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OSMINGTON WHITE HORSE HILL-FIGURE, DORSET
A REGAL RESTORATION

SURVEYED AND HISTORICAL EVIDENCE FOR THE RE-ESTABLISHED OUTLINE

Stewart Ainsworth and Jon Horgan

ASSESSMENT

ENGLISH HERITAGE

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SUMMARY

In 2011 English Heritage and Ordnance Survey collaborated on a research project to inform the restoration of the George III chalk-cut hill-figure, commonly known as the Osmington White Horse. Although a relatively recent creation (1808), little was known about the hill-figure's origins or the changes made to it through time. In recent years, this prominent Scheduled Monument also suffered extensive erosion, further obscuring its original shape, and leading to its inclusion on the Heritage at Risk Register. The project's objective – to establish the most appropriate outline for reinstatement – was prompted by the Osmington Society, which had been actively promoting the restoration of this local landmark in partnership with English Heritage, Natural England, Dorset County Council, Dorset AONB Partnership and the local landowners. Following the restoration, the monument was officially unveiled by HRH The Princess Royal in March 2012.

CONTRIBUTORS

The research and field surveys were carried out by Stewart Ainsworth, formerly Senior Archaeological Investigator with the English Heritage Research Department, now Visiting Professor of Landscape Archaeology at the University of Chester, and Jon Horgan, a research scientist specialising in photogrammetry and GIS at Ordnance Survey. The report was edited by Dave Went and graphics support was provided by Philip Sinton, both of English Heritage's Investigation and Analysis Division. Laura Holland, also of English Heritage, contributed to the editorial process and prepared the report for publication.

ACKNOWLEDGEMENTS

Special thanks are extended to Geoff Codd, Chairman of the Osmington White Horse Restoration Group, and other members of the Group for their support and help with this research project. Thanks also go to Steve White for advising on historical information, Steve Wallis, Claire Pinder and Peter Addison for documentary material and advice, Oxford Archaeology South and Ordnance Survey for supplying images and data, Mary Kempe for permission to reproduce the historic postcards, Chris Bird for permission to use his photographs, and the Department of History and Archaeology at the University of Chester for facilitating the preparation of this report. Practical advice and guidance during the restoration process was provided by John Hayes, and last but not least, special thanks to Paul Critchell, who allowed access to the hill-figure throughout the project.

ARCHIVE LOCATION

The report and associated data have been deposited at the English Heritage Archive, The Engine House, Fire Fly Avenue, Swindon, SN2 2EH.

DATE OF SURVEY

The research and survey was undertaken between February and July 2011.

CONTACT DETAILS

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1.1 Introduction

This hill-figure, first cut in 1808, portrays King George III on horseback and is generally referred to as the Osmington White Horse. It is a Scheduled Monument (formerly Dorset 746, now National Heritage List Entry number 1005574: George III chalk-cut hill-figure) and is situated at SY7151 8432 on White Horse Hill, *c* 1km north west of the village of Osmington in Dorset. Overall, the hill-figure measures *c* 98m by 85m and has been cut into a prominent, south-facing, chalk escarpment which forms part of the South Dorset Ridgeway. Due to its location, the hill-figure is very visible as a landscape feature from the south, both from the main road to Weymouth (A353) and also from Weymouth Bay, where in the summer of 2012 the London Olympic and Paralympic Games sailing events were held (Figure 1).

In recent years the hill-figure had suffered from considerable erosion and neglect, to the point where its outline had become much disfigured (Figure 48). In recognition of its poor condition the monument was added to the Heritage at Risk Register (English Heritage 2010), while a wish to address the deterioration of the monument also became the objective of a local community-driven initiative by the Osmington Society. The Osmington White Horse Restoration Group (OWHRG) was formed in 2009 and included representatives from the Osmington Society, English Heritage, Dorset County Council, Dorset AONB Partnership, Dorset Countryside Coastal Ranger Team, the landowners and other members of the local community. This group recognised that not only was the monument in need of short-term consolidation and maintenance to arrest its deterioration, but also that its prominence as a visual backdrop to the Olympic sailing event, for both visitors and world-wide broadcast media, was an important factor in the timetable for any proposed restoration. In addition, it was accepted that as well as requiring action in the short term, its long-term future would be best assured by the formulation of an appropriate management plan.

This report confines itself in scope to documenting the rapid assessment which was undertaken in 2011 by English Heritage and Ordnance Survey (OS) to underpin the investigation, interpretation and physical restoration of the monument prior to the Olympic event. It is acknowledged that this project was necessarily limited in its aims and that further research in the future, particularly examination of primary historical documentary sources and historic photography, may fill in some of the gaps in the current understanding of the chronology and evolution of the hill-figure.

The background to the project and the practical stages of research and survey are presented in Sections 1-4 of this report; the results of the overall analysis are presented as a chronology for the monument in Section 5, while Section 6 attempts to discuss some of the results within the broader context of the late 18th and early 19th century.

Throughout this report, to avoid confusion regarding the constituent elements of the monument, the terms 'horse and 'rider' are applied to the representation of King George III and his mount, and 'hill-figure' is used when referring to the monument as a whole.

Figure 1: Location map.
This plan is based on the OS map with the permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationery Office. © Crown Copyright and database right 2013. All rights reserved. Ordnance Survey Licence 100019088

1.2 Historical background

Until recently there has been some uncertainty about the precise date and historical context of the hill-figure. One suggestion held that it had been cut in the early 19th century by a soldier stationed at Weymouth who wished to commemorate George III's visits there (it is known that the king visited Weymouth on a number of occasions between 1789 and 1805). Another theory suggested that it was created in 1815 by a party of military engineers (NMR no SY 78 SW 48; RCHM 1970, 183, Marples 1949, 125). The monument even found its way into Thomas Hardy's *The Trumpet Major*, in which the narrative of Ann Garland (the heroine) and John Loveday (the Trumpet Major) has the pair walking over the hill towards Overcombe (Sutton Poyntz) where a group of navvies, in the area due to the anticipated invasion by Napoleon's forces, were

busy cutting the hill-figure (Hardy 1880). This has led over the years to an erroneous date of origin of 1805 being used by some (*see* White 2011, 23) and a general blurring between fiction and fact (for example, Marples 1949, 125-126). Other fanciful stories and legends built around the origins of the hill-figure are summarised in White (2011, 22-24). It has furthermore been suggested that the rider successively represented a number of different individuals in addition to George III, namely Wellington, Kitchener and Montgomery (Marples 1949, 123).

However, the stories and legends which have been built around the origins of this hill-figure can now be consigned to folklore. The date of its creation in 1808 has recently been firmly established with a number of secure, contemporary references (*see* Wallis 2010, 4; White 2011, 22-24). It is now known that the hill-figure was created as the result of a private initiative between four local individuals: John Wood (a Weymouth bookseller), Robert Serrell Wood (a landowner), James Hamilton (a prominent Weymouth architect) and John Rainier (who funded the project). It is possible that the venture may have been financed by John Rainier because his brother, Admiral Peter Rainier, had died early in the same year (1808) and had left him a significant sum of money. The fact that the hill-figure was of sufficiently large scale to be later described as a seamark on Admiralty charts and of use to mariners for navigation (White 2011, 23), may have been part of the original design concept to make it visible from the sea as well as the land (this is discussed more fully in Section 6).

Contemporary references to the hill-figure include a letter from John Wood to Sir Richard Colt-Hoare (then a well-known antiquarian) of 19th August 1808 which describes the find of a bronze flanged axe 'discovered in the cutting out of an Equestrian figure of the King in the side of Osmington Hill in this neighbourhood not far from Sutton Points [sic]...' (quoted in White 2011, 22; *see also* NMR no SY 78 SW 56). The hill-figure was also referred to in the diary of a local man, Thomas Oldfield Bartlett, who recorded that he saw it on 24th August 1808, stating that it was cut between the beginning of May and the beginning of August of that year (quoted in Wallis 2010, 4). Further accounts from 1808 also document the monument. A newspaper cutting from the *Sherborne Mercury* dated 10th October refers to the cutting of the figure of the reigning monarch, King George III, 'on his favourite grey charger...lately' (ibid). In addition to the sources identified above by White and Wallis, the hill-figure was also noted in *The Dorchester and Sherborne Journal* for 7th October, which states that "the likeness of the King is well preserved and the symmetry of the horse is so complete as to be a credit to Mr Hamilton of this town, for its execution" (http://dorset-ancestors.com/?p=112). This is more fully documented in the November 'Occurrences' section of the *Monthly Magazine* (Anon. 1808, 393). The potential importance of this last source for understanding the original context of the monument is discussed in Section 6.

2. SCHEDULED MONUMENT CONSENT APPLICATION

A Scheduled Monument Consent (SMC) application was made on 8th July 2010 by Steve Wallis of Dorset CC on behalf of the landowners and the OWHRG for the commencement of remedial works to arrest the decline of the hill-figure and to restore its outline. This included the removal of the inappropriate Portland scalpings which had been added to the monument in 1989 as a result of an attempted restoration for the television programme '*Challenge Anneka*'. In support of the SMC application (which was approved on 21st July 2010), a report was prepared and a series of recommendations produced (*see* Wallis 2010). The report included a brief summary of the historic changes in the shape of the hill-figure, based mostly on a rapid examination of historic postcards and photographs, proposed a methodology for the removal of the scalpings and included an outline proposal for further consolidation work. The report also outlined three phases of activity in relation to the SMC application:

Phase 1. To understand the monument sufficiently to inform its restoration;

Phase 2. The restoration work itself;

Phase 3. The development of a long-term management plan.

In essence, the Wallis report of 2010 fulfilled Phase 1 of the project and the results were intended to be used as the basis for defining the outline of the hill-figure. The report concluded that the analysis of the photographic imagery provided no clear understanding of what the original hill-figure (of 1808) may have looked like. It could be demonstrated, however, that although the monument changed very little between 1883 and 1920, subsequent episodes of poorly informed 'restoration' and informal maintenance resulted in a number of changes to the outline. Some 27 historic photographic postcard images, 16 aerial photographs and 12 research references were consulted as part of that analysis (ibid, 15-16). One early 19th-century postcard image (Hitch *c* 1911-12) was deemed to be the earliest reliable representation of the hill-figure and it was recommended that this should be used as the basis of the restored outline in Phase 2 of the SMC process (*see* Figure 15).

As part of the research associated with the compilation of the Wallis report, Oxford Archaeology South undertook a survey of the degraded outline of the hill-figure as it existed in 2010 (Figure 2) and also digitised the Hitch postcard (*c* 1911-12) so that the outline could be re-instated on the ground using GPS (Global Positioning System). However, the digitisation of Hitch image was unsuccessful due to a combination of factors which compounded the potential for both metrical and interpretative error, namely:

- the distortion of the hill-figure caused by a combination of the steepness of the slope and the low angle at which the photograph had been taken;
- the lack of clarity of some of the details of the outline;
- the lack of features on the photograph which could be identified on modern-day

OS mapping from which a computer-based rectification could be carried out.

Since these initial results lay beyond the quality-control parameters which Oxford Archaeology South applied to the rectification process (Bradley, pers comm) further, more specialist input was sought to provide a digital template for setting out the hill-figure as proposed in the SMC application (Wallis 2010, 19). Geoff Codd (Chairman of the OWHRG) approached OS and this led to the research project documented by this report.

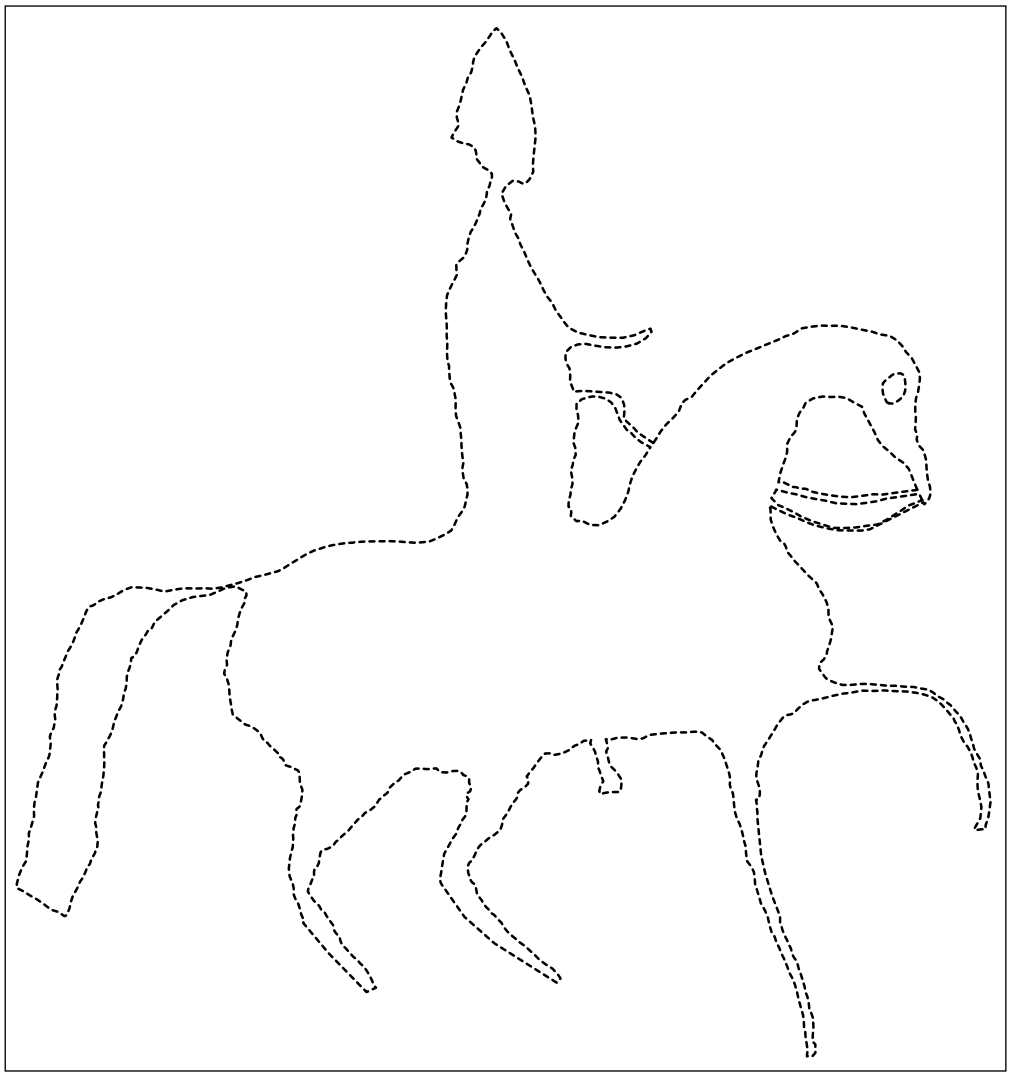

Figure 2: Outline of the hill-figure as surveyed by Oxford Archaeology South in 2010. Survey data courtesy of Oxford Archaeology South

2.1. English Heritage and Ordnance Survey collaborative research project

In early January 2011, while gathering information prior to formulating a reply to the OWHRG, Phil Watts, Head of Corporate Affairs at OS, contacted Stewart Ainsworth, Senior Investigator at English Heritage, for advice related to the archaeological understanding and historical cartographic depiction of the monument. It was subsequently agreed with the OWHRG that an English Heritage/OS collaborative project was needed to produce the most reliable basis for the restoration planned for Phase 2 of the SMC application: Stewart Ainsworth providing the archaeological expertise (survey, investigation and interpretation) and Jon Horgan (OS research scientist) providing expert knowledge of photogrammetric and cartographic survey. This project comprised two stages: assessment (*see* Section 3) and survey (*see* Section 4).

3. ASSESSMENT OF THE HILL-FIGURE

To establish the most appropriate strategy for this collaboration and to ascertain whether any additional evidence, particularly ground remains, might influence or guide interpretation of the outline to be restored, Stewart Ainsworth undertook ground reconnaissance on 4th February 2011. This was followed by a rapid assessment of aerial photographs, historic mapping and readily available, published documentary sources. This phase of rapid assessment was completed by 16th February 2011 and a series of recommendations were presented to a meeting of the OWHRG on 18th February 2011 (see below).

This assessment stage identified three important sources of evidence which had not been included in the preparation of the supporting document for the SMC application. The evidence made a sufficiently important contribution to the understanding of the shape and form of the hill-figure that a reappraisal of the plan to restore the outline to that displayed on the Hitch (*c* 1911-12) image was required. These evidence sources were as follows:

Ordnance Survey County Series 1:2500 scale map editions (OS 1889; 1902)

The OS large-scale map of 1889 is the earliest known cartographic depiction of the hill-figure and, within the limitations of the mapping scale, some reliance can be placed on the detail of the outline which existed when it was surveyed in 1886 (this is discussed further in Section 5). However, whether that outline replicated the original of 1808 was unknown. A photograph taken three years before the OS map was surveyed (Acott 1883) is not sufficiently clear to use as an comparator with the published survey, but it does provide a useful reference for the general shape of the monument close to the date of the OS (1889) map (Figure 3).

The survey was revised in 1901 for the Second Edition (for the purpose of this report, the publication dates of 1889 and 1902 respectively are used as the reference dates). The hill-figure seems to have remained unchanged on the Second Edition. The assumption may therefore be made that no significant alterations occurred between the two survey dates (1886 and 1901), although this would have been entirely dependent on the expertise or diligence of the Officer in Charge with respect to the map depiction of the monument. The same depiction is shown on the OS 1929 and 1958 editions, despite changes to its outline which are known to have occurred in the intervening period. Perhaps the complexity of the monument precluded minor changes during map revision.

Some elements of the outline as mapped by OS in 1889 and 1902 appear to correspond closely to the outline visible on the Hitch (*c* 1911-12) postcard, and also to a later, but very clear, oblique aerial photograph (Aerofilms 1947 – see Figures 4 and 28), although there were also some obvious differences (these are discussed below). It must be remembered that the 1:2500 scale adopted for the OS mapping has some limitations with respect to the depiction of small features, particularly if represented by dashed lines as in the case of the hill-figure (where a small turn or corner can easily be lost in the 'gaps'). Also, it was common practice on 1:12500 maps to exaggerate narrow features

or details for the sake of clarity. Nevertheless an attempt was made by OS to show a high level of detail (for example, the portrayal of a nose and chin on the human-figure). An apparent distortion of the hill-figure along the north to south axis on the map (that is to say, making the horse's legs appear shorter than they should be and the rider too tall), may be partly the result of the difficulty of surveying on a very steep slope and having to project the 'sloping' hill-figure onto the 'flat' surface of the map – a process which can result in the map dimensions being smaller than the actual ones. The practical difficulties of measuring on such a steep slope may also have introduced metrical errors. However, whilst these factors might account for the apparent shortening of the horse's legs, it does not account for the exaggerated size of the human figure (the reason for this exaggeration is returned to in Section 6).

Examination of later editions of OS mapping of the hill-figure showed that there was no change made to the depiction of the outline until it was resurveyed directly onto the Master Survey Document (MSD) at 1:2500 scale by the OS Archaeology Division investigator in June 1980 (NMR no SY 78 SW 48, Authority 3; OS 1929; 1958). The MSD was used for recording any new survey or changes made before a map was republished, and then discarded once publication had taken place (which appears to have been the case with this monument). At the date of the resurvey, in 1980, the hill-figure was described as being in 'a fair state of preservation' by the investigator. This is confirmed by inspection of vertical aerial photographs taken close to this date (OS 1978) which show that erosion of the outline of the hill-figure was minimal.

