Title: Cross Ridge Dykes Project

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Date: 14th February 2017

Summary: Cross ridge dykes are an understudied and poorly understood prehistoric earthwork type found on the South Downs and elsewhere in Britain and on the Continent. Although much of the dating evidence does not stand up to scrutiny, they are widely believed to date to the Late Bronze Age / Early Iron Age transition. We decided to add prospection for unrecognised cross ridge dykes using aerial photography, LiDAR and ground work on the ridges and spurs of the South Downs from Eastbourne to Winchester.

Cross Ridge Dykes Project

by

David Lea MA, Dick Tapper PhD and Judie English MCIfA, PhD

Background

Cross ridge dykes are an understudied and poorly understood prehistoric earthwork type found on the South Downs and elsewhere in Britain and on the Continent. Although much of the dating evidence does not stand up to scrutiny, they are widely believed to date to the Late Bronze Age / Early Iron Age transition. Professor Sue Hamilton and Mike Seager Thomas began a survey of these bank and ditch monuments, primarily examining the position within the landscape of known examples, but were unable to complete the work, and generously gave their results to us to complete the study. We decided to add prospection for unrecognised cross ridge dykes using aerial photography, LiDAR and ground work on the ridges and spurs of the South Downs from Eastbourne to Winchester.

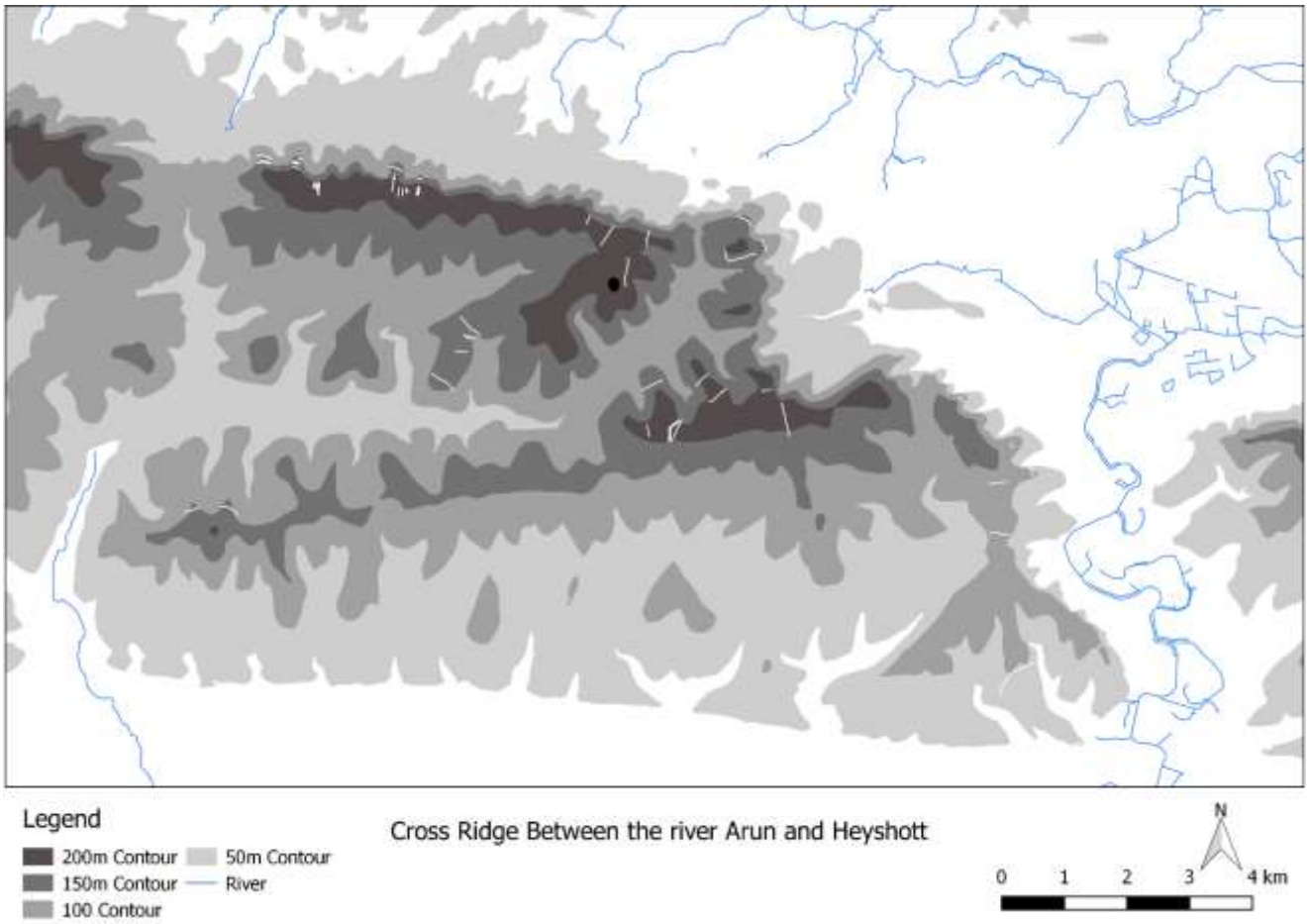
We started at the eastern end of the study area and an interim report on the stretch of the downs between Eastbourne and the Cuckmere has been written (Lea, Tapper & English submitted). One of the conclusions from this stage of the project was that there were indeed a number of dykes which had not been recognised, and that the search for previously unknown examples would become one of the more exacting requirements over the remainder of the project.

The LiDAR we had been using was that provided by the Environment Agency which covers most, but not all, of the South Downs. However, it only has a stated resolution of 1m and a number of the cross ridge dykes no longer achieve this height although they may have done so when first constructed. When the Secrets of the High Woods LiDAR became available it rapidly became clear that it was capable of highlighting much slighter earthworks. Given this, and the knowledge that the western portion of the downs carry a much more extensive covering of woodland that the eastern, we 'leapfrogged' our area of interest and became Independent Researchers within the Secrets of the High Woods Project.

Cross Ridge Dykes in the High Woods

A total of 56 certain and probable cross ridge dykes have been located in the area within the LiDAR cover provided by the Secrets of the High Woods Project which we have so far studied. Of these, no fewer than 24 had not been identified before and were first noticed as anomalies on the LiDAR. All

have been visited on the ground and their details, including shape, form, scale, topographic position and viewshed, have been recorded. A list is given in the table below and their location in figure 1. It should be noted at this stage that this work is still in progress; the area west of the now dry valley west of Heyshott has not yet been studied and there may be further sites between there and the River Arun.



Whilst it is not intended to provide a full discussion of the genesis and possible purpose of these monuments here, further information of a limited number will be provided in the form of a small number of case studies.

It is far from certain that all the earthworks recorded have been correctly identified as cross ridge dykes. Farther east some confusion has been caused by anti-glider ditches dug on the main ridge of the downs in World War II; however, these can be excluded by their appearance as white lines of exposed chalk on aerial photographs taken in the mid-1940s and the likelihood of their presence in the area described here is reduced by the amount of mature woodland.

Site Name	HER	NGR	First seen on LiDAR
Arundel Park		TQ 00746 08929	Y
Barlavington	CD1964	SU 95880 15620	N
Barlavington Spur Lower		SU 96900 15745	Y
Barlavington Spur Upper		SU 96524 15621	Y
Barlavington Vertical	CD1964	SU 95880 15620	N
Bury Hill 1	CD2891	TQ 00460 12410	N
Bury Hill 2 Michael's Rib	MWS3305	TQ 00110 11800	N
Cocking Spur Lower		SU 88471 17047	Y
Cocking Spur Middle		SU 88476 16971	Y
Cocking Spur Upper		SU 88480 16933	Y
Combe Wood		TQ 00809 11939	Y
Dry Lodge Plantation		TQ 01857 09193	Y
Duncton Hanger		SU 96284 16010	Y
East Lavington	CD1783	SU 93714 16007	N
Glating Down	CD 1716	SU 96810 13090	N
Graffham Down A	CD1767	SU 90989 16478	N
Graffham Down B	CD1767	SU 90999 16470	N
Graffham Down C	CD1767	SU 91017 16493	N
Heyshott Down East A		SU 89332 16552	N
Heyshott Down East B	CD1764	SU 90692 16499	N
Heyshott Down East C	CD1765	SU 90757 16482	N
Heyshott Down East D	CD1766	SU 90816 16449	N
Heyshott Down East E	CD1766	SU 90828 16450	N
Heyshott Down West A		SU 89332 16552	N
Heyshott Down West B	CD1136	SU 89349 16582	N
Heyshott Down West C	CD1136	SU 89361 16572	N
Heyshott Down West D	CD1136	SU 89391 16559	N
Heyshott Down West E	CD1136	SU 89401 16510	N
Heyshott Down West F	CD1136	SU 89422 16557	N
High Down 1		SU 91230 13570	Y
High Down 2		SU 91628 13928	Y
High Down 3		SU 91783 14138	Y

