlements that make up Devon's rural landscape probably date to the 16th century, some with early medieval or prehistoric antecedents (Turner 2006). The low visibility of deserted settlements within this 'rich legacy' of a medieval landscape is limited by the simple continuity of settlement; although Devon saw many medieval boroughs fail, settlement usually

continued on such sites albeit often in a much reduced form (Hoskins 1973, 48). Within the survey area evidence for settlement desertion, loss or clearance is limited to three sites. These rare examples result from a shared and identifiable driver for landscape change, dating to the mid to late 19th century.

The sites are all examples of 'lost farms' rather than villages, which may be a reflection of the dispersed settlement pattern across much of the county. The cleared farmsteads were recorded in the environs of Poltimore House, a Tudor manor largely enclosed by Georgian facades, located approximately 5km to the north-east of Exeter (Pevsner 1952). A seat of the Bampfylde family from the 13th century, the house was long associated with formal gardens and a deer park (see Section 6.9.2 below).

The mid to late 19th century Tithe Maps for Poltimore and Broadclyst depict the locations of Bargain Farm and Pitt Farm (recorded together under MDV113064) abutting the southern extent of Poltimore Park, approximately 500 metres to the south of the house (see Figure 31). West Clist and Home Farm (MDV113754) were located a further 500 metres beyond the parkland to the south-east.

The OS First Edition maps of the 1880s-1890s show a very different landscape, in which Bargain Farm and Pitt Farm are absent, their sites incorporated into an extended Poltimore Park, the former farmsteads now replaced by wood pasture and ornamental tree clumps. Although situated without the parkland proper, it is likely that Home Farm was also levelled during this large scale landscape redesign, conceivably to enhance the newly created vista along the low-lying combe to the south-east beyond the parkland, as seen from Poltimore House.

The former sites of the farms, and indeed further field boundaries not shown on the Tithe Map, located further to the north and well within the parkland, were visible on aerial photographs of the 1940s but were most apparent as earthwork ditches and hollows on images derived from lidar data (see Figure 32).

Settlement clearances might be more often associated with earlier and more intensive phases of 'improvement', but similar occurrences are recorded from elsewhere in the country in the 18th and 19th century, such as the village clearances of Houghton in Norfolk (Williamson 1998), and more locally the village of Stocklinch Ottersey, Somerset, north-east of Ilminster, cleared to create a tree-planted parkland around Stocklinch Manor (Driver, 2006). Nonetheless, and despite the later date of this clearance episode, it still needs to be viewed as part of the 'wider relationship between elite residences and settlements…and also within the more general context of changing styles of landscape design and their ideological significance' (Dyer and Jones, 164).

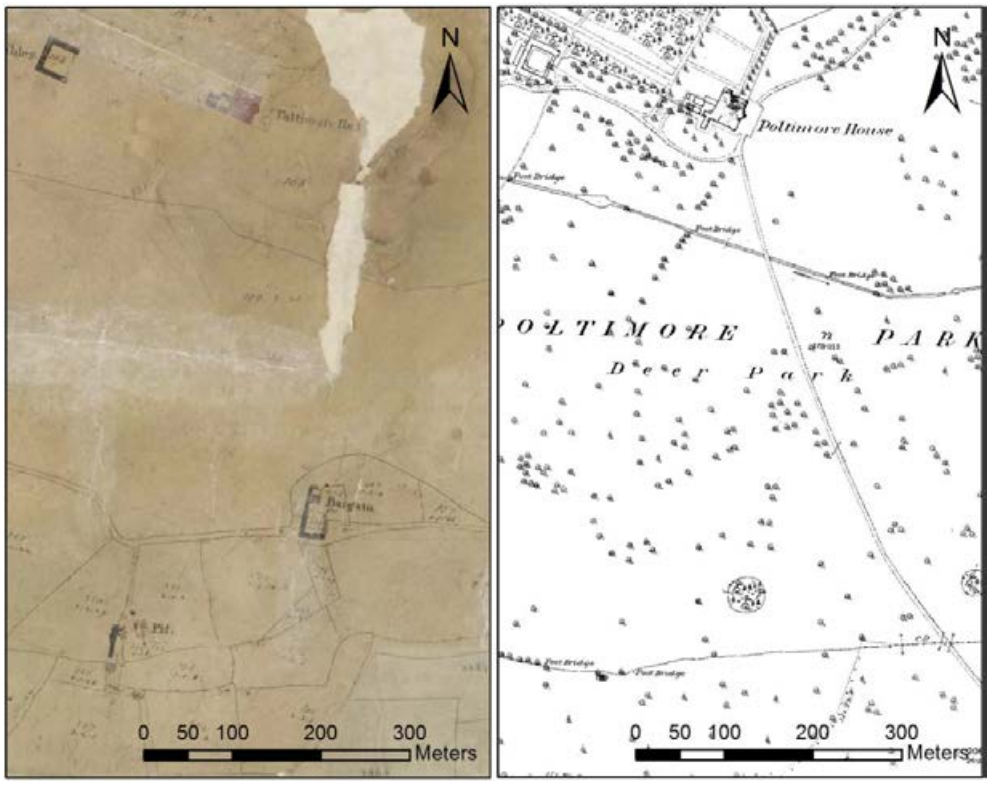


Figure 31. Extract of the Tithe Map for Poltimore (left) and the OS First Edition map for the same area, published approximately 40 years later (right).Bargain and Pit Farm have been cleared and replaced with ornamental tree clumps. Tithe Map: Devon County Council Digital Mosaic. © Devon County Council. First edition Ordnance Survey 25 inch map © Crown copyright and Landmark Information Group Ltd.

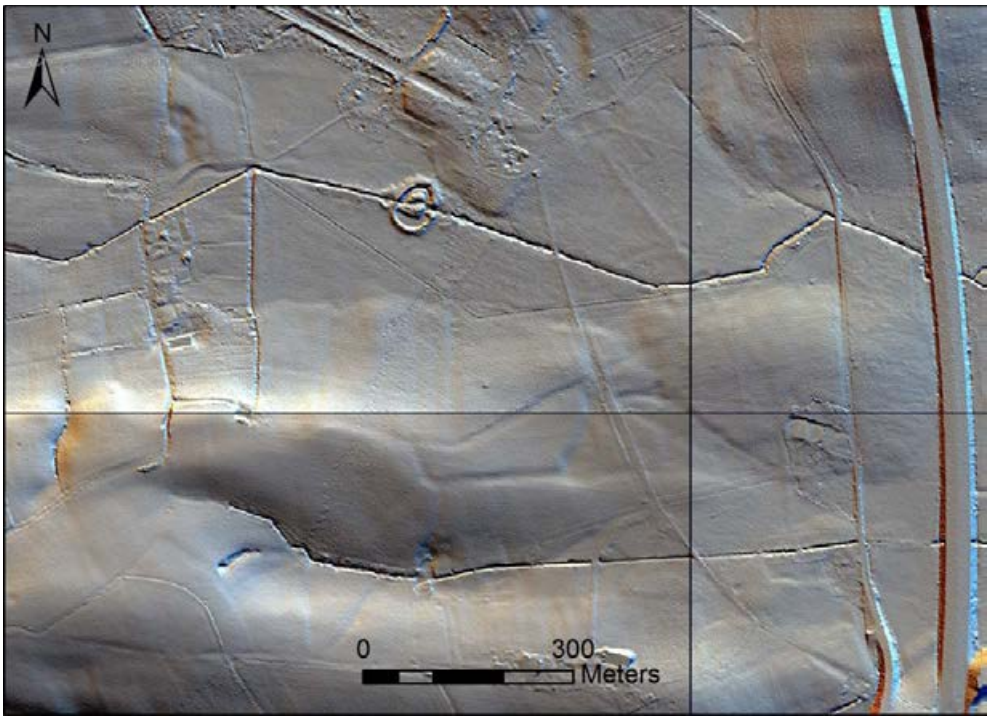


Figure 32. The former locations of Bargain Farm (A) and Pit Farm (B), with associated removed field boundaries, visible as earthwork hollows on images derived from Lidar data. LIDAR ST9692 Environment Agency JPEG DTM 13-JAN-2012. Environment Agency copyright 2015. All rights reserved.

6.4.6 Orchards

Cider making has a particular association with Devon, and a minimum of 29,700 acres of land was depicted as orchard on the late-19th century OS maps (Turner 2007, 86-87). East Devon is no exception and a major theme of the project, and one that still strongly affects landscape character, is the number and scale of traditional orchards.

Orchards, or more specifically within the NMP methodology orchard banks, comprise the most common single monument type recorded during the survey, at 19% of all records made or amended. For most, their date of origin is considered likely to be post-medieval or 19th century, as in many cases the areas were depicted as orchards on the First Edition OS map.

Many contained linear banks on which fruit trees, predominantly cider apples, were planted. As discussed above (5.2.3), these were almost always recorded from earthworks, as many were still in use with tree cover visible on the 1940s aerial photographs. They are generally aligned cross-contour, to aid drainage, and a width of circa 3.5m is typical, although some significantly wider and narrower banks have been recorded. This fits broadly with Marshall's (1796) measurements of between 4 and 6 yards apart.

The rate of survival of recorded banks is relatively high and a good proportion remained visible on the most recent lidar-derived images. Although 83 records of levelled earthworks and 4 of cropmarks were made, two thirds (163) of records were of extant earthworks (Figure 33). However, many have been reduced in area and size since they were first visible on aerial photographs, and the surviving earthwork remains are often very fragmentary. As might be expected, the banks are particularly dense on the poorly draining mudstones, helping to prevent waterlogging (Crowther, Dickson & Truscoe, 2008; Turner 2007).

It is worth noting, however, that drainage cannot be the only reason for the creation of orchard banks, since these earthworks were also recorded on the more free draining sandstone soils. Perhaps increased depth of soil for planting was another reason; Marshall believed that the 'richest deepest soils' were chosen for west Devon orchards because the shallower soils were 'unfit for fruit trees', and described the 18th century method of banking up using 'fresh earth and sea sand' before planting (1796: 217-218). Within living memory, scrapings from roads and trackways, called 'waydrift' in parts of Devon, were piled onto the banks (Colin Pady pers. comm.). This mixture of manure, silt and sand will have served much the same function as mulching using vegetation - with application of river sand to correct over-nourishment - also described by Marshall (1796; 220-221). The redistribution of these road scrapings might also partly account for the spread of wildflower seeds from roadside verges across many Devonian orchards.

Of the orchard banks levelled during the 20th century, the vast majority appear to have been on mudstone, and it is reasonable to suggest that these areas were particularly targeted for drainage and land improvement in the post-war period.

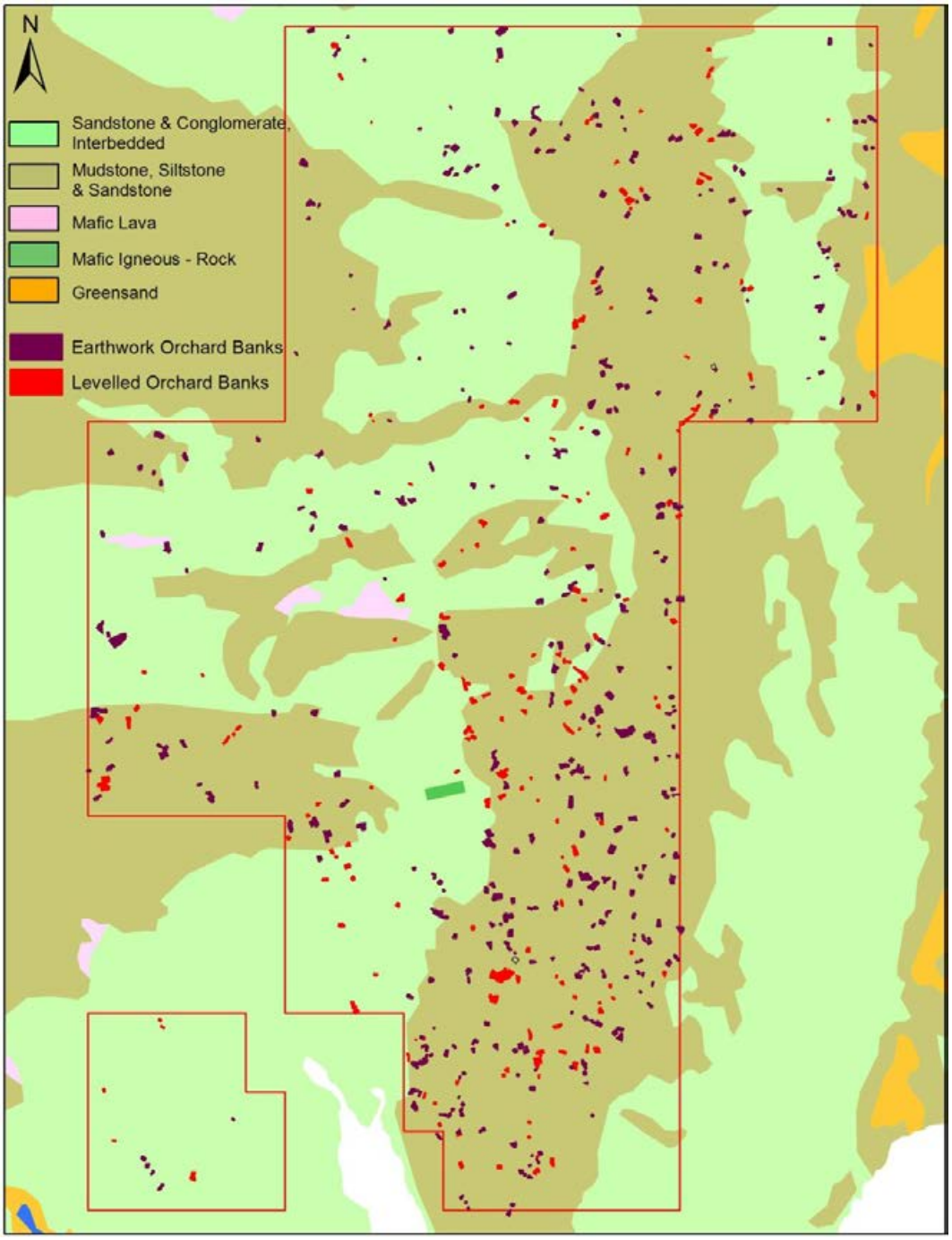


Figure 33. Distribution map of orchard banks by evidence type, overlying geology. Contains British Geological Survey materials © NERC 2015. Interpreted primarily as drainage features, it is perhaps unsurprising the orchard banks are most numerous on the less well draining soils, although this relationship is not exclusive.

Approximately five sixths of the orchards recorded from late-19th century mapping were no longer planted with fruit trees at the time HLC was carried out (finishing in 2005). Identification of orchard banks through the NMP survey extends the known and inferred areas of former orchards much further. As an example, Figure 34 shows additional areas of former orchard around Clyst St George, where banks were visible on the aerial photographs, but orchards were not depicted on any of the available historic mapping. These are thought likely to be

earlier phases of orcharding and demonstrate the importance of fruit produce prior to the late 19th century.

Rotation of ground for fruit production is now considered good husbandry due to specific apple replant disease, but while rotation may have been practised in the past, historic maps demonstrate evidence of some very long-lived Devon orchards. One at Buckland Priory in west Devon was 'said to be the oldest in the country…about two hundred years old' (Marshall 1796, 214). The continuing success of these enduring orchards has been credited to the Devonshire practise of planting replacements between the (widely spaced) older failing trees, thus 'keeping the same ground in a state of orchard, in perpetuity' (Marshall 1796: 218). More densely planted modern orchards would not necessarily be able to accommodate this practise.

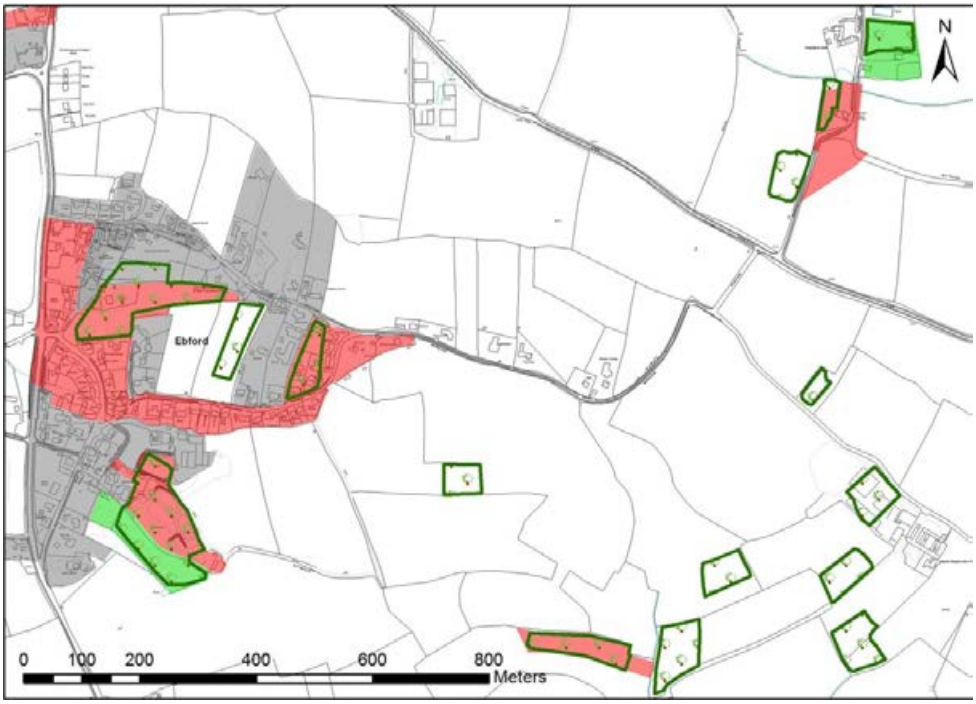
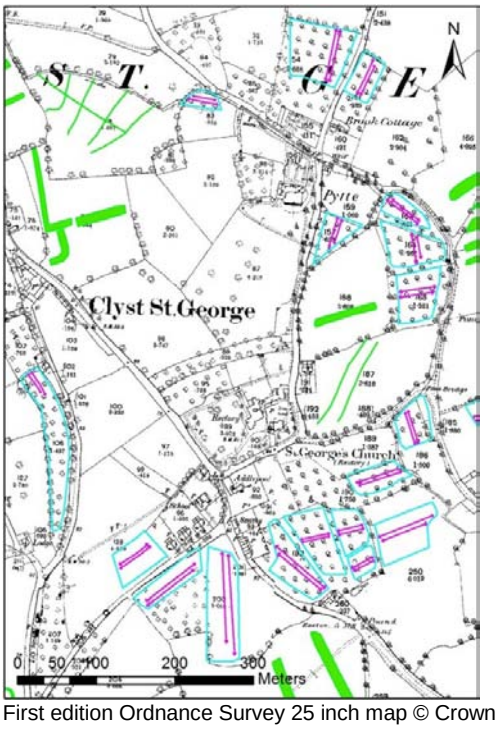


Figure 34. Orchards around Ebford: those recorded by HLC as 'lost' since the First Edition OS map (shaded red) and the much smaller area of those surviving at the end of the 20th century (shaded green); additional orchard banks mapped during the NMP project are depicted by a dark green boundary.

Although Devon is renowned for its cider, and although mapped by HLC, very few orchards had previously been recorded as monuments in the HER for this project area. The survey has allowed the earthwork remains associated with this historically significant local product to be consistently and comprehensively recorded and illustrated for the first time. It is likely however that the record is still an under-representation of the number of orchards that had planting ridges, as the visible ground surface was often obscured on the historic aerial photographs by the canopy of trees still under active production.



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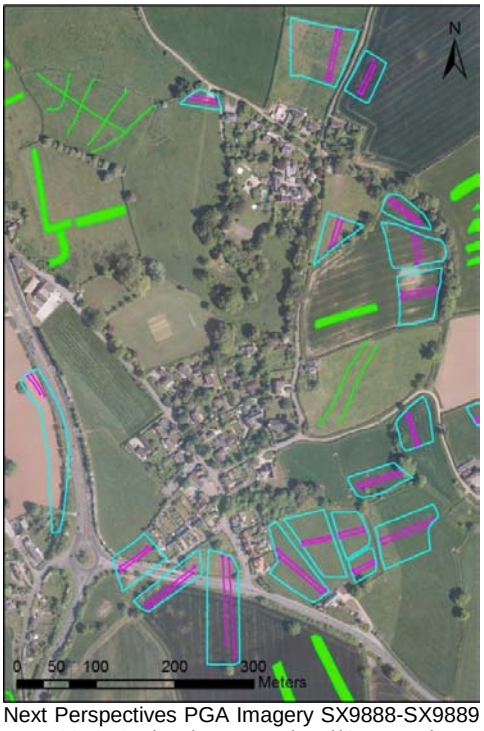


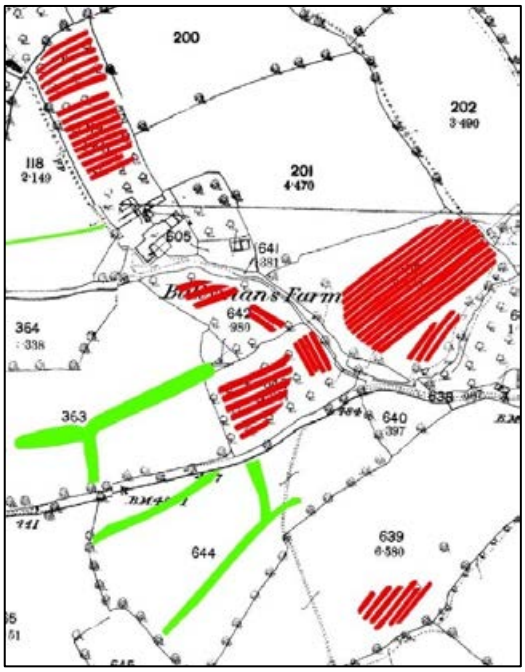
Next Perspectives PGA Imagery SX9888-SX9889 22-MAY-2010. © Bluesky International/Getmapping PLC.

Figure 35. Orchard banks (transcribed during phase 2 of the project using the ridge and furrow symbology) at Clyst St George. Earthworks were not visible in all areas depicted on the historic map as orchard, but some were visible in additional areas that were no longer in use as orchards by the late-19th century. All have now been removed.

Although farm subsidies contributed to extremely high levels of orchard loss in the second part of the 20th century, traditional orchards have enjoyed a resurgence of interest in recent years (Common Ground 2000). The information compiled by this project will be of interest to community groups and individuals involved in orchard history and recreation. It can help to inform planting proposals and restoration schemes that strengthen historic landscape character, and encourage retention and re-use rather than levelling of orchard banks, for example through Countryside Stewardship capital grants and management options.

Mortimer's Farm, just west of Blackborough Common, provides a good example of the differential survival of historic orchards. Many of the fields around the farm are symbolised as orchard on the First Edition OS map and parallel linear earthwork banks were visible in some of these on the 1940s aerial photographs (Figure 36, top). At circa 3.5 to 4 metres wide and roughly cross-contour they are typical of orchard ridges in the area and interpreted as post-medieval or 19th century in date. The rows of trees that partly obscure the ground surface indicate that these orchards were still in use at this time. Two parcels of narrower banks to the east of the farm and the small area to the south are not depicted as orchard on the historic mapping, and these may pre-date the late-19th century; the lesser width of those to the east also perhaps suggests a different date of origin. The orchards south of the farm seem to survive until at least 2010, and

although those to the north had been removed, their banks survived as earthworks visible on lidar data captured between 2005 and 2010.



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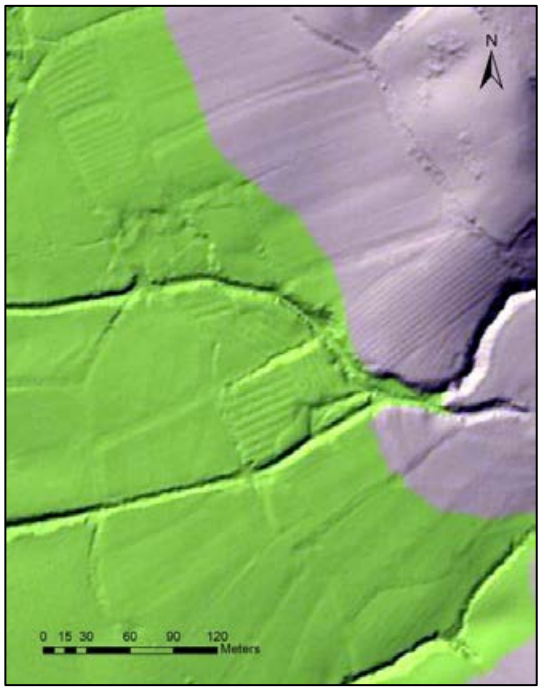
RAF/CPE/UK/1974 FP 2293 11-APR-1947. Historic England RAF Photography.

DCC Geoinformation Layer 2010 Aerial Photograph © Bluesky International/Getmapping Plc.



LIDAR ST0508-ST0509 Environment Agency DTM 19-DEC-2005 & 05-MAR-2010.

Figure 36. Orchards and orchard banks around Mortimer's Farm: banks in orchards mapped on the First Edition OS in the three fields immediately north and south of the farm are recorded as MDV108748, the narrower banks in the field to the east are MDV108752 and those in the field to the south are MDV108754.

Historic mapping also helps to define the date of orchards in other ways; numerous examples of orchard banks have been recorded in earthwork hollows interpreted as disused quarries. That they are often depicted as orchards on the late-19th century mapping supports the interpretation that extraction pre-dated this. The pits were presumably re-used in the post-medieval or early modern period for fruit tree cultivation, taking advantage of the shelter provided by the excavation as well as utilising land that was not otherwise easily cultivated. Both these reasons are cited for the location of 18th century west Devon orchards in valleys, dips and hollows, these being 'singularly eligible for Orchard grounds' (Marshall 1796: 216-217).

The alignment and size of the banks is immediately apparent from the transcriptions, and this helps HER users to rapidly appreciate their layout and form, and assess whether the banks at a farm were likely to have been set out in a single or multiple phases. Transcription of the individual banks was relatively rapid where lidar coverage was good and earthworks survived, although in cases where no lidar was available, or where the banks were not visible on recent georectified imagery, the necessary rectification of the relevant aerial photographs considerably slowed progress. Extent of area could have been used to indicate the extent of the earthworks, with the dimensions and alignment of the banks just described in the monument record to save some time. However the time saving would not have been great since recording an accurate extent of area would still require rectification.

For the second phase a compromise was devised, whereby orchards were transcribed using the ridge and furrow symbology, which is quicker, but has the disadvantage of being indistinguishable at first glance from medieval ridge and furrow. For future projects where orchard banks are likely to be common a modified symbology is recommended that would more accurately reflect and distinguish these features. For example the use of the 'extent of area' style orange coloured boundary with two red 'bank' style linears depicting the orientation and width of separation of the banks; removing the arrows at the ends would not hinder interpretation but would reduce the time requirement.

6.4.6.1 Whiteways Cyder Company

Whiteways Cyder Company, based in Whimple, was instrumental in altering the farmed landscape of large areas of East Devon in the late-19th and early-20th century. Initially sourcing apples from approximately 10 miles around Churchill Farm in the 1890s, 47 suppliers provided the company with fruit by 1897 (Whiteway 1990: 21). By the 1920s the company's own orchards had increased and 540 growers were selling to Whiteways; the number was up to 1243 by the end of the decade (op. cit. p47). From 1926 Whiteways collaborated with the Devon County Council Agricultural Committee to promote the improvement of orchards, including cash prizes for farmers, although it is not clear whether this would have included endorsement of orchard banks (op. cit. p47).

Figure 37. A sign proudly advertising 'Whiteway's Cyder Orchards' photographed by James Ravillious for Common Ground (2000, 151-152; © Common Ground 2015). based in Whimple and established in the 1890s, Whiteways expanded into other parts of East Devon and before the Second World War were producing 3 million gallons of cider annually (Crowden 2008), and responsible for an estimated 30,000 tons of rail freight each year by the 1930s (Oakley 2007, 210).

New tree planting, in this instance without orchard banks, is neatly illustrated in Figure 40, where a crowd of people gathered around a raised platform gaze up at the aerial photographer from a hilltop, surrounded by orderly lines of young trees and a wary herd of sheep. This photograph was taken in May 1932, and is almost certainly the event described by Whiteway (1990, 48) as a prizegiving by the Devon Agricultural Committee, when an aeroplane was commissioned to record the occasion. Whimple Heritage Centre displays a ground photograph of a similar event in circa 1936, the presentation of the 'Orchard Management Cups' in a relatively young orchard.

Further oblique aerial photographs taken in May 1932 show a large number of vehicles parked downslope, some of the many 'Whiteways Cyder Orchards' signs, and mature traditional orchards planted on banks in lower lying and riverside areas (Figure 41). Sheep grazing in orchards seems to have been commonplace in the early-20th century, but the current importance of the dairy industry may be the reason that only cattle were observed grazing in the orchards around Whimple on a site visit in May 2015.

Although this industry had a significant impact on the local landscape, the influence of the company was not confined to Devon. Diversification of products and strong marketing campaigns, combined with an office on the Albert Embankment in London, meant widespread advertising and distribution, the images often claiming a link with the past and a bucolic Westcountry landscape (Figure 42). Nor was the expansion limited to the UK; variations became popular

overseas during the course of the 20th century and world events were capitalised on, including taking advantage of the disruption of cider supplies from Spain to South America during the Civil War (Whiteway 1990, 122-124).

RAF/58/3858 PSF00195-PSFO0196 03-OCT-1960. Historic England RAF Photography.

Figure 38. A sign similar to that shown in Figure 37 can be seen in the distance (marked by a black box, and enlarged inset) amongst the apple trees on a hillside south of Hele in the Culm Valley. This particular site nevertheless suffered the same fate as many others and was grubbed out during the later 20th century, the company ceased trading after a takeover in 1989 (Green Valley Cyder, 2015).

Two non-alcoholic lines continue as a facet of life in Trinidad and Tobago, especially for special occasions and celebrations (Plummer 2007; Heeralal 2007). Since the closure of Whiteways in the late 1980s, production has shifted to the Caribbean, although it is still possible for the determined to obtain them in the UK (Figure 41).

Although the factory buildings in Whimple were demolished in the 1990s, the surviving orchard banks (Figure 44) remain testament to the impact of this industry on this landscape and community for nearly a century. With a global dimension, this is a reminder not only of the hundreds of people who worked for Whiteways and the hundreds of farmers who altered their farming methods to supply them, but the thousands of consumers across the world.

Photograph: S. Knight.

Figure 39. Cattle grazing amongst blossoming apple trees behind Whimple Heritage Centre, May 2015. MDV112479.

AFL 193205 EPW038075 MAY-1932. Historic England, Aerofilms.

Figure 40. People gathered among recently established trees at Whimple, probably for an orchard management prizegiving ceremony. No ridges are visible here, on an area of high ground.

AFL193205 EPW038093 May-1932. Historic England, Aerofilms.

Figure 41. Low lying areas around Whimple with orchard trees visible on raised earthwork banks (right foreground and in the distance). Another Whiteways Cyder Orchard sign is just visible facing the railway lines. MDV112480; MDV112479.

Photographs: S. Knight, courtesy of Whimple Heritage Centre.

Figure 42. Two of the many historic advertisements for Whiteways cider displayed in Whimple Heritage Centre, stressing tradition and longevity: 'The Great White-Way Is Before You' in a national newspaper in 1933 (left); 'Cyder: The Drink of Yesterday and To-Day' dated to 1918-1919 (right).

Photograph: S. Knight

Figure 43. Peardrax, a non-alcoholic drink made from fermented pears still produced in Trinidad.

Photograph: S. Knight.

Figure 44. Orchard banks visible as earthworks at SY03659765, north-west of Whimple, in November 2013. These orchards were established in the 20th century and appear to have been newly planted in the 1940s; the banks are assumed to be contemporary.

