



DCO Submission

Environmental Statement

**Chapter 10:** Heritage (built and archaeology)

**Appendix 10.5:** Assessment of Airborne Remote Sensing Data  
and Satellite Imagery for Archaeology

Document 6.10E

On behalf of  
**Oxfordshire Railfreight Limited**

Prepared by Air Photo Services  
**October 2021**



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## Oxfordshire Strategic Railfreight Interchange, Ardley

Assessment of Airborne Remote Sensing data  
and Satellite Imagery for Archaeology

APS 221 08 02

October 2021



# Oxfordshire Strategic Railfreight Interchange, Ardley

## Assessment of Airborne Remote Sensing Data and Satellite Imagery for Archaeology

Client	RPS Group PLC (known collectively as RPS)
Planning Authority	Oxfordshire Council
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## Summary

- S1. This assessment of airborne remote sensing data and satellite imagery for archaeology considers the site of a proposed new railfreight development to the south of Ardley in Oxfordshire, plus a 500m buffer to provide landscape context around the site.
- S2. The site is centred at UK National Grid Reference (NGR) SP 531259, coordinates 453177,225980. This report considers all available aerial imagery, airborne remote sensing data and satellite imagery from a range of sources (**Appendix**) as part of an assessment of archaeological features visible within the site to provide data for planning purposes. A desk-Based Assessment, (Bethell 2021), sets out the baseline archaeology data for the site and a 1km radius.
- S3. The object of this assessment is to provide information on the location and nature of buried and upstanding archaeological features which are visible on historic aerial photographs<sup>1</sup>, modern digital aerial and satellite imagery<sup>2</sup> and visualised Airborne Laser Scan (ALS) <sup>3</sup>data which is also known as Light Detection and Ranging (LiDAR) data to assess the type and condition of buried, topographic<sup>4</sup> and any micro-topographic<sup>5</sup> features within the site.
- S4. The well-drained limestone substrate gives rise to free draining lime-rich loamy soils which are conducive to the formation of crop marks<sup>6</sup> in germinating and ripening crops over buried eroded ditches and banks, where the crops grow to differing height and density in times of Soil Moisture Deficit (SMD) and as marks in soil, where the

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<sup>1</sup> Printed historical aerial photographs taken prior to c.1999

<sup>2</sup> 'Red-Green-Blue' (RGB) normal light spectrum, and sometimes multi-spectral imagery gathered from a variety of commercial survey satellites orbiting the earth in space and available *via* commercial providers and to view at [www.Google.com/Earth](http://www.Google.com/Earth) ('Google Earth').

<sup>3</sup> ALS/LiDAR data used for archaeological prospection is a digital model of the ground surface produced by a laser scan survey from an airborne survey platform such as an aircraft or a drone (UAV, unpiloted aerial vehicle) / These data are digitally visualised to produce a model for the viewer to see and interpret variations in height of the ground surface.

<sup>4</sup> Features which are upstanding and can be seen and measured easily on the ground surface. For example, an extant mound over a Bronze Age burial, or a visible land boundary bank or ditch.

<sup>5</sup> Features which exist at the ground surface but are very small, usually due to erosion, and often not discernible to the naked eye.

<sup>6</sup> Crops grow more strongly and over buried ditches and weakly over buried surfaces and walls, and ripening crops show these 'crop marks' which may reveal the shape and extent of buried features under the right environmental conditions.

actual features are visible at the surface there they are being actively eroded by ploughing.

S5. Forty-two areas containing buried or extant heritage assets were identified in the site and in an area which extends 500m from the redline boundary. Fifteen of these sites, which include two eroded and buried Iron Age livestock management and/or settlement ‘banjo-type’ enclosures, Prehistoric and undated ditches, and remains of post-enclosure field systems were identified within the redline boundary. These are summarised in **Table S1** below.

S6. It is likely that the buried features will be more extensive below the ground than indicated by the evidence visible as crop marks on aerial and satellite imagery.

**Table S1** Sites within, or partially within the redline boundary:

APS_Site	Asset_Type	Present condition	Period	OHER MonUID	Comment
APS_05	Field Boundary	Cropmark	Medieval / Post Medieval		Ditches visible on aerial photographs and satellite imagery as cropmarks which may relate to either MOX4971 Sexintone DMV, or MOX4989 Medieval Bucknell Park.
APS_10	Field Boundary	Cropmark	Undated		Former field boundary visible as a cropmark on satellite imagery.
APS_13	Modern Service	Cropmark	Modern	EOX2137	Cropmark from excavation for laying the Ardley Reservoir Mains Reinforcement. Small residual bank formed from the backfilling of trench.
APS_14	Ditch	Cropmark	Prehistoric	MOX4861 MOX4867	Series of parallel ditches which are likely associated with the rectangular enclosure MOX4861 and Banjo Enclosure MOX4867.
APS_15	Ditch	Cropmark and residual earthwork	Undated	MOX4862	Features which likely relate to MOX4862 Rectangular enclosures. Visible as faint cropmarks on aerial photographs and residual earthworks on LiDAR data.
APS_17	Ditch	Cropmark	Undated		Cropmarked ditch which appears to diverge into two parallel ditches. Visible on aerial photographs and satellite imagery.

APS_Site	Asset_Type	Present condition	Period	OHER MonUID	Comment
APS_20	Ditch	Cropmark	Undated		Cropmarked ditch visible on aerial photographs. May be related or a continuation of ditch <b>APS_12</b> .
APS_21	Settlement	Cropmark	Iron Age	MOX23329 MOX23330 MOX23331	Site of a previously recorded settlement and banjo enclosure.
APS_22	Field Boundary	Residual earthwork	Post Medieval		Former field boundaries visible on 1940s aerial photographs as extant features and on Environment Agency lidar data as residual earthworks.
APS_25	Field Boundary	Cropmark and residual earthwork	Post Medieval		Former field boundary visible when extant in 1940s, and on Environment Agency LiDAR data as a residual earthwork and satellite imagery as a cropmark.
APS_26	Field Boundary	Cropmark	Post Medieval		Cropmarked ditches of former field boundaries visible as extant boundaries on 1940's photography. Now visible as cropmarked ditches around and between the runway of Upper Heyford Airfield
APS_28	Field System	Cropmark	Post Medieval		Former field system visible as cropmarks on satellite imagery and as extant boundaries on 1940s aerial photographs.
APS_30	Field Boundary	Extant boundary when observed in the 1940s, now removed	Undated		Former field boundary visible as an extant boundary in 1940s aerial photographs.
APS_32	Banjo Enclosure	Cropmark	Iron Age		Two previously unrecorded interconnected banjo enclosures visible as fragmented cropmarks on aerial photographs.
APS_39	Field System	Cropmark and residual earthwork	Post Medieval		Former field system visible on satellite imagery, aerial photographs and Environment Agency LiDAR data as residual earthworks.

# 1 Introduction

- 1.1. This assessment of airborne Remote Sensing Data and Satellite Imagery for Archaeology considers the site of a proposed new railfreight development to the south of Ardley in Oxfordshire, plus a 500m buffer to provide landscape context around the site.
- 1.2. The site is centred at UK National Grid Reference (NGR) SP 531259, coordinates 453177,225980. A Desk-Based Assessment, (Bethell 2021), sets out the baseline archaeological data for the site plus a 1km radius.
- 1.3. The object of this assessment is to provide information on the location and nature of buried and upstanding archaeological features which are visible on historic aerial photographs, modern aerial and satellite imagery and visualised Airborne Laser Scan (ALS) data which is also known as Light detection and ranging (LiDAR) data to assess the type and condition of buried, topographic and micro-topographic features within the site.

## Sources of data

- 1.4. The primary source of data for this assessment are the vertical and specialist oblique aerial photographic collections held at the Historic England (HE) Archive in Swindon. There are currently no data generated by Historic England Aerial Investigation and Mapping Projects (AIMP) in this location.
- 1.5. In addition to these data, aerial and satellite images displayed at all the timelines at [www.google.com/earth](http://www.google.com/earth) and [www.bing.com/maps](http://www.bing.com/maps) were examined.
- 1.6. LiDAR data were gathered by the UK Environment Agency (EA) in 2003 at 2m resolution, 2009 and 2011 at 1m resolution over part of the site, and over the whole site by the National LiDAR Project (NLP) in 2019 and 2020 at 1m resolution. All available datasets were downloaded from the EA website and processed in September 2021 to inform this project.
- 1.7. The Cambridge University Collection of Aerial Photographs (CUCAP) was not open for consultation during the timescale of this assessment.

- 1.8. It is important to note that aerial imagery usually only shows part of the horizontal and vertical extent of buried and upstanding features. Its capacity to reveal features as crop marks, vegetation marks, soil marks or as shadows cast by banks, ditches and walls, depends upon a number of environmental, lighting and agricultural factors prevalent at the time of the photographic survey.
  
- 1.9. Stereoscopic pairs of vertical aerial photos were viewed using a magnifying mirror stereoscope to allow three-dimensional viewing and checked to single photos and differently visualised LiDAR data. This increased the reliability of the interpretations and identification of the present condition of the mapped features, which are largely and heavily plough eroded. Visualised LiDAR data were particularly useful for testing the presence of any remaining micro-topography which was identified over areas of former field boundaries only, and not over the eroded and cropmarked sites.

# The Site

Figure 1 Location of the site

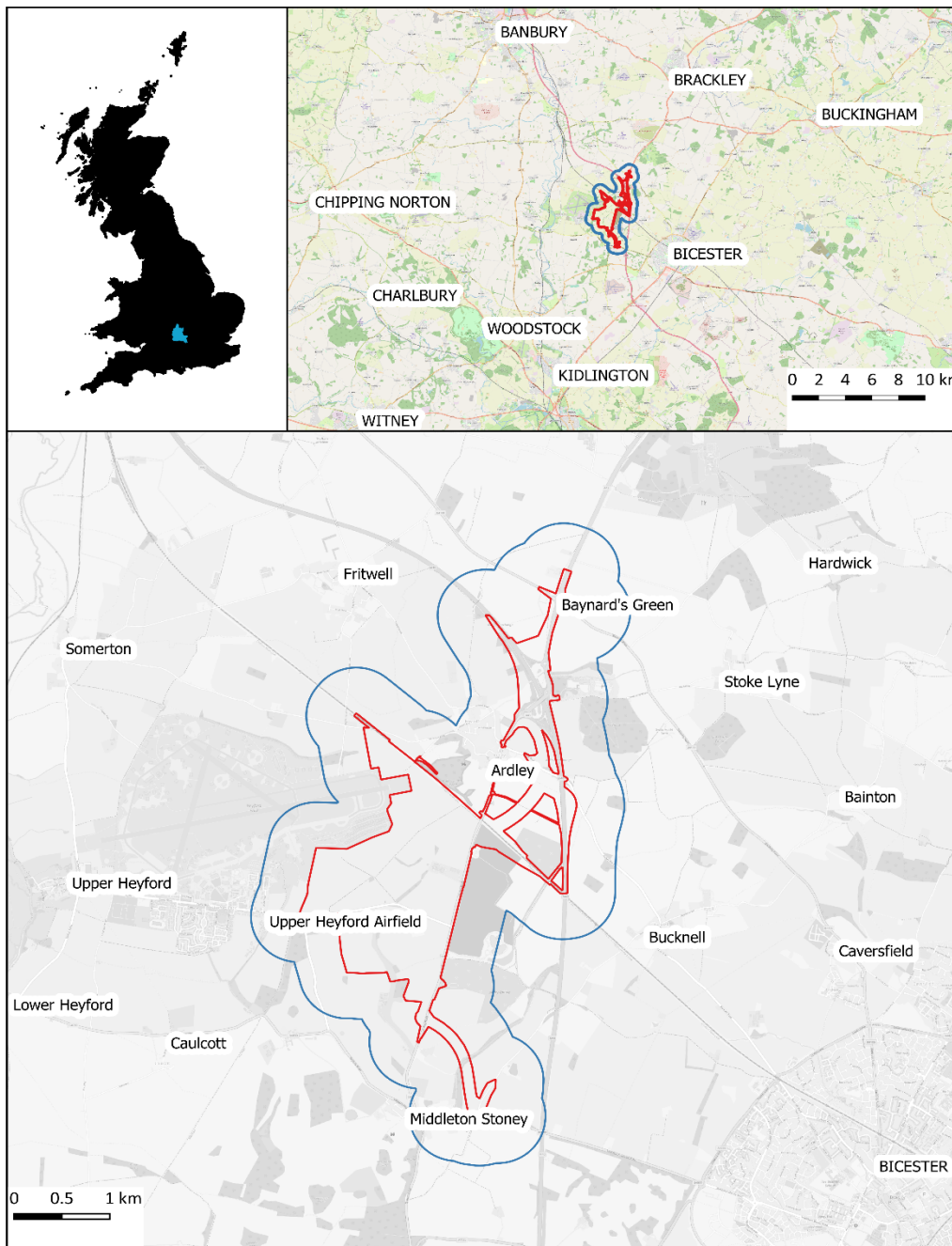
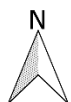


FIGURE 1: Site Location



Ardley (Oxford Railfreight) Assessment of Aerial Imagery  
 Client: RPS  
 Date: October 2021  
 Project: APS 221 08 02  
 By: Adam Jarvis ACIfA

 Site Outline  
 500m Buffer

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## Topography, Land Use, Geology and Soils

### Topography and land use

- 1.10. The site lies within an agricultural landscape to the east of modern RAF Upper Heyford, is traversed by the modern M40 motorway, the A43, and a modern railway near the modern settlement at Ardley.
- 1.11. The land falls slightly between 125m Above Ordnance Datum (AOD) and 100m AOD from northwest to southeast.