Earthworks

On inspection at ground level it was found that earthwork survival was far better than might have been expected given erosion and the general poor condition of the site. In most areas traces of earlier outlines could be found on average 1-1.5m beyond the degraded extent of the hill-figure, which was then defined by exposed sub-surface chalk, brash, soil, weeds and a smattering of Portland scalpings (*see* Figures 52 and 55). These earthworks had not previously been recognised, yet they clearly corresponded to the outline shown on the early OS maps and included traces of minor and more significant phases of cutting and alteration, as well as some substantial features thought likely to be original components of the hill-figure. The appraisal showed that about 90% of the outline depicted on the OS maps could be captured through detailed earthwork survey, and the analysis of visible stratigraphy would provide a much improved understanding of the hill-figure's phasing and chronological development

A high-quality oblique aerial photograph taken by Aerofilms in September 1947 (Aerofilms 1947; RCHM 1970, Plate 114 - *see* Figures 4 and 28)

This oblique aerial photograph taken in 1947 is particularly important to the understanding of the monument for several reasons. Firstly, given the clarity of the hill-figure on this image and the inclusion of various mapped reference points, it could be used to facilitate a metrical rectification. Secondly, the photograph showed that the outline of the hill-figure was, despite differing in some points of detail (see below), remarkably unchanged from the depiction on the 1889 and 1902 OS maps and the Hitch

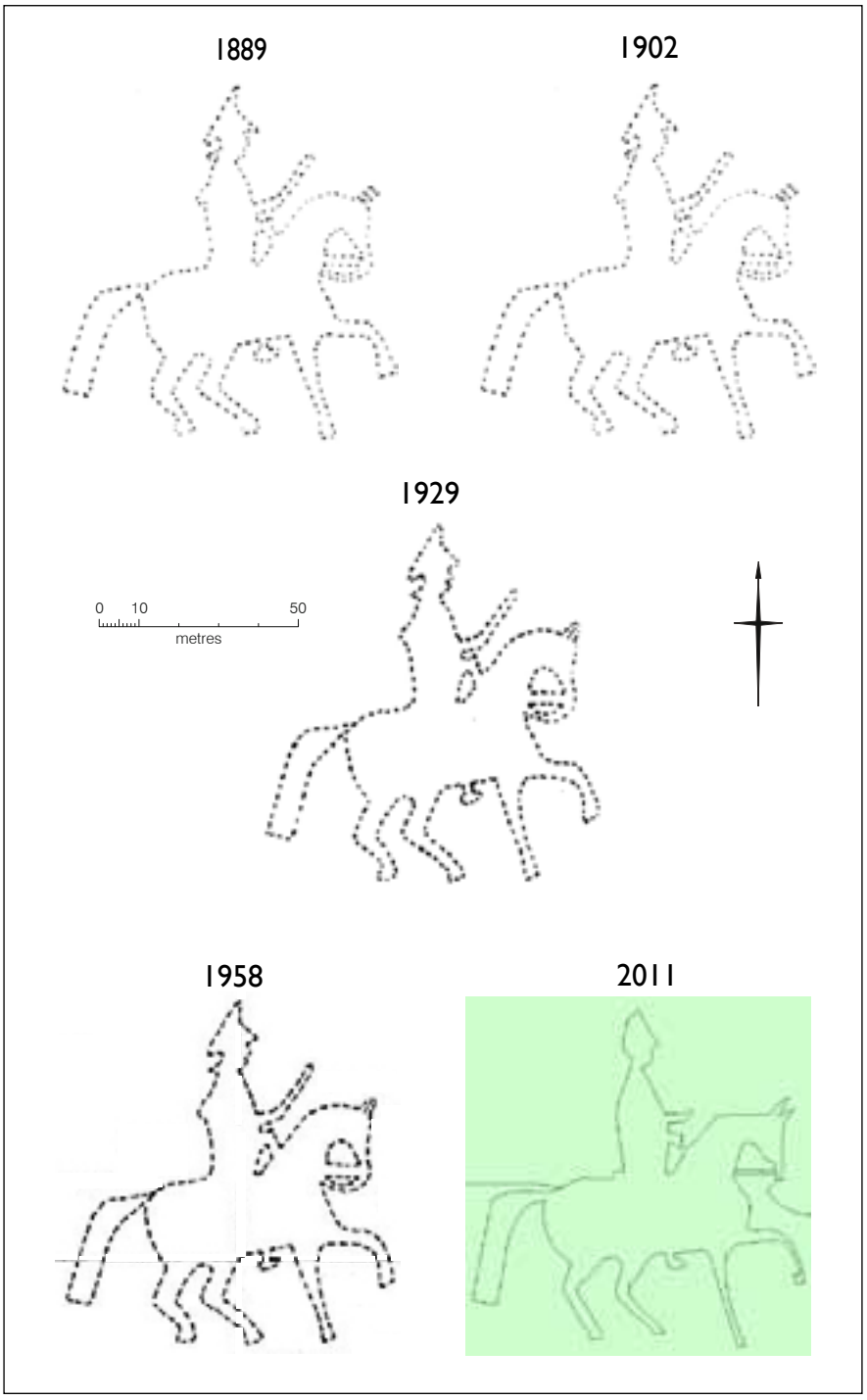

Figure 3: OS depictions of the hill-figure (with publication dates). It can be seen that the depiction remains unchanged from 1889 to 1958 despite known changes to the shape in that period suggesting that it was not revised for minor changes by the surveyors. The additional lines on the 1958 and 2011 depictions are vegetation boundaries and grid lines.

image (*c* 1911-12). Conversely, a slightly later oblique aerial photograph taken between 1947 and 1949 (Marples 1949, Plate 34 – *see* Figure 29) shows that some significant changes occurred soon after. Some of those later changes were also still identifiable on the ground as earthworks (for example, two reins evident on the horse in 1947 were increased to four and fingers were added to the upper hand).

Figure 4: Oblique aerial photograph (Aerofilms 1947): AFL03/Aerofilms/A10928 24-SEP-1947. English Heritage (NMR) photography

3.1 Anomalies identified during the assessment

The suite of postcards consulted by Wallis, plus some additional aerial photographs, were also reviewed as part of this assessment, and together with the new evidence highlighted above these raised a number of questions which threw doubt on the use of the Hitch (*c* 1911-12) postcard as the basis for the proposed restoration. In total, fourteen anomalies were identified which had a significant bearing on the previous interpretation of the outline (see 3.1.1 to 3.1.14 below). An analysis of these anomalies, as well as some other inconsistencies identified during the subsequent survey phase, is given in Section 5. For the moment, however, they can be briefly summarised as follows:

3.1.1

The OS maps appeared to depict a facial profile for the rider, the principal components of which were a nose and chin. It was evident that this profile had changed over time.

3.1.2

OS maps, the Aerofilms (1947) oblique aerial photograph and images taken at intervening dates, show a sword or baton in the rider's upper hand, although it was not clear if this was an original feature.

3.1.3

The OS maps show two ears on the horse, but it was not clear if they had always been present.

3.1.4

The OS maps and the Aerofilms (1947) oblique aerial photograph show two reins connecting the horse's neck and mouth, whilst later images show four reins.

3.1.5

Neither the OS maps, nor any photographic images up to and including the Aerofilms (1947) oblique aerial photograph, show the horse having an eye. However, because it was considered to be an accepted part of the monument, it was originally proposed to retain this feature in the restoration.

3.1.6

The Hitch (*c* 1911-12) and Aerofilms (1947) oblique aerial photograph, as well as some images taken between those dates, show clear details of the horse's hooves, although this was not evident on the OS maps.

3.1.7

The OS maps and Aerofilms (1947) oblique aerial photograph show the rider's foot with a rounded front with an angular heel area, but it was unclear if a boot or stirrup was represented by the feature which connects the foot to the outline of the horse.

3.1.8

All the photographic images show the horse as having a very rounded rump. This is in contrast to the flatter portrayal on the OS maps.

3.1.9

The Hitch (*c* 1911-12) image, the Aerofilms (1947) oblique aerial photograph and other images taken between those dates indicate a sweeping curve to the upper, outer line of the horse's tail. However, on the OS maps this tail is shown as being more regular in shape.

3.1.10

The Hitch image (c 1911-12), the Aerofilms (1947) oblique aerial photograph and images taken between those dates show what appears to be a saddle at the rear of the rider at its junction with the back of the horse. This was not depicted on the OS maps.

3.1.11

The OS maps show a small, but distinct lump or protrusion on the back of the rider which is not evident on any later images.

3.1.12

The OS maps show a protrusion at the back of the rider's neck, which is not evident in any later photographic images.

3.1.13

The OS maps show a square end to the rear of the hat, although photographic images suggest that it was pointed.

3.1.14

The OS maps show a small jut at the north-east corner of the rider's lower hand. This is not evident on any of the photographic images.

3.2 Recommendations arising from the assessment

The results of the assessment, together with the previous work undertaken by Wallis, indicated that there had been no significant change to the overall shape or size of the hill-figure from the first known image in 1883, through to 1947 (this was confirmed in the later survey phase which is discussed in Section 5). However, the new evidence cast doubt on the original recommendation (Wallis 2010, 14) to adopt the Hitch (c 1911-12) image as the template for reconstruction and the recommendation to use that alone as the basis for a new restoration. The results of the assessment made it clear that the anomalies which had been identified in the outline needed to be clarified by further and more detailed analysis. It was subsequently agreed at a meeting of the OWHRG on 16th February 2011 that it was necessary to undertake this further analysis before the physical restoration could be undertaken. The the aims of this further stage were:

> Aim 1. Undertake a combination of accurate earthwork survey and photogrammetric transcription of the Aerofilms (1947) oblique aerial photograph, and any other appropriate images, to produce a single, coherent and metrically accurate survey dataset based on the OS National Grid coordinate system.
>
> Aim 2. Define the outline to be restored as a string of computer-retrievable OS National Grid coordinates which could be used to set out the hill-figure using survey-grade GPS (that is to say, accurate to the nearest 10mm).

Aim 3. Produce accurate baseline data to inform a full analysis of the evidence for the choice of outline to be restored.

Aim 4. Identify and quantify the parts of the monument which required cutting, removal or reinstatement as part of the restoration process.

Aim 5. Future-proof the restored outline as part of a long-term management plan for the monument. This was to be achieved by archiving the outline digitally as a series of OS National Grid coordinates giving a single, unambiguous 'virtual' statement of the outline and obviating the need for physical demarcations using pegs or shuttering (which was considered by the OWHRG to be inappropriate, visually intrusive and likely to be short-lived). The data was to be archived in such a form that it could be uploaded electronically or manually to the future survey systems available to organisations and groups concerned with the monument's long-term management. The data would also be included on the coordinate database of the digital OS MasterMap.

Aim 6. Prepare a report to summarise the stages and results of the collaborative project between English Heritage and OS. The 'virtual' outline data (Aim 5) should accompany the report in a paper form which is not software dependant.

Aim 7. Bring together the disparate datasets produced during this project in a single report (and digital record) to be curated at the English Heritage Archive and copied to the Dorset Historic Environment Record.

4. SURVEY OF THE HILL-FIGURE

To achieve Aims 1-7, two surveys were undertaken, one consisting of a computer-based rectification and transcription of the aerial photographs (4.1), the other a ground-based, analytical survey of the earthworks (4.2) (Figures 5 and 6). An evaluation of the results of those surveys was undertaken to ensure metrical and interpretative consistency (4.3). In addition to defining the outline to be restored, both these surveys were to be used to underpin a programme of groundworks that would be needed to restore the hill-figure. The final analysis of the evidence gathered during these surveys is presented in Section 5.

4.1 Photogrammetric survey

Between February and March 2011, Jon Horgan undertook a photogrammetric transcription of the outline of the hill-figure shown on the Aerofilms (1947) oblique aerial photograph. The use of this image presented a number of technical issues which had to be overcome to facilitate the rectification process. Firstly, the image was a two dimensional representation of a three-dimensional surface, which could result in the positions of features on undulating ground being distorted on the image. Secondly, the image was taken with a camera and lens of unknown specifications and these details are necessary to perform accurate metrical rectification. Thirdly, the oblique angle from which the image was taken had the potential to distort the plan-shape and position of features on it. Also, since there had been 63 years between the date of image capture and the present day, there were very few features on the image that could still be identified on the current map, and those that were still in existence were largely toward the north west and south of the hill-figure itself. Ideally, full surrounding control points are required to perform accurate rectification.

To assist in the rectification process and to help address the issues above, vertical aerial photographs with a known camera and lens focal length (RAF 1946) were digitally scanned and used for comparison. These were captured at a different flying height (resulting in different photo scales), but they did at least offer the opportunity to identify some of the original features on the ground, and to derive OS coordinates which could be correlated with the Aerofilms (1947) photograph as a prelude to rectification. However, although taken only a year earlier, the RAF images were captured at a time just after the Second World War when the definition of the hill-figure was particularly poor (*see* Section 5 below), thus preventing their direct use to plot the hill-figure.

High resolution, digital aerial imagery of the area of the hill-figure was captured by OS in 2009 (OS 2009) and used to generate a 3D digital surface model (DSM) to underpin the rectification process. It also served to identify features to be used as control points in the referencing of the archive imagery. This involved the use of a block of multiple stereo-matched images with known reference information from the camera, lens, flight pattern and ground control points. The image matching, or correlation, was carried out as a computer-based process and the result was a dense matrix of 3D points which modelled the terrain and features on it, such as ground undulations and earthworks. The accuracy of the DSM produced was *c* 50cm RSME (Root Mean Square Error) and it showed the relief of the earthworks of the hill-figure and its penumbra. Once established, it also

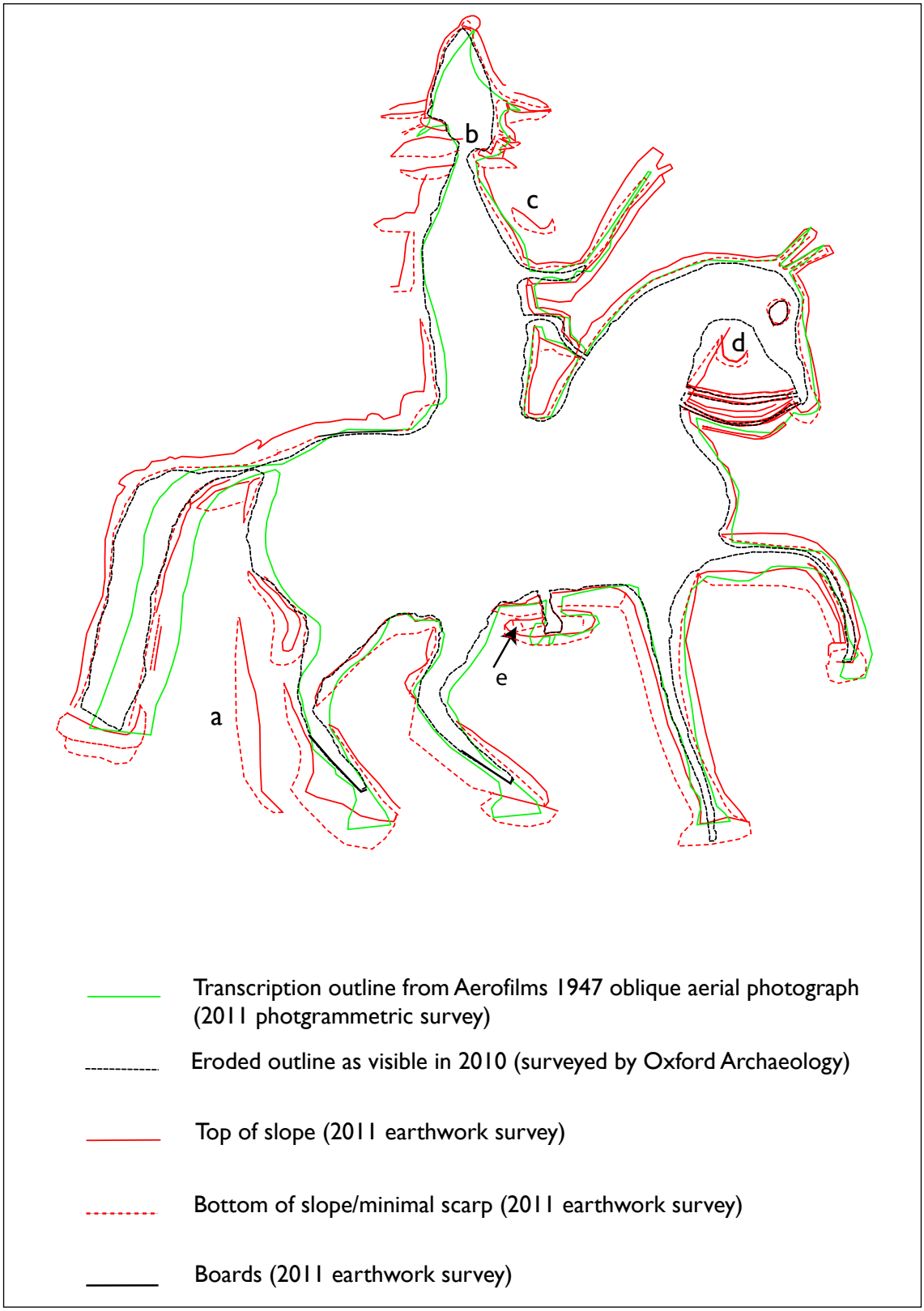

Figure 5: Composite diagram showing the 2011English Heritage/OS surveys, and the 2010 Oxford Archaeology South survey of the outline. Note the significant metrical error in the tail and rump of the horse caused by a lack of control points visible on the Aerofilms (1947) oblique aerial photograph.

provided the foundation for the rectification of the archive images and for the digitisation of the outline of the hill-figure. In summary, this rectification process was successful in eliminating any distortion due to scale from flying height or ground relief in the image and facilitated plotting from the images. However, some errors in this process were inevitable and although they were minimised through the careful use and management of the data, an error of *c* 4 metres was identified in certain regions of the resultant 'transcription' outline. The main reasons for this were the lack of camera and lens model information and, more importantly, the shortage of identifiable control points which existed around the hill-figure in the 1947 image. This was mitigated through subsequent use of the GPS to capture earthwork features, as this helped to refine the accuracy of the outline transcribed from the 1947 image.

Whilst the 'transcription' outline was established through computer-based rectification, it incorporated some human judgements made on the desk-based interpretation of the hill-figure from a single non-stereo image, as well as on the metrical errors noted above. The outline of various features (particularly the horse's tail and rump, the baton or sword and the rider's hands, head and foot) were subsequently refined during the data evaluation stage after comparison with the earthwork survey (*see* Section 4.3).

4.2 Earthwork survey

Between 24th and 25th March 2011, an analytical survey of the earthworks was conducted using survey-grade GPS to English Heritage Level 3 standard (*see* Ainsworth and Thomason 2003; Ainsworth *et al* 2007). All features pertinent to the understanding of the morphology and chronological evolution of the monument were recorded. This data was added to the photogrammetric transcription of the Aerofilms (1947) oblique aerial photograph and the survey of the outline by Oxford Archaeology South in 2010, to provide a composite electronic dataset, rectified and adjusted to OS National Grid.

The hill-figure was, in the main, originally created by cutting through the turf to expose the underlying chalk and sub-soil surface. However, embanked earthworks had been raised as revetments to stabilise and retain features on the slope, in some places, such as around the hooves of the horse-figure, remaining *c* 1.5m high (*see* Figures 52 and 53). The extent to which these stabilising features were incorporated in the original design implied that some thought was originally given to its longevity and the problems of erosion and slippage, particularly at the base of linear features which ran down the slope, such as the horse's legs and tail. In effect, the whole of the lower half of the hill-figure, including the horse's tail and legs and the rider's boot, was to some degree deliberately engineered to prevent slippage or loss of shape downslope from erosion, especially erosion from rainwater channelled down these features.

In general, the steeply sloping surface exposed within the outline was relatively free from significant undulations, with only small, localised variations present, probably reflecting the ground contours before the hill-figure was constructed. The depth of the cutting necessary to expose the underlying rock varied between *c* 1m and 20cm in height (for example, *see* Figures 55 and 60), depending on two factors: the angle of slope and the contours of the original surface. Although the escarpment face seems relatively uniform

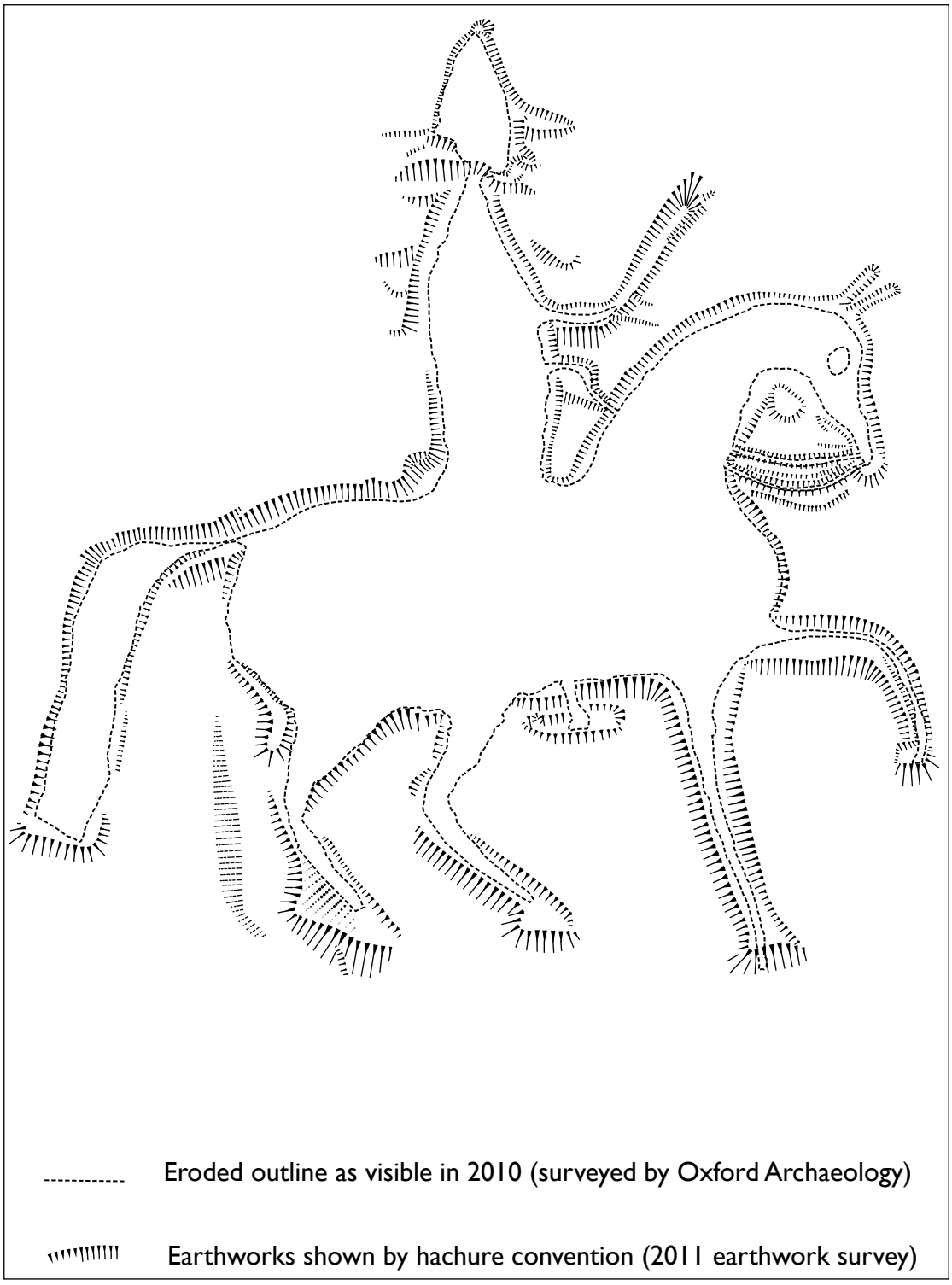

Figure 6: Hachured earthwork survey (2011).

from a distance, close-up, there are numerous earthworks visible around the hill-figure. Some are slight steps formed by horizontal bands in the underlying rock, whilst others are a combination of minor slumps and small terraces caused by soil movement. There is also a series of man-made lynchets and banks particularly noticeable to the east of the hill-figure, although similar features also occur to the west. One earthwork ('a' on Figure

5) belonging to this field pattern runs up and down the slope close to the western edge of the horse's westernmost leg. Further discussion and mapping of this prehistoric or Romano-British 'Celtic' field system lies beyond the scope of the project. The rectilinear pattern of boundaries can be seen in relation to the hill-figure on 1m resolution lidar data of the escarpment which was captured in 2009 (Figure 7).