6.5 Military Defence and Fortification

This section summarises the evidence for all monuments that could be characterised as defensive or military in nature. The monumental earthworks that define many hillforts of later prehistoric date have often led to a default interpretation as defensive or fortified sites. In reality the function of hillforts was in fact probably as diverse as their setting, size and shape and more than likely changed over time (Bowden 2011); as summarised by Harding (2012), hillforts probably played a mixed practical, social and symbolic role. However, for ease of categorisation they will be considered here with more readily identified evidence for military occupation and defence of Roman and 20th century date.

6.5.1 Defence and Fortification: Prehistoric

Prehistoric hillforts and fortified sites in Devon are some of the most impressive and recognisable features of the county's historic landscape, with some 90 examples recorded on the Devon HER. Hillforts are located throughout the county and exhibit a variety of size and form. Broad regional variations of Devon's hillfort are visible, for example those found in East Devon are typically characterised by their close-set multiple ramparts and hilltop setting which are more comparable to those found in central southern and eastern England (Fox 1952, 1969; Griffith 1988, 24). Arguably the most impressive example of this type is Hembury (Figure 45A).

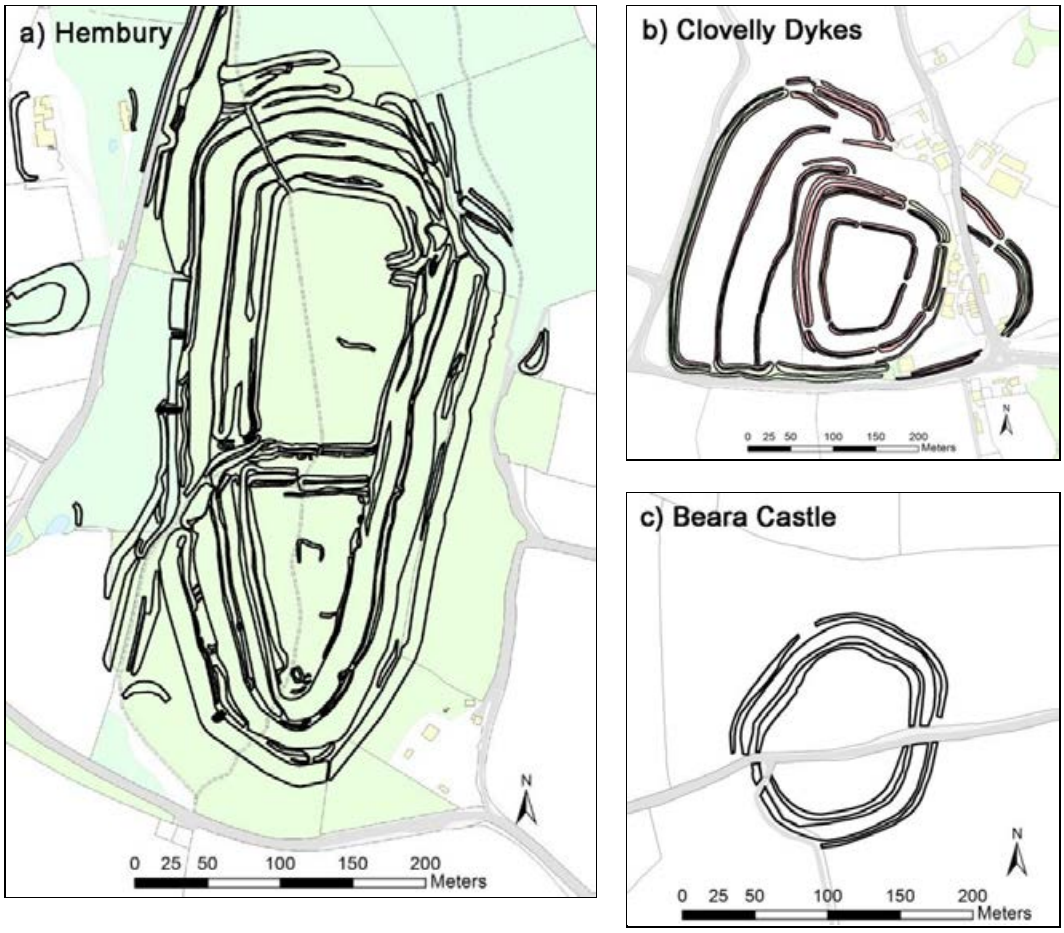


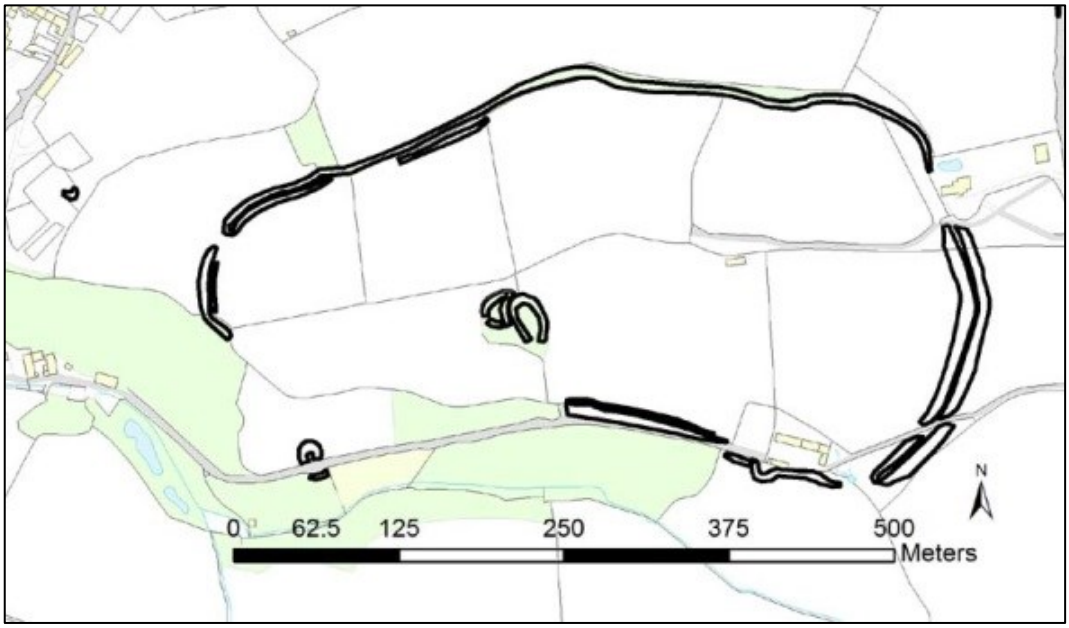
Figure 45. Examples of the different hillfort types in Devon a) Hembury, the 'Wessex' Type; b) Clovelly Dykes, the 'south-western' type; and c) Beara Castle, a simpler 'hillslope enclosure' type. The base map is © Crown Copyright and database right 2015. Ordnance Survey 100019783.

Given the general absence of large-scale excavations carried out on Devon's hillfort's and fortified sites and indeed those in the south-west in general, comparatively little is known about their date, extent of occupation and layout and organisation, particularly when considered against the better studied examples of southern England.

Five previously recorded sites relating to defence and fortification of prehistoric date were recorded. These include the hillforts of Cranmore Castle to the south of Tiverton (MDV1360), Dolbury at Killerton (MDV1312), Bury Castle (MDV12340) approximately 3km to the west of Cullompton, Woodbury Castle (MDV10500) approximately 2km east of Woodbury and Stoke Hill (MDV10196) to the north of Exeter. Whilst all are well documented and have been subject to detailed aerial reconnaissance and in some cases measured survey and excavation, the survey has helped to significantly enhance the existing records by providing additional detail and clarity to their layout, extent and organisation.

For both Cranmore Castle and Dolbury hillfort, previously unrecorded earthwork bank and ditch components have been identified through examination of lidar-derived imagery. At Cranmore Castle, a previously unrecorded possible outwork

has been recorded as an earthwork bank at the western entrance of the fort, and the remnants of a possible additional outer bank transcribed to the east (Figure 46). DTM lidar images of Dolbury hillfort have also improved our understanding of this heavily wooded enclosure, building upon the results of a previous measured survey by perhaps identifying the possible true southern boundary of this much altered parkland enclosure (Figure 47).



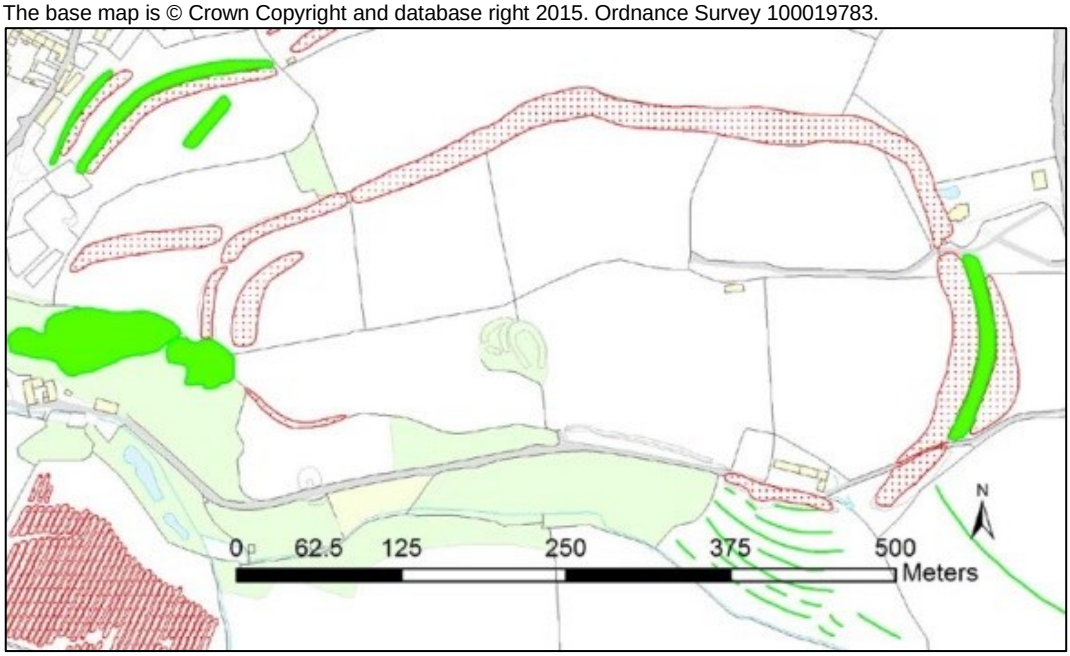
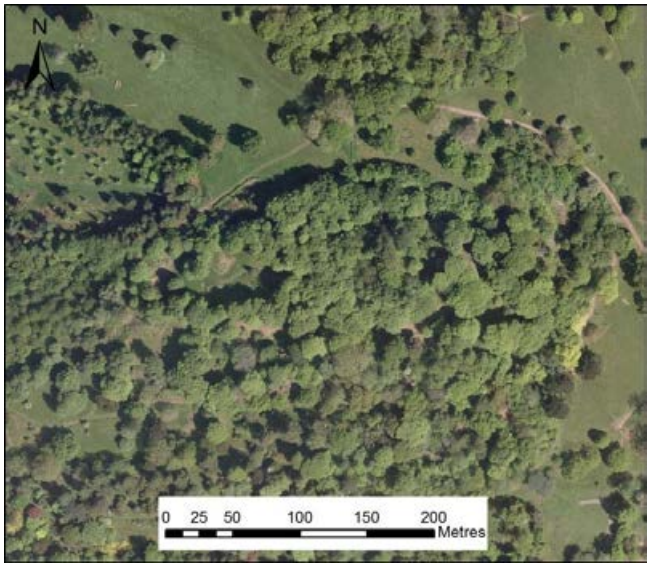
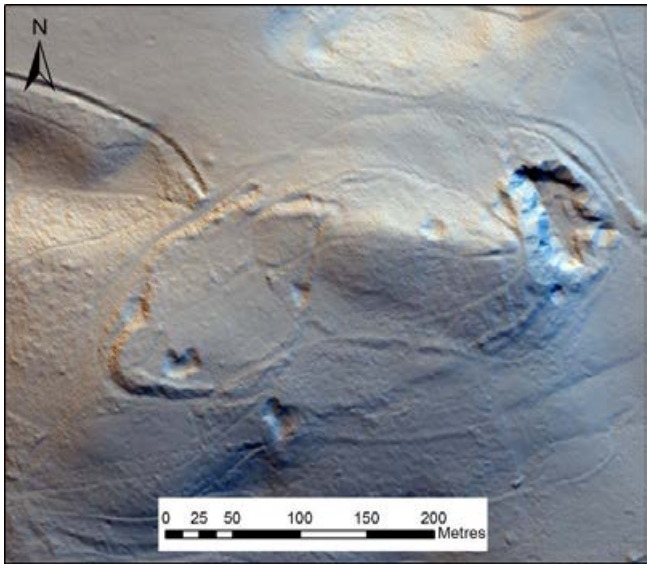


Figure 46. Cranmore Castle hillfort (MDV1360) showing the previously recorded extent of earthworks on the OS base map (Top) and additional earthworks to the east and west newly recorded from lidar and aerial photographs of 1996 (Bottom).



DCC Geoinformation Layer 2010 Aerial Photograph © Bluesky Internationa/ Getmapping Plc.



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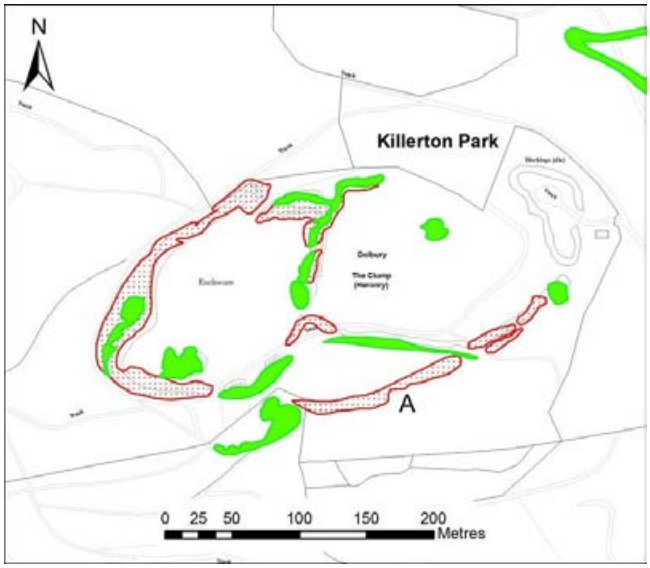

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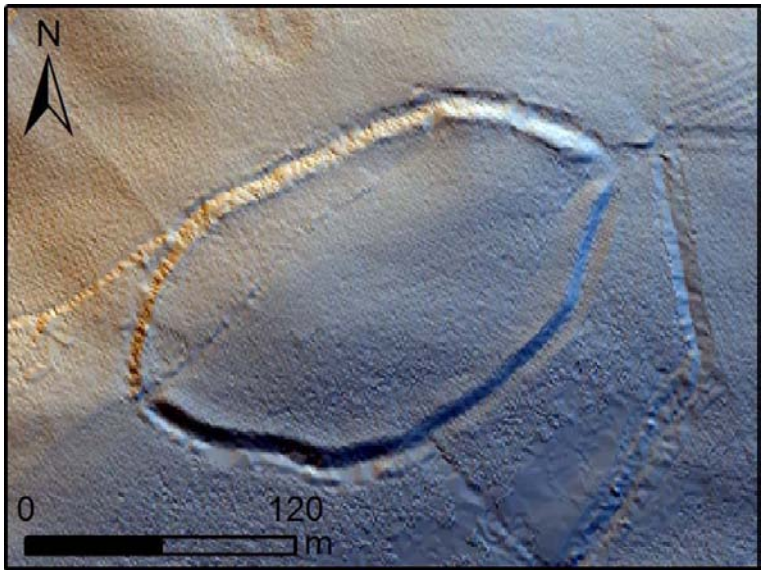
Figure 47. Dolbury Castle, in Killerton Park. A former woodland footpath had previously been recorded as the southern limit of this small hillfort. A subtle earthwork bank on the south-eastern edge (A) has been identified as a more probable boundary.

Similarly, the ramparts of the medium sized and much eroded single-ditched hillfort on Stoke Hill, overlooking the Exe valley to the north-west, had been previously recorded as surviving only on the north-west of the monument, preserved within a belt of tree planting (Fox 1996, 53). Reassessment using lidar data not only reveals that rampart survival appears to be better than thought to the north-east and south west of the camp, but that slight traces of a possible external rampart might survive to the south-east, although this could include traces of a former field boundary bank.



LIDAR SX9295 Environment Agency DSM 01-JAN-1998 to 30-SEP-2014. Environment Agency copyright 2015. All rights reserved.

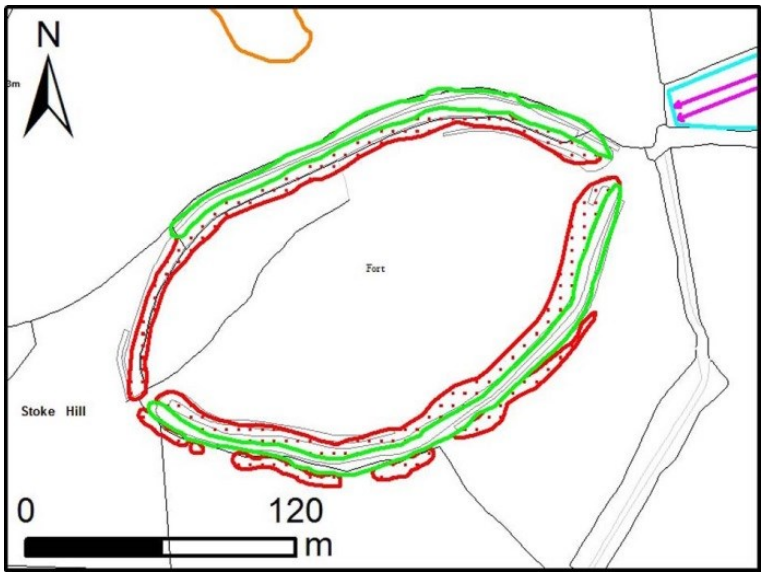


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Figure 48. Stoke Camp on Stoke Hill, Stoke Canon. Lidar data reveals slight traces of possible external ramparts (Top). The NMP transcription is shown below, earthwork banks in red, ditches in green.

The survey has arguably made the greatest contribution to the understanding of Bury Castle hillfort (MDV12340). Sited on a prominent hill-top position between the Exe and Culm valleys, the extent and layout of the hillfort is partly defined by a series of curvilinear extant field boundaries. The enclosure is broadly oval in shape and is characterised by two sets of ramparts. The outer ramparts encompass a total area of approximately 12 hectares, with the inner rampart

enclosing an area of approximately 2 hectares. Here, the survey has been able to tentatively transcribe a previously unrecorded section of outer rampart to the north, complete with possible entrance, visible as a slight ditch and bank on lidar-derived images. A cropmark bank to the south-east was previously recorded but it has been possible to provide better definition. Detail of the inner rampart has also been much improved and shown to comprise a single ditch, visible on aerial photographs as both a cropmark and earthwork, with traces of both an inner and outer bank (Figure 49).

The lidar-derived data has been complemented by both oblique and vertical aerial photographs which have provided additional detail and clarity in areas where the earthworks have been completely levelled. The survey has strongly highlighted the case for further survey work to be carried out at Bury Castle hillfort with a view to scheduling.

Woodbury Castle (MDV10500) is perhaps the best investigated of the hillforts within the project area, being subject to limited excavation in 1971 in advance of road widening (Miles 1975), a detailed earthwork survey in 1999 (Fletcher 1999) and a geophysical survey in 2009 (Caldwell 2009). The hillfort is a substantial earthwork, with well-preserved steep rampart and deep ditch, supplemented by a counter-scarp bank to the north and east sides, whilst on the west side the defences are doubled (Fox 1996, 56-57). The interior of the hillfort covers an area of approximately 2 hectares and the site is bisected by the B3180 (Figure 50).

Despite the substantial nature of the earthworks, dense tree cover has obscured much of the hillfort (Figure 50). An absence of lidar data for this area also meant that limited NMP transcription of the site has been possible. Although no additional features have been recorded at Woodbury Castle, the examples of Cranmore Castle, Dolbury and Bury Castle recorded here as part of this survey all demonstrate the potential for the discovery of future, hitherto unrecorded earthworks using lidar-derived data.

Possible evidence of a previously unrecorded fortified site on aerial photographs of 1988 was recorded as a partial cropmark enclosure on a prominent hilltop position, to the north-west of Hayes Barton (MDV112311). The well-defined curvilinear cropmark, with possible entrance-ways to the south and east, is visible on the southern side of the hilltop and appears to form part of a sub-oval shaped enclosure of approximately 1.65 hectares (Figure 51). A flint scatter and barrow recorded on the HER within the immediate vicinity of the possible enclosure may add some weight to this interpretation, but further field investigation is strongly recommended.

DAP 6763/09 04-JUL-1989 © Frances Griffith, Devon County Council.

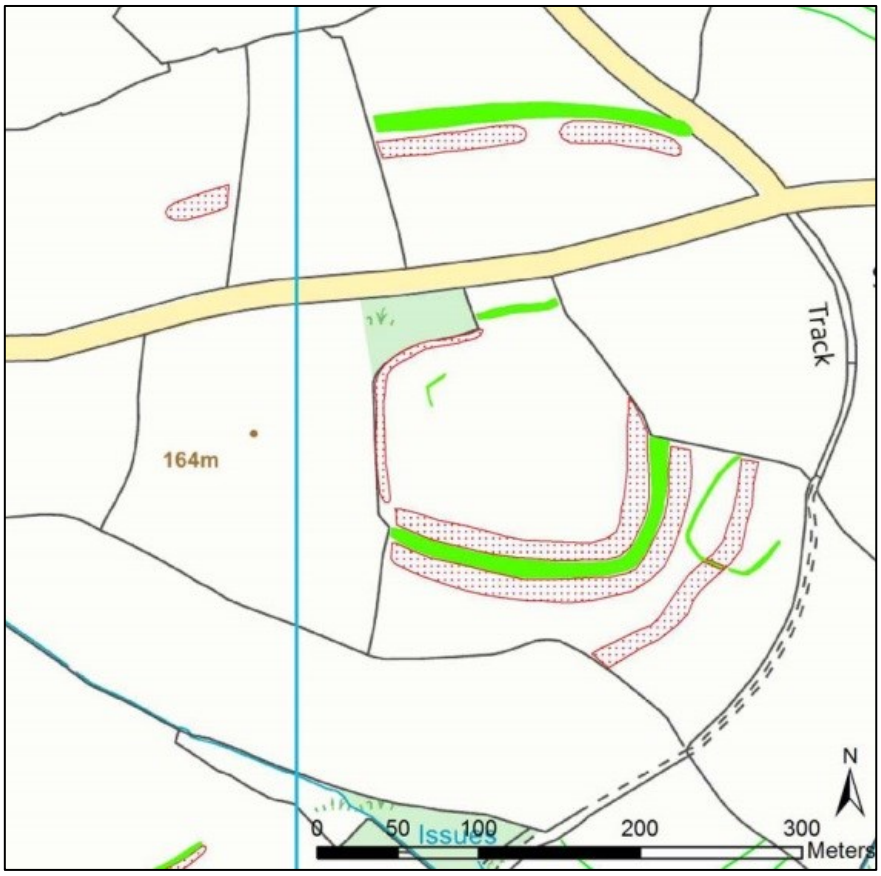

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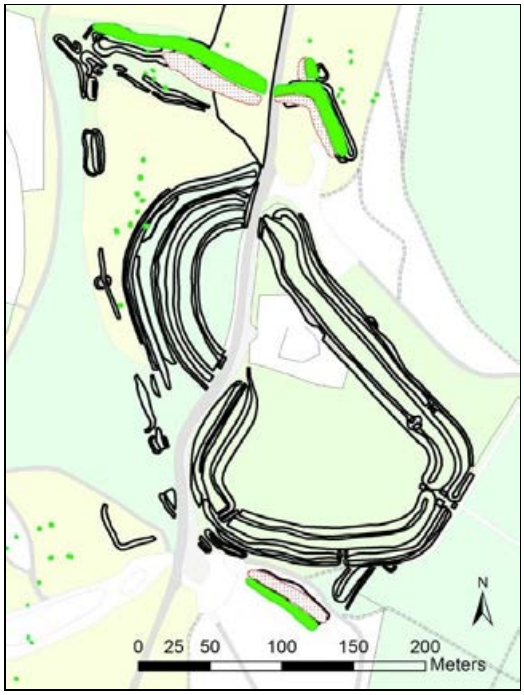
Figure 49. Bury Castle hillfort (MDV12340); cropmarks of buried ditches are visible on oblique aerial photography of 1989 (Top, north to the right). Newly recorded earthworks forming part of the outer ramparts have been transcribed by the survey to the north (Bottom).



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Next Perspectives PGA Imagery SY0387 22-MAY-2010. © Bluesky International/Getmapping PLC.

Figure 50. Woodbury Castle hillfort (MDV10500): earthworks on the OS base map (Left) and digital images of 2010 showing the extent of vegetation cover, with NMP transcriptions (Right).

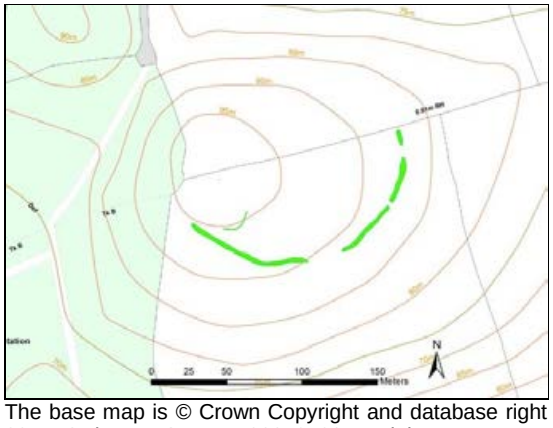

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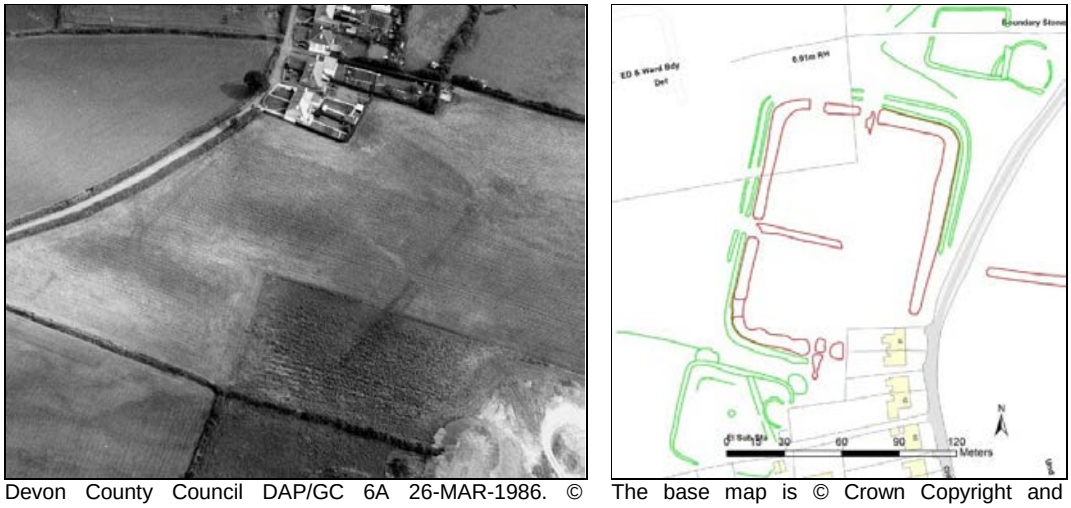
Figure 51. NMP transcription of a possible hilltop enclosure north-west of Hayes Barton (MDV112311) (Left), and as visible on aerial photographs of 1988 (Right).

6.5.2 Defence and Fortification: Roman

The Roman campaign to conquer the south-west is likely to have been launched soon after the initial invasion in AD 43, although when they first entered Devon and Cornwall is largely unclear given the paucity of evidence. Evidence of early temporary encampments in Devon at North Tawton and Alverdiscott are undated, although indicate the likely progress of the Roman army, around the north side of

Dartmoor and up the Taw-Torridge watershed towards North Devon (Maxfield 1999). The earliest known occupation appears to be that of the abandoned hillfort at Hembury, briefly occupied sometime in the late 40s, with more permanent bases established along major communication routes such as at North Tawton and Okehampton and also adjacent to water courses, as at Exeter, occupied between AD55-75. Other sites were not occupied until later, for example Tiverton fort at approximately AD65 (Griffith 1995).

Evidence of Roman military occupation in Devon has, until the final quarter of the last century been relatively sparse, although since then a number of 'new' sites have come to light. Many of these have been discovered through aerial survey, including Okehampton fort in 1975 (Figure 52), the marching camp forming part of the North Tawton complex also in 1975 and Bolham fort, Tiverton in 1978. During the drought of 1984, a number of additional sites were discovered by Frances Griffith, following an extensive programme of aerial reconnaissance which significantly enhanced understanding of the Roman military presence in Devon. Identified sites included Cullumpton fort, a fortlet at Ide (Figure 53), a possible fort at Killerton and a possible signal station at Newton Tracey (Griffith 1984, 11-26). Sites have continued to be discovered through a continued programme of aerial reconnaissance, for example the Roman fort north-east of Cudmore Farm in 1989 (Figure 53), as well as those revealed through excavation, most notably a fort at St. Loyes, east of Exeter. The increased number of sites, as well as evidence for multiple phases of activity at several of them, suggests a much greater Roman military presence in Devon than has previously been assumed.



Devon County Council DAP/GC 6A 26-MAR-1986. © Frances Griffith, Devon County Council.

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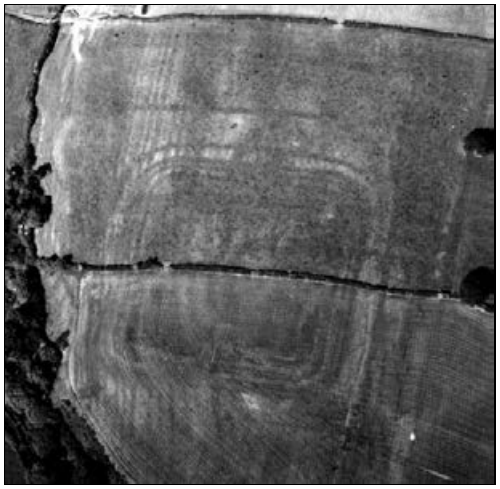
Figure 52. Oblique aerial photograph of 1986, Okehampton fort (Left) and NMP transcription (Right).

Devon County Council DAP/JA 2A 17-JUL-1987. © Frances Griffith, Devon County Council.



Devon County Council DAP/MK 5 24-JUN-1989. © Frances Griffith, Devon County Council.

Figure 53. Oblique aerial photographs of 1987 showing the Roman fortlet at Ide (Left) and of 1989 showing the fort at Cudmore Farm (Right).

Within the study area evidence of Roman military defence and fortification was limited to four sites. These include the fort of Bolham Hill (MDV12371) north of Tiverton, the multi-phase forts of St. Andrew's Hill north of Cullompton (MDV29189), a possible fort east of Killerton Park (MDV29190), and the fortlet or Signal Station on Stoke Hill (MDV10188), all occupying prominent positions in the landscape.

The Roman forts recorded in Cullompton (MDV29189; Figure 54) are in a prominent position on the summit of St. Andrew's Hill. There were two successive phases of occupation, of approximately 1.07 hectares and 1.89 hectares respectively, with annexes recorded to the east and possibly to the west, as well as a range of internal features.

The forts have been subject to extensive investigation since their discovery through aerial survey in the drought of 1984 (Griffith 1984, 13-16). This has included a continued programme of aerial survey, geophysical survey, field-walking and limited excavation.

