

**DUNSTABLE DOWNS MULTI-USER ROUTE  
BEDFORDSHIRE**

**A PROGRAMME OF ARCHAEOLOGICAL  
INVESTIGATION**

Project: DD1149

Document: 2008/102  
Version 1.1

20<sup>th</sup> November 2008

Compiled by	Checked by	Approved by
Wesley Keir and Kathy Pilkinton	Jeremy Oetgen	Drew Shotliff

Produced for:  
Bedfordshire County Council  
Countryside Access Service  
County Hall  
Cauldwell Street  
Bedford, MK42 9AP





## Contents

Preface	5
Structure of the Report	5
Key Terms	6
Non-Technical Summary	7
<b>1. INTRODUCTION</b>	<b>9</b>
1.1 Background	9
1.2 Site Location and Description	9
1.3 Archaeological Background	9
<b>2. OBJECTIVES AND METHODOLOGIES</b>	<b>11</b>
2.1 Introduction	11
2.2 Methodological Standards	11
2.3 Earthwork Survey	12
2.4 Trench Excavation	13
2.5 Observation and Recording ('Watching Brief')	13
<b>3. RESULTS</b>	<b>16</b>
3.1 Introduction	16
3.2 Extent and Nature of Construction Groundworks	16
3.3 Overburden and Undisturbed Geological Deposits	16
3.4 Hollow-Ways and Wheel Ruts	16
3.5 Quarry Pits	17
3.6 Chalk Mound (C – on Fig. 2)	18
3.7 Raised Platform (P – on Fig. 2)	18
<b>4. CONCLUSIONS</b>	<b>19</b>
4.1 Interpretation	19
4.2 Significance	20
4.3 Potential for further analysis	20
<b>5. BIBLIOGRAPHY AND LIST OF HISTORICAL MAPS CONSULTED</b>	<b>21</b>



**6. APPENDIX 1 – CONTEXT SUMMARY**

**23**

**7. APPENDIX 2 – PHOTOGRAPHIC SURVEY OF THE EARTHWORKS 37**

**LIST OF FIGURES**

Figure 1: Site location plan

Figure 2: Earthworks along the course of the multi-user route on Dunstable Downs

Figure 3: 1947 aerial photograph (CPE/UK/1965. 10.4.47. 4429) with earthwork survey overlain

Figure 4: Hollow-ways at the top of the Downs outside the course of the Multi-User Route.

Figure 5: All features Areas 7 and 8.

Figure 6: All features Area 9

Figure 7: Section drawings

Figure 8: Photographs of hollow-way [803]

Figure 9: Photographs of hollow-way [859] and wheel ruts [903]-[915]

Figure 10: Photographs of wheel ruts/hollow-ways [826]/[867]; [859]; [863]; and quarry pits [819] and [822]

Figure 11: Photographs of hollow-ways [867]/[303]; [865]/[302]; and [869]

*The figures are bound at the back of the report.*



## **Preface**

*Every effort has been made in the preparation of this document to provide as complete a summary as possible within the terms of the method statement. All statements and opinions in this document are offered in good faith. Albion Archaeology cannot accept responsibility for errors of fact or opinion resulting from data supplied by a third party, or for any loss or other consequence arising from decisions or actions made upon the basis of facts or opinions expressed in this document.*

*This report has been prepared by Wesley Keir (Project Officer) and Kathy Pilkinton (Assistant Archaeological Supervisor). Joan Lightning (CAD Technician) digitised the plans and produced the figures. The finds were identified by Jackie Wells (Artefacts Officer). The archaeological investigation was undertaken by Wesley Keir and Kathy Pilkinton. During the trial trenching phase, the team also comprised David Ingham (Project Officer), together with Anthony Clifton-Jones, Elizabeth Davis, and Marcin Koziminski (Assistant Archaeological Supervisors), and Anna Rebisz-Niziolek (Archaeological Technician). Earthwork survey was undertaken by Wesley Keir and Ian Turner (Archaeological Supervisor). Survey control was established with the assistance of Mercedes Planas (Souterrain Archaeological Services Ltd). The project was managed by Jeremy Oetgen (Project Manager) and Wesley Keir. Drew Shotliff (Operations Manager) was responsible for quality control.*

*Albion Archaeology is grateful to Chris Nicol (Bedfordshire County Council, Countryside Access) for commissioning the project. Thanks are also extended to Gavin Jones (Site Manager) of F. G. Morris for his assistance and cooperation during the archaeological observation and investigation on site. Albion Archaeology also gratefully acknowledges the assistance of the following:*

*Martin Oake, County Archaeological Officer, BCC*

*Dr. Jen Heathcote, Regional Science Advisor (East of England), English Heritage*

*Jeremy Sutton, Property Manager, the National Trust*

Albion Archaeology  
St Mary's Church  
St Mary's Street  
Bedford, MK42 OAS  
☎: 01234 294006  
Fax: 01234 294008  
e-mail: office@albion-arch.com

20<sup>th</sup> November 2008

## **Structure of the Report**

After the introductory Section 1, there is a summary of the methodologies employed for the project (Section 2). Section 3 summarises the results of the investigations, followed by the conclusions and their significance (Section 4). Section 5 is a bibliography. The subsequent appendices contain detailed archaeological context information and a photographic survey of the earthworks.



## **Key Terms**

Throughout this report the following terms or abbreviations are used:

<i>BLARS</i>	Bedfordshire and Luton Archives and Records Service
<i>CAO</i>	Bedfordshire County Archaeological Officer
<i>IFA</i>	Institute of Field Archaeologists
<i>Procedures Manual</i>	Albion Archaeology <i>Procedures Manual Volume 1 Fieldwork</i> , 2 <sup>nd</sup> Edition 2001. Bedfordshire County Council
<i>OS</i>	Ordnance Survey
<i>SAM</i>	Scheduled Ancient Monument
<i>SARM</i>	Scheme of Archaeological Resource Management



## **Non-Technical Summary**

*Planning permission (ref: BC/CC/2005/41) for the construction of a Multi-User Route across Dunstable Downs was granted by Bedfordshire County Council. Given the archaeological sensitivity of specific areas of the Multi-User Route, a condition was attached to the planning permission that required the implementation of a Scheme of Archaeological Resource Management (SARM). This was prepared by Albion Archaeology (2007) in accordance with a brief issued by Bedfordshire County Council's Archaeological Officer (CAO).*

*The SARM detailed a programme of archaeological works to be undertaken prior to and during the development of the Dunstable Downs Multi-User Route. These works comprised earthwork and photographic survey, trench excavation and watching brief.*

*The development comprises a route running north to south along the top of the chalk escarpment of the Downs for a distance of approximately 1.3km, centred on grid reference TL 0079 2038.*

*The Downs are rich in archaeology dating from the Palaeolithic period to 20<sup>th</sup> century military remains. Two scheduled ancient monuments lie at the north end of the scarp in close proximity to the Multi-User Route: the Five Knolls Bronze Age barrow cemetery (SAM 20422) and a pair of medieval pillow mounds (SAM 24409). Located at the north end of the Downs and within the course of the Multi-User Route are a series of previously unrecorded linear earthworks, mostly aligned north to south. Remains of possible practice trenches dating to the First and Second World War are located near to the course of the Multi-User Route, as well as remains of quarry pitting probably dating to the post-medieval or modern period.*

*Following excavation and survey, the series of linear earthworks visible at the north end of the Downs were shown to be old route-ways or hollow-ways containing wheel-ruts within their bases. The number of hollow-ways and their size suggest they were created over a period of many years. Some are likely to be precursors to the current highway, the B4541 Whipsnade Road, and probably date back to at least the medieval period. It is also quite possible that they date back to much earlier than this and therefore are considered to be at least of regional significance. They are possibly associated with the Icknield Way, one of the most famous ancient trackways in England.*

*Several quarry pits were recorded during the survey and excavation. Chalk was commonly quarried for the 'manuring' (marling) of fields and for supplying 'whiting' (lime) works from the medieval period onwards.*

*A raised earthwork platform was recorded on the top of the scarp overlooking the Downs and may be associated with the known extensive past military activity in the area. Evidence of Second World War gun emplacements have been found elsewhere on the Downs in recent years.*







## 1. INTRODUCTION

---

### 1.1 Background

Planning permission (ref: BC/CC/2005/41) for the construction of a Multi-User Route across Dunstable Downs was granted by Bedfordshire County Council. Given the archaeological sensitivity of specific areas of the Multi-User Route, a condition was attached to the planning permission that required the implementation of a Scheme of Archaeological Resource Management (SARM). This was prepared by Albion Archaeology (2007) in accordance with a brief issued by Bedfordshire County Council's Archaeological Officer (CAO).

The SARM detailed a programme of archaeological works to be undertaken prior to and during the development of the Dunstable Downs Multi-User Route. These works comprised earthwork and photographic survey, trench excavation and watching brief. The results of all stages of work are presented in this report.

### 1.2 Site Location and Description

The development lies within land owned by Bedfordshire County Council at the top of the chalk escarpment on the eastern edge of Dunstable Downs, adjacent to the B4541 (Fig. 1). The development comprised construction of a metalled pathway, running north to south along the top of the scarp for a distance of approximately 1.3km between grid references TL 0081 1976 and TL 0073 2105.

Dunstable Downs is an area of permanent pasture on the north-western edge of the Chilterns Area of Outstanding Natural Beauty. Over the years, dense scrub growth has encroached onto the Downs, but a proactive management programme is now being undertaken by the National Trust in order to remove the scrub and restore the chalk grassland. The chalk escarpment of the Downs stretches from the edge of Dunstable southwards and, despite the name, lies mainly in the parish of Totternhoe. The crest of the escarpment lies at approximately 220m OD.

### 1.3 Archaeological Background

The existing archaeological and historical knowledge of Dunstable Downs was examined in detail in Albion Archaeology (2004) and more recently in an Impact Assessment (Albion Archaeology 2006) submitted as part of the planning application for the Multi-User Route. A brief summary of the archaeological background most pertinent to the development area is given below.

The above documents revealed that the Downs are rich in archaeology dating from the Palaeolithic period to 20<sup>th</sup> century military remains. Two scheduled ancient monuments lie at the north end of the scarp in close proximity to the Multi-User Route; the Five Knolls Bronze Age barrow cemetery (SAM 20422) and a pair of medieval pillow mounds (SAM 24409) (Fig. 1).

A series of unrecorded linear earthworks, mostly aligned north to south, are located at the north end of the Multi-User Route. These were interpreted as



hollow-ways that had probably been ancient route-ways or drove-ways up onto the Downs.

The Rifle Volunteers' rifle range (established in 1851) comprised a series of targets placed along the foot of the Downs. Remains of some of these targets, which consist of iron plates set into the ground, still survived. Scrub clearance on the Downs in recent years had also uncovered evidence for Second World War gun emplacements. Remains of possible practice trenches dating to the First and Second World War had been identified near to the course of the Multi-User Route, as well as visible evidence of small-scale quarrying, probably dating from the post-medieval or modern period.

The London Gliding Club, at the foot of the Downs, is significant for its association with early 20<sup>th</sup>-century aviation. Its landing ground was shown on the 1937 Ordnance Survey 25 inch map (sheet XXXII.6). Earthworks located towards the southern end of the Multi-User Route are thought to have been associated with the Dunstable Downs Golf Club and therefore date from the early 20<sup>th</sup> century.