### Geology and soils

- 1.12. The Jurassic limestone substrate at the site gives rise to freely draining lime-rich and loamy soils which are classified by the Landis Soilscales system as Soilscale 18 ([landis.org.uk/soilscales](http://landis.org.uk/soilscales)). These freely draining substrates and soils were attractive to past settlers, support arable agriculture and are conducive to the formation of marks in crops over buried features under conditions of soil moisture deficit.  
Previously Recorded Heritage Assets within the Site

- 1.13. The site and its environs contain evidence for Prehistoric agricultural land use, medieval and post medieval fields and settlement land use as well as modern defensive and infrastructure features, as detailed by Bethell, 2021.

## 2 Archaeological and Natural Features from Aerial Imagery

- 2.1 In suitably cultivated soils, subsurface features – including archaeological ditches, banks, pits, walls or foundations – may be recorded from the air in different ways in different seasons. In spring and summer these may show through their effect on grass and crops growing above them. In this study area, traces of buried and plough-eroded cut features are visible as marks in crops in times of slight to moderate drought.
- 2.2 Upstanding features, which may survive in unploughed grassland, are also best recorded in winter months when vegetation is sparse, and the low angle of the sun helps pick out slight differences of height and slope.
- 2.3 LiDAR data has been used effectively to assess the condition of the ploughed out features within the site, which have been eroded within all but some of the embanked field boundaries and traces of ridge and furrow in this environment.

### Limitations of the aerial photographic data<sup>5</sup>

- 2.4 Aerial photographic evidence is limited by seasonal, agricultural, meteorological and environmental factors which affect the extent to which either buried or upstanding archaeological features can be detected from the air.
- 2.5 The visibility of archaeological features may differ from year to year, dependent on the type of crop or land use, prevailing weather and levels of moisture in the soil over the grass or crop growing season. Differences in the intensity and angle of the light also assist greatly in seeing the nuances of slightly upstanding earthwork features, as are present on this site. Individual photographs often record only a small percentage of the actual extent of buried or upstanding features, and a wide range of photos taken over a long timescale may be needed to reveal the extent of extant and anyburied features from the air. The site has been photographed over the 20<sup>th</sup> and 21<sup>st</sup> Centuries by specialist aerial archaeologists and military and commercial aerial surveyors, and the Oxford Historic Environment Records (OHER) data reflects the input of these surveys to the archaeological record. More modern sources, available online, have also contributed to the discovery of new site during this assessment.

### 3 LiDAR Data

- 3.1 Airborne Laser Scan (ALS) data, otherwise known as Light Detection and Ranging (LiDAR) data, have been collected from airborne survey platforms in recent years at varying resolutions, and are available for download, processing, visualising and interpretation *via* the Environment Agency for England website, <https://environment.data.gov.uk/DefraDataDownload/?Mode=survey>
- 3.2 LiDAR data indicates variation in the height of the ground surface. Data is collected by an active laser beam fired in pulses which scans the ground surface. The reflected pulses are recorded by the sensor on board a geolocated airborne survey platform, fitted with an inertial measurement unit to record the roll, pitch and yaw of the aircraft.
- 3.3 The point cloud data derived from the survey are processed into a series of Digital Elevation Models (DEM) usually in American Standard Code for Information Interchange (ASCII) format. These include Digital Surface Models (DSM) which contain tree cover and buildings, and Digital Terrain Models (DTM) which remove tree cover and can reveal features beneath the tree canopy (Bennett *et al* 2012, Hesse 2010, Stular *et al* 2012).
- 3.4 These data are of assistance in recording micro and macro topographic features which may indicate relict or extant archaeological features and historic landscapes alongside more modern features. LiDAR data are best interpreted and used in conjunction with modern and historic aerial photographs and maps to provide ground truth information for features and sites recorded *via* this prospection method.
- 3.5 The data needed were identified by using the EA timestamp shapefile detailing the LiDAR file names within the area of interest and the Ordnance Survey (OS) 10km and 5km grid square to identify the grids and quarter sheets. Digital Terrain Models were selected as the primary data source as the ability to remove the tree canopy makes it ideal for prospection. All available LiDAR data for this site were downloaded for

completeness of evidence. The data were visualised into Hillshade, Multi-Directional Hillshade, Simple Local Relief Model (SLRM), Slope, Sky View Factor, Anisotropic Sky View Factor, Open Positive and Open Negative using specialist software, the Relief Visualisation Toolbox (RVT). These visualisations were chosen as they are of most use for archaeological prospection. The multiple ASCII tiles were merged before being visualised for ease of use in the GIS. The data were analysed alongside the APs and base mapping to double check the topography and nature of features interpreted from LiDAR data.

- 3.6 An additional visualisation was created using a simplified process based upon the methodology proposed by Hesse to create a SLRM (Hesse, 2010). A low pass filter was applied to nearest neighbour resampling, and the resampled model was removed from the original DTM, creating a Local Relief Model. This was then processed through the RVT with a smoothing factor of 20m.

## 4 Results

- 4.1 The site contains heritage assets which form part of a wider and cohesive landscape of past settlement, farming and land division which date from Prehistory to the Post-Medieval periods.
- 4.2 **Figure 2** over the page shows the site locations and the recorded extents of archaeological features from aerial imagery within the site redline area and the 500m buffer, which are discussed in this report.

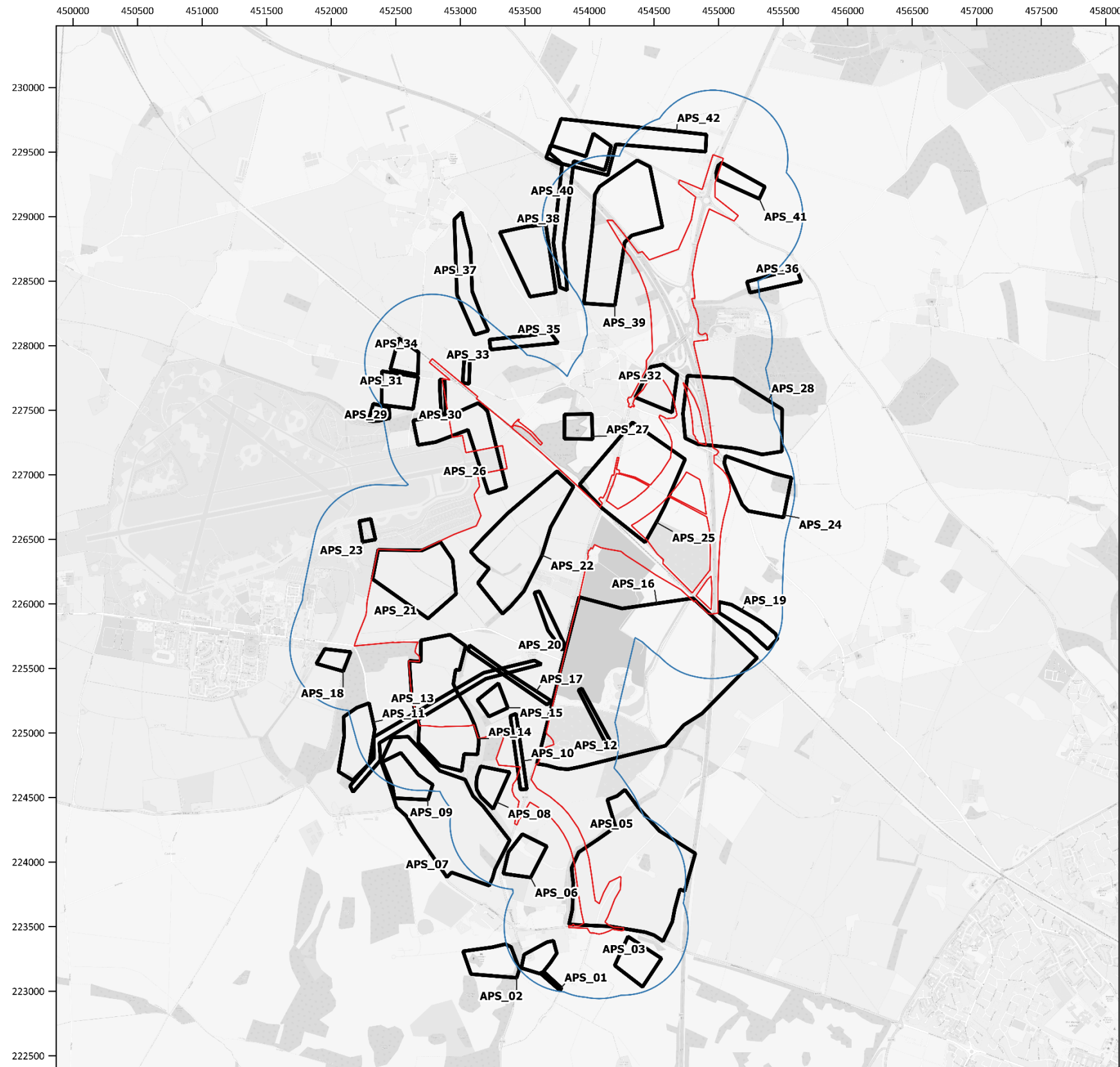
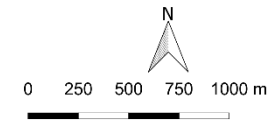


FIGURE 2: Overview of site extents

- Site Outline
- 500m Buffer
- Sites



Ardley (Oxford Railfreight)  
Assessment of Aerial Imagery

Client RPS Group  
Date October 2021  
Project APS 221 08 02  
By Adam Jarvis ACIfA



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## Within the redline boundary

- 4.3 **Table 1** over the page details fifteen sites with their concordances to the OHER where applicable which form part of the archaeological landscape visible within the redline boundary from airborne remote sensing and satellite imagery data sources.

**Table 1 Archaeological features recorded within the redline boundary**

These sites are illustrated at **Figures 3.1 to 3.5**, a mapbook which is indexed at **Figure 3** below and shows all the sites recorded within the redline boundary and in the buffer area (**APS\_01 to APS\_42**)

APS_Site	Asset_Type	Present condition	Period	OHER MonUID	Comment	Figure
APS_05	Field Boundary	Cropmark	Medieval / Post Medieval		Ditches visible on aerial photographs and satellite imagery as cropmarks which may relate to either MOX4971 Sexintone DMV, or MOX4989 Medieval Bucknell Park, which lie outside of the site redline boundary.	3.1
APS_10	Field Boundary	Cropmark	Undated		Former field boundary visible as a cropmark on satellite imagery.	3.1
APS_13	Modern Service	Cropmark	Modern	EOX2137	Cropmark from excavation for laying the Ardley Reservoir Mains Reinforcement. Small residual bank formed from the backfilling of trench.	3.1
APS_14	Ditch	Cropmark	Prehistoric	MOX4861 MOX4867	Series of parallel ditches which are likely associated with an area of cropmarked agglomerated ditched enclosures and banjo enclosures which are recorded as <b>AP_21</b> within this assessment.	3.1
APS_15	Ditch	Cropmark and residual earthwork	Undated	MOX4862	Features which likely relate to MOX4862, rectangular enclosures and ditches which are visible as faint cropmarks on aerial photographs and residual earthworks on LiDAR data.	3.1
APS_17	Ditch	Cropmark	Undated		Cropmarked ditch which appears to diverge into two parallel ditches. Visible on aerial photographs and satellite imagery.	3.3
APS_20	Ditch	Cropmark	Undated		Cropmarked ditch visible on aerial photographs. May be related or a continuation of ditch <b>APS_12</b> which lies outside the site redline boundary.	3.3
APS_21	Settlement	Cropmark	Iron Age	MOX23329 MOX23330 MOX23331	Site of a previously recorded agglomerated ditched settlement site and banjo enclosure.	3.2, 4



APS_Site	Asset_Type	Present condition	Period	OHER MonUID	Comment	Figure
APS_22	Field Boundary	Residual earthwork	Post Medieval		Former field boundaries visible on 1940s aerial photographs as extant features and on Environment Agency lidar data as residual earthworks.	3.2
APS_25	Field Boundary	Cropmark and residual earthwork	Post Medieval		Former field boundary visible when extant in 1940s, and on Environment Agency LiDAR data as a residual earthwork and satellite imagery as a cropmark.	3.3
APS_26	Field Boundary	Cropmark	Post Medieval		Cropmarked ditches of former field boundaries visible as extant boundaries on 1940's photography. Now visible as cropmarked ditches around and between the runway of Upper Heyford Airfield	3.4
APS_28	Field System	Cropmark	Post Medieval		Former field system visible as cropmarks on satellite imagery and as extant boundaries on 1940s aerial photographs.	3.3, 3.5
APS_30	Field Boundary	Extant boundary when observed in the 1940s, now removed	Undated		Former field boundary visible as an extant boundary in 1940s aerial photographs.	3.2
APS_32	Banjo Enclosures	Cropmark	Iron Age		Two previously unrecorded interconnected banjo enclosures visible as fragmented cropmarks on aerial photographs.	3.3, 3.5, 4
APS_39	Field System	Cropmark and residual earthwork	Post Medieval		Former field system visible on satellite imagery, aerial photographs and Environment Agency LiDAR data as residual earthworks.	3.4

Sites dated to Prehistoric and likely prehistoric, but undated, periods

- 4.4** Within the redline boundary, sites **APS\_14**, **APS\_21** and **APS\_32** are dated to the prehistoric, likely Iron Age, period. Undated sites **APS\_15**, **APS\_17** and **APS\_20** are likely prehistoric features which are associated with the nearby settlement and livestock management enclosures.
- 4.5** Parallel ditches at **APS\_14** show as marks in crops on Fairey Surveys verticals and on specialist obliques. These ditches are likely to have been field boundaries associated with an area of complex agglomerated ditched enclosures and pits and a ‘banjo’ shaped livestock management enclosure dated to the Iron Age at **APS\_21** to the immediate northwest. These features are recorded by the OHER and are part of a wider landscape of prehistoric settlement and livestock management remains which have been eroded and now show as marks in crops.
- 4.6** **APS\_15** is indicated as a series of crop marked buried ditches which may be the remains of enclosures and boundaries indicative of further likely Prehistoric settlement areas within the site.
- 4.7** **APS\_17** and **APS\_20** are similarly areas of crop marked ditches which are likely part of the wider Prehistoric settlement and agricultural landscape, which are as yet undated.
- 4.8** Two newly identified interconnected banjo enclosures are recorded by this assessment at site **APS\_32**, within the redline boundary. These are identified as likely Iron Age livestock corralling enclosures, with a sub-circular central area and a ‘funnel’ or tunnel shaped entrance for the management of cattle and possibly other livestock animals. They are visible alongside a similar enclosure recorded at **APS\_21** and others of the same type within or on the boundary of the buffer area (**APS\_11**, **APS\_31** and **APS\_38**), within 500m of the redline boundary. They are visible as cropmarks on specialist oblique aerial photographs held at the Historic England Archive with no visible microtopography indicated via examination of visualised LiDAR data.
- 4.9** **Figure 4** shows these sites all together, which are of a similar size and shape, within and outside of the redline boundary.

#### Sites dated to the Medieval period

- 4.10 Within the redline boundary, there are no records of residual or upstanding ridge and furrow indicative of Medieval ox-drawn heavy ploughing. Outside of the site in the wider environs, some areas of reserved and cropmarked ridge and furrow are recorded. It is likely that a large part of the agricultural land within the site was cultivated in the Medieval period, and ridge and furrow has been eroded by subsequent changes to land use and modern ploughing. There are no records from airborne and satellite data which record Medieval settlement. Middleton Stoney Deserted Medieval Village (DMV) lies outside and to the south of the site and buffer area.

#### Sites dated to the Post-Medieval period

- 4.11 Within the redline boundary, other recorded sites comprise the cropmarked or slightly residual earthwork, remains of post-enclosure field systems which were laid out following the 18<sup>th</sup> century enclosure acts.
- 4.12 These boundaries have largely been removed since the 1940s to facilitate modern mechanised agriculture and correspond to the field systems which are recorded on earlier edition OS and earlier mapping which is referenced by Bethell (2021).

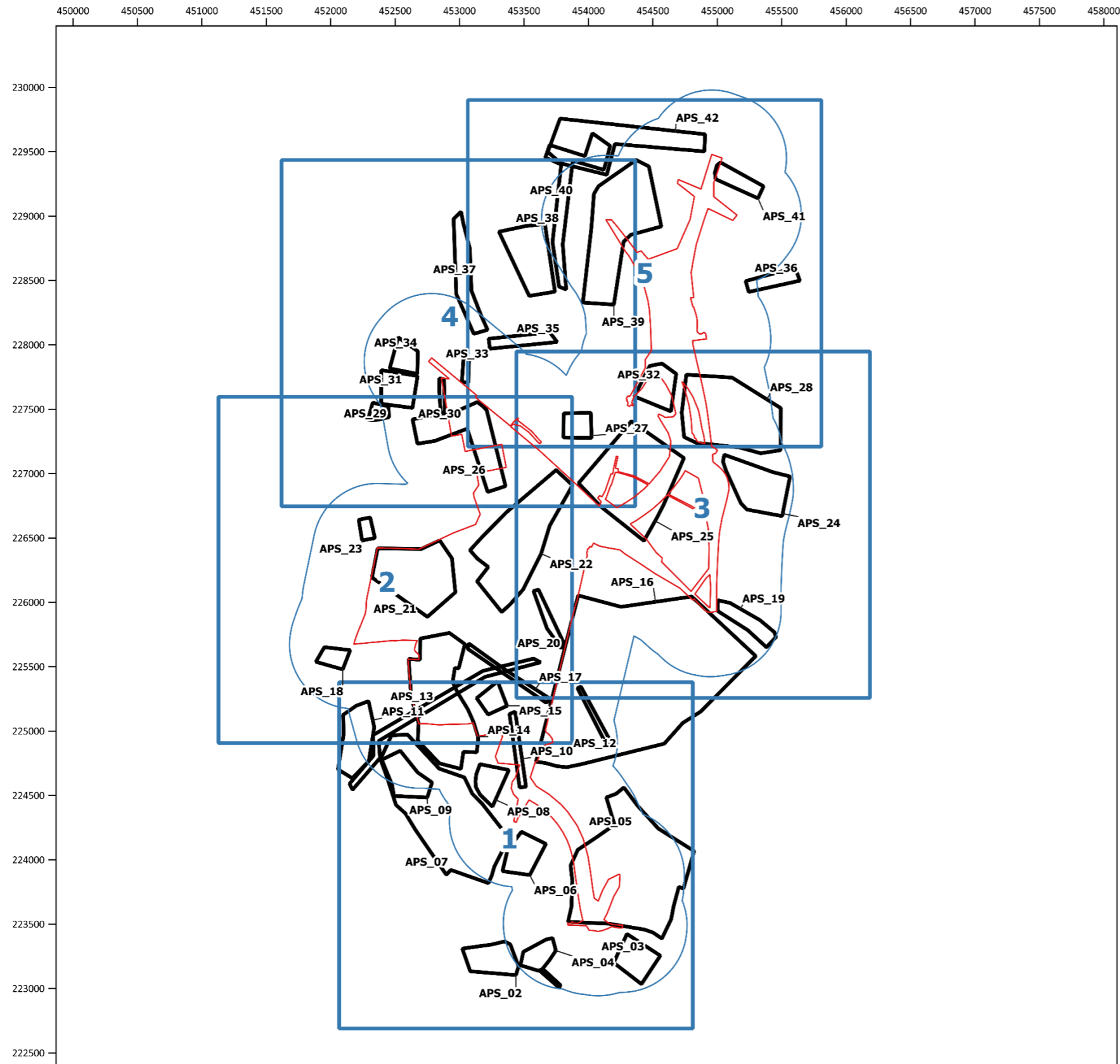
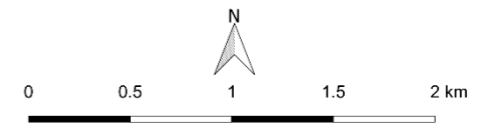


FIGURE 3: Mapbook Page Index

- Site Outline
- 500m Buffer
- Sites



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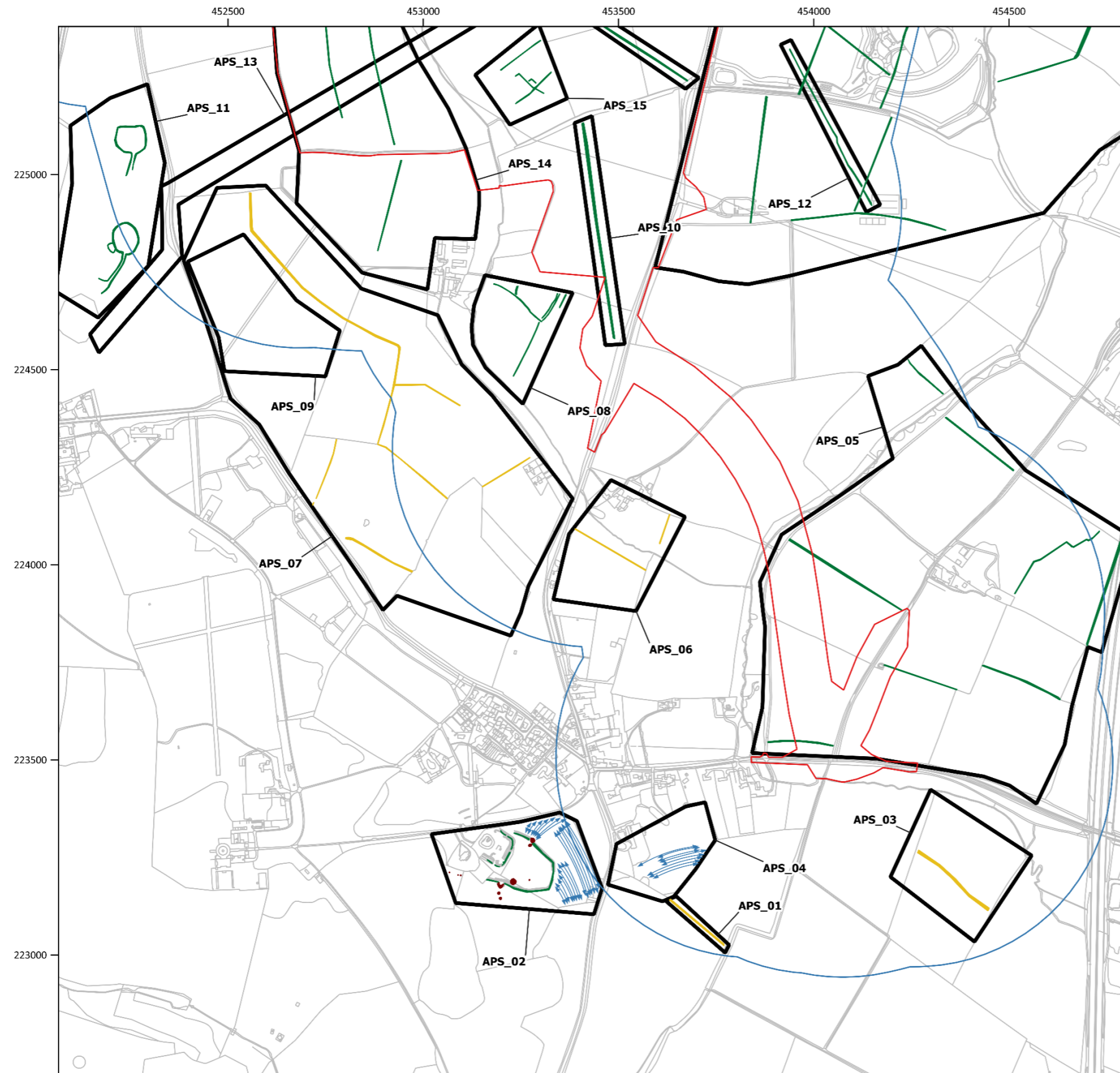
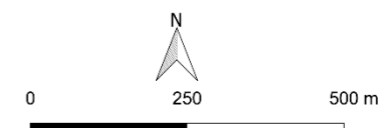


