Cotswold Archaeology

South-West Extension
Ryall North Quarry
Worcestershire

Earthwork Survey

for:
CEMEX UK Operations Ltd

CA Project: CR1193
CA Report: CR1193_1
Worcestershire HER Ref: WSM72961

October 2022

Andover Cirencester Milton Keynes Suffolk

South-West Extension
Ryall North Quarry
Worcestershire

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SUMMARY

Project name:	South-Western Extension, Ryall North Quarry
Location:	Ryall Quarry, Worcestershire
NGR:	384815 241962
Type:	Earthwork Survey
Date:	5 October 2022
Planning reference:	Worcestershire County Council: 20/000009/CM
Location of Archive:	To be deposited with Worcestershire Museums Service and the Archaeology Data Service (ADS)

In October 2022, Cotswold Archaeology carried out an earthwork survey at the South-Western Extension of Ryall North Quarry, Worcestershire.

The survey identified several infilled ditches representing parish and district boundaries and a series of sinuous undated drainage ditches. In the north-eastern part of the site ridge and furrow earthworks were present and were overlain by a mound; a probable enclosure ditch and bank relating to an undated deserted settlement was also identified. Infilled anti-glider ditches dating to WWII were also recorded on the site.

1. INTRODUCTION

1.1. In October 2022, Cotswold Archaeology (CA) carried out an earthwork survey (EWS) at the proposed site of the South-Western Extension of Ryall North Quarry, Worcestershire (centred at NGR: 384815 241962; Fig 1) This earthwork survey was undertaken for CEMEX UK Operations Ltd.

1.2. A planning application has been submitted to Worcestershire County Council to extend the current sand and gravel extraction (WCC planning ref: 20/000009/CM).

1.3. Following consultation comments made by Emma Hancox, Historic Environment Policy and Advisory Manager, Worcestershire Archive and Archaeology Service (WAAS), the archaeological advisor to WCC, an EWS was required on the site to record extant earthworks prior to their destruction by extraction activities. The EWS was carried out in accordance with a *Written Scheme of Investigation* (WSI) prepared by CA (2022) and approved by Emma Hancox.

1.4. The EWS was also carried out in line with *Standards and Guidelines for Archaeological Projects in Worcestershire* (WCC 2019), *Understanding the Archaeology of Landscapes: A guide to good recording practices* (Historic England 2017), *Where on Earth Are We? The Role of GNSS in Archaeological Field Survey* (Historic England 2016), *Management of Research Projects in the Historic Environment (MoRPHE) PPN 3: Archaeological Excavation* (Historic England 2015) and *Management of Research Projects in the Historic Environment: The MoRPHE Project Managers' Guide* (Historic England 2015).

The site

1.5. The proposed extension area is approximately 14.4ha and is located on the eastern bank of the River Severn opposite Upton-upon-Severn and approximately 1.5km north-west of the village of Ryall (Fig. 1). It comprises an irregular block of agricultural land, currently under pasture, situated on the floodplain of the river at approximately 11m above Ordnance Datum (aOD) and is relatively flat. The site is divided into a small number of fields by hedgerows interspersed with occasional mature trees.

2. ARCHAEOLOGICAL BACKGROUND

2.1. The archaeological and historical background for the current site has been presented in a Heritage Assessment (CA 2018). In addition, the site was considered during the compilation of the *Environmental Statement* (SLR 2014, Chapter 13) for the currently approved adjacent extraction area that itself was informed by the results of geophysical (GSB 2005), borehole surveys (ARCA 2005) and a heritage asset gazetteer (CA 2014). In addition, two phases of archaeological recording have been undertaken to the north of the current site during Phases 1, 2 and 3 of the approved extraction works (CA 2019). The current site was also considered in a Heritage Settings Assessment (CA 2015).

Prehistoric

2.2. The Heritage Assessment noted that no prehistoric archaