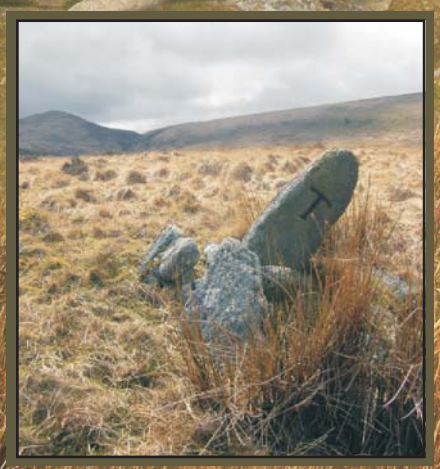
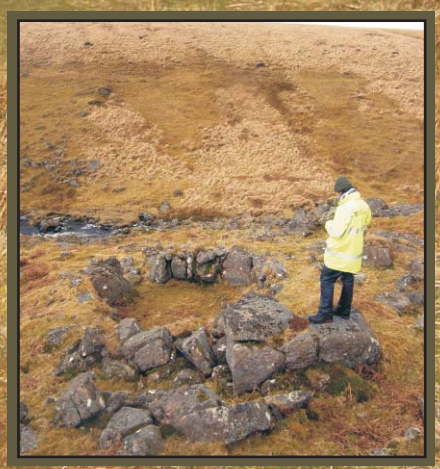
Wessex Archaeology

# Okehampton Range, Dartmoor Training Area, Devon

## Archaeological Monument Condition Survey





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April 2010

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Wessex Archaeology

# OKEHAMPTON RANGE, DARTMOOR TRAINING AREA, DEVON

## ARCHAEOLOGICAL MONUMENT CONDITION SURVEY

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On behalf of:
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Report reference: 73640

**April 2010**

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**OKEHAMPTON RANGE,**
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**ARCHAEOLOGICAL MONUMENT CONDITION SURVEY**

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**ARCHAEOLOGICAL MONUMENT CONDITION SURVEY**

**Summary**

Wessex Archaeology (WA) was commissioned by Landmarc Support Services on behalf of Defence Estates to undertake an archaeological monument condition survey within the Okehampton Range at Dartmoor Training Area in Devon. This survey provides an updated comprehensive condition assessment that will allow analysis of a similar survey undertaken by English Heritage in 2004.

The survey was undertaken between the 18th March 2010 and 8th April 2010. The principal objectives of the 2010 survey may be summarised as follows:

- To survey 240 archaeological monuments within the Study Area and assess their present condition against data gathered in 2004.
- To identify those monuments in greatest need of conservation works.
- To identify those monuments at the greatest risk from burrowing rabbits and/or badgers and those affected by scrub encroachment.

Information generated by the survey may be used by Defence Estates to inform and assist future management, conservation and development strategies. During the course of the survey a total of 256 monuments were visited by the survey team – the 240 monuments identified by the previous English Heritage surveys, along with a further 16 monuments identified during the course of the survey.

This survey established that the monuments within the Study Area continue to form a largely stable heritage resource. Most of the monuments were recorded as in good or fair condition, with only a small proportion in poor condition. An assessment of the stability of monuments also concluded that the majority are stable, with only a small proportion in gradual decline and a single monument in rapid decline. The proportions of monuments in each category are similar to those recorded in the 2004 survey.

Despite this, there are a small but significant group of monuments suffering ongoing damage, largely as a result of animal or human agencies. Very few of these are the result of direct military activity, with the main recorded impacts associated with animal action, although smaller numbers of human impacts include digging and vehicle damage.

A number of management recommendations have been made on the basis of this survey. The results of this survey comprise a single volume report and a GIS/Access database package and supporting digital photographs supplied on a CD ROM.

**OKEHAMPTON RANGE,**
**DARTMOOR TRAINING AREA, DEVON**

**ARCHAEOLOGICAL MONUMENT CONDITION SURVEY**

## Acknowledgements

The survey and report were commissioned by Landmarc Support Services. Special thanks are due to Naomi Turner, RDEM Co-ordinator SW at Landmarc, John Harris, Rural Estates Manager at Landmarc, and Lt Col Tony Clarke, **Commandant Dartmoor Training Area** for their support and help. Thanks are offered to those who were responsible for arranging access to the Training Area on a daily basis, specifically Paul Fletcher, Training Area Supervisor for Okehampton Ranges and Ray Hill, deputising in his absence. Additional thanks should go to the Range Wardens on both the Okehampton and Willsworthy Ranges for their assistance and advice, and in particular for their perseverance in rescuing the survey team in heavy snow. Wessex Archaeology would also like to thank Martin Brown, Defence Estates Archaeologist for assistance throughout the duration of the project. All digital information was kindly supplied by Defence Estates.

Fieldwork was undertaken by Nicholas Cooke and Jonathan Millward. This report was compiled by Nicholas Cooke, GIS and database development and support was provided by Chris Brayne, Paul Cripps and Jens Neuberger. The illustrations were prepared by Linda Coleman. The project was managed for Wessex Archaeology by Paul White and Chris Brayne.

# OKEHAMPTON RANGE, DARTMOOR TRAINING AREA, DEVON

# ARCHAEOLOGICAL MONUMENT CONDITION SURVEY

## 1 INTRODUCTION

### 1.1 Project Background

1.1.1 Wessex Archaeology (WA) was commissioned by Landmarc Support Services on behalf of Defence Estates to undertake an archaeological monument condition survey within the Okehampton Range at Dartmoor Training Area in Devon. This survey provides an updated comprehensive condition assessment that will allow analysis of a similar survey undertaken by English Heritage in 2004.

1.1.2 The Dartmoor Training Area (DTA) comprises approximately 13,000 hectares of land within the Dartmoor National Park (DNP), predominantly in the form of upland moorland, and largely used under licence from the Duchy Of Cornwall. The Okehampton Training Area comprises some 6285 hectares within the Dartmoor Training Area. It is used for both dry training and fixed and field firing, predominantly by the Royal Marines and Light forces, although in the past it appears to have been used as an artillery range.

1.1.3 The upland moorland of the DTA largely comprises unimproved pasture grazed by relatively low levels of sheep and cattle, although the construction and use of some facilities (largely comprising Okehampton and Willsworthy Camps and assorted range facilities) have altered the moorland character of some areas.

1.1.4 This condition survey follows on from a previous condition survey undertaken by English Heritage (2004). This earlier work covered the whole of the Okehampton Training Area along with a further 300 hectares of moorland licensed from the Duchy of Cornwall between the Rattle Brook and the Doe Tor Brook to the west of the Okehampton Training Area (hereafter referred to as the Study Area). This land is currently used to supplement training undertaken in the Willsworthy Training Area.

1.1.5 The original survey investigated 240 archaeological sites and monuments identified within the Survey area by a Baseline Condition Survey (*ibid*). These include 47 Scheduled Monuments, protected under the *1979 Ancient Monuments and Archaeological Areas Act (as amended).* In line with the previous survey, this survey assessed both protected Scheduled Monuments and undesignated archaeological sites.

1.1.6 The Okehampton Training Area is an important multi period landscape, containing a number of sites typical of the archaeology of Dartmoor, and others which are not closely paralleled elsewhere. The prehistoric remains of the Study Area, characterised by small dispersed settlements, funerary monuments such as cairns are typical of the remains recorded elsewhere on the upper part of the moor, whilst monuments in the lower lying areas include the large settlement at Wattern Oake and the Taw Marsh Reave.

1.1.7 Elsewhere, an extensive field system on Longstone Hill, and cairnfields on Homerton Hill, Longstone Hill and Halstock Down suggest early medieval clearance and cultivation, almost certainly associated with similar activity in Okehampton Park to the north of the Study Area

1.1.8 Extensive remains of medieval and post medieval tin working survive, with widespread evidence of streamworking in the numerous river valleys, some evidence for open cast mining, whilst 19th century mining remains include mines on the Rattle Brook, Doetor Brook, the Red-a-ven Brook and on the watercourse below Steeperton Tor.

1.1.9 Parts of the Okehampton Training Area have been used by the army since 1873. Since then the area has seen continuous military activity. One of the legacies of this is a diverse array of military earthworks and structures which have few parallels. These include important groups of redoubt and experimental earthworks dating back to the early 20th century, as well as a number of target railways and artillery observation posts in various states of preservation (Francis, 2002).

1.1.10 The survey undertaken in 2010 revisited the 240 archaeological sites and monuments (with a small number of exceptions – see below) and also identified and assessed a further 16 sites or monuments. This report presents the results of this 2010 survey alongside comparative baseline data gathered in winter 2000 and 2005. It notes the relative changes in the stability and integrity of each monument surveyed (**Appendix 1**), highlights trends of improvement but also shows changing patterns of 'impact'. It also highlights those monuments that are still considered to be in need of management or that are now in need of improvement. This data may be used to inform and assist future management and development strategies within the Study Area.

## 1.2 Project Brief

1.2.1 A brief for the survey was prepared by the Defence Estates (DE) in the form of a Statement of Requirement (Defence Estates 2010). This indicated that the condition survey should meet the following guidelines:

- All Scheduled Monuments should have an individual record.

- All monuments with an individual report in the 2001 English Heritage Survey should be revisited and resurveyed. Individual findspots may be excluded from the survey.

- Other, multiple records relating to one site such as component elements or associated finds from a deserted medieval settlement should, where appropriate be grouped together as one condition record.

- Each site shall have a Unique Identifying Number (UIN) , which will be that defined by the 2004 English Heritage survey. Any new monuments encountered and recorded may be given a new UIN.

- Isolated findspots should be omitted from the survey.

- Using the above criteria, the English Heritage gazetteer and survey sites should be sifted and a list of sites identified for condition assessment. This to be agreed with the DE Archaeological Advisor before fieldwork begins.

- Using the above criteria the SMR list should be sifted and a concise list identified of sites for condition assessment to be agreed with the DE Archaeological Advisor before fieldwork begins

1.2.2 A method statement for this survey was prepared by Wessex Archaeology in advance of the survey, and was submitted to Defence Estates (Wessex Archaeology, 2010). This detailed the proposed methodology for the survey.

## 1.3 Aims and Objectives

1.3.1 The principal objective of the survey was to determine the current condition of the 240 monuments within the Study Area. The survey assessed the nature and extent of any activities, whether human or natural, which might reasonably be interpreted as impacting upon the historic environment resource.

1.3.2 In addition the survey recorded activities or protection measures which currently promote and protect the resource.

## 1.4 Survey Output

1.4.1 This constitutes the third and final stage of the project and comprises two principal elements:

***CD Rom***

1.4.2 This contains all survey data in digital format and consists of ;

- A database report for all monuments in PDF
- A digital image archive
- A *.pdf* file of this report
- A text only *rtf* file of the report and *tif* files of the illustrations.

***Written Report***

1.4.3 This report has been prepared in two volumes; this summary report comprising a review of the project methodology and results and a stand-alone appendix (**Appendix 1**) which contains a copy of the monument condition record for each monument.

# 2 CONDITION SURVEY METHODOLOGY

## 2.1 Introduction

2.1.1 Each monument was visited by the survey team (comprising two surveyors) over the course of the condition survey.

## 2.2 Survey Equipment

2.2.1 The team was equipped with a Compaq IPAQ handheld PC connected to a GPS device. This combination provided a stated accuracy of +/- 5m (but with processing through GIS improved to +/- 3.5m). The handheld PC ran Pocket GIS software loaded with OS landline data (1:10,000) and Arcview shapefiles together with point data for identified monuments as provided by the DE. This package allowed the survey teams to quickly navigate around the estate and to record impacts/protection measures to within the stated accuracy range of the device.

2.2.2 A database developed for the survey (based on the standard monument condition survey forms supplied by DE) was also loaded onto the mobile device. This allowed the survey teams to record and input data directly on site, reducing the need to 'double-handle' data and eliminating the possibility of secondary transcription errors entering the database.

2.2.3 Each impact and protective measure affecting the monument was recorded separately. In every case maximum height, condition and stability were recorded in the field. Management recommendations were assessed and recorded on site as appropriate with each monument being considered on a case-by-case basis.

2.2.4 All digital photographs taken were located on the IPAQ by use of the GPS equipment. The cameras used 10 megapixel CCDs, delivering a maximum image resolution of 3264x2448 pixels. Each image was taken at high resolution.

## 2.3 Field Methodology

2.3.1 Access to specific areas of the Okehampton and Willsworthy Training Areas was co-ordinated on a daily basis in consultation with the relevant Range Warden at Okehampton Camp. This also ensured that basic levels of safety and communication could be maintained at all times. The survey was undertaken between the 18th March 2010 and 8th April 2010. At the time, live firing had ceased on the Okehampton Ranges, and training was restricted to dry training. Undertaking the condition survey relatively early in the year ensured that vegetation cover rarely obscured the monuments, allowing for a thorough assessment of condition to be undertaken.

2.3.2 The survey was undertaken by a single two man team to ensure internal consistency of recording and approach. In accordance with the Written Scheme of Investigation, individual findspots were not surveyed by the team.

## 2.4 Information recorded

***Introduction***

2.4.1 The classes of collected data were derived from the list defined by DE for monuments within the training area to consider land use, potentially damaging 'impacts', monument condition, stability, protective measures and vulnerability. These should allow direct comparibility with the results of the earlier condition survey (2004).

2.4.2 The data-logger included a copy of the raw data collected at each monument during the 2004 survey along with polygons and lines surveyed by English Heritage as part of their baseline condition survey.

## 2.5 Categories of Information

2.5.1 In addition to the basic information (Monument number, Monument name, Record type, Record source and Summary), several categories of information relating to the condition and likely impacts on the monument were recorded onto the database.

2.5.2 **Monument Condition** was recorded in a number of different ways. These included:

- Maximum height or depth of earthwork or extant standing structure
- The survival of the monument at the time of survey (as a percentage, judged in 5% increments)
- The stability of the monument (Improving, Stable, Gradual Decline, Rapid Decline and No longer extant)
- The vulnerability of the monument (None, Low, Medium or High) Free text was added where appropriate to provide additional information as to localised factors affecting the monument.
- The date of the survey was also recorded.

2.5.3 **Land Use** was recorded as a percentage both of the immediate area covered by the monument and within the surrounding 10m. Categories comprised:

- Agriculture (arable / pasture / buildings)
- Grassland (mown / garden)
- Forestry (coniferous / deciduous / mixed, scrub)
- MoD Facilities
- Military Training (12 sub-divisions, including drop zone, rifle ranges)
- Road / Track
- Civilian
- Bare Ground

2.5.4 **Impacts** (any activity which potentially damages the cultural heritage resource) were subdivided into the following broad categories:

- Vehicle Damage
- Tree Damage (wind blow)
- Digging

- Shelling
- Scrub Encroachment
- Overgrazing
- Burrowing Badgers
- Burrowing Rabbits
- Burrowing Moles
- Water Erosion
- Ploughing
- Footpath Erosion
- Tipping
- Development Encroachment
- Collapse of Structural Features
- Removal of Structural Material
- Other

2.5.5 The approximate extent of each impact (as a percentage of the total area of each monument) was estimated in basic increments of 5% and an assessment made of its age (current, recent or old).

2.5.6 **Protective measures** (any activity which potentially protects or promotes the cultural heritage resource) were subdivided into nine feature categories comprising:

- None present
- No Digging Signs
- No Vehicle Signs
- Agricultural Penning
- Palisaded
- Dragons Teeth
- Fenced
- Screen of Trees
- Temporary Repair/Support
- Burrowing animal control
- Meshing

2.5.7 The presence or absence of these measures was noted separately and an assessment made of their and condition (good, average or poor).

2.5.8 **Digital photographs** were taken of each monument site and their location and orientation integrated onto the database using the IPAQ.

2.5.9 **Management recommendations** were made where appropriate based on the current and projected levels of damage to each monument. These were selected from the following categories:

- Prepare Management Plan
- Mark No Digging Sign
- Mark No Vehicle Sign
- Repair No Digging Sign
- Restrict Access (Fence)

- Restrict Access (Palisade)
- Repair Protective Fence
- Repair Protective Palisade
- Deflect Vehicle Track Off
- Divert Vehicle Track Off
- Harden Earth Tracks of Monument
- Divert Footpath Off
- Clear Scrub
- Clear Trees
- Remove Vegetation Off
- Make Safe Features
- Shape Plantation
- Control Rabbits
- Control Moles
- Relocate Badgers
- Remove from Ploughing
- Reduce Stocking Levels
- Relocate Fence
- Relocate Trough
- Relocate Gate
- Management Agreement with Farmer
- Pursue Countryside Stewardship
- Repair Erosion Scars
- Move Targets
- Mark on Establishment Map
- Bring to Attention of Site Users
- Meshing
- Repair Meshing

2.5.10 In addition to this, a timescale was assigned to these recommendations (Long Term, Medium Term, Urgent). In instances where the monument was found to be no longer extant or no threat was perceived, no recommendations were made.

# 3 RESULTS

## 3.1 Introduction

3.1.1 This section represents a brief overview of the condition survey results together with general observations concerning aspects of the impacts and protective measures. It is not intended to provide a detailed analysis of the monuments, as this is more appropriately carried out by the end user querying the database/GIS, combining both statistical and spatial information.

3.1.2 During the course of the survey a total of 256 monuments were visited by the survey team – the 240 monuments identified by the previous English Heritage surveys, along with a further 16 monuments identified during the course of the survey. Further details of these monuments can be found in **Appendix 1**. A selection of impacts on particular monuments is shown in **Plates 1-8**. A full set of images can be found on the CD-Rom.

## 3.2 New sites and monuments

3.2.1 As part of this survey 16 further sites or monuments were observed. These are illustrated as red dots on **Figure 1**. They are currently given Wessex Archaeology numbers (WA) and will need to be attributed a monument ID within the DE dataset.

3.2.2 The sites comprise of four boundary stones (WA1002, 1003, 1004, 1014), two memorial stones (WA1009, 1010), features associated with water courses including streamworks (WA1005), a dam (WA1008), fords (WA1001, 1015) millstones (WA1007, WA1011) and building remains (WA1006). Other sites include a circular shelter (WA1012) and a clearance enclosure (WA1013). Specific military activity is represented by butts (WA1016).

## 3.3 Monument condition- overview

3.3.1 At least one monument condition was recorded for each of the 256 monuments covered by this survey. In some cases (particularly in the case of larger monuments, such as extensive areas of streamworking) impacts on different areas of the monument were recorded separately. For the purposes of this analysis, the minimum condition recorded has been used.

3.3.2 The majority of the monuments recorded in 2010 were in Good (139 monuments) or Fair (73 monuments) condition. Some 28 were considered in Poor condition, with a further 16 not found. The distribution of these monuments by condition show no significant distributions by condition, although the majority of the monuments in Poor condition are located within the northern half of the Okehampton Range, the area which has historically seen the most concentrated military activity and animal grazing (**Figure 2**).

3.3.3 A comparison between the condition of the monuments recorded in 2004 with that recorded in 2010 are shown in **Table 1** and **Chart 1** below.

**Table 1. Comparison of monument condition between 2004 and 2010**

| | No of monuments 2004 | % or Monuments 2004 | No of monuments 2010 | % of monuments 2010 |
|---|---|---|---|---|
| **Good** | 97 | 40.42 | 139 | 54.30 |
| **Fair** | 73 | 30.42 | 73 | 28.51 |
| **Poor** | 46 | 19.17 | 28 | 10.94 |
| **Not found** | 22 | 9.17 | 16 | 6.25 |
| **Destroyed** | 2 | 0.83 | 0 | 0 |
| **Total** | **240** | **100** | **256** | **100** |

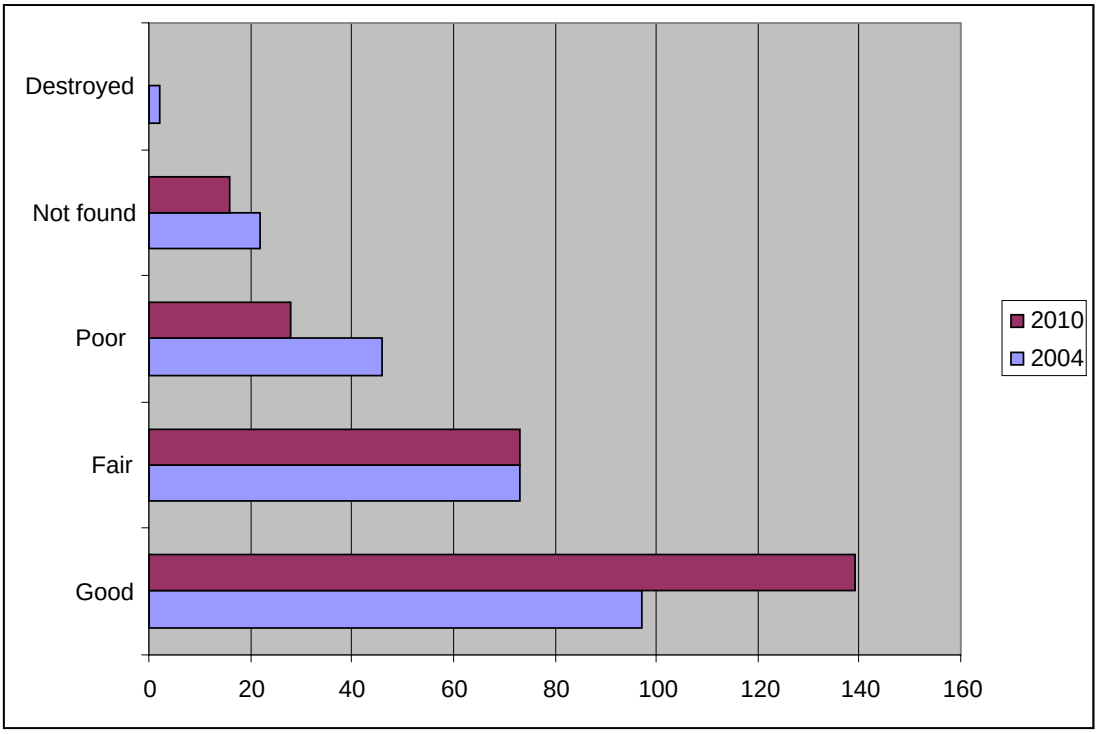


**Chart 1. Comparison of condition between 2004 and 2010 survey**

3.3.4 In general, these figures suggest that the condition of monuments as a whole has altered slightly between the two surveys, with more monuments recorded as good in 2010, and slightly fewer recorded as Fair or Poor. Some care must be taken here, however, to allow for the subjectivity of decisions made by the different survey teams involved.

3.3.5 Of the 97 monuments recorded as Good in 2004, 70 were recorded as Good in 2010, 23 as Fair, and the remaining 4 as Poor. Equally, only 27 of the monuments recorded as Fair in 2004 recorded as Fair in 2010, with a further

40 recorded as Good. The remaining 6 were recorded as Poor. Of those recorded as Poor in 2004, 18 were considered Fair in 2008, 10 as Good, whilst only 17 were considered Poor. One monument recorded as extant in 2004 could not be found; a Tinners Hut (MON UID 443745), where the co-ordinates given for the monument are clearly erroneous. The co-ordinates for a second monument (440608) were also erroneous, but the description of the monument allowed for its identification and recording.

3.3.6 In addition to this, seven of the 22 monuments recorded as Not Found in 2004 were located in 2010, and assigned monument conditions, ranging from Fair to Good (Monuments 443777, 867382, 894740, 895437, 1063789, 1147634 and 1233486), whilst both monuments recorded as destroyed in 2004 were identified and assigned a monument condition in 2010 (Monuments 967102 and 1063939 – both the sites of former artillery Observation Posts).

3.3.7 These figures suggest that there are significant differences between the recording undertaken by the two teams in 2004 and the single team who undertook the 2010 work. This may partially be a reflection on the subjective nature of the value judgements being made in this category, but could also reflect methodological differences in the location of monuments or differences in ground conditions at the time of survey – particularly where significant differences in condition were identified between 2004 and 2010.

3.3.8 Despite these differences, it is clear that there has been a decline in the number of monuments recorded as Poor or Not Found between the 2004 and 2010 survey and a 10% increase in the number of monuments considered Good and a stable number of monuments considered as Fair.

### 3.4 Monument stability- overview

3.4.1 In total, 200 of the 256 monuments recorded in 2010 were considered to be Stable (see **Figure 3**), 38 were considered to be in Gradual Decline and one in Rapid Decline. One monument is also recorded as improving – Monument 969170, a cairn containing a stone cist on Longstone Hill. There are no significant concentrations of monuments in decline within the Study Area, although most are located within the northern half of the Study Area. The single monument in Rapid Decline is 1064701, a series of tin pits on the south-western slopes of Little Kneeset (**Plate 1**).

3.4.2 Comparison with the earlier survey indicates that the majority of monuments surveyed in both 2004 and 2010 were considered to be stable (over 79% in 2004 compared to 78% in 2010). A smaller number of monuments were considered in Gradual Decline in both surveys (nearly 11% in 2004 compared to nearly 15% in 2010). A single monument was recorded as in rapid decline in 2010 (see **Table 2**).

3.4.3 Looking at these figures in more detail, it is clear that the two surveys are in broad agreement, and suggest that the majority of the monuments surveyed are suffering no significant current impacts. Only 20 of the 88 monuments recorded as Stable in 2004 were considered in gradual decline in 2010. A number of these are likely to be methodological differences – where small impacts have been recorded on larger monuments such streamworks, which are largely stable, but suffering small scale specific impacts. This may also

account for the slightly higher proportion of monuments recorded as in gradual decline.

**Table 2. Comparison of monument stability between 2004 and 2010.**

| **2004 Survey** | **Improving** | **Stable** | **Gradual decline** | **Rapid decline** | **No longer extant** | **Total** |
|---|---|---|---|---|---|---|
| **Good** | 0 | 88 (36.67%) | 9 (3.75%) | 0 | 0 | **97 (40.42%)** |
| **Fair** | 0 | 66 (27.50%) | 7 (2.92%) | 0 | 0 | **73 (30.42%)** |
| **Poor** | 0 | 36 (15%) | 10 (4.17%) | 0 | 0 | |
| **Not found** | 0 | 0 | 0 | 0 | 22 (9.17%) | **22 (9.17%)** |
| **Destroyed** | 0 | 0 | 0 | 0 | 2 (0.83%) | **2 (0.83%)** |
| **Total** | **0** | **190 (79.17%)** | **26 (10.83%)** | **0** | **24 (10%)** | **240 (100%)** |
| | | | | | | |
| **2010** | **Improving** | **Stable** | **Gradual decline** | **Rapid decline** | **No longer extant** | **Total** |
| **Good** | 0 | 114 (44.53%) | 25 (9.76%) | 0 | 0 | **139 (54.30%)** |
| **Fair** | 1 (0.39%) | 61 (23.83%) | 11 (4.30%) | 0 | 0 | **73 (30.42%)** |
| **Poor** | 0 | 25 (9.76%) | 2 (0.78%) | 1 (0.39%) | 0 | **28 (10.94%)** |
| **Not found** | 0 | 0 | 0 | 0 | 16 (6.25%) | **16 (6.25%)** |
| **Total** | **1 (0.39%)** | **200 (78.13%)** | **38 (14.84%)** | **1 (0.39%)** | **16 (6.25%)** | **256** |

3.4.4 The stability of the monuments recorded in 2010 confirms that a high proportion of monuments are both in good and fair condition and stable. Only a small number of monuments are in Gradual Decline, with only one considered in Rapid Decline. These figures are important in that they reflect the long term condition of monuments on the Okehampton Ranges and indicate the effectiveness or not of the measures being taken to manage those monuments.

## 3.5 Scheduled Monument Condition and Stability

3.5.1 Assessment of the condition and stability of the 47 Scheduled Monuments between 2004 and 2010 has also been undertaken and the condition results are illustrated in **Chart 2**. The scheduled cairns (SM28725) on the northern

slope of Metheral Hill which was recorded as Not Found in 2004 was recorded in 2010 and assessed to be in Good condition. Overall the percentage of Scheduled Monuments assessed as Good has increased from 43% to 59%. The percentage of monuments considered Fair as reduced from 2004 by 4% and may reflect subjective variation between the two surveys and the definition of 'Fair' and 'Good'. However the most significant change is the decreased number of Scheduled Monuments assessed as Poor; 21% in 2004 to 11% in 2010. As a result the stability of the monuments are considered to be stable, with no difference between the two surveys for the overall stability of the Scheduled Monuments.

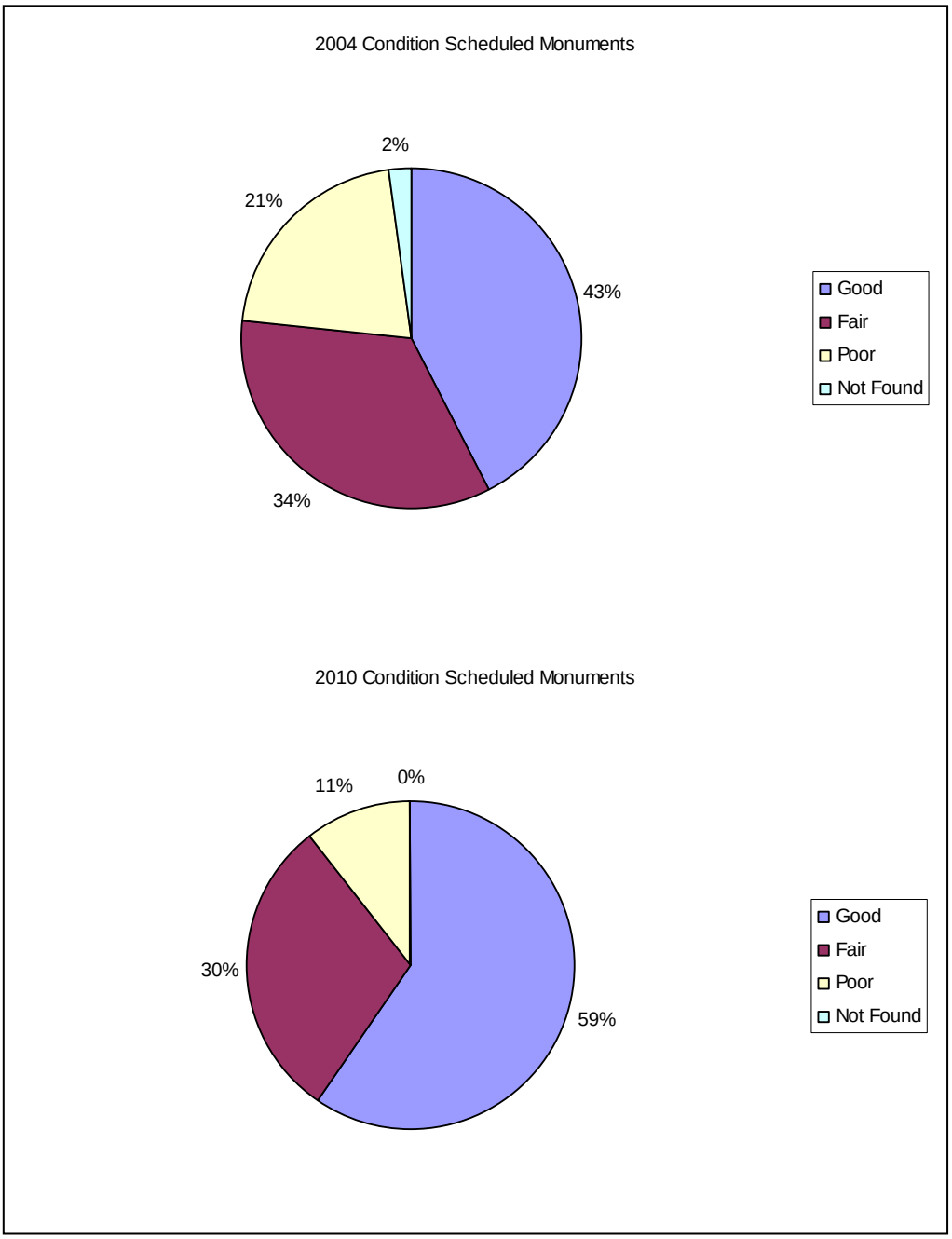


**Chart 2. Comparison of Scheduled Monument condition between 2004 and 2010**

3.5.2 However specific monuments have seen either declined in condition or not improved from the previous survey. The scheduled cist (SM34445/ MON UID 1376648) on Whitehorse Hill was considered as Good in 2004 but is assessed as Poor in 2010 due to animal erosion. Two Scheduled Monuments assessed as Poor in 2004 continue to be assessed as Poor in 2010. These are the hut circle (MON UID 893803) as part of SM28724, although there are no current discernable threat to its survival and reflects historical erosion; and Tor Cairn (SM24158 MON UID 965852) on top of High Willhays Summit which was recorded in 2004 as suffering from visitor erosion.

### 3.6 *In Situ* Protective Measures

3.6.1 No protective measures were noted on any of the monuments visited surveyed, although in some instances vehicle tracks affecting monuments have been blocked by large granite boulders. Protective measures such as palisades and warning signs that are common on many other Defence Estate training areas are not used on Dartmoor at the request of the Dartmoor National Park to prevent the cluttering of the landscape. The absence of these

### 3.7 Impacts

3.7.1 A detailed breakdown of the impacts affecting each monument can be found in the front-end database found in the CD-ROM. Some generalisations, however, can be made.

3.7.2 In total one or more impacts was recorded on 51 of the monuments (see **Figure 4**). These impacts are also shown in **Table 3**. The most numerous are episodes of animal erosion (predominantly 'poaching' by sheep and a lesser extent cattle). 32 out of the 256 monuments (12.50%) were being damaged by animal erosion. The remaining impacts are all relatively rare, with only vehicle damage (8 cases, 3.13%) and water erosion (6 cases, 2.34%). Particularly noticeable in this list is how few monuments are being impacted by burrowing animals – the two exceptions are 1064701, the tin pits on Little Kneeset being damaged by badgers (**Plate 1**) and 1063585, a small Bronze Age settlement on the banks of the East Okement River. In the case of the former, the tin workings are now so riddled with burrows that it is likely that any monument integrity is all but lost.

3.7.3 It is evident from the distribution map for these impacts the majority are located towards the north and east, in the areas subject to most intensive grazing and military activity, both currently and in the past.

3.7.4 A mixture of current, recent and old impacts were recorded affecting the monuments. The breakdown of 60 recorded impacts can be seen in **Table 4** below. Current impacts are dominated by animal erosion (65%, see **Plate 2**), vehicle damage (11%) and water erosion (13%), whilst the two recorded recent impacts were animal erosion and vehicle damage. The old impacts are more varied, and include episodes of digging and shelling likely to reflect past military activity on the ranges. The smaller numbers of recent and old impacts recorded are likely to reflect difficulties in identifying specific causes of damage, particularly with regards to older impacts. This has probably led to a significant under-recording of old impacts – for example historic shelling

within the Okehampton Ranges is likely to have caused significantly greater damage than is evident in these figures.

**Table 3. Impact types**

| | Primary impact | Secondary impact | Total |
|---|---|---|---|
| **Animal erosion** | 32 | | 32 |
| **Burrowing badger** | 1 | | 1 |
| **Burrowing rabbits** | 1 | | 1 |
| **Digging** | 2 | | 2 |
| **Footpath erosion** | 2 | | 2 |
| **Other** | 1 | 2 | 3 |
| **Shelling** | 2 | | 2 |
| **Vehicle damage** | 7 | 1 | 8 |
| **Water erosion** | 3 | 3 | 6 |
| **Total** | **51** | **6** | **57** |

**Table 4. Current, Recent and Old impacts.**

| | Current impact | Recent impact | Old impact | Total |
|---|---|---|---|---|
| **Animal erosion** | 30 | 1 | 2 | **33** |
| **Burrowing badger** | 1 | | | **1** |
| **Burrowing rabbits** | | | 1 | **1** |
| **Digging** | | | 2 | **2** |
| **Footpath erosion** | 2 | | 1 | **3** |
| **Other** | 2 | | 1 | **3** |
| **Shelling** | | | 2 | **2** |
| **Vehicle damage** | 5 | 1 | 2 | **8** |
| **Water erosion** | 6 | | 1 | **7** |
| **Total** | **46** | **2** | **12** | **60** |

3.7.5 Drawing direct parallels between the impacts recorded in the recent survey and that undertaken in 2004 is difficult because of the different methodologies used. Broad parallels, can, however, be drawn. In 2004 no impact was recorded for 204 of the 240 monuments (85%), which compares to 205 out of 256 in 2010 (80%). The most numerous impacts (recorded in free text) were animal erosion (12 monuments, 5%), visitors (9 monuments, 3.75%) vegetation (3 monuments, 1.25%) and roads/tracks (2 monuments, 0.83%), with smaller numbers of monuments impacted through burrowing animals, water erosion and inclement weather. Overall, fewer monuments were recorded as being impacted in 2004 than in 2010, although the main cause of damage in both was identified as animal erosion. Visitor damage was not recorded directly in the 2010 survey, whilst in no example was the vegetation cover on a monument considered significant enough to form an impact, possibly because of the time of year in which the survey was undertaken.

# 4 MANAGEMENT RECOMMENDATIONS

## 4.1 Introduction

4.1.1 Management recommendations were made by the survey team based on the condition, stability and impacts on a monument. In some cases, it was considered necessary to make more than one recommendation per monument. In total, 45 management recommendations were made on 42 monuments (see **Figure 5**).

4.1.2 The distribution of these recommendations shows that the majority of monuments requiring mitigatory work lie in the north eastern and eastern zones of the Study Area.

4.1.3 In addition to the management recommendations, suggested levels of urgency were identified for their implementation (**Figure 6**). There are no significant concentrations of monuments based on the urgency of recommended mitigation works. The breakdown of these recommendations can be seen summarised in **Table 5**.

**Table 5. Management Recommendations**

| | **Long Term** | **Medium Term** | **Urgent** | **Total** |
|---|---|---|---|---|
| **Repair Erosion Scars** | 6 | 22 | 2 | **30** |
| **Bring to the attention of site users** | 2 | 7 | 0 | **9** |
| **Divert vehicle track off** | 1 | 3 | 0 | **4** |
| **Mark no digging sign** | 0 | 2 | 0 | **2** |
| **Total** | **9** | **34** | **2** | **45** |

### 4.2 Repair of erosion scars

4.2.1 Some 30 of the 45 recommendations made were for the repair of erosion scars.

4.2.2 Two monuments were considered in need of urgent repairs to prevent further erosion. The first of these is 1376648, a Bronze Age cist situated atop Whitehorse Hill, which is suffering serious erosion, probably caused by both humans and animals, and which needs remedial work if it is not to be lost entirely (**Plate 3**). The second refers to animal poaching on the leat embankment above the Fox Holes (Wheal Frederick) Mine, part of streamworks 1398493, which is rapidly eroding this earthwork (**Plate 4**).

4.2.3 The largest group are those regarded as requiring medium term repairs. These can be divided into two groups – those where animal or water erosion is affecting monuments, and those where human action is affecting monuments. The former group is largely dominated by boundary and memorial stones (444211, 893430, 895361, 895384, 966811, 1063583, 1063929, 1393026, 1395903, 1396609, 1396616, 1396631, 1397029, WA1002, WA 1003, WA 1009 and WA 1010). In most cases, these are suffering erosion around their bases, caused by animals using the stones as rubbing and scratching posts (see **Plates 2 and 5)**. In some cases, this damage is fairly extensive, and one stone, monument 1393026, the stone appears to have fallen as a result of such erosion. A programme of remedial actions would ensure the continued stability of these monuments. Other monuments affected in a similar way include two observation posts (967045 and 1398456), a set of missile firing positions (1396606, see **Plate 6**) and a military earthwork, possibly a redoubt (1063519).

4.2.4 Other monuments appear to be suffering from man-made impacts – including cairns (443723, 444211), shooting stands 893474 and target railway 1397720. The latter impact relates to the continued use of one stretch of the target railway as part of a modern firing range.

4.2.5 Monuments requiring remedial works on erosion scars in the longer term included five further boundary stones or groups of boundary stones (831614, 894186, 895323, 1396616 and 1396631) and an infantry redoubt on East Mill Tor (1063526) which is suffering minor animal poaching.

### 4.3 Bring to the attention of site users

4.3.1 It is suggested that the condition of nine monuments be brought to the attention of site users. Seven of these were regarded as medium term and two as long term issues, and comprise cairns and cairnfields (440858, 440888, 443705, 443946 and 1395963), prehistoric settlements (443769 and 440600), a military trench system (1396475) and Irishman's wall (894434). All of these are suffering some degree of structural deterioration, either at the hands of people (the cairns and cairnfields) or a combination of people, animals and the elements (the settlements, the trenches and Irishman's wall). It is recommended that the ongoing condition of these monuments is monitored and that site users are made aware of the potential for damage to these monuments. Of particular concern is the damage being caused to a number of the more prominent cairns by the removal or repositioning of stones (**Plate 7**).

### 4.4 Divert vehicle track

4.4.1 Four monuments are being impacted by vehicular activity – a cairn on Halstock Down (1395963) and associated cairnfield (440888), a target railway on East Mill Tor which is being used as an access route to Observation Post 6 (832018) and a prehistoric enclosure on the ridge between Higher Tor and Oke Tor (894311). Of these, both the cairn and cairnfield on Halstock Down lie within the bounds of the Scheduled Monument covering the latter. In all four cases, ongoing use of the vehicular tracks, particularly in the winter months, is likely to lead to serious localised damage (see **Plate 8**).

### 4.5 Mark with no digging sign

4.5.1 Two monuments have suffered from instrusive digging, presumably as part of military exercises – a cairn on Halstock Down (1395963) and associated cairnfield (440888). Although the evidence for digging is not recent, both of these monuments have been affected by military digging. In the light of this, the Scheduled Monument status of 440888 and the low relief of many of the cairns and enclosure boundaries, it is suggested that perhaps no digging signs be erected to prevent further damage in the future or the monument is brought to the attention of site users.

### 4.6 Review of 2004 Recommendations

4.6.1 The English Heritage monument condition survey, undertaken in 2004, identified a number of impacts:

- "Visitor damage continues to be the greatest threat to the archaeological environment. The small tor cairn on High Willhays is being robbed to furnish a walkers' cairn on the rocks above it and a small cairn on Black Down is suffering the same fate. The fabrics of the large cairns near the summit of Yes Tor and that south of Wattern Tor are constantly being rearranged to create small shelters similar to a seemingly permanent structure within a hollow in the top of Quintin's Man."

- "Vehicle damage to sites is limited to the cairnfield and field system on Halstock Down though the site will remain stable if the present track is adhered to."

- "Incidental damage is defined as that actually caused by livestock and potentially through adverse vegetation, particularly gorse and bracken. Livestock poaching is very apparent on the north face of the cairn on Hangingstone Hill and is sufficiently extensive on the experimental military parapets south of East Mill Tor to cause concern. There is no evidence to suggest that overgrazing is causing this disturbance, the larger archaeological features appear to attract livestock by providing shelter. Most of the boundary stones included in the investigation stand in hollows caused by animals using the stones as rubbing posts."

- "Minor damage from burrowing animals is visible on several other military earthworks."

- "Bracken and gorse, which possess the potential to disrupt archaeological deposits, are not extensive within the investigated area

though the former is gradually overrunning prehistoric settlements in the West Okement valley and the early cultivation remains on Longstone Hill. Also of concern is the spread of molinia grass throughout the estate and which now almost completely obscures a large prehistoric settlement overlooking the Steeperton Brook."

4.6.2 These impacts can largely be paralleled in the 2010 survey, with the exception of the concerns raised over the vegetation cover. This may reflect the time of year in which the survey was undertaken (in March and Early April, when vegetation cover was low).

4.6.3 On the basis of their survey, English Heritage made the following recommendations:

- While the MoD is apparently not responsible for the ongoing intentional disturbance it, the Duchy of Cornwall and the Dartmoor National Park Authority have a duty of care towards the monuments in this area. Short term action should include the levelling of the prominent visitors cairns and shelters while increased education and awareness should lessen the problem in the longer term. Pressure from outside bodies and individuals regarding the effacement of redundant military features should be resisted by all conservation parties.

- Incidental damage in terms of livestock poaching is largely unavoidable though thankfully on a small scale and treatable on a case by case basis. The threat posed by vegetation encroachment can sustainably be addressed through changing the grazing regime for the affected areas.

4.6.4 The results of the recent survey suggest that further work is required to address some of these concerns. In some cases, this can be addressed through continued efforts to raise awareness of the nature and vulnerability of some of the monuments, whilst in others, more direct intervention may be required to ensure that there is not further deterioration of the small number of monuments identified as at risk.

## 5 METHODOLOGICAL REVIEW

5.1.1 The survey and methodology was designed to be accurate, robust, simple and repeatable as well as to allow a degree of comparability with the survey previously undertaken by English Heritage.

5.1.2 Direct data entry in the field was undertaken using the IPAQ GPS/digital camera package. This quick and efficient technology avoids transcription errors, which can afflict paper based survey techniques. The calculated GPS tolerance of +/- 3.5m proved more than sufficiently accurate for the tolerances of OS base mapping and for the mapping of discrete impacts and locating of photographs.

5.1.3 The use of GPS equipped hardware as a navigational aid can save a considerable amount of time identifying the location of sites. It permits the grid references of slight or destroyed monuments, crop-mark sites or find-spots to be located precisely. There were, however, a number of examples

where the co-ordinates given for a particular monument are either unhelpful or inaccurate. In this respect, assigning notional 'centre points' for extensive monuments such as areas of streamworking has its drawbacks, particularly when those centre points lie away from the extents of the monument they describe. Additionally, co-ordinates for two discrete monuments were erroneous:

- Monument 443745, a tinners hut on the upper reaches of Steeperton Brook

- Monument 440608, a tinners hut overlooking Black Ridge Brook

5.1.4 Unfortunately, as a result of this, Monument 443745 was not surveyed. The text description of 440608 enabled the survey team to identify and record the monument.

5.1.5 The survey was undertaken during the early spring (late March – early April 2010) to coincide with minimal covering vegetation and an optimum break in military training. This did, however, limit the survey team's ability to establish the extent of the damage being caused by extensive vegetation cover – an issue identified in the 2004 survey and subject to one of the management recommendations made by English Heritage.

5.1.6 In addition to the hand held IPAQ running a GIS, the survey team also used traditional paper maps based on 1:10,000 maps of the area overlain with the monument information on polygons. These have the advantage of providing a better image of the terrain (showing contours, etc), thus allowing survey teams to plot a route across the landscape and provide an excellent visual guide to which monuments have been surveyed. In addition they indicate the full extent of any monument, especially settlement sites, beyond the 'central-dot' that is usually shown to identify sites on the GPS entry.

5.1.7 Using a single two man team to record all of the monuments appears to have ensured a relatively consistent dataset – variations of recording have previously been noted in the data collected on condition surveys undertaken by two or more teams.

5.1.8 The use of industry standard hardware and software meant that the survey system was relatively simple to implement and personnel did not require extensive training in its use. Although every effort was made to establish and maintain recording consistency in the field, the subjective nature of the recording process must be recognised.

## 6 CONCLUSIONS

6.1.1 The monument condition survey undertaken in March and April 2010 established that the monuments within the Study Area continue to form a largely stable heritage resource, in agreement with the conclusions drawn up by the previous 2004 survey. Most of the monuments were recorded as in Good or Fair condition, with only a small proportion in Poor condition. Although there is some difficulty in comparing these results with the earlier 2004 survey (including a degree of subjectivity in the records made by different survey teams), these suggest a slight increasing in the number of

monuments in Fair or Good condition and a slight decline in those recorded as Poor condition compared to 2004. An assessment of the stability of monuments also concluded that the majority are stable, with only a small proportion in gradual decline and a single monument in rapid decline. The proportions of monuments in each category are similar to those recorded in the 2004 survey.

6.1.2 Despite this, there are a small but significant group of monuments suffering ongoing damage, largely as a result of animal or human agencies. Very few of these are the result of direct military activity, with the main recorded impacts associated with animal action, although smaller numbers of human impacts include digging and vehicle damage. Although it is not possible to draw direct comparison with the 2004 survey, the identified impacts are similar, with two main exceptions – visitor damage and vegetational damage. The former is a reflection of the way the 2010 survey was undertaken, with no specific category for visitor damage (although this was recorded in free text and as part of the recommendations), whilst vegetation cover was low whilst the survey was conducted.

6.1.3 A number of management recommendations have been made on the basis of this survey. The first recommendation is that remedial work is undertaken to repair erosion scars on a number of monuments (largely, but not exclusively the result of animal or water erosion). English Heritage previously recommended that such erosion be monitored.

6.1.4 It is also recommended that further effort is made to bring the vulnerability of a small number of monuments to the attention of site users, particularly military personnel and visitors. This follows on from a similar recommendation made by English Heritage in 2004.

6.1.5 Apart from these, a small number of monuments have been identified where ongoing use of vehicle tracks is likely to impact upon monuments, and it is recommended that these tracks be diverted to avoid such impacts, whilst the location and vulnerability of a cairn and cairnfield on Halstock Down is such that it would benefit from 'No digging' signs, particularly as it has suffered from episodes of digging in the past.

6.1.6 In the absence of further data, it is suggested that the levels of vegetation growth on monuments be monitored and grazing regimes adjusted in accordance with the recommendations made by English Heritage in 2004.

## 7 ARCHIVE

7.1.1 The project archive is currently held at the offices of Wessex Archaeology under the project code 73640.

# 8 BIBLIOGRAPHY

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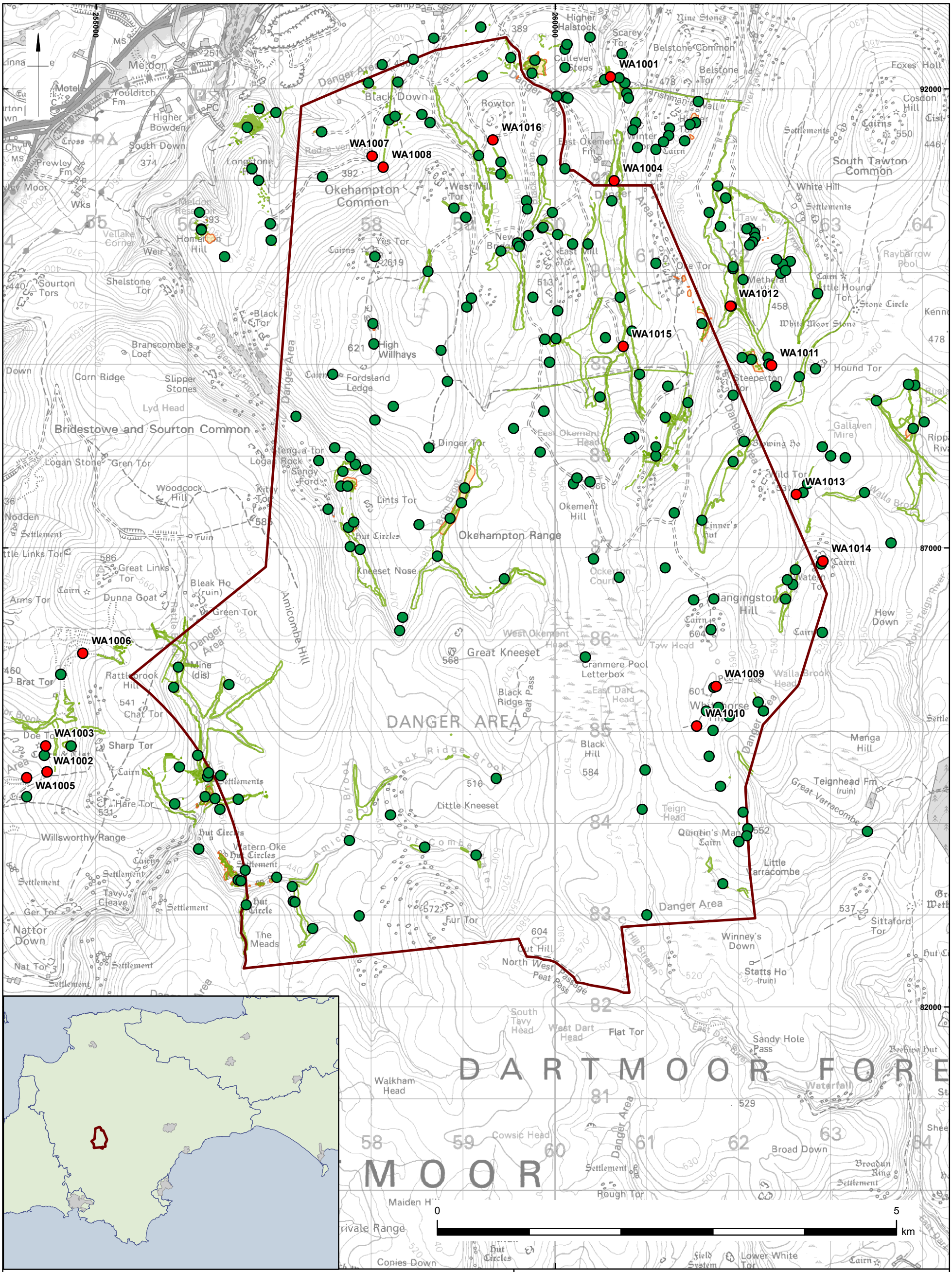




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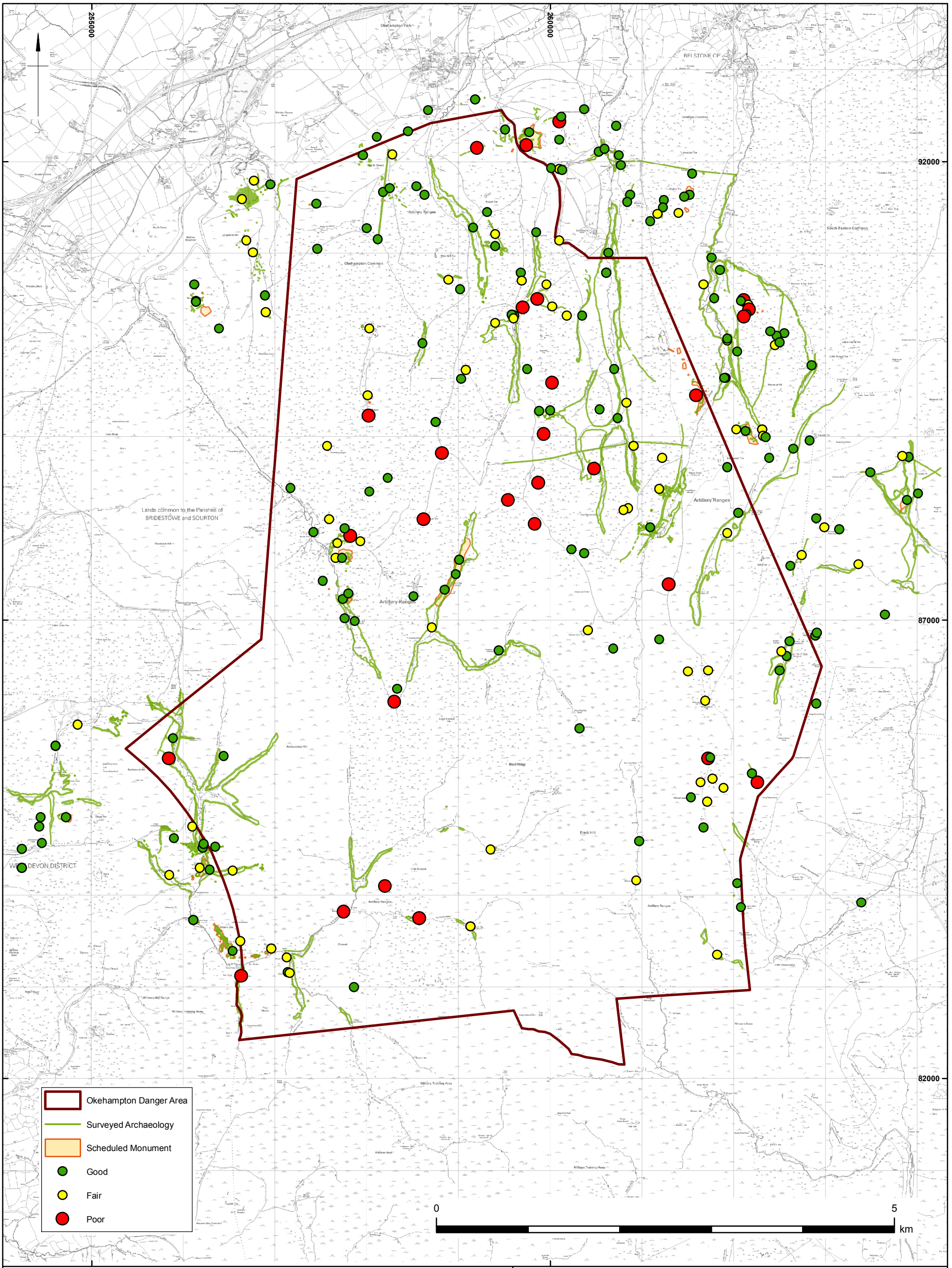
All monuments (new monuments shown in red)

Figure 1



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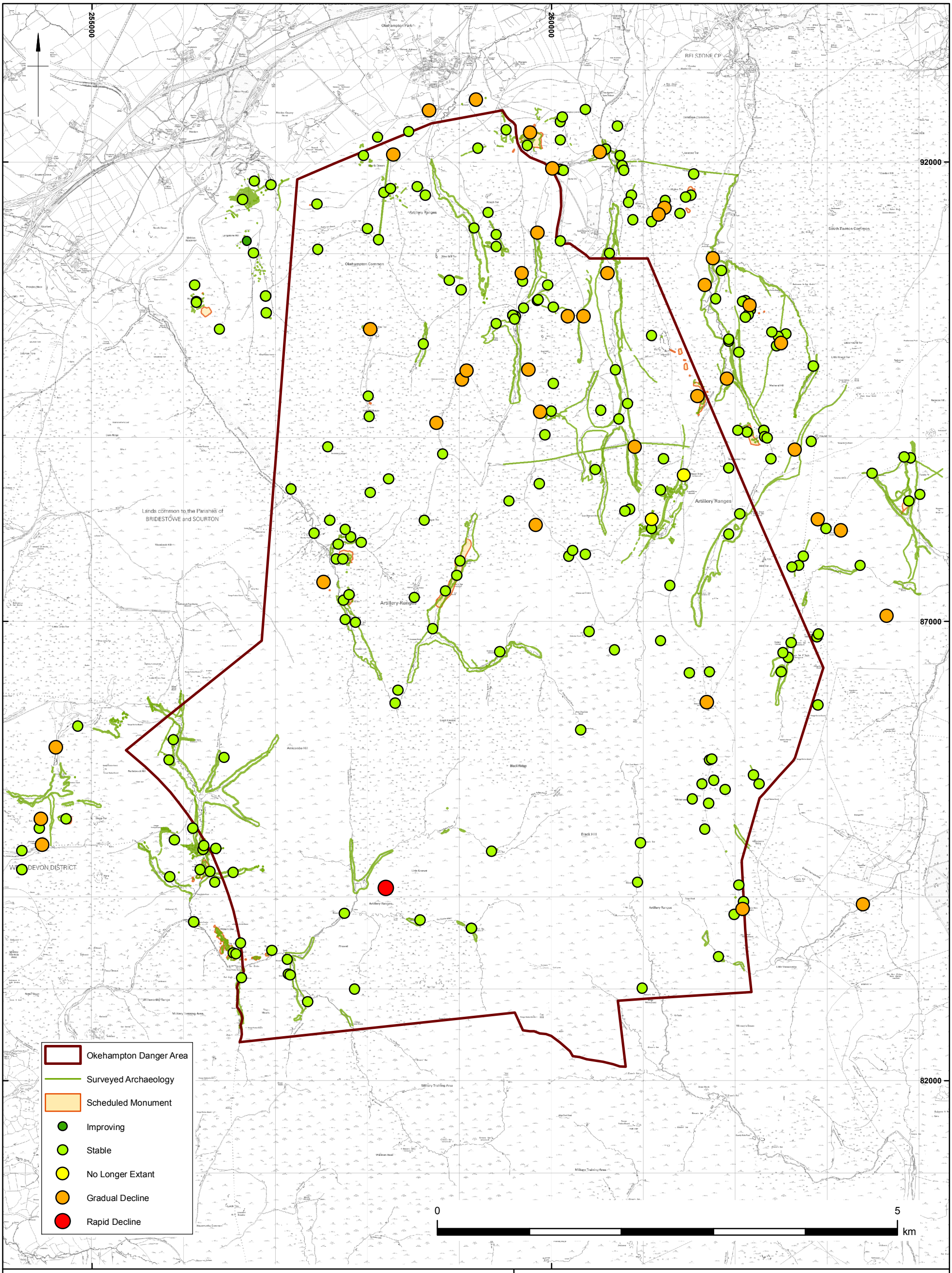
Monument condition

Figure 2



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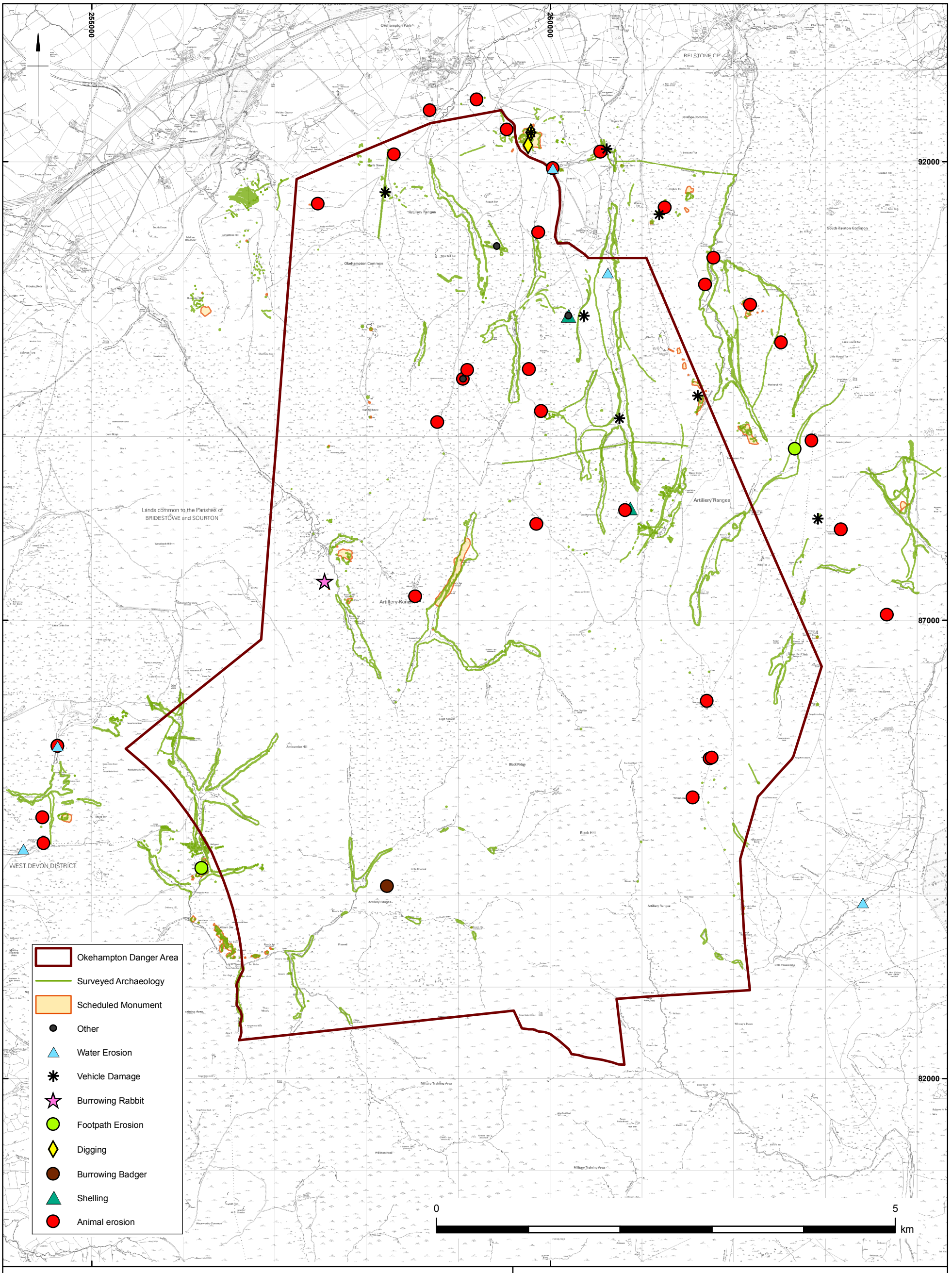
Monument stability

Figure 3



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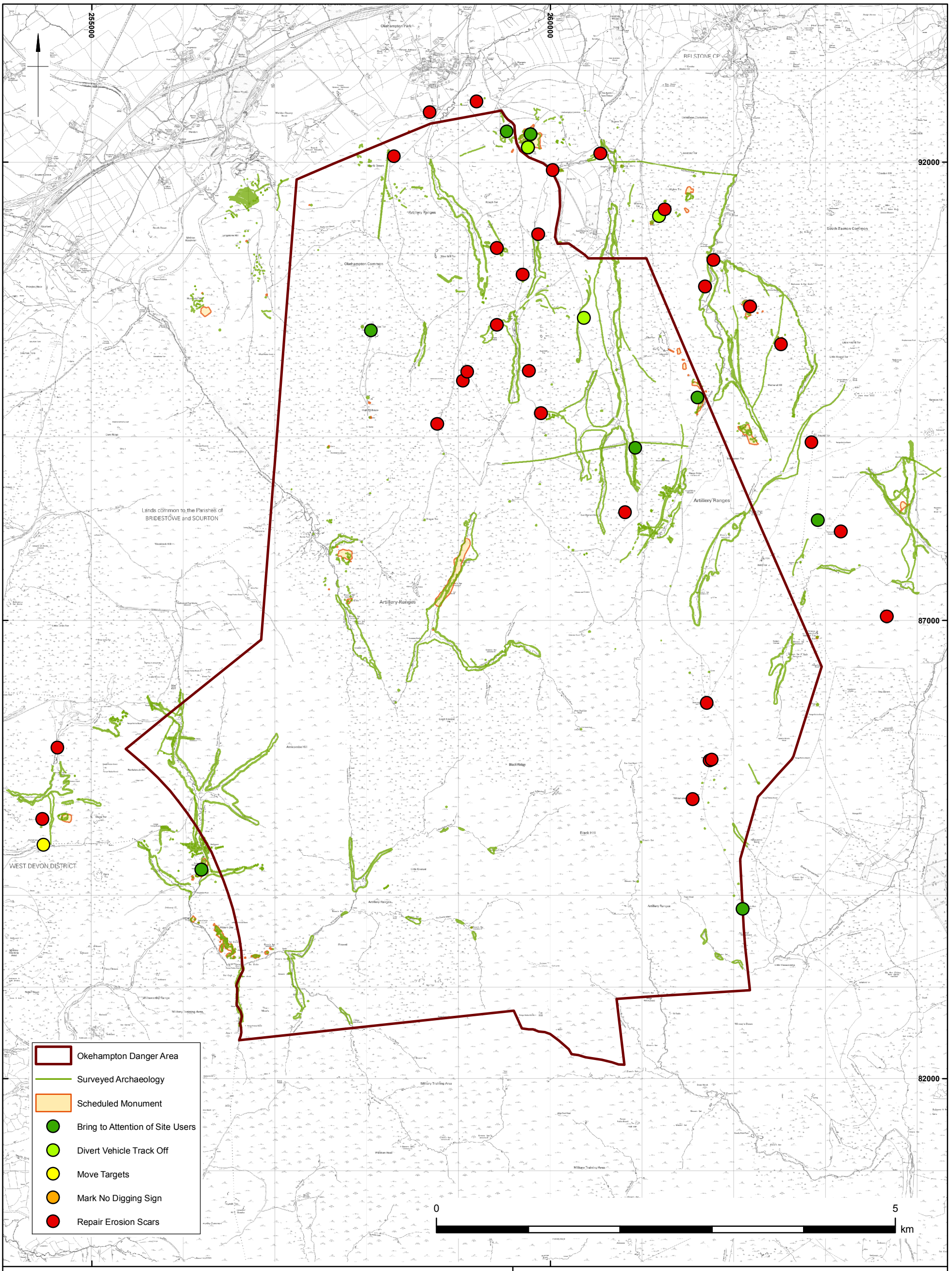
Recorded Impacts

Figure 4



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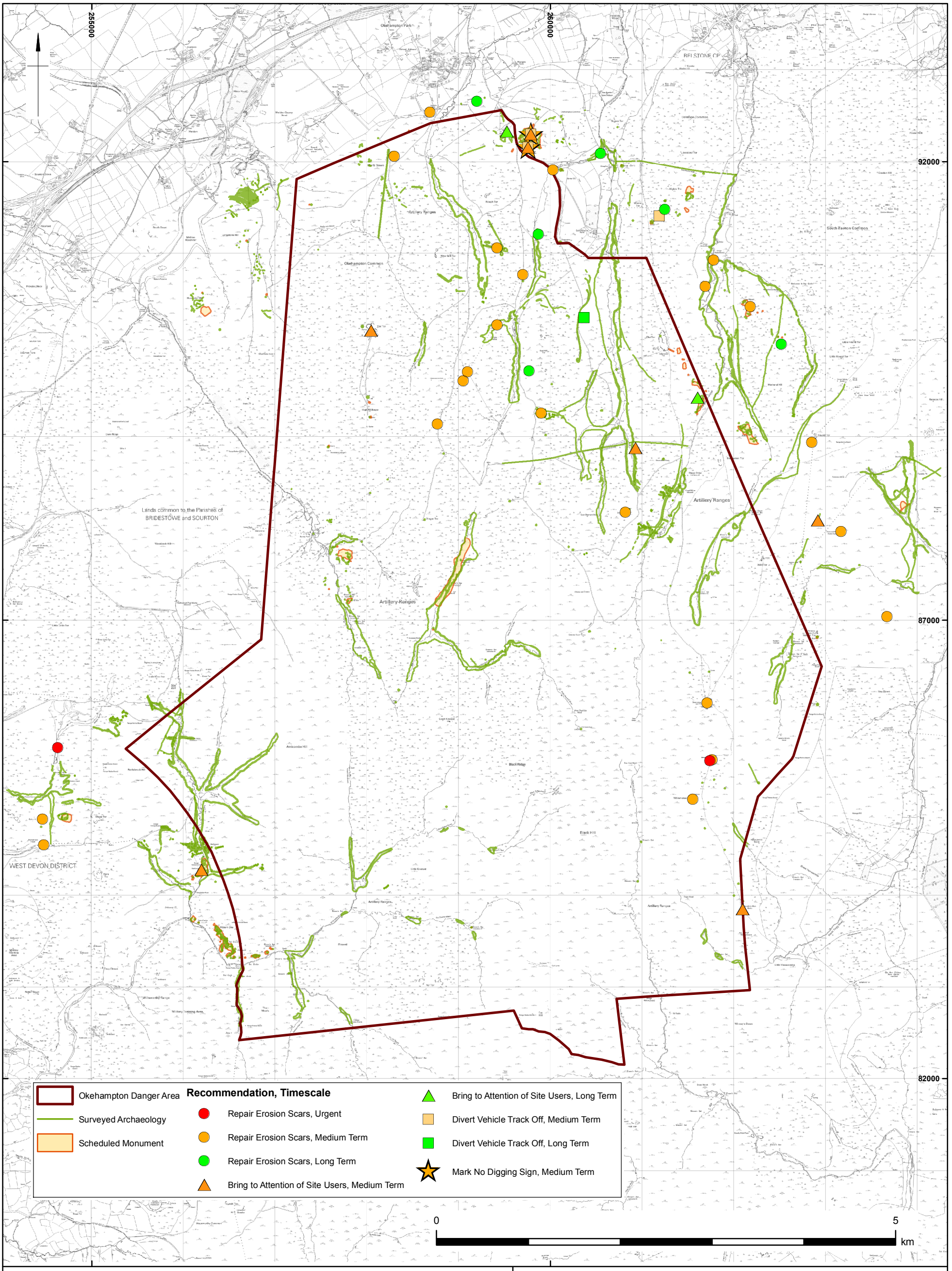




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Urgency of suggested works

Figure 6

Plate 1: Monument 1064701. Ongoing damage to tin workings being caused by badger burrows

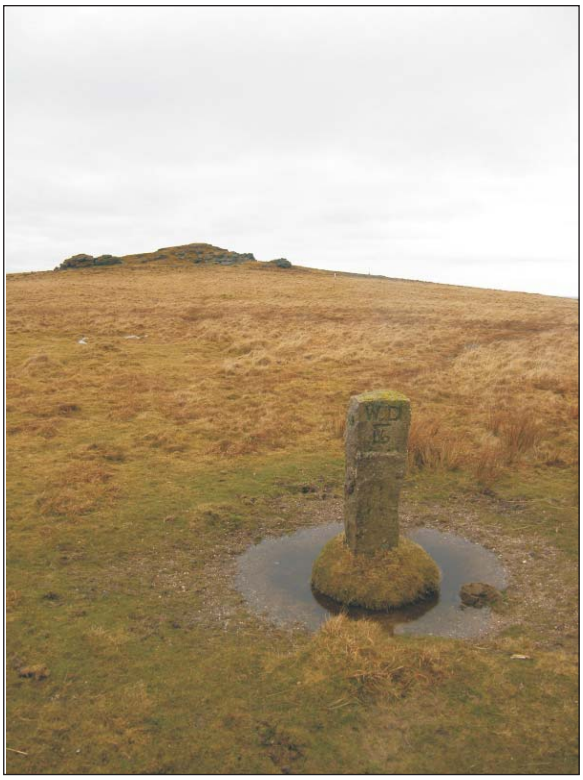

Plate 2: Monument WA 1003. Boundary marker showing classic signs of animal poaching



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Plate 3: Monument 1376648. Bronze Age cairn showing ongoing damage caused by both human and animal activity

Plate 4: Monument 1398493. Animal erosion to the embanked leat above the Fox Holes (Wheal Frederick) Mine



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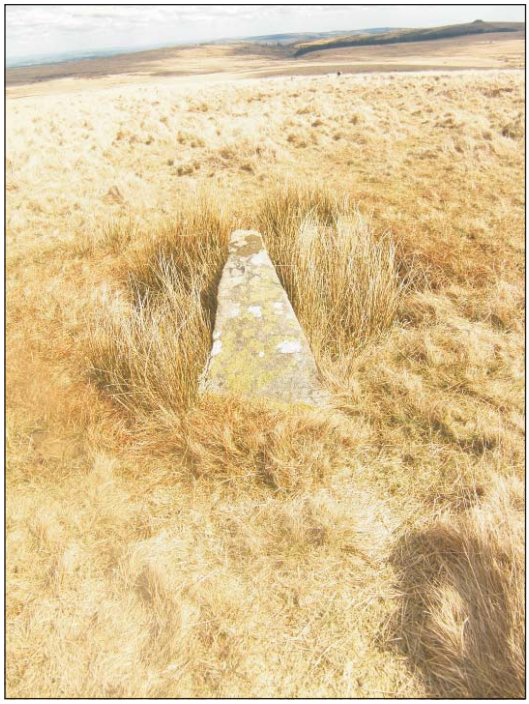

Plate 5: Monument 1393026. Boundary marker slighted as the result of animal erosion

Plate 6: Monument 1396606. Missile firing position showing ongoing damage



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Plate 7: Monument 443946. Modern alterations to historic cairn

Plate 8: Scheduled Monument 440888. Recent damage caused by vehicles using track



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