FIGURE 3.1: Mapbook Page 1

- Site Outline
- 500m Buffer
- Sites
- Bank
- Ditch
- Hollow
- Pit
- Ridge and Furrow



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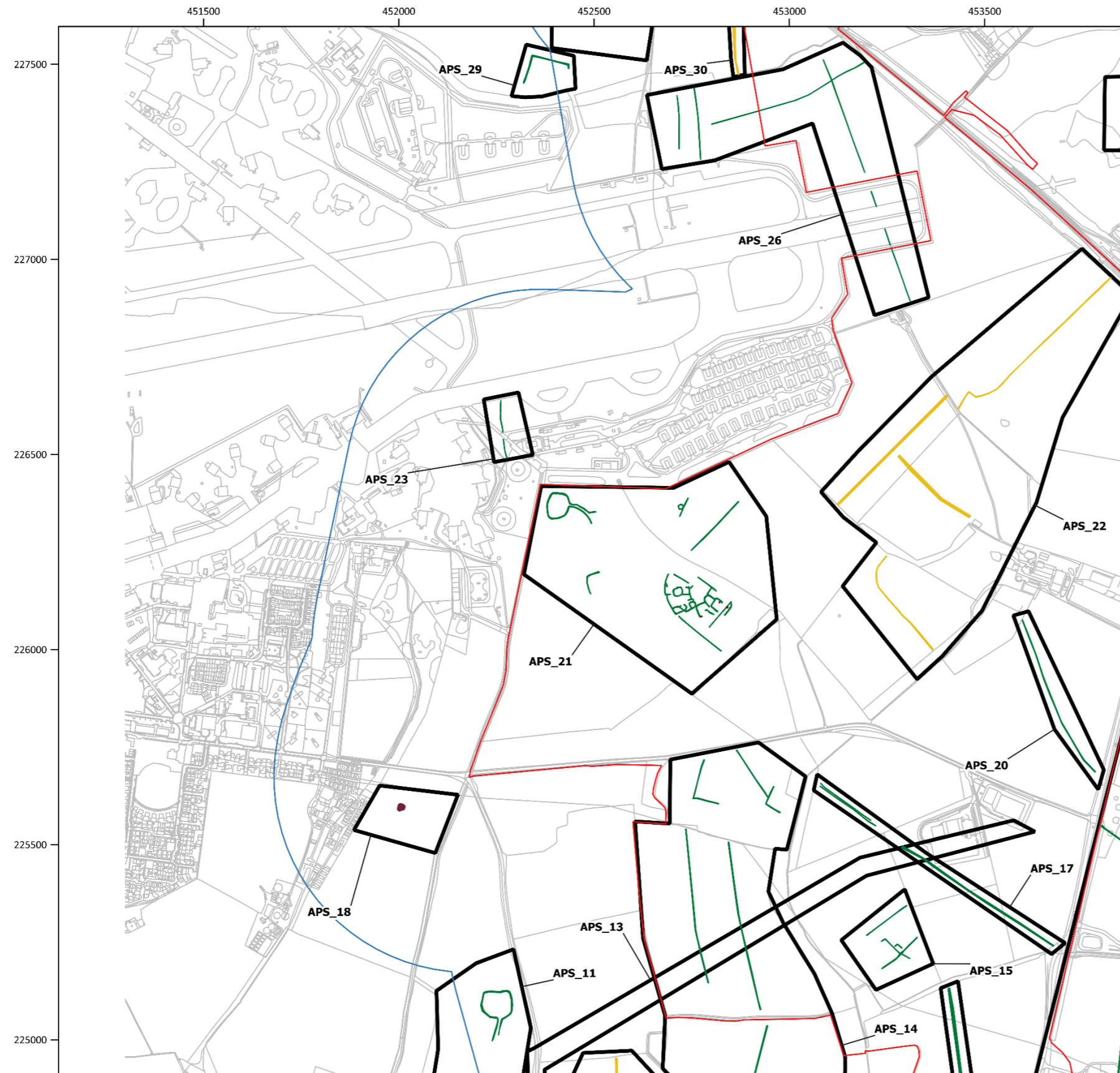
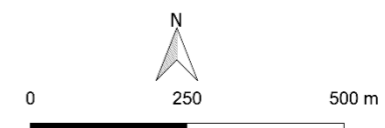


FIGURE 3.2: Mapbook Page 2

- Site Outline
- 500m Buffer
- Sites
- Bank
- Ditch
- Hollow
- Pit
- ↔ Ridge and Furrow



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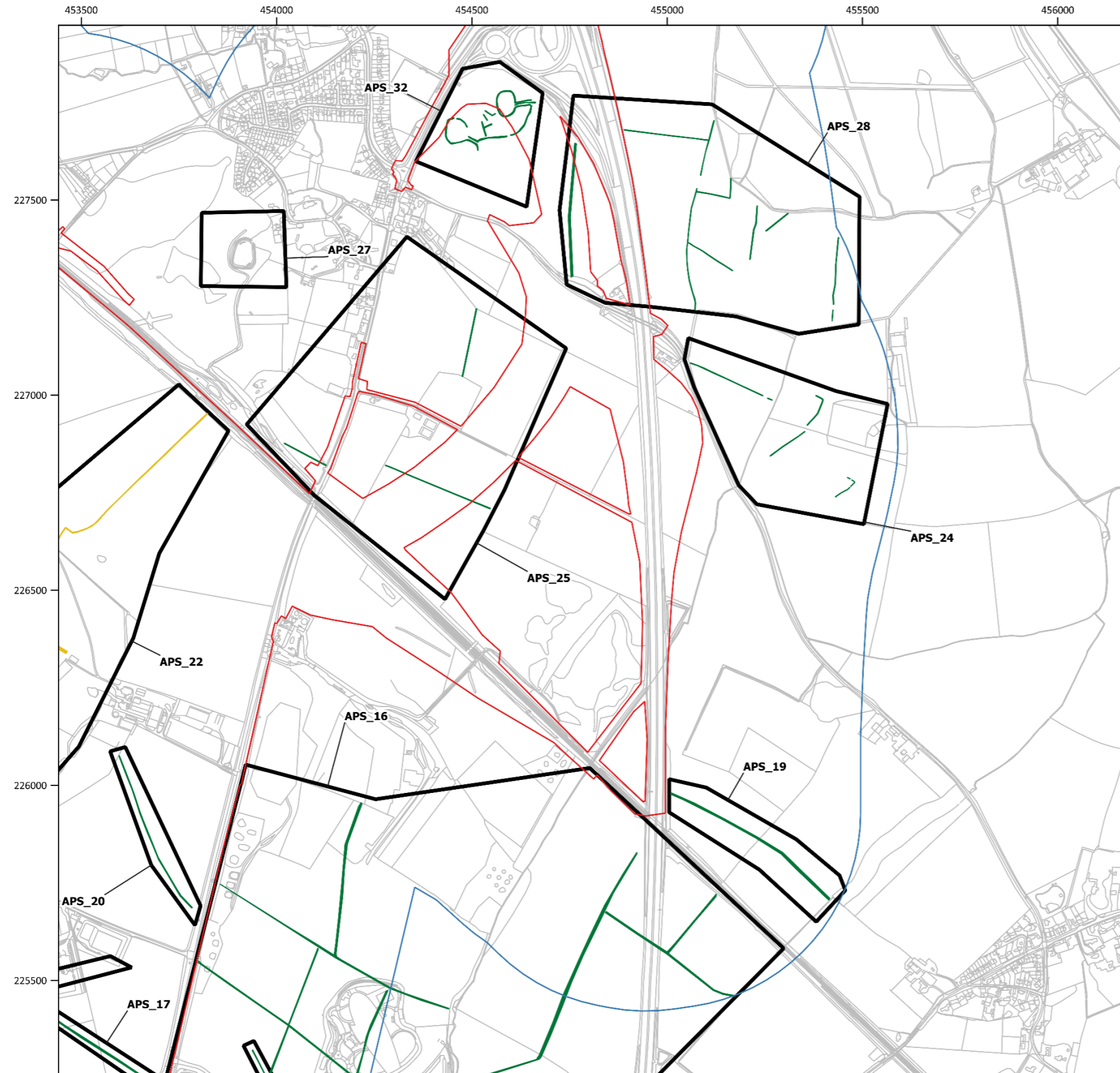
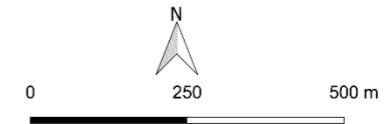


FIGURE 3.3: Mapbook Page 3

- Site Outline
- 500m Buffer
- Sites
- Bank
- Ditch
- Hollow
- Pit
- Ridge and Furrow



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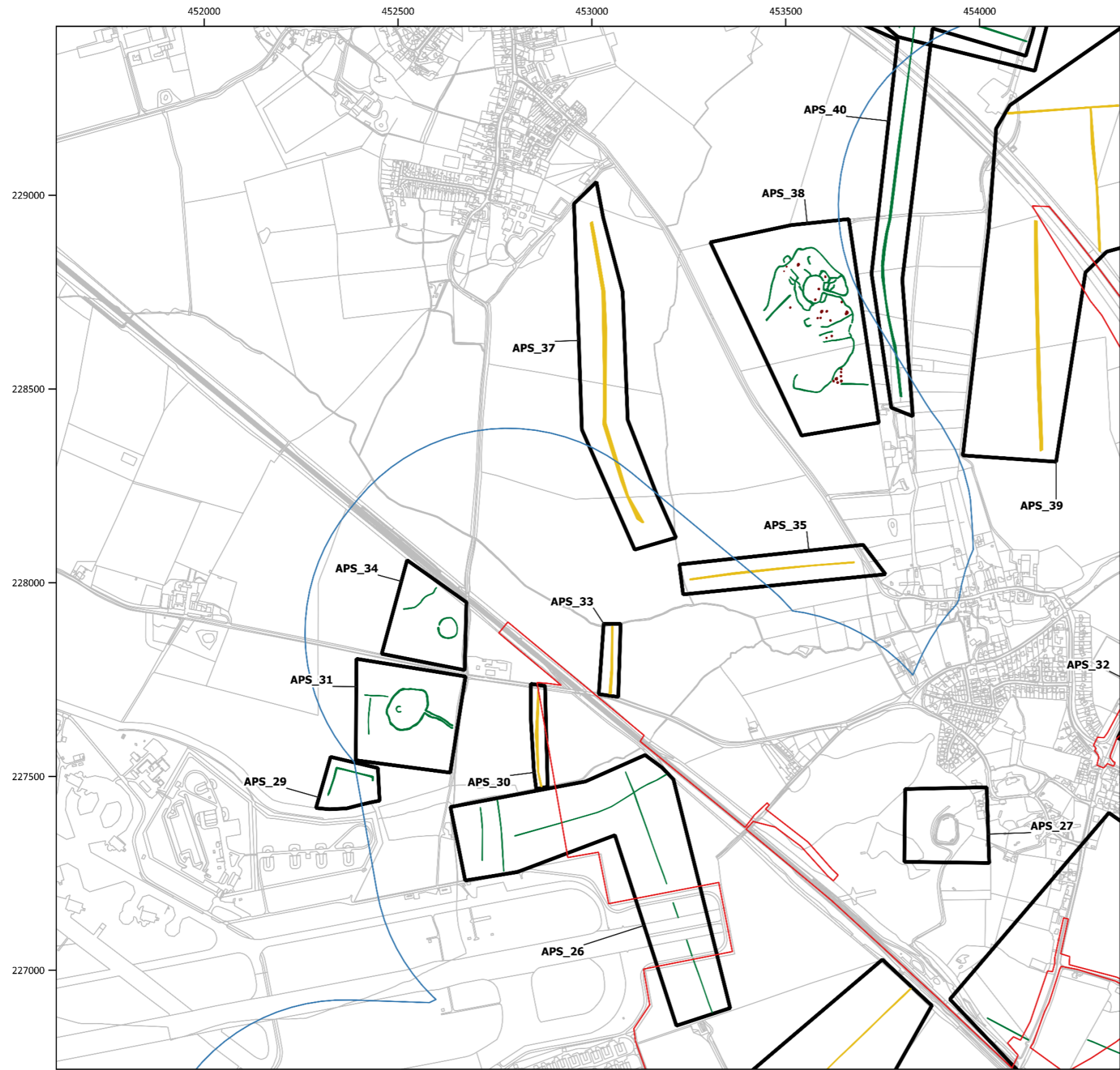
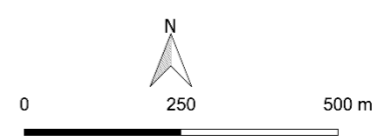


FIGURE 3.4: Mapbook Page 4

- Site Outline
- 500m Buffer
- Sites
- ▬ Bank
- ▬ Ditch
- ▬ Hollow
- ▬ Pit
- ↔ Ridge and Furrow



Ardley (Oxford Railfreight)  
Assessment of Aerial Imagery

Client RPS Group  
Date October 2021  
Project APS 221 08 02  
By Adam Jarvis ACIFA



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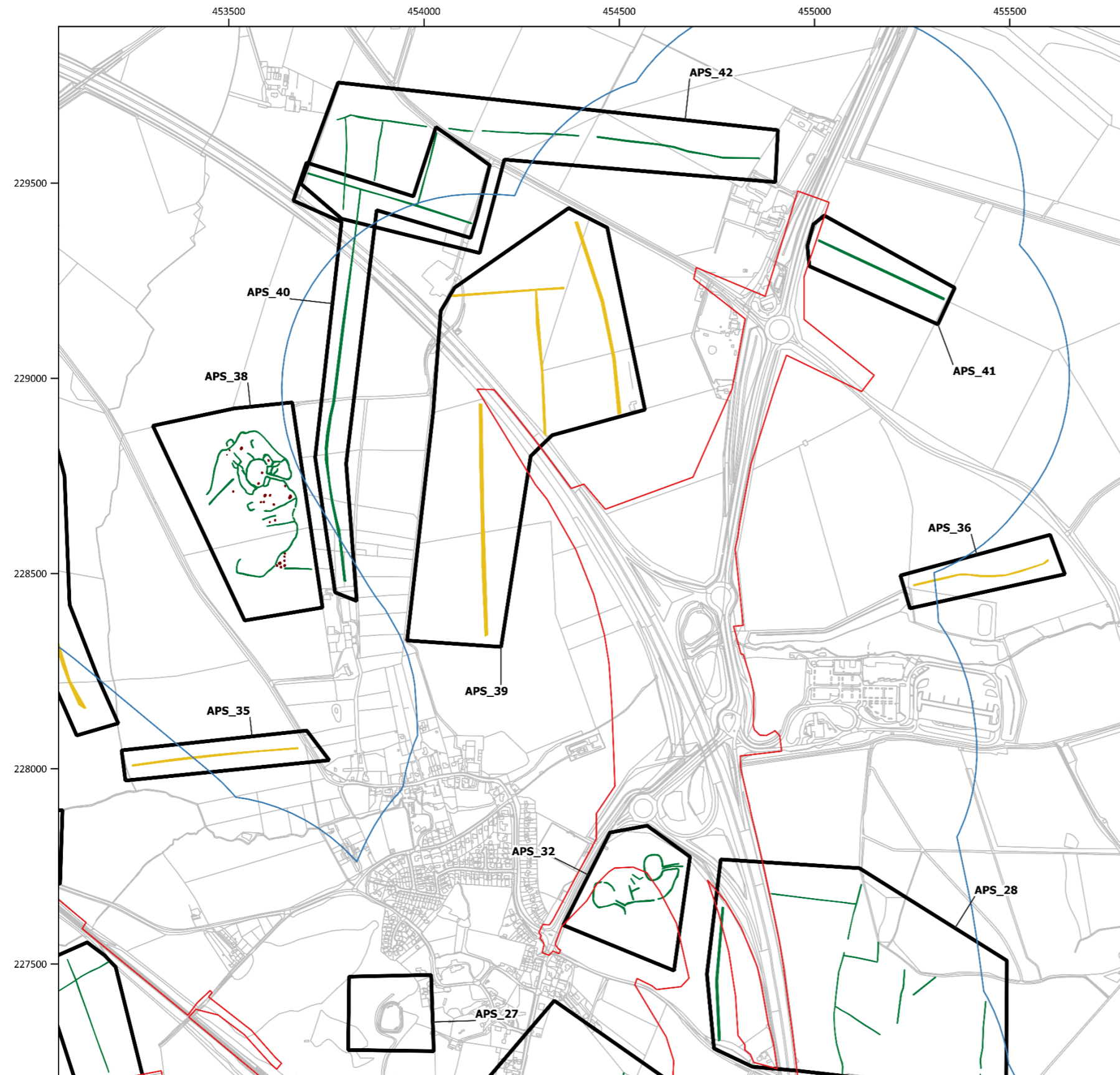
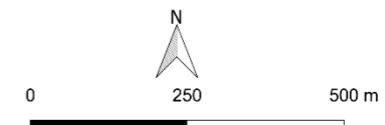


FIGURE 3.5: Mapbook Page 5

- Site Outline
- 500m Buffer
- Sites
- Bank
- Ditch
- Hollow
- Pit
- Ridge and Furrow



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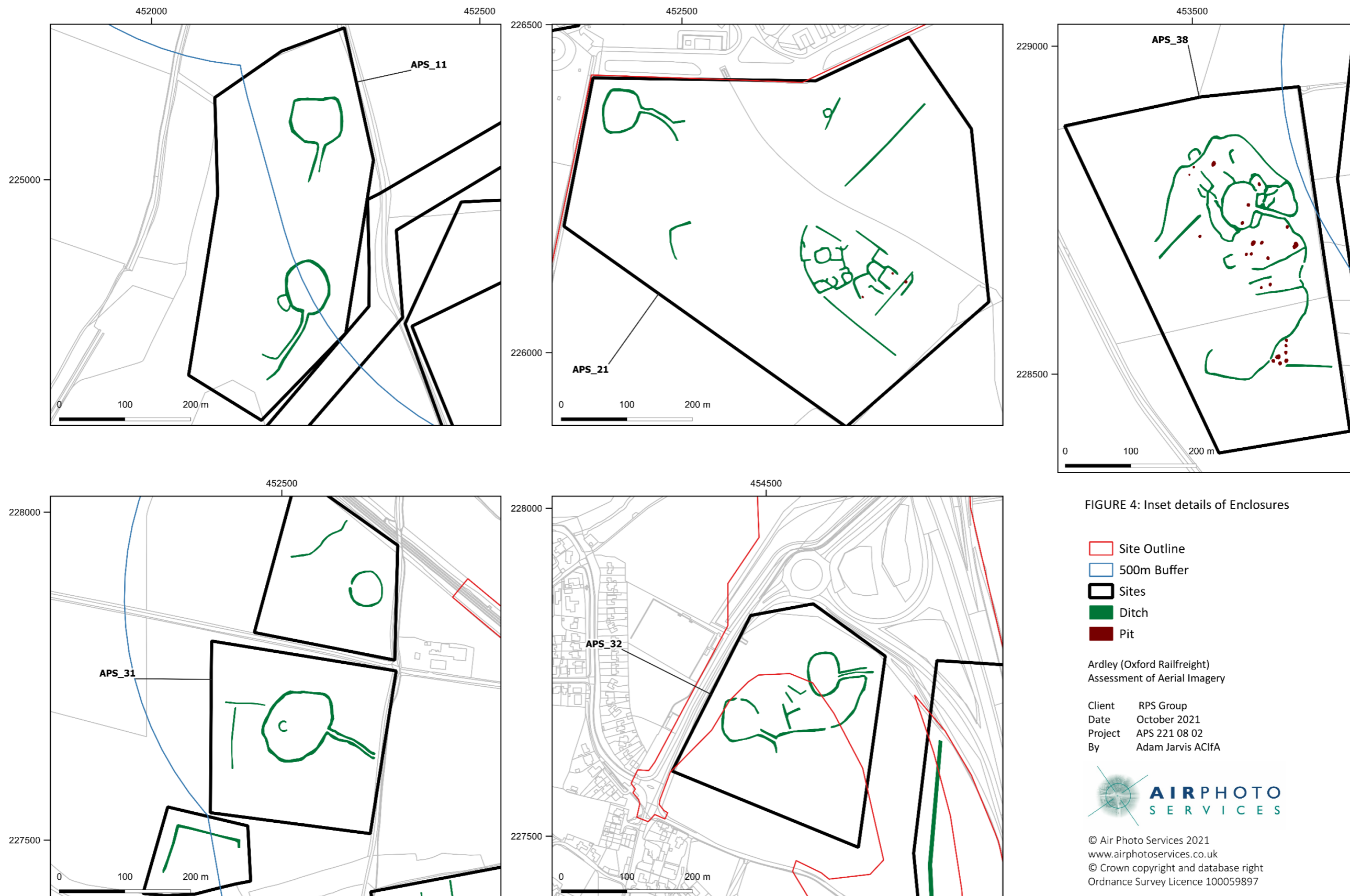


FIGURE 4: Inset details of Enclosures

- ▭ Site Outline
- ▭ 500m Buffer
- Sites
- ▭ Ditch
- ▭ Pit

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Outside the redline boundary, within or adjacent to the 500m buffer area

- 4.13 **Table 2** over the page details twenty seven further sites with their concordances to the Oxfordshire Historic Environment Record (OHER) where applicable. These form part of the archaeological landscape, which is visible adjacent to but not within the site.

Sites dated to Prehistoric, or undated likely Prehistoric, periods

- 4.14 Sites **APS\_11**, **APS\_31** and **APS\_38** are further areas of Iron Age banjo-shaped enclosures and likely settlement remains which show as marks in crops. These are shown in detail at **Figure 4**.

- 4.15 **APS\_29** is an undated rectilinear enclosure which may be Prehistoric or Roman. **APS\_34** is a curvilinear enclosure which may again be part of a prehistoric livestock management system, and **APS\_24** is a former field system and possible enclosure which may be Prehistoric but is as yet undated.

- 4.16 **APS\_08** is a field system and possible trackway, again visible as cropmarks, which is likely Prehistoric. Undated ditches are also recorded, which may form part of the Prehistoric agricultural and settlement landscape.

Medieval period

- 4.17 At **APS\_02** The Medieval and Post-Medieval agricultural landscape comprises extant ridge and furrow, banks, ditches and pits which relate to Middleton Stoney Castle.

- 4.18 Boundaries and ridge and furrow are visible at **APS\_03** and **APS\_04**. A moated site, **APS\_27**, is located in woodland and is visible but not entirely morphologically identifiable on LiDAR or Satellite imagery. LiDAR visualisation shows an earthwork bank, yet the moated site is not clearly visible enough to identify further features.

Post-Medieval period

- 4.19 Further Post-Medieval field boundaries which have been removed to facilitate modern agriculture are visible as marks in crops and residual earthworks within the buffer area.

**Table 2 Archaeological features recorded outside the redline boundary and within the buffer area**

These sites are illustrated at **Figures 3.1 to 3.5** above, a mapbook which is indexed at **Figure 3** above which shows all the sites recorded within the site and in the buffer area (**APS\_01 to APS\_42**)

APS_Site	Asset_Type	Period	OHER	Comment	Figure
APS_01	Field Boundary	Post Medieval		Former field boundary visible when extant on a 1930s aerial photograph.	3.1
APS_02	Castle	Medieval / Post Medieval	MOX27769 MOX60 MOX4995	Ridge and furrow along with banks, ditches and pits relating to MOX60, Middleton Stoney Castle.	3.1
APS_03	Field Boundary	Post Medieval		Possible field boundary visible on EA lidar data as residual earthwork.	3.1
APS_04	Ridge and Furrow	Medieval / Post Medieval		Ridge and furrow which may be related to MOX13775 The Old Rectory.	3.1
APS_06	Field Boundary	Post Medieval		Former field boundaries visible when extant in 1960s aerial photographs.	3.1
APS_07	Field System	Post Medieval		Former field system partially visible as extant boundaries on 1960s aerial photographs and as residual earthworks on Environment Agency LiDAR data and partially as cropmarks on satellite imagery.	3.1
APS_08	Trackway	Prehistoric		Field system with possible trackway visible as cropmarks on aerial photographs and satellite imagery.	3.1
APS_09	Pit	Undated		Area of possible pits, which may be related to geological pitting.	3.1
APS_11	Banjo Enclosure	Iron Age	MOX23326 MOX4996	Two previously recorded interconnected banjo enclosures visible as cropmarks on aerial photographs.	3.1
APS_12	Ditch	Undated		Ditch visible as a cropmark which may related to or a continuation of ditch <b>APS_20</b> .	3.1
APS_16	Field Boundary	Post Medieval		Extensive field system visible as extant boundaries on 1960's aerial photographs.	3.3

APS_Site	Asset_Type	Period	OHER	Comment	Figure
APS_18	Pit	Post Medieval / modern		Area which appears to be former extractive pit. Northeast corner was likely mined during the 1940s.	3.2
APS_19	Field Boundary	Post Medieval		Former field boundary visible as a cropmark on satellite imagery.	3.3
APS_23	Field Boundary	Post Medieval		Former field boundary visible on 1940's RAF photographs, now visible as cropmarked ditches around the runway of Upper Heyford Airfield.	3.2
APS_24	Ditch	Undated		Series of former field boundaries and a possible enclosure visible as cropmarks on satellite imagery.	3.3
APS_27	Moated Site	Early Medieval / Late Medieval	MOX318	Located in woodland, this site is visible but not entirely identifiable on LiDAR or Satellite imagery. LiDAR visualisation shows an earthwork bank; however the moated site is not clear enough to identify further features.	3.3
APS_29	Rectilinear Enclosure	Undated	MOX23332	Rectilinear enclosure visible on aerial photography as a faint cropmark.	3.4
APS_31	Banjo Enclosure	Iron Age	MOX4860	Banjo enclosure with internal partial ring ditch visible as cropmarks on aerial photographs and satellite imagery.	3.4
APS_33	Field Boundary	Undated		Former field boundary visible on Environment Agency lidar data as residual earthwork.	3.4
APS_34	Ring Ditch	Prehistoric	MOX233333	Ring ditch or enclosure which may be associated with the banjo enclosure to the south.	3.4
APS_35	Field Boundary	Undated		Former field boundary visible on Environment Agency lidar data as residual earthwork.	3.5
APS_36	Field Boundary	Undated		Former field boundary visible on Environment Agency lidar data as residual earthwork.	3.5

APS_Site	Asset_Type	Period	OHER	Comment	Figure
APS_37	Bank	Undated		Residual bank visible as an earthwork on Environment Agency LiDAR data.	3.4
APS_38	Banjo Enclosure	Iron Age		Extensive banjo enclosure with pits visible as cropmarks on aerial imagery. While on the outskirts of the buffer, as it lies between the two arms and is quite extensive, this has been included for completeness.	3.5
APS_40	Field Boundary	Post Medieval		Post-Medieval field boundaries visible as extant on 1960's photographs. Currently visible as residual earthworks on LiDAR data.	3.5
APS_41	Field Boundary	Undated		Former field boundary visible when extant on 1940's aerial photographs and later as a cropmark on satellite imagery	3.5
APS_42	Ditch	Undated		Undated ditch visible on 1960s aerial photographs. This site has been separated from the nearby field boundaries as this is only visible as cropmarks and appears to be on a slightly different alignment.	3.5

## 5 Conclusion and Summary

- 5.1 This assessment identified fifteen areas within the site which contain buried evidence for a contiguous and more widespread archaeological landscape.
- 5.2 This multi-period landscape comprises areas of eroded and buried likely Iron Age livestock management and settlement enclosures, boundaries and trackways. Post-Medieval field systems are also evident.
- 5.3 A further twenty-seven areas and sites were identified within the 500m buffer area which represent a continuation of the archaeological landscape recorded from aerial imagery within the site. These again comprise Iron Age settlement and livestock management features alongside Medieval and Post-Medieval field systems.
- 5.4 Within the site, many centuries of cultivation and modern ploughing have radically eroded the once-upstanding features which are now mainly visible as marks in the crops and soil over their buried remains, within the site. Visualised LiDAR data indicates minimal microtopography, although some of the field banks are visible *via* the visualised data.
- 5.5 The buried features are visible on aerial photographs under variable environmental conditions and on different occasions of photography. The majority were recorded from oblique and vertical aerial photos held at the HE Archive and *via* visualised LiDAR data.
- 5.6 The sites are likely to be more extensive below ground, both vertically and horizontally, than indicated by the presently available aerial photographic evidence.

## 6 Acknowledgements

6.1 Many thanks to those who have supported this assessment through the provision of research materials:

- Phillip Bethell at RPS
- Historic England Archive
- Oxfordshire Historic Environment Record

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## 8 Appendix

### Data consulted for this assessment

#### Google Earth

1945 partially redacted	Geoinformation Group
12/1985	Landsat/Copernicus
06/2005	Infoterra and Bluesky
12/2006, 05/2009	Getmapping plc, Infoterra and Bluesky
06/2009	Infoterra and Bluesky
12/2009	Getmapping plc
07/2013	Maxar Technologies satellite
04/2017 and 05/2018	Google
04/2020 and 10/2021	Google

## LiDAR Metadata

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## Aerial photographs at the Historic England Archive, Enquiry number 130503

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SP 5124 / 1	NMR 4634	/ 38	02 JUN 1990
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SP 5323 / 1	CCC 8970 / 6755	17 MAR 1930
SP 5323 / 2	CCC 8956 / 6756	21 OCT 1929
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SP 5327 / 1	OCM 11219 / ORACLE25	1972
SP 5327 / 2	OCM 11219 / ORACLE26	1972
SP 5327 / 3	NMR 18537 / 07	05 OCT 1999
SP 5327 / 4	NMR 26867 / 01	03 FEB 2011
SP 5327 / 5	NMR 26867 / 02	03 FEB 2011
SP 5327 / 6	NMR 26867 / 03	03 FEB 2011
SP 5327 / 7	NMR 26867 / 04	03 FEB 2011
SP 5327 / 8	NMR 27683 / 01	03 MAY 2013
SP 5327 / 9	NMR 27683 / 02	03 MAY 2013
SP 5327 / 10	NMR 27683 / 03	03 MAY 2013
SP 5327 / 11	NMR 27683 / 04	03 MAY 2013
SP 5327 / 12	NMR 27683 / 05	03 MAY 2013
SP 5327 / 13	NMR 27683 / 06	03 MAY 2013
SP 5327 / 14	NMR 27683 / 07	03 MAY 2013
SP 5327 / 15	NMR 27683 / 08	03 MAY 2013
SP 5327 / 16	NMR 27683 / 09	03 MAY 2013
SP 5327 / 17	NMR 27683 / 10	03 MAY 2013
SP 5327 / 18	NMR 27683 / 11	03 MAY 2013
SP 5327 / 19	NMR 27683 / 12	03 MAY 2013
SP 5327 / 20	NMR 27683 / 13	03 MAY 2013
SP 5327 / 21	NMR 27683 / 14	03 MAY 2013
SP 5327 / 22	NMR 27683 / 15	03 MAY 2013
SP 5328 / 1	NMR 4602 / 01	02 JUN 1990
SP 5328 / 2	NMR 4602 / 02	02 JUN 1990
SP 5328 / 3	NMR 4602 / 03	02 JUN 1990
SP 5328 / 4	NMR 4634 / 14	02 JUN 1990
SP 5328 / 5	NMR 4634 / 15	02 JUN 1990
SP 5328 / 6	NMR 4634 / 16	02 JUN 1990
SP 5328 / 7	NMR 15119 / 19	12 JUL 1994
SP 5328 / 8	NMR 15119 / 20	12 JUL 1994
SP 5328 / 9	NMR 15119 / 21	12 JUL 1994
SP 5328 / 10	NMR 15119 / 22	12 JUL 1994
SP 5328 / 11	NMR 15119 / 23	12 JUL 1994
SP 5328 / 12	NMR 15119 / 24	12 JUL 1994
SP 5328 / 13	NMR 15119 / 25	12 JUL 1994
SP 5328 / 14	NMR 15112 / 32	12 JUL 1994
SP 5328 / 15	NMR 15112 / 33	12 JUL 1994
SP 5328 / 16	NMR 15112 / 34	12 JUL 1994
SP 5328 / 17	NMR 15112 / 35	12 JUL 1994
SP 5328 / 18	NMR 15112 / 36	12 JUL 1994
SP 5328 / 19	NMR 15332 / 40	07 JUL 1995

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SP 5328 / 20	NMR 15332 / 41	07 JUL 1995
SP 5328 / 21	NMR 15332 / 42	07 JUL 1995
SP 5328 / 22	NMR 15332 / 43	07 JUL 1995
SP 5328 / 23	NMR 15333 / 49	07 JUL 1995
SP 5328 / 24	NMR 15333 / 50	07 JUL 1995
SP 5328 / 25	NMR 15474 / 15	11 JUL 1996
SP 5328 / 26	NMR 15474 / 16	11 JUL 1996
SP 5328 / 27	NMR 15436 / 12	11 JUL 1996
SP 5328 / 28	NMR 26289 / 27	02 JUN 2009
SP 5328 / 29	NMR 26289 / 28	02 JUN 2009
SP 5328 / 30	NMR 26289 / 29	02 JUN 2009
SP 5328 / 31	NMR 26289 / 30	02 JUN 2009
SP 5328 / 32	NMR 26289 / 31	02 JUN 2009
SP 5328 / 33	NMR 26289 / 32	02 JUN 2009
SP 5328 / 34	NMR 26289 / 33	02 JUN 2009
SP 5329 / 1	NMR 15302 / 08	23 JUN 1995
SP 5427 / 1	NMR 15296 / 25	23 JUN 1995
SP 5427 / 2	NMR 15296 / 26	23 JUN 1995
SP 5427 / 3	NMR 15332 / 26	07 JUL 1995
SP 5427 / 4	NMR 15332 / 27	07 JUL 1995
SP 5427 / 5	NMR 15332 / 28	07 JUL 1995
SP 5427 / 6	NMR 15332 / 29	07 JUL 1995
SP 5427 / 7	NMR 15332 / 31	07 JUL 1995
SP 5427 / 8	NMR 15333 / 47	07 JUL 1995
SP 5427 / 9	NMR 15333 / 48	07 JUL 1995
SP 5427 / 10	NMR 15302 / 03	23 JUN 1995
SP 5427 / 11	NMR 15302 / 04	23 JUN 1995
SP 5427 / 12	NMR 15302 / 05	23 JUN 1995
SP 5427 / 13	NMR 15302 / 06	23 JUN 1995
SP 5427 / 14	NMR 15302 / 07	23 JUN 1995
SP 5427 / 15	NMR 18616 / 13	16 NOV 1999
SP 5427 / 16	NMR 18616 / 14	16 NOV 1999
SP 5427 / 17	NMR 18616 / 15	16 NOV 1999
SP 5427 / 18	NMR 18616 / 16	16 NOV 1999
SP 5427 / 19	NMR 18616 / 17	16 NOV 1999
SP 5427 / 20	NMR 18616 / 18	16 NOV 1999
SP 5427 / 21	NMR 18561 / 26	16 NOV 1999
SP 5427 / 22	NMR 18561 / 27	16 NOV 1999
SP 5427 / 23	NMR 18561 / 28	16 NOV 1999
SP 5427 / 24	NMR 18561 / 29	16 NOV 1999
SP 5427 / 25	NMR 18561 / 30	16 NOV 1999
SP 5427 / 26	NMR 18561 / 31	16 NOV 1999
SP 5427 / 27	NMR 21320 / 11	20 JUL 2001
SP 5427 / 28	NMR 21320 / 12	20 JUL 2001
SP 5427 / 29	NMR 21320 / 13	20 JUL 2001
SP 5427 / 30	NMR 21320 / 14	20 JUL 2001
SP 5427 / 31	NMR 21320 / 15	20 JUL 2001
SP 5427 / 32	NMR 21320 / 16	20 JUL 2001
SP 5427 / 33	NMR 21320 / 17	20 JUL 2001
SP 5427 / 34	NMR 21320 / 18	20 JUL 2001
SP 5427 / 35	NMR 21320 / 19	20 JUL 2001



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SP 5427 / 36	NMR 21320 / 20	20 JUL 2001
SP 5427 / 37	NMR 21320 / 21	20 JUL 2001
SP 5427 / 38	NMR 21320 / 22	20 JUL 2001
SP 5427 / 39	NMR 21320 / 23	20 JUL 2001
SP 5427 / 40	NMR 21269 / 10	20 JUL 2001
SP 5427 / 41	NMR 21269 / 11	20 JUL 2001
SP 5427 / 42	NMR 21269 / 12	20 JUL 2001
SP 5427 / 43	NMR 21294 / 02	20 JUL 2001
SP 5427 / 44	NMR 21294 / 03	20 JUL 2001
SP 5427 / 45	NMR 21294 / 04	20 JUL 2001
SP 5427 / 46	NMR 21294 / 05	20 JUL 2001
SP 5427 / 47	NMR 21294 / 06	20 JUL 2001
SP 5427 / 48	NMR 21294 / 07	20 JUL 2001
SP 5427 / 49	NMR 26289 / 14	02 JUN 2009
SP 5427 / 50	NMR 26289 / 15	02 JUN 2009
SP 5427 / 51	NMR 26289 / 16	02 JUN 2009
SP 5427 / 52	NMR 26289 / 17	02 JUN 2009
SP 5427 / 53	NMR 26289 / 18	02 JUN 2009
SP 5427 / 54	NMR 26289 / 19	02 JUN 2009
SP 5427 / 55	NMR 26289 / 20	02 JUN 2009
SP 5427 / 56	NMR 26289 / 21	02 JUN 2009
SP 5427 / 57	NMR 26289 / 22	02 JUN 2009
SP 5427 / 58	NMR 26289 / 23	02 JUN 2009
SP 5427 / 59	NMR 26289 / 24	02 JUN 2009
SP 5427 / 60	NMR 26289 / 25	02 JUN 2009
SP 5427 / 61	NMR 26289 / 26	02 JUN 2009
SP 5525 / 1	NMR 15484 / 36	16 JUL 1996
SP 5525 / 2	NMR 15500 / 15	16 JUL 1996
SP 5525 / 3	NMR 15500 / 16	16 JUL 1996
SP 5525 / 4	NMR 18561 / 21	16 NOV 1999
SP 5525 / 5	NMR 18561 / 22	16 NOV 1999
SP 5526 / 1	NMR 15296 / 16	23 JUN 1995
SP 5526 / 2	NMR 15301 / 46	23 JUN 1995
SP 5526 / 3	NMR 15301 / 47	23 JUN 1995
SP 5526 / 4	NMR 15484 / 35	16 JUL 1996
SP 5526 / 5	NMR 15500 / 13	16 JUL 1996
SP 5526 / 6	NMR 15500 / 14	16 JUL 1996
SP 5528 / 1	NMR 15474 / 17	11 JUL 1996
SP 5528 / 2	NMR 15474 / 18	11 JUL 1996
SP 5528 / 3	NMR 15474 / 19	11 JUL 1996
SP 5528 / 4	NMR 15436 / 13	11 JUL 1996
SP 5528 / 5	NMR 18787 / 16	19 JUL 2000
SP 5528 / 6	NMR 27786 / 01	08 JUL 2013
SP 5528 / 7	NMR 27786 / 02	08 JUL 2013
SP 5528 / 8	NMR 27786 / 04	08 JUL 2013
SP 5528 / 9	NMR 27786 / 05	08 JUL 2013
SP 5529 / 1	NMR 15099 / 15	30 JUN 1994
SP 5529 / 2	NMR 15099 / 16	30 JUN 1994
SP 5529 / 15	NMR 18847 / 22	19 JUL 2000
SP 5529 / 16	NMR 18847 / 23	19 JUL 2000
SP 5529 / 18	NMR 18787 / 17	19 JUL 2000

Photo reference	Film and frame number	Date
SP 5529 / 20	NMR 18787 / 19	19 JUL 2000
SP 5529 / 21	NMR 27786 / 03	08 JUL 2013
SP 5529 / 22	NMR 27786 / 06	08 JUL 2013
SP 5625 / 1	NMR 18616 / 08	16 NOV 1999
SP 5625 / 2	NMR 18616 / 09	16 NOV 1999
SP 5625 / 4	NMR 18616 / 11	16 NOV 1999
SP 5625 / 5	NMR 18616 / 12	16 NOV 1999
SP 5625 / 6	NMR 18561 / 23	16 NOV 1999
SP 5625 / 7	NMR 18561 / 24	16 NOV 1999
SP 5625 / 8	NMR 18561 / 25	16 NOV 1999
SP 5627 / 1	NMR 15301 / 48	23 JUN 1995
SP 5627 / 2	NMR 15301 / 49	23 JUN 1995
SP 5627 / 4	NMR 26289 / 07	02 JUN 2009
SP 5627 / 5	NMR 26289 / 08	02 JUN 2009
SP 5627 / 6	NMR 26289 / 09	02 JUN 2009
SP 5627 / 7	NMR 26289 / 10	02 JUN 2009
SP 5627 / 8	NMR 26289 / 11	02 JUN 2009
SP 5627 / 9	NMR 26289 / 12	02 JUN 2009
SP 5627 / 10	NMR 26289 / 13	02 JUN 2009
SP 5627 / 13	NMR 27103 / 10	01 JUL 2011
SP 5627 / 14	NMR 27103 / 11	01 JUL 2011
SP 5627 / 15	NMR 27103 / 12	01 JUL 2011

## Verticals

Sortie number	Frame number	Held	Centre point	Run	Date	Sortie quality	Scale 1:
RAF/106G/UK/1347	5001	P	SP 518 283	1	01 APR 1946	A	9600
RAF/106G/UK/1480	3002	P	SP 556 280	1	09 MAY 1946	AC	9400
RAF/106G/UK/1480	3003	P	SP 547 278	1	09 MAY 1946	AC	9400
RAF/106G/UK/1480	3004	P	SP 539 276	1	09 MAY 1946	AC	9400
RAF/106G/UK/1480	3005	P	SP 531 274	1	09 MAY 1946	AC	9400
RAF/106G/UK/1480	3006	P	SP 522 272	1	09 MAY 1946	AC	9400
RAF/106G/UK/1480	4002	P	SP 550 295	4	09 MAY 1946	AC	9400
RAF/106G/UK/1480	4003	P	SP 542 295	4	09 MAY 1946	AC	9400
RAF/106G/UK/1480	4004	P	SP 535 293	4	09 MAY 1946	AC	9400
RAF/106G/UK/1480	4005	P	SP 528 291	4	09 MAY 1946	AC	9400
RAF/106G/UK/1480	4006	P	SP 521 288	4	09 MAY 1946	AC	9400
RAF/106G/UK/1488	3001	P	SP 555 288	1	09 MAY 1946	AB	10000
RAF/106G/UK/1488	3002	P	SP 547 287	1	09 MAY 1946	AB	10000
RAF/106G/UK/1488	3003	P	SP 539 286	1	09 MAY 1946	AB	10000
RAF/106G/UK/1488	3004	P	SP 532 286	1	09 MAY 1946	AB	10000
RAF/106G/UK/1488	3005	P	SP 524 285	1	09 MAY 1946	AB	10000
RAF/CPE/UK/1897	3147	P	SP 523 252	4	12 DEC 1946	AB	9800
RAF/CPE/UK/1897	3148	P	SP 532 253	4	12 DEC 1946	AB	9800
RAF/CPE/UK/1897	3149	P	SP 540 254	4	12 DEC 1946	AB	9800
RAF/CPE/UK/1897	3150	P	SP 549 255	4	12 DEC 1946	AB	9800
RAF/CPE/UK/1897	4147	P	SP 528 236	10	12 DEC 1946	AB	9800
RAF/CPE/UK/1897	4148	P	SP 536 237	10	12 DEC 1946	AB	9800
RAF/CPE/UK/1897	4149	P	SP 545 239	10	12 DEC 1946	AB	9800

Sortie number	Frame number	Held	Centre point	Run	Date	Sortie quality	Scale 1:
RAF/CPE/UK/1897	4150	P	SP 553 240	10	12 DEC 1946	AB	9800
RAF/CPE/UK/1897	4324	P	SP 553 239	12	12 DEC 1946	AB	9800
RAF/CPE/UK/1897	4325	P	SP 547 239	12	12 DEC 1946	AB	9800
RAF/CPE/UK/1897	4326	P	SP 541 238	12	12 DEC 1946	AB	9800
RAF/CPE/UK/1897	4327	P	SP 536 238	12	12 DEC 1946	AB	9800
RAF/CPE/UK/1897	4328	P	SP 530 238	12	12 DEC 1946	AB	9800
RAF/CPE/UK/1897	4329	P	SP 524 238	12	12 DEC 1946	AB	9800
RAF/CPE/UK/2013	3011	P	SP 552 282	1	16 APR 1947	A	9800
RAF/CPE/UK/2013	3021	P	SP 551 271	2	16 APR 1947	A	9800
RAF/CPE/UK/2013	3022	P	SP 545 270	2	16 APR 1947	A	9800
RAF/CPE/UK/2013	3023	P	SP 538 270	2	16 APR 1947	A	9800
RAF/CPE/UK/2013	3024	P	SP 532 270	2	16 APR 1947	A	9800
RAF/CPE/UK/2013	3025	P	SP 526 270	2	16 APR 1947	A	9800
RAF/CPE/UK/2013	3026	P	SP 519 270	2	16 APR 1947	A	9800
RAF/CPE/UK/2013	4045	P	SP 552 288	14	16 APR 1947	A	9800
RAF/CPE/UK/2013	4046	P	SP 548 288	14	16 APR 1947	A	9800
RAF/CPE/UK/2013	4047	P	SP 544 288	14	16 APR 1947	A	9800
RAF/CPE/UK/2013	4048	P	SP 540 288	14	16 APR 1947	A	9800
RAF/CPE/UK/2013	4049	P	SP 534 288	14	16 APR 1947	A	9800
RAF/CPE/UK/2013	4050	P	SP 528 288	14	16 APR 1947	A	9800
RAF/CPE/UK/2013	4051	P	SP 522 287	14	16 APR 1947	A	9800
RAF/CPE/UK/2013	4066	P	SP 519 239	16	16 APR 1947	A	9800
FSL/6125	13023	P	SP 554 239	45	1961	A	8000
FSL/6125	13024	P	SP 547 239	45	1961	A	8000
FSL/6125	13025	P	SP 540 240	45	1961	A	8000
FSL/6125	13026	P	SP 532 239	45	1961	A	8000
FSL/6125	13027	P	SP 525 239	45	1961	A	8000
FSL/6125	13108	P	SP 523 251	46	1961	A	8000
FSL/6125	13109	P	SP 530 251	46	1961	A	8000
FSL/6125	13110	P	SP 538 251	46	1961	A	8000
FSL/6125	13111	P	SP 545 251	46	1961	A	8000
FSL/6125	13112	P	SP 552 251	46	1961	A	8000
FSL/6125	13140	P	SP 551 266	47	1961	A	8000
FSL/6125	13141	P	SP 544 266	47	1961	A	8000
FSL/6125	13142	P	SP 538 266	47	1961	A	8000
FSL/6125	13143	P	SP 531 265	47	1961	A	8000
FSL/6125	14016	P	SP 557 280	49	1961	A	8000
FSL/6125	14017	P	SP 550 280	49	1961	A	8000
FSL/6125	14083	P	SP 518 293	52	1961	A	8000
FSL/6125	14084	P	SP 525 293	52	1961	A	8000
FSL/6125	14085	P	SP 533 293	52	1961	A	8000
FSL/6125	14086	P	SP 540 293	52	1961	A	8000
FSL/6125	14087	P	SP 548 293	52	1961	A	8000
FSL/6125	14088	P	SP 555 293	52	1961	A	8000
FSL/6125	21003	P	SP 543 280	75	1961	A	8000
FSL/6125	21004	P	SP 534 280	75	1961	A	8000
FSL/6125	21005	P	SP 526 279	75	1961	A	8000
FSL/6125	21006	P	SP 518 279	75	1961	A	8000
FSL/6125(Z)	14019	P	SP 536 278	1	29 JUN 1961	A	8000
FSL/6125(Z)	14020	P	SP 529 278	1	29 JUN 1961	A	8000