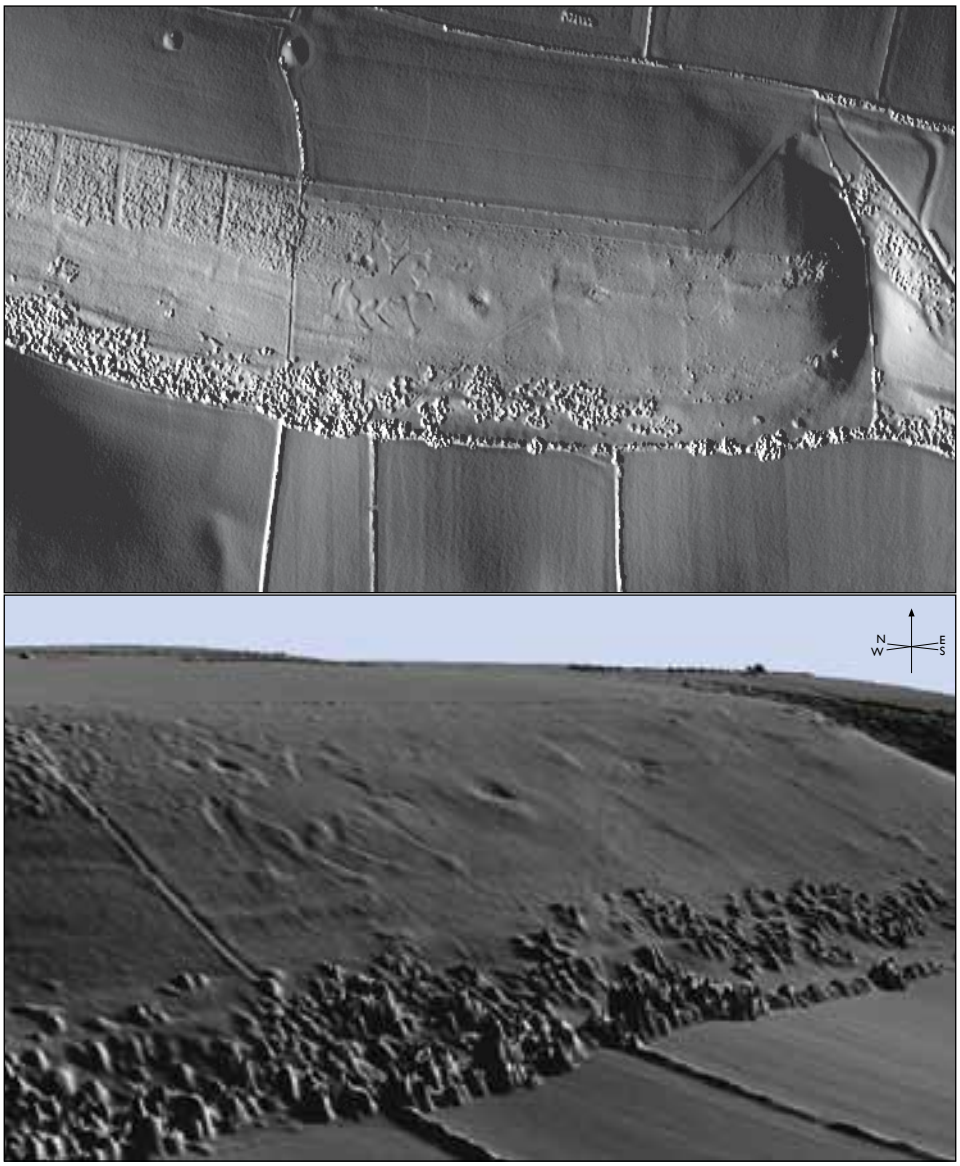

Figure 7: Digital Surface Model (DSM) of the escarpment and hill-figure based on 1m resolution lidar data (2009).
[Upper] Plan view. The bulk of the field systems survive to the right (east) of the hill-figure.
[Lower] 3D lidar model showing the slope of the escarpment.
Based on Environment Agency lidar, Licence GMG-1756-220211.

The majority of surviving hill-figure revetments have consistent morphological characteristics that suggest a single episode of construction. The same applies, in general, to the negative earthworks resulting from cuts into the slope: some of which are quite substantial (up to *c* 1m in depth) and have mostly retained their integrity, despite later cutting back or trimming (Figure 8). Since most of the trimming has only been applied to the cut face of the hill-figure, rather than to the more substantial original earthworks, the outline evident in 2010-11 was, apart from erosion bleeds, 'inboard' of the earthworks (usually by 1-1.5m) and much reduced from its original size. In a number of places, stratigraphic relationships between earthworks were observed, as well as changes in form, allowing chronological relationships to be established and interpreted (*see* Section 5). Some phases of activity identified from historic images and cartography could be related to specific earthworks, whilst other earthworks clearly related to the sculpting of the outline do not appear on any image consulted. Approximately 90% of the shape of the hill-figure interpreted from the earliest photographic image and map depiction (Acott 1883; OS 1889) has survived in earthwork form. In addition to the earthwork at 'a' noted above, a number of earthworks close to or closely related to the history of the hill-figure do not seem to appear on any image or map (*see* Figures 5 and 6):

- 'b' - a slight scarp extends across the rider's neck, linking the chin and queue. This may be a natural feature, although it does seem to have been artificially utilised (*see* Section 5.1.1).

- 'c' - a slight curving earthwork close to, but detached from the rider's chest. This cannot be assigned to any specific period explored in Section 5 and does not form any obvious outline: it may be a natural feature.

- 'd' - a slight mound *c* 0.2m high and 3.5m wide at the junction of the horse's neck and head. Again, there is no obvious explanation for this and it may be a natural feature which appears slightly exaggerated because of the cutting of the horse's neck around its upper edges (*see* Section 5.1.1).

The earthworks noted above, along with those that can be equated with features evident on the historic imagery and the anomalies noted in Section 3, are discussed more fully in Section 5 in an attempt to present the evolution of the hill-figure as a whole and to establish a chronology for changes to the state of the monument.

4.3 Evaluation of the survey data

The evaluation was undertaken at the OS headquarters in Southampton on 10th May 2011 using specialist photogrammetric equipment and Geographical Information Systems (GIS) software. The main purpose of this was to compare and assess the relative metrical accuracies of the photogrammetric and earthwork surveys and to identify any inconsistencies. Stewart Ainsworth took the lead role in interpretative, archaeological and historical matters and Jon Horgan took the lead role in metrical accuracy validation. The results are given in Sections 4.3.1 and 4.3.2 below. In summary however, the 1947 oblique aerial photograph could be rectified with sufficient accuracy to allow transcription of the hill-figure visible on it, corrected to OS National Grid. Some of the

Figure 8: Earthworks defining the upper part of the eastern foreleg of the horse viewed from the east.

differences between the rectified image and the earthwork survey were identified as metrical errors arising from the transcription process. These were isolated and adjusted. Other differences clearly indicated physical changes made to the monument between 1947 and the present day.

4.3.1 Metrical accuracy

Analysis of the overall earthwork form of the hill-figure and comparison of its current position with that shown on the 1889 First Edition OS map, indicate that it has not moved in position along the escarpment, nor has it expanded in size despite many episodes of maintenance. Its current overall measurements (c 98m by 85m) are broadly consistent with those given in the 1940s (323 feet high and 280 feet long, Marples 1949, 123) and with scale measurements taken from the 1889 First Edition 1:2500 OS map. The main identifiable changes to the outline result from minor modifications and are discussed in more detail in Section 5.

There was a good deal of positional correlation between the outline of the hill-figure on the Aerofilms (1947) oblique aerial photograph and the surviving earthworks on the ground. Where metrical correlation could not be achieved, this was mainly due to inadequate map control being available on the aerial photograph toward the east of the

image (as noted above in Section 4.1). This resulted in positional differences of between 0.5 and 1m for the majority of points on the outline and the actual earthwork and suggested a rotational metrical error arising from the photogrammetric process. Some more significant positional differences occurred, mostly around the rider's head, the front legs of the horse and the tail. These were easily identifiable and adjusted within the solid ground framework provided by the earthworks. Some other slight differences in the outline resulted from the interpretation of features during the computer-based transcription process, mainly the portrayal of the rider's head, arms and foot and the horse's head.

4.3.2 Archaeological interpretation

A number of temporal changes to the hill-figure could be identified in both the earthworks and the imagery. These were principally additions to the shape of the rider's head and boot, and the horse's head. Some of these changes, which survive as earthworks, have never been recorded on images or maps. Conversely, other changes which could be identified on the ground and aerial photographs, have not left earthworks, suggesting that they were ephemeral, short-lived and fairly informal. In general terms, *c* 90% of the 'evaluation' outline (see below) survives as physical earthworks whose position can be correlated with those which existed in 1947. It was clear from the evaluation exercise that the earthworks provided a solid metrical and interpretative framework for establishing the outline of the hill-figure and that the remaining *c* 10% of the outline could be reinstated on the basis of the photogrammetric transcription of the 1947 oblique aerial photograph. A detailed archaeological analysis of the chronology of changes and their significance is provided in Sections 5 and 6 below.

By systematically reviewing the earthwork and photogrammetric surveys against each other, an 'evaluation' outline which best represented the hill-figure was prepared and added to the dataset (Figure 9, below).

4.3.3 The definitive outline

Immediately following the data evaluation exercise the 'evaluation' outline was taken back into the field (on 11th and 12th May 2011) and fine-tuned by close inspection and measurement on the ground, particularly in the areas which had been subject to erosion, to produce a definitive outline. As part of this process, a site meeting was arranged between Stewart Ainsworth, Peter Addison (English Heritage), John Hayes (Dorset Countryside Coastal Ranger Team) and Chris Bird (on behalf of OWHRG), to present the results of the surveys. Following a detailed perambulation of the hill-figure by this group the definitive outline was formally accepted as the template for restoration. An assessment was also made, at all salient points, of the groundworks that would be required to restore that outline (these works are summarised in Section 5.1.11).

This definitive outline (Figures 10, 11 and 69), reflects the best understanding of the evidence presented by the analysis of the earthworks, the transcription of the 1947 outline and cartographic, photographic and historical evidence (see below). There is no evidence to suggest that the original interior surface of the monument was anything

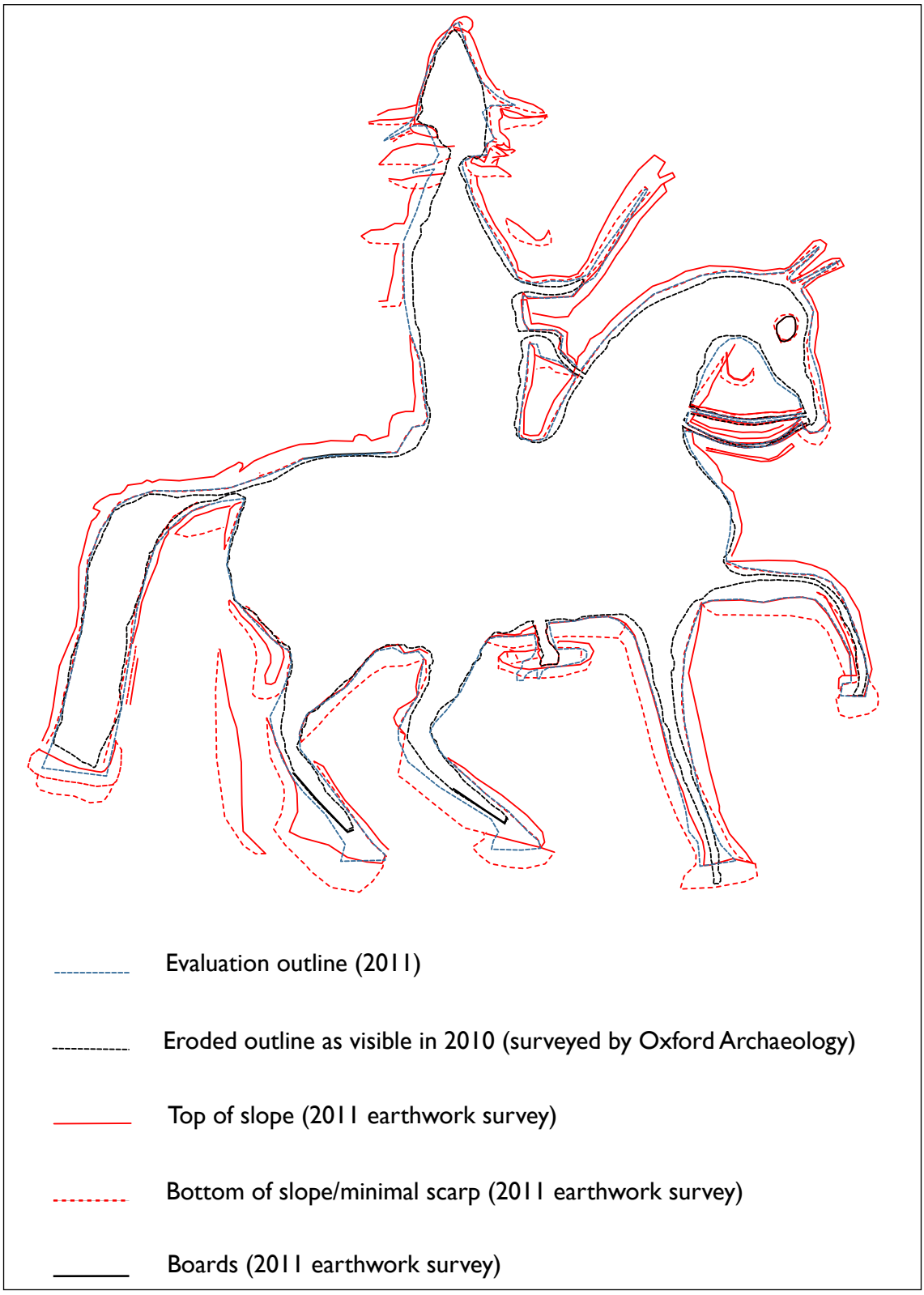

Figure 9: Evaluation outline (2011).

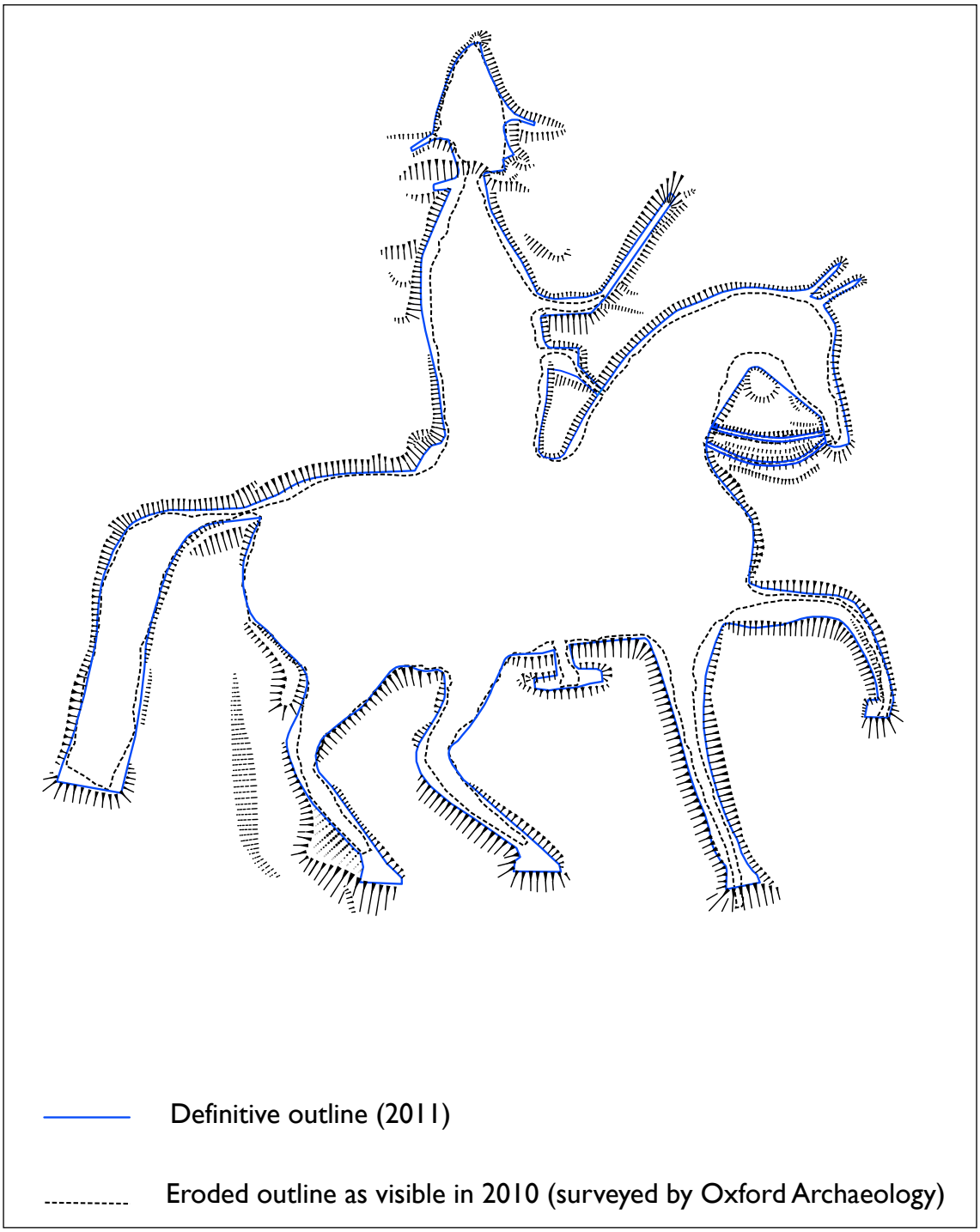

Figure 10: Definitive outline (2011) shown against the earthworks and the hill-figure as surveyed by Oxford Archaeology South in 2010.

other than the natural strata that would have been exposed below turf level (Wallis 2010, 4). Nor was there any evidence to support the idea that the hill-figure was an adaptation of an earlier (that is to say, pre-19th century) hill-figure, as had been once suggested (*see* Marples 1949, 126).

Figure 11: Definitive outline as set out on the ground (2011).

5. ANALYSIS AND CHRONOLOGICAL DEVELOPMENT OF THE HILL-FIGURE

An analysis of the new evidence produced during the assessment and survey phases, building on the solid work by Wallis and the OWHRG, underpinned decisions about the definitive outline. A rapid review of historic portraiture was also undertaken to help understand contemporary representations of George III and how this might affect the interpretation of the outline. The results of that analysis are presented below and define the current understanding of the evolution of the monument.

5.1 Chronology of changes to the hill-figure and previous restorations

This analysis demonstrates that the monument has seen changes to its outline through time and that this evolution is fundamental to the its character. Over the years, the hill-figure's importance to local communities has led to episodes of maintenance and a number of well-intentioned 'restorations'. Some of the changes have been fairly extensive, whilst others have been relatively informal and limited in scale. Indeed, some may have been intended to celebrate important historical events and as such should be considered as integral to the monument's development. Not all the energies expended on the monument were designed to increase its visibility or make improvements, however. For example, at some time between 1883 and *c* 1911-12 a large 'proboscis-like' nose was added (see below) and at the start of the Second World War, it was deliberately masked by camouflage netting for a short time (White 2011, 23). In relatively recent times, it also seems to have been a local tradition to add initials close to the hill-figure using loose stones, and to add 'drips' to the end of the nose using the same method. At one stage, the 13th Girl Guide Unit added a huge '13', which apparently caused a local stir as it was thought to be a bad omen (Geoff Codd, OWHRG, pers comm). Even during the course of this current project a large 'horn' made from white plastic sheeting was added - instantly converting the horse into a unicorn! This was soon removed. However, these additions illustrate how much the hill-figure is part of the fabric and character of the landscape as perceived by the local community, as well as being a nationally important monument and show that change is something that is likely to have happened throughout its existence.

On the historic photographs, some of the smaller, cut features seem to appear and disappear, but as Wallis (2010, 7) correctly points out, this can largely be attributed to the quality and angles of the photography, which vary considerably, and not necessarily to physical changes in the monument. Also, as the positions and angles from which the images have been taken vary, so too does the perspective, particularly relating to curves such as the horse's rump and the rider's chest, which could be easily be misinterpreted as changes to the shape. However, there are some significant exemptions to this which are discussed below.

What follows is a summary of the known 'restorations', maintenance, impacts and activities relevant to the understanding of the monument which can be identified from maps, aerial photographs, ground-based imagery, readily available published sources and earthwork evidence. A total of 25 (of the 27) images from the historic postcard

collection originally consulted by Wallis (2010, 15) were made available for consultation as part of this analysis. For many of these, the dates supplied are only approximate, making a precise chronology difficult. Adobe Photoshop software was used to enhance and refine the images to enable better interpretation of details. During the course of this review, it was discovered that some of the dates of the images, and thus of the interpretations, used previously by Wallis could be refined. Where appropriate, comments based on the image evidence have been included to clarify specific details or the chronology of changes to features. The majority of the anomalies noted during the assessment phase were clarified during the survey stage and have been included in the analysis below (their numbers are given in brackets for example, 3.1.1). A number of recommendations were made to the OWHRG for specific features to be incorporated in (or excluded from) the definitive outline as a result of this analysis. These recommendations have also been included in the chronological analysis below, where appropriate.

5.1.1 The 19th century

The original hill-figure in 1808

It is now well established that the hill-figure was created in 1808, probably between the months of May and August (Wallis 2010, 4; White 2011, 23-24; Anon. 1808). No survey or design drawing of the original hill-figure has come to light, although the possible use of paintings as a design template is discussed below (*see* Section 6). Analysis of the evidence suggests that, apart from some small details, there had been no significant change to the hill-figure's overall shape or size from its cutting to its first known appearance in image form in 1883 (closely followed by the map depiction in 1886). Also, it seems that overall maintenance of the original outline continued through to 1947, again with only some small changes. In broad terms, the evidence supports the *Monthly Magazine* report (Anon. 1808, 393) that the hill-figure originally comprised a seamless amalgam of a man (representing George III) sitting astride a horse (said to be George's favourite charger, Adonis). Both the ground and photographic evidence indicate that George III was shown wearing a tricorn hat and carrying a sword or baton in his upper hand, and that his lower hand held two reins in a single gather. A crude representation of the monarch's boot protruded from the underbelly of the horse.

The rider and associated apparel

*Facial outline and neck (*see *3.1.1)*

The early OS maps depict a nose and chin on the rider's face, to define a facial profile. In essence, these features are replicated on the Aerofilms (1947) oblique aerial photograph. The profile of the face is unclear on the Hitch (*c* 1911-12) image, although this clearly shows a grossly extended appendage which appears more like a proboscis than a nose (*see* Figure 15). The edges of some of the facial features visible on the 1947 oblique aerial photograph (*see* Figure 28) could be detected as earthworks, particularly the chin, which has a significant revetment, and the mouth and base of the nose - although the bridge and the junction of the facial profile with the hat could not be recovered, as this was an area that had been heavily eroded. (This part of the outline was reinstated from the photogrammetric transcription of the 1947 oblique aerial photograph). Other earthworks evident around the nose area seem to reflect changes to the profile (as

seen on the post-1947 images), giving the nose a slightly hooked appearance (see 1947-49 below). The earthwork across the neck noted in Section 4.2.1 ('b'), may well be a natural step in the underlying rock, although it has also been utilised to form part of the revetment for the chin and back of the hat. The proboscis-like nose evident in the Hitch (c 1911-12) image was likely an informal 'comedy nose', added using gathered stones as this left no earthwork signature (see c 1911-12 below). The shape and coherence of this feature on the photograph suggests that it was not an erosion bleed or a blemish on the image.

- Recommendation - the facial features visible on the Aerofilms (1947) oblique aerial photograph should be reinstated using a combination of existing earthwork edges and the photogrammetric transcription.

Hat (see 3.1.13)

The early OS maps show a square end to the rear of the hat, which overall appears to have had the profile of a tricorn. The Hitch (c 1911-12) image and the Aerofilms (1947) oblique aerial photograph suggest that the rear was more pointed, in sympathy with the front. Images taken at intervening dates do not clarify this issue due to the angle at which they were taken and their distance from the monument. Later images indicate that there were changes to this area in the post-1947 period (see 1947-49 below). This square end on the map could have resulted from the use of carelessly drawn dashed lines to depict it, but this has not occurred at the peak of the hat, which is shown as pointed. A slight edge in the turf could be detected on the ground, which joined to the original revetment earthwork defining the base of the hat, suggesting that the OS depiction may have been partially accurate on this detail, but that the angularity of the feature had been exaggerated. Elsewhere around the profile of the hat, the same gentle curving shape seen on the Acott (1883) image (see Figure 12) and portrayed on the early OS maps is defined by the earthworks, which although low are well defined. The apparent peak of the hat extends as an earthwork terrace 3m beyond the end as transcribed from the 1947 oblique aerial photograph and is disproportionally long compared to the rest of the face and hat. It seems unlikely that this lack of proportion is part of the original design and it may have been extended at a later date, although an effort was clearly made to create it as an earthwork, rather than as an informal addition. It may have been extended as the result of the fanciful works recorded on a later oblique aerial photograph (see 1947-49 below). It is also possible that these changes occurred between 1947 and 1968, as it is evident from other aerial photographs that significant changes to the hat had been made during this time (see below). Also, a small, circular earthwork which can still be seen at the top of the hat (probably a pom-pom) is not original and was added between 1971 and 1978 (see 1978 below).

- Recommendation - a combination of existing earthwork edges and the outline derived from the photogrammetric transcription should be used to define the outline of the hat with a square end at the back. The 'pom-pom' and extension to the terrace which hosts the 'peak' should not be reinstated.

Boot (see 3.1.7)

The width of the feature which connects to the outline of the horse suggests a boot and comparison between the hill-figure and contemporary equestrian paintings support this interpretation (see Section 6). The early OS maps and the Aerofilms (1947) oblique aerial photograph show a rounded front with an angular heel area to the boot. On the Hitch (*c* 1911-12) photograph, the foot appears more pointed, but this may be due to the shallow perspective of the photograph. None of the other images taken before 1947 clarify this. However, the Aerofilms (1947) oblique aerial photograph shows the foot of the boot much as depicted on the OS maps, albeit with some erosion on the downslope edge. The changes evident on the aerial photograph taken between 1947 and 1949 (Marples 1949) are detectable as earthworks, particularly the addition of an upturn at the heel, which appears to signify the rowel of a spur, and a slight rounding at the toe end. Interestingly, although the rowel would appear to have been a new addition at that stage, Thomas Hardy mentions one in his fictional narrative about the hill-figure in *The Trumpet Major* (see 1880 below). The Aerofilms (1947) oblique aerial photograph shows what appears to be a square heel with a possible stirrup projecting downwards immediately in front of it. Contemporary equestrian illustrations of George II and George III by Sir William Beechey and David Morier would support the possible portrayal of both, especially if a painting was used as the basis of the design (see Section 6). However, whilst the angularity of the heel is clear on the 1947 photograph, the presence of what might be interpreted as the stirrup is less clear, as this may simply be an erosion bleed (this feature was transcribed on the photogrammetric survey). The position, if it was a stirrup, also seems too far back. Due to later changes to the boot, the revetment slope upon which the heel was located has been either been deliberately removed, which seems unlikely, or more probably, has been lost to erosion and resultant slippage.

- Recommendation - to re-instate the heel of the boot as reconstructed from the photogrammetric transcription would require building an earthwork revetment of the same size. This is considered impractical at this stage and it is recommended that the existing earthwork platform should form the basis of the restoration, but without the rowel (which is a later addition). There is no substantive evidence to support the presence of a stirrup.

Sword or Baton (see 3.1.2)

The early OS maps, the Aerofilms (1947) oblique aerial photograph and images taken at dates before 1947 show an object, assumed by Wallis (2010, 11) to be sword, in the rider's upper hand. Although not obvious on the Hitch (*c* 1911-12) photograph, its presence can be inferred (see 1883 below). The earthworks which define this long, thin rectangle with a square end are well defined, being visible as a narrow, 12m long shallow trench-like feature. This feature seamlessly merges at the bottom into an embanked terrace across the slope, which represents the rider's upper hand. This suggests that the sword or baton was part of the original design. The whole feature resembles the shape of a hockey stick or golf club held at its base.

The irregular shape of the sword or baton transcribed on the 'evaluation' outline by the photogrammetric survey needs comment. The apparent step in the edge visible on

the 1947 photograph reflects a change in height of the earthwork, but the angle from which the image was taken makes it appear like a change in direction. The earthwork itself indicates that this line should be straight. Slight earthworks which project from the base of the sword or baton near its junction with the hand, relate to the fingers added sometime between 1947 and 1949 (see 1947-49 below). Whether this feature is a sword or a baton cannot be determined from the earthworks alone. A number of 18th- and 19th-century paintings of George III mounted on a horse were consulted (see Section 6). None show him with a raised sword, although a number show him with a baton pointing downwards (or possibly a scroll in one instance). The possibilities are discussed more in Section 6, but whether the original intention was to display a sword or baton, the feature, raised in the way it is, is clearly an important symbolic gesture. There is no evidence that this feature was added to the hand at a later date, as the earthworks which define the periphery are seamless and show no evidence of relative stratigraphy. Both appear to have been created at the same time.

- Recommendation - a regular-shaped sword or baton should be reinstated using the existing earthwork edges.

Queue (see 3.1.12)

The early OS maps show an extension at the back of the neck which can be still identified as an earthwork. The morphology is consistent with that of other features which have been terraced to create a stabilising revetment, suggesting that it is part of the original design. This feature could plausibly be a representation of a queue, a hair adornment shown in numerous contemporary portraits and caricatures of George III. Without such an adornment the dress uniform, particularly that of a monarch of the period, would be considered incomplete, thus adding to the likelihood that this was part of the design from the outset. The queue is not evident on the Aerofilms (1947) oblique aerial photograph nor on any of the earlier photographic images consulted, suggesting that it was 'lost' (that is buried or turfed over) at an early date, and that the remnant earthworks were too slight and faint to register.

- Recommendation - the queue should be reinstated from a combination of earthwork edges and the photogrammetric transcription.

Frockcoat (see 3.1.10)

The Hitch (*c* 1911-12) postcard, the Aerofilms (1947) oblique aerial photograph and images taken between those dates, show what could be interpreted to be a saddle at the rear of the rider. It appears to have been depicted on the OS maps (indicated by a slight chamfer at the junction of the rider and horse) and is still visible as a well-defined, 1m high scarp cut into the slope, seemingly as part of the original earthwork morphology. Whether this is actually the profile of a saddle is debatable, as it could alternatively be the outline of the rider's frockcoat draped over a saddle. Contemporary equestrian paintings of George II and George III by Sir William Beechey and David Morier would support the idea of a frockcoat, especially if a painting, or an amalgam of portrayals, was used as the basis of the hill-figure's design (see Section 6). There are hints of this feature, although it is not clear, on the Acott (1883) photograph and it is clearly visible on the

Aerofilms (1947) oblique aerial photograph. A projection was added to this part of the outline between 1947 and 1949, presumably to create a cantle at the rear of a saddle (see 1947-49 below). The cut for this feature is still evident in the slope, although it is now slightly slumped and has lost some of its original form.

- Recommendation - the trailing frockcoat outline should be reinstated to the existing earthwork edges.

The horse and associated equipment

Head

The horse's head has shrunk significantly over time, probably due to a mixture of turf encroachment and informal trimming, rather than a deliberate reshaping. The edge of the original head and neck is mostly marked by low earthwork scarps which were confirmed by the photogrammetric transcription to be the same features as those on the Aerofilms (1947) oblique aerial photograph. There are hints of a feature which resembles a mouth on the Hitch (*c* 1911-12) image, but when examined closely, this comprises two closely-spaced features which may simply be the erratic edges of vegetation encroachment. However, a mouth was definitely added between 1947 and 1949 (see *c* 1911-12 and 1947-49 below).

- Recommendation - the horse's head should be reinstated using a mixture of existing earthwork edges and the outline derived from the photogrammetric transcription. Whether a mouth was an original feature is less secure and therefore should it not be reinstated without further supporting evidence.

Ears (see 3.1.3)

The early OS maps show the horse with two ears. They are not visible on the Acott (1883) or Hitch (*c* 1911-12) images, but are clearly visible on a photograph taken in *c* 1930 (Valentine Pre-1934) (see Figure 25) and the Aerofilms (1947) oblique aerial photograph, suggesting that they have always been present, even though the low angle of many of the photographs and the narrowness of the features have combined to make them obscure. As earthworks, the two ears are well defined by trench-like depressions 10m long and 0.5m wide. Their earthwork form, and the way the earthwork outline of the horse's head flares out to accommodate them, would indicate that they are part of the original design. There is no evidence that they were added at a later stage. A slight narrowing at both tips is evident on the 1947 image and this is partly suggested in the earthworks of the upper of the two ears.

- Recommendation - the ears should be reinstated with pointed tips using the existing earthwork edges.

Eye (see 3.1.5)

Neither the OS maps, nor any photographic images up to and including the Aerofilms (1947) oblique aerial photograph, show the horse with an eye. Other aerial photographs indicate that this was added between 1968 and 1971 (see 1971 below). The modern

origins of this eye were recognised in the original SMC application (Wallis 2010, 17), but because it was considered to be an accepted part of the modern perception of the monument, it was originally proposed to retain this feature in the restoration. The eye is an area of turf growth on the surface of the chalk and not a raised earthwork.

- Recommendation - historically, the hill-figure was in outline only and had no internal detail. The presence of the eye detracts from the original visual distinctiveness of the monument and should be removed.

*Hooves and legs (***see** *3.1.6)*

The Hitch (*c* 1911-12) postcard and the Aerofilms (1947) oblique aerial photograph, as well as some images taken between those dates, show clear details of the horse's hooves and legs. The OS maps show less detail of the hooves, probably due to the limitations of the mapping scale; nevertheless, those depictions seem consistent with the later aerial photographs noted above. Despite the modern erosion, which has been at its most pronounced on the legs and hooves, their original form and shape is clear from the well-formed earthworks. Indeed, the hooves possess some of the most substantial revetments on the monument (up to 1.5m high) and it was obviously recognised by the builders that reinforcement at the base of the slope would be necessary if they were to retain their shape. These earthworks are essentially as laid out in the original hill-figure, although rabbit burrowing, scrub growth and turf encroachment have contributed to a general loss of shape. In the main, the outline of these features can be recovered from the earthwork form, apart from the lower backs of the two hind legs, where serious erosion has caused significant loss. Here, the outline can be recovered from the photogrammetric survey.

- Recommendation - the legs and hooves should be reinstated to the shape as defined by a combination of existing earthwork edges and the outline derived from the photogrammetric transcription.

*Rump (***see** *3.1.8)*

All the photographic images consulted which were taken after 1883 show the horse with a very rounded rump. This is in contrast to the flatter portrayal on the early OS maps. The earthworks are well defined around most of this part of the outline, including some substantial revetments at the lower end, and these also follow a rounded shape. There is no indication of changes to the earthworks in this area apart from some localised trimming which is partially documented on post-1947 aerial photography (see below). There has been a slight loss of part of the outline to erosion, but the line of this (and the edge of the earthworks) was confirmed by the photogrammetric survey from the 1947 oblique aerial photograph. The flatter line shown on the OS maps is likely to be a slight mapping error associated with the problems of surveying a complex hill-figure on a steep slope.

- Recommendation - the rump should be reinstated to the shape as defined by a combination of existing earthwork edges and the outline derived from the photogrammetric transcription.

Tail (see 3.1.9)

The Hitch (*c* 1911-12) image, the Aerofilms (1947) oblique aerial photograph and other images taken between those dates all indicate a sweeping curve to the upper, outer line of the horse's tail. However, on the early OS maps this tail is shown as a more angular shape. The outline of the tail is marked by well-defined earthworks along the majority of its length and a substantial revetment at the end, where erosion is occurring. There are no indications of any significant changes to the earthworks other than trimming (as illustrated on later aerial photographs - see below). There is also no evidence to support a lateral shift in the position of the tail as was originally apparent in the photogrammetric survey. Indeed, the size and scale of such a shift would have left significant earthwork remains (particularly at the east where a residual slope would have survived). This inconsistency was a metrical issue associated with the location of adjustment points as noted above (*see* 4.3.1). The difference between the map portrayal and the plan-form of the earthworks can be dismissed as a mapping error arising from the problems associated with surveying a complex hill-figure on a steep slope.

- Recommendation - the tail be reinstated to the shape as defined by a combination of the existing earthwork edges and the outline derived from the photogrammetric transcription.

Reins (see 3.1.4)

The early OS maps and the Aerofilms (1947) oblique aerial photograph show two reins between the horse's neck and mouth. Their individual widths appear to have been unevenly exaggerated on the OS map due to the limitations of scale (where important features were less than 2m wide, it was OS practice to exaggerate their width on 1:2500 mapping), including the junction with the horse's muzzle area. The Hitch (*c* 1911-12) image only shows one rein clearly, but the low angle of the photograph, combined with the narrowness of the features, makes interpretation difficult. It is clear from the earthworks that there are four reins, all cut into the surface as narrow channels *c* 0.4m wide. Two are better defined than the others (the uppermost and the third from the top) and the photogrammetric survey confirmed that these are the two visible on the Aerofilms (1947) oblique aerial photograph and thus likely to be the two indicated crudely on the OS maps. The two additional reins were added between 1947 and 1949 (*see* 1947-49 below). The linear earthwork between the rider's lower 'bridle-hand' (the hand is essentially a square earthwork platform) and the horse's neck is a single, trench-like channel which shows no sign of any significant alteration. This channel was clearly intended to also represent the gathered reins as a single feature. This feature was depicted on the OS maps and is visible on a number of photographic images and seems to be original. The OS maps show a slight angular projection at the north east corner of the bridle-hand, but there is no earthwork evidence that this existed or that the earthworks have been remodelled. This is therefore assumed to be a mapping error (*see* 3.1.14).

- Recommendation - that only the two original reins (the uppermost and third from the top) and the single bridle should be reinstated as part of the restoration outline using the existing earthwork edges.

1880

In 1880 *The Trumpet Major* by Thomas Hardy was published. The date at which it was written has not been firmly established, but it may have been 1879 (Hardy 1880, xxiii - Note on Text by R Nemesvari). Although the dangers of confusing fact, fiction and folklore have been touched on elsewhere, it is worth quoting two extracts from the novel which pertain to the hill-figure.

> "I see little figures of men moving about. What are they doing? Cutting out a huge picture of the king on horseback in the earth of the hill. The king's head is to be as big as our mill-pond and his body as big as this garden; he and the horse will cover more than an acre..."
>
> "When they reached the hill they found forty navvies at work removing the chalk sod so as to lay bare the chalk beneath. The equestrian figure that their shovels were forming was scarcely intelligible to John and Anne now they were close, and after pacing from the horse's head down his breast to his hoof, back by way of the king's bridle arm, past the bridge of his nose and into his cocked hat, Anne said she had had enough of it and stepped out of the chalk clearing upon the grass. The Trumpet Major had remained all the time in a melancholy attitude within the rowel of His Majesty's right spur." (Hardy 1880, 317 and 320)

It seems highly probable that Hardy had seen the Osmington hill-figure during his time in Dorset. The context is fictional, of course, but the specific reference to a "rowel" and "spur" may have some significance with regard to the understanding of the existing remains today. There is no earthwork evidence of a spur as such, but a small, 0.5m diameter, semi-circular earthwork scar ('e' on Figure 5), above the rider's heel could indeed be indicative of a rowel. There is no trace of this on imagery up to and including the Aerofilms (1947) aerial photograph and it was not depicted on the early OS maps, although realistically such a feature would have been too small for depiction. However, there is evidence that the present feature was created (or reinstated) between 1947 and 1949 (*see* 1947-49 below). The feature is cut into the underlying terrace for the boot and seems less well formed than many of the other primary earthworks. It is possible that the rowel (and spur) was Hardy's invention, purely included to embellish the story. It is also possible that the addition of the rowel between 1947 and 1949 took Hardy's narrative as its inspiration rather than any indication of a pre-existing feature. Unfortunately, the evidence from aerial photography is equivocal and the ground evidence is compromised by significant erosion around the heel of the boot (see below).

1883

The Acott postcard (1883) (Figure 12) is the earliest known image of the hill-figure. It is too distant to allow any comments to be made about erosion, although the outline appears to be well defined and the shape is generally consistent with that shown on the early OS maps, apart from some of the small details such the reins, which are not visible at all. Interestingly, the sword or baton in the rider's upper hand and the lower hand do not show in the same tone as the rest of the exposed surface, but can be discerned as lighter tones within the scrub-like vegetation on the upper slopes. This suggests that the

Figure 12: Postcard (Acott 1883).
Courtesy of Mary Kempe

feature did exist at that time (this is more obvious if the contrast is increased in photo-enhancement software).

1886

In 1886 the hill-figure was surveyed by the OS for the First Edition 1:2500 scale mapping (OS 1889) (Figure 3).

Lump on the back of the rider (see 3.1.11).

A lump in the middle of the rider's back is shown on the 1889 OS map. It also exists as a very ephemeral earthwork whose morphological characteristics are quite different to the original earthworks seen elsewhere. The rider's back is a smooth outline on the earlier Acott (1883) postcard, and similarly rounded on the Hitch (*c* 1911-12) and Aerofilms (1947) oblique aerial photographs and images taken between those dates. That the lump was not visible on the 1883 photograph implies that it may have been added between then and the date of the OS survey 1886 map, and its subsequent absence suggest that it was short-lived and not maintained. The interpretation of this feature is difficult, although judging from equestrian paintings of George II and George III, such a feature in silhouette could be interpreted as a protruding elbow, an epaulette, or even another iteration of a queue (*see* Section 6).

- Recommendation - this feature should not form part of the restoration outline without further evidence that it was part of the original hill-figure.

Summary

From the archaeological assessment of the surviving earthworks, art evidence and historical context (*see* Section 6) it would appear that there were only minor

alterations to the hill-figure in 80 years or so following its creation in 1808. However, it is acknowledged that future, more detailed documentary research may alter our understanding of the hill-figure in that period.

5.1.2 The early 20th century: up to the end of the First World War

1901

In 1901 the OS 1:2500 scale map of 1889 was revised for the Second Edition, but there was no change to the depiction (OS 1902) (Figure 3). As noted above (in Section 3), this implies that there was no change to the outline of the hill-figure between 1886 and 1901, although it may simply be that the depiction was not revised.

1905

Postcard (F. Frith & Co Ltd 1905 *The White Horse*) (Figure 13). This photographic image appears to be hand-coloured and has a slight 'artistic' appearance to it. Consequently, both the whiteness of the hill-figure and the apparent clarity of its outline have to be treated with caution. In general terms, however, the hill-figure appears much as depicted on the 1889 and 1902 OS maps, apart from small details which would not be visible at that distance, and the Hitch (*c* 1911-12) image.

Figure 13: Postcard (F.Frith & Co Ltd 1905).
Courtesy of Mary Kempe

c 1907

In 1907, Major J H C Devenish, a member of Weymouth Town Council made himself responsible for the cleaning of the hill-figure, which was undertaken with 'unfailing regularity'. It is uncertain how long a period this covered (*Dorset Daily Echo*, 26th March 1947 quoted in White 2011, 23-24).

c 1910

Postcard (Max Ettinger and Co Ltd *c* 1910 *White Horse, Nr Weymouth*) (Figure 14). This photographic image was taken from too great a distance to be of any real value, apart from the general form of the outline of the hill-figure. It has been hand-coloured and therefore the obvious whiteness of the surface and shape of the hill-figure cannot be used as a reliable guide as to the monument's state of repair or the existence of small detail.