Nonetheless, the NMP survey has enhanced the accuracy and extent of the aerial photographic transcription, primarily using the DAP aerial photographic archive as well as recording valuable new information about earthwork survival from lidar-derived images.

The survey has, in particular, provided greater detail of the forts' internal arrangements, including previously unrecorded pits and posthole-like features of possible timber-built structures. Our understanding of the extent and layout of the larger, later fort has also been enhanced, particularly along the eastern and northern edges; broad earthwork banks visible on lidar-derived images have complemented the cropmark evidence for buried ditches gleaned from the aerial photographs. The variation in visibility of cropmark features on aerial photographs from year to year (Figure 55) and the discovery of previously unrecorded features on more recent aerial photographs strongly endorses the merits of a continued programme of aerial reconnaissance of complex sites such

as this. The results also highlight the need for continued aerial survey of sites which have yielded significantly less in the way of cropmark evidence, such as the Roman fort of Bolham Hill.

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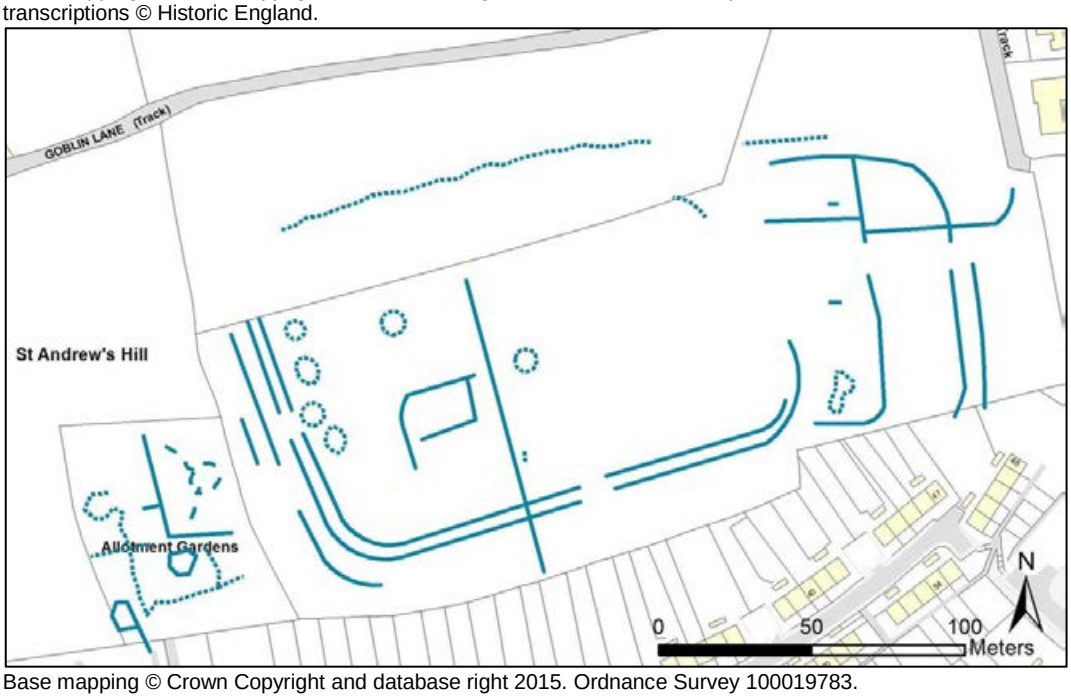

Base mapping © Crown Copyright and database right 2015. Ordnance Survey 100019783.

Figure 54. Roman forts on St. Andrew's Hill, Cullompton (MDV29189), comparing the NMP transcription (Top) to that of the more schematic digital DAP transcription (Bottom).

Devon County Council DAP/YA 02-03 05-JUL-1995. Devon County Council Devon Aerial Photograph.

SOM 13181/15 19-JUL-1989. Somerset County Council Aerial Photograph.

Figure 55. Use of multiple aerial photographs for transcription of the Roman forts on St. Andrew's Hill, Cullompton (MDV29189) and highlighting the enhanced visibility of certain cropmark elements on different aerial photographs.

A rectilinear triple-ditched enclosure, visible as incomplete cropmarks overlooking the Culm Valley from a low spur to the east of Killerton Park (MDV29190: Figure 56), has been suggested as a further monument of Roman military character within the survey area. First recorded by Griffith during the droughts of 1984, the site is typically strategically situated, overlooking several crossing points over the River Culm to the north and west.

However, the NMP transcription of the cropmarks could support arguments against the interpretation of this site as a Roman Fort. In terms of strategic location, the site is overlooked by a prominent hill around 650 metres to the west-north-west, itself the site of Dolbury Hillfort. Furthermore, the enclosure is somewhat trapezoidal in form. This alone would not necessarily rule out the interpretation as a possible Fort, but as suggested by Maxwell and Wilson (1987), slight irregularities in the alignments of the near parallel ditches, particularly on the south side, combined with a lack of clearly defined entrances make an interpretation as a Fort problematic.

The site's form and proximity to Dolbury Hillfort has led some to suggest an alternative interpretation as a siege camp (pers. comm. Horner 14th May 2015). Whether related to conflict or practise manoeuvres is unclear, but Roman temporary or semi-permanent siege camps are often less regular in form than Forts, often displaying "astonishing errors of geometry" (Campbell 2011,4: also see Campbell, 2003 for further discussion of Roman siege camps).

For this reason, and to attempt to clarify the enclosure's relationship with the ditched features visible in close proximity to it, this site has been added to the list of sites recommended for further investigation by geophysical survey (Appendix B).

Devon County Council DAP/BH 32 06-JUL-1984.
© Frances Griffith, Devon County Council.

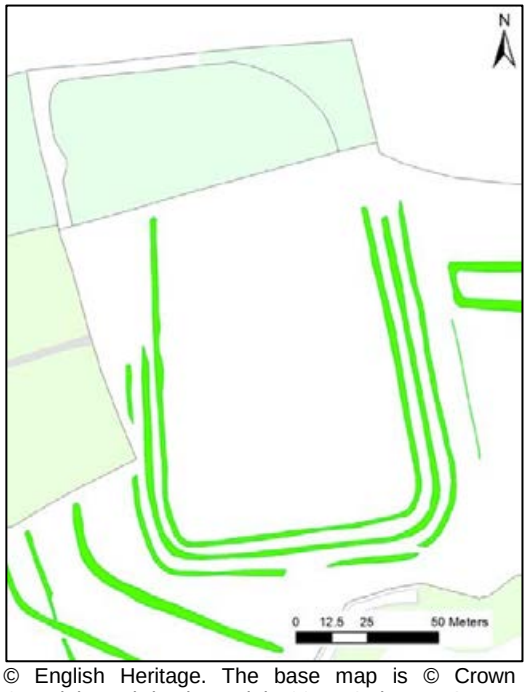

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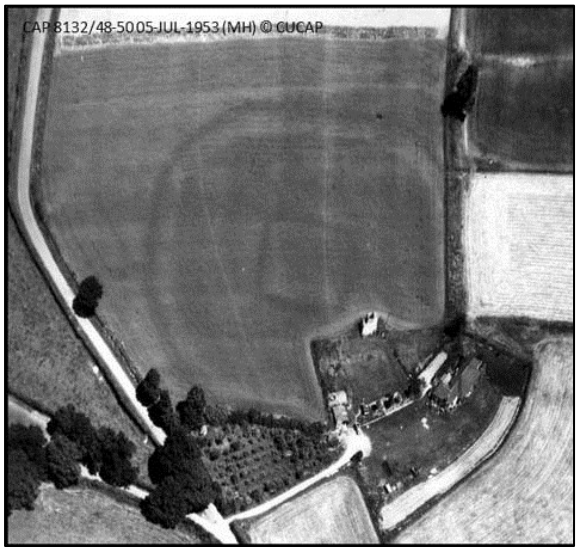
Figure 56. A triple-ditched enclosure at Killerton (MDV29190). A Roman date and military function has been suggested but this interpretation has been disputed by some.

Stoke Hill Signal station (MDV10188) was discovered by the Ordnance Survey during routine examinations of vertical aerial photographs in 1953, and was targeted for limited excavation in the 1950s and 1970s (Fox and Revenhill 1959; Quinnell 1984). The earlier investigations recovered potentially redeposited finds dateable to the late 3rd to 4th century, while the 1970s excavation recovered no finds but confirmed the form of the outer ditch.

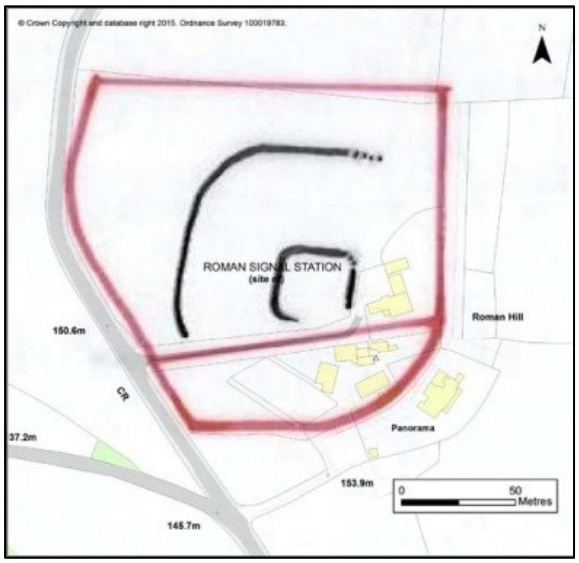
The fortlet or signal station is slightly larger but otherwise very similar to The Beacon and Old Burrow, 1st century AD fortlets on the North Devon coast at Martinhoe (MDV2022; Exmoor National Park HER MDE1020) and, Countisbury (MDV671; Exmoor National Park HER MDE1223). In both size and form, however, it most closely parallels a Roman signal station recorded at Ide (MDV20078), less than 2km west of the survey area.

The south-east corner of the scheduled fortlet was obscured by late 19th and early 20th century development, the cropmarks of the buried ditches and rampart of the site most clearly visible on CUCAP oblique aerial photographs of 1953. These images confirmed Fox's earlier plan and enabled a more enhanced transcription than was possible from the DAPs, which were largely later images, revealing a roughly square central ditched enclosure approximately 30 metres across, within a roughly circular or sub-octagonal bank and ditch defined outer enclosure, circa 105 metres in diameter (Figure 57).

More significantly, reassessment of the lidar data by the survey has also revealed that the signal station's outer rampart survives as an earthwork bank to the north and west of the dwellings (Figure 57).



CAP 8132/48-50 05-JUL-1953 (MH) © Cambridge University Collection of Aerial Photography.



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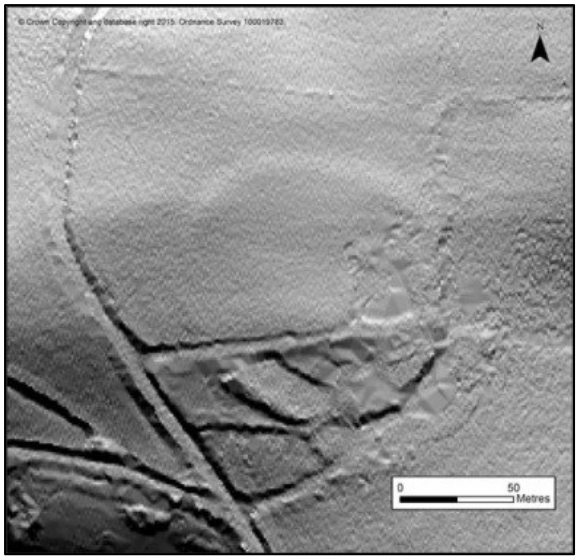


LIDAR SX9295 Environment Agency DTM 01-JAN-1998 to 30-SEP-2014
Environment Agency copyright 2015. All rights reserved.

Figure 57. The Roman Signal Station at Stoke Hill. Top: cropmarks of buried ditches visible on 1953 CUCAP aerial photography. Middle: as previously transcribed by from DAP aerial photography. Bottom: earthworks visible on revisualised EA 1m resolution Lidar data.

6.5.3 Defence and Fortification: 20th Century

The project amended 49 existing monument records and recorded 64 previously unrecorded monuments of 20th century date and military function, an increase of 77%. With the possible exception of slit trenches of possible First World War date (for example MDV107765 and MDV108079) and two Cold War ROC establishments (MDV55041 and MDV72197) these all dated to the Second World War.

As anticipated the project recorded fewer Second World War monuments than many of the previous NMP surveys in Devon, both proportionately in and absolute terms. For instance, modern military monuments comprised 29% of the total for North Devon Coast AONB NMP, compared to 6% for this survey. This can largely be accounted for by the inland character of the survey area and corresponding near absence of anti-invasion defences, and relatively low number of military training establishments, monument types that comprised the majority of monument records for both the North Devon Coast AONB and South Coast RCZAS NMP surveys (Knight and Hegarty 2013, Hegarty, Knight and Sims, 2014).

In contrast, the majority of the modern military sites recorded during this survey relate to civil defence or the internment of prisoners of war, and were largely temporary installations or constructions leaving few, if any ephemeral remains. Table 6 illustrates the contrast between the types of modern military site most commonly amended and newly recorded by the survey. Table 6 also illustrates the survey's success in identifying and recording the most ephemeral and short-lived material expressions of the conflict, such as passive defence bombing decoys and the bomb craters that demonstrate their effectiveness – the most numerous monument type for this period - and other earthwork ephemera such as weapons pits and slit trenches, a characteristic part of any military establishment.

Noteworthy exceptions include the few hardened and more permanent installations of Heavy Anti-Aircraft Artillery batteries, such as at Broadclyst (MDV53282) and Exeter Airfield with its associated defensive infrastructure. Examples of all of these main themes are illustrated below.

6.5.3.1 Bomb Craters

The most direct evidence of conflict recorded by the survey was provided by earthwork or cropmark remains of bomb craters. With over 20 possible incidences noted, these slight remains were also the single most numerous military monument type to be recorded. Whilst some could possibly have been shell craters from military firing ranges or training exercises (particularly those on Woodbury, Bicton and Colaton Raleigh Commons, MDV112541-3 and MDV55208, MDV70206, MDV112551), at least 15 other incidences were undoubtedly evidence of bombing raids (See Figure 58 below; Figure 60 and Figure 74 below).

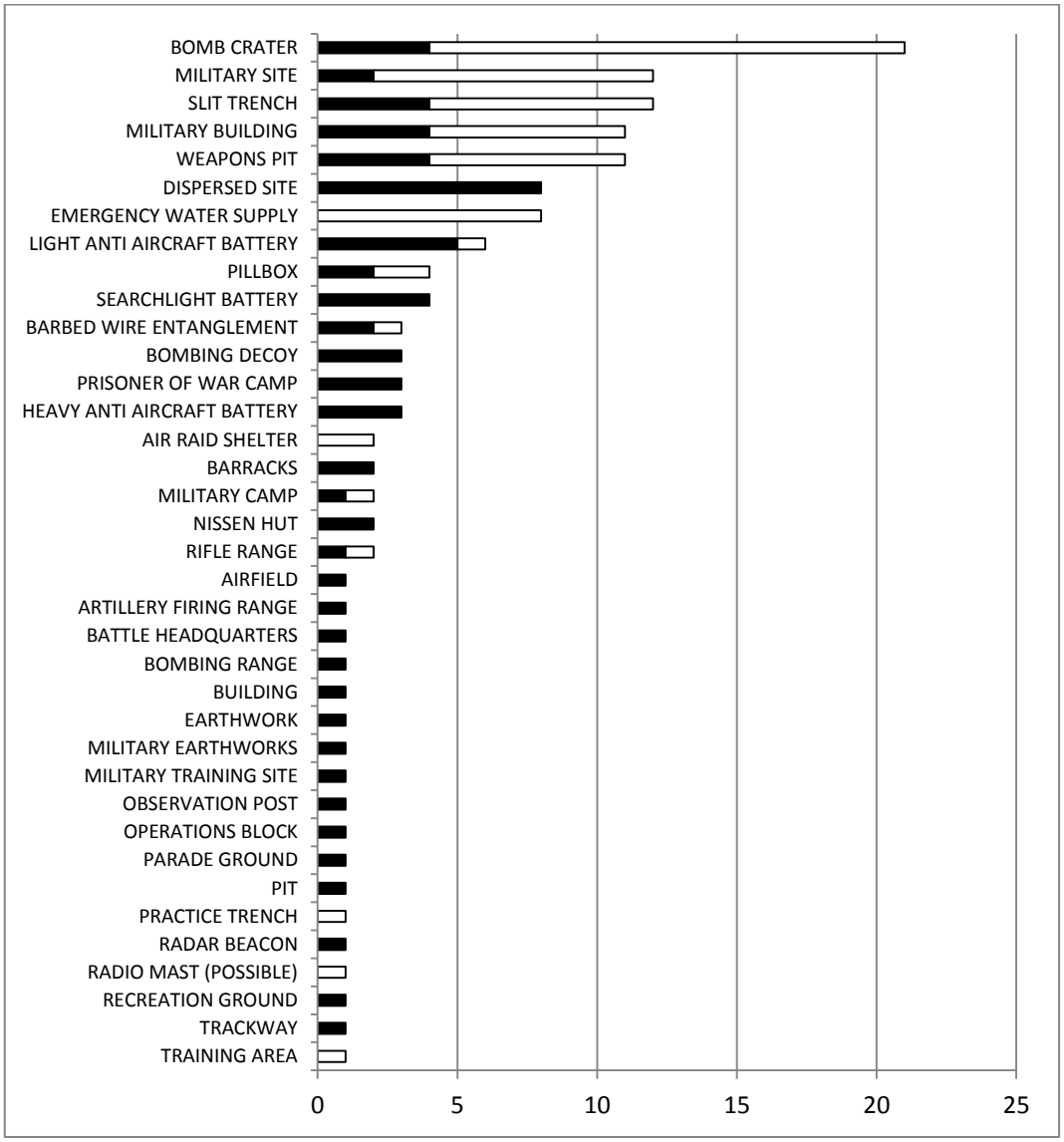
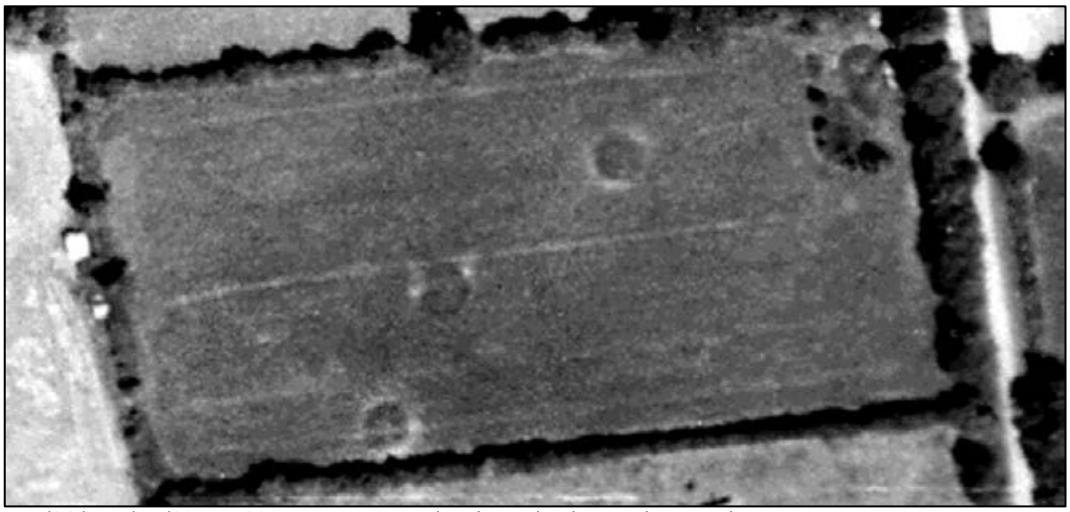


Table 6: Numbers of newly recorded (white) and amended (black) monument types of modern military date.



RAF/3G/TUD/UK/221 V 5386 11-JUL-1946. Historic England RAF Photography.

Figure 58. Possible bomb craters visible as cropmarks north of Uffculme (MDV107637).

6.5.3.2 Passive Air-Defence: Decoy Sites

Several groups of bomb craters were recorded in the vicinity of sites of strategic military significance, such as RAF Exeter (See Figure 74), or sites constructed with the intention to draw bombing raids away from them (See Figure 60). The latter are known as bombing decoys, and a range of decoy types were developed during the war to replicate a range of strategic targets, from airfields to urban and industrial centres (Dobinson 2000).

Three decoy sites were recorded within the survey area. The Special Fire, SF or 'starfish' decoy site at Ide (MDV72100) was established by the end of May 1942 to draw enemy aircraft away from the city of Exeter (Dobinson 2000, 166-167). This was in response to, but unfortunately too late to mitigate the impact of, the deadly and culturally devastating 'Baedeker' raids of late April and early May 1942 (RAMM, n.d). These operations targeted historically significant cities and were intended to destroy civilian morale; they were undertaken in retribution for the tactical British attack on Lübeck, which was itself designed to demonstrate the prowess of Bomber Command as much as (or more than) to disable critical military targets (Dobinson 2000,164).

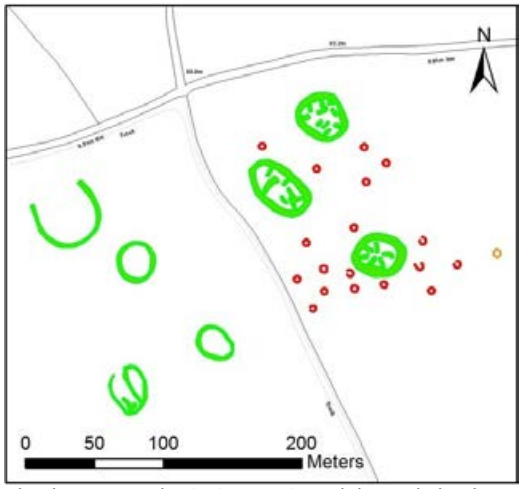
The decoy site was previously recorded only as a point on the HER, but much more detail was visible on aerial photographs taken in 1945 and 1946 (Figure 59) on which a range of ephemeral or slight earthwork features can be distinguished. In one field, three pale sub-oval ring shaped features, between 40 and 50 metres in maximum extent, appear to be slight ditched earthworks of circa 5 metres width, each with numerous narrower internal subrectangular or curving pale areas, also probably slight ditches or compacted surfaces.

The larger features bear similarities to the irregularly-shaped firebreaks of narrow ditch and bank construction, around ring-shaped channels for burning oil, that still survive at Allhallows, Kent (Small 2014). They are also consistent with the starfish layout outlined by Dobinson (1996, Figure 15) which includes groups of firing devices to simulate the light effects that would be expected in bombed cities, enclosed by irregular firebreak trenches.

In the northernmost of the three clearest firebreaks at Ide, the internal features were probably caused by firebaskets (Roger Thomas, pers. comm.). These metal wire constructions burned creosoted wood chippings, and the ground beneath may have become compacted. The other clearly visible firebreaks enclose more widely dispersed features, and these are more likely to be from 'crib' fires or oil fires over steel troughs which mixed oil (for colour change) and water (for flare) for a more convincing effect (*ibid*.).

Numerous much smaller and almost circular features approximately 6 metres in diameter are visible, as ring-shaped possible earthworks with a raised lip less than a metre wide. These superficially resemble bomb craters in size and plan, but they do not appear to have characteristic depth and are more likely to be a part of the decoy site. Roger Thomas has interpreted these as rare examples of light positions for different types of light display, intended to simulate movements such as doors opening. Although light positions required level ground, any cut

would not necessarily be deep and the raised lip may well be a ring of higher vegetation rather than a slight earthwork bank.



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RAF/106G/UK/865 RVp1 6056 30-SEP-1945 Historic England RAF Photography (above and top left).

Figure 59. A Second World War 'Starfish' Bombing Decoy at Ide (MDV72100).

In the field immediately to the west, four additional irregularly shaped ring-shaped features are visible as cropmarks of broadly the same dimensions as the more clearly seen firebreaks discussed above, although internal features are indistinctly visible in only one. There may have been further small light display settings here too, but as the field had been cultivated by 1945 very shallow features would not have survived.

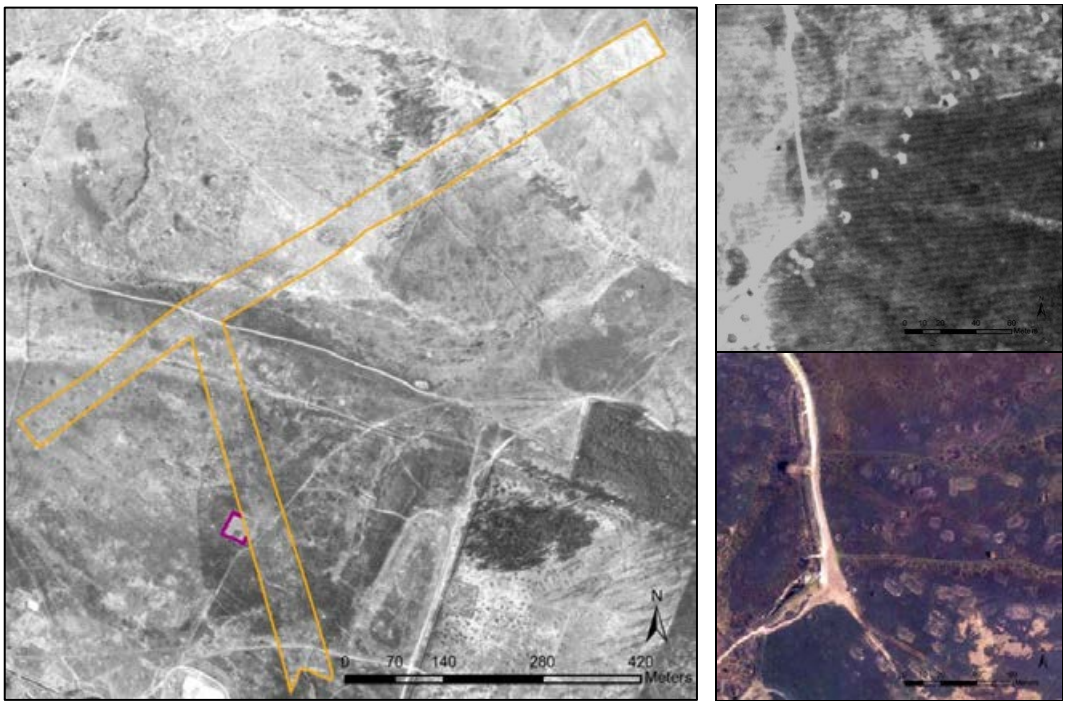
No nightshelters or other buildings were visible, and any firing device superstructures had also been removed soon after the war ended. None of the earthwork remains seem to have survived beyond the 1940s.

However, approximately 550 metres to the north-east, two roughly circular earthwork pits, circa 14 metres in diameter, are visible on aerial photographs taken from 1946 and on images derived from lidar data captured in 2005

(MDV112637). They strongly resemble bomb craters, perhaps from the Baedeker - or subsequent - raids, although it is not clear whether the Exeter decoy was ever lit and if so, how successful it was.

A 'Q' bombing decoy site (MDV72068) for RAF Exeter was constructed across Woodbury Common, approximately 7km to the south-east of RAF Exeter, in 1941 (Figure 60A). An imitation T-shaped runway, which appears to have been rolled and or mown, was designed to divert enemy bombers away from the airfield in the event of a raid by using a series of diversionary fires. It appears the Q site had some success in fooling enemy bombers, when on the night of the 26th April 1942, a raid returning from Bath took a 'side-swipe at the Q for Exeter airport' (Dobinson 2000, 165). A linear alignment of probable bomb craters (MDV70396) east of and parallel to the main arm of the decoy runway, perhaps offer evidence of such a raid. A number of these bomb craters remain visible on recent images of 2010 (Figure 60B & C).

Given the temporary nature of their construction, evidence of such decoy sites rarely survives. However, the impact of this site on the landscape remains clearly identifiable, where construction of the false runway truncated the north-east corner of an earlier square embanked or walled stock enclosure (Figure 60 & Figure 61).



RAF/106G/UK/1412 3173-74 13-APR-1946. Historic England RAF Photography (Left and Top Right).

Next Perspectives PGA Imagery SY0487 22-MAY-2010.© Bluesky International/Getmapping PLC.

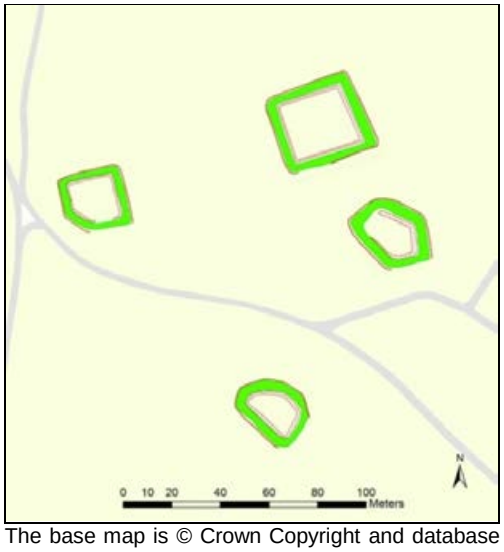
Figure 60. Aerial photographs of 1946 showing the outline of Q bombing decoy site MDV72068 (Left), with inserts showing bomb craters (MDV70396) in 1946 (Top Right) and on digital images of 2010, amongst earthworks from present day military exercises (Bottom Right). The stock enclosure cut by the false runway is visible outlined in purple towards the bottom left corner of the main image.

Original photograph and enhanced photograph by Stephanie Knight, October 2015.

Figure 61. Photograph looking south-east across truncated stock enclosure (top) with enhanced digital image (bottom) showing the approximate alignment of the runway in light brown and truncated enclosure banks in dark brown.

Approximately 650m to the north-east of the Q decoy runway site on Colaton Raleigh Common is the site of QF bombing decoy MDV72067. Smaller and less elaborate than SF/Starfish decoys, QF sites built on the success of 'Q' decoys and were established to encourage enemy bombers to attack the decoy using mock fires rather than lights to simulate an already bombed target (Lowry 1995, 64; Dobinson 2000, 56). In conjunction with the decoy runway site (MDV72068) these sites would have simulated an RAF Exeter struck by 'pathfinder' Luftwaffe bombers. The site is visible on aerial photographs of 1946 onwards and comprises four discrete earthwork ditched and banked features of varying size and shape. For example, the northern two earthworks are distinctly rectilinear in form, whilst those to the south are more irregular in shape. All four earthworks appear to be defined by a broad shallow firebreak ditch which is flanked by both an inner and outer bank or possible walled structure (Figure 62). A control shelter and generator building (MDV70415) for this decoy site which possibly also served the decoy runway site are located broadly equidistance between the two.

A field inspection of the QF decoy site was carried out in October 2015. Although largely covered with gorse and heathland grass, the ditches and banks of the two south-eastern enclosures clearly survive as earthworks, complete with upstanding concrete posts of a former, but possibly contemporary perimeter fence around each of these (Figure 62 & Figure 63). The survival of the remaining two enclosures could not be ascertained due to impenetrable gorse. The remains of the former control shelter and generator building are also clearly visible and survive as largely intact structures which both appear to be sunken and embanked (Figures 64 & 65).



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Next Perspectives PGA Imagery SY0487; SY0488 22-MAY-2010. .© Bluesky International/Getmapping PLC.

Figure 62. NMP transcription of the QF decoy site MDV72067 (Left), with surviving earthworks of the southern-most enclosure as seen on digital images of 2010 (Right).

Figure 63. Surviving earthworks and concrete posts of the southern-most enclosure of QF decoy site MDV72067. Photograph by Stephanie Knight, October 2015.

Figure 64. Concrete blast wall and embankment of the control centre MDV70415. Photograph by Stephanie Knight, October 2015.

Photograph by Richard Sims, October 2015.

Figure 65. Internal view of generator building MDV70415 showing precast concrete.

6.5.3.3 Passive Air-Defence: Searchlight Batteries

Prior to the development of radar, searchlights were the only means of guiding anti-aircraft artillery fire and airborne interception towards enemy aircraft. Searchlights also forced raiders to fly at higher altitudes, therefore decreasing the accuracy of bombing raids (Lowry, ed. 1996). Such installations were therefore commonly situated in the vicinity of strategically sensitive establishments.

As has been illustrated above (see Section 6.5.3.1 - 6.5.3.2), airfields were particularly vulnerable to aerial assault and RAF Exeter and the City of Exeter, a tempting target with which it was co-located, were provided with a complex system of dispersed air defence sites, both ‘passive’ and ‘active’ (Francis 1999, Map 17; Appendix 7). Examples of active defences, anti-aircraft artillery, are illustrated below.

Passive defences, in the form of four searchlight batteries, were recorded during the survey (MDV58248, MDV78517, MDV78522, MDV78529), with a demonstrable focus on RAF Exeter to the east of the city. One example, visible as earthworks at Postlake Farm approximately 5km to the south of the airfield, were probably part of a dispersed system of air defence for RAF Exeter, specifically the remains of a searchlight battery (MDV78517). This site was captured by aerial photography in 1946, well into the process of removal (Francis 1999, 141).

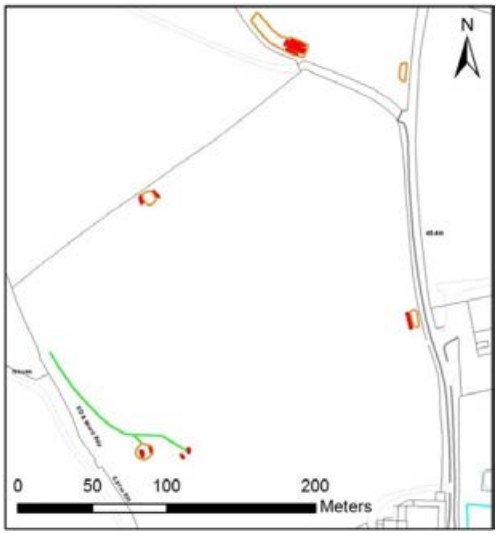
This site was previously recorded only as a point location on the HER, and the survey has therefore added greater detail on location, layout and extent. A curvilinear ditch with small mounds of spoil along its length may have been a cable trench between generator and lights, and this branched into two, each terminating in an area of bare ground with mounds of spoil (Figure 66). One of the areas was fairly circular, and these were probably the locations of searchlight emplacements. A similar feature to the north is likely to have been a third emplacement, possibly housing a Light Anti-Aircraft gun position. What appear to

be the sites of three rectangular buildings, 11 by 5 metres in plan, were visible as pale mounds of earth along the hedgerows. Some had linear banks along their outer edges, presumably resulting from excavation of the wall foundations. No earthworks are visible on later available images, demonstrating the slight nature of such sites.

6.5.3.4 Active Air-Defence: Anti-Aircraft Artillery

Similarly, four previously recorded active air defence sites, specifically Heavy Anti-Aircraft Artillery (HAA) batteries, were transcribed during the survey (MDV53282, MDV57216, MDV58247 AND MDV79572). These display a similar distribution to the searchlight batteries, following the eastern perimeter of the City of Exeter in the vicinity of Exeter Airfield, but also extend to the south of the city (MDV79572). This is not a complete representation of the HAA batteries listed by Francis (1999, Map 17; Appendix 7), who identifies several additional HAA sites within or adjacent to the survey area. However, the incomplete nature of some of the sites visible on the historic aerial photography might support the interpretation that a number were never constructed or possibly only partly completed; for instance, MDV57216 was identified from only three Nissen Hut structures with little evidence that a fully manned or gunned battery was ever built in this location.

Of the three remaining HAA battery records enhanced by the survey, two (MDV58247 AND MDV79572) were fairly typical in arrangement, with four earthwork embanked hardened gun pits set within boundary banks at the corner of a field, surrounding a rectangular concrete command post and smaller associated structures. Figure 67 illustrates a detail of the Alphington Allotment battery (MDV79572), and the previously unrecorded domestic camp associated with it (MDV113147). Linked to the battery by a trackway, it was visible as a military complex of numerous temporary structures and trackways including numerous curved roofed structures of dimensions consistent with an interpretation as Nissen huts, interspersed with pitched roofed structures, probably further accommodation huts. As with the battery itself, most structures were located along pre-existing hedgelines, with three rows of circular dark cropmarks in the central field possibly caused by temporary storage or Bell tents. At the very east of the site a circular structure circa 9 metres in width, apparently water-filled, is likely to have been an Emergency Water Supply reservoir in case of fire. Adjacent to this a small complex structure may have been a water treatment site. All superstructures had been removed by the spring of 1955 and all remaining footings were removed after 1958. The area has now been completely redeveloped as an industrial and trading estate, and all battery structures but the command post, which survives in isolation, have been removed.



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RAF/106G/UK/1412 RS 4265 13-APR-1946. Historic England RAF Photography (above and below).

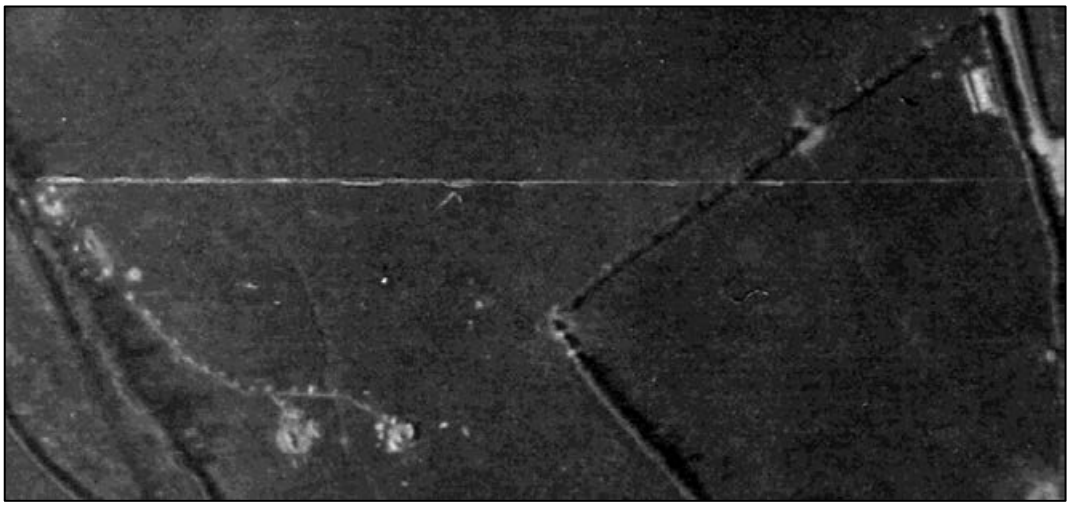


Figure 66. Searchlight Battery MDV78517, Postlake Farm, in the process of removal (top). Detail of one of the building locations to the east and the cable runs and remains of the gun positions to the west (bottom).

The battery transcribed at West Clyst farm (MDV53282) was more unusual in plan (see Figure 68). Here, the gun pits were again set into an extant field boundary, but arranged in a linear formation south of the command post instead of the more standard arc. This configuration is reminiscent of that used in Diver batteries constructed to combat the threat of the German V1 flying bomb, and previous interpretations have suggested this as a possible role. However, an intended use as a Diver battery is unlikely for two reasons. Firstly, the Diver strip batteries were not constructed further west than East Sussex (Lowry ed. 1996). Secondly, the large scale reorganisation of anti-aircraft artillery for Operation Diver took place from the summer of 1944 and the West Clyst Battery was recorded as being under construction in November 1942 (Francis 1999). It is probable that this battery was completely destroyed during the construction of the M5 motorway.

RAF/106G/UK/780 RVp2 6112 09-SEP-1945. Historic England RAF Photography (above and right).

Figure 67. Alphington Allotments Anti-Aircraft Battery (north) and associated camp (south). Detail of the battery (MDV79572; left) and camp (MDV113147; right).

RAF/CPE/UK/1974 FP 1454 11-APR-1947. Historic England RAF Photography.

Figure 68. The HAA battery near West Clyst Farm, north-east of Exeter. The domestic site was located north of the battery in and around a former quarry pit.

6.5.3.5 Exeter Airport and wider associated sites

The only airfield recorded in the project area and one of the most important RAF stations at the front line of air defence in the South West during the Second World War, RAF Exeter (MDV48842) occupies an area to the east of Clyst

Honiton, to the north of what is now the A30 and approximately 6km to the north-east of Exeter. RAF Exeter was designated a fighter station after the outbreak of the Second World War and along with other stations in the south-west, including Roborough in Plymouth and St. Eval in Cornwall, fell under the wing of No.10 Group. 10 Group were tasked with the defence of Southampton, westwards into the Atlantic approaches (Clarke 2009,108).

A civilian airfield was first established here in 1937, although at the outbreak of the war, the air ministry had requisitioned the airfield and by 14th September 1939 the first RAF personnel had arrived, although it did not formally come into being as RAF Exeter until 6th July 1940 (Smith 2000,112;114). During the Battle of Britain, RAF Exeter played an important role in defending Portland and Portsmouth. The airfield was also host to two research departments, experimenting with barrage balloon wire cutting aircraft, and a Gunnery Research Unit. During 1941 and 1942 there was a succession of Hurricane and Spitfire squadrons based here as well as Exeter's first Polish-manned Defiant night fighters. By 1944 RAF Exeter had been formally handed over to the USAAF and was primarily used for exercises in preparation for the Normandy Landings. For the remainder of the war it was used for air-sea rescue until its closure in 1946 and subsequent reopening as a civil airfield in 1947 (Francis 1999, 14-15).

The earliest available images of RAF Exeter date to May 1942 (Figure 69) and show the newly extended runway and camouflage painted over the airfield to imitate field boundaries, with patches along the runway edges designed to break up the straight lines. The fighter pens, hangers and other structures are also visible to the west of the runway, although the dispersal is still evidently under development, with features such as the looped hard-standing off the western perimeter track and spectacle pens to the north not yet constructed (compare to Figure 70).

Principally a fighter station, RAF Exeter was laid out to a standard design, including hard standing dispersal pens around a curved perimeter track that circled the centre of the airfield with separate looped tracks off the main perimeter to the north and west. This looped pattern of dispersal (Figures 70 & 72) which had been designed by late 1941 and widely implemented across the country by 1942 was an important feature of airfield evolution and a revolution in design which allowed for much more rapid and efficient deployment of aircraft (Clarke 2008,115). Eight spectacle pens were also later added at Exeter along the northern edge of the runway as marshalling areas. Provision of blast pens for single-engine fighters and twin-engine aircraft were dispersed to the west and north of the airfield and were typically E-shaped in plan, with the outer arm curved to protect the aircraft. The blast pens were constructed of low brick walls outlining the shape of the pen and covered with sand bags, with a pre-cast concrete and brick shelter at the end of each of the central arms (Francis 1999, 85). The majority of the fighter pens at RAF Exeter were for single-engine fighters (for example, Figure 70 A-B; I-N), although two pens for twin-engine airplanes were also later added (Figure 70 C-D).

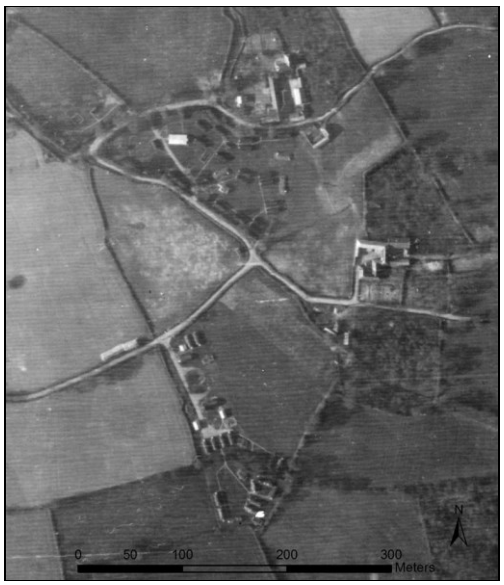
RAF/HLA/535 V 6087 07-MAY-1942. Historic England RAF Photography.

Figure 69. Aerial photograph of 1942 showing camouflage techniques employed across the airfield and the new design of dispersal, still under development, to the west.

RAF/CPE/UK/1823 RP 3069 04-NOV-1946. Historic England RAF Photography.

Figure 70. RAF Exeter in 1946, showing the standard wartime design and layout of the airfield.

Accommodation for personnel stationed at RAF Exeter was provided by the numerous dispersed camps that were established, primarily to the south-east of the airfield. These sites were established to help disperse personnel away from the threat of enemy bombs landing at the airfield by accommodating them within the relative safety of the surrounding countryside, for example at Higher Southwood Farm (Figure 71), approximately 1.3km to the south-east of the airfield. The sites are typically fairly small in size and are characterised by a number of Nissen huts and pitched-roof structures for accommodation, administration and storage, as well as other structures such as sewage treatment works, gymnasia and embanked earthwork air-raid shelters. Whilst most of these sites have been completely cleared, several isolated structures still survive, either as seemingly redundant features or re-used for agricultural storage.



RAF/106G/UK/1412 RS 4435-36 13-APR-1946. Historic England RAF Photography.

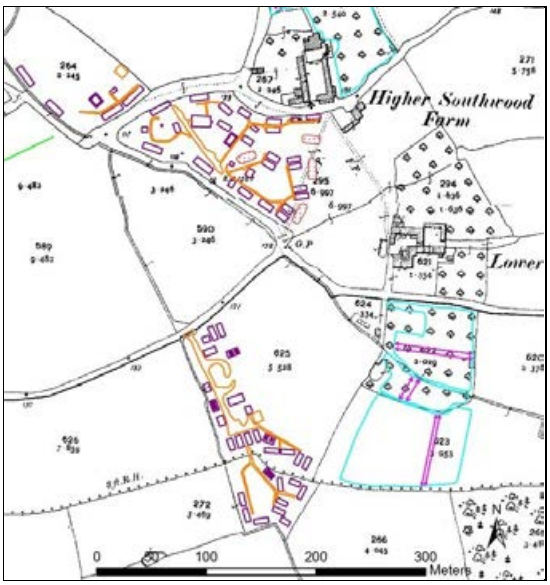


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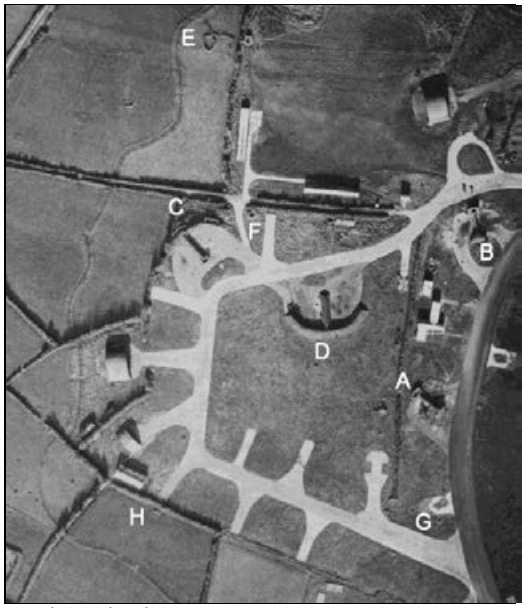
Figure 71. Dispersed accommodation camps at Higher Southwood Farm, showing sites MDV56271 (Left) and MDV56268 (Right).

Defence of the airfield against enemy bombing raids and low level strafing is characterised by a number of anti-aircraft gun pits which were located within the dispersals at the ends of the runways, theoretically improving the chances of shooting down enemy aircraft using the runway as a marker for their approach (Smith 2000, 60), and elsewhere across the airfield (Figure 72 E-H; O-P). In addition, outer rings of anti-aircraft defence measures were established across the surrounding countryside, including a number of searchlight batteries and both heavy and light anti-aircraft artillery batteries (Figures 73).



RAF/106G/UK/996 RVp4 6296-97 12-NOV-1945. Historic England RAF Photography.

RAF/CPE/UK/1823 RP 3069 04-NOV-1946. Historic England RAF Photography.

Figure 72. Dispersal area on aerial photographs of 1945 and 1946 showing perimeter track and loop, with blast pens, anti-aircraft gun pits and a range of additional structures, such as hangars and perimeter fencing.

Image reproduced courtesy of southwestairfields.co.uk (via David Trevor)

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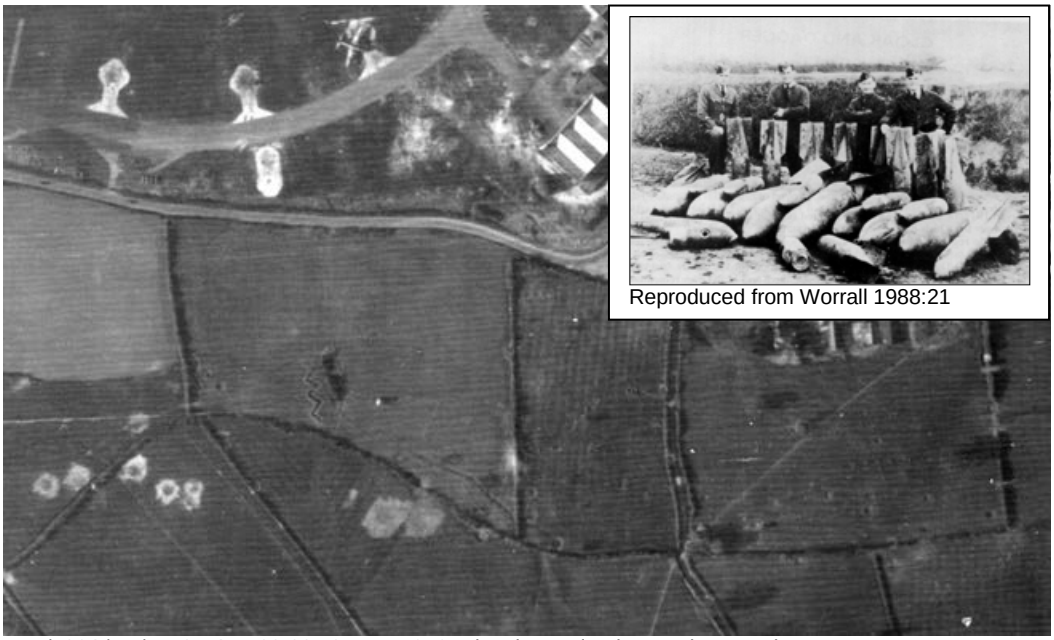
Figure 73. RAF Exeter's outer defences including an anti-aircraft gun pit at Heath House Farm (Left) and gun emplacements of a heavy anti-aircraft battery at Dymond's Bridge MDV58247 (Right).

Despite such measures the airfield suffered damage from enemy bombing raids, first being bombed on 21st August 1940. A further eight raids were carried out during April 1941, followed by raids in May and during February and November of the following year (Smith 2000, 118). Evidence of these bombing raids is visible on aerial photographs of 1944 onwards, as a concentration of earthwork craters, open and recently filled, along the southern edge of the airfield (MDV113001; Figure 74). Bomb damage within the airfield itself would have been promptly levelled and damage to infrastructure hastily repaired, whilst those without, in the neighbouring fields, were clearly less of a priority. Some success was, however, recorded during these raids and on the night of 11th-12th May, for example, air defences were credited with shooting down three enemy aircraft (Francis 1999, 39).



RAF/106G/UK/1412 RS 4432-33 13-APR-1946. Historic England RAF Photography.

Figure 74. Bomb craters on RAF aerial photographs of 1946, along the southern edge of RAF Exeter (MDV113001). Infilled bomb craters can be seen to the east (right) and unlevelled craters to west (left). The insert shows a cache of unexploded bombs at cleared following a raid.

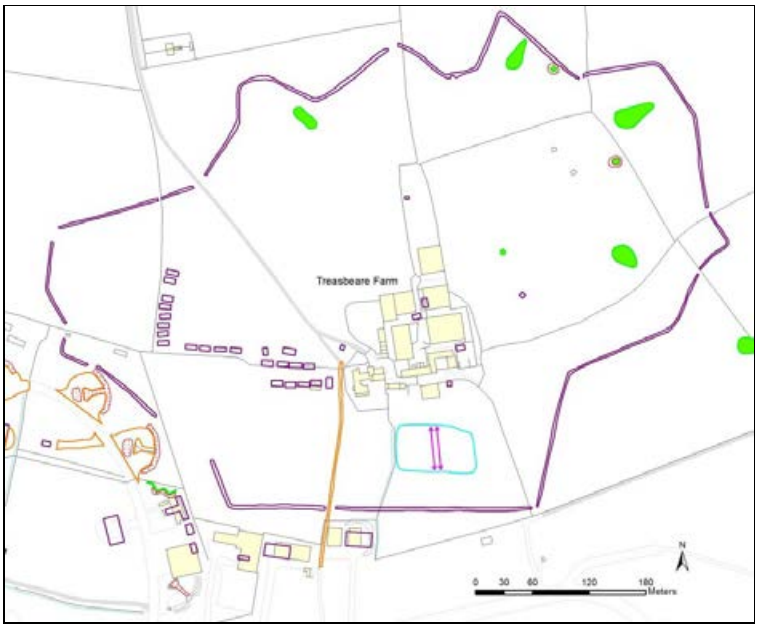


Figure 75. Treasbeare Farm battle headquarters (MDV78139), on the north-east side of the airfield. The four elongated features along the north and east perimeter are earlier, unrelated, extraction pits or quarries.

Responsibility for maintaining ground defence across the airfield was transferred to the army in July 1940, focusing on the construction of pillboxes and digging of slit trenches dispersed (see Figure 72Q & Figure 74 above). After June 1941 this

strategy changed and a battle headquarters at Treasbeare Farm, a prominent stronghold position on the north-eastern edge of the airport, was established (Francis 1999, 58; Figure 75). The site of the battle headquarters (MDV78139) is first visible on aerial photographs of 1944, comprising a range of structures including barrack blocks, service huts, a pump house and a pillbox, plus earthwork gun pits, enclosed by a zig-zag arrangement of barbed-wire entanglements. With the exception of several structures, including the pillbox, all evidence of this site has been removed.

Elements of the civil and wartime airfield fabric survive within the present day site. These include redundant structures and earthworks, such as the former fighter pens, pillboxes and perimeter track hardstanding, as well as structures that still remain in use, either in their original function, such as the main terminal building and hangers, or adapted for modern use.

In recent years, much of the western extent of the site has been levelled for development, including construction of the B3174 along the western perimeter edge and the SkyPark business park, under development at the time of writing, which will ultimately replace the western extent of the war-time airfield. Consideration of the surviving wartime airfield components for heritage protection, for example the fighter pens to the north-east of the airport, is strongly recommended as the structures are tangible remains of the contribution made by RAF Exeter during the Second World War.

6.5.3.6 Training Trenches

Three previously unrecorded examples of trenches excavated probably for military training purposes were recorded in the northern part of the survey area. All were between 1 and 2 metres in width and displayed the zig-zag or crenelated plan typically seen in practice trenches of First World War date, but also in association with Second World War military training establishments (Hegarty, Knight and Sims 2014, 92-93).

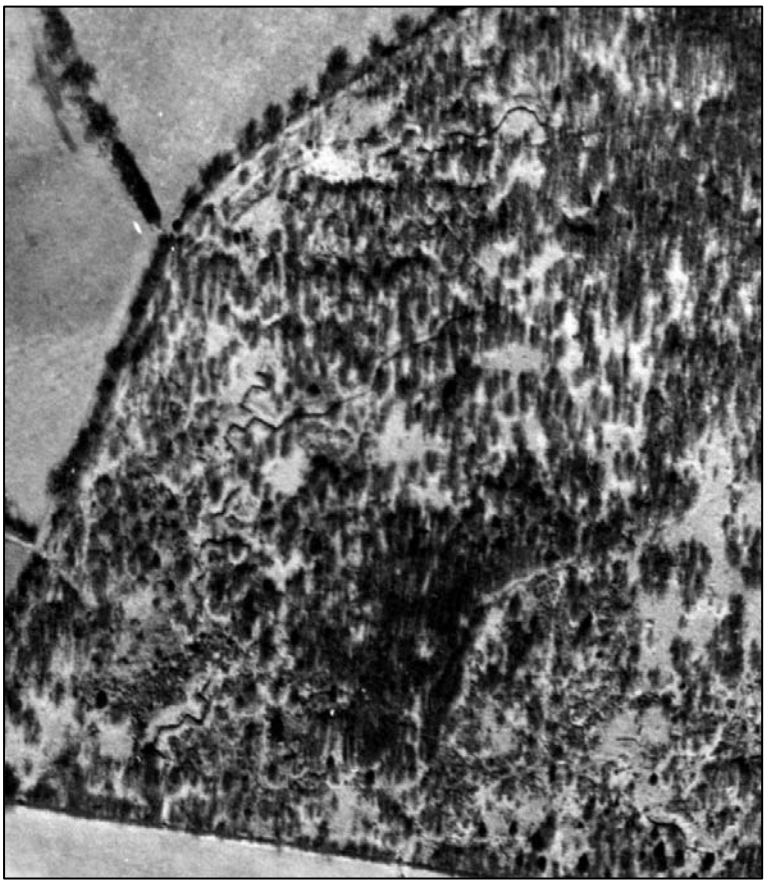
An interpretation as military training sites rather than civil defence works (i.e. surface air raid shelters) was informed by the location of the earthworks. All were some distance from the nearest settlement or residence and located on rough, lower quality agricultural land, typically used for such training activity, although unusually one was recorded within a plantation (Figure 76 and 77).

The ditches were mostly well-defined and clearly visible on images of 1946-7 but had been covered by vegetation by the 1960s. A Great War origin for the earthwork trenches is possible. However, the good condition of some of the earthworks and the absence of scrub vegetation on aerial photography of 1946-1947 raises the possibility that some were Second World War in date. With the exception of the trenches on Gaddon Down, the trenches have probably been levelled or destroyed by quarrying.

RAF/CPE/UK/1823 RP 3322 04-NOV-1946. Historic England RAF Photography

RAF/CPE/UK/1974 FP 2289-2290 11-APR-1947. Historic England RAF Photography

Figure 76. Training trenches of probable First World War date on Uffculme Down (left; MDV107765) and Gaddon Down (right; MDV108079).



RAF/CPE/UK/1974 RP 3281 11-APR-1947. Historic England RAF Photography.

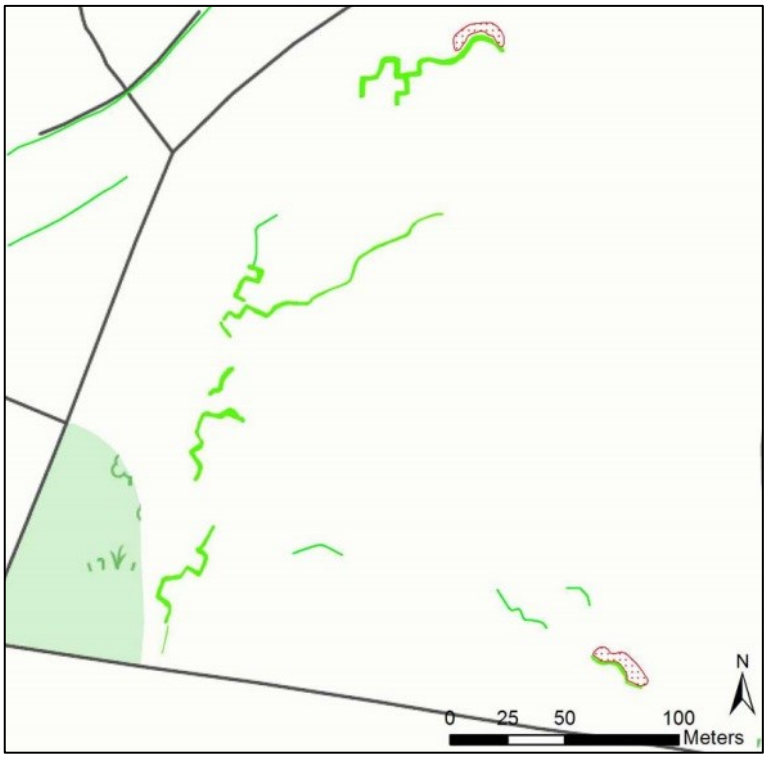


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Figure 77. Rectified RAF vertical photograph showing practice trenches (MDV108323) within Tidcombe Plantation (Top) and the NMP transcription of the ditches in green and associated earthwork banks in red (Bottom).

6.5.3.7 Air-raid shelters

A possible air raid shelter of Second World War date (MDV108391) was recorded as an earthwork within the grounds of Blundell's School, to the east of Tiverton (Figure 78) from aerial photographs of 1946 and 1947. The zig-zag or V-shaped embanked ditch earthworks probably formed part of a simple trench air raid shelter. Such shelters usually comprised simple revetted trenches, their irregular plan intended to reduce the effect of bomb blasts along the ditch (Lowry 1996, 67).

Documents dated to July 1940 from the Blundell's School archive (*pers. comm.* Sampson, 17 December 2015) outline the school's procedures in the event of an air-raid. It refers to a total of five air raid trenches located within the grounds of the school and whilst these do not correspond to the location of the earthworks recorded as part of this survey, it is possible that additional shelters were constructed after July 1940. Alternatively, the number and distribution of shelters across the school grounds might have changed in response to the decreased threat of air raids after July 1940. The possible air raid shelter had been completely levelled by 1966.

RAF/CPE/UK/1823 RP 3336-37 04-NOV-1946. Historic England RAF Photography.

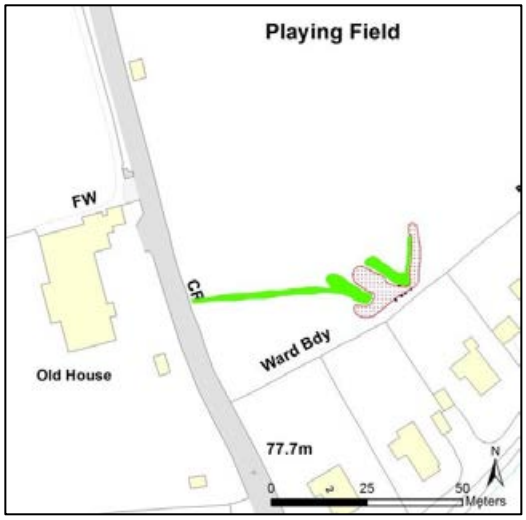

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Figure 78. Possible air raid trench shelter, Blundell's School (MDV108391), showing rectified RAF vertical photograph (a) and transcription (b).

6.5.3.8 Camps and Hutted Accommodation

The extent and plan of five temporary hutted camps of Second World War date was transcribed by the EMDRC survey. This was therefore the most common broad class of Second World War monument recorded.

Wartime temporary camps varied greatly in size and plan and some changed function and subsequently internal organisation. This is well illustrated by two establishments recorded on the HER prior to the survey; both were initially constructed as Prisoner of War camps but had very different trajectories over the course of the war.

A prisoner of war camp (Camp No. 1022; MDV80418) was recorded at Bradninch, but its location had not been identified prior to the survey (Thomas, 2003). A small and relatively simple establishment not much larger than 2 hectares in area was observed on photographs taken in 1946, comprising a series of Nissen Huts and larger buildings arranged around the perimeter of a trapezoidal shaped field to the south-west of Kensham Avenue, Bradninch (Figure 79). No other wartime camps were visible in the vicinity of Bradninch, and it therefore seemed probable that this was the site of the camp recorded by Thomas (ibid) as housing a German working company. All traces of this prisoner of war camp have now been removed, and the field is currently in use as a recreation ground.

RAF/CPE/UK/1995 RS 4044 04-NOV-1946. Historic England RAF Photography.

Figure 79. Second World War Prisoner of War camp at Bradninch, photographed from the air in 1946 (MDV80418).

A second prisoner of war camp was recorded on the north-west side of Tiverton (MDV57281: Figure 80). Initially utilised as a German Working Party camp, ‘Camp 92’ was given over to the United States 4th Infantry Division's signals and cavalry reconnaissance troops sometime in 1944. The earliest aerial photographs on which this camp was visible dated to late 1946, over two years after D-Day, but the impact of the influx of US troops is clearly apparent, not least in the size of the camp which at nearly 10 hectares is five times larger than the Bradninch camp, but also in the provision of recreational or leisure facilities such as a running track and sports field to the south-west of the camp. By 1966 the former camp had been completely cleared and the site is now occupied by Petroc College and Tiverton High School.

RAF/3G/TUD/UK/221 V 5401-02 11-JUL-1946 Historic England RAF Photography.

Figure 80. Rectified RAF vertical photograph of Bampton Road camp, Tiverton (MDV57281)

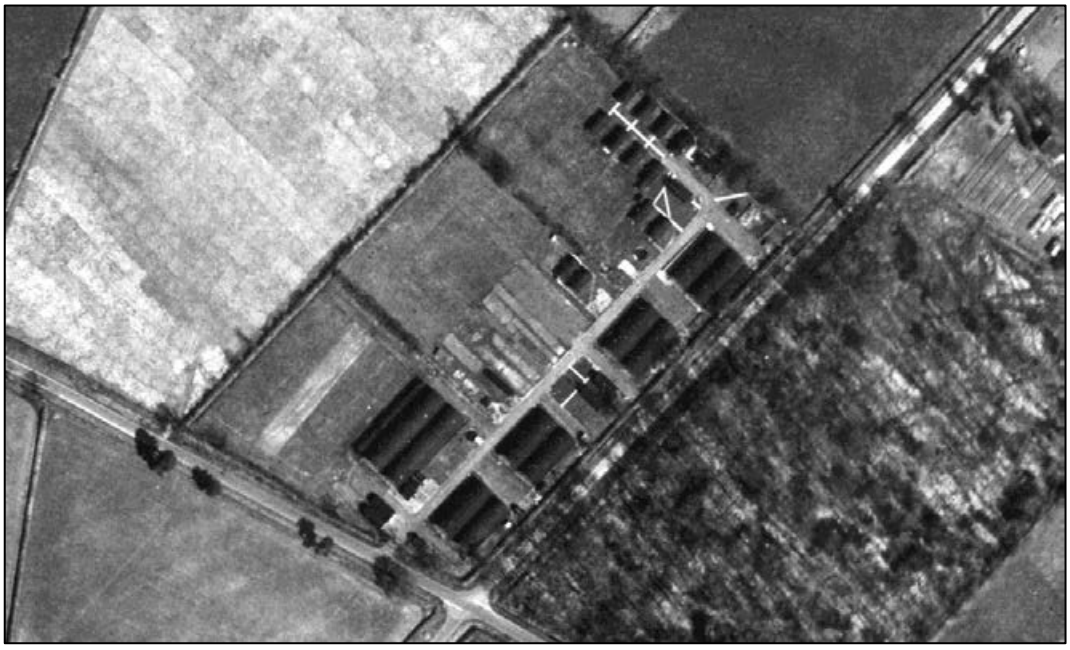
In contrast, a temporary hutted camp on the south-western edge of Silverton (MDV108075) was also built to house US servicemen undergoing training, but unlike the example at Tiverton, no evidence of exercise or recreation facilities was visible at this much smaller establishment, which comprised only 20 Nissen Hut-type structures (possibly Quonsett Huts) and extended over less than 1 hectare in area (Figure 81). Nonetheless personal testimony suggests servicemen were stationed here for several months (BBC 2005). The camp's temporary buildings have all been removed but slight structural remains were visible on digital images derived from aerial photographs of 2010. These might be the slabs referred to by a former US serviceman in his account of returning to his former wartime accommodation.

RAF/CPE/UK/1823 RS 4174-4175 04-NOV-1946. Historic England RAF Photography.

Figure 81. A Second World War US Army Training Camp at Silverton (MDV108075).

The function of the two remaining Second World War temporary camps newly identified by the survey, at Post Cross, Kentisbeare (MDV109200, Figure 82) and in parkland to the east of Grantlands, Uffculme (MDV107878, Figure 83) has not yet been determined.

They were very different in layout and size, one twice the area of the other, the first isolated and the second on the edge of a village, though both with good road access. Changes in arrangement and possibly function are indicated at both camps by the removal or appearance of structures or supplies, although this may simply be a consequence of the ending of hostilities. The variety in size, organisation, number and type of structures recorded at such wartime establishments demonstrates that although relatively straightforward to identify, they are not always so readily interpreted.



RAF/CPE/UK/1995 RP 3136 13-APR-1947. Historic England RAF Photography.

Figure 82. Second World War military camp at Post Cross (MDV109200).

Main image: RAF/CPE/UK/1823 RP 3322 04-NOV-1946; inset image: RAF/CPE/UK/1974 FP 3286 11-APR-1947. Historic England RAF Photography.

Figure 83. Military camp at Grantlands (MDV107878) in 1946 (main image) and 1947 (inset). A possible pillbox (MDV108618) is sited by the road in the bottom left corner of the main image.

6.6 Water Supply and Drainage

Effective water management is a vital part of any agricultural activity. The impact of enhanced drainage in orchards, part of the previously very widespread cider industry, has already been illustrated above (see Section 6.4.6). Farm-scale water management had, however, been an essential component of the pastoral economy on the hills and combes of Devon's rolling landscape, and extensive evidence for this has emerged from recent NMP surveys in the region (Hegarty with Wilson-North 2014; Knight and Hegarty 2012; Hegarty, Knight and Sims, 2013). Perhaps unsurprisingly, for a survey focused on river catchments, water management remained a prominent theme throughout the current project area.

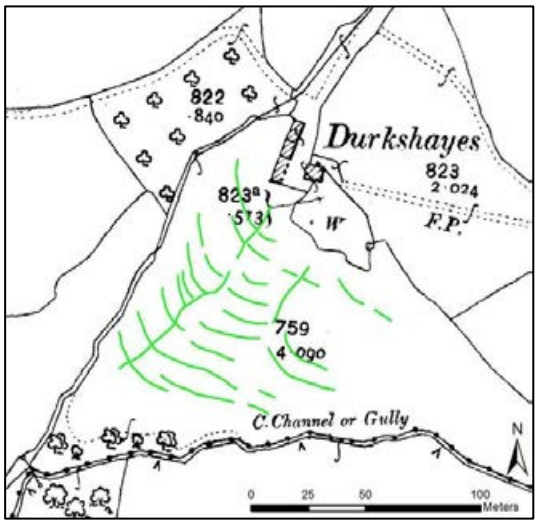
6.6.1 Water Meadows

The most visible and frequently recorded aspect of water management was the catch meadow or catchwork water meadow, of which a total of 224 were recorded. The majority (187) of these were in the Phase 1 area, as might be expected, given the steeply rolling hills and sharply incised tributaries combes of the northern part of the survey. This might support Turner's suggestion that catch

meadows were particularly common within the central part of the Exe valley, around Tiverton (Turner 2007, 85).

Two broad forms were recognised; the typical form of combe or hillside catch meadow and a more unusual form, interpreted as a possible local 'hybrid' style of catch meadow.

At their simplest, these local variants were visible as small-scale hill slope systems defined by a series of parallel contour gutters bisected by one or more lateral linear drains or channels aligned cross-contour. The association of these linear channels with the catch meadow gutters strongly supports the interpretation that they were contemporary features and formed an integral component of these systems, rather than acting as simple land drains. In many cases, the channels appear to have tapped a water source located further uphill, or originated at a farmstead, as at Durshayes (MDV108300; Figure 84), providing the opportunity of applying liquid manure to the slopes by integrating farmyard manure into the system; such catch meadows have been called 'attached systems' (Cook and Williamson 2007, 28-29). More complex and large-scale examples of these systems suggestive of a more integrated and closely managed system of water management were also recorded, for example at Chettiscombe Farm (MDV81040; Figure 84).



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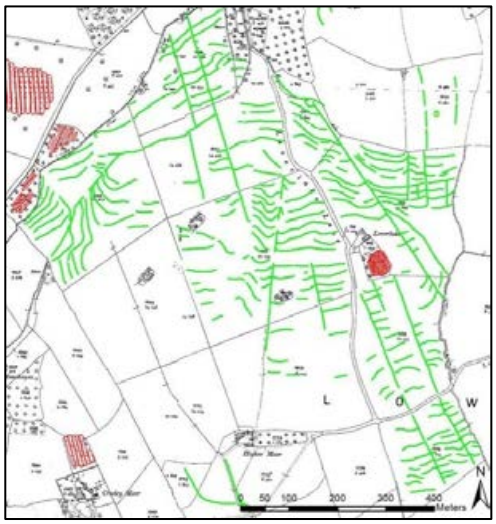

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Figure 84. 'Local variant' catch meadow systems: a simple system recorded at Durkshayes, MDV108300 (Left) and a more extensive and complex system at Chettiscombe Farm, MDV81040 (Right).

These local variants were most numerous in the northern half of the Phase 1 project area, with a sizeable number situated on the hill slopes to the north and south of Tiverton. Fewer were recorded in the Phase 2 survey area, and were generally located further to the south, to the east and southeast of Exeter.

More conventional catch meadows were also recorded throughout the project area, although again these were generally small-scale and simple in form. These systems were most numerous along the slopes and combes to the south-west of

the Phase 1 project area, with notable concentrations and more extensive examples recorded to the north of Thorverton (Figure 85) and Silverton (either side of the Exe Valley), and around Butterleigh (Figure 86), further to the north.

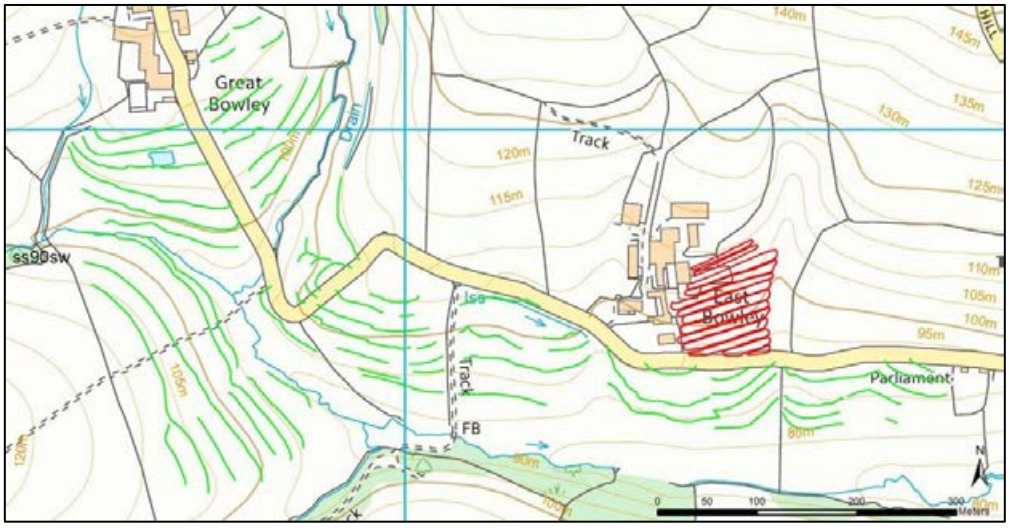

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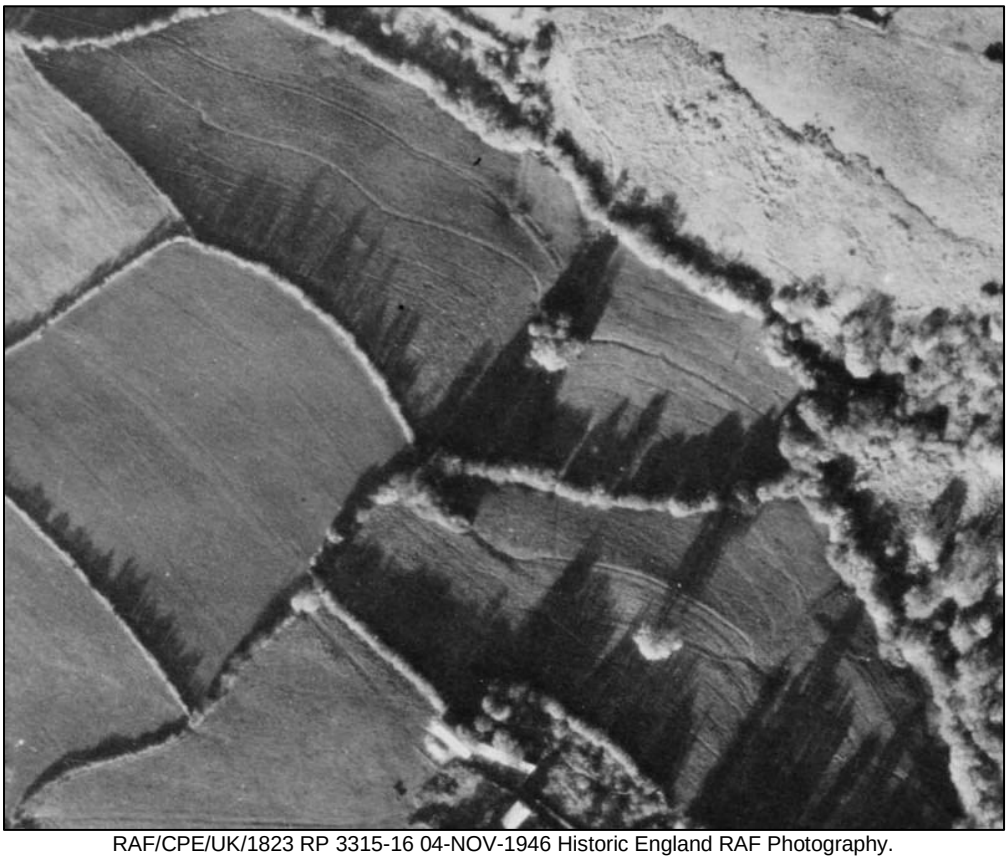
Figure 85. Extensive Catch Meadow, or meadows, (MDV110519 & MDV110555) at Great and East Bowley



RAF/CPE/UK/1823 RP 3315-16 04-NOV-1946 Historic England RAF Photography.

Figure 86. Simple Catch meadow systems (MDV107419 & MDV107420) recorded at Southcoombe, near Butterleigh.

Valley bottom water meadows known as bedworks are rare in Devon. An example had been postulated by Turner (2007 after Gray, 2003) from historic cartographic evidence at Haccombe, near Newton Abbot. A recent NMP survey of the South Devon coast had also identified a possible example at Dawlish Warren (MDV105249; Hegarty, Knight and Sims 2013).

Several possible bedwork water meadows were recorded across the project area. These include a number of small-scale and previously unrecorded examples distributed along the Culm valley to the north-east of the project area and along Spratford Stream and Great Western Canal, to the north of Willand. The densest concentration was, however, recorded along the Exe Valley and River Lowman, on the south and north-east side of Tiverton respectively.

The previously unrecorded extensive water meadows at Lower Collipriest Farm (MDV108337; Figure 87A-C) were located on the floodplain on the eastern side of the River Exe, to the south of Tiverton. They were defined and probably supplied with water by a series of channels and sluices, depicted and labelled on the First Edition OS map, and were most clearly visible on RAF vertical aerial photographs of 1947.

In total the system covers an area of approximately 37 hectares and appears to be an unusual example of the valley bottom water meadow system. The system seems to have been fed via a carrier channel that diverted the flow of water from the River Exe to the north. This was then directed across the floodplain via an intricate network of narrower channels which constituted the main part of the system, and which, while appearing irregular, were probably aligned with the micro-topography of the floodplain. To the immediate south-west of Lower Collipriest Farm, short and very regular ditches in a curvilinear pattern aligned parallel to a probable main carrier or head main, might be evidence of a further hybridisation or integration of catch meadow and bedwork technology, taking advantage of the gentle sloping gradient of the floodplain (Figure 87B).

Across the remainder of this extensive area of irrigation, the arrangement of channels is less regular. Water seems to have entered often irregularly laid out tapering channels or floats, from which the water was made to overflow onto each part of the meadow. Typically, bedwork floats are cut into parallel earthwork ridges, or beds, down which the water would flow. Although the network of probable floats is clearly defined, particularly along the eastern and northern extent of the system (Figure 87B), evidence of possible surviving beds is limited, visible as earthwork banks on lidar-derived images in only a few locations (Figure 87C).

Calling this a single system is almost certainly inaccurate. The irregular layout of the possible floats or carriers and drains, and their possible organisation into discrete blocks of bedworks is evidence that this, and other similar complexes in the Phase 1 survey area probably developed in a piecemeal fashion, constrained by land divisions based on former land ownership, geomorphology or other aspects of the 'prehistory' of the water meadow (Taylor 2007, 24-28).

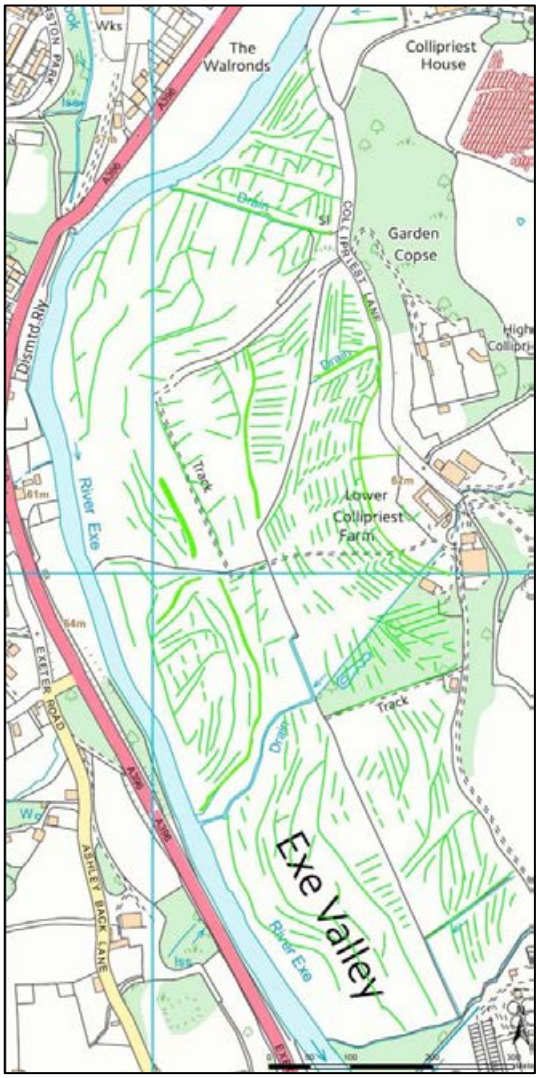


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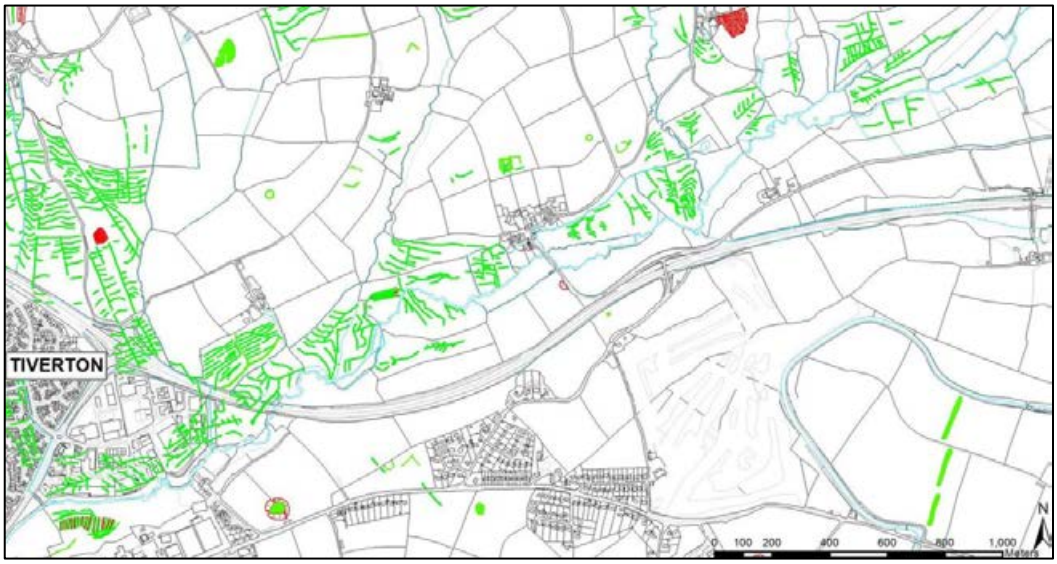
Figure 87. Water meadow (MDV108337) at Lower Collipriest Farm on the Exe valley, Tiverton, showing the extent of the system (A) and inserts showing the network of floats (B) and possible beds on lidar-derived images (C).

Another extensive, but more fragmentary system (MDV108639; MDV108593; MDV108587 & MDV108584) was recorded along the River Lowman, stretching from the north-east edge of Tiverton at Cowleymoor, towards Widhayes Farm to the north-east, with an approximate length of 3.5km (Figure 88A). Some uncertainty exists as to the exact nature and function of a number of the features transcribed here; some are possibly simple drainage ditches, but numerous elements exhibit bedwork characteristics, including probable earthwork beds (Figure 88B-C).



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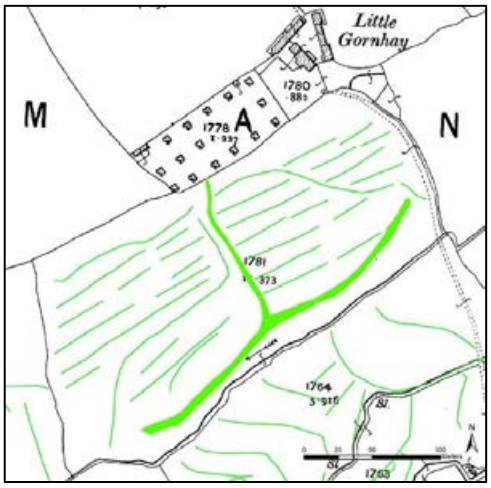


C: Second Edition Ordnance Survey 25 inch map © Crown copyright and Landmark Information Group Ltd. NMP transcriptions © Historic England.

Figure 88. Water meadow systems (MDV108639; MDV108593; MDV108587 & MDV108584) recorded along the River Lowman, north-east of Tiverton (A), showing floats and beds at Cowleymoor (B) and head mains and floats at Little Gornhay (C).

Further variants on this type of valley bottom bed work system were observed. Interestingly these also have characteristics of the catch meadow variants discussed above. Water meadow MDV108854, for example (Figure 89), is located to the east of Willand on the floodplain of the River Culm which flows towards the south-west. The system comprises a number of linear channels aligned broadly north-east to south-west, from which emanate a series of fairly sinuous gutters to either side. The pattern of these gutters does not suggest a land drainage function, and might instead be part of a less formal and managed system of water meadow, more *ad hoc* in its construction.

These NMP survey results significantly extend the known westwards distribution of bedwork irrigation. The possible Dawlish Warren bedwork (MDV105249) mentioned above is roughly as far west but is very small in scale. Another possible example, the postulated bedwork site at Haccombe (MDV66699), 15km

south of the survey area and very slightly west, was first recorded from an estate map dated to 'the turn of the 16th century'. However an assessment of the site's topography indicates a narrow combe, more suited to catch meadow than bedwork irrigation. Certainly the Cornwall HER does not currently record any confirmed examples of bedwork irrigation and Historic England are not aware of any more western examples (pers. comm. Nicky Smith 3rd December 2015). As such, the results are significant not only in Devon, but regionally.

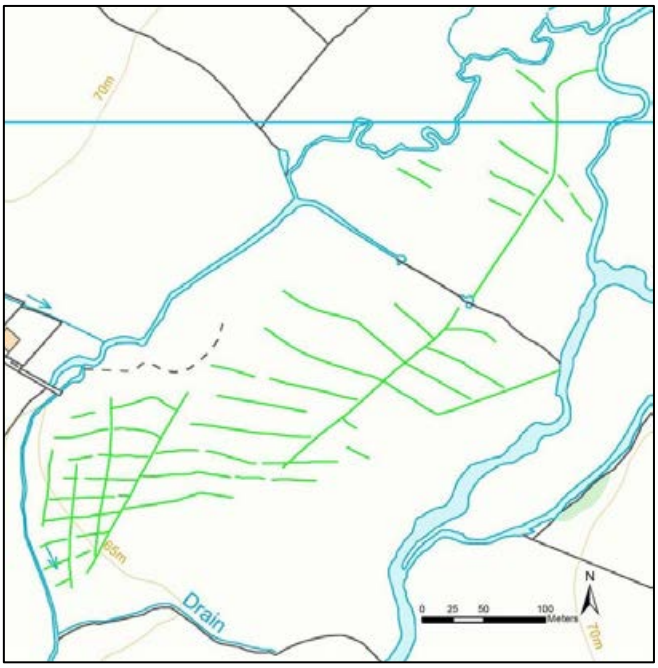


Figure 89. Possible variant water meadow system, MDV108854, Willand

The catch meadow and possible bedwork water meadow systems were typically recorded as narrow earthwork ditches and were most commonly transcribed from RAF military vertical photographs. The percentage of catch meadows which survived to varying degrees as extant earthworks, or where survival was uncertain, was shown to be approximately equal to those that appeared to have been completely levelled. This contrasts markedly to the bedwork systems which survive as earthworks in much greater numbers, probably a reflection of their more extensive nature and the continued use of the floodplains for pasture. Here lidar-derived images have proven a particularly useful tool for transcription, complementing the aerial photograph resource.

It is worth highlighting the potential and suitability of these water management features for future research and field investigation, given the good survival of earthworks, particularly the larger systems. The importance of such research is strongly promoted by Taylor (2007, 22-34), and would form an interesting case study within the regional context of south-west England.

6.6.2 Water Meadows & HLC

The results of EMDRC NMP compliment the current HLC for Devon and have potential to enhance future HLC methodology (see Section 4.3.3 HLC). Whilst successful in many respects, the constraints of the HLC methodology could not have anticipated the extensive distribution of hill-side catch meadows in the county; these are only rarely depicted on historic cartographic sources, and then often incompletely. As such, the existing HLC methodology for characterising landscapes as water meadows under-represents the resource that has been identified by NMP, largely from historic aerial photography.

Similarly, the identification of the potential hybrid or moderate-slope to combe-bottom systems described above could not have been foreseen. Figure 90 illustrates approximately the same area to the east of Tiverton as shown in Figure 88 above, overlain on the OS First Edition map for clarity. The areas outlined in blue mark those zones characterised by HLC as 'Watermeadow' or 'Old Watermeadow' for circa 1890 overlain onto NMP transcriptions. It is readily apparent that the HLC methodology underestimated both the extent and, perhaps more significantly, the topographical range in which water meadow irrigation techniques were viable, and applied, in Devon.

These NMP results could inform future HLC approaches in Devon, and possibly elsewhere in the South-West, by extending the topographical zones in river valley bottoms and hinterlands that could have been exploited by water meadow irrigation.

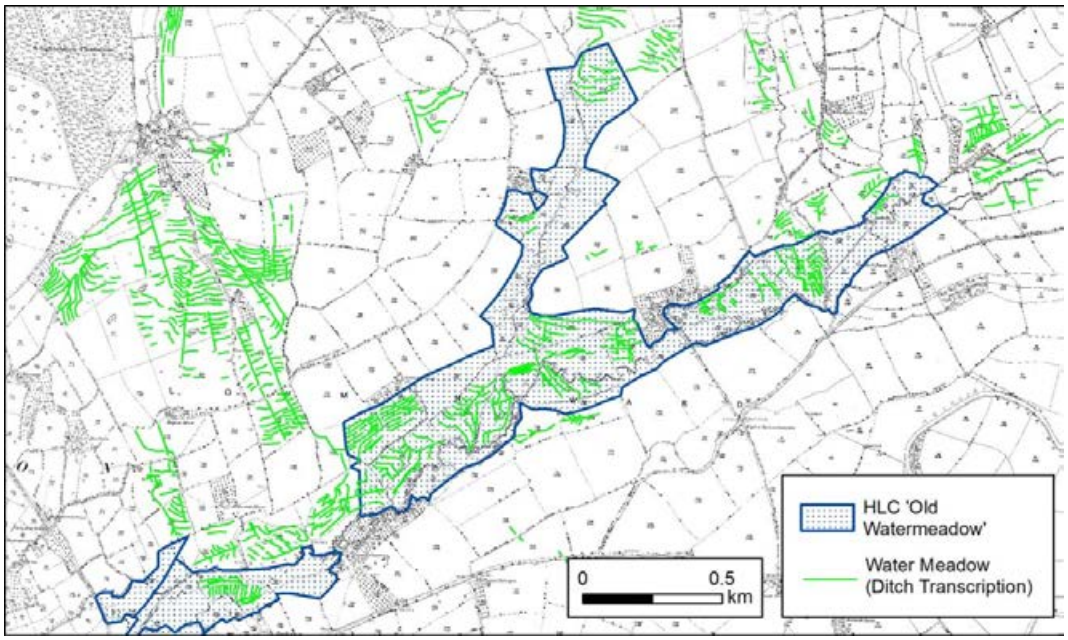


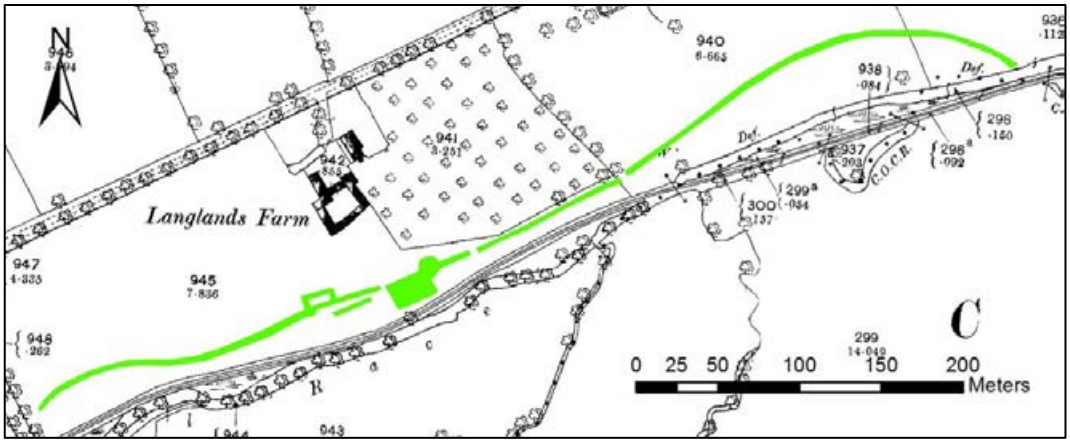
Figure 90. HLC parcels characterised as 'Old Watermeadow' overlain by NMP transcriptions of water meadows, to the east of Tiverton.

6.6.3 Water Mills

In contrast to the plentiful evidence for the agricultural exploitation of water for irrigation on the valley floors and combe sides of the survey area, evidence for industrial use of water-power were limited to a single site. A dark curvilinear

cropmark and earthwork ditch, visible on aerial photographs taken in 1947, was tentatively interpreted as the remains of a mill race associated with the 18th century Selgar's Mill to the south-west, or perhaps to an earlier mill (Figure 91). It appears to have been taken off the watercourse to the north-east, although it is possible that construction of the adjacent Culm Valley Light Railway line resulted in some realignment of watercourses in this area. Two rectangular dark cropmarks adjoining the curvilinear ditch could have formed over the remains of mill building platforms. An oval dark cropmark immediately to the north-east of the latter had very clearly defined edges, maybe formed over an infilled pond.

None of the features were depicted on the available historic mapping, and they probably therefore fell out of use before the mid-19th century, although field boundaries depicted on the Tithe Map partly correspond to the line of the curvilinear ditch. Despite the development of the western part of this feature, including the possible building locations, parts of the ditch on the east appear to survive as substantial earthworks visible on images derived from lidar data captured between 2005 and 2010.



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RAF/CPE/UK/1974 FP 3285 11-APR-1947. Historic England RAF Photography.

Figure 91. Dark cropmarks point to the possible remains of mill buildings or building platforms and a watercourse south-west of Uffculme (MDV108003).

6.7 Industrial

Quarries and extractive pits were very frequently recorded during the project, comprising 13% of all monument types. Extraction pits included those for stone, sand, gravel and marl. These were distributed across the project area, with an apparent focus of scattered farm-scale pits on the mudstone, siltstone and sandstone geology, with a substantial concentration reflecting an established industry located on the western part of the Blackdown Hills AONB (Figure 92).

A very high percentage (81%) of quarries and extractive pits were recorded as earthworks, many from imagery derived from lidar data, and only 13% as levelled earthworks, suggesting that these features had generally not been subject to (or were substantial enough to withstand) the levelling effects of ploughing or deliberate infilling.

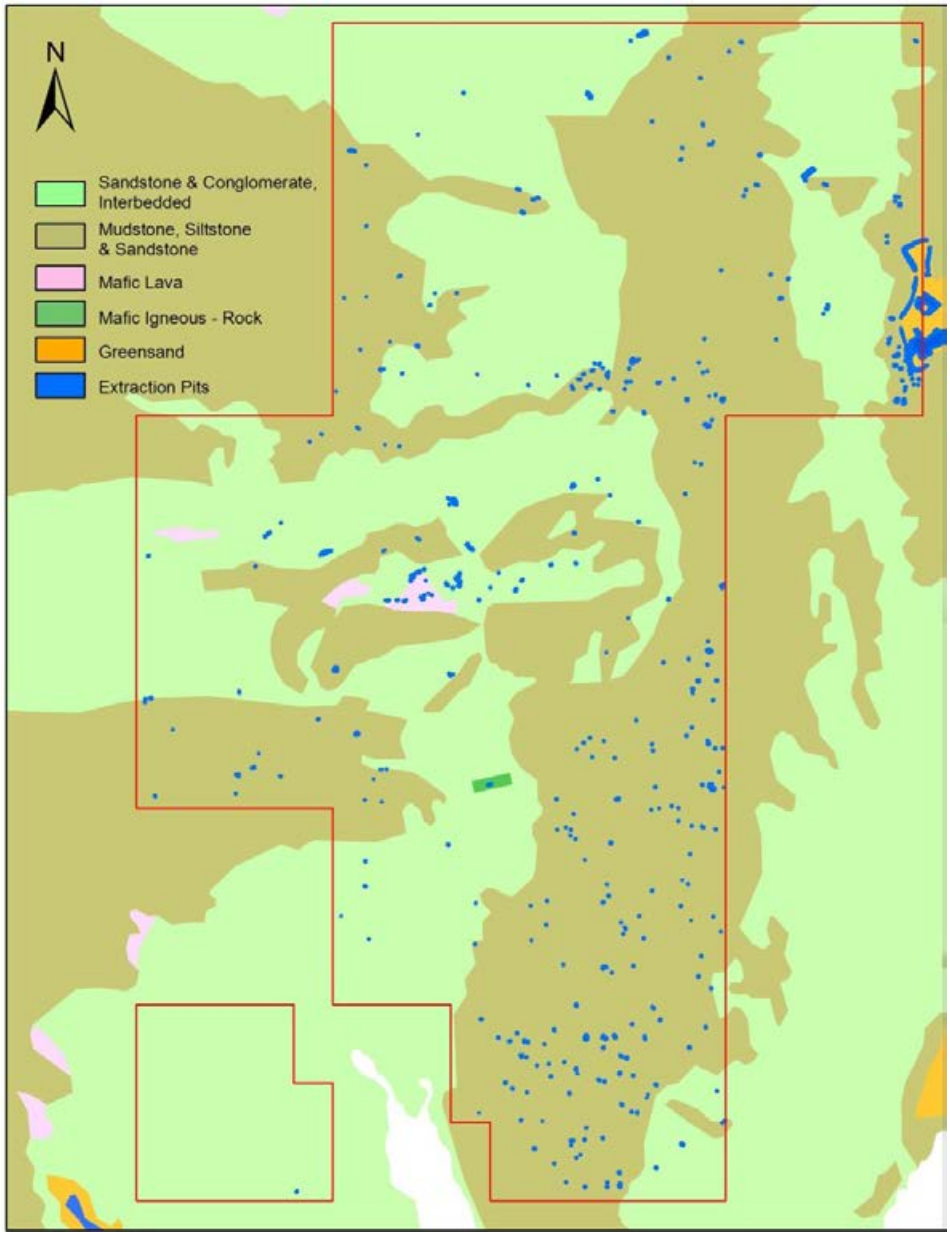


Figure 92. Distribution extraction pits recorded by the project. Concentrations across the mudstone geology, with a denser cluster on the greensand of the Blackdown Hills (top right). Contains British Geological Survey materials © NERC 2015.

In the Blackdown Hills the earthwork remains of two different and significant mining industries were visible on the aerial photographs and lidar-derived images. These were confined to the area of greensand in the east of the project area, where whetstone mining took place and iron ore was extracted from the overlying clay with flints. Both were previously recorded as numerous individual monuments resulting from site investigations and examination of historic maps.

Although the surviving visible extent of the industries had mostly been plotted from DCC's 1940s RAF aerial photograph coverage onto hard copy map overlays held by the HER, this information had not yet been transferred onto the HER GIS. This resulted in the digital spatial data for these sites being generally available on the HER only as point data. NMP has therefore refined and digitally mapped the extent of these industrial areas in the HER for the first time, and the form and size of the individual extractive earthworks have been transcribed where they were clearly enough defined. The resulting transcriptions are useful for appreciating and understanding the density and form of the earthworks, as visible from multiple images.

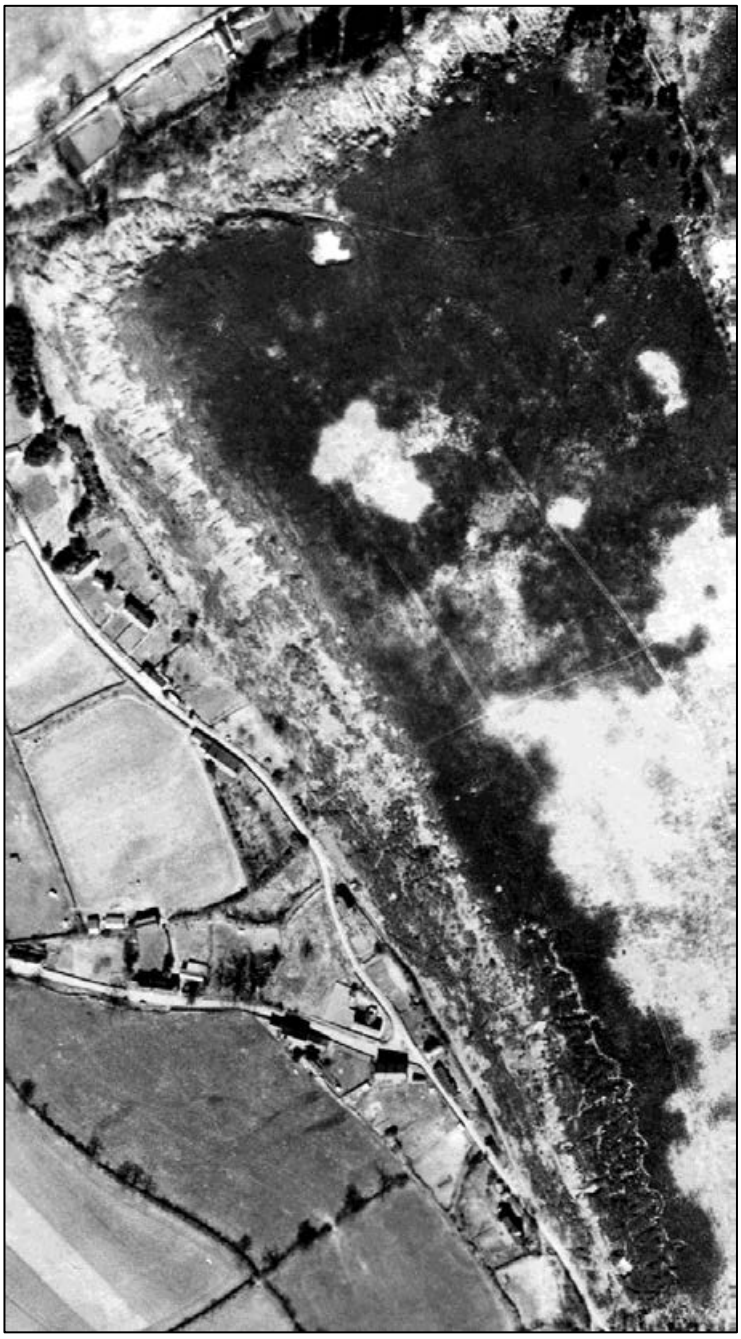
The earthworks extended outside the project area by some distance. Where aerial photographic coverage was adequate, transcriptions were made immediately outside the project area, up to the closest boundary.

6.7.1 Whetstone Mining

Whetstone mining was an important local industry from at least 1755 until 1929, based around and probably originating at Blackborough (then named Ponchydown) (Stanes 1993). The significance of the industry is reflected in the scale of the earthworks: Stanes refers to the earliest known description dating to 1755 of 'some miles' of whetstone workings; by 1825 a white line of spoil was said to be visible from Cullompton (Figure 96). The local industry was well known by the end of the century, employing many families including small children: on 14 June 1878 the complete absence of local school pupils was attributed to their attendance at the *Scythestone Fair* on Waterbeer Street in Exeter.

Numerous large pits on the lower slopes south-west of North Hill are visible on aerial photographs and lidar-derived images from 2010 (Figure 94). Some correspond to 'Old Whetstone Pits' depicted and labelled on the First Edition OS map, and may be sited at springheads where the sandstone meets the clay, the subsequent erosion exposing sandstone suitable for use as whetstones.

In geological layers at higher elevations, localised deposits of fine silica were valued for sharpening tools. The extraction and working of this material, through horizontal tunnels dug in from the hillside (Figure 93), was the cause of the white line of spoil referred to above. The remains of individual galleries were visible, although partially obscured by tree cover, on aerial photographs taken between 1947 and the 1980s as earthwork ditches perpendicular to the contour (Figure 93). The sorties from 1947 are the most useful sources, having the best coverage of this area before scrub cover became too dense.



RAF/CPE/UK/1974 FP 4292 11-APR-1947. Historic England RAF Photography

Figure 93.

Earthwork remains of whetstone mining galleries (MDV110227) around the plateau of Blackborough Common. In the south of the image (bottom right) the pale linear features are interpreted as bare ground over the collapsed galleries below.

In addition to lung diseases, Stanes records that collapse of the galleries resulted in deaths of miners and a high proportion of widows among the mining families. Aerial photographs taken in 1947 might show evidence of such collapse: in Figure 93 an area of up to 40 metres inland from the edge of the slope is covered by pale linear features likely to be bare ground, presumably disturbed by collapses into the underlying galleries.

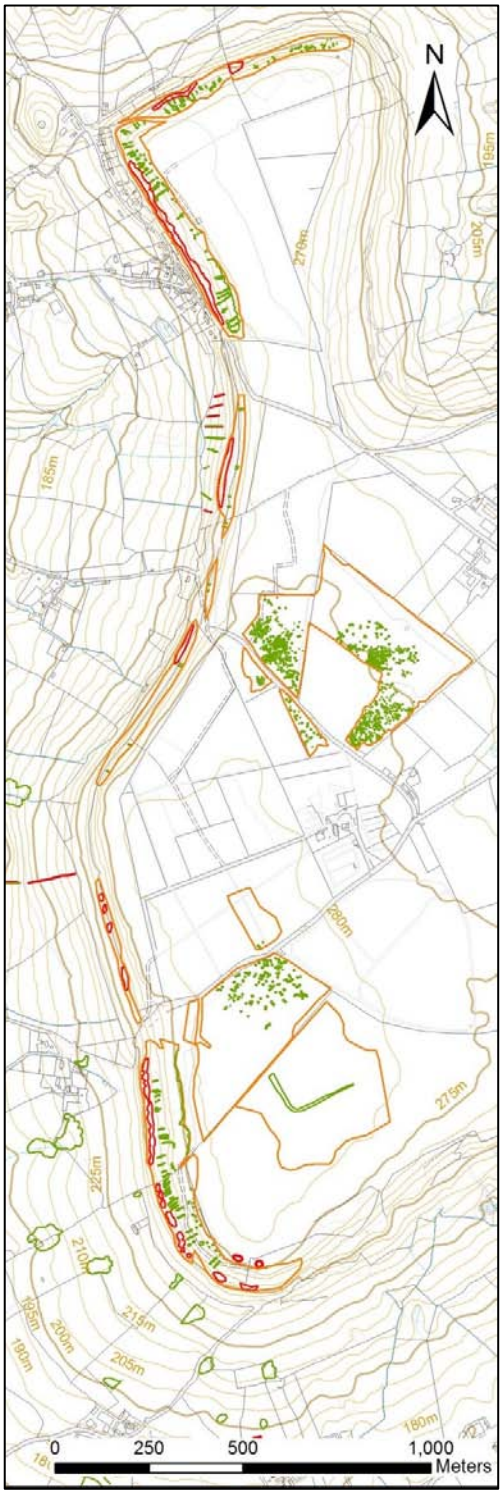
Stanes (op. cit.) records that the galleries started as narrow tunnels of 5-6 feet in width, but became wider over time. This may be reflected in the width of the earthworks visible on the aerial photographs; in the north of the area they are approximately 1.5 to 2 metres wide. However towards the south they are up to

3.5 metres wide, in keeping with Stanes' view that mining began at Ponchydown and spread south-east to Hembury (outside the project area).

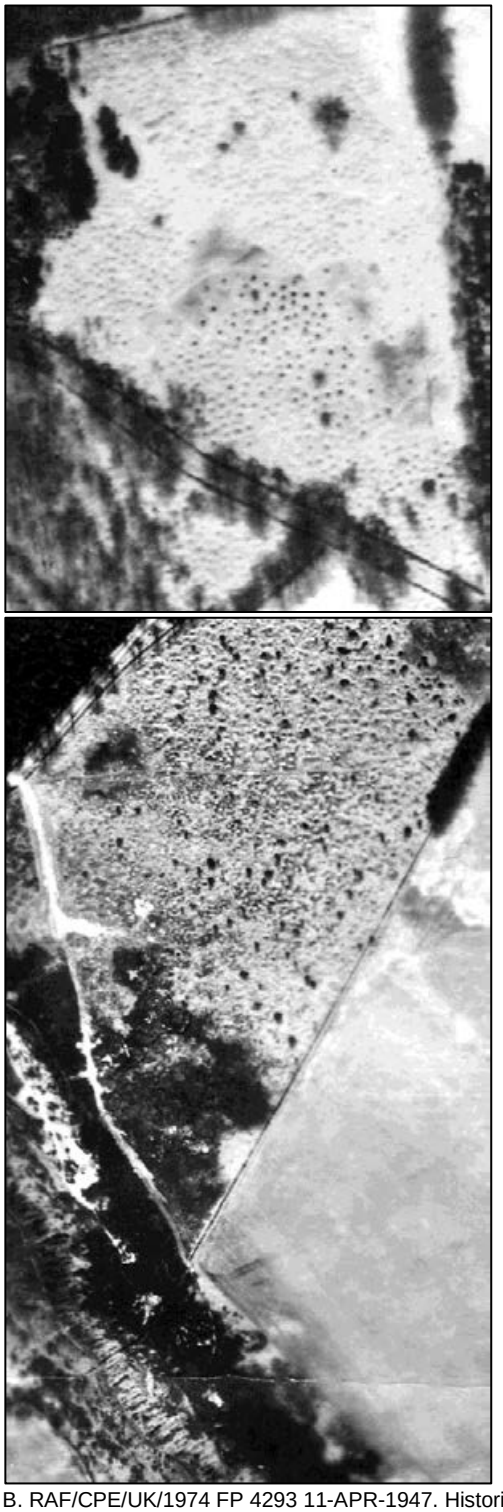
A contemporary account states that the resource became exhausted by 1910 (Stanes 1993, 85), and the trade fully abandoned, after reworking old areas, 19 years later. This later revisiting of galleries is also probably reflected in the form of the visible earthworks, which are very densely packed and often intercutting. The area is now very overgrown and many of the earthworks are inaccessible (Figure 98).

The substantial earthwork terrace resulting from the extraction process (access track, levelled working areas and the top of spoil heaps) is clearly visible on DTM images derived from lidar data captured in 2010 (Figure 95), with linear irregular mounds of spoil downslope. Although the landform was easy to see, detail of the individual galleries was not generally visible on the DTM. However in areas free from dense vegetation cover these could be clearly seen on the DSM images (Figure 95). This confirms that the processing of the lidar data to produce the DTM had removed the finer detail of archaeological features, and that bespoke lidar images might be more helpful.

An earthwork survey targeting areas of good survival identified from the aerial photographs, coupled with systematic archaeological investigations, would help to elucidate the sequence of extraction and re-use of mines. Consideration should be given to offering the best preserved areas statutory protection.

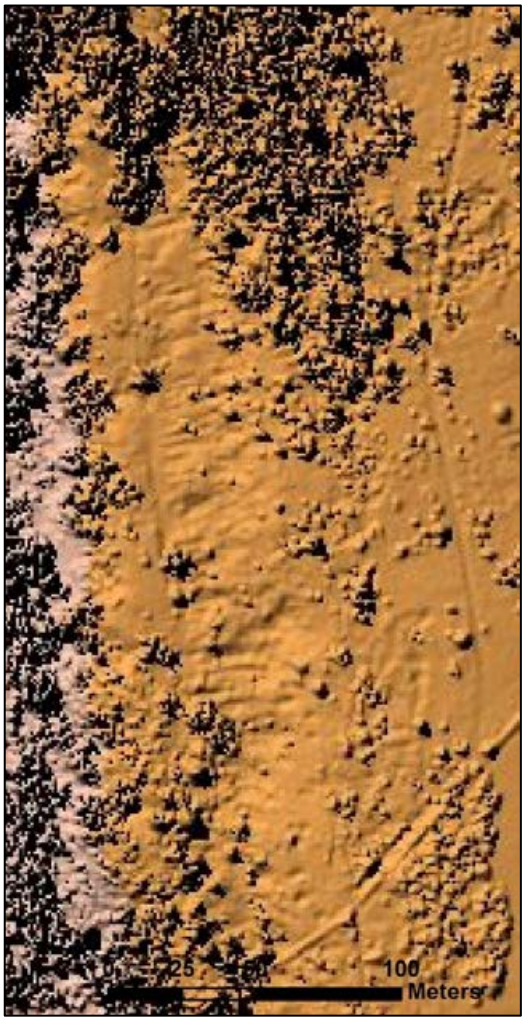


A. Base mapping © Crown Copyright and database right 2015. Ordnance Survey 100019783. NMP transcriptions © Historic England.

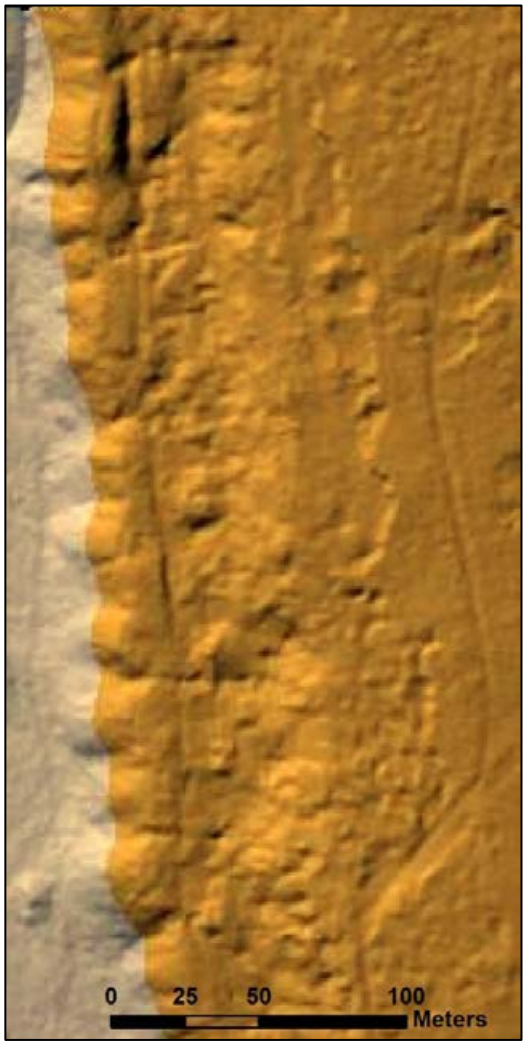


B. RAF/CPE/UK/1974 FP 4293 11-APR-1947. Historic England RAF Photography.

Figure 94. A) Transcription of whetstone mining galleries and spoil (MDV110227) along the south, west and north faces of the scarp around North Hill, Black Down and Blackborough with large pits on lower-lying ground to the west, and dense clusters of small iron ore extraction pits (MDV110229) on the plateau at Black Down (centre) and North Hill in the south (left); B) aerial photographs of iron ore extraction pits on Black Down (top) and North Down (bottom); linear whetstone mining galleries are also visible on the latter, to the south.



LIDAR ST0906 Environment Agency JPEG DSM 05-MAR-2010. Environment Agency copyright 2015. All rights reserved.



LIDAR ST0906 Environment Agency JPEG DTM 05-MAR-2010. Environment Agency copyright 2015. All rights reserved.

Figure 95. Lidar-derived images of whetstone mining galleries and spoil along the scarp west of North Hill (MDV110227). On the DSM (left), the linear galleries are clearly identifiable as earthworks perpendicular to the slope. When processed to create a DTM (right) most of these are no longer distinguishable, although the substantial terrace is clearly visible.

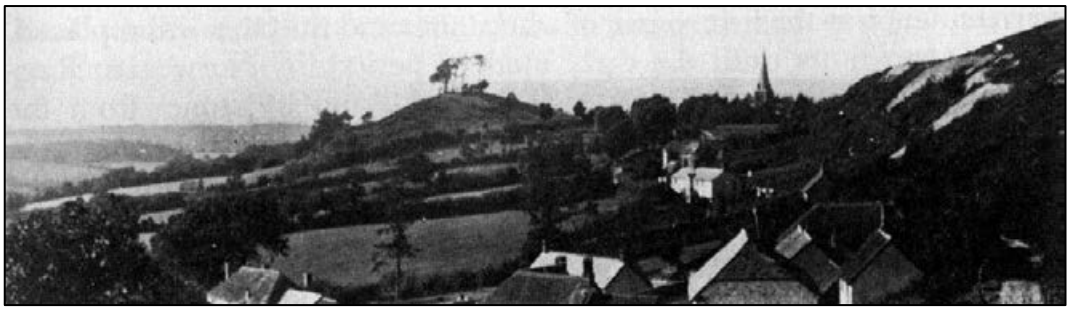


Figure 96. Blackborough in circa 1900, with pale mounds of spoil on the slopes east of the village visible on the top right of the image (reproduced from Stanes 1993 Figure 1, photograph attributed to Gilbert Venn).

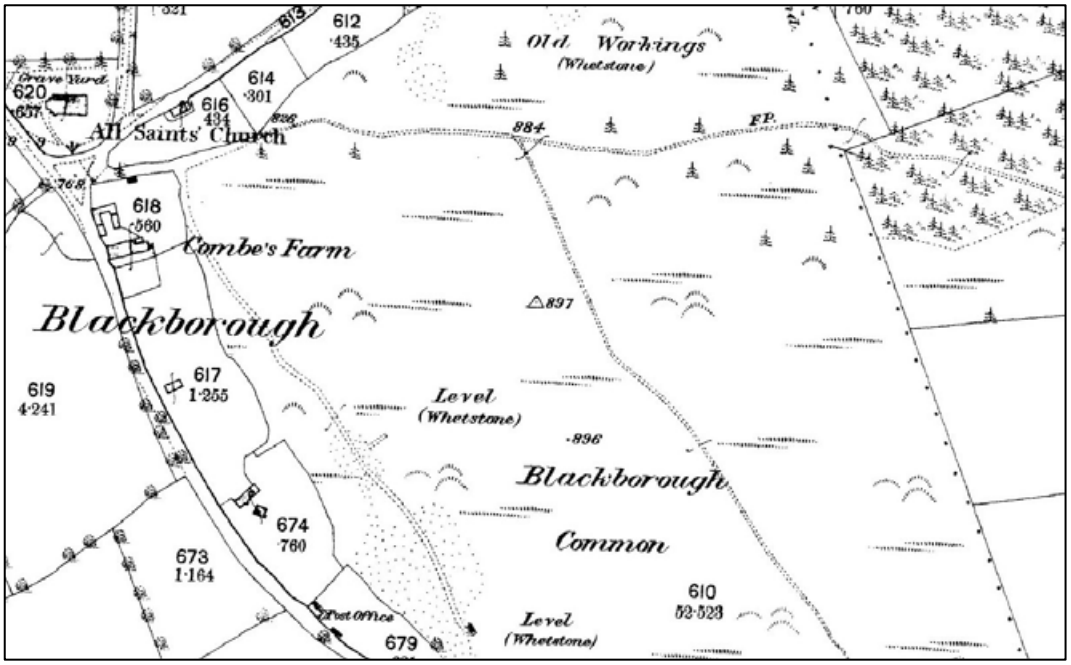


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Figure 97. Whetstone levels and workings on Blackborough Common, marked on the late-19th century mapping.


Photograph: S. Knight, 17th December 2014.

Figure 98. One of the more readily identifiable earthworks in the field on the edge of North Hill, where much of the ground is obscured by bracken and other vegetation cover.

Figure 99. The entrance to a gallery; the whetstone miner is named as John Rookley who in 1929 was the last to retire from this trade.

Reproduced from Stanes 1993 Figure 5, photograph attributed to Derek Rugg.

6.7.2 Opencast Iron Ore Extraction

On the plateau above the whetstone mines, extensive open workings from the extraction of iron ore were visible as earthwork pits and, where land had been levelled, as cropmarks (Figure 94B). Periodic investigations since the 1980s have built up an incomplete picture of this industry; radiocarbon analysis has dated partially levelled pits on North Hill to the Roman or post-Roman/early medieval period (Griffith & Weddell 1996), and excavations indicate that although the surveyed depth of the pits is up to 2.5m, their original depth was 3.5m or greater. This is in keeping with the size and shape of the similar ore mine pits of possible Roman date that form a strong component of the industrial historic character of the High Weald (Stapleton 1986; High Weald AONB, n.d.; Figure 100).

East Sussex County Council. Image © James Cope.

Figure 100. Artist's impression of iron ore extraction pits, from an identification toolkit produced for the Weald Forest Ridge Landscape Partnership Scheme.

Aerial photographic evidence indicates that the best survival is on North Hill, Black Down and Downlands Plantations. Several adjacent photographs had to be transcribed to incorporate the very extensive areas of earthworks and again these were mostly from the 1947 sorties, which had the most comprehensive spatial coverage before dense vegetation obscured the ground surface. In many cases the exact outline of individual pits is not clear and for this reason the extent of the earthworks is also depicted in the transcription. Where individual pits could be distinguished they have been individually transcribed and diameters of 2.5m to 5m are common, although some appeared to measure up to 10m across. They are densely packed and possibly intercutting, obscured by vegetation and tree cover, and presumably silted up with spoil, which has made many of the pit edges difficult to determine. The size of the pits is therefore probably under-represented in the transcriptions. The areas of surviving substantial earthworks are now very overgrown and difficult to access or view clearly.

Extensive areas of irregular cropmarks on the adjacent levelled fields of Black Down were visible on aerial photographs taken in March 1950 (Figure 101). The overall area of earthwork and cropmark pits extends for some distance to the east of the project area; only pit groups where the visible features intersected with the project boundary were transcribed (Figure 94A). Even so, this is likely to be only a proportion of the area once exploited for iron ore, and this site is part of a much wider early iron working industry across the Blackdowns which is the focus of current and recent research.

RAF/541/453 RP 3110 04-MAR-1950. Historic England RAF Photography.

Figure 101. Dense clusters of iron ore extraction pits on the plateau (MDV110229) are visible as earthworks in the field at North Hill on the left of this aerial photograph from 1950, but the ground to the east of this land parcel (Black Down) has been improved and irregular cropmarks have formed over the levelled pits. Linear earthworks of the whetstone mining galleries (MDV110227) are just visible in the south-west (lower left) of the image.

The potential for using lidar data to identify further areas of iron extraction and working in wooded parts of the Blackdowns is high, if utilising appropriate resolution and visualisation techniques. As with the area of whetstone mines, lidar coverage for this part of the Blackdown Hills was unfortunately incomplete, and the pits were most clearly visible on aerial photographs taken in April 1947, before vegetation growth obscured the ground surface. Where lidar data was available, the processing to produce a DTM had removed the fine detail, and only the DSM was suitable for transcription in a few areas where tree growth did not obscure the ground surface (Figure 95). Again, bespoke processing of lidar point cloud data has potential to create very useful images, and to enhance understanding of the impact of forestry operations on the survival of the earthworks.

Given the importance of this industry in the history of the Blackdowns, aerial survey of the wider area including bespoke lidar imagery coupled with selective ground survey, should be undertaken to define the extent and any variation in form of the extractive features. Following this, systematic archaeological investigations from selected sample areas would be necessary to more closely

determine the period and character of exploitation. The remains are of high significance and likely to be worthy of statutory protection, along with other contemporary mining remains in other parts of the Blackdowns.

It is perhaps surprising that good evidence for smelting sites, slag heaps and charcoal burning platforms was not identified during this survey from the available aerial sources. Plentiful resources were available locally within the project area, including fuel for industrial processes such as iron smelting, which could have been sourced from the wooded slopes below the plateau. Clay for the construction of furnaces and water management systems could have been extracted from the interface of the greensand and underlying keuper marl, but most of the pits on the lower slopes are marked as 'Old Whetstone Pits' rather than marl pits on the First Edition OS maps. In the south-east of England evidence from the Weald indicates that slag/rubbish dumps, industrial and residential areas were located in fairly close proximity to iron ore pits in the Roman period (Cleere & Crossley 1985, 73). The relative absence of such associated sites from the record in the Blackdowns could well be partly an artefact of the piecemeal coverage and standard processing of lidar data, coupled with tree cover during the 20th century obscuring the ground surface on aerial photographs. Earthworks may also have been impacted by ground preparation for forestry operations, and before that by working of the whetstone mines.

Two dark well-defined soilmarks were visible on aerial photographs taken in 1989, on lower ground to the north-west near Ashill (MDV108118). These resemble evidence for charcoal burning platforms or hearths seen in other iron working areas, such as the Forest of Dean and Leadon Valley (Small and Stoertz 2006: Priest *et al* 2008). However they are almost 4 kilometres north of the closest iron extraction pits recorded by the survey, on good quality agricultural land that has no evidence of having been planted with coppiced woodland in recent history. Although charcoal burning would have been required for as long as iron extraction and processing took place on the Blackdown Hills, and could therefore be Iron Age in date, the soilmarks more closely resemble the spread of waste material seen at some historic metal working sites. With its connotations of burnt material the place name of Ashill – first recorded in 1249 (Gover *et al* 1932, 538) – could support this interpretation, although it could simply refer to a hill with ash trees. Slag has been recorded in the fields around nearby Northcott (see MDV59022), indicating that metal working has taken place in this area. It is possible that deeper ploughing in the 1980s brought buried remains to the surface, but there is no trace of these features on any other available aerial photographs and any interpretation is therefore tentative. Field walking here could help to clarify the character of these features.

6.7.3 Manganese Mining

The largest manganese ore production industry in England has historically been associated with Devon. Although linked to the glass and pottery industries from the Roman to medieval periods, the use of English sources of manganese for glassmaking is not recorded until the late 18th century and the development of

mines at Upton Pyne, roughly 3 km to the north of Exeter (Russell 1968-70). This industry developed around 1770, with the Upton Pyne area becoming the centre of national production until circa 1800. Quarries in this area would have been ideally situated to take advantage of the transport opportunities offered by the Creedy and Exe Rivers to the west and south, leading directly to Exeter Quay, the principal late 18th to early 19th century shipping port (NAMHO, ND).

Focus later shifted towards Newton Abbot and later still to the Teign Valley. From the mid-19th century Milton Abbot, west of Dartmoor became the largest producer in England until the industry declined in the early 20th century (Cranstone 1993).

Despite its regional importance, the Devonian manganese industry was never significant on a national scale, as was the extraction of other major non-ferrous metals (arsenic, copper, iron, tin and zinc)(Cranstone 1993, 6) and it is likely that the scale of extraction rarely developed beyond the open-cast pit. It was one such pit, a shallow D-shaped exaction circa 40 by 30 metres in size that had been previously recorded as the sole earthwork evidence of the manganese industry near Upton Pyne, on the north-facing combe slopes at Langford (MDV10278). The slight earthwork remains of the pit were suggested on the Upton Pyne Tithe Map (circa 1840-1842) in a plot listed in the apportionments as Langford Orchard, and remains depicted within an orchard on the OS First Edition map (See Figure 102). This pattern of land use conforms to that seen elsewhere in Devon whereby sites of limited agricultural productivity, often due to a previous extractive use, were subsequently reused as orchards in the 19th century (see above, Section 6.4.2), and follows the decline of the Upton Pyne manganese industry post-1800.

Cranstone suggested that Devon's manganese mines had an identity distinct from other major, non-ferrous metal mines and as they occupied readily definable 'sub-areas', the limited archaeological evidence had individual regional importance; their rarity could warrant a degree of heritage protection consideration (op. cit. 1993, 28).

From images derived from lidar data the NMP survey has identified the subtle earthwork remains of two further similarly sized possible pits immediately to the north, on the south-facing slopes of the shallow combe at Langford (See Figure 103). Their proximity to pit MDV10278 could support the interpretation that these were additional former manganese open cast quarries, significantly increasing the evidence of this industry. The small scale of this industry and the limited attention that has been given to the archaeology of manganese mining and its associated infrastructure may mean that these sites represent a significant and previously unrecognised concentration of evidence for early manganese production in England.

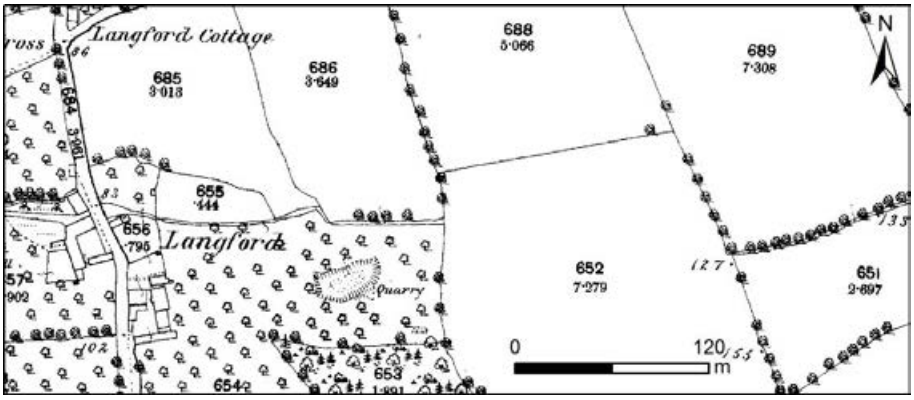

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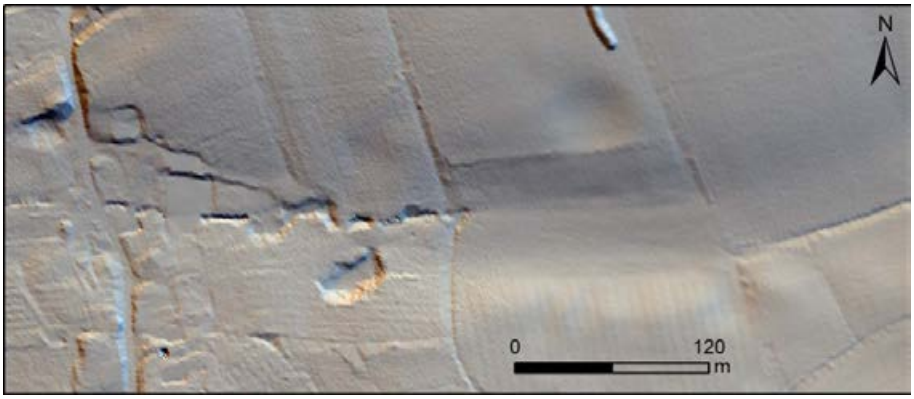
Figure 102. The possible manganese quarry MDV10278 depicted as a relict earthwork within an orchard at Langford.



LIDAR SX9097 Environment Agency DSM 01-JAN-1998 to 30-SEP-2014. Environment Agency copyright 2015. All rights reserved.

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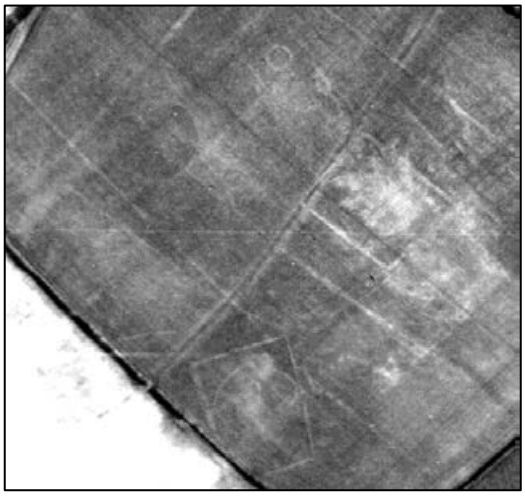
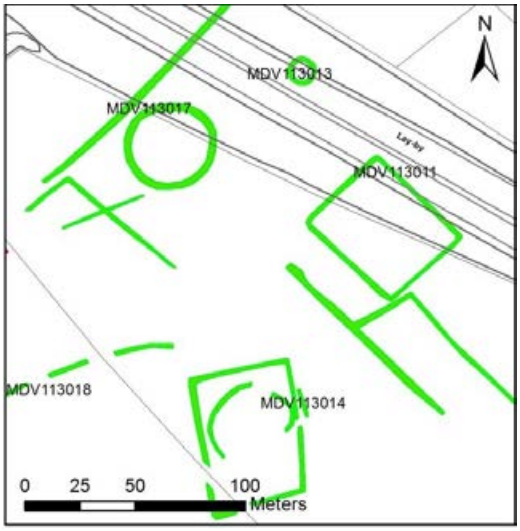
Figure 103. Lidar derived imagery and NMP transcription of quarry MDV10278 and two newly recorded possible former manganese quarry pits, MDV113728 and MDV113729, transcribed in orange.

6.8 Transport: impacts and opportunities

The Exeter area has been transformed by development and transport links in the past century. This is also an area of dense archaeological cropmarks and modern road building and improvement has had a significant impact on the archaeological resource (Figure 104).



RAF/543/2332 2F21 0102-0103 26-Jul-1963 Historic England RAF Photography.

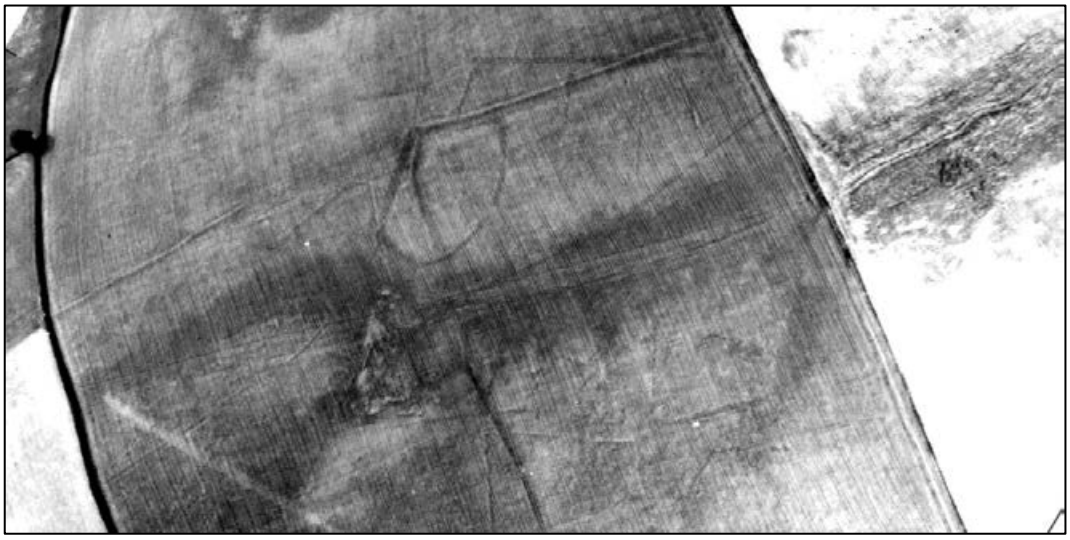


The base map is © Crown Copyright and database right 2015. Ordnance Survey 100019783. NMP transcriptions © Historic England.

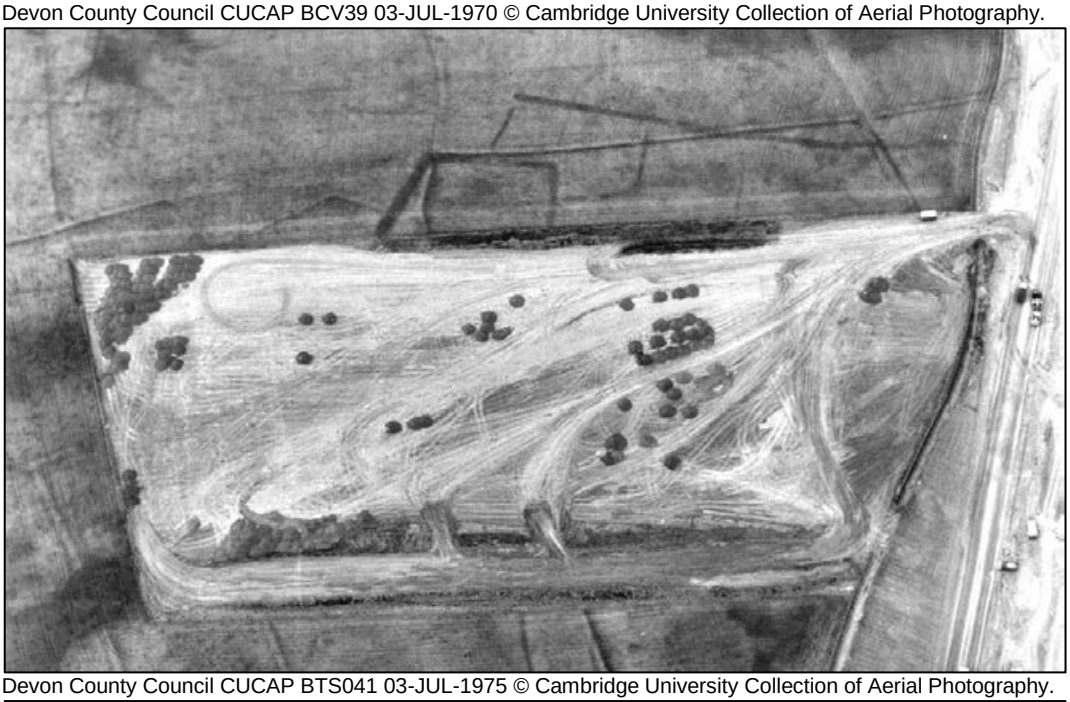
Figure 104. Enclosures along the line of the M5 south of Exeter. The rectilinear enclosure (MDV113011) was partially excavated and dated as Romano-British (Jarvis 1976); the small ring ditch to its north-west (MDV113013) has been completely lost.

Part of the cropmark-rich area south-west of Alphington was impacted during construction of the A30. In addition to the area destroyed by the road cutting, a rectangular area of bare (possibly topsoil stripped) earth with vehicle tracks is visible on aerial photographs taken in 1975 (Figure 105). It is likely that this works compound partly destroyed some of the remains, including the southern part of the fan-shaped enclosure (MDV10023), as no cropmarks are visible within its footprint on subsequent aerial photographs.

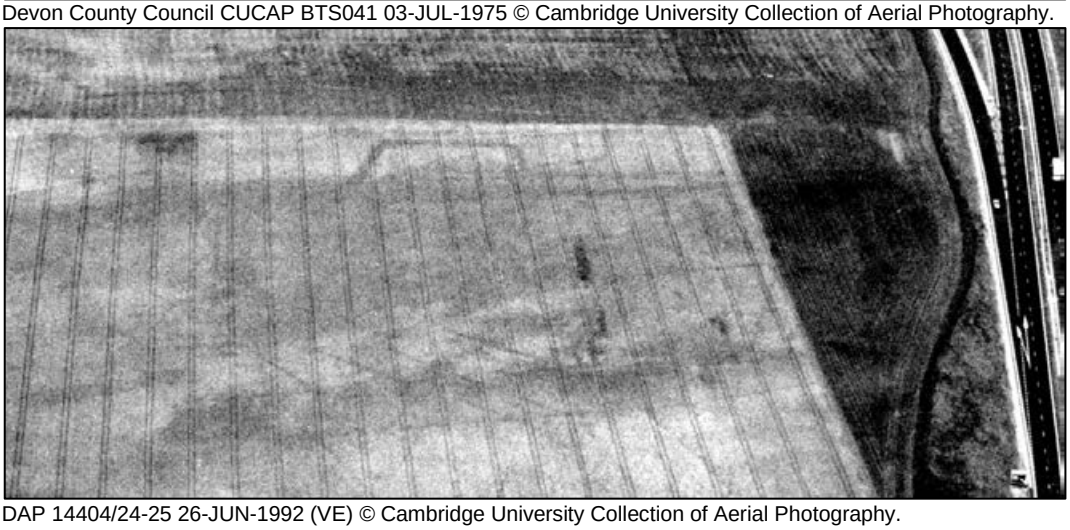
As well as damage, improving transport links has added to the historic assets around the city of Exeter, for example petrol station MDV113163. This multi-level, flat-roofed rectangular structure is visible on aerial photographs taken from 1946 onwards (Figure 106). It is not depicted on the available historic maps pre-dating these photographs, and is 1930s in character including corner windows with multiple panes of glass. A row of small structures adjacent to and parallel with the road, most clearly visible on aerial photographs taken in 1947, were probably petrol pumps, indicating that this was an early, purpose-built filling station. It may have been associated with a programme of 1930s road building in this area (Horner, pers. comm.). It is still in use as a petrol station, and is recommended for assessment for local listing, in line with Britain's motoring heritage becoming better recognised and appreciated nationally (Historic England 2011, 2013 & 2015, Minnis 2012).



Devon County Council CUCAP BCV39 03-JUL-1970 © Cambridge University Collection of Aerial Photography.



Devon County Council CUCAP BTS041 03-JUL-1975 © Cambridge University Collection of Aerial Photography.



DAP 14404/24-25 26-JUN-1992 (VE) © Cambridge University Collection of Aerial Photography.

Figure 105. Specialist oblique aerial photographs demonstrate the impact of road construction on enclosures not just within the footprint of the road but also in adjacent areas (MDV10023).

RAF/CPE/UK/1987 V 5226-5227 12-APR-1947 Historic England RAF Photography.

Figure 106. Early petrol station south-east of Exeter. A row of possible petrol pumps are adjacent to the road. MDV113163.

The breccia in the south of the project area produced a plethora of confusing cropmarks, particularly in the dry years of the mid-1970s. New road cuttings, despite causing difficulties in terms of finding suitable control points for rectification, shed some light on the below-ground geological features that these cropmarks seem to have formed over (Figure 107).

OS/76072 V 011 28-May-1976 © Crown Copyright. Ordnance Survey

Figure 107. Junction 31 of the M5 at Pearce's Hill in 1976, with geological fault lines visible and cross-cutting in the newly cut sides. Dark cropmarks that have formed over these in the fields above the road can therefore be demonstrated to be of natural origin.

6.9 Designed Landscapes and Parkland Features

The English country house and the emergence of designed landscapes and parks originated from the time of Henry VIII's reign and continued up to the last quarter of the 19th century. Many of the smaller, more typical country houses in Devon, however, were constructed from the 16th century onwards, often by successful industrialists.

These were often sited in commanding but impractical situations, their landscape setting chosen for purely for aesthetic considerations, as a display of wealth and

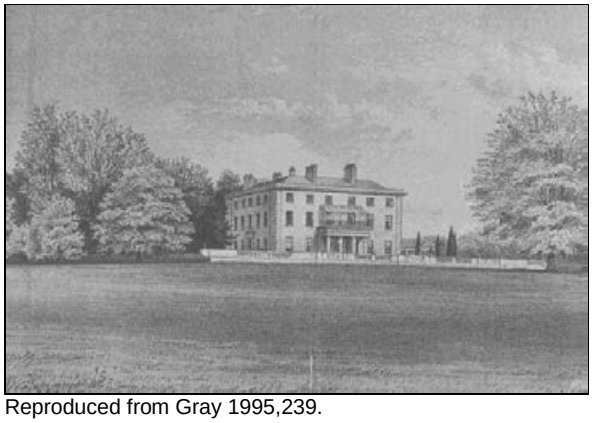
status. The creation of parkland with these houses reached its peak by the 18th century, emparkment becoming more extensive as competition within the landed class mounted.

This also included a shift in emphasis towards the more exotic including the planting of foreign trees which now form a conspicuous feature in many designed landscape. Nationally, the founders of landscape gardening, including William Kent and Lancelot Brown, exerted a strong influence in the design and layout of parks and gardens (Hoskins 1955, 130-142), which clearly infiltrated into Devon's country estates; 'Capability' Brown, for example, is believed to have influenced the designs at Escot, Sharpham and Ugbrooke.

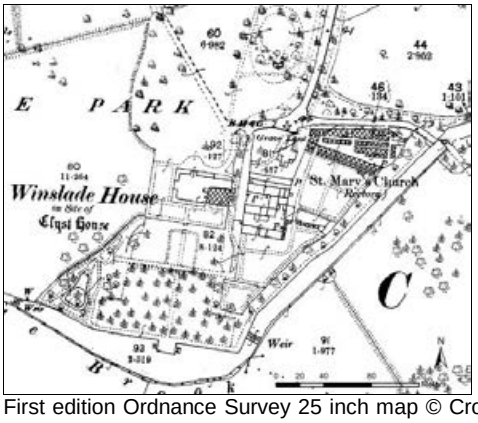
A small number of features associated with parkland and the designed landscape were identified within the project area. Four Registered Parks or Gardens located entirely or partly within the project area are recorded, including Bridwell, Killerton House, Knightshayes and Rockbeare Manor. Many more examples of parkland and evidence of designed landscapes associated with country houses are, however, evidenced by their depiction on the OS First Edition map.

6.9.1 Winslade Park

One such example is Winslade House (Figure 108), a late 18th century house constructed over 16th century remains and built for a wealthy East India merchant. The house was described as having beautiful grounds created by 'some of the cleverest and most artistic landscape gardeners in the Kingdom' (Gray 1995, 239), with large numbers of specimen trees, garden terraces, ornamental lake, Italian garden and woodland walks (*ibid* 239-240).



Reproduced from Gray 1995,239.



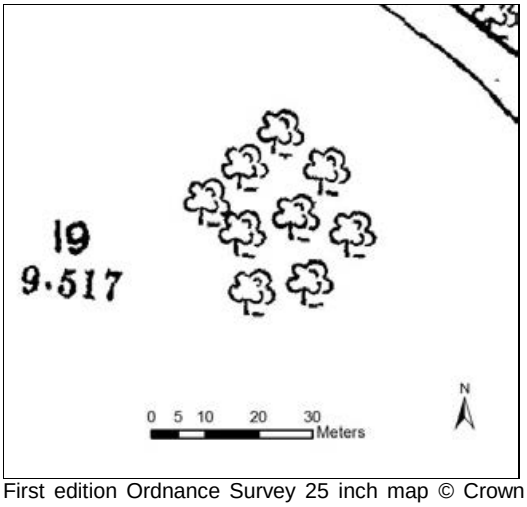
First edition Ordnance Survey 25 inch map © Crown copyright and Landmark Information Group Ltd.

Figure 108. Illustration of Winslade House (Left) and as depicted on the OS First Edition map (Right).

Within Winslade Park, to the southwest of the house, two earthwork features are visible on aerial photographs of 1946 onwards. The larger of these (MDV113344) is visible as an oval, flat-topped mound or earthwork platform which measures approximately 36m in length by 31m in width. The mound corresponded to a circular arrangement of trees depicted on the First Edition OS map (Figure 109). The earthwork mound, which remained visible on Lidar-derived images of 1998-

2007, was probably an ornamental parkland feature on which trees were established.

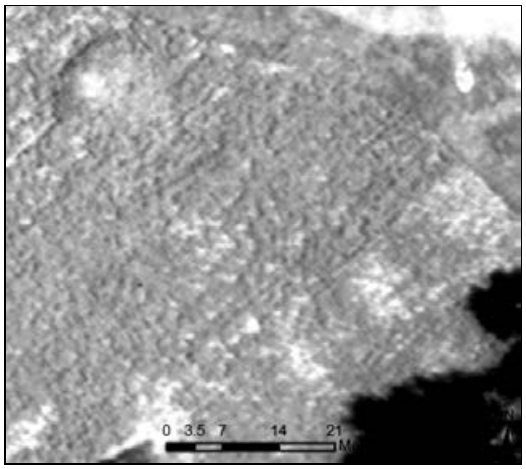
LIDAR SX9790 Environment Agency JPEG DSM 03-MAY-1998 - APR-2007. Environment Agency copyright 2015. All rights reserved.



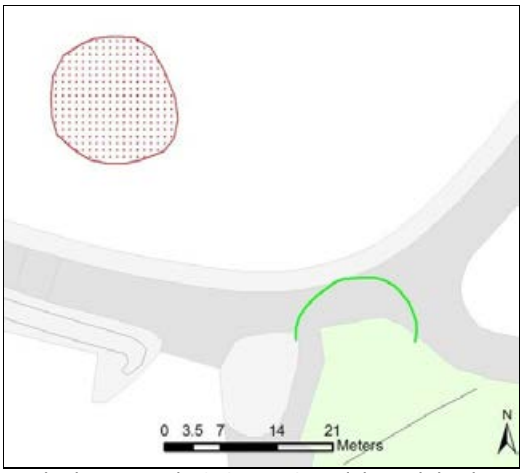
First edition Ordnance Survey 25 inch map © Crown copyright and Landmark Information Group Ltd.

Figure 109. Possible tree mound (MDV113344) in Winslade Park, visible on Lidar-derived images of 1998-2007 (Left), with corresponding area of trees depicted on the First Edition OS map (Right).

The second of these (MDV113346), to the west of the house and only visible on aerial photographs of 1955 is similar in nature, albeit smaller, and may also represent the remains of a tree mound. A partial circular cropmark ditch (MDV113345) recorded to the immediate southeast, although of uncertain origin, could comprise another associated parkland feature (Figure 110).



A. RAF/540/1649 F22 080-81 25-JUN-1955. Historic England RAF Photography.

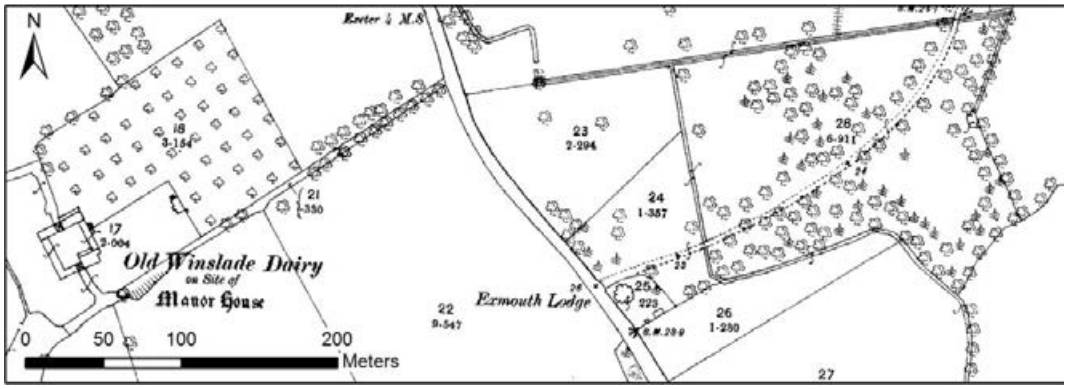


B. The base map is © Crown Copyright and database right 2015. Ordnance Survey 100019783. NMP transcriptions © Historic England.

Figure 110. RAF aerial photograph of 1955 (Left) and transcription (Right) showing earthwork MDV113346 (top left) and cropmark MDV113345 (bottom right).

More recent changes to the designed landscape of Winslade Park can be tracked through the aerial images. The established tree planting along the drive depicted south of Winslade House on the First Edition OS map was replaced by a double

row of young trees between 1946 and 1955 (Figure 111). This could perhaps be a result of the loss of a number of veteran trees; some gaps in the avenue are apparent on the 1946 photography. Fashion might also have played a role; a lime avenue at Poltimore House (see below) was also replaced in 1956, with poplars (Poltimore House Trust 2004). Continuity of use in this part of the historic landscape however has not endured; the area was completely planted with trees after 1999, its open parkland character consequently completely altered.



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Devon County Council RAF/CPE/UK/1974 4456 11-APR-1947. Devon County Council RAF Photography.


RAF/540/1649 F22 0032-0033 25-JUN-1955 Historic England RAF Photography.

Figure 111. New trees planted along the line of a drive leading to Winslade Park in 1955. These replaced mature standards after 1946, along the alignment depicted on the First Edition OS map.

6.9.2 Poltimore House and Park

A seat of the Bampfylde family from the 13th century, Poltimore House was set within formal gardens of probable 17th century date, and a larger deer park which was recorded at least a century earlier (Clark and Richardson 1999). By the early 20th century much of the deer park had been sold or turned over to arable agriculture, and field survey carried out as part the Monument Protection Programme found no surviving evidence of the deer park pale (Salvatore, 1999).

The first attempt at true parkland landscaping at Poltimore is recorded from 1840, when George Bampfylde, first Baron Poltimore, commissioned James Veitch, son of the famous landscape gardener John Veitch, to plant woodland on the higher ground to the immediate north and west of the mansion. This attempt to emphasise the only slightly higher ground in the vicinity of the house may have been in part a response to Swete's criticism in 1800 of the parkland at Poltimore as being 'unvarying flat, having few, if any circumstances of local or adventitious beauty to recommend it' (Clark and Richardson, 1999).

Although the Poltimore arboretum contains a variety of oaks and exotic tree species, most of the trees planted at Poltimore House were conifers. Veitch's use of coniferous planting to add height and interest to the landscape around Poltimore House might have been a continuation of a process begun a few years earlier, when several ornamental plantations were established on Lord Poltimore's land on a high ridge of land adjacent to Huxham Brake, roughly 2km to the west of the Park. Five earthwork banks defining triangular, circular and semi-circular enclosures were recorded by the survey, which corresponded to plantations depicted on the 1837 Tithe map for Huxham (see Figure 112). These plantations would probably have been clearly visible on the horizon from the house, framed by the contours of the stream that runs through the park.

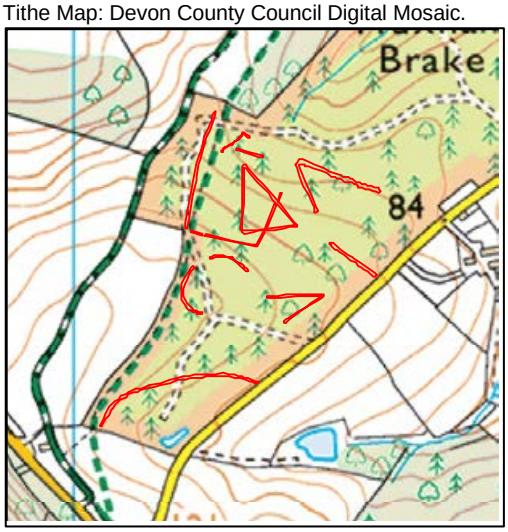
Further relict banks were probably the remains of field boundaries and additional enclosures of earlier, possibly post-medieval to 19th century date, listed on the Tithe Apportionments as brakes or gardens, as was the land between the plantations. The OS First Edition 25 inch map indicates that by the 1880s the coniferous planting had been extended beyond the enclosures, subsuming the earlier ornamental planting and the surrounding brakes and gardens into wider, and presumably economically more viable plantations.

6.9.1 Woodbury Common

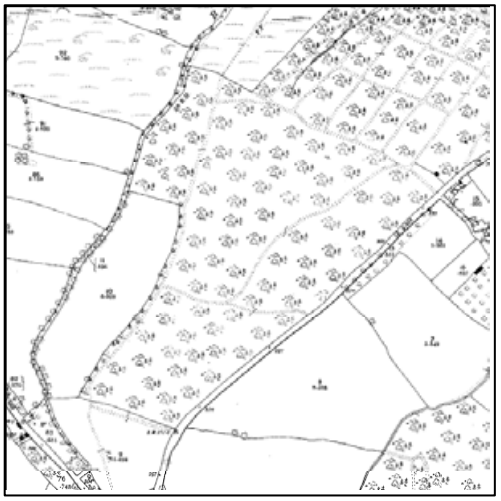
Possible evidence of grander-scale landscaping works is visible on Woodbury Common, approximately 2km to the southeast of Woodbury, from the Four Firs junction eastwards along the Yettington road, within land formerly belonging to John Rolle (1750-1842). John Rolle was the largest landowner in Devon and a highly influential and wealthy individual who instigated and financed numerous large scale engineering projects across the County, including the Rolle Canal and Rolle Quay in North Devon (Hughes 2006; Figure 113).

Tithe Map: Devon County Council Digital Mosaic.

NMR FSL/6412 V 1080 07-FEB-1964.



Base mapping © Crown Copyright and database right 2015. Ordnance Survey 100019783. NMP transcriptions © Historic England.



First edition Ordnance Survey 25 inch map © Crown copyright and Landmark Information Group Ltd.

Figure 112. Earthwork banks define geometrically shaped ornamental plantations of probable mid-19th century date on the western edge of Poltimore Park.