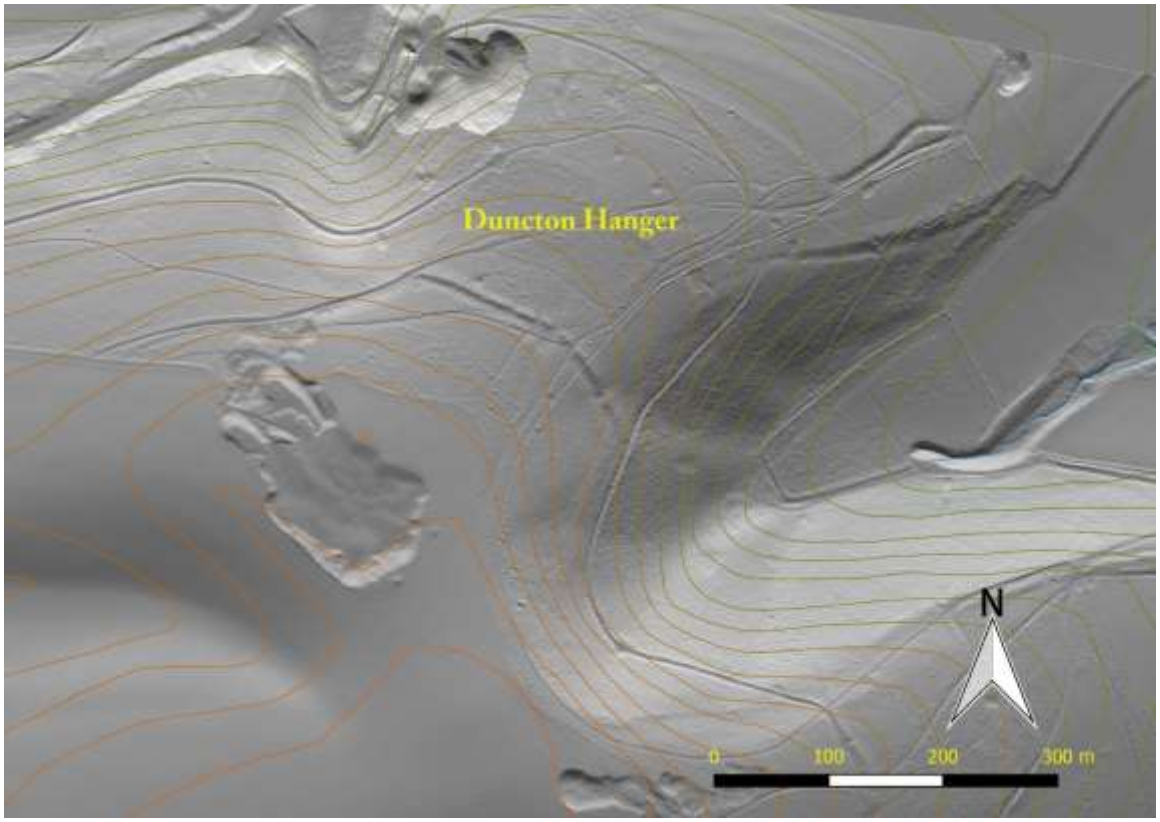
High Down 4		SU 91781 14159	Y
High Down 5		SU 91734 14413	Y
Lamb Hanger	CD1718	SU 96480 13290	N
Legg Farm Spur A		SU 89077 16848	Y
Legg Farm Spur B		SU 89056 16922	Y
Legg Farm Spur C		SU 89042 16950	Y
Legg Farm Spur D		SU 91734 14413	Y
Little Down Lower		TQ 00001 13259	Y
Little Down Upper		SU 95880 15620	Y
Little Graffham		SU 91028 16670	Y
Littleton End	CD2774	SU 9545 1339	N
Littlton Down	CD1791	SU 94350 15358	N
Mellersh's Copse Lower		SU 90653 16842	Y
Mellersh's Copse Upper		SU 90610 16686	Y
Shepherds Copse	CD2633	SU 94780 13420	N
Stubb's Wood		SU 6661 2680	Y
Sutton Down	CD1717	SU 9592 1336	N
Tegleaze	CD1784	SU 93919 15614	N
Trundle North East	CD1212	SU 87860 11440	N
Trundle North West	CD1211	SU 87445 11406	N
Upwaltham Hill 1 Double	CD2756	SU 95029 12700	N
Upwaltham Hill Single	CD2756	SU 95100 12640	N
Whiteways	MWS6418	TQ 00150 11010	N
Woolavington Down	CD1785	SU 94657 15727	N

Case study – Duncton Hanger

The earthwork crosses one of the spurs at the north east corner of the scarp of the downs, overlooking the valleys of the Arun and its tributary the Rother, and with wide views over the Low Weald. It is a large feature in its landscape with a length of 214m and an overall width to the complex of 21m. The bank, which is downhill from the ditch, still stands about 1m high and the ditch is about 1m deep. The earthwork straddles the spur ending at points where the slopes steepen and, although damaged by tracks cut through probably to service quarrying activities, is generally in excellent condition. It is

remarkable that an earthwork of this scale should not have been recognised, particularly since both ends are close to public rights of way.

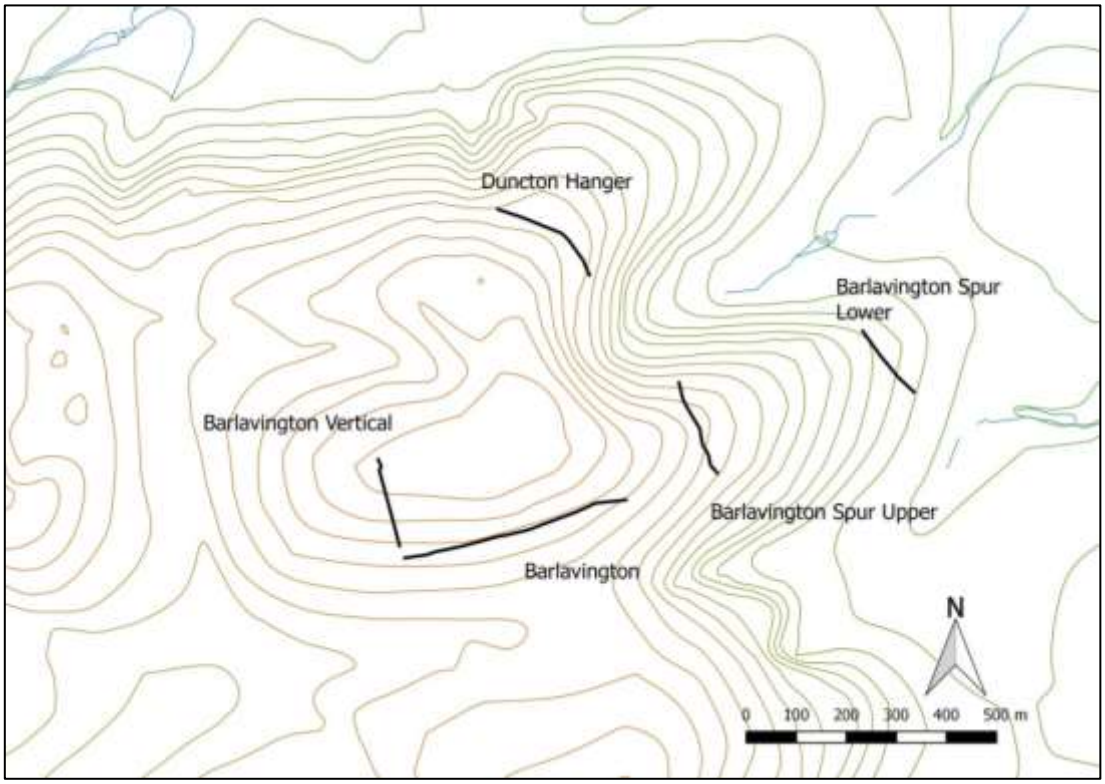
The cross ridge dyke on Duncton Hanger from the south-east (left) and north-west (right)



LiDAR image of cross ridge dyke on Duncton Hanger

It is far from certain that all the earthworks identified as cross ridge dykes were constructed for the same purpose, or, indeed, that they are all are contemporary. Within the area described here a high proportion are located crossing either the main ridge of the South Downs or the north facing spurs of

the scarp slope. Duncton Hanger represents the latter of these two positions and two further examples crossing the spur to the south-east, Barlavington Spur Upper and Lower, occupy a similar location.



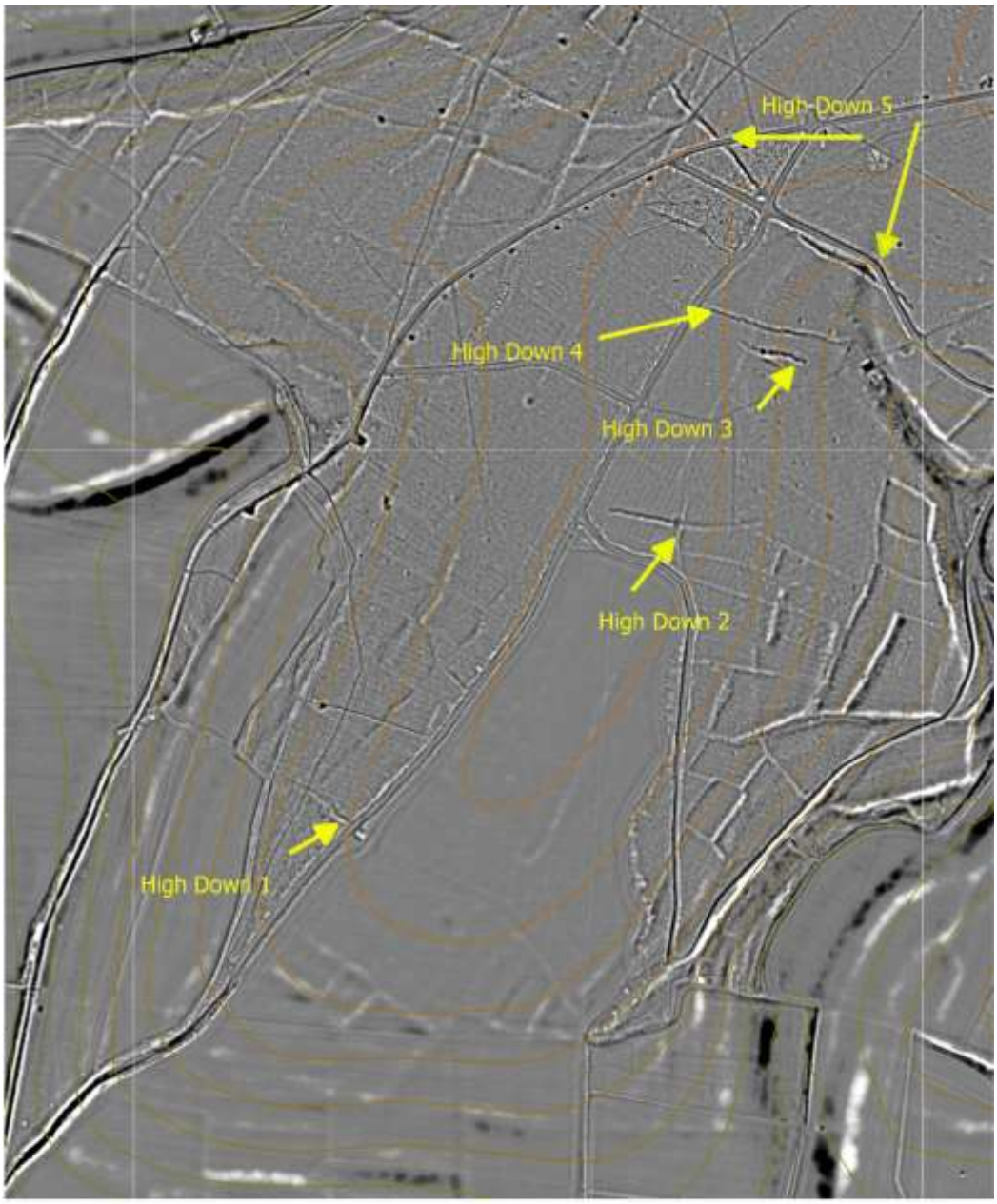
The cross ridge dyke on Duncton Hanger in its immediate topographical context

Case study – High Down, East Dean

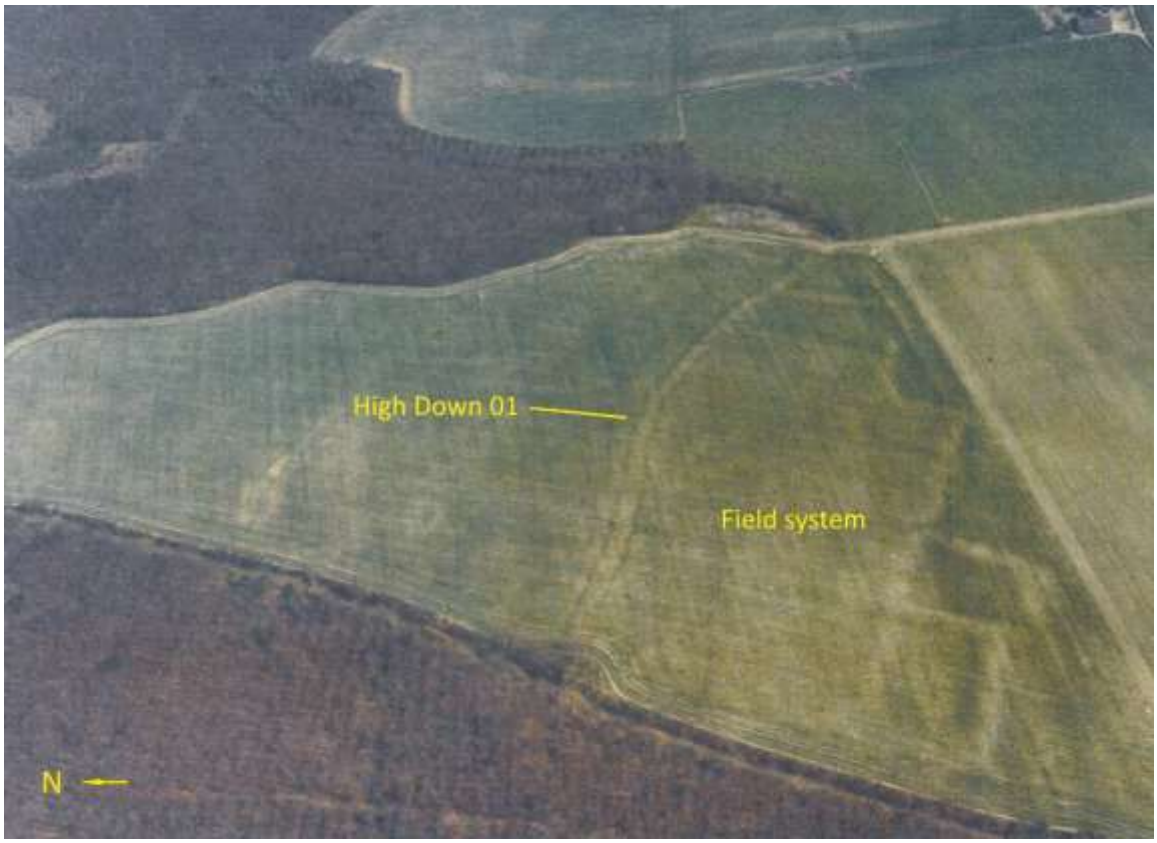
High Down is a south-facing spur of the South Downs overlooking the village of East Dean and with views over the coastal plain towards Portsmouth Harbour and the Isle of Wight. More locally it marks the south-west corner of the downs on the eastern side of the now dry upper reaches of the valley which farther west holds the Lavant.

Remarkably LiDAR images showed no fewer than five previously unknown cross ridge dykes – an unusual cluster on the dip slope of the downs in an area where the great majority were placed across either the ridge above the scarp slope or spurs facing north from it.

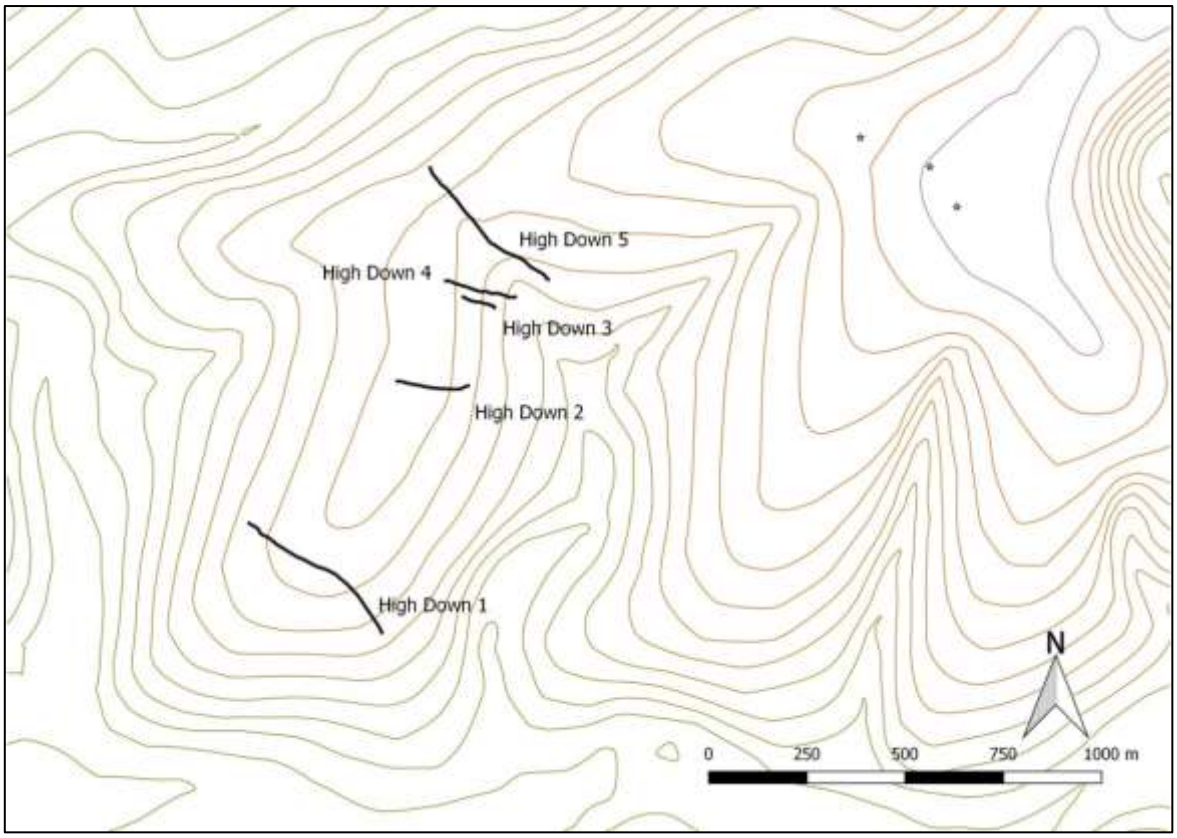
Numbers 2 – 5 are all well preserved standing in open coniferous woodland although disturbed ground to the west may have truncated numbers 3 and 4. All these would be vulnerable to the large machines increasingly being used by commercial forestry operations in the area.



High Down 01 is now only visible above ground west of the track at its western end and then only as a very shallow ditch with a slight down-slope bank but its route can be seen clearly on aerial photographs crossing arable land to give a total length of 460m. The use history of the area has not been fully researched, but on late 19th century maps the spur is shown as wooded except for the present arable fields which were open downland. The clarity of the soil marks showing High Down 01 crossing the spur suggests that its destruction above ground is relatively recent.



Aerial photograph of cross ridge dyke High Down 01 and possible prehistoric field system to the south (NMR 18498/17)

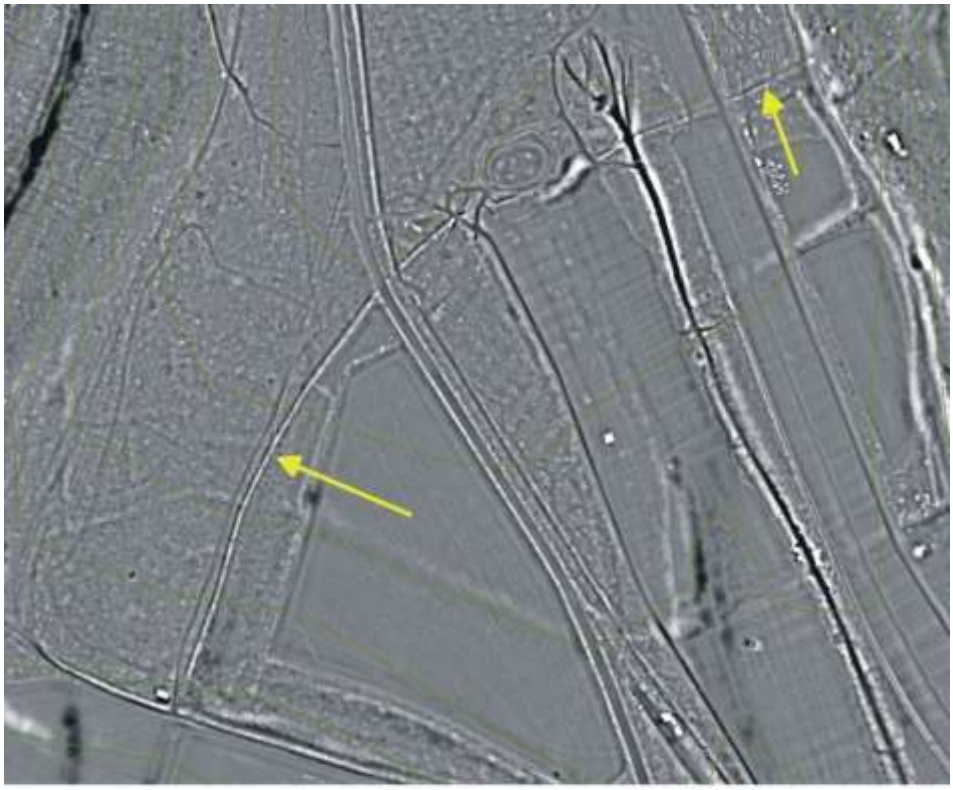


Cross ridge dykes at High Down, East Dean

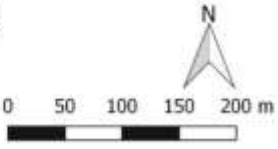
Cross ridge dykes High Down 02 (left) and High Down 03 (right) both looking east

Case study - Arundel Park

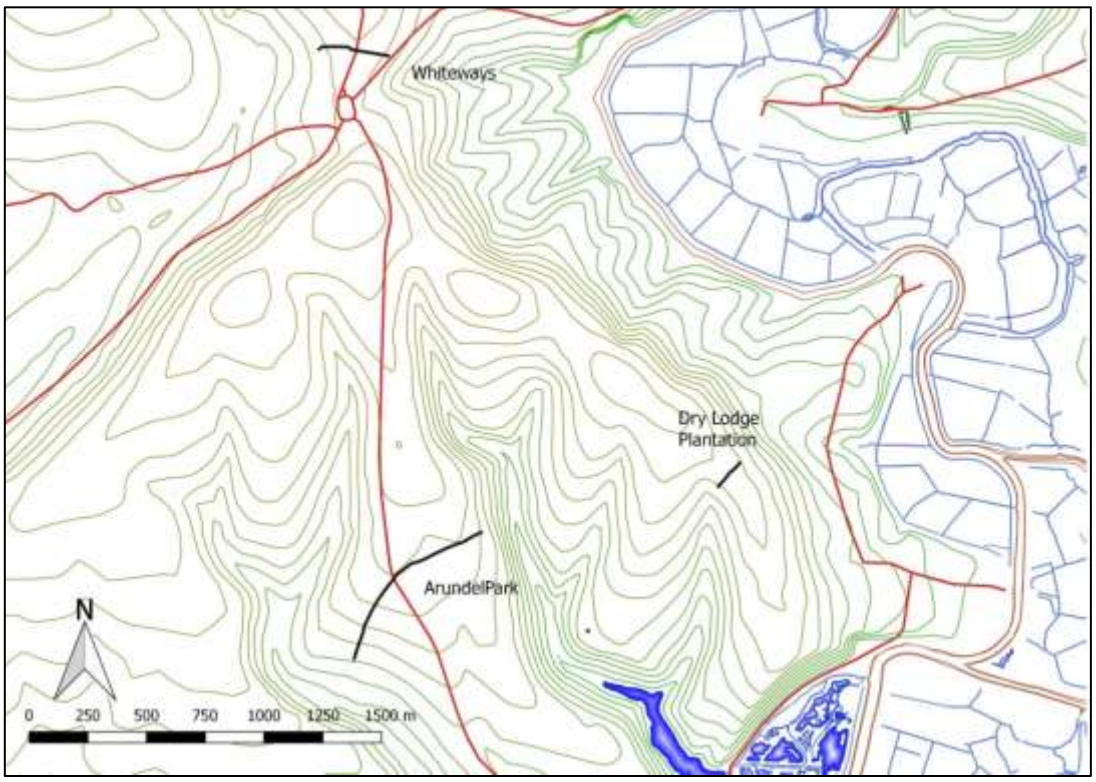
An unusually long (806m) cross ridge dyke runs over a south-west facing spur on the dip-slope of the downs and has a long view over the coastal plain and the Arun close to its estuary. The eastern portion of the complex, within Arundel Park, is relatively slight and has suffered considerable disturbance particularly around the sawmill.



LiDAR image of cross ridge dyke in Arundel Park



The cross ridge dyke west of the A284 (left) and within Arundel Park (right)



Cross ridge dyke at Arundel Park

Some of the later earthworks in this area probably relate to parkland features but would be worth further investigation.

West of the A284 it is well preserved, curving towards the south down the gentler side of the spur. The earthwork appears to terminate at a modern track bounding arable fields – this may not be its original end but neither above ground evidence nor aerial photographs hint at any continuation. This western portion is shown as a field boundary on late 19th century and modern maps and this may have

precluded its consideration as a possible cross ridge dyke. However these earthworks are not infrequently re-used as administrative or land-use boundaries, and in this case the form, continuation on both sides of the A284, ie. inside and outside Arundel Park, and its topographical position encourage the present identification.

Discussion

If, as seems likely, one purpose for the construction of cross ridge dykes was to influence movement of people and stock along the downland ridges and at access points to those ridges the area from which they could be seen becomes relevant to this study. Some, including the unusual concentration on Heyshott and Graffham Downs, have wide views over the Low Weald and the barrow cemeteries on the greensand of Heyshott, Graffham, Lavington and Duncton Commons. Although the barrows were almost certainly constructed earlier the light soils around them may have remained in use and Late Bronze Age settlement on the low land north of the downs has been found elsewhere (Butler, 2000; Mullin *et al* 2010).

Others appear concerned with access points from the river valleys which either sever or penetrate the chalk massif. The example in Arundel Park overlook the southern end of the Arun Gap whilst those on Duncton and Barlavington Hangers overlook its northern end with the cluster of Bury Hill 01 and 02, Coombe Wood, Whiteways and Dry Wood Plantation lie across the spurs between these points. A large number of cross ridge dykes overlook the upper reaches of the Lavant valley – although now dry the level of the water table and therefore the location of the source/s of the river in the Late Bronze / Early Iron Age is uncertain and, in any case, the valley could well have been seen as either giving access to the main ridge to travel east /west or a short crossing over high ground to the Low Weald.

What is perhaps surprising is that no dykes so far recognised influence travel along the alternative, southern west / east ridge between Singleton Forest and Eartham Wood despite the numerous south-facing spurs which would have given easy access to the high ground. There was extensive Late Bronze Age / Early Iron Age activity on the coastal plain (for example Chadwick 2006; Seager Thomas 2016) and this apparent lack will require further investigation.

The use of LiDAR has greatly facilitated our identification of cross dykes on the South Downs, particularly by directing our efforts towards likely features. Whilst it has already proved useful in areas

of open downland, the increasingly wooded nature of the downs in West Sussex and the frequent relatively under-managed nature of the woodland adds to the need to target fieldwork. LiDAR has also, on occasion, confirmed earlier records and aerial photographic evidence where the above ground archaeology has since been largely destroyed by ploughing. But fieldwork has still proved necessary to determine the scale of the surviving earthworks, sometimes differentiating between cross dykes and lynchets and, of particular importance, recognising phasing differences with earlier and later earthworks.

In all, use of a combination of four methods, early records, aerial photography, LiDAR and field visits is proving successful in locating, identifying and recording these relatively common but poorly understood earthworks. Within the area described here, and not yet fully investigated, we have located 24 previously unrecorded possible and probable cross dykes and removed three from the existing record.

References

Butler, C 2000 *Saxon settlement and earlier remains at Friar's Oak, Hassocks, West Sussex*, Oxford: BAR Brit Ser **295**

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