Figure 14: Postcard (Max Ettinger and Co Ltd c 1910). Courtesy of Mary Kempe

c 1911-12

Postcard (Hitch *c* 1911-12 *White Horse, Weymouth*) (Figure 15). This photographic image is much clearer than that of 1883 and defines the outline initially proposed in the SMC application as the basis for the restoration. Elements of the outline seen on that image and the differences between the OS map depiction of 1889 and 1902 have been dealt with elsewhere in this report. Some slight erosion bleeds can be seen along the underside of the horse between the rear legs and at the base of the hoof of the straight foreleg. The proboscis-like appendage to the rider's nose is clearly visible; it should have been evident on the earlier 1883 image if it had existed then and therefore is likely to have been an informal addition between 1883 and *c* 1911-12. As noted above, the apparent 'mouth' of the horse might actually be a patch of scrub around the margin, rather than being part of the outline. The surface of the hill-figure appears to be generally clear of any scrub or weed, suggesting that it had been maintained. There is no evidence on this photograph of the small pit which exists as an earthwork close to the rider's lower back, suggesting that this is a later feature, possibly a quarry pit or bomb crater (*see* 1939-45 below).

Figure 15: Postcard (Hitch c 1911-12).
Courtesy of Mary Kempe

Two other images from the historic postcard collection consulted by Wallis are clearly reproductions of the Hitch (*c* 1911-12) image. This has been verified using computer enhancement software. These are:

Postcard (Anon. *c* 1920 *White Horse, Weymouth*). As noted above, this supposedly *c* 1920 image (with handwritten title 'King George III on horseback') is clearly a reproduction of the Hitch (*c* 1911-12) image with a darker, more sepia range of tones. It cannot be used for comparative purposes (Figure 16).

Figure 16: Postcard (Anon. c 1920). The ascribed date of c 1920 is incorrect. This is a reproduction of the Hitch (c 1911-12) image.
Courtesy of Mary Kempe

Figure 17: Postcard (Jackson and Son c 1926). The ascribed date of c 1926 is incorrect. This is a reproduction of the Hitch (c 1911-12) image.
Courtesy of Mary Kempe

Postcard (Jackson and Son *c* 1926 *White Horse, Near Weymouth*, postmarked). This image is also a hand-coloured reproduction of the Hitch (*c* 1911-12). It cannot be used for comparative purposes (Figure 17).

c 1914-18

Australian soldiers cleaned up the hill-figure at some stage during this period. The Weymouth Chamber of Commerce carried on the work afterwards with the aid of the Scouts (White 2011, 24).

c 1915

Postcard (Seward *c* 1915 *The White Horse, Weymouth*). This photographic image (Figure 18) was taken from too great a distance to be of any real value, apart from the general form of the outline. However, the surface of the hill-figure appears to be clear of any scrub or weed, suggesting that it had been maintained. There seems to have been significant clearance of scrub from the upper slopes of the escarpment when compared to earlier images.

1916

Postcard (Seward 1916 *The White Horse, Weymouth*). This photographic image (Figure 19) was taken from slightly further west and from a slightly lower angle than that by Hitch. The tonal range is poor and therefore only general statements can be made about what it shows. The state of the surface seems relatively free of scrub or weed, although the whiteness appears enhanced. There is no discernible change to the outline from the earlier images, but because of the position from which it was taken, the sword or baton

Figure 18: Postcard (Seward c 1915). Courtesy of Mary Kempe

is more evident and the reins less so. There is no obvious erosion around the edges of the hill-figure at this date.

Postcard (Anon. 1916 *The White Horse, Preston Near Weymouth*). This photographic image (Figure 20) was taken from a distance and so the detail of the hill-figure is not particularly clear and again it can only be used to gain an overall impression of the general outline. It was taken from further away and higher up than the Seward image of the same year, but apart from two small areas on the horse's body near the front leg, which may be scrub growth, the surface seems reasonably clear and there is no obvious erosion around the outline. There seems to have been a general increase in scrub growth on the slopes of the escarpment when compared to the image of *c* 1915.

Figure 19: Postcard (Seward 1916). Courtesy of Mary Kempe

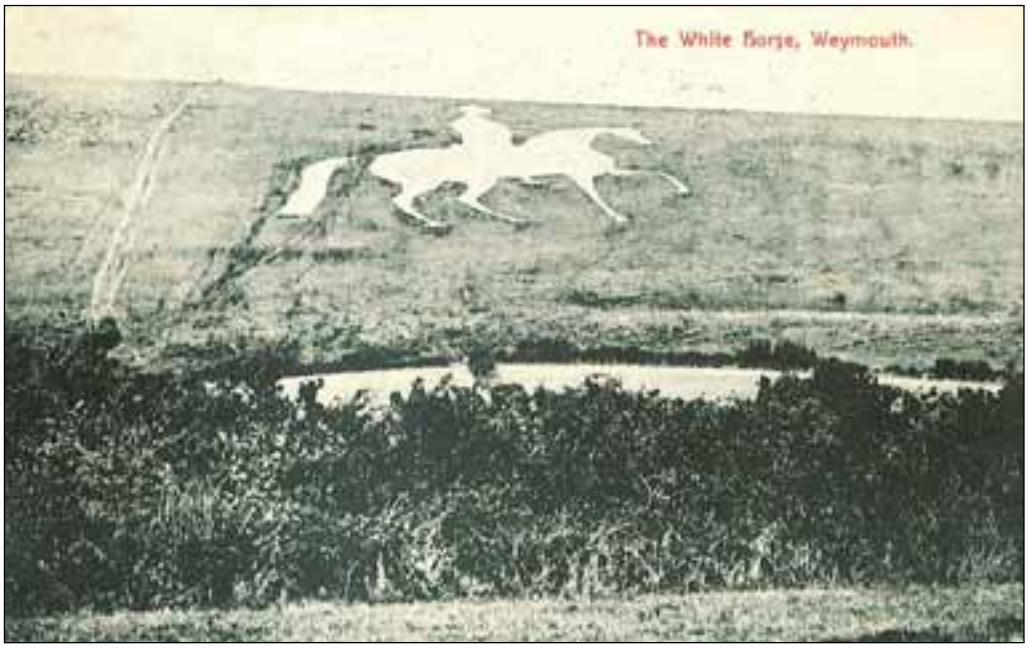

Figure 20: Postcard (Anon. 1916).
Courtesy of Mary Kempe

c 1916-1918

Postcard (J Welch and Sons 1905-1918 *The White Horse, Weymouth*). This is a hand-coloured photographic image (Figure 21) and therefore the obvious whiteness of the surface of the hill-figure cannot be used as a guide for its condition. The image is of uncertain date within the life of the company (1905-1918), but the increased density of scrub growth on the escarpment slope might indicate a general trend which seems to have been evolving since *c* 1915 and might suggest therefore that it is later than the unattributed 1916 image.

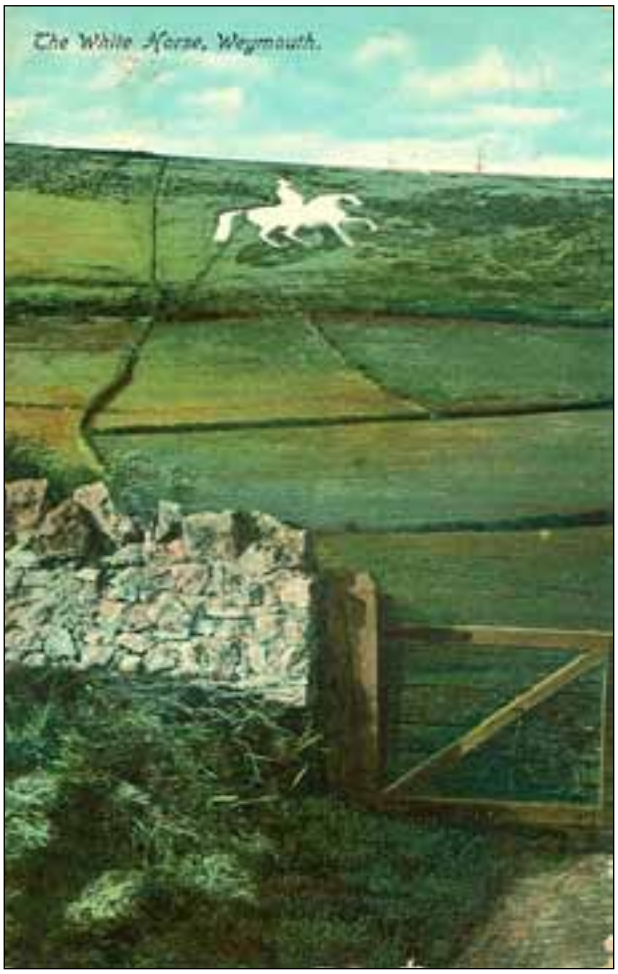

Figure 21: Postcard (J Welch and Sons 1905-1918).
Courtesy of Mary Kempe

Summary

There is little indication of change in the early years of the 20th century up to the end of the First World War, apart from informal additions (for example, the proboscis-like nose). The hill-figure seems largely to have been kept free of encroaching vegetation and scrub and the outline appears to have retained a sharpness consistent with either regular or episodic maintenance, such as weeding and 'freshening-up' by cutting back any encroaching turf around the periphery. Whether this is a legacy of the documented work of Major J H C Devenish from *c* 1907 or the Australian troops during the First World War is uncertain and there may have been other unrecorded initiatives.

5.1.3 The 1920s

1923

An oblique aerial photograph taken in 1923 (Figure 22) is the earliest known aerial image of the site (Crawford 1923). Due to the distance and height from which it was taken, only the general outline of the hill-figure can be seen, but this seems consistent with that portrayed on earlier images. Although the hill-figure is distant, there is no indication of the proboscis-like nose, which suggests that it may have been removed by then. At this date there appears to be little evidence of erosion on the slopes around the hill-figure.

Figure 22: Oblique aerial photograph (Crawford 1923). 07-AUG-23 CCC 8612, SY7184/001.
English Heritage (NMR) photography

1928

Weymouth Chamber of Commerce used unemployed labourers to undertake 'grooming' (Marples 1949, 127 quoting unspecified press cutting of 2nd June 1928).

1929

The OS 1:2500 scale mapping was revised and republished, but the depiction remained unchanged (OS 1929) (Figure 3). As noted above (in Section 3), this implies that there was no change to the outline of the hill-figure between 1902 and 1929, although it seems equally or more likely that the depiction was simply not revised by the field surveyors.

Summary

The few strands of evidence for this decade suggest that the hill-figure remained in the same general shape as in previous decades and that it was probably maintained throughout, as there is little evidence of erosion.

5.1.4 The 1930s

c 1930-35

Postcard (Kestins 1930-35 *White Horse*). This photographic image (Figure 23) is relatively clear and it appears to be the most reliable benchmark for the state of the monument since the unattributed (*c* 1916) postcard. The hill-figure appears to be much in the same condition as in *c* 1916, again suggesting regular upkeep. By this date the proboscis-like nose had definitely been removed. There is no obvious indication of erosion of the hill-figure on this image, although the level of scrub on the escarpment seems to have increased since 1923. Although the precise date is uncertain, this is likely to be the first of three images ascribed to the early 1930s, since the other two show gradual changes in vegetation and advancing erosion.

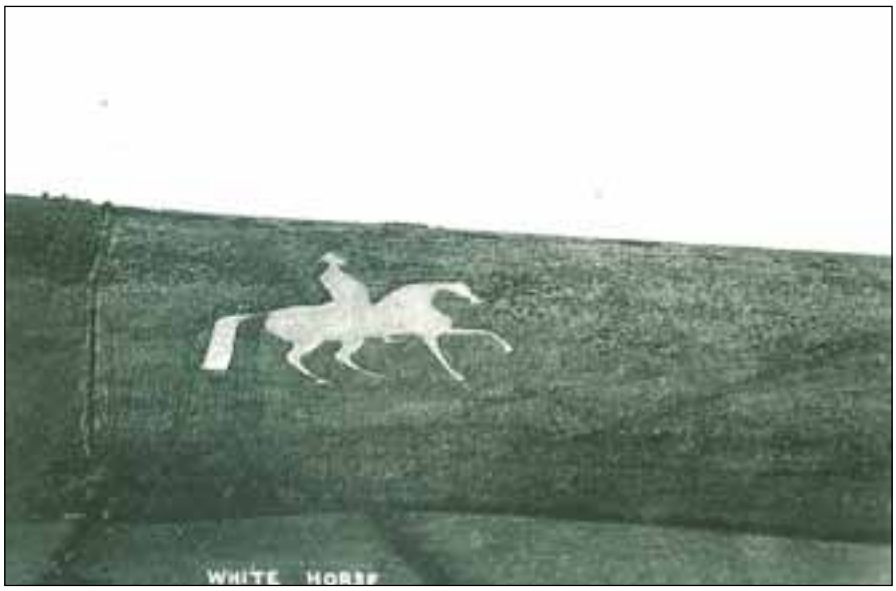

Figure 23: Postcard (Kestins 1930-35).
Courtesy of Mary Kempe

c 1930

Postcard (The Photochrom Ltd *c* 1930 *Weymouth: Equestrian Statue*). This image (Figure 24) shows a lot of the detail of the outline and all the main features evident throughout the earlier decades, again suggesting there had been little change to the hill-figure over the years. The sword or baton is very clear due to the angle from which the photograph was taken. There appears to have been erosion resulting in leakage of surface material along the western outline of the horse's rear legs and the base of the tail and the bottom of the rider's boot. Wallis (2010, 8) has suggested that this was either erosion or spilled chalk resulting from restoration work. Its branch-like pattern suggests run-off channels developing from breaches in the turf edge rather, than being the result of any human act. This image appears to be lightly hand-tinted, but details of the hill-figure do not appear to have been doctored.

Figure 24: Postcard (The Photochrom Ltd c 1930). Courtesy of Mary Kempe.

c 1930-*c* 1934

Postcard (Valentine Pre-1934, *The White Horse, Weymouth*). This photographic image (Figure 25) was taken from much the same angle and elevation as the Photochrom postcard of *c* 1930 and acts as a good comparator. The erosion evident on the image had clearly worsened in all areas of the horse's underside and had also started to develop on the front legs and hooves. Erosion had also worsened on the rider's foot. From this, it would appear that the Valentine image post-dates the Photochrom one.

1936

Maintenance work by the Scouts (Marples 1947, 127).

Figure 25: Postcard (Valentine Pre-1934).
Courtesy of Mary Kempe

c 1936

Postcard (Raphael Tuck and Sons *c* 1945 *The White Horse, Osmington*) This photographic image (Figure 26) is very clear and shows that work had been carried out to arrest the obvious erosion noted on the Valentine (*c* 1930-34) and Photochrom (*c* 1930) images. Residual areas of eroded, exposed surface, which had previously leaked down the slope, are still visible as lighter areas, but sections along the downslope edges (left) of the horse's rear legs and straight front leg had clearly been returfed. The surface of the horse was evidently in the process of being stripped of weeds. The boundaries of this work can clearly be seen and about 70% of the hill-figure had been systematically cleared in what was evidently a well-coordinated campaign. Otherwise, the general outline of the hill-figure seems to remain unchanged from the earlier images. Although it is dated *c* 1945, Wallis (2010, 9) concluded that this image was in fact taken before the Second World War by comparing it with a securely dated vertical aerial photograph of 1946 (see below). If so, it may be that this restoration is the work of the Scouts referred to as taking place in 1936. Wallis based his conclusion on the faint and very poor state of the hill-figure in 1946, which could not be attributed to the quality of the 1946 image, and the fact that such deterioration could not reasonably have taken place in the passage of just a year or so. Marples's (1949, 127) description of the hill-figure being covered in weeds in 1946 (see below) also supports Wallis's challenge to the recorded date.

There is a suggestion that a hollow to the rear of the rider, distinct on a 1946 RAF aerial photograph (see below), may have existed when the photograph on this Tuck postcard was taken. If so, it is unlikely to be a bomb crater and is more probably a small quarry-pit. Another more pit-like feature is visible to the east of the hill-figure and it seems probable that these hollows were dug to extract chalk (they all show clearly on the lidar - *see* Figure 7). These pits are probably those noted by Marples (1949, 127) as a source of

material for building up the embanked sections of the earthworks. However, these hollows are not evident on other earlier photographs, as might be expected if they related to the hill-figure's construction. They may subsequently have been used as quarry pits for various 'restorations' and maintenance episodes. All that can be said for certain, is that all three hollows nearby were in existence in 1946 (see below). The larger of the two to the west of the hill-figure was partially filled-in during 2011 with turf removed during the restoration.

Figure 26: Postcard (Raphael Tuck and Sons c 1945). The ascribed date of c 1945 may be in error and it may have been photographed in the late 1930s.
Courtesy of Mary Kempe

Alternatively, if this Tuck photograph was taken between November 1946 and September 1947 this postcard could be showing 'work in progress' toward the restoration seen on the 1947 aerial photograph (Aerofilms 1947). The uncertain date of this Tuck postcard makes the relative dating and interpretation of features on it difficult.

Summary

The photographs indicate that, throughout the 1930s, the monument changed little from the previous era and was in receipt of some level of maintenance. There also seems to have been a concerted attempt to arrest erosion to the horse's legs and underside and clean up the interior surface.

5.1.5 Second World War

1939

Camouflage netting was added to prevent the use of the highly visible hill-figure as a navigation marker by the Luftwaffe. This netting was apparently a short-lived addition due to difficulties with animals (White 2011, 23).

1939-1945

It seems, not surprisingly, that any upkeep or maintenance was suspended during the Second World War, presumably to encourage the hill-figure to blend in with the natural landscape (Marples 1949, 127). This period also produced a number of isolated bomb craters along the coastline of Dorset, which can be seen on vertical aerial photographs taken in 1946 (*see* 1946 below). Many aerial combats took place around Weymouth Bay and Portland during the war and it was common practice for the Luftwaffe to randomly 'ditch' bombs if attacked. The hollow (noted above) seen on the 1946 photography immediately adjacent to the rider's back and which is not obvious on any pre-wartime images, may be one such bomb crater, although it does not appear as crisp as some of the others. Due to the absence of an accurate date for the Raphael Tuck postcard, the origins of this feature are uncertain, and it seems more likely to be a quarry-pit.

Summary

During the Second World War there was clearly an initiative, presumably by the military authorities, to reduce the visibility of the hill-figure to prevent it being used by the enemy as a navigation aid. Apart from a failed attempt with camouflage netting, it would seem that this might have been achieved by turf-cutting or spreading of turf, soil *et cetera* to reduce the signature of the outline (*see* 1946 below). This, combined with general neglect, particularly weed growth, would have helped, but not entirely masked its visibility from the air. There is no evidence, either on imagery or from the 2002 excavations, that paint was used to camouflage the hill-figure.

5.1.6 The late 1940s

1946

Vertical aerial photograph (RAF 1946) (Figure 27). This precisely dated image of 4th November 1946 shows the hill-figure shortly after the end of the Second World War. The hill-figure is relatively faint (not attributable to the clarity of image, as noted by Wallis) and patches of scrub have started to intrude onto the interior surface, especially at the east end around the horse's head. There are extensive areas marked by lighter-tones on this photograph, particularly around the edge of the horse, suggesting that some attempt may have been made to remove turf or spread soil, perhaps in an attempt to blur the otherwise distinctive outline (this would be consistent with camouflage techniques used on many military sites). This aerial photograph seems to confirm the lack of maintenance during wartime (suggested by Marples 1949, 127), which would also have been consistent with a desire to reduce its visibility. In 1946, weeds still partially obscured the hill-figure (Marples 1949, 127). The three hollows noted above are visible on this RAF imagery.

Figure 27: Vertical aerial photograph (RAF 1946). Enlarged extract of the hill-figure. RAF/CPE/UK/1824 3336 04-NOV-1946.
English Heritage (NMR) photography

1947

Dorset Daily Echo, 26th March 1947 (quoted in White 2011, 23-24). At this date the hill-figure was described as being completely overgrown by weed and scrub. This would suggest a continuing lack of maintenance in the immediate years following the end of the Second World War.

Oblique aerial photograph (Aerofilms 1947; RCHM 1970 Plate 114). An image taken by Aerofilms on 24th September 1947 provides the earliest clear photograph that exists of the site, either from the air or the ground (Figures 4 and 28). The image demonstrates that there must have been a campaign to restore the hill-figure in the six months after the publication of the article noted above (26th March 1947).

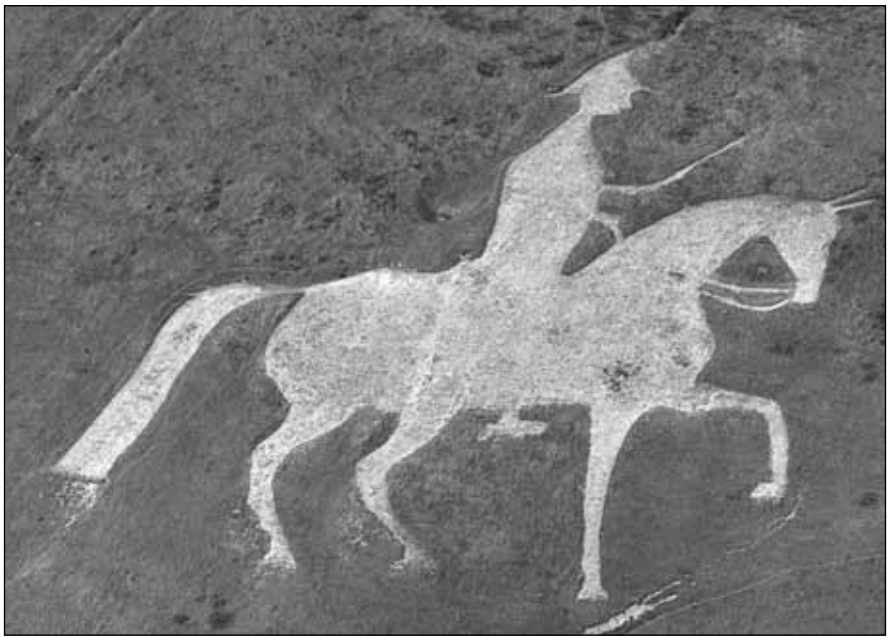

Figure 28: Oblique aerial photograph showing enlarged area of the hill-figure. AFL03/Aerofilms/A10928 24-SEP-1947.
English Heritage (NMR) photography

The outline has clearly been cleaned up in some areas (compared to its state on the 1946 vertical aerial photograph), but work may not have been complete at that stage. Some areas appear to have been reinstated, as they have crisp edges, for example the horse's eastern front leg, head, reins and ears and the rider's hands, sword or baton, head, hat and possibly boot. Other areas appear relatively unchanged however, such as the horse's tail and rear legs, which continued to display unimproved erosion edges, leakage of surface material and turf or weed growth. It also appears that the exposed surface had extensive weed coverage and had not been cleared. In essence, the hill-figure at this date (except for the differences in detail already noted - *see* Section 3 and Section 5 of this report) had many similarities to that depicted on the early OS maps.

1947-1949

Oblique aerial photograph (Marples 1949, Plate 34) (Figure 29). Of particular relevance to the understanding of changes to the hill-figure is an oblique aerial photograph which accompanies Marples's publication *White Horses and Other Hill Figures*. Although the exact date (and photographer) of this image is unknown, it seems likely that it was taken after the date of the Aerofilms image (24th September 1947) and certainly before the end of 1949 (the date of Marples's publication). This is indicated by the consistency of erosion scars and the pattern of scrub below the hill-figure on the securely dated aerial photographs taken in 1946 and 1947. One particular scar below the horse's straight foreleg is common between this image and the two dated images and suggests that there was only a short time lapse between them. The Marples photograph shows areas of former erosion on the horse's legs which have been heavily redefined. Wallis (2010, 11) noted that the well-worn paths around the hill-figure and the patches of chalk particularly around the horse's rear suggest that the 'restoration' was relatively recent when the photograph was taken.

A ground photograph taken *c* 1950 (Dearden and Wade) shows four reins, as does the photograph used by Marples. However, the well-defined sword or baton evident in *c* 1950 was not evident on the photograph used by Marples, further suggesting that this image records a 'work in-progress'. This all seems to point to the Marples image having been taken after 1947 and before 1949. Wallis (2010, 11) previously identified the addition of facial features and fingers on the hand supporting the sword or baton from the Marples photograph, although at that stage the Aerofilms (1947) oblique aerial photograph had not been consulted. Now, further details can be clarified. With the additional evidence gained from the Aerofilms photograph, it can be seen that the most significant changes to the hill-figure from previous images were as follows:

Rider

- Re-definition of the facial profile to show a longer, more hooked nose and a smaller indent for the mouth.

- Four fingers and a thumb added to the upper hand (the one holding the sword or baton), including the enlargement of the whole hand and wrist area.

- No attempt to re-define the sword or baton, possibly because work had not yet started on this.

- Addition of an upward curve to the rear of the boot, probably a rowel and spur.

Horse

- Possible change to the shape of the hoof of the easternmost rear leg.

- Addition of two reins to make four in total.

- Addition of a mouth.

- Recutting of the former irregular eroded edges along the rear legs and hoof areas.

- Addition of a cantle to emphasise the rear of the saddle.

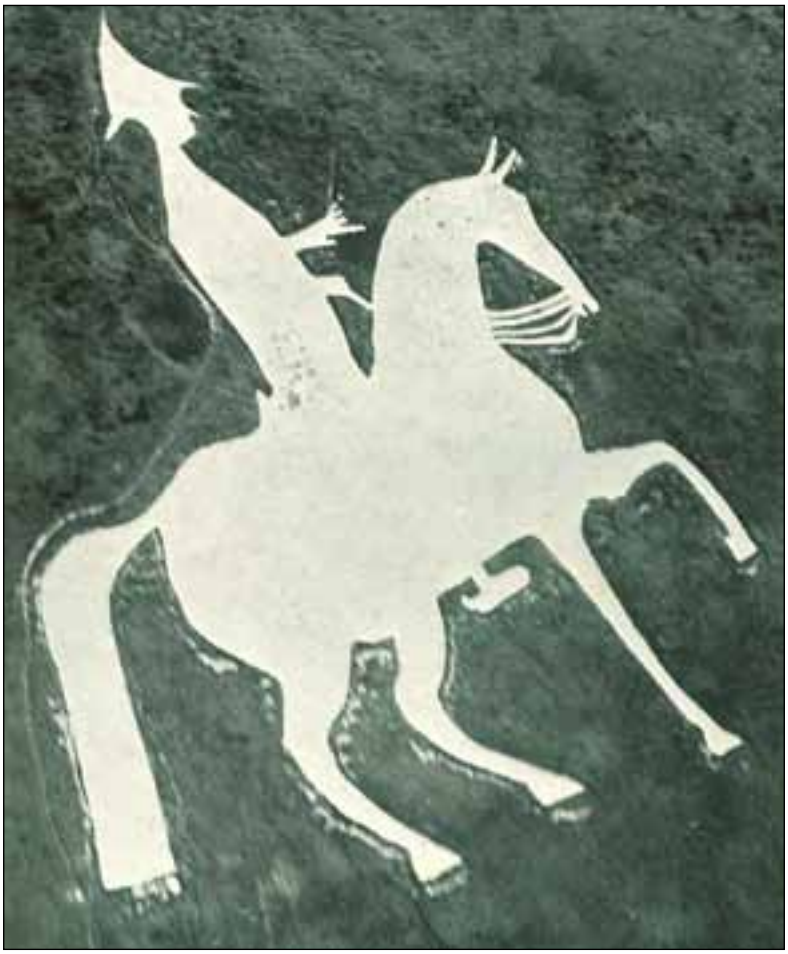

Figure 29: Oblique aerial photograph (Marples 1949, Plate 34). The exact date of this photograph is unknown but was probably taken between 1947 and 1949.

It is not known who undertook this elaborate restoration or whether there is any substance in Marples's speculation that the rider's hooked nose might be a relic of the "Wellington avatar" (Marples 1949, 123 and 127), although the latter seems unlikely given the date at which it was added. By the same token, however, there may be some substance to the suggestion by Marples that the face may have been symbolically reconfigured in part to represent Montgomery (ibid 123).

Postcard (Valentine *c* 1940s, *Osmington White Horse*). This photographic image (Figure 30) was taken at some distance and as a result it is not especially clear. It appears to show the hill-figure and surrounding vegetation in much the same state as the *c* 1950 (Dearden and Wade) image (*see c* 1950s below). Given the state of the hill-figure on images taken in 1946 (RAF) and between 1947-1949 (Marples, Plate 34), it may have been taken toward the end of that decade.

Figure 30: Postcard (Valentine c 1940s).
Courtesy of Mary Kempe

Summary

The hill-figure clearly went through two distinct restorations in the second half of the 1940s. The first occurred soon after the Second World War, between 1946 and 1947, presumably reflecting the new energy and desire to celebrate the victory. In essence, this work seems to have mostly replicated the shape as it existed before the war. The second episode was a somewhat fanciful restoration undertaken between 1947 and 1949, when a number of rather spurious details were added. No evidence has come to light as to who promoted or undertook these works.

5.1.7 The 1950s

c 1950s

Postcard (Dearden and Wade *c* 1950s *The White Horse, near Weymouth*). This image (Figure 31) was taken after that of the restoration captured on the oblique aerial photograph accompanying Marples's publication, although how long after is not clear. Most of the features from the 1947-1949 restoration are evident on this photograph, but one significant change can be observed. On this later image, the rider's upper hand appears to have had its fingers removed and the sword or baton reinstated. Furthermore, an additional feature appears to connect this hand with the neck of the horse. This might be interpreted as a new rein, although it is more likely to have been an erosion bleed from the extended finger noted on the 1947-49 restoration. The hill-figure seems unnaturally white on this image and thus cannot be used to assess the condition of the interior at that date.

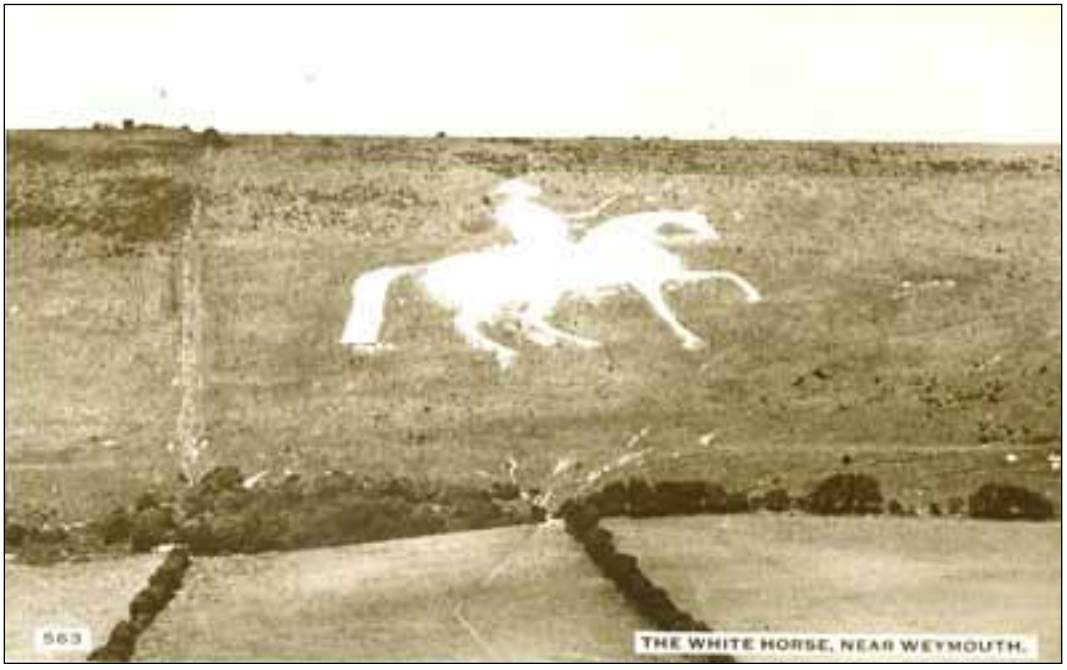

Figure 31: Postcard (Dearden and Wade c 1950s).
Courtesy of Mary Kempe

Postcard (J Salmon Ltd *c* 1950s *The White Horse, Weymouth*). This image (Figure 32) was taken from some distance away and can only be used to indicate the general outline of the hill-figure, although it does seem to have recovered from the dumping of chalk around the edges noted on the earlier Marples and Dearden and Wade photographs, suggesting that it post-dates the latter.

Postcard (Jarrold *c* 1950s *The White Horseman, Weymouth*). Changes in the farm buildings in the foreground of this image (Figure 33) might indicate that this postcard pre-dates a number of other photographs taken in the early 1970s (see below) and there is little change between this and the Frith image of 1960: it may therefore have been taken in

the late 1950s or perhaps even the early 1960s. It appears to be an original colour image, rather than hand-coloured, although the colours seem enhanced and the image may have been doctored. It was taken from some distance away and can only be used to indicate the general outline of the hill-figure. There are indications that the surface of the hill-figure had extensive weed coverage, although the colouring may be distorted.

Figure 32: Postcard (J Salmon Ltd c 1950s).
Courtesy of Mary Kempe

Wallis (2011, 4) has stated that at some stage during the 1950s, that Portland stone scalpings were added to the monument although no further details are given.

Figure 33: Postcard (Jarrold c 1950s).
Courtesy of Mary Kempe

1957

Vertical aerial photograph (reproduced in Wallis 2010, 11). This RAF image of 17th April 1957 seems to indicate that at that date the outline was well defined, perhaps indicating some level of upkeep through the first half of the decade. The possible additional rein noted on the Dearden and Wade image is not evident on this aerial photograph, which further casts doubt on its authenticity as part of the outline.

1958

The OS 1:2500 scale mapping was recast onto National Grid sheet lines with revision, but the depiction of the hill-figure remained unchanged apart from minor differences attributable to the cartographic drafting style which used dashed lines to depict the outline (OS 1958 – *see* Figure 3). As noted above (in Section 3), this implies that there was no change to the outline of the hill-figure between 1929 and 1958, although this cannot be guaranteed as it seems more likely that the depiction was simply not revised. This appears to have been a constant pattern throughout the map revisions.

Summary

There was clearly work undertaken on the monument in this decade, although in the main, this may have been an attempt to remove some of the more fanciful additions of the late 1940s, particularly around the hand holding the sword or baton, which was restored to its former outline. The available imagery is not sufficiently clear to show if other small details were significantly changed, but at the end of the decade, the hill-figure was still well defined, and apart from now having four reins instead of two, was little different from the earlier periods.

Figure 34: Postcard (Francis Frith 1960).
Courtesy of Mary Kempe

5.1.8 The 1960s

1960

Postcard (Francis Frith 1960 *Osmington White Horse. Weymouth*). It is unclear whether this is a hand-coloured or colour photograph, as the colours seem unnatural. This image (Figure 34) was taken from some distance away and can only be used to indicate the general form of the hill-figure, which has clearly had its whiteness and outline artificially enhanced.

c 1960

Postcard (Anon. *c* 1960 *Weymouth: The White Horse*). This appears to be a colour image (Figure 35), rather than hand-coloured, although it has clearly been enhanced. It was taken from some distance away and can only be used to indicate the general outline of the hill-figure.

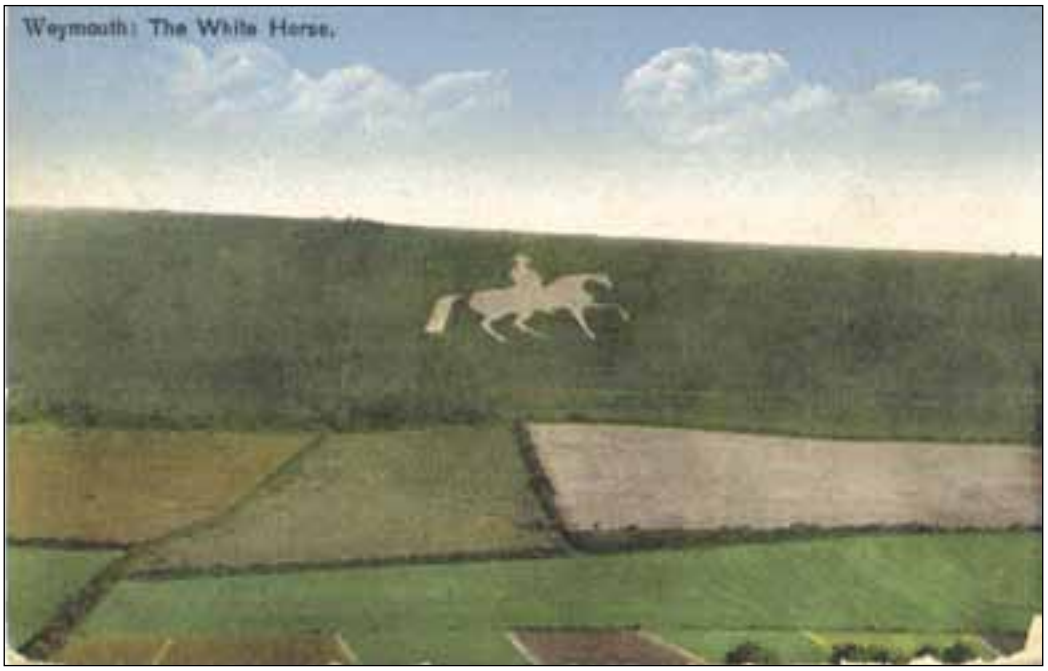

Figure 35: Postcard (Anon. c 1960).
Courtesy of Mary Kempe

Early 1960s

Postcard (Anon. *c* 1971 *The White Horseman, Osmington, Weymouth*). This colour image (Figure 36), although postmarked as *c* 1971, appears to have been taken between 1960 and mid-1965, using the evolution of the farm buildings in the foreground in later images as a guide. The hill-figure appears in reasonable condition and the outline is much as evidenced in earlier images. There is little evidence of erosion.

Figure 36: Postcard (Anon. c 1971). This photograph may have been taken between 1960 and 1965.
Courtesy of Mary Kempe

Postcard (The Photographic Greeting Card Co Ltd 1971). Changes to the farm buildings in the foreground of this colour image (Figure 37) suggest that it was taken after the Frith image of 1960, but before the addition of more barns that can be seen on the ETW Dennis (*c* 1965) image. The colour appears to have been enhanced, especially the whiteness of the hill-figure and can only be used as a general statement of the outline.

Figure 37: Postcard (The Photographic Greeting Card Co Ltd 1971). This photograph may have been taken between 1960 and 1965.
Courtesy of Mary Kempe

c 1965

Postcard (ETW Dennis *c* 1965 *Hill Figure of King George III - Returning from Weymouth*). This colour photograph (Figure 38) appears to have been taken on a long focal length lens and the image is sharper than others of this period. It confirms that the shape of the outline remained consistent with the earlier images and that there was no obvious erosion at that time. There does appear to have been some vegetation on the interior surface of the hill-figure, but not as much as shown on the Jarrold image of the 1950s. This is one of the few images which shows the natural tone of the exposed surface of the hill-figure, which varies from grey to a yellowish off-white, depending on the angle and brilliance of the sun.

Figure 38: Postcard (ETW Dennis c 1965).
Courtesy of Mary Kempe

1968

Vertical aerial photograph (RAF 1968). This clear image of 26th August 1968 (Figure 39) provides a good record of the hill-figure at that date. It can be seen that:

- The fingers added in 1947-49 on the upper hand had been removed by this date (as suggested by the *c* 1950s Deardon and Wade image and the 1957 RAF aerial photograph).

- An upturned end had been added to the rear of the rider's hat after the fanciful restoration undertaken between 1947 and 1949. The hat also appears less pointed than seen on the oblique aerial photograph used by Marples in 1949.

- The profile of the rider's face may have been altered from that as shown on the oblique aerial photograph used by Marples in 1949. The nose appears less hooked, although this is not certain due to the resolution of the image.

- The horse's muzzle had been extended

- The rowel on the spur of the heel of the boot displayed on the oblique aerial photograph used by Marples in 1949 had gone and the heel was more rounded.

Figure 39: Vertical aerial photograph (RAF 1968). Enlarged extract of the hill-figure. RAF/58/8974 0041 26-AUG-1968.
English Heritage (NMR) photography

1969

The hill-figure was scheduled (Dorset 740) on 11th June 1969. Included in the records pertaining to this scheduling is a letter to the Ministry of Public Building and Works dated 10th February, which states that the figure "suffered a sex change … in recent months)". There are no details of how this was achieved or whether it applied to the horse- or rider.

Summary

Some of the slight changes noted in this decade may in fact have taken place during the 1950s, as the imagery from that period is not particularly clear. In general, the hill-figure had been subject to some level of upkeep to retain its definition, presumably trimming and weeding. No obvious erosion seems to have occurred during this decade and the hill-figure appears to have been largely kept free of weeds. At the end of the decade, it was still an impressive landscape feature and had retained much of its shape and character from earlier decades, but had, however, latterly suffered some deliberate defacement and was showing distortion around the horse's muzzle.

5.1.9 The 1970s

1971

Vertical aerial photograph (OS 1971). This image from 7th March 1971 (Figure 40) was taken at a lower altitude (7000 feet) than the 1968 photograph and is much clearer as a result. The outline seems to have deteriorated in a number of places, suggesting that there had been no upkeep after 1968, and that erosion had again started on the downslope side of all of the legs, particularly the rear ones, along the underbelly and around the boot. The profile of the rider's face is much clearer than the 1968 image and seems to confirm some level of change from the outline visible on the 1947-49 oblique aerial photograph used by Marples, particularly showing a less hooked nose (it had probably been reshaped by 1968). The upturned end to the hat added between 1947-49 and 1968 seems to have gone by 1971. There appears to have been general weed growth on the surface of the interior. One important addition was made between 1968 and 1971 and that was an eye, placed within the horse's head. The photograph also shows a hint of an eye within the rider's head. Neither one appears to be a patch of unmanaged re-growth. There may have been a deliberate trimming of the weeds to make these features, but the horse's eye is particularly clear and may have been created by placed turf. Four reins can be identified on this image. There is substantial scrub growth on the upper slopes of the escarpment around the hill-figure.

Figure 40: Vertical aerial photograph (OS 1971). OS/71004 0034 07-MAR-1971

1972

Vertical aerial photograph (Story 1972). Photography from this sortie (Figure 41) adds little to the understanding of the hill-figure, except confirming that the erosion visible in 1971 seems to have remained much the same a year later.

Figure 41: Vertical aerial photograph (Story 1972). Enlarged extract of the hill-figure.
Story 20 0099.
© Dorset County Council

1973

Vertical aerial photograph (Story 1973). There seems to have been little change during the first three years of this decade (Figure 42), as the hill-figure continued to display the same outline shape as in 1971 and the erosion does not seem to have increased. This is a slightly clearer image than that of 1972 and there is no hint of the possible rider's eye noted above on the 1971 imagery.

Figure 42: Vertical aerial photograph (Story 1973). Enlarged extract of the hill-figure.
Story 012-073-0122.
© Dorset County Council

1978

Vertical aerial photograph (OS 1978). This image (Figure 43) was taken from a similar altitude (7,800 feet) to the 1971 aerial photograph is very clear, more so than the photographs of the intervening years. Small patches of light-coloured material can be seen around the underside and topside of the horse's neck, similar to those evident around the outside of the hill-figure when it was being restored during the 1947-49 period, suggesting the edges may have then been recently trimmed. This may additionally have occurred around the hat, where a pom-pom also appears to have been added to the top. The slight indentation of the rider's mouth, evident on the earlier aerial photograph (Marples 1949), can no longer be seen. This too may suggest some trimming around the head. Only two reins, the two upper ones, have had the surface exposed. The lower two are overgrown, but can still be identified on the image. There also appears to have been some upkeep around the underside of the horse since 1971, particularly the legs and hooves, and around the boot, and there seems to have been some trimming around the tail and general weeding within the figure. The putative rider's 'eye', if it ever existed, has clearly disappeared by this date, but the eye of the horse was still present, if less sharply defined. By this date, the encroachment of turf on the west side of the muzzle had made the horse's head appear more 'trunk-like'.

Figure 43: Vertical aerial photograph (OS 1978). Enlarged extract of the hill-figure.
OS/78080 0156 11-JUN-1978
© Crown copyright. Ordnance Survey

Summary

During this decade, there was one 'restoration' which sharpened up the monument and in particular addressed the erosion around the horse's legs. The most significant change was the introduction of the horse's eye and the reinstatement of two reins (as it had originally). This effort was misguided, however, in that one rein from the original and one from the restoration of the late 1940s were exposed. At the end of this decade it was

still a well-defined landscape monument and still had a distinct shape, although by then the horse's head appeared even more distorted than in 1968.

5.1.10 The 1980s

c 1984-85

Two postcards - Bailey 1984 and Damer *c* 1985 (Figures 44 and 49) - supplied for this assessment and dated to the mid-1980s, have caused some degree of confusion (Wallis 2010, 12). The earlier image (Figure 44), is not very clear, but the outline of the hill-figure seems relatively well defined and without any obvious significant erosion. However, if the dates are assumed to be correct, then the later image (Figure 49) dated *c* 1985 shows that a rapid deterioration of the hill-figure had apparently occurred. By the latter date, the hill-figure had apparently suffered from extensive erosion, particularly to the rear legs where the surface material (including scalpings) had leaked down the slope in two large fans, and the outline shape and integrity of the hill-figure evident in 1978 had become severely distorted. The horse's forelegs had become thinner, as had its head and tail (probably due to turf growth) and the eye had got bigger.

Figure 44: Postcard (Bailey 1984).
Courtesy of Mary Kempe

The rider's head displayed none of the detail of the hat and facial features that had been evident on the securely dated aerial photograph of 1978. It seems implausible that the hill-figure could have deteriorated so quickly in such a short space of time, especially

considering the timescales of other erosion episodes identified during this assessment, and therefore the date of the later postcard must be questioned. Wallis (2010, 12) also questioned the authenticity of the date of that image, although speculated that the rapid deterioration may have prompted the appeal to '*Challenge Anneka*'. The Damer image in fact bears more than a passing resemblance to the state of the hill-figure when captured on a securely dated, colour oblique aerial photograph taken on 6th December 2006 (NMR 2006 - *see* Figure 48). Some small details are consistent between the two, and in a few areas they are almost identical. For example, the exact shape and pattern of the erosion fans at the base of the rear hooves of and around the horse's front legs, the pattern and density of weeds within the interior, erosion at the rider's chin and crucially, a series of letters casually formed between the forelegs (see below) are all identical in both images. It is highly improbable that these features would have remained essentially the same from *c* 1985 to late 2006 and therefore suggests that the Damer postcard should not be used as evidence for the state of the hill-figure or its rate of deterioration. Comparison of the Damer postcard with other securely dated aerial photographs taken in 1986 adds weight to the notion that the date of this postcard is incorrect (see below).

1986

Vertical aerial photograph (CEGB Winfrith Flight 1986). Although not as clear as the OS 1978 photography, the outline of the hill-figure appears reasonably distinct in 1986 (*see* Figure 45). By that date, a horn had been attached to the horse's forehead making it look like a unicorn. As this left no earthwork signature that could be identified in the surveys of 2011, it is assumed that the horn was created from surface-gathered stones and so forth. The reins are not very well defined on this image, but there are hints of the upper

Figure 45: Vertical aerial photograph (CEGB Winfrith Flight 1986). Enlarged extract of the hill-figure. CEGB 2763/860614
© Dorset County Council

rein and the third one from the top, suggesting that the erroneous display of the second rein down evident on the 1978 aerial photograph had been corrected at some stage. The western part of the hat was less distinct in 1986. Overall, there does not seem to have been much change to the general condition of the monument. The erosion around the lower parts of the horse does not seem to have increased significantly since 1978 and still appears to have been mostly at the hooves.

1989

'*Challenge Anneka*' television programme. For this programme, the hill-figure was covered in some 160 tons of Portland stone scalpings, and although the project was subsequently criticised, the work was based on research and expert opinion current at that time, and was 'restored' using the same methodology and Portland stone scalpings as previously employed in the 1950s (Wallis 2010, 4).

Summary

The major impact in this decade was the introduction of the *c* 160 tons of Portland scalpings during the '*Challenge Anneka*' episode. Little evidence was available to assess other aspects of this project, but it is possible that the reinstatement of the two correct original reins, evident on the 1996 aerial photograph below, may have taken place during this television-funded restoration.

5.1.11 The 1990s

1996

Vertical aerial photograph (OS 1996). This image (Figure 46), taken on 15th May 1996 is very clear. There are three significant changes to the outline of the hill-figure compared to that in 1986, but whether these are attributable to the television-funded restoration work is unclear. The first is that the two reins appear to have been restored, possibly the result of the addition of the Portland scalpings during the 1989 '*Challenge Anneka*' episode, to match those which appeared on the Aerofilms (1947) oblique aerial photograph and that were hinted at on the CEGB Winfrith Flight (1986) image (that is to say, the upper and middle of the four). The image shows that the reins had been re-instated to the original lines, revising the error seen on the 1978 aerial photograph. The second change is that the rider's face had acquired a protruding chin and a more hooked nose. Whether this chin was a deliberate creation or a result of erosion is not obvious from the photograph, although some slight earthworks which were identified during the survey may indicate that this was deliberate. The third change is that the horn had been removed from the horse. Elsewhere, other changes to the outline of the hill-figure appear to be more consistent with turf encroachment, such as narrowing of the horse's legs and loss of the hooves, and loss of shape of the boot (which then appeared as a narrow, vertical appendage).

1997

Vertical aerial photograph (DCC 1997) (Figure 47). No significant change can be seen to have taken place since 1996, although erosion around the rider's chin area may have increased.

Figure 46: Vertical aerial photograph (OS 1996). Enlarged extract of the hill-figure. OS/96662 0910 15-MAY-1986
© Crown copyright. Ordnance Survey

Figure 47: Vertical aerial photograph (DCC 1997). Enlarged extract of the hill-figure. DCC 21-0200
© Dorset County Council

Summary

Changes to the monument since the late 1980s relate to small detail, particularly the reins and the rider's head. However, erosion and turf encroachment had increased, the horse's legs and hooves in particular had begun to lose their shape and definition, and the muzzle had become more pointed, suggesting that little maintenance had been undertaken.

5.1.12 The new millennium, 2000-2012

2002

In 2002 a series of trial trenches were excavated by AC Archaeology on the advice of English Heritage. In most cases, the '*Challenge Anneka*' Portland scalpings were found to directly overlie the bedrock apart from in one trial pit, which exposed an earlier layer of scalpings which were thought to belong to the 1950s work (Wallis 2010, 4; Valentin *et al* 2002).

2006

Oblique aerial photograph (NMR 2006). This securely-dated image (Figure 48) documents the dilapidated state of the hill-figure at that time. In the 20 years since the vertical aerial photograph of 1996 was taken, the hill-figure had suffered extensive erosion and encroachment of turf onto the formerly exposed surface. The rider's hat and head had merged into a single cone shape, with the loss of facial details and extremities, and the chin had become extended with a beard-like feature. The sword or baton was barely visible, as too were the horse's ears, the reins and the hands and boot. The horse's forelegs had become thin strips of exposed surface (due to turf encroachment) with no definition of the hooves and the rear legs had suffered extensive erosion, with scalpings spilt down the slope. The cantle of the saddle was no longer visible and the tail appeared narrower toward the base due to weed encroachment. Within the interior, weed growth had mostly occurred on the tail, rump and chest of the horse. Across the upper part of the westernmost hind leg was a very distinct, narrow white strip, the origin of which is unclear as it does not appear to be erosion. Other impacts on and close to

Figure 48: Oblique aerial photograph (NMR 2006). SY7184/7 06-DEC-2006 © English Heritage

the hill-figure can be identified including a series of small holes at the hoof of the straight foreleg (which are typical of rabbit burrows) and two, possibly three, crudely-formed groups of letters outside the hill-figure at the east. These appear to have been laid on the grass surface using scalpings probably gathered from the monument. The largest of these, between the front forelegs of the horse, is on two rows (the upper appears to form 'UV' and the lower 'SH?SE') although the individual letters are difficult to decipher. This is the same graffiti evident on the Damer image noted above which was thought to have been taken c 1985, although that date can now be assumed to be an error and it seems more likely that it was taken around the same time as this aerial photograph (Figure 49). The second set of letters 'ST' are immediately east of the horse's muzzle. A third set lies opposite the horse's eye and may be interpreted as 'HH', although this set is less clear than the others. In summary, the hill-figure by 2006 was in very poor condition, with disfigurement of the outline due to erosion, turf encroachment and casual graffiti.

Figure 49: Postcard (Damer c 1985). Although alleged to have been taken in the mid-1980s this image is more likely to have been taken around 2006.
Courtesy of Mary Kempe

2009

The OWHRG was formed (White 2011, 24; www.osmingtonwhitehorse.info/). The poor state of the hill-figure at that time can be seen on vertical aerial photography (OS 2009) undertaken by OS in that year (Figure 50).

2010

The Scheduled Monument was included in the Heritage at Risk Register (English Heritage 2010, 143). Its condition was categorised as being generally unsatisfactory due to extensive natural erosion, with major localised problems. The SMC application was submitted on 8th July and granted on 21st July, leading to proposals to restore

Figure 50. Vertical aerial photograph (OS 2009). Dorset 040324 21-MAR-2009 © Ordnance Survey

the hill-figure to that visible on the Hitch (*c* 1911-12) image (these proposals were not implemented as a result of the assessment which is the subject of this report). The SMC supporting documentation included recommendations for a number of practical interventions to redefine the hill-figure. Three trial areas were cleared of scalpings and painted with limewash in April (for more details *see* Wallis 2010, 19). Some attempts were also made by the OWHRG to arrest erosion on the areas of the hooves with the insertion of wooden shuttering boards (OWHRG, pers comm). The year 2010 also included the removal of approximately *c* 160 tons of Portland stone scalpings from the hill-figure by local businesses, Dorset Army Cadet Force, Royal Engineers Training Unit and other volunteer groups and individuals under the supervision and guidance of members of the OWHRG. The project received a grant from Natural England's Higher Level Stewardship Scheme.

2011

Assessment and surveys (Figures 51-69) were conducted by English Heritage and Ordnance Survey and are the subject of this report. Aerial photography of the area was undertaken by the OS shortly before the definitive outline was marked out (Figure 68). The new, definitive outline was formerly accepted by the OWHRG and was set out on the ground by the authors of this report on 30th June and 1st July 2011 using survey-grade GPS. The nodal points of the outline, which has a total length of 657.3m, were marked on the ground and joined together by a line marked with bio-degradable, water-based paint. The final coordinates of the nodal points of the outline are listed in Appendix 1 of this report and also deposited with the English Heritage Archive, Swindon and OS MasterMap database.

As part of the survey process, an assessment of the impact of the new proposed outline and any groundwork which might result was undertaken. (The main categories of what groundwork was needed in which areas are summarised in graphic form on Figure 51). In

summary, the priority was to stabilise and repair the main areas of erosion around the horse's rear legs and hooves, using a mixture of boarding and returfing. Boarding was also necessary to arrest erosion on the steep slopes on the easternmost foreleg and along the top of the tail and rear end; the areas behind the boards could then be used to stack spoil from the turf-cutting. Some boards placed during an earlier attempt to stabilise the rear hooves needed to be removed as part of this process. It was discussed on site that it would be impractical to rebuild the revetment for the rider's boot, but that this might be reviewed as part of the longer-term management of the monument. The main area that required a significant amount of heavy turf-cutting was the horse's easternmost foreleg, where turf encroachment had remained unchecked for many years to the point that the leg had narrowed to a very thin band. Smaller areas of deturfing were required on the horse's eye, the hat, the sword or baton, and the horse's neck and ears. Elsewhere, only simple cutting back of the turf-line (trimming) was necessary to achieve the restoration outline.

In June and July, cutting of the definitive outline was undertaken by volunteers from the Royal Naval Air Service, the Countryside Ranger team, schools, local businesses, members of the Osmington Society and others under the supervision of the OWHRG. (Full details of the restoration diary and activities can be found on the project website http://www.osmingtonwhitehorse.info).

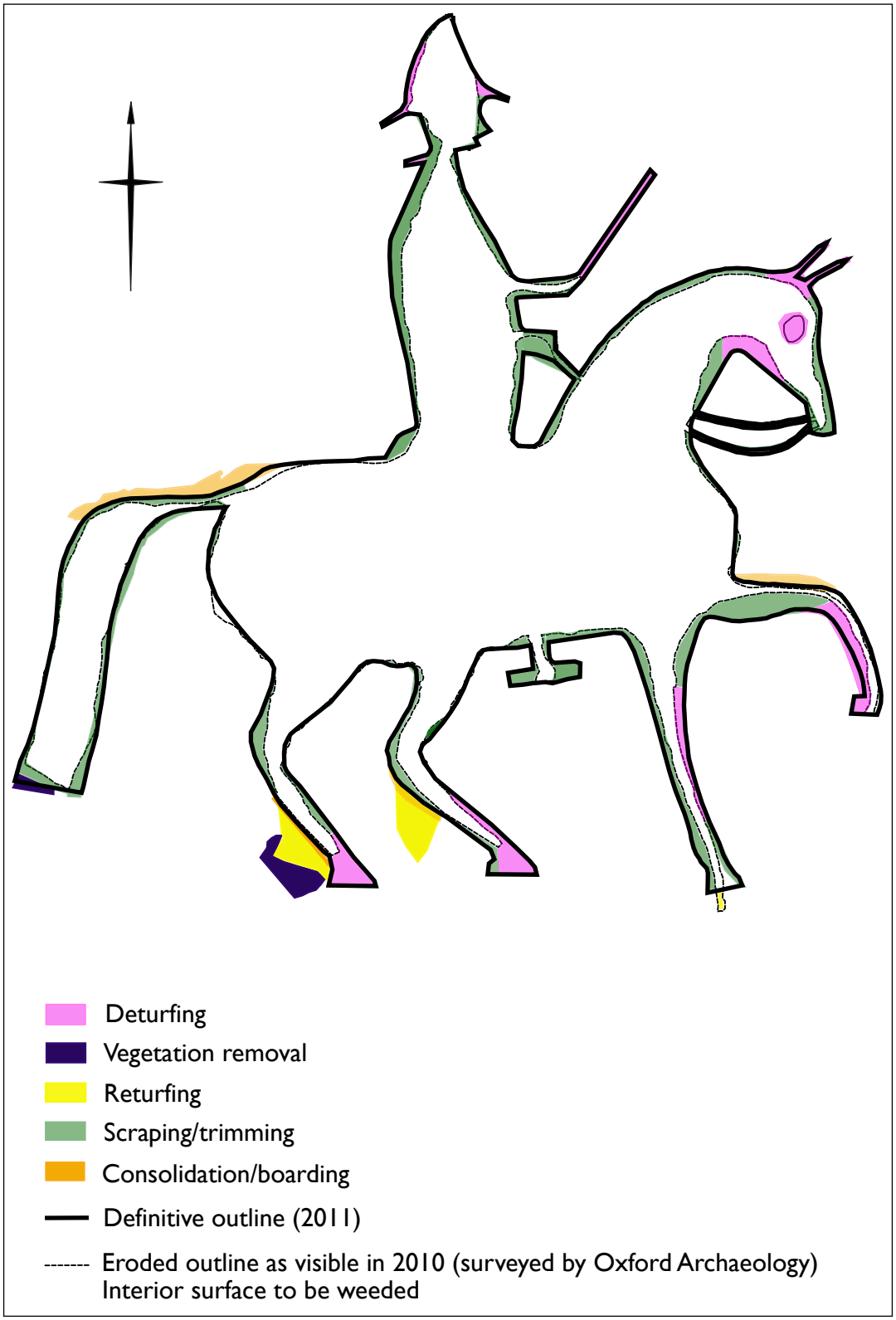

Figure 51: Groundworks needed to restore the monument. This diagram provides an overview of the location and types of work.

Figure 52: The hoof of the eastern rear leg of the horse viewed from the south east (at marking-out stage). The definitive outline is marked by the yellow spray paint.
Stewart Ainsworth © English Heritage

Figure 53: The western foreleg of the horse viewed from the south east (at marking-out stage). The definitive outline is marked by yellow spray paint either side of the narrow exposed surface area. The raised earthwork in the foreground is the revetment at the base of the hoof, at the time eroded from rabbit burrowing.
Stewart Ainsworth © English Heritage

Figure 54: Erosion on the eastern rear leg of the horse viewed from the south (at marking-out stage). The earthwork terrace defining the leg branches to the right, whilst erosion has developed down the slope to the left (between the two surveyors). Photograph courtesy of Chris Bird.

Figure 55: Earthworks defining the junction of the tail and upper part of the body of the horse-figure viewed from the west. Scars mark the results of slope collapse and erosion.
Stewart Ainsworth © English Heritage

Figure 56: Facial profile of the rider viewed from the south (at marking-out stage). The definitive outline is marked by the yellow spray paint to the right of the existing exposed surface.
Stewart Ainsworth © English Heritage

Figure 57: Facial profile of the rider viewed from the south (at cutting-out stage).
Stewart Ainsworth © English Heritage

Figure 58: The hat of the rider viewed from the north (at marking-out stage). The definitive outline is marked by the yellow spray paint. Weymouth bay is in the background.
Stewart Ainsworth © English Heritage

Figure 59: The queue viewed from the west (at marking-out stage).
Stewart Ainsworth © English Heritage

Figure 60: The reins viewed from the west (at cutting-out stage). Their original form as narrow stepped terraces can be clearly seen; only turf was removed from the surface during the restoration. Stewart Ainsworth © English Heritage

Figure 61: The sword/baton viewed from the north east (at marking-out stage).
Stewart Ainsworth © English Heritage

Figure 62: The boot of the rider viewed from the west (at marking-out stage).
Stewart Ainsworth © English Heritage

Figure 63: The earthwork terrace of the bridle-hand of the rider viewed from the west (at marking-out stage).
Stewart Ainsworth © English Heritage

Figure 64: Stage 1 of the marking-out process. OS National Grid coordinate of node on the definitive outline set out by survey-grade GPS and visually checked against the overall hardcopy survey plot. Photograph courtesy of Chris Bird.

Figure 65: Stage 2 of the marking-out process. Marked nodes were joined by tape measure and line sprayed with bio-degradable, water-based paint. The marking-out team (top to bottom); Jon Horgan (OS – with GPS); John Hayes (Dorset Countryside Ranger Service); Stewart Ainsworth (English Heritage); Roger Lewis (OS); Peter Addison (English Heritage). Photograph courtesy of Chris Bird.

Figure 66: The cutting-out process. Turf encroachment was cut back to the definitive outline marked by the sprayed line. This shows the head of the horse viewed from the north before the removal of the eye (right of frame). Stewart Ainsworth © English Heritage

Figure 67. Cutting-out along the neck of the horse. The volunteers are trimming the edge of the turf and removing the eye. Stewart Ainsworth © English Heritage

Figure 68: Vertical aerial photography (OS 2011). Weymouth 2012 040611 003 6-APR-2011. This digital imagery was taken shortly before the monument was restored.
© Ordnance Survey

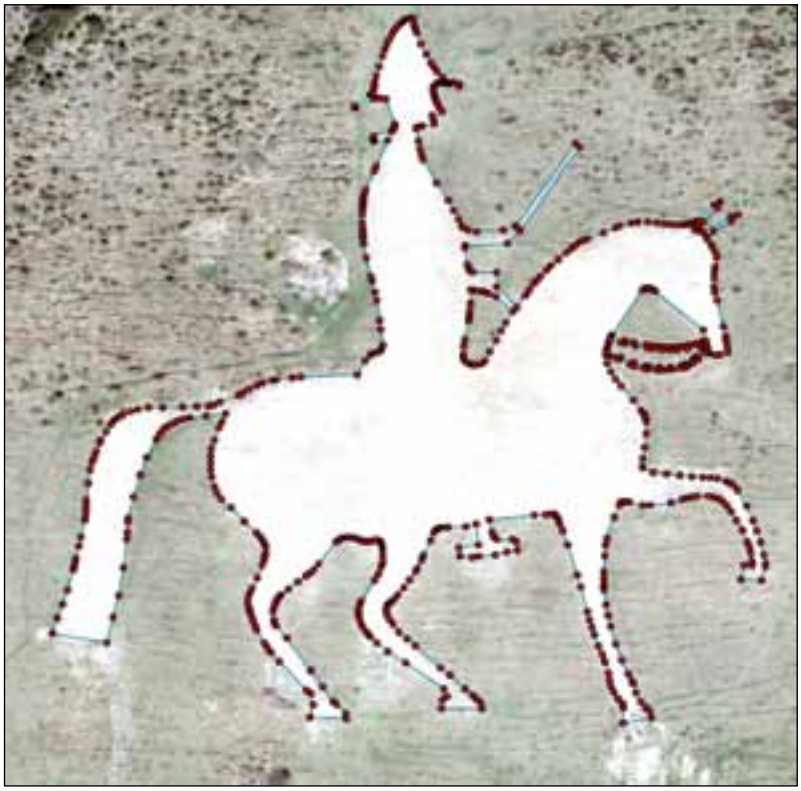

Figure 69: Nodes of the definitive outline as set out on the ground. The coordinates of these points are listed in Appendix 1.

2012

New vertical aerial photography of the area was undertaken by the OS (2012) and this imagery captured the restored hill-figure after completion of the work (Figure 70). The OS MasterMap (OS 2013) was also updated to show the restored, definitive outline (Figure 71). In a ceremony on 12th March 2012, the Osmington White Horse was officially unveiled by HRH The Princess Royal.