## 2. OBJECTIVES AND METHODOLOGIES

---

### 2.1 Introduction

The project objectives and methodologies to be employed in meeting the objectives were set out in Scheme of Archaeological Resource Management, or SARM (Albion Archaeology 2007), which was approved by the CAO. The SARM defined twelve Areas of Archaeological Significance, each requiring an appropriate mitigation strategy. Where archaeological remains were likely to suffer adverse impacts, archaeological investigation was undertaken both prior to and during the development of the Multi-User Route. The investigation methods comprised the following:

- *Trench excavation* – Trenches 1–6, which targeted earthworks located within the course of the Multi-User Route and were excavated between 8<sup>th</sup> and 12<sup>th</sup> October 2007.
- *Earthwork survey* – including photographic and measured survey of earthworks that would be altered as a result of the development. Undertaken between 15<sup>th</sup> and 16<sup>th</sup> October 2007 (measured survey). Photographs used in the survey were taken on various days during the autumn/winter months of 2006, 2007 and 2008.
- *Watching brief* – observation, investigation and recording during groundworks was undertaken between 10<sup>th</sup> October and 10<sup>th</sup> January 2008. This focused on the northern end of the Multi-User Route, where it passed near the ‘Five Knolls’ and crossed the hollow-way earthworks, but also included features unexpectedly revealed further to the south. For the purpose of recording, the route was divided into three stretches, Areas 7-9.

In November 2007, while construction of the path was underway, major design changes were proposed by the client for the length of the path in Area 8. In order to achieve the correct gradient for the path, the path had to be cut deeper into the hillside, with a concomitant increase in overall width to accommodate a batter at the sides of the path. This greatly increased the archaeological impact of the works, but the CAO accepted that mitigation of the revised works could be dealt with appropriately under the existing SARM, provided that the groundworks were continuously monitored by an archaeologist and that sufficient time was allowed within the programme for the archaeologists to complete investigation and recording of any archaeological features affected.

### 2.2 Methodological Standards

Throughout the project the following standards and guidance were adhered to:

- IFA’s *Code of Conduct* (Revised edition 2006); the *Standard and Guidance for Archaeological Field Evaluation* (Revised edition 2001); the *Standard and Guidance for Archaeological Excavation* (Revised edition 2001); the *Standard and Guidance for an Archaeological Watching Brief* (Revised edition 2001); the *Standard and Guidance for the Collection, Documentation, Conservation and Research of Archaeological Materials* (2001); and the draft *Standard and Guidance for Stewardship of the Historic Environment* (2007)



- *Standards for the Field Archaeology in the East of England* (Gurney 2003)
- English Heritage's *Understanding the Archaeology of Landscapes: A guide to good recording practice* (2007)
- English Heritage's *Management of Archaeological Projects 'MAP 2'* (1991)
- English Heritage Centre for Archaeology guidelines for *Environmental Archaeology* (2002)
- Albion Archaeology's *Procedures Manual: Volume 1 Fieldwork*, (2<sup>nd</sup> edn, 2001)
- *Preparing Archaeological Archives for Deposition with Registered Museums in Bedfordshire* (Bedford Museum and Luton Museum, 2002)
- Society of Museum Archaeologists' *Preparation of Archaeological Archives: Selection Retention and Dispersal of Archaeological Collections* (1993).

Specific methodologies employed for each stage of the investigation are described below.

## **2.3 Earthwork Survey**

### **2.3.1 Introduction**

Several earthworks were located within the construction corridor, towards the northern end of the Multi-User Route. These consisted of localised banks and hollows, which were probably former quarry pits, and a series of linear hollows, embankments and scarps that appeared to be a number of hollow-ways. Before any construction works took place on the site, an earthwork survey was undertaken in order to record the location, form and condition of these earthworks (Fig. 2 and Appendix 2).

### **2.3.2 Methodology**

Prior to development, the course of the Multi-User Route was walked by an archaeologist and a comprehensive series of photographs taken in order to illustrate all visible earthworks. In October 2008, a corresponding series of 'after' shots were taken from the same approximate locations. The photographs and their locations are catalogued in Appendix 2.

Measured earthwork survey was undertaken using a co-axial Electromagnetic Distance Measurer ('total-station'). A Global Positioning System (GPS) was used to help establish survey control and tie the earthwork survey in to the OS National Grid. The extent of the survey was largely confined to a construction corridor of up to 10m wide that had previously been cleared of vegetation. Thick vegetation prevented survey much beyond these limits. A draft of the earthwork survey was approved by the CAO prior to commencement of construction work. The measured survey was used to prepare a hachure drawing of the earthworks (Fig. 2).



## **2.4 Trench Excavation**

### **2.4.1 Introduction**

The aim of the trenching was to characterise and attempt to date earthworks that were going to be directly affected by the development. Six trenches were excavated within the construction corridor towards the northern end of the Multi-User Route (see Figs. 1 and 5). They measured 1m wide and varied between 3.4m and 5.4m long according to the size of the targeted earthwork. The excavation was undertaken prior to the start of construction works.

### **2.4.2 Methodology**

Trench excavation was undertaken as set out in the Scheme of Archaeological Resource Management (Albion Archaeology 2007). In summary:

- The location of the trenches was agreed with the CAO prior to the start of works.
- All excavation was undertaken by hand.
- Upstanding earthworks were excavated down to the top of the underlying natural geology.
- All spoil was scanned for artefacts.
- The location of each trench was tied in to the OS National Grid and to the earthwork survey described above.
- The deposits and any potential archaeological features were noted, cleaned, excavated and recorded using Albion Archaeology's pro forma sheets.
- The trenches were subsequently drawn and photographed as appropriate.
- All deposits were recorded using a unique number sequence commencing at 100 for Trench 1, 200 for Trench 2 etc.
- The trenches were approved by the CAO prior to commencement of construction work.

## **2.5 Observation and Recording ('Watching Brief')**

### **2.5.1 Introduction**

In the vicinity of the Five Knolls scheduled ancient monument, the SARM specified that mechanical soil stripping for the Multi-User Route was to be continuously monitored by an archaeologist. This stretch was recorded as Area 7. Following the design changes implemented in November 2007, the groundworks along the hollow-way earthworks in Area 8 were also continuously monitored. A record was also made of features unexpectedly revealed during soil stripping further to the south (Area 9).

### **2.5.2 Methodology**

Excavation and recording adhered to the standards and field methods set out in the SARM. In summary:

- All mechanical excavation was undertaken using a toothless ditching bucket.
- All disturbed soil was scanned for artefacts.
- The deposits and any potential archaeological features were noted, cleaned, excavated by hand and recorded using Albion Archaeology's pro forma sheets.



- All deposits were recorded using a unique number sequence, continuing that used for the trench excavation and commencing at 700 for Area 7, 800 for Area 8 etc.
- All archaeological observations were accurately located in relation to the OS National Grid.
- A photographic record was kept of all significant features.





### 3. RESULTS

---

#### 3.1 Introduction

For clarity, this section combines the results of all stages of the archaeological investigation. Detailed technical information on all the deposits and archaeological features referred to below can be found in Appendix 1.

#### 3.2 Extent and Nature of Construction Groundworks

The groundworks for the Multi-User Route comprised the ground reduction, levelling and infilling necessary to create a surfaced route along the crest of Dunstable Downs that links to the newly constructed visitor centre. For the most part, ground reduction was limited to the topsoil stripping of a corridor measuring c.3m wide. The width and depth was increased where necessary to achieve the required gradient. This was particularly the case in Area 8, where, at its greatest extent, the excavation was up to 10m wide and 2m deep due to the steep incline and in order to accommodate some bench plateaus.

#### 3.3 Overburden and Undisturbed Geological Deposits

A moderately shallow topsoil c.0.15m thick, consisting of a loose dark brown silty loam, typically directly overlay the undisturbed chalk geology. Towards the northern end of the Route and within the denser areas of scrub, its depth increased up to 0.4m thick. In these areas, an interface between the chalk and topsoil was often present, consisting of a light grey-brown silty chalk, probably resulting from root disturbance.

At the northern end of Area 8, where the Route descended towards the B4541, a layer of colluvial material had formed between the topsoil and undisturbed chalk geology, as well as infilling hollow way [833] and quarry pit [819].

#### 3.4 Hollow-Ways and Wheel Ruts

Several linear earthwork hollows were recorded within Areas 7 and 8 at the northern end of the Route. They formed part of a series of similar earthworks, mostly aligned north–south, visible at this end of the Downs (see photos on Fig. 4 and Appendix 2). Their full extent can be seen on an aerial photograph dating to 1947 (Fig. 3).

Several of these earthworks lying within the course of the Multi-User Route were targeted by the trenches. All were found to contain wheel ruts within their bases, confirming the interpretation that they are hollow-ways – route-ways that have gradually been eroded into the underlying chalk geology. During ground reduction for the Route, the extent and nature of these hollow-ways and associated wheel ruts were further revealed (Figs. 5-11).

The hollow-way earthworks typically had relatively shallow, concave profiles measuring between 3.2m and 6m wide and between 0.25m and 0.7m deep. The fills within the bases of the hollow-ways and the wheel ruts generally consisted of brown-grey chalky silts. However, at the northern end of Area 8, distinctive colluvial deposits consisting of fine light yellow-brown and brown-grey chalk silts filled hollow-way [833] and associated wheel ruts.





One hollow-way earthwork [803] located to the eastern edge of the Route was significantly larger, measuring up to 1.7m deep and up to 10m wide (Fig. 7, Section 6; Fig. 8). Where it crossed the northern end of the Route it had been backfilled with chalky silt (804) containing fragments of brick and concrete. This is likely to have been the result of deliberate in-filling during the 1980s, when the adjacent housing estate was developed. Beneath this deposit, the buried topsoil (810) was visible, overlying clearly defined wheel ruts filled with chalky silt (853). These deposits contained finds dating to the first half of the 20th century, including a 1924 half penny, a 1918 penny and a .303 brass cartridge case. Markings indicate the cartridge was a 'blank' round manufactured by Birmingham Metal and Munitions Ltd, which formed in 1897 and had ceased manufacture by 1920<sup>1</sup>. No artefacts were found in any of the other hollow-ways or wheel ruts.

Whilst the hollow-ways in Area 8 all tended to be aligned north-south, three visible as earthworks in Area 7 were on a more north-east to south-west alignment, heading towards the vicinity of the 'Five Knolls' round barrows. One of these, [602], was excavated during the evaluation (Fig. 7, Section 3; Profile 1 on Fig. 2). A further similarly orientated hollow-way [701] was revealed nearby during the watching brief (Fig. 7, Section 5).

Though some of the revealed route-ways may have been in use at a similar time, it is also apparent that some must have largely been superseded by other routes. The large earthwork hollow to the east of the Multi-User Route appears to have made hollow-way [869] somewhat redundant as a route-way by cutting across its southern end. Similarly, hollow-way [873] was infilled by colluvial material and appears to pre-date hollow-way [867].

Wheel ruts were also revealed in Areas 7 and 9 on the crest of the Downs, some distance away from the large hollow-way earthworks. Wheel ruts [705], [707] and [709] (photo on Fig. 5) were located running north-west to south-east near the south end of Area 7. Wheel rut [709] may be associated with a slight linear depression that is visible in this location. Much further to the south, but also on the crest of the Downs, a group of wheel ruts ([903] – [915]) was aligned north-south (Fig. 9, Photograph 3). All contained grey-brown chalky silts similar to that of the other wheel ruts mentioned above. These indicate that at least a proportion of the traffic using the hollow-ways was also progressing along the crest of the Downs.

### 3.5 Quarry Pits

Several quarry pits, some visible as earthworks and some not revealed until the watching brief, were recorded in Areas 7 and 8. No artefacts were contained within the excavated quarry pits. Stratigraphically, they pre-dated some hollow-ways and wheel-ruts, but post-dated others.

Quarry pits [819], [822] and [840] appeared to pre-date hollow-ways and wheel-ruts in the vicinity (Fig. 7, Section 4; Fig. 10, Photograph 6). Of these, only quarry [819] still partially survived as a visible earthwork on its western edge (Q1 on Fig. 2). The pits were all sub-circular in shape, measuring up to 10m

<sup>1</sup> <http://enfieldking.tripod.com/enfieldking/id13.html>



across. Quarry pits [822] and [840] appeared to have been backfilled largely with a mixture of chalky silt and lumps of chalk. Interestingly, quarry [819] was infilled with colluvial material similar to that contained in hollow-way [873], suggesting they silted up at a similar time.

To the south of the above mentioned pits, a larger area of quarrying was visible as earthwork depressions, each measuring up to 10m across (Q2 on Fig. 2). This area of quarrying was later than hollow-ways in the vicinity, interrupting the courses of [837] and [869].

A large area of quarrying (Q3 on Fig. 2) survived as earthwork depressions to the south of the 'Five Knolls' in Area 7. Where it was crossed by the Multi-User Route, the quarried area measured up to 38m across. A linear earthwork depression adjoining the south of this area is likely to be a route created during the quarry extraction. This was probably part of a quarry that extends further to the west, now visible as a broad depression containing a small plantation of sycamore trees (see Fig. 3).

A group of three shallower depressions was located at the south end of Area 7; these are also likely to have been quarries (Q4 on Fig. 2).

### **3.6 Chalk Mound (C – on Fig. 2)**

A small earthwork mound, measuring up to 3m across and lying on the western scarp of one of the hollow-ways, was targeted by Trench 1. It was made up of layers of chalk rubble and chalky silt (101-102), none of which contained any artefacts. It may be discarded material derived from the nearby quarries.

### **3.7 Raised Platform (P – on Fig. 2)**

Towards the south end of Area 7, a distinct raised and levelled area, 15m long and 3m wide, was visible as a slight earthwork. Though its function is unknown, its location at the top of the scarp overlooking the Downs raises the possibility that it is associated with the known extensive past military activity on the Downs. Evidence of Second World War gun emplacements has been found elsewhere on the Downs.



## 4. CONCLUSIONS

---

### 4.1 Interpretation

The series of linear earthworks visible at the north end of the Downs can confidently be interpreted as old route-ways. The wheel-ruts revealed within the bases of those within the course of the Multi-User Route confirm this interpretation and indicate that they were used frequently by wheeled vehicles. It is also worth noting that some of the earthworks outside the course of the Multi-User Route and not investigated, appear too narrow to facilitate wheeled transport. As such they are more likely to be the result of sheep drovers' routes up onto the Downs.

The number of hollow-ways and the depth to which they had been eroded suggest they were created over a period of many years. It is also evident that the hollow-ways are not all contemporary, with some passing out of use and succeeded by others, perhaps due to degradation of some of the hollow-ways, or an increase in the amount of passing traffic creating wider routes. It is likely that the hollow-ways orientated north to south are precursors to the current B4541 Whipsnade Road, which prior to 1798 was a Greenway leading to Kensworth (Smith 1904). Maps dating back to 1798 were examined (see Section 5), but the course of Downs Road appears as it is today.

It is also possible that the earliest hollow-ways – those pre-dating the quarry pits – are very ancient in origin, although perhaps they need not be any earlier than the medieval period when chalk quarrying became widespread (see below). Worthington G. Smith considered these hollow-ways to be 'old trackways', labelling them as such on his map of the antiquities of the area (Smith 1904). In Smith's day, the trackways appear to have been visible for some distance further to the north, extending into a Greenway which led to Totternhoe and to the south-east side of the junction with the B4541 and West Street (Smith 1904, 124). It is also possible that they would have joined a rutted trackway previously revealed during the archaeological evaluation (Albion Archaeology 2004b) of land 0.5km further to the east adjacent to West Street. These were suggested as being the remains of part of the Icknield Way. As well as the Icknield Way, which is accepted as passing close to Dunstable Downs, Smith (ibid.) proposed the courses of numerous other 'ancient' route-ways in the vicinity of the Downs, any of which could be associated or contemporary with some of the hollow-ways within the Multi-User Route.

Evidence of chalk quarrying is visible as earthworks and pits revealed during the watching brief at the north end of the Multi-User Route. Some of these pre-dated some of the hollow-ways, whilst others were cut through them. Chalk was commonly used for the 'manuring' (marling) of fields and for supplying 'whiting' (lime) works from the medieval period onwards. Small pits were also often dug alongside roads, especially on common land, for mending the roads (Rackham 1994, 174). It is possible that some of the hollow-ways may have been haul roads for quarried chalk, but it is unlikely that the scale of quarrying evinced on the top of the Downs would on its own have given rise to such a network of large earthwork features.



The location and nature of the raised earthwork platform at the top of the scarp overlooking the Downs raises the possibility that it is associated with the known extensive past military activity on the Downs. Evidence of Second World War gun emplacements have been found elsewhere on the Downs.

#### **4.2 Significance**

Though the hollow-ways have been noted by Smith and others, they have not until now been subject to any detailed examination or survey. Their nature indicates they are likely to date back to at least the medieval period. As mentioned above, it is also quite possible that they date back to much earlier than this and could conceivably be remains of part of the Icknield Way. Though there is some doubt as to its nature and date (Harrison 2003), in wetter ground conditions a route along the crest of the Downs would certainly be preferable to the commonly marked course of the Icknield Way at the foot of the Downs. In this light, the hollow-ways should therefore be considered to be at least of regional importance.

The quarrying of chalk as a raw material in the whiting, lime and cement industries is characteristic of the Dunstable area. These industries have been identified by English Heritage as being potentially of national importance (Chitty 2001). Given the relatively small scale of the quarrying identified within the course of the Multi-User Route and its commonplace occurrence elsewhere on the Downs, it should probably be considered to be of local importance. However, if further investigation were to reveal a medieval or earlier date for the quarries they would be considered more important.

The importance of recording 20<sup>th</sup>-century military remains is increasingly being recognised, as illustrated by the Defence of Britain Project. A research framework has also been produced setting out the agenda for future research and management of the 20<sup>th</sup>-century military heritage (Schofield 2004). The survey of anti-aircraft batteries, military training areas and First World War remains in general are noted as specific areas for further research. As such, the earthwork platform surveyed on the crest of the Downs could be considered to be of local significance.

#### **4.3 Potential for further analysis**

Few finds were recovered, all of which were 20<sup>th</sup> century in date and do not warrant further analysis. However, substantive new information regarding the form and nature of the linear earthworks on Dunstable Downs has been recorded and this deserves appropriate dissemination.

Details of the project and this report will be submitted to the OASIS database in accordance with the guidelines issued by English Heritage and the Archaeology Data Service. Copies of this document will be deposited with the Bedfordshire Historic Environment Record (HER).



## 5. BIBLIOGRAPHY AND LIST OF HISTORICAL MAPS CONSULTED

---

- Albion Archaeology, 2004, *The Chilterns Gateway Centre, Dunstable Downs, Bedfordshire: Impact Assessment for Archaeology and Cultural Heritage*, Document no. 2004/73
- Albion Archaeology, 2004b, *Land at Victoria Allotments, West Street, Dunstable, Bedfordshire: Archaeological Field Evaluation*, Document no. 2004/76.
- Albion Archaeology, 2006, *Dunstable Downs Multi-User Route: Impact Assessment for Archaeology and Cultural Heritage*, Document no. 2006/16
- Albion Archaeology, 2007, *Dunstable Downs Multi-User Route, Bedfordshire. Scheme of Archaeological Resource Management*. Document no. 2007/10.
- Bedfordshire County Council, Heritage and Environment Service, 2006, *Brief for a Scheme of Archaeological Resource Management for the Dunstable Downs Multi-User Route, Bedfordshire*. 21/07/06
- Bedford Museum and Luton Museum, 2002, *Preparing Archaeological Archives for Deposition in Registered Museums in Bedfordshire*
- Chitty, G., 2001, *MPP: Lime, Cement and Plaster Industries Step 4 Report, report for English Heritage*
- English Heritage, 1991, *Management of Archaeological Projects*
- English Heritage, 2007, *Understanding the Archaeology of Landscapes: A guide to good recording practice*
- Gurney, D., 2003, *Standards for the Field Archaeology in the East of England*. East Anglian Archaeology Occasional Paper 14
- Harrison, S., 2003, 'The Icknield Way: Some Queries'. *Archaeological Journal*. Vol. 160.
- Institute of Field Archaeologists (IFA), 2006, *Code of Conduct*
- Institute of Field Archaeologists (IFA), 2001, *Draft Standard and Guidance for Stewardship of the Historic Environment*
- Institute of Field Archaeologists (IFA), 2001, *Standard and Guidance for Archaeological Excavation*
- Institute of Field Archaeologists (IFA), 2001, *Standard and Guidance for Archaeological Field Evaluation*



Institute of Field Archaeologists (IFA), 2001, *Standard and Guidance for an Archaeological Watching Brief*

Institute of Field Archaeologists (IFA), 2001, *Standard and Guidance for the Collection, Documentation, Conservation and Research of Archaeological Materials*

Rackham, O., 1994, *The Illustrated History of the Countryside*. Phoenix Illustrated: London

Schofield, J., 2004, *Modern Military Matters. Studying and managing the twentieth-century defence heritage in Britain: a discussion document*. Council for British Archaeology.

Smith, W. G., 1904 (1980 reprint), *Dunstable: Its History and Surroundings..*

### **Historical Maps Consulted**

<b>Description</b>	<b>Date</b>	<b>BLARS ref.</b>
unsigned Inclosure map	1798	BH 465
Inclosure map	1798	MA 98/1
OS first survey (2" to 1 mile)	1804–15	
OS 25" First Edition sheet XXXII.6	1880	
map of intended Inclosures	1888	BW 1035
Inclosure and Regulation of ...	1891	MA 89/1
Tithe map (also PP58/27/2)	1892	MAT 46/2
plan of proposed rifle range	1895	BW 1037
plan of proposed rifle range	1895	BW 1038
OS 25" Second Edition sheet XXXII.6	1901	
OS 25" Third Edition sheet XXXII.6	1924	
OS 25" 4th? Edition sheet XXXII.6	1937	
OS 6" Series	1937	
annotated OS 6" (indicating pasture)	1947	BH462
War Agricultural Committee maps (annotated OS 6")	1939– 47	WW2/AC3/100
War Agricultural Committee maps (annotated OS 6")	1939– 47	WW2/AC3/53
War Agricultural Committee maps (annotated OS 6")	1939– 47	WW2/AC3/99



## **6. APPENDIX 1 – CONTEXT SUMMARY**

---







**Trench: 1**

**Max Dimensions:** Length: 3.70 m. Width: 1.00 m. Depth to Archaeology Min: m. Max: m.

**Co-ordinates:** OS Grid Ref.: TL 00783/20740

OS Grid Ref.: TL 00779/20780

**Reason:** Investigate earthwork within course of Multi-User Route.

Context:	Type:	Description:	Excavated:	Finds Present:
100	Topsoil	Friable dark brown silty loam occasional flecks chalk 0.12m thick. Heavy root matt.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
101	Dump material	Friable mid grey brown chalky silt moderate flecks chalk, moderate small chalk 0.10m thick.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
102	Dump material	Friable dark grey brown chalky silt frequent small-medium chalk 0.38m thick. A small modern dumped mound of material which has been heavily disturbed by rabbit burrows..	<input checked="" type="checkbox"/>	<input type="checkbox"/>
103	Buried topsoil	Loose mid grey brown chalky silt occasional small chalk 0.18m thick. Buried beneath mound material.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
104	Natural interface	Compact light grey brown silty chalk frequent small chalk 0.15m thick.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
105	Natural	Firm light grey white chalk	<input type="checkbox"/>	<input type="checkbox"/>



**Trench: 2**

**Max Dimensions:** Length: 4.40 m. Width: 1.00 m. Depth to Archaeology Min: m. Max: m.

**Co-ordinates:** OS Grid Ref.: TL 00779/20780

OS Grid Ref.: TL 00775/20777

**Reason:** Investigate area within course of Multi-User Route.

Context:	Type:	Description:	Excavated:	Finds Present:
200	Topsoil	Friable dark grey brown silty loam occasional small-medium chalk, occasional small-medium stones Up to 0.26m thick.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
201	Natural	Firm mid grey white chalk	<input type="checkbox"/>	<input type="checkbox"/>
202	Natural interface	Friable mid brown grey silty chalk Up to 0.12m thick. Heavy rooting	<input checked="" type="checkbox"/>	<input type="checkbox"/>
203	Wheel ruts	Linear N-S profile: concave base: concave dimensions: max breadth 0.38m, max depth 0.1m, min length 1.m Runs parallel with [205].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
204	Layer	Friable light brown grey chalky silt occasional flecks chalk Fills wheel rut [203].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
205	Wheel ruts	Linear N-S profile: concave base: concave dimensions: max breadth 0.48m, max depth 0.08m, min length 1.m Runs parallel with [203].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
206	Layer	Friable light brown grey chalky silt occasional flecks chalk Fills wheelrut 205.	<input checked="" type="checkbox"/>	<input type="checkbox"/>



**Trench: 3**

**Max Dimensions:** Length: 5.40 m. Width: 1.00 m. Depth to Archaeology Min: m. Max: m.

**Co-ordinates:** OS Grid Ref.: TL 00769/20936

OS Grid Ref.: TL 00764/20937

**Reason:** Investigate earthwork within course of Multi-User Route.

Context:	Type:	Description:	Excavated:	Finds Present:
300	Topsoil	Loose mid brown grey silty loam frequent small-medium chalk, frequent small-medium stones Up to 0.42m thick. Infills hollow ways [302] and [303].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
301	Natural	Friable light yellow white chalk	<input type="checkbox"/>	<input type="checkbox"/>
302	Hollow way	Linear N-S profile: concave base: uneven dimensions: min breadth 4.75m, max depth 0.42m, min length 2.m	<input checked="" type="checkbox"/>	<input type="checkbox"/>
303	Hollow way	Linear N-S profile: concave base: uneven dimensions: min breadth 4.m, max depth 0.45m, min length 2.m Contains wheelruts [304] and [306].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
304	Wheel ruts	Linear N-S profile: concave base: uneven dimensions: max breadth 0.46m, max depth 0.15m, min length 2.m Formed within hollow way [303].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
305	Layer	Friable light grey brown silt occasional flecks chalk Fills wheel rut [304].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
306	Wheel ruts	Linear N-S profile: concave base: uneven dimensions: max breadth 0.5m, max depth 0.1m, min length 2.m Formed within hollow way [303].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
307	Layer	Friable light grey brown silt occasional flecks chalk Fills wheel rut [306].	<input checked="" type="checkbox"/>	<input type="checkbox"/>



**Trench: 4**

**Max Dimensions:** Length: 3.40 m. Width: 1.00 m. Depth to Archaeology Min: m. Max: m.

**Co-ordinates:** OS Grid Ref.: TL 00770/20833

OS Grid Ref.: TL 00767/20832

**Reason:** Investigate earthwork within course of Multi-User Route.

Context:	Type:	Description:	Excavated:	Finds Present:
400	Topsoil	Friable mid grey brown silty loam occasional small-medium stones Up to 0.3m thick.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
401	Natural	Compact mid grey white chalk	<input type="checkbox"/>	<input type="checkbox"/>
402	Hollow way	Linear N-S profile: concave base: uneven dimensions: min breadth 3.m Contains wheel ruts [404] and [406].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
403	Layer	Friable mid brown grey chalky silt frequent small-medium chalk, occasional small stones Fills hollow way [403] and associated wheel ruts [404] and [406].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
404	Wheel ruts	Linear N-S profile: concave base: uneven dimensions: max breadth 0.32m, max depth 0.14m, min length 0.3m Part of hollow way [402].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
406	Wheel ruts	Linear N-S profile: concave base: uneven dimensions: max breadth 0.37m, max depth 0.16m, min length 1.m Part of hollow way [402].	<input checked="" type="checkbox"/>	<input type="checkbox"/>



**Trench: 5**

**Max Dimensions:** Length: 5.25 m. Width: 1.00 m. Depth to Archaeology Min: m. Max: m.

**Co-ordinates:** OS Grid Ref.: TL 00770/20988

OS Grid Ref.: TL 00765/20989

**Reason:** Investigate earthwork within course of Multi-User Route.

Context:	Type:	Description:	Excavated:	Finds Present:
500	Topsoil	Loose dark grey brown clay silt Up to 0.43m thick. Also fills upper part of hollow way [508]. Extensive rooting.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
501	Wheel ruts	Linear N-S profile: 45 degrees base: concave dimensions: max breadth 0.75m, max depth 0.25m, min length 1.m Part of hollow way [508].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
502	Layer	Firm light brown grey chalky silt Colluvial material filling wheel rut [501] and partially hollow way [508].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
503	Wheel ruts	Linear N-S profile: 45 degrees base: concave dimensions: max breadth 0.35m, max depth 0.22m, min length 1.m Part of hollow way [508].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
504	Layer	Firm light brown grey chalky silt Colluvial material filling wheel rut [503] and part of hollow way [508].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
505	Colluvium	Compact light grey brown chalky silt occasional small chalk	<input checked="" type="checkbox"/>	<input type="checkbox"/>
506	Colluvium	Compact mid grey brown chalky silt occasional small chalk	<input checked="" type="checkbox"/>	<input type="checkbox"/>
507	Natural interface	Compact light grey white silty chalk Probably created partially by root disturbance	<input checked="" type="checkbox"/>	<input type="checkbox"/>
508	Hollow way	Linear N-S profile: concave base: concave dimensions: max breadth 3.25m, min length 1.m Contains the wheel ruts [501] and [503].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
509	Natural	Compact white chalk	<input type="checkbox"/>	<input type="checkbox"/>



**Trench: 6**

**Max Dimensions:** Length: 5.05 m. Width: 1.00 m. Depth to Archaeology Min: m. Max: m.

**Co-ordinates:** OS Grid Ref.: TL 00682/20984

OS Grid Ref.: TL 00678/20988

**Reason:** Investigate earthwork within course of Multi-User Route.

Context:	Type:	Description:	Excavated:	Finds Present:
600	Topsoil	Loose dark grey brown silty loam Up to 0.14m thick. Heavy rooting	<input checked="" type="checkbox"/>	<input type="checkbox"/>
601	Natural	Compact light brown white chalk	<input type="checkbox"/>	<input type="checkbox"/>
602	Hollow way	Linear NE-SW profile: concave base: uneven dimensions: max breadth 5.05m, max depth 0.57m, min length 1.m Contains wheel ruts [604] and [606].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
603	Natural interface	Partially created by root disturbance.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
604	Wheel ruts	Linear NE-SW profile: 45 degrees base: concave dimensions: max breadth 0.5m, max depth 0.2m, min length 1.m Part of hollow way [602].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
605	Layer	Loose mid brown grey chalky silt Fills hollow way [602] and associated wheelruts [604] and [606].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
606	Wheel ruts	Linear NE-SW profile: 45 degrees base: concave dimensions: max breadth 0.69m, max depth 0.22m, min length 1.m Part of hollow way [602].	<input checked="" type="checkbox"/>	<input type="checkbox"/>



**Area:** 7  
**Extent (ha):** 0.1  
**OS Co-ordinates:** TL0070020862  
**Description:** Area stripped for the section of the Multi-User Route that heads towards the Five Knolls.

Context:	Type:	Description:	Excavated:	Finds Present:
700	Topsoil	Friable dark grey brown silty loam . 0.34m thick.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
701	Hollow way	Linear NE-SW profile: concave base: uneven dimensions: max breadth 3.65m, max depth 0.31m, min length 2m. Contains wheelruts [702] and [703].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
702	Wheel ruts	Linear NE-SW profile: 45 degrees base: uneven dimensions: max breadth 0.9m, max depth 0.12m, min length 0.9m. Within hollow way [701]	<input checked="" type="checkbox"/>	<input type="checkbox"/>
703	Wheel ruts	Linear NE-SW dimensions: max breadth 0.5m, max depth 0.07m, min length 0.9m. Within Hollow way [701]	<input checked="" type="checkbox"/>	<input type="checkbox"/>
704	Layer	Friable light grey brown chalky silt occasional small chalk. 0.31m thick. Fills hollow way [701] and associated wheelruts [702] and [703].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
705	Wheel ruts	Linear NW-SE dimensions: max breadth 0.59m, max depth 0.16m, min length 0.9m. Probably related to [707]. Mostly obscured by topsoil, only a small portion visible.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
706	Layer	Friable mid grey brown chalky silt . 0.16m thick. Fills wheelrut [705].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
707	Wheel ruts	Linear NW-SE dimensions: max breadth 0.67m, max depth 0.1m, min length 0.5m. Probably related to [705]. Mostly obscured by topsoil, only small portion visible.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
708	Layer	Friable mid grey brown chalky silt . 0.1m thick. Fills wheelrut [707].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
709	Wheel ruts	Linear NW-SE dimensions: max breadth 0.98m, max depth 0.2m, min length 7m	<input checked="" type="checkbox"/>	<input type="checkbox"/>
710	Layer	Friable mid orange brown chalky silt . 0.2m thick. Fills wheelrut 709.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
711	Natural interface	Compact mid brown grey silty chalk frequent small-medium chalk. Mixed natural and topsoil caused by root disturbance e.t.c	<input type="checkbox"/>	<input type="checkbox"/>
712	Natural	Firm light grey white chalk	<input type="checkbox"/>	<input type="checkbox"/>



**Area:** 8  
**Extent (ha):** 0.3  
**OS Co-ordinates:** TL0076620893  
**Description:** Northern section of the Multi-User Route that connects with the B4541.