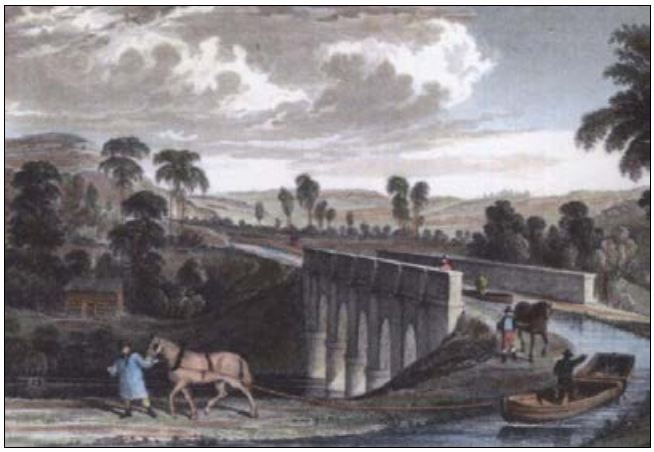
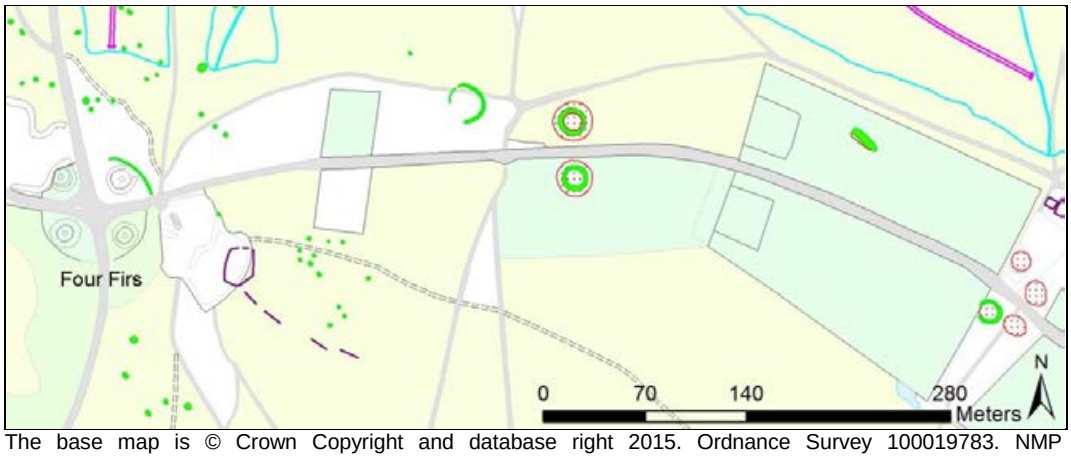


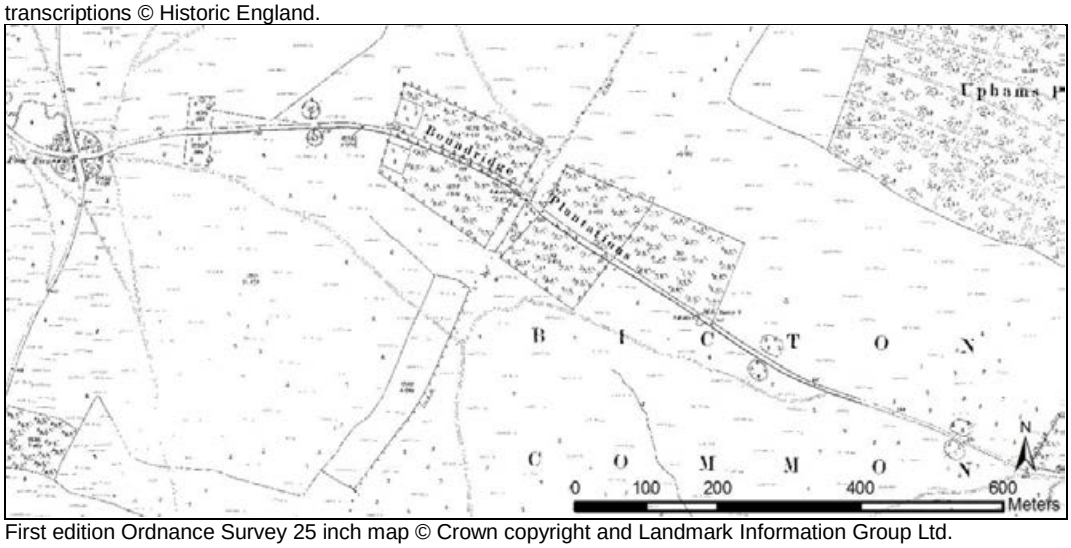
Figure 113. Portrait of John Rolle (Left) and engraving of circa 1830 entitled 'Rolle Canal and Rolle Aqueduct (Right), in Torrington.

A series of prominent circular earthwork features up to 27m in diameter are visible arranged in pairs or groups of four either side of the Yettington road and at

the Four Firs junction (Figure 114). These earthworks, six of which are Scheduled Monuments, are depicted on the First Edition OS map, although the earlier tithe map is incomplete here, but are only intermittingly visible on aerial photographs of 1946 onwards owing to variable tree and vegetation cover. The better-defined and more elaborate of these (SY 0345 8644) are visible as a central circular mound enclosed by an earthwork ditch and outer berm, whilst those to the east, possibly less well preserved, are largely visible as individual mounds. The four mounds to the west, at Four Firs intersection, appear to be also surrounded by quadrants of a circular enclosure partly visible as an earthwork ditch. Evidence of additional former earthworks is also visible and suggests that these earthwork features may have once been more numerous. For example, a previously unrecorded partial ring ditch (MDV112313) visible on aerial photographs of 1946 to the west of the central pair of earthworks, is tentatively interpreted as evidence that a similar arrangement of four mounds may have been constructed here (Figure 114 ; Figure 115). Similarly, further to the southeast, historic maps from the Parish Tithe Map onwards depict two pairs of circular wooded copses positioned either side of the road which bear close similarity to those approximately 350m to the northwest (Figure 114, Bottom).



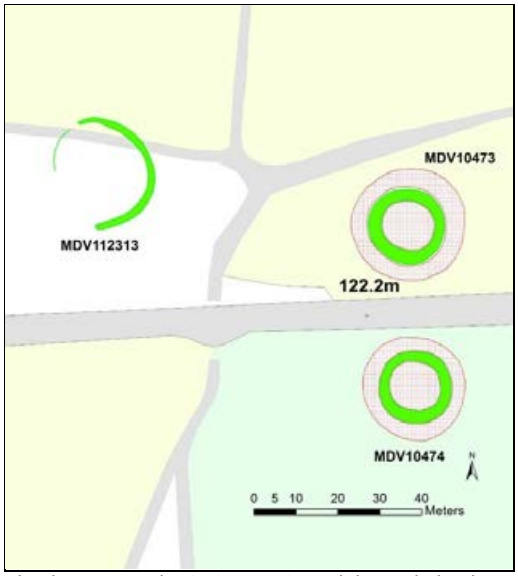
The base map is © Crown Copyright and database right 2015. Ordnance Survey 100019783. NMP transcriptions © Historic England.



First edition Ordnance Survey 25 inch map © Crown copyright and Landmark Information Group Ltd.

Figure 114. Ordnance Survey MasterMap base map and NMP transcriptions of the earthwork mounds (Top) and OS First Edition 25 inch map showing possible additional pairs of circular features further along the road to the southeast (Bottom).

Next Perspectives PGA Imagery SY0386 22-MAY-2010. © Bluesky International/Getmapping PLC.



The base map is © Crown Copyright and database right 2015. Ordnance Survey 100019783. NMP transcriptions © Historic England.

Figure 115. Earthwork mounds MDV10473 and MDV10474 as visible on aerial images of 2010 (Left) and the NMP transcription of a cropmark of possible previously unrecorded levelled mound (MDV112313) (Right).

Photograph: Stephanie Knight 23rd October 2015.

Figure 116. Earthwork mound at the Four Firs junction (MDV10499); a Bronze Age barrow or 18th to 19th century landscaping?

The date and purpose of these earthworks is, however, largely uncertain and they have been the subject of a wide range of interpretations, from prehistoric burial mounds, to defensive mounds erected by General Simcoe as part of the defence of the Exe Estuary against the threat of invasion from Napoleonic forces, or as follies commissioned by Lord Rolle (Grinsell 1983, 45). Some of the earthworks here may have originated as prehistoric burial mounds and been later modified; excavation of one of the mounds in the 1930s is purported to have produced evidence for a cremation (Exeter Archaeology 2007). However, it seems unlikely that all were of prehistoric date, particularly given their geometric

layout and positioning along the road. Perhaps for these reasons, they are also unlikely to represent Napoleonic era defences, although the more elaborate of the earthworks are similar to other such broadly contemporary defensive earthworks elsewhere in the country, such as at Western Heights in Dover (Figure 117).

Figure 117. Pre-Napoleonic earthworks, Western Heights, Dover, comprising central mound, with outer ditch and berm . Reproduced by permission of John Latter © All Rights Reserved.

Perhaps more likely is they are at least *in part* the result of 18th to 19th century landscaping works, instigated by Lord Rolle. It is possible that these features were deliberately established along the road here to create a highly visible avenue of earthwork monuments, capped with trees. Such monuments may have served to reaffirm the extent of Lord Rolle's estate and emphasise the extent of his personal influence; or perhaps they were simply constructed to show continuity with the past, referencing the prehistoric barrows that survive across Woodbury and Bicton Commons. Although the earthworks remain as substantial features in the landscape, they are less visible, being largely obscured by impenetrable gorse and heathland grasses or covered in conifer trees. A site inspection carried out in October 2015 showed visible evidence of damage to a number of the earthworks caused by burrowing animals or walkers. Interestingly, these monuments share characteristics with three earthworks located outside of the project area, approximately 10km to the northeast, within Cleeve's Plantation, to the southeast of Ottery St. Mary (Figure 118). These are likewise located parallel to a trackway or road, although each of the three are quite different in shape. The most northern of the three comprises a sub-circular mound with outer ditch and berm and is identical to those recorded on the Yettington Road; the central earthwork is broadly square in shape with accentuated corners with outer ditch and bank, and the southern of the three comprises a star-shaped mound with outer ditch and bank. Whilst the interpretation of these earthworks is also

uncertain, the similarities to those recorded as part of this survey on the Yettington road are marked and it seems conceivable that they exercised a comparable function and could also be attributed to Lord Rolle.

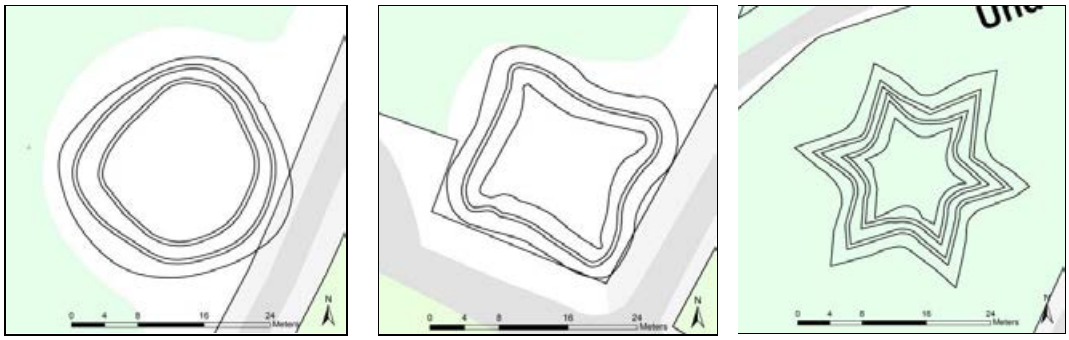
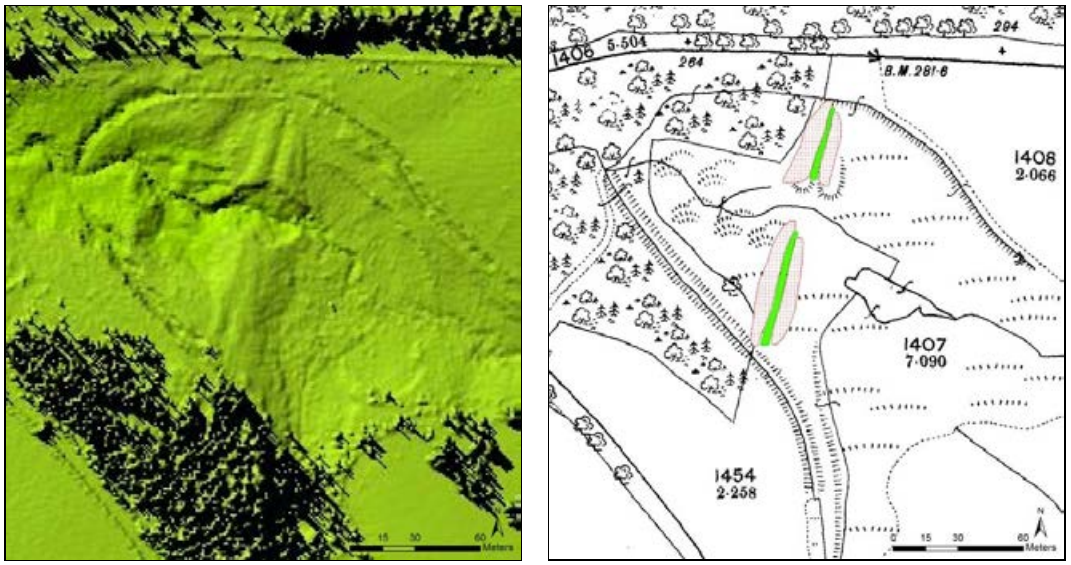


Figure 118. Earthwork mounds to the southeast of Ottery St. Mary. The base map is © Crown Copyright and database right 2015. Ordnance Survey 100019783

Further earthworks within Lord Rolle's estate are visible approximately 900m to the west of Four Firs, within Woodbury Wood. These previously unrecorded features (MDV112325) are visible on aerial photographs of 1946 and on lidar-derived images of 2005. They comprise two sets of banked features located on each side of, and spanning, a moderately sloping combe bisected by a stream (Figure 119). A slight linear earthwork cutting is visible along the length of both. They are partly depicted on the First Edition OS map, along with other earthworks to the north and south that are recorded on the HER as an ornamental watercourse. The earthworks are likely to be of 18th – 19th century date and are possibly the result of improvements instigated by Lord Rolle, such as a possible aqueduct associated with the ornamental watercourse, or perhaps a bridge providing access across the combe, either as part of a designed landscape or simply for more utilitarian, agricultural use.



LIDAR SY0286 Environment Agency JPEG DSM 06-DEC-2005. Environment Agency copyright 2015. All rights reserved.

First edition Ordnance Survey 25 inch map © Crown copyright and Landmark Information Group Ltd. NMP transcriptions © Historic England.

Figure 119. Earthwork bank feature MDV112325 visible on lidar-derived images (Left). NMP transcription overlain on the First Edition OS map (Right), depicting a possibly ornamental watercourse.

6.9.2 Exvale Psychiatric Hospital

A planned landscape of more modest scale is that of Exvale Psychiatric Hospital at Exminster designed by Charles Fowler. This was constructed as the 'County Lunatic Asylum' during the 1840s. As well as the name reflecting changing attitudes to mental health (it was known as Emxinster Hospital by the mid-20th century), the grounds were also altered throughout its use as an institution. The gardens were designed to be therapeutic and used for exercise and employment including work on the farm (Wellcome Trust *et al* 2012). Between the First and Second Edition OS maps, terraces were constructed to the south-west of the main radial building and aerial photographs show standard trees aligned along these terraces (MDV113186). North-east of the hospital too aerial evidence shows tree planting close to the burial ground; these are smaller and of uniform size and shape, and could be fruit trees. It is not clear whether these are associated with the hospital, maybe used to aid recovery, or part of the adjacent farm (Figure 120).

The hospital gardens are recorded on the Devon Gardens Trust (DGT) register as a Victorian Institutional Landscape and recommended for inclusion in the Register of Historic Parks and Gardens of special historic interest in England as a Grade II item (DGT 2015). Although the hospital itself has been converted to apartments, the aerial archaeological resource could be consulted to aid future sympathetic management of the grounds.

RAF 58/3858/PSFO-0073 03-OCT-1960 Historic England RAF Photography.

Figure 120. The designed landscape around Exvale Hospital MDV106034, looking north-east. The terraces are partially obscured, centre foreground (MDV113186) with the farm to the right; the possible orchard is top centre and the tree avenue along the drive extends to top right of the image.

7 Heritage Protection/Monument Management

As the survey progressed a list was maintained of sites of potential national significance or monuments previously recorded as of national significance that might benefit from further attention. The full list with interpreters' comments is included as a table in Appendix A. It includes:

- Previously unrecorded sites that warrant assessment for heritage protection consideration, either individually or due to group value.
- Previously recorded sites assessed by the NMP survey and considered be of potentially national significance and worthy of assessment for heritage protection consideration;
- Scheduled monuments where the NMP survey results warrant reassessment and possible amendment of the scheduled area;

The table includes only monuments visible on aerial photographs or other remotely sensed data considered by the survey. The suggested sites have not been not been fully assessed against the current criteria for scheduling.

8 Recommendations

8.1 Recommendations for further work

The DAP aerial reconnaissance programme has identified a significant number of previously unrecorded monuments within the survey over recent decades, particularly from cropmark evidence of buried ditched features. The recognition of additional sites from vertical aerial photography, particularly RAF, BKS, MAL and OS sorties, illustrates the potential for further discoveries to be made. It is therefore recommended that a programme of aerial reconnaissance continue, particularly during the summer months.

It is also recommended that a programme of aerial reconnaissance be extended onto those areas not traditionally seen as productive for the identification and recording of buried archaeological features visible as cropmarks, i.e. those areas on the less well drained mudstone geologies (see Section 6.3.3). The survey has had some slight success in extending the known distribution of possible Bronze Age Barrows into this zone, and aerial reconnaissance in optimum conditions might shed further light on the distribution of this monument type.

A list of monuments where further work would be particularly useful in enhancing our knowledge to aid in local and national decision making was maintained. For instance, nationally for heritage protection; or locally for targeting of aerial reconnaissance, oral history projects, targeting geophysical survey to inform land management considerations, etc. Monuments singled out for further work include:

- Monuments where the broad character or date cannot be reasonably inferred from the available AP evidence;
- Monuments where further work would help to inform heritage protection considerations e.g. to clarify survival or extent;
- Monuments of exceptional rarity or local significance.

A list of these sites is reproduced as a table in Appendix B. Inclusion on the list does not indicate that the features are necessarily under threat but this may be a factor in their inclusion on the list. Nor does it imply that resources are available for the suggested work. Rather than indicating all types of work that could be employed to better define the monument, the list tabulates the minimum archaeological work that, in the survey teams professional judgement, is considered necessary to address the above points,.

9 Conclusions and Summary

The East and Mid-Devon River Catchments National Mapping Programme has increased the HER record count for the Phase 1 and phase 2 survey areas by up to 45%.

The survey has enhanced our understanding of the historic environment in areas subject to potential infrastructure and economic development, and environmental conservation and agricultural pressures, as outlined in the project design (Hegarty 2015). To conclude, by fulfilling the objectives set out in Section 3.3, the survey can be seen to have met the aims outlined in Section 3.2.

The Phase 1 results have enhanced the record as anticipated in the project design; outcomes can be summarised under seven main themes:

1. Ceremonial and Funerary
2. Settlement and Agriculture
3. Military Defence and Fortification
4. Water Supply and Drainage
5. Industrial
6. Transport
7. Designed Landscapes

Notable discoveries and improvements to the breadth of knowledge have been made for each theme.

In terms of rarity and national significance, arguably the greatest impact of the survey has been made under Theme 1, with the identification and recording of a previously unrecognised possible Neolithic henge monument at Blundells School, Tiverton. Geophysical survey is planned that will hopefully shed further light on the nature of this monument. Also of national significance were two previously unrecorded possible Neolithic long mounds or mortuary enclosures and the inclusion of additional earthwork mounds into the previously well-studied Bronze Age cemeteries at Upton Pyne and the identification of a ‘lost’ barrow at Kentismore.

For Theme 2, the survey has enhanced the known resource for the later prehistoric to Roman settlement pattern by increasing the number of recorded enclosure monuments by over a third.

Whilst the survey results have not dramatically changed perceptions of later prehistoric to Roman settlement in the River catchments under examination - the

distribution has been only slightly extended beyond the better drained geologies - they reinforce the pattern of dense of settlement in these zones, particularly in the river confluences, and potentially support the assertion that enclosures without associated field patterns were the dominant enclosure type

For post-Roman periods, beyond small scale changes associated with parkland clearances, the persistent medieval antecedents of the Devonian landscape have restricted aerial survey's potential in identifying settlement change. Nonetheless, the survey has been very successful in enhancing the results of HLC and identifying zones of additional historic field boundary loss, landscape scale changes with implications for both the natural and historic environment. Similarly, beyond the characterisation of plots as former orchards by HLC, Devon's previously nationally significant cider industry was under represented on the HER prior to the survey. The earthwork remains of probably post-medieval to early 20th century orchards were the most numerous monument type to be recorded by the survey. Many were not depicted on the OS first edition maps, the results further enhancing the distribution indicated through HLC.

Sites of a military or defensive character frequently form one of the more significant themes to emerge from NMP surveys. In contrast, Theme 3, Military Defence and Fortification was a minor theme in this survey. The use of lidar data permitted some significant amendments to be made to the record for a small number of defensive sites of prehistoric and Roman date. However, military sites of 20th century date comprised less than 10% of the total with only bomb craters falling within the count of top 30 monument types recorded. Nonetheless, several previously unrecorded sites were observed and valuable detail was added to nationally important sites.

Farm-scale water management emerged as a major theme in previous NMP surveys in Devon (Hegarty with Wilson-North 2014; Knight and Hegarty 2013). True to form, catchwork water meadows were the third most numerous monument type to be recorded in this survey. However, perhaps the most significant element of Theme 4, Water Supply and Drainage, is the identification of extensive valley bottom bedwork-type irrigation, or variants of it, in the Exe valley.

The quarries and extractive pits of Theme 5, Industrial, comprised 13% of all monument types observed, the fourth most numerous recorded. Many farm-scale pits were scattered across the project area, with an apparent bias towards the mudstone, siltstone and sandstone geologies. Lidar data again played a major role in recording these often subtle earthworks. In contrast, the remains of the nationally important Roman and post-medieval iron ore and whetstone industries on the western scarp of the Blackdown Hills benefitted from very limited lidar data, but their records were greatly enhanced from historic aerial photography. Acquisition of lidar data for this area of the AONB has excellent potential to further enhance our understanding of these industries.

Despite the development of modern transport infrastructure having had significant negative consequences for the cropmark-rich landscape of the survey area, notably the impact of the construction of the M5 motorway, Theme 6,

Transport, is a minor theme. The historic legacy of an earlier phase of road building, dating probably to the 1930s, is however recognised in the identification of an early purpose built petrol station to the south of Exeter. This structure is recommended for consideration for heritage protection, and assessment for local listing at minimum.

Very little evidence associated with the four Registered Parks or Gardens located entirely or partly within the project area was recorded by the survey. However, elements of landscape design were recorded in association with two further country houses, specifically Winslade House and Poltimore House, the latter including the only clear evidence of settlement clearance within the survey area. Larger scale landscaping, beyond the confines of formal parkland, was also recorded on Woodbury Common. Probably created by Lord Rolle, these earthworks were no doubt intended to make a grand statement. In contrast, the designed gardens at Exvale Psychiatric Hospital at Exminster, formerly the 'County Lunatic Asylum', were more domestic in scale and therapeutic in function.

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DCC Historic Environment Webpages:
https://new.devon.gov.uk/historicenvironment/the-devon-historic-environment-record/

DCC EMDRC NMP Webpages:
https://new.devon.gov.uk/historicenvironment/the-devon-historic-environment-record/emdrc_nmp/

DCC Landscape Character Webpages:
http://www.devon.gov.uk/index/environmentplanning/natural_environment/landscape/devon-character-areas/dca-east-devon.htm

Growth Points:
http://www.exeterandeastdevon.gov.uk/What-is-a-Growth-Point/

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Historic England Project Planning Note 7: Interpretation and mapping from aerial photographs and other aerial remote sensed data:
https://historicengland.org.uk/images-books/publications/morphe-project-planning-note-7/

Soilscapes:
http://www.landis.org.uk/soilscapes/

Magor Villa, near Cambourne:
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Heritage Gateway
www.heritagegateway.org.uk/

DCC Environmental Data Online:
http://map.devon.gov.uk/DCCViewer/

APPENDIX A: Sites Suggested for Heritage Protection Consideration

Previously recorded sites that warrant assessment for heritage protection consideration			
Name	Illustration	MonID/ Heritage Gateway	Notes
Bury Castle Hillfort	Figure 49	MDV12340	Strongly recommend for scheduling, particularly in light of the possible surviving earthworks recorded to the north which appear to have been heavily denudated by ploughing.
Bradfield House Park and Gardens		MDV54726	Consider for Register of Parks and Gardens. Some modern components. Parterres removed but basic layout remains.
Whetstone Mines Around North Hill, Black Down, Blackborough Common, Tower Plot and Newcombe Common	Figure 94	MDV110227	Significant local industry – extensive earthwork remains shape the landform, and likely to be worthy of designation. Needs to be considered in the context of the full extent of physical remains of this industry in the wider area within the Blackdown Hills. Some less well preserved areas could be more suitable for local list.
Open Cast Iron Ore Extraction Pits on Black Down and North Hill	Figure 101	MDV110229	Particularly the area with good earthwork survival on Black Down/North Hill should be considered for scheduling, in the context of the wider industry across the Blackdowns. Important site as no evidence of later re-use with good archaeological potential. Other areas with less good survival for local list?
Exeter Airfield		MDV48842	Recommend the protection of surviving wartime structures within the airfield as tangible evidence of the contribution made by RAF Exeter during the Second World War.

Post-Roman Cemetery East of Middle Covert	Figure 14	MDV55042	Very likely to extend further to the east and west.
Complex Ditched Enclosure on Knowle Hill		MDV17723	An unusual complex enclosure.
Various ditched enclosures south of Exeter visible as cropmarks		Eg MDV17717, MDV29602, MDV17719, MDV112744-5-6 & MDV28649	Address the discrepancy between scheduled and unscheduled monuments of this type in the area south of Exeter.
Exvale Psychiatric Hospital Grounds (formerly County Lunatic Asylum)	Figure 120	MDV106034 & MDV113186	Devon Garden Trust recommend Grade II listing.

Previously unrecorded sites that warrant assessment for heritage protection consideration			
Name	Illustration	MonID/ Heritage Gateway	Notes
Ring Ditch South-West of Matford Barton		MDV113020	Consider scheduling as part of, or in association with, the prehistoric Barrow Cemetery West of Matford Barton MDV17714 (Scheduled Monument 1012347).
Neolithic 'mortuary' enclosure or long barrow north of Stevenstone Barton	Figure 4	MDV111027	Recommend for Scheduling. Given their rarity and age, all examples which have visual integrity or which retain archaeological potential should be designated. Particular care should be taken to capture any examples which lie outside their usual distribution range.
Earthworks within Playing Fields of Blundell's School	Figure 7	MDV108465	Possible scheduling of earthworks dependent upon the outcome of further field investigation, in particular geophysical survey.
Barrow to the South East of Starved Oak Cross	Figure 11	MDV113839	Consider scheduling as part of Upton Pyne Barrow Cemetery on basis of lidar evidence.
One of Two Barrows on Kentismoor	Figure 13	MDV11453	Investigate earthwork of possible second, previously unrecorded barrow & assess whether both are worthy of scheduling.
Petrol Station on Sannerville Way	Figure 106	MDV113163	Recommend for local list.

Previously Scheduled Monuments that warrant reassessment				
Name	Illustration	MonID/ Heritage Gateway	SM no.	Notes
Bowl Barrows near Fordy Bridge, Thorverton		MDV1251 MDV1268 & MDV1284	1017133	Recommend slight amendment to Scheduled areas to reflect area of transcribed features.
Bowl Barrow North of Green Lane		MDV10222 & MDV10269	1016565	Slight amendment to Scheduled areas (1016565) to reflect mound spread.
Barrow North-West of Rewe		MDV113285		Amend extent of Scheduled Area 1014144 to include MDV113285.
Bowl Barrows South East of Stevenstone Farm, Upton Pyne	Figure 11	MDV10223 & MDV10224	1010631	Slight amendment to Scheduled areas (1010631) to reflect transcribed earthworks.
Bowl Barrow South-East of Stevenstone Farm	Figure 11	MDV10288	1015973	Slight amendment to Scheduled areas (1015973) to reflect transcribed earthworks.

Barrow North West of Starved Oak Cross, Brampford Speke	Figure 12	MDV113316	1015974	Slight amendment to Scheduled areas (1015974) to reflect transcribed earthworks.
Dolbury Hillfort, Killerton	Figure 47	MDV1312	1017192	Recommend extension of Scheduled area to include the extent of the earthworks banks on the southern edge.
Stoke Hill Iron Age Hillfort	Figure 48	MDV10196	1003841	Adjust southern edge of the Scheduled area to include traces of slight banks.
Cranmore Castle, Tiverton	Figure 46	MDV1360	1020156	Possible extension of the Scheduled area to encompass an earthwork bank to the east and possible outwork to the west, dependent upon field investigation.
Roman Forts and Camps on St Andrews Hill, Cullompton	Figure 54 & 55	MDV29189	1019543	Extension of the Scheduled area to encompass cropmarks and earthworks recorded to the north and cropmarks of a possible annexe to the west.
Stoke Hill Signal Station	Figure 57	MDV10188	1002500	Amend extent of Scheduled Area to trim closer to the earthwork remains.

APPENDIX B: Sites Suggested for Further Work

Theme	MonID	Site Visit	Geophysical Survey	Palaeoenvironmental Survey	Analytical Field Survey	Aerial Survey	Excavation	Oral History
Ceremonial and Funerary								
One of Two Barrows on Kentismoor	11453	✓	✓		✓			
Post-Roman Cemetery East of Middle Covert	55042		✓			✓		
Possible Barrow East of Up Exe	110609		✓				✓	
Mortuary Enclosure or Long Barrow North of Stevenstone Barton	111027		✓				✓	
Ring Ditch Northwest of Four Firs	112321		✓					
Possible Ring Ditch Northwest of Four Firs	112324		✓					
Possible Mortuary Enclosure North-East of Shillingford	112719		✓					
Earthworks within Playing Fields of Blundell's School	108465	✓	✓		✓			
Settlement and Agriculture								
Enclosure to the southeast of East Butterleigh	107480	✓	✓					
Cropmark Enclosure to the southeast of Colebrook	107808		✓					
Enclosure to the north of Colebrooke Court	107857		✓					
Trapezoidal Banked Enclosure North of Ratclyffe	107902	✓			✓			✓
Possible Enclosure at Castle Hill, Bradninch	108251	✓	✓				✓	
Enclosure Ditch Northwest of Hayes Barton	112311	✓	✓				✓	
Possible Causewayed Boundary Ditch North-East of Church Path Hill Plantation, Matford	74343		✓				✓	

Military Defence and Fortification								
Roman Forts and Camps on St Andrews Hill, Cullompton	29189		✓		✓			
Triple Ditched Enclosure, east of Killerton Park	29190		✓					
Starfish Bombing Decoy, Ide	72100							✓
Searchlight Battery, Postlake Farm	78517							✓
Military Complex East of Grantlands	107878							✓
Possible Second World War Training Trenches on Gaddon Down	108079	✓			✓			✓
Practice Slit Trenches within Former Woodland of Tidcombe Plantation	108323							✓
Possible Air Raid Shelter adjacent to Old House, Blundell's School	108391							✓
Military Complex North of Post Cross	109200							✓
Military Site or Base South of Alphington Anti-Aircraft Battery	113147							✓
Water Supply and Drainage								
Possible Water Meadow or Drainage System North-West of Ford Farm	107964							✓
Possible Mill Leat and Former Mill Buildings South of Langlands	108003	✓			✓		✓	
Possible Water Meadow North of Smithincott Farm	108019							✓
Bedworks at Lower Collipriest Farm	108337	✓			✓			

Industrial								
Possible Iron Working Site South-East of Langlands Farm	108118	✓						
Whetstone Mines Around North Hill, Black Down, Blackborough Common, Tower Plot and Newcombe Common	110227				✓		✓	
Open Cast Ironstone Pits on Black Down and North Hill	110229		✓		✓		✓	
Transport								
Petrol Station on Sannerville Way	113163							✓
Designed Landscapes								
Bradfield House Gardens	54726							✓

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