Figure 70. Vertical aerial photography (OS 2012). Weymouth 2012 031612 6-MAR-2012. This image shows the hill-figure after the restoration was completed.
© Ordnance Survey

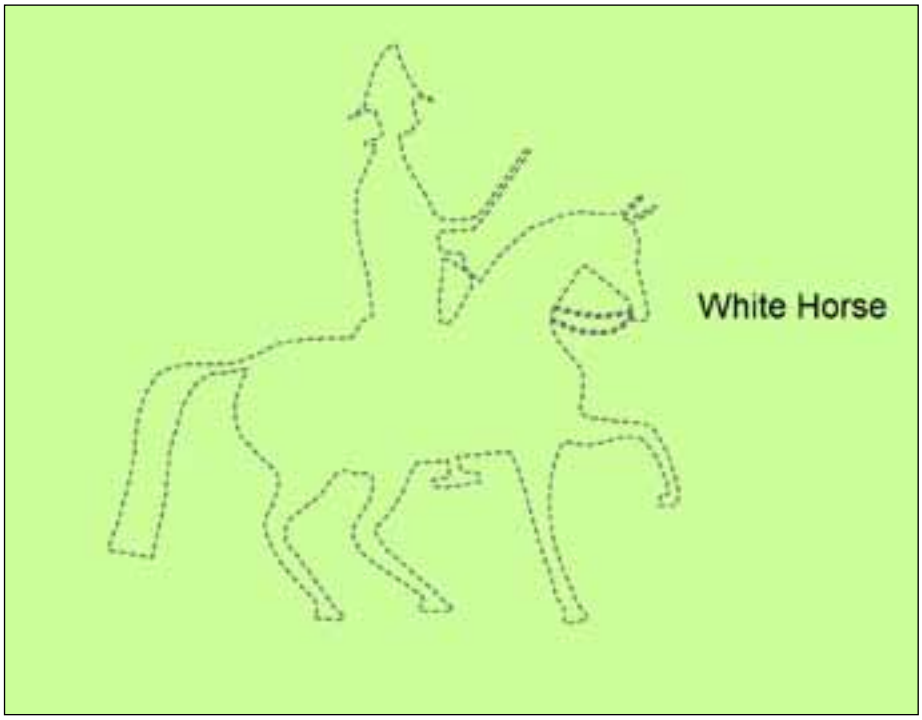

Figure 71: OS MasterMap (2013).
© Ordnance Survey

Figure 72: HRH The Princess Royal unveiling the Osmington White Horse
© Ordnance Survey

6. DISCUSSION

Why was this monument created? That it was intended as a tribute to George III, shown mounted on his favourite charger, Adonis, has now been firmly established from the contemporary documentary evidence. However, other factors may need to be considered to fully understand the monument's context. The Golden Jubilee celebrations for George III, which began at the start of the 50th year of his reign in October 1809, provided a major opportunity for displays of respect and affection for the King throughout the country. It has been alleged that the hill-figure at Osmington was created as part of these celebrations (Ditchfield 2010, 163-164), although the fact that it was cut in the late summer of 1808 does not comfortably equate with this assertion. However, there is one direct link between the hill-figure and the Jubilee celebrations at Weymouth – and that is the architect James Hamilton. It is known that George III visited Weymouth, one of his favourite retreats, during most summers between 1789 and 1805, but due to his deteriorating health he did not return after 1805 (Black 2006, 120 and 398). Due to this association, the citizens of Weymouth expressed their loyalty and ties with George III by erecting a life-sized statue of the monarch in the town, which was unveiled as part of the Jubilee celebrations in October 1810 (NMR no SY 67 NE 29; Black 2006, 406). The architect of this monument was the same James Hamilton who had been involved with the hill-figure at Osmington two years earlier. The timing of the cutting of the hill-figure in May-August 1808 may have been in consideration of the anniversary of George's accession on (25th October), but 1808 was well in advance of the coronation Jubilee, and it is unlikely that either formed the primary objective. A clue as to its inception may have been provided by an anonymous writer in an entry entitled 'Provincial Occurrences in Dorsetshire' dated 1st November 1808 in the *Monthly Magazine* (Anon. 1808, 393), which is perhaps the most illuminating contemporary reference:

> "An equestrian figure of his Majesty, mounted on his favourite grey charger, Adonis, has been formed in chalk on the hills of Ormington [sic] near Weymouth, belonging to Mr. Wood, of the former place. Although its length is 280, and its height 320 feet, yet the likeness of the King is well preserved, and the symmetry of the horse is complete. It forms a pleasing object to the pedestrians on the esplanade of Weymouth, but more especially to those who are fond of water excursions in the bay, where the view is more complete. It has been carried into effect under the direction of Mr. Wood, bookseller, *at the particular request and sole expense of John Rainier. esq. brother to the late admiral of that name* [italics added for this report]".

It is possible that the death of Admiral Rainier, who had had a long and distinguished naval career, and latterly served as a Member of Parliament, on 6th April 1808 (Breen 2004), may have been a more important factor in the inception of the hill-figure than has hitherto been recognised. His brother, John Rainier (one of the four responsible for the hill-figure) seems to have been one of the heirs to the admiral's large fortune (*Asiatic Journal* 1819, 525). It was John Rainier, according to the *Monthly Magazine* (1808), who requested and 'solely' financed the cutting of the hill-figure. With this background in mind, it is possible to speculate that the creation of this monument might have fulfilled two aims: one, a personal tribute by John Rainier to his brother and his noteworthy

career, and the other, a more symbolic and patriotic tribute to the reigning monarch and his associations with Weymouth. That the hillside chosen for its placing was visible both from Weymouth and the sea, the latter giving a perspective, where, according to the *Monthly Magazine* "the view is more complete", would have perhaps reinforced the link between the monument and the Admiral's naval career.

As well as discussions about the circumstances of the creation of the hill-figure, there has also been debate about its shape and orientation. It has been suggested that the original outline may have been based on one or more equestrian paintings (Boddy and West 1983; 1985; White, pers comm; OWHRG). The scope of this project precluded lengthy research into wider art history, although a rapid, mostly web-based appraisal of late 18th and early 19th-century equestrian paintings of royalty, such as would have been in vogue in 1808, was undertaken to assess styles, dress and postures which might help to clarify some of the detail of the outline. This appraisal brought the work of two artists to the fore: Sir William Beechey (1753-1839) and David Morier (1701/2?-70). The paintings of both may have had a part to play in the origin of the hill-figure, although those of the latter artist may have made the more significant contribution (see below). Importantly, both artists had royal patronage and produced equestrian paintings of George III (Morier also painted George II).

Figure 73: His Majesty Reviewing the Third Dragoon Guards and the Tenth Light Dragoons (Beechey 1798). This image is a black and white copy of the original which was destroyed in the fire at Windsor Castle in 1992.
Royal Collection Trust © HM Queen Elizabeth II 2013

The Beechey equestrian paintings of George III, which includes those by followers of his style and copies derived from them, show variation in orientation. Horses face left or right and the positions of their legs vary, as do the positions of the monarch's arms, the direction of his head in relation to orientation of the horse and a baton or sword may be present or absent. No single Beechey equestrian portrait has been identified which could have been used as a straightforward template for the hill-figure. Beechey had the patronage of George III and at the Royal Academy exhibition in 1798, he was commanded by the king to exhibit what many regard as his finest masterpiece, *His Majesty Reviewing the Third Dragoon Guards and the Tenth Light Dragoons* (Wilson 2004). From this painting (Beechey 1798 – *see* Figure 73), a number of derivatives and engravings were produced (for example, Ward 1799 – *see* Figure 74), including one by William Hopkins (after the style of Beechey) which features George III on Adonis without the other figures who were present in the original painting and which partly obscured the King's horse (Hopkins 1804 – *see* Figure 75). These paintings and engravings are probably the most famous of George III's equestrian portrayals to have existed in 1808 and they show the horse left-facing, but with the King turned to the right and wearing a tricorn hat. He has an outstretched arm but his sword is sheathed.

Figure 74: King George III Reviewing the Third or Prince of Wales's Regiment of Dragoon Guards & the Tenth or Prince of Wales's Regiment of Light Dragoons (Ward 1799).
©Crown Copyright: UK Government Art Collection

Figure 75. King George III on his Favourite Charger Adonis (Hopkins 1804).
©Crown Copyright: UK Government Art Collection

David Morier (1701/2?-1770), a Swiss artist with a specialist interest in military equestrian figures, also had the patronage of both George II and George III. He paid particular attention to military uniforms and produced many paintings of royalty, nobility and common soldiers (Spencer-Smith 2004). Morier's work is of varying quality and he may have had collaborators; Henry Angelo, whose father Morier had portrayed, stated that Richard Brompton frequently 'put the figures on [Morier's] horses' (*Reminiscences of Henry Angelo*, 2 vols., 1904, 1.24 quoted in Spencer-Smith 2004). Four equestrian paintings by Morier are particularly relevant to the Osmington hill-figure, two of George II and two of George III. The first is a right-facing equestrian portrait in silhouette of George II entitled, *Equestrian portrait of King George II* (Morier *c* 1727-60). Exact details of the original have not been reliably sourced or dated, but copies and derivatives seem to have been consistently attributed to Morier in art sales and collections (Figure 76). The similarity of the silhouette in the first of these pictures, allowing for the generalising of detail that would be required for the cutting of an enormous hill-figure on a steep escarpment, to the Osmington hill-figure is striking, particularly in terms of:

- the same composition and orientation;
- the proportions of the horse and the sweeping curve of the tail (a Morier trait displayed in his equestrian works);
- a feature interpreted as the saddle in the earthwork survey, which matches the outline exactly of the sweep of the frockcoat;
- the angle of the posture of the rider, George II, which rests at 10 degrees from the vertical through the centre line of the neck and the foot. This seems to be a common posture for equestrian figures by Morier; and
- the position of the arms.

Figure 76. Equestrian portrait of King George II (Morier 1727-60). Courtesy of Wikigallery.org

There are however, three main differences between the painting and the hill-figure:

- George II holds a baton, rather than a sword, which points downwards rather than upwards;

- the face of the George II is not in profile: his face is slightly turned toward the viewer. However, the profile of the nose and chin is highlighted; and

- George II wears a tricorn hat which is rather flatter in silhouette than the one on the hill-figure.

Despite these differences, the similarity of the outline of the hill-figure to that displayed on this painting is remarkable.

Figure 77. George II (Morier c 1745).
Royal Collection Trust © HM Queen Elizabeth II 2013

The second equestrian painting of George II by Morier (*c* 1745) has the figures facing to the left of the portrait, but if the image is reversed, again the similarity to the Osmington hill-figure is striking (Figure 77). This painting has three main differences to the right-facing Morier painting noted above:

- The profile of the back of George II displays what appears to be an angular shoulder. This could plausibly be the feature evident in the earthworks and shown on the early OS maps as the lump.

- The bottom of George II's wig (or possibly a queue) protrudes from the neck. This in part may be the queue evident in the earthworks and on the early OS maps.

- Three reins are portrayed.

Both paintings show a stirrup, spur and rowel. Also, on both the sword is sheathed and the monarch clearly holds a baton which is pointed downwards. It is unclear whether the first painting is a derivative of the second, as the precise date of the first has not been established and seems less refined. The second painting is in the Royal Collection and has been dated to *c* 1745. That artists themselves followed a tradition of equestrian portraiture is illustrated by a further left-facing equestrian painting of George II (Wootton 1743), which was painted at an earlier date than the Morier (*c* 1745) portrait: both have many similarities in style.

The third painting by Morier entitled, *Equestrian Portrait of George III and General Ramsden* (undated) (Figure 78), again bears a remarkable similarity to the earlier painting of George II and it has been suggested that a version of this which hung in the Weymouth Guildhall was used (in reverse) as a template for the Osmington hill-figure (Boddy and West 1983; 1985). There is a fourth equestrian painting by Morier of George III (Morier *c* 1765), which also shows the figures facing right which is less in profile than the paintings of George II (Figure 79). Again, this has many similarities to the earlier right-facing painting of George II (Figure 76).

There are two striking differences between the hill-figure and the equestrian portrayals of the two monarchs by Morier which need comment. The first difference is in the shape of the hat (which is more akin to that shown on the Beechey equestrian portraits than those by Morier), and the second is the raised baton. It is unclear whether the tricorn hat was originally intended to represent something akin to that shown on the Beechey portraits, or whether the headgear was extended before 1883 (the date of the first photographic image). The raised baton is not represented on any of the paintings consulted and thus seems somewhat anomalous, although as noted earlier, it may be a symbolic statement. Interestingly, in the famous Beechey painting where George III is shown reviewing the Third Dragoon Guards (Figure 73), a sabre is held aloft in front of the king, but it is actually held by the Prince of Wales behind him. It is possible that the raised sword in the hand of the reigning monarch at Osmington was intended as a defiant patriotic statement at a time of the international strife associated with the Napoleonic Wars. However, this is no more than speculation.

In summary, it seems likely that a template would have been necessary to realise the execution of the hill-figure. The Morier paintings of George II, in particular the unsourced right-facing one (Figure 76), offer the most convincing evidence for the use of a painting as a pattern. However, the Morier (undated) Guildhall painting of George III has so many (reversed) similarities to the earlier ones of George II, that realistically, inspiration could have been drawn from any or all. In reality, the outline for a hill-figure of the scale at Osmington would have only demanded the shape of a suitably attired rider on a horse and it may not have mattered which painting of a monarch served this purpose. Only in the detail of the attire might there have been specific differences. In actual fact, there was such a standardisation of equestrian postures, particularly of monarchs, and such copying of styles amongst the artists of the 18th century, that even these details may have been blurred. To illustrate this point, another right-facing equestrian painting by Morier shows a private in the Royal Horse Guards in profile with a raised sword (Morier *c* 1751-60). If it were not for the lack of a tail on the horse, this too would be strikingly similar to the Osmington hill-figure.

Figure 78. Equestrian Portrait of George III and General Ramsden (Morier undated).
Courtesy of Steve White

That the monument when completed had the proportions and refinement in shape that it had is a testimony to its creators, and clearly shows the input of the architectural mind of James Hamilton. Given the severity of the slope and the scale of the hill-figure, it is likely to have required the preparation of a design drawing from a template (as discussed above), which could be used to calculate measurements from which to scale-up the outline to the required shape and size on the ground. A similar design-drawing technique was used on the Kilburn White Horse in Yorkshire which was created in 1857 by a

businessman, Thomas Taylor, following a visit to the Uffington White Horse (NMR no SE 58 SW 42). A design drawing for the Kilburn hill-figure was created by the artist Harrison Weir and a copy of this survives with measurements, which give some idea how it might have been set out (http:/www.hows.org.uk/personal/hillfigs/kilb/kilb.gif). This hill-figure was of a similar scale, minus a rider, and on a similar severity of slope to that at Osmington, and at Kilburn, 33 men were required to cut it (Oswald and Pearson 2001, 29). (A field inspection undertaken at Kilburn in 2011 confirmed that earthworks of a similar scale to those at Osmington were created to define and stabilise the hill-figure). It is probable that the construction at Osmington would have required a similar labour-force to achieve the results.

Figure 79. George III (Morier c 1765).
Royal Collection Trust © HM Queen Elizabeth II 2013

Even with the use of a scale design drawing the figure's size (c 98m by 85m), coupled with the severity of the slope (c 26°) - both necessary if it was to be distinguishable from a distance on both land and sea - would have created considerable practical problems for its builders. The neck to foot axis of the rider is oriented toward the highest point on Osmington Hill, immediately south of the main road from Weymouth, and this axis is likely to have provided the base-line from which offsets (right-angle measurements) could have been set out along the contour of the slope to the principal nodes of the figure, using a surveying chain. Notwithstanding the availability of techniques of measurement, and Hamilton's undoubted grasp of scales and trigonometry, the height of the rider at Osmington seems strangely exaggerated in relation to that of the horse. There are a number of possible reasons for this. It may simply have been a surveying error, although that seems unlikely given the well-crafted symmetry achieved elsewhere. Alternatively, the complex of earthworks around the rider's neck could be indicative of changes to the head earlier than those identified between 1947 and 1949. More probably, however, this was a purposeful extension of the rider's body, intended to compensated for the foreshortening effect of a correctly proportioned human form placed on a severe slope and viewed from a distance, or perhaps to emphasise its importance as the principal component of the monument. Given that the monument was to George III (and not his horse) and was intended to make an impact on the landscape of Weymouth and Weymouth Bay, this is arguably the most plausible explanation for the distortion.

The monument still has a significant landscape presence more than 200 years after it was originally created. Like other hill-figures, it has attracted many visitors over that period, some to tend it, some to abuse it, but most simply to see it. It was part of the folklore and legend of Dorset before it was immortalised by Thomas Hardy and it continues to be so. In recent decades, it has suffered from some of the most severe erosion in its history, for reasons which lie beyond the scope of this report. However, in the last few years there has also been the most concerted study and restoration ever undertaken and the monument has now been firmly returned to the landscape. Changes to the monument are part of its character. In 2011, an attempt was made to interpret the available evidence to determine its original shape and meaning and make a best judgement as to the intentions of those who created it in 1808. It is hoped that this collaborative project between English Heritage and OS has not only underpinned the restoration and informed the monument's management plan, but that it has also identified some of the gaps that remain in understanding its evolution. In time it may be possible to fill some of those gaps.

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APPENDIX 1: OS NATIONAL GRID COORDINATES OF THE RESTORED HILL-FIGURE

EASTINGS	NORTHINGS
371481.632	084319.288
371482.112	084319.532
371482.845	084319.995
371483.730	084320.476
371484.483	084320.780
371485.542	084321.063
371485.978	084321.123
371487.839	084321.392
371488.850	084321.493
371495.433	084321.757
371496.320	084323.360
371496.965	084324.139
371497.099	084324.261
371497.517	084324.362
371497.989	084324.498
371498.055	084324.573
371498.278	084324.967
371498.453	084325.263
371498.122	084327.115
371497.991	084328.186
371497.693	084330.576
371497.461	084331.579
371497.154	084332.889
371497.022	084333.455
371496.480	084335.647
371496.157	084337.346
371496.068	084338.036
371496.040	084338.411
371496.040	084338.807
371496.023	084339.298
371496.023	084339.823
371496.031	084340.859
371496.031	084341.453
371496.040	084341.858
371496.048	084342.220
371496.089	084342.625
371496.133	084342.945

371496.230	084343.312
371496.436	084343.821
371497.360	084346.048
371497.614	084346.630
371498.967	084349.706
371497.346	084349.573
371497.303	084349.701
371497.283	084349.911
371497.283	084350.011
371497.292	084350.098
371497.337	084350.179
371499.406	084350.794
371499.492	084350.860
371499.709	084351.177
371499.739	084351.288
371499.764	084351.595
371498.747	084354.616
371497.909	084354.724
371497.334	084354.654
371495.273	084353.551
371495.152	084353.494
371495.046	084353.807
371496.920	084355.066
371497.130	084355.202
371497.221	084355.317
371497.319	084355.778
371497.369	084356.298
371497.434	084356.638
371497.616	084357.433
371497.934	084358.460
371498.349	084359.691
371498.628	084360.526
371498.918	084361.235
371499.145	084361.739
371499.502	084362.429
371499.757	084362.843
371500.124	084363.303
371500.507	084363.676
371500.782	084363.896
371500.996	084364.033
371501.248	084364.144

371501.504	084364.206
371501.733	084364.215
371501.907	084364.224
371501.980	084363.697
371502.091	084363.200
371502.187	084362.858
371502.305	084362.546
371502.825	084361.183
371503.427	084359.941
371503.973	084358.889
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371504.687	084357.853
371505.324	084357.180
371506.587	084356.580
371507.310	084356.344
371507.229	084356.034
371506.108	084356.413
371505.959	084356.462
371505.841	084356.506
371505.610	084356.584
371505.428	084356.587
371505.221	084356.587
371505.029	084356.580
371504.840	084356.511
371504.579	084356.366
371504.328	084356.152
371504.240	084355.912
371504.258	084355.480
371504.379	084355.032
371504.466	084354.678
371504.538	084354.484
371504.681	084354.118
371504.914	084353.632
371505.239	084353.125
371504.152	084352.635
371504.265	084352.133
371504.369	084351.594
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371502.250	084351.073
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371503.071	084347.394
371504.636	084344.639
371506.000	084342.537
371506.623	084341.311
371507.186	084340.215
371507.558	084339.371
371507.740	084339.274
371508.291	084339.004
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371513.877	084339.485
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371514.295	084338.905
371512.865	084337.392
371507.984	084337.138
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371508.588	084334.092
371508.794	084333.971
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371511.605	084332.208
371513.939	084329.821
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371515.396	084331.877
371515.929	084332.591
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371525.740	084323.542
371525.049	084323.904
371524.310	084324.266

ENGLISH HERITAGE RESEARCH AND THE HISTORIC ENVIRONMENT

English Heritage undertakes and commissions research into the historic environment, and the issues that affect its condition and survival, in order to provide the understanding necessary for informed policy and decision making, for the protection and sustainable management of the resource, and to promote the widest access, appreciation and enjoyment of our heritage. Much of this work is conceived and implemented in the context of the National Heritage Protection Plan. For more information on the NHPP please go to http://www.english-heritage.org.uk/professional/protection/national-heritage-protection-plan/.

The Heritage Protection Department provides English Heritage with this capacity in the fields of building history, archaeology, archaeological science, imaging and visualisation, landscape history, and remote sensing. It brings together four teams with complementary investigative, analytical and technical skills to provide integrated applied research expertise across the range of the historic environment. These are:

* Intervention and Analysis (including Archaeology Projects, Archives, Environmental Studies, Archaeological Conservation and Technology, and Scientific Dating)
* Assessment (including Archaeological and Architectural Investigation, the Blue Plaques Team and the Survey of London)
* Imaging and Visualisation (including Technical Survey, Graphics and Photography)
* Remote Sensing (including Mapping, Photogrammetry and Geophysics)

The Heritage Protection Department undertakes a wide range of investigative and analytical projects, and provides quality assurance and management support for externally-commissioned research. We aim for innovative work of the highest quality which will set agendas and standards for the historic environment sector. In support of this, and to build capacity and promote best practice in the sector, we also publish guidance and provide advice and training. We support community engagement and build this in to our projects and programmes wherever possible.

We make the results of our work available through the Research Report Series, and through journal publications and monographs. Our newsletter *Research News*, which appears twice a year, aims to keep our partners within and outside English Heritage up-to-date with our projects and activities.

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