Context:	Type:	Description:	Excavated:	Finds Present:
800	Topsoil	Friable dark grey brown silty loam	<input type="checkbox"/>	<input type="checkbox"/>
801	Natural interface	Compact mid grey brown silty chalk	<input type="checkbox"/>	<input type="checkbox"/>
802	Natural	Firm light grey white chalk	<input type="checkbox"/>	<input type="checkbox"/>
803	Hollow way	Linear N-S profile: concave base: concave dimensions: max breadth 10.m, max depth 1.7m, min length 2.m	<input checked="" type="checkbox"/>	<input type="checkbox"/>
804	Backfill	Friable mid brown grey chalky silt occasional small-medium ceramic building material, frequent small-medium chalk. Modern dumped material, including brick and concrete, infilling hollow way [803].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
805	Topsoil	Friable dark grey brown silty loam . Root mat, mainly consists of roots. Fairly thin and similar to (800).	<input checked="" type="checkbox"/>	<input type="checkbox"/>
806	Hollow way	Linear N-S profile: concave base: uneven dimensions: max breadth 3.m, max depth 0.42m, min length 2.m. Contains deposit (807). Truncated by [808] to the north.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
807	Layer	Friable mid brown grey chalky silt occasional flecks chalk. 0.3m thick. Within hollow way [806].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
808	Hollow way	Linear N-S . Unexcavated - only partially visible in section.	<input type="checkbox"/>	<input type="checkbox"/>
809	Layer	Friable mid brown grey chalky silt occasional flecks sand. At least 0.34m thick layer within hollow way [808].	<input type="checkbox"/>	<input type="checkbox"/>
810	Buried topsoil	Friable mid grey brown silty loam . Same as (800). Topsoil layer formed within hollow way [803]. .	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
811	Hollow way	Linear N-S profile: concave base: flat dimensions: min breadth 2.35m, min depth 0.15m, max length 80.m. Contains layer (814) and wheel ruts [812] and [813]. Associated with wheel ruts [869].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
812	Wheel ruts	Linear N-S profile: 45 degrees base: flat dimensions: max breadth 0.7m, min depth 0.12m. Within hollow way [811]	<input checked="" type="checkbox"/>	<input type="checkbox"/>
813	Wheel ruts	Linear N-S profile: 45 degrees base: flat dimensions: max breadth 0.7m, min depth 0.17m. Within hollow way [811]	<input checked="" type="checkbox"/>	<input type="checkbox"/>
814	Layer	Friable mid brown grey chalky silt . Contained occasional chalk and flint fragments. 0.17m thick.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
815	Treethrow	Irregular profile: irregular base: uneven dimensions: max breadth 1.12m, max depth 0.56m	<input checked="" type="checkbox"/>	<input type="checkbox"/>
816	Fill	Contained a mixed fill, consisting of re-deposited chalk and mid brown-grey chalky silt.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
817	Colluvium	Firm light yellow brown chalky silt . 0.25m thick.	<input checked="" type="checkbox"/>	<input type="checkbox"/>





**Area:** 8  
**Extent (ha):** 0.3  
**OS Co-ordinates:** TL0076620893  
**Description:** Northern section of the Multi-User Route that connects with the B4541.

819	Quarry	Sub-circular profile: concave base: flat dimensions: min breadth 5.8m, min depth 0.7m	<input checked="" type="checkbox"/>	<input type="checkbox"/>
820	Fill	Firm light yellow brown chalky silt	<input checked="" type="checkbox"/>	<input type="checkbox"/>
821	Fill	Friable mid yellow brown chalky silt	<input checked="" type="checkbox"/>	<input type="checkbox"/>
854	Fill	Firm light yellow grey chalky silt moderate flecks chalk	<input checked="" type="checkbox"/>	<input type="checkbox"/>
822	Quarry	Sub-circular profile: concave base: concave dimensions: max breadth 2.94m, max depth 0.6m	<input checked="" type="checkbox"/>	<input type="checkbox"/>
823	Fill	Friable mid grey brown chalky silt moderate small-medium chalk	<input checked="" type="checkbox"/>	<input type="checkbox"/>
824	Fill	Friable light yellow brown chalky silt frequent small-medium chalk	<input checked="" type="checkbox"/>	<input type="checkbox"/>
825	Fill	Friable light yellow brown chalky silt frequent small chalk, occasional medium chalk	<input checked="" type="checkbox"/>	<input type="checkbox"/>
849	Fill	Firm light brown orange clay silt occasional small-medium chalk	<input checked="" type="checkbox"/>	<input type="checkbox"/>
826	Hollow way	Linear NE-SW profile: concave base: flat dimensions: min breadth 1.m, min depth 0.2m. Truncates top of quarry pit [822]. Same as [828].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
827	Layer	Firm mid brown grey clay silt occasional small chalk. 0.2m thick. Within hollow way [826].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
828	Hollow way	Linear NE-SW profile: concave base: flat dimensions: min breadth 2.3m, min depth 0.15m. Contains wheel ruts [829] and [830].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
829	Wheel ruts	Linear NE-SW profile: concave base: flat dimensions: min breadth 0.8m, min depth 0.15m. Wheel rut within hollow way [828].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
830	Wheel ruts	Linear NE-SW profile: concave base: flat dimensions: max breadth 0.5m, max depth 0.12m. Within hollow way [828].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
831	Layer	Firm mid grey brown chalky silt occasional small chalk. Within wheel ruts [828] and [829].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
832	Layer	Firm mid grey brown chalky silt occasional small chalk. Within wheel ruts [828] and [829].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
833	Hollow way	Linear N-S profile: 45 degrees base: flat dimensions: min breadth 3.4m, max diameter 0.7m. Contains wheel rut [834] and layers (835) and (836). Same as [873].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
834	Wheel ruts	Linear N-S profile: concave base: concave dimensions: max breadth 0.55m, max diameter 0.11m. Wheel rut within hollow way [833].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
835	Colluvium	Firm light yellow brown chalky silt . 0.32m thick. Lying within hollow way [833] and wheel rut [834].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
836	Colluvium	Firm mid yellow brown chalky silt occasional flecks chalk. 0.4m thick. Lying within hollow way [833].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
837	Hollow way	Linear N-S profile: concave base: flat dimensions: min breadth 1.54m, max depth 0.3m. Probably associated with wheel ruts [865]. Contains wheel rut [838] and layer (839).	<input checked="" type="checkbox"/>	<input type="checkbox"/>



**Area:** 8  
**Extent (ha):** 0.3  
**OS Co-ordinates:** TL0076620893  
**Description:** Northern section of the Multi-User Route that connects with the B4541.

838	Wheel ruts	Linear N-S profile: concave base: concave dimensions: max breadth 0.25m, max depth 0.1m. Wheel rut within hollow way [837].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
839	Layer	Friable mid grey brown chalky silt occasional small-large chalk. 0.2m thick layer within hollow way [837].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
840	Quarry	Sub-circular profile: concave base: flat dimensions: max diameter 6.2m, min diameter 0.6m	<input checked="" type="checkbox"/>	<input type="checkbox"/>
841	Fill	Firm light orange brown clay silt occasional small chalk	<input checked="" type="checkbox"/>	<input type="checkbox"/>
842	Fill	Firm light brown grey silty chalk frequent small-medium chalk	<input checked="" type="checkbox"/>	<input type="checkbox"/>
843	Hollow way	Linear N-S profile: convex base: flat dimensions: min breadth 2.1m, max depth 0.27m. Contains wheel ruts [844], [845] and [846] and layers (847) and (848).	<input checked="" type="checkbox"/>	<input type="checkbox"/>
844	Wheel ruts	Linear N-S dimensions: min breadth 0.22m, max depth 0.1m. Wheel rut within hollow way [843].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
845	Wheel ruts	Linear N-S dimensions: max breadth 0.25m, max depth 0.15m. Within hollow way [843].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
846	Wheel ruts	Linear N-S dimensions: max breadth 0.15m, max diameter 0.15m. Within hollow way [843].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
847	Layer	Friable mid grey brown chalky silt occasional small stones. 0.12m thick layer within hollow way [843] and wheel rut [844].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
848	Layer	Friable mid grey brown chalky silt occasional small stones. Up to 0.2m thick layer within hollow way [843] and wheel ruts [845] and [846].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
850	Wheel ruts	Linear N-S dimensions: max breadth 0.5m, max depth 0.2m. Within hollow way [803].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
851	Wheel ruts	Linear N-S dimensions: max breadth 0.8m, max depth 0.1m. Within hollow way [803].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
852	Wheel ruts	Linear N-S dimensions: max breadth 0.4m, max depth 0.1m. Within hollow way [803].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
853	Layer	Firm mid brown grey chalky silt . Upto 0.25m thick layer within hollow way [803] and wheel ruts [850], [851] and [852].	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
855	Wheel ruts	Linear N-S dimensions: max breadth 1m, max depth 0.2m	<input type="checkbox"/>	<input type="checkbox"/>
856	Layer	Firm light yellow brown chalky silt occasional flecks chalk. Within wheel rut [855].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
857	Wheel ruts	Linear NNE-SSW dimensions: max breadth 0.4m, min length 13m	<input type="checkbox"/>	<input type="checkbox"/>
858	Layer	Friable mid grey brown silty loam . Within wheel rut [857].	<input type="checkbox"/>	<input type="checkbox"/>



**Area:** 8  
**Extent (ha):** 0.3  
**OS Co-ordinates:** TL0076620893  
**Description:** Northern section of the Multi-User Route that connects with the B4541.

859	Wheel ruts	Linear NNE-SSW dimensions: max breadth 1.8m. Group of wheel ruts related to hollow way [833].	<input type="checkbox"/>	<input type="checkbox"/>
860	Layer	Firm mid grey brown chalky silt . Within group of wheel ruts [859].	<input type="checkbox"/>	<input type="checkbox"/>
861	Wheel ruts	Linear N-S dimensions: max breadth 0.4m, max depth 0.15m, min length 22.m	<input checked="" type="checkbox"/>	<input type="checkbox"/>
862	Layer	Friable dark grey brown chalky silt . Within wheel rut [861].	<input checked="" type="checkbox"/>	<input type="checkbox"/>
863	Wheel ruts	Linear NNE-SSW dimensions: max breadth 1.5m, max length 60.m	<input type="checkbox"/>	<input type="checkbox"/>
864	Layer	Firm mid grey brown chalky silt . Within wheel ruts [863].	<input type="checkbox"/>	<input type="checkbox"/>
865	Wheel ruts	Linear N-S dimensions: max breadth 1.1m, max length 17.m	<input type="checkbox"/>	<input type="checkbox"/>
866	Layer	Firm light yellow brown chalky silt . Within wheel ruts [865].	<input type="checkbox"/>	<input type="checkbox"/>
867	Hollow way	Linear NNE-SSW dimensions: max breadth 2.5m, max length 40.m. Same as [826], [828] and [843].	<input type="checkbox"/>	<input type="checkbox"/>
868	Layer	Firm mid brown grey chalky silt occasional small-medium chalk. Within hollow way [867].	<input type="checkbox"/>	<input type="checkbox"/>
869	Wheel ruts	Linear N-S dimensions: max breadth 1.4m, max length 80.m. Associated with hollow way [811].	<input type="checkbox"/>	<input type="checkbox"/>
870	Layer	Firm mid brown grey chalky silt occasional small-medium chalk. Within wheel ruts [869].	<input type="checkbox"/>	<input type="checkbox"/>
871	Wheel ruts	Linear NNW-SSE dimensions: max breadth 0.15m, max length 15.m	<input type="checkbox"/>	<input type="checkbox"/>
872	Layer	Firm mid grey brown chalky silt . Within wheel rut [871].	<input type="checkbox"/>	<input type="checkbox"/>
873	Hollow way	Linear N-S dimensions: max breadth 4.5m, max length 75.m. Same as [833].	<input type="checkbox"/>	<input type="checkbox"/>
874	Layer	Firm light yellow brown chalky silt . Colluvial deposit within hollow way [873].	<input type="checkbox"/>	<input type="checkbox"/>



**Area:** 9  
**Extent (ha):** 0.46  
**OS Co-ordinates:** TL0081820267  
**Description:** Southern half of Multi-User Route extending along the crest of the downs.

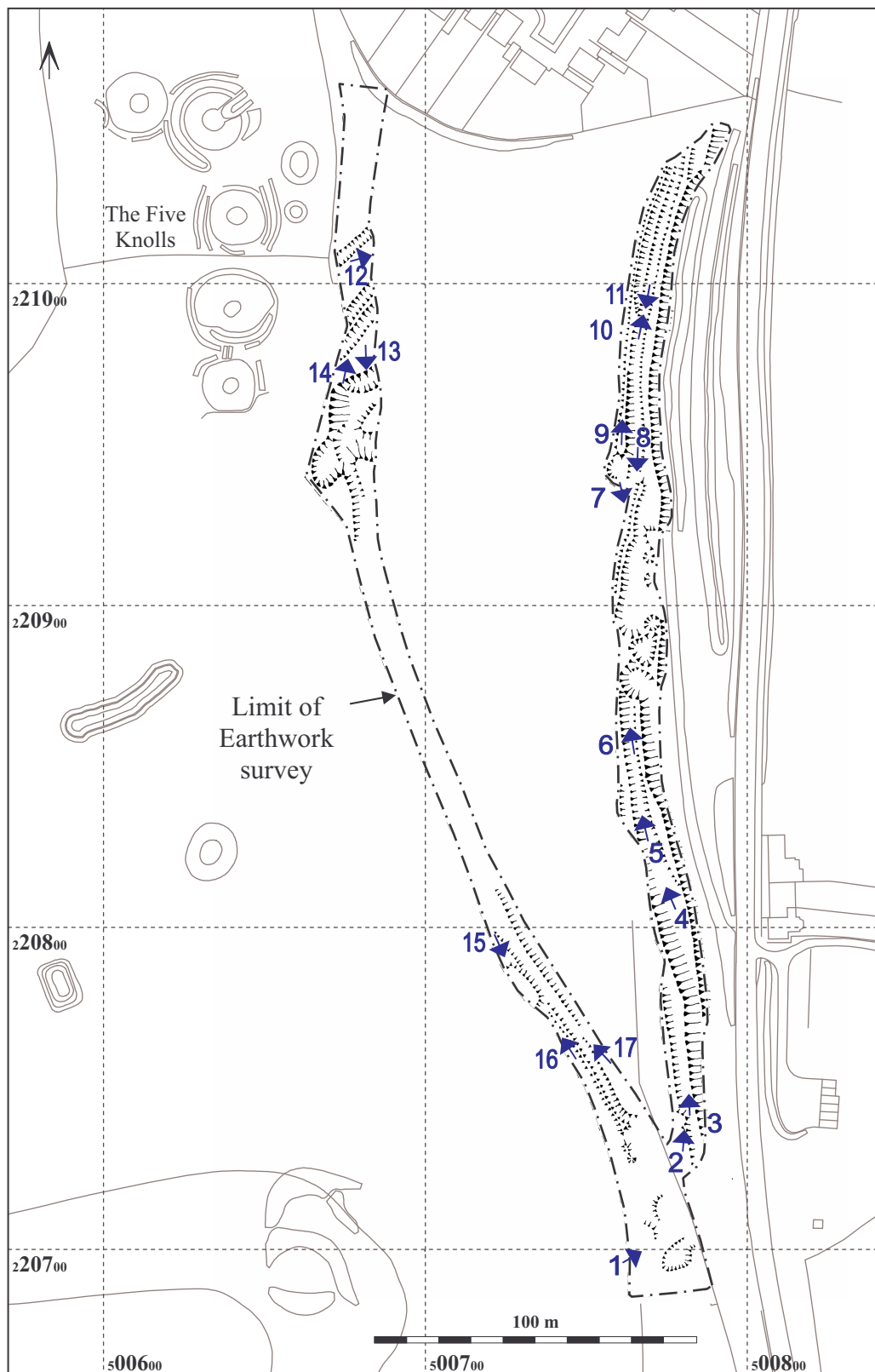
Context:	Type:	Description:	Excavated:	Finds Present:
900	Topsoil	Friable dark grey brown silty loam	<input checked="" type="checkbox"/>	<input type="checkbox"/>
901	Natural interface	Firm mid brown grey silty chalk frequent small-medium chalk	<input type="checkbox"/>	<input type="checkbox"/>
902	Natural	Chalk	<input type="checkbox"/>	<input type="checkbox"/>
903	Wheel ruts	Linear N-S dimensions: max breadth 0.7m, min length 5.m. Runs parallel to other wheel ruts [905], [907], [909], [911], [913], [915].	<input type="checkbox"/>	<input type="checkbox"/>
904	Layer	Friable mid grey brown chalky silt occasional flecks chalk. Fills wheel rut [903].	<input type="checkbox"/>	<input type="checkbox"/>
905	Wheel ruts	Linear N-S dimensions: max breadth 0.6m, min length 8.3m. Runs parallel to other wheel ruts [903], [907], [909], [911], [913], [915].	<input type="checkbox"/>	<input type="checkbox"/>
906	Layer	Friable mid grey brown chalky silt . Fills wheel rut [905].	<input type="checkbox"/>	<input type="checkbox"/>
907	Wheel ruts	Linear N-S dimensions: max breadth 0.9m, min length 24.m. Runs parallel to other wheel ruts [903], [905], [909], [911], [913], [915].	<input type="checkbox"/>	<input type="checkbox"/>
908	Layer	Friable mid grey brown chalky silt . Fills wheel rut [907].	<input type="checkbox"/>	<input type="checkbox"/>
909	Wheel ruts	Linear N-S dimensions: max breadth 1.1m, min length 12.m. Runs parallel to other wheel ruts [905], [907], [903], [911], [913], [915].	<input type="checkbox"/>	<input type="checkbox"/>
910	Layer	Friable mid grey brown chalky silt . Fills wheel rut [909].	<input type="checkbox"/>	<input type="checkbox"/>
911	Wheel ruts	Linear N-S dimensions: max breadth 0.25m, min length 5.6m. Runs parallel to other wheel ruts [905], [907], [903], [909], [913], [915].	<input type="checkbox"/>	<input type="checkbox"/>
912	Layer	Friable mid grey brown chalky silt . Fills wheel rut [911].	<input type="checkbox"/>	<input type="checkbox"/>
913	Wheel ruts	Linear N-S dimensions: max breadth 0.25m, min length 5.5m. Runs parallel to other wheel ruts [905], [907], [903], [911], [909], [915].	<input type="checkbox"/>	<input type="checkbox"/>
914	Layer	Friable mid grey brown chalky silt . Fills wheel rut [913].	<input type="checkbox"/>	<input type="checkbox"/>
915	Wheel ruts	Linear N-S dimensions: max breadth 0.7m, min length 15.9m. Runs parallel to other wheel ruts [905], [907], [903], [911], [913], [909].	<input type="checkbox"/>	<input type="checkbox"/>
916	Layer	Friable mid grey brown chalky silt moderate flecks chalk, moderate small chalk. Fills wheel rut [915].	<input type="checkbox"/>	<input type="checkbox"/>



## **7. APPENDIX 2 – PHOTOGRAPHIC SURVEY OF THE EARTHWORKS**

---





### Locations of photographs of earthworks

Base map reproduced from the Ordnance Survey Map with the permission of the Controller of Her Majesty's Stationery Office, by Bedfordshire County Council, County Hall, Bedford. OS Licence No. 100017358. © Crown Copyright







01. Quarry pits.



02. Chalk mound.



03. Chalk mound and route-way beyond.

Photographic survey of earthworks. Photographs 01-03







04. Hollow-way.



05. Hollow-way.



06. Quarry pitting.

Photographic survey of earthworks. Photographs 04-06





07. Hollow-way earthworks.



08. Hollow-way earthworks.



09. Hollow-way earthworks.

Photographic survey of earthworks. Photographs 07-09







10. Hollow-way.



11. Hollow-way.



12. Hollow-way heading towards the "Five Knolls".

Photographic survey of earthworks. Photographs 10-12







13. Quarry pitting.



14. Hollow-ways heading towards the "Five Knolls"



15. Hollow-way and raised platform in the foreground

Photographic survey of earthworks. Photographs 13-15





16. Hollow-ways and raised platform. Scale 1m.



17. Hollow-way and raised platform. Scale 1m.

Photographic survey of earthworks. Photographs 16-17





Similar view to that of Photo 1.



Similar view to that of Photo 2.



Similar view to that of Photo 4.

Selected 'after' shots of similar views to those of photographs 01, 02 + 04







Similar view to that of Photo 6.



Similar view to that of Photo 8.



Similar view to that of Photo 10.

Selected 'after' shots of similar views to those of photographs 06, 08 + 10







Similar view to that of Photo 11.



Similar view to that of Photo 12.



Similar view to that of Photo 13.

Selected 'after' shots of similar views to those of photographs 11-13





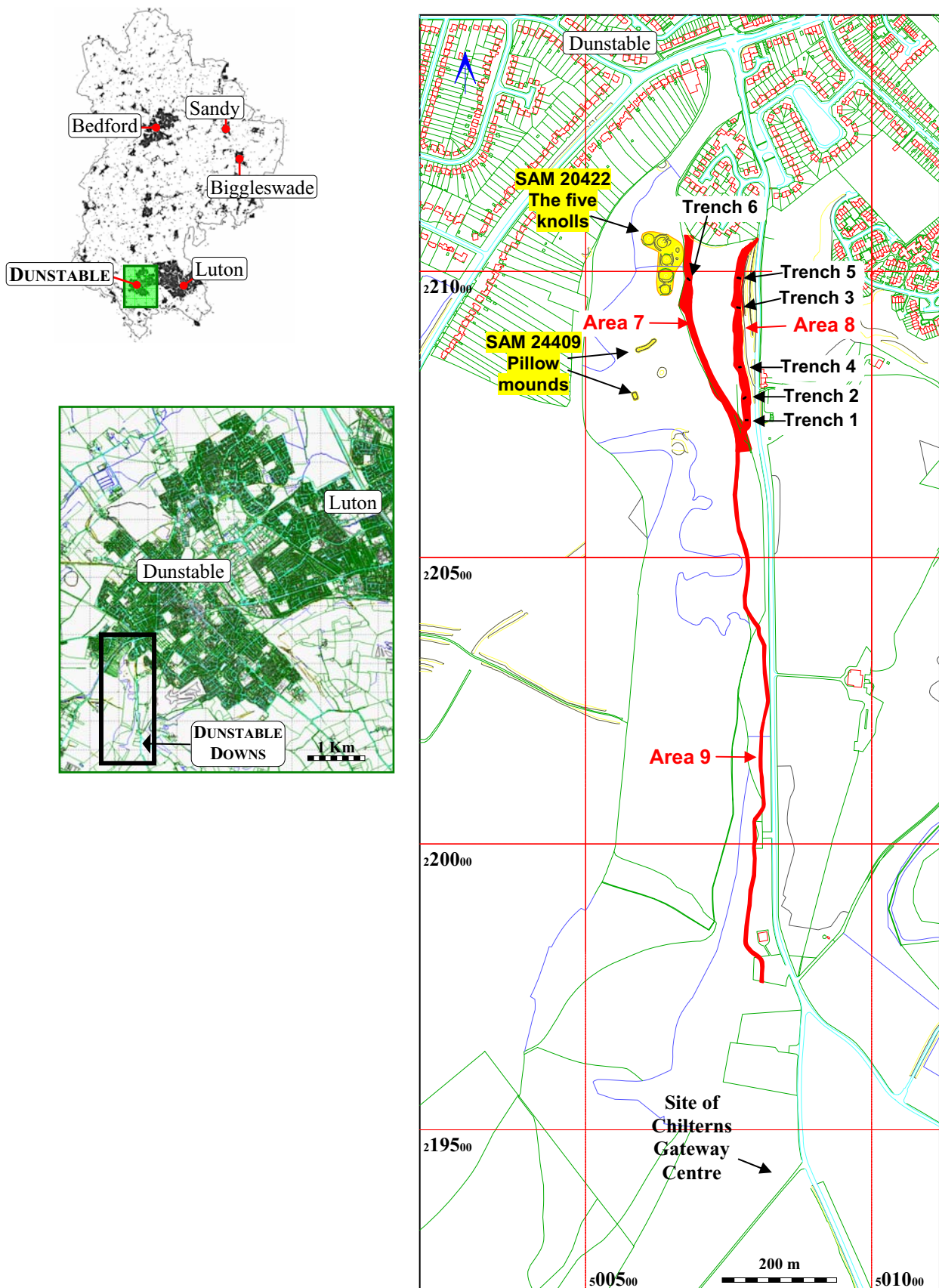
Similar view to that of Photo 14.



Similar view to that of Photo 17. (P) – raised platform.

Selected 'after' shots of similar views to those of photographs 14 + 17

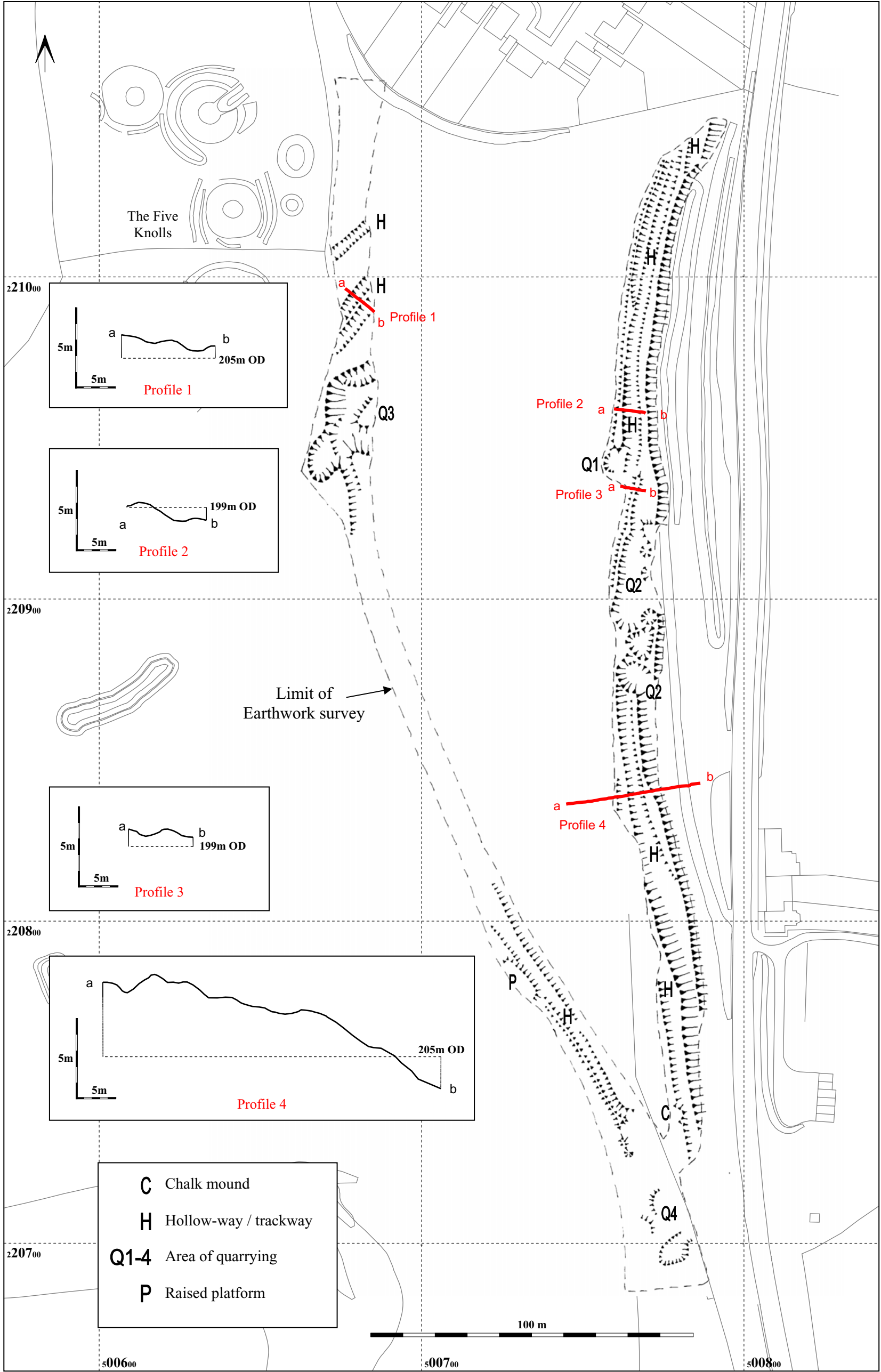




**Figure 1: Site location plan**

Base map reproduced from the Ordnance Survey Map with the permission of the Controller of Her Majesty's Stationery Office, by Bedfordshire County Council, County Hall, Bedford. OS Licence No. 100017358. © Crown Copyright





**Figure 2:** Earthworks along the course of the multi-user route on Dunstable Downs.  
Surveyed by Wesley Keir and Ian Turner, Oct 2007.

Base map reproduced from the Ordnance Survey Map with the permission of the Controller of Her Majesty's Stationery Office,  
by Bedfordshire County Council, County Hall, Bedford. OS Licence No. 100017358. © Crown Copyright





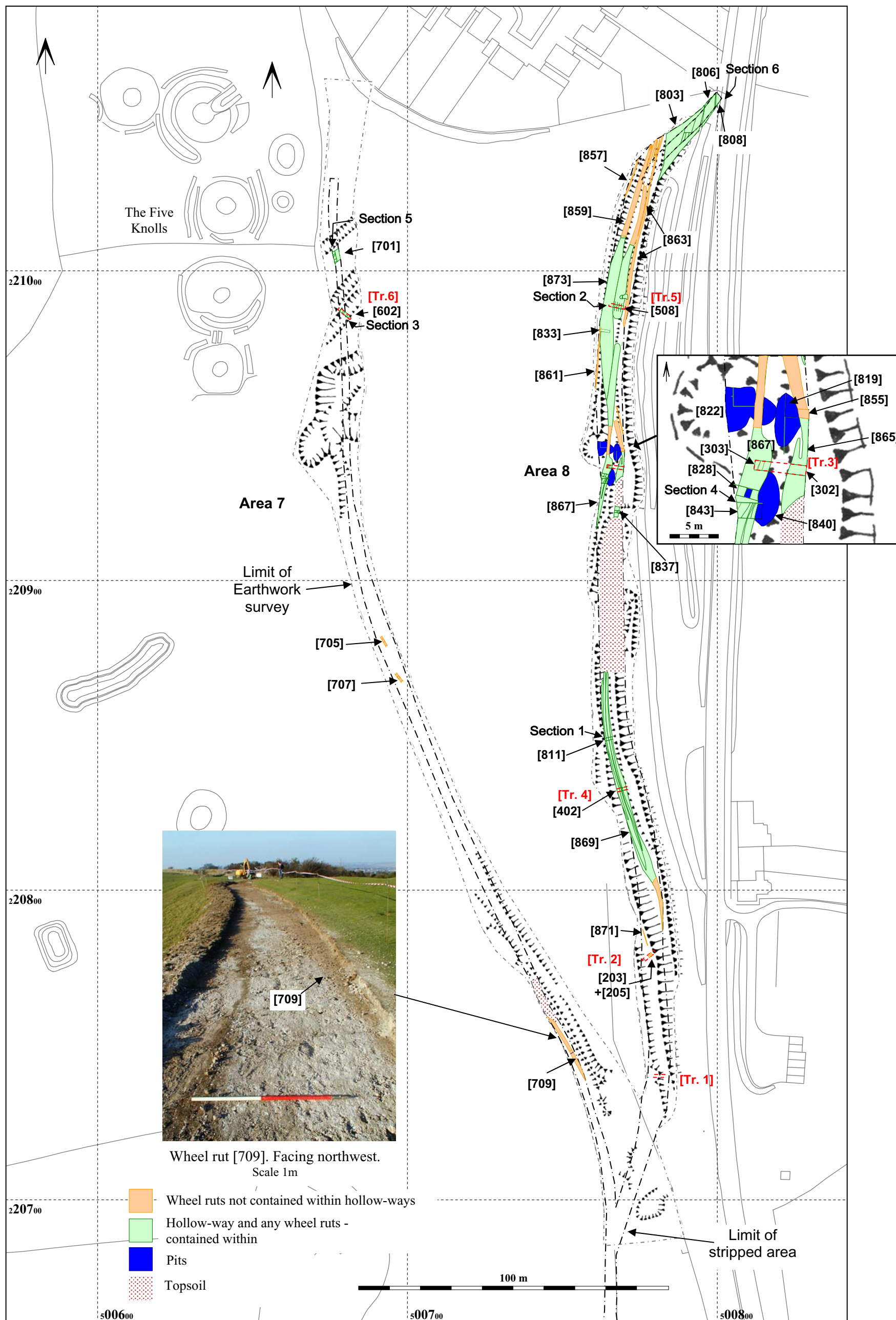
**Figure 3:** 1947 aerial photograph (CPE/UK/1965. 10.4.47. 4429)  
with earthwork survey overlain





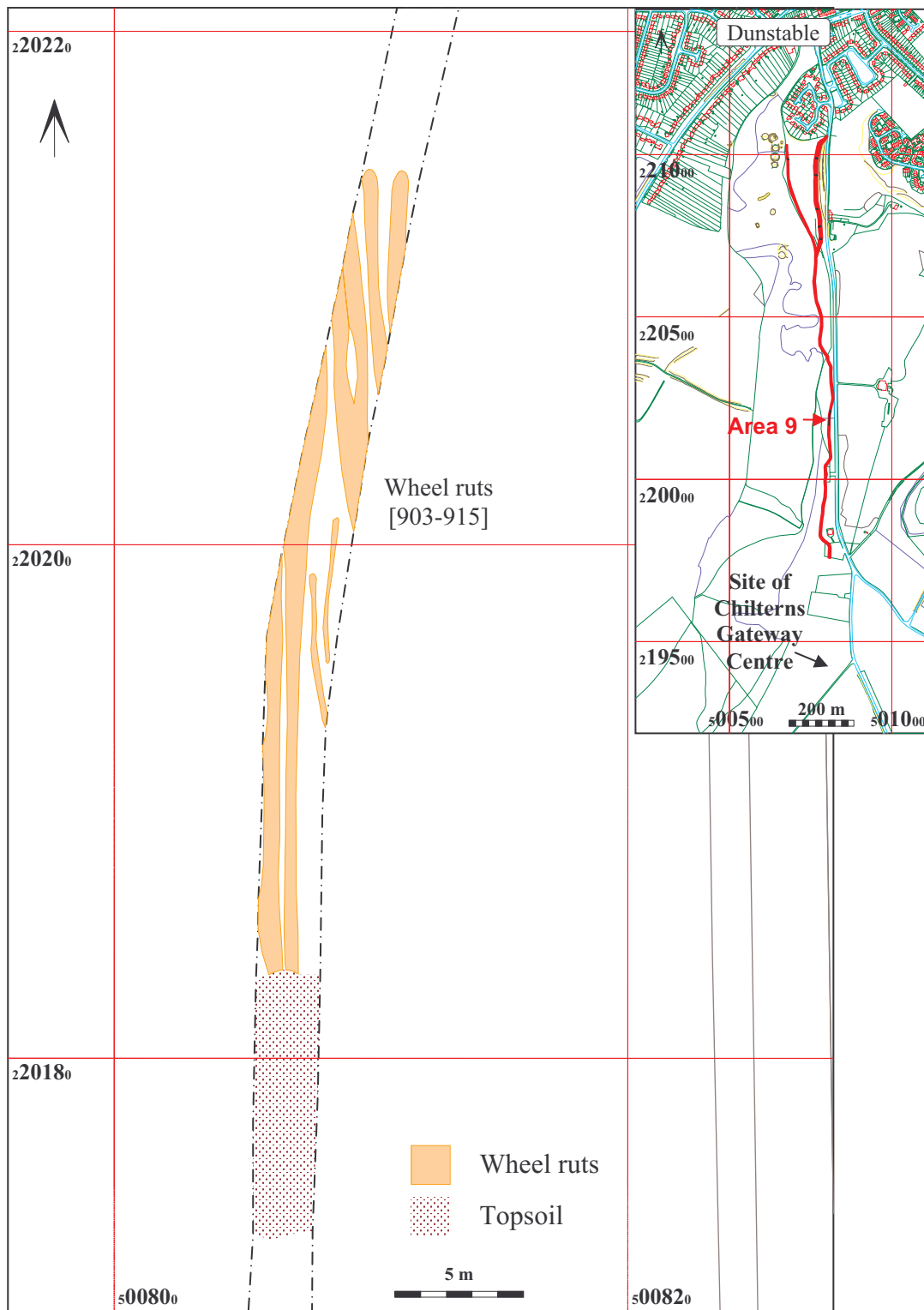
**Figure 4:** Hollow-ways at the top of the Downs outside the course of the Multi-User Route. Facing north. Scale 1m.





**Figure 5: All features Areas 7 and 8.**

Base map reproduced from the Ordnance Survey Map with the permission of the Controller of Her Majesty's Stationery Office, by Bedfordshire County Council, County Hall, Bedford. OS Licence No. 100017358. © Crown Copyright



**Figure 6: All features Area 9**

Base map reproduced from the Ordnance Survey Map with the permission of the Controller of Her Majesty's Stationery Office, by Bedfordshire County Council, County Hall, Bedford. OS Licence No. 100017358. © Crown Copyright

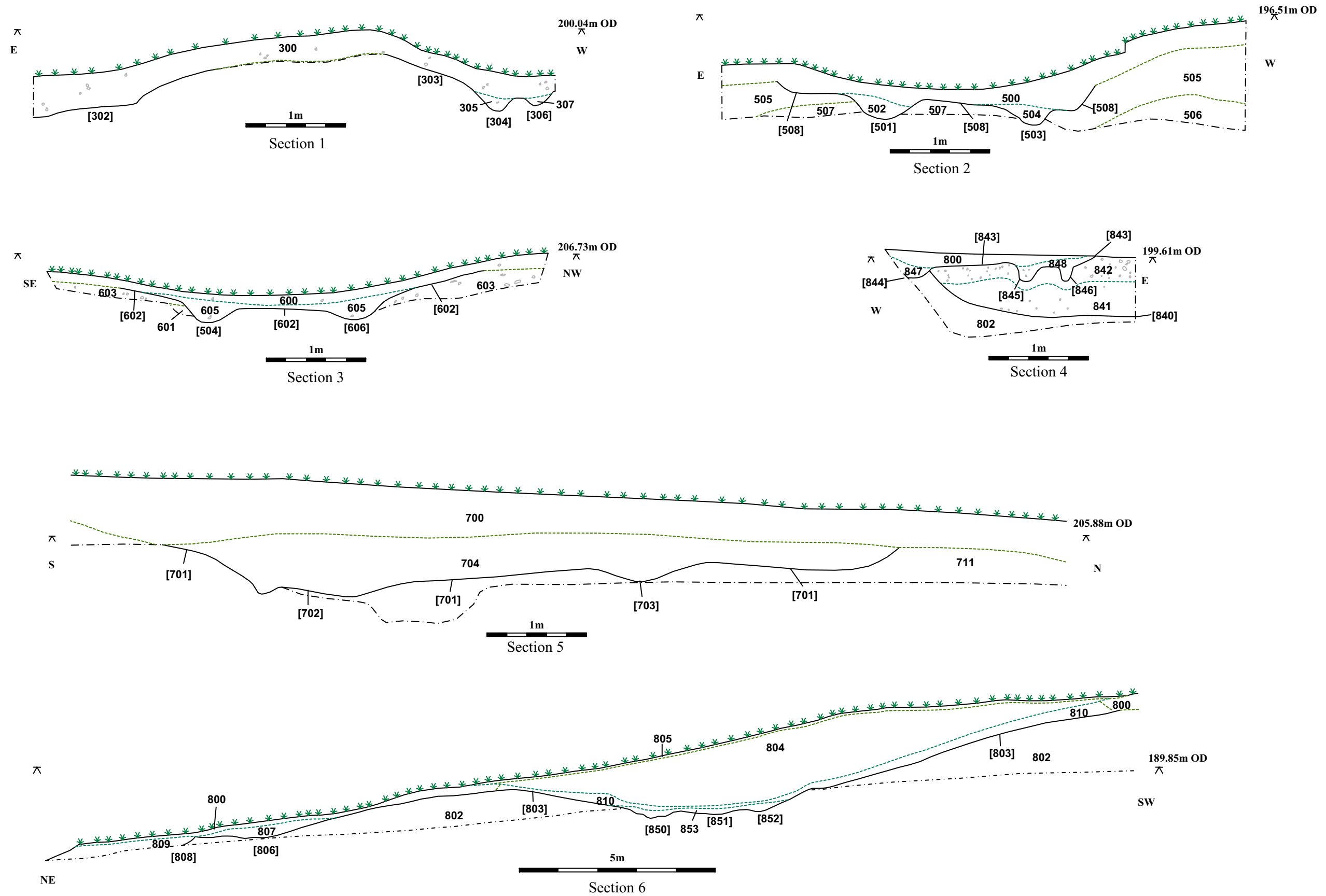


Figure 7: Section drawings





**Photograph 1:** Hollow-way [803]. Facing south  
Scale 2m



**Photograph 2:** Base of hollow-way [803], post-excavation. Facing south  
Scale 40cm

**Figure 8:** Photographs of hollow-way [803]





**Photograph 3:** Wheel ruts [903-915]. Facing north



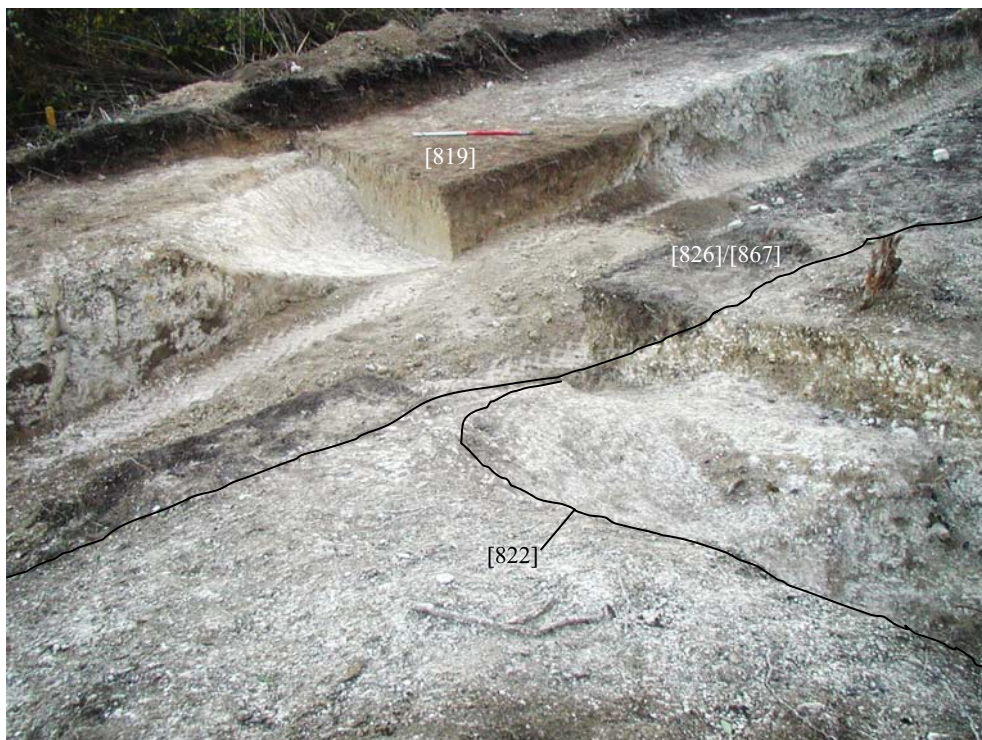
**Photograph 4:** Hollow-way [859]. Facing north.  
Scale 1m

**Figure 9:** Photographs of hollow-way [859] and wheel ruts [903]-[915]





**Photograph 5:** Wheel ruts/hollow-way [863] and [859]. Facing south  
Scale 1m



**Photograph 6:** Quarry pits [819] and [822] and hollow-way [826]/[867]. Facing south-east  
Scale 1m

**Figure 10:** Photographs of wheel ruts/hollow-ways [826]/[867]; [859]; [863];  
and quarry pits [819] and [822]





**Photograph 7:** Hollow-ways [867]/[303] and [865]/[302]. Facing south-east.  
Scale 1m



**Photograph 8:** Hollow-way [869]. Facing south.  
Scale 1m

**Figure 11:** Photographs of hollow-ways [867]/[303]; [865]/[302]; and [869]