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FSL/6125(Z)	14021	P	SP 522 278	1	29 JUN 1961	A	8000
RAF/82/1006	288	P	SP 542 285	56	31 AUG 1954	AB	15000
RAF/82/1006	289	P	SP 545 274	56	31 AUG 1954	AB	15000
RAF/82/1006	290	P	SP 548 263	56	31 AUG 1954	AB	15000
RAF/82/1006	291	P	SP 550 252	56	31 AUG 1954	AB	15000
RAF/82/1006	288	P	SP 512 280	33	31 AUG 1954	AB	15000
RAF/82/1006	289	P	SP 514 269	33	31 AUG 1954	AB	15000
RAF/82/1006	290	P	SP 517 258	33	31 AUG 1954	AB	15000
RAF/82/1006	291	P	SP 519 247	33	31 AUG 1954	AB	15000
RAF/540/1400	165	P	SP 551 238	15	01 SEP 1954	AB	10300
RAF/540/1400	166	P	SP 544 239	15	01 SEP 1954	AB	10300
RAF/542/1	6	P	SP 545 235	1	04 AUG 1954	A	10000
RAF/542/1	7	P	SP 544 248	1	04 AUG 1954	A	10000
RAF/542/1	8	P	SP 542 261	1	04 AUG 1954	A	10000
RAF/542/1	9	P	SP 541 274	1	04 AUG 1954	A	10000
RAF/542/1	10	P	SP 539 287	1	04 AUG 1954	A	10000
RAF/542/1	16	P	SP 520 289	3	04 AUG 1954	A	10000
RAF/542/1	6	P	SP 566 237	2	04 AUG 1954	A	10000
RAF/542/1	7	P	SP 565 250	2	04 AUG 1954	A	10000
RAF/542/1	8	P	SP 563 263	2	04 AUG 1954	A	10000
RAF/542/1	9	P	SP 562 276	2	04 AUG 1954	A	10000
RAF/542/1	10	P	SP 560 289	2	04 AUG 1954	A	10000
RAF/542/1	30	P	SP 533 245	6	04 AUG 1954	A	10000
RAF/542/1	31	P	SP 531 257	6	04 AUG 1954	A	10000
RAF/542/1	32	P	SP 529 270	6	04 AUG 1954	A	10000
RAF/542/1	33	P	SP 528 282	6	04 AUG 1954	A	10000
RAF/542/1	34	P	SP 526 295	6	04 AUG 1954	A	10000
RAF/540/562	5008	P	SP 528 238	1	26 JUL 1951	AC	4800
RAF/540/562	5009	P	SP 527 241	1	26 JUL 1951	AC	4800
RAF/540/562	5010	P	SP 526 245	1	26 JUL 1951	AC	4800
RAF/540/562	5011	P	SP 526 248	1	26 JUL 1951	AC	4800
RAF/540/562	5012	P	SP 525 252	1	26 JUL 1951	AC	4800
RAF/540/562	5013	P	SP 525 256	1	26 JUL 1951	AC	4800
RAF/540/562	5024	P	SP 533 243	2	26 JUL 1951	AC	4800
RAF/540/562	5025	P	SP 532 247	2	26 JUL 1951	AC	4800
RAF/540/562	5026	P	SP 532 250	2	26 JUL 1951	AC	4800
RAF/540/562	5027	P	SP 531 254	2	26 JUL 1951	AC	4800
RAF/540/562	5028	P	SP 530 257	2	26 JUL 1951	AC	4800
RAF/540/562	5029	P	SP 529 261	2	26 JUL 1951	AC	4800
RAF/540/562	5034	P	SP 526 278	2	26 JUL 1951	AC	4800
RAF/540/562	5035	P	SP 525 282	2	26 JUL 1951	AC	4800
RAF/540/562	5036	P	SP 524 285	2	26 JUL 1951	AC	4800
RAF/540/562	5037	P	SP 523 289	2	26 JUL 1951	AC	4800
RAF/540/562	5038	P	SP 522 292	2	26 JUL 1951	AC	4800
RAF/540/562	5040	P	SP 532 237	3	26 JUL 1951	AC	4800
RAF/540/562	5041	P	SP 532 239	3	26 JUL 1951	AC	4800
RAF/540/562	5042	P	SP 531 242	3	26 JUL 1951	AC	4800
RAF/540/562	5043	P	SP 530 245	3	26 JUL 1951	AC	4800
RAF/540/562	5044	P	SP 530 248	3	26 JUL 1951	AC	4800
RAF/540/562	5045	P	SP 529 251	3	26 JUL 1951	AC	4800

Sortie number	Frame number	Held	Centre point	Run	Date	Sortie quality	Scale 1:
RAF/540/562	5046	P	SP 529 254	3	26 JUL 1951	AC	4800
RAF/540/562	5047	P	SP 528 256	3	26 JUL 1951	AC	4800
RAF/540/562	5055	P	SP 521 282	3	26 JUL 1951	AC	4800
RAF/540/562	5056	P	SP 520 285	3	26 JUL 1951	AC	4800
RAF/540/562	5058	P	SP 519 237	4	26 JUL 1951	AC	4800
RAF/540/562	5059	P	SP 519 240	4	26 JUL 1951	AC	4800
RAF/540/562	5060	P	SP 518 243	4	26 JUL 1951	AC	4800
RAF/540/562	5061	P	SP 517 246	4	26 JUL 1951	AC	4800
RAF/13H/AC46	4	P	SP 519 256	4	28 APR 1942	A	13000
RAF/13H/AC46	5	P	SP 515 258	4	28 APR 1942	A	13000
RAF/13H/AC46	13	P	SP 522 262	5	28 APR 1942	A	13000
RAF/13H/AC46	14	P	SP 518 265	5	28 APR 1942	A	13000
RAF/13H/AC46	21	P	SP 532 269	6	28 APR 1942	A	13000
RAF/13H/AC46	22	P	SP 528 272	6	28 APR 1942	A	13000
RAF/13H/AC46	23	P	SP 524 274	6	28 APR 1942	A	13000
RAF/13H/AC46	24	P	SP 519 277	6	28 APR 1942	A	13000
RAF/13H/AC46	31	P	SP 542 273	7	28 APR 1942	A	13000
RAF/13H/AC46	32	P	SP 537 275	7	28 APR 1942	A	13000
RAF/13H/AC46	33	P	SP 533 276	7	28 APR 1942	A	13000
RAF/13H/AC46	34	P	SP 528 278	7	28 APR 1942	A	13000
RAF/13H/AC46	35	P	SP 524 280	7	28 APR 1942	A	13000
RAF/13H/AC46	36	P	SP 519 283	7	28 APR 1942	A	13000
RAF/13H/AC46	42	P	SP 538 270	8	28 APR 1942	A	13000
RAF/13H/AC46	43	P	SP 534 271	8	28 APR 1942	A	13000
RAF/13H/AC46	44	P	SP 529 273	8	28 APR 1942	A	13000
RAF/13H/AC46	45	P	SP 525 274	8	28 APR 1942	A	13000
RAF/13H/AC46	46	P	SP 521 276	8	28 APR 1942	A	13000
RAF/16/AC638	5026	P	SP 553 239	6	07 NOV 1943	A	10800
US/7PH/GP/LOC102	5011	P	SP 554 300	7	13 DEC 1943	AB	10400
US/7PH/GP/LOC268	8006	P	SP 545 275	17	11 APR 1944	AC	10000
US/7PH/GP/LOC268	8007	P	SP 538 268	17	11 APR 1944	AC	10000
US/7PH/GP/LOC268	8008	P	SP 528 266	17	11 APR 1944	AC	10000
US/7PH/GP/LOC268	7006	P	SP 538 293	8	11 APR 1944	AC	10000
US/7PH/GP/LOC268	7007	P	SP 531 287	8	11 APR 1944	AC	10000
US/7PH/GP/LOC268	7008	P	SP 521 283	8	11 APR 1944	AC	10000
RAF/HLA/110	21	P	SP 526 247	5	05 FEB 1941	A	12200
RAF/HLA/110	22	P	SP 518 252	5	05 FEB 1941	A	12200
RAF/HLA/110	23	P	SP 517 259	5	05 FEB 1941	A	12200
RAF/HLA/110	24	P	SP 511 267	5	05 FEB 1941	A	12200
OS/75311	326	P	SP 524 290	3	05 JUL 1975	A	8000
OS/75311	444	P	SP 536 288	6	05 JUL 1975	A	8000
OS/75311	445	P	SP 549 291	4	05 JUL 1975	A	8000
OS/73251	161	P	SP 556 234	4	06 JUN 1973	A	7700
OS/73251	162	P	SP 551 234	4	06 JUN 1973	A	7700
OS/73251	163	P	SP 546 233	4	06 JUN 1973	A	7700
OS/73251	164	P	SP 540 233	4	06 JUN 1973	A	7700
OS/73251	165	P	SP 532 234	4	06 JUN 1973	A	7700
OS/73251	166	P	SP 525 234	4	06 JUN 1973	A	7700
OS/73251	167	P	SP 517 235	4	06 JUN 1973	A	7700
OS/73252	70	P	SP 530 247	1	06 JUN 1973	A	7700

Sortie number	Frame number	Held	Centre point	Run	Date	Sortie quality	Scale 1:
OS/73252	71	P	SP 536 247	1	06 JUN 1973	A	7700
OS/73252	72	P	SP 543 247	1	06 JUN 1973	A	7700
OS/73252	73	P	SP 550 248	1	06 JUN 1973	A	7700
OS/73274	54	P	SP 554 262	1	06 JUN 1973	A	7700
OS/73274	55	P	SP 548 262	1	06 JUN 1973	A	7700
OS/73283	809	P	SP 558 274	1	14 JUN 1973	A	7600
OS/73283	810	P	SP 551 274	1	14 JUN 1973	A	7600
OS/73283	811	P	SP 545 274	1	14 JUN 1973	A	7600
OS/73284	175	P	SP 520 286	1	14 JUN 1973	A	7600
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OS/66042	1	P	SP 528 240	4	29 APR 1966	A	7500
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OS/91021	119	P	SP 545 290	5	10 APR 1991	A	10400
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OS/91021	123	P	SP 547 258	5	10 APR 1991	A	10400
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OS/91021	125	P	SP 547 243	5	10 APR 1991	A	10400
OS/91258	16	P	SP 557 238	1	19 SEP 1991	A	8600
OS/94213	88	P	SP 523 287	5	28 JUN 1994	A	8000
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OS/96633	69	N	SP 530 255	2	15 JUN 1996	A	7900
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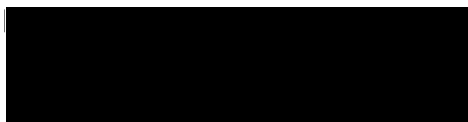
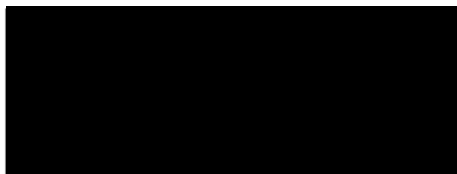


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OS/96633	234	P	SP 535 275	6	15 JUN 1996	A	7900
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RAF/540/673	4330	P	SP 527 254	15	12 FEB 1952	A	10000
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RAF/540/673	4389	P	SP 547 245	16	12 FEB 1952	A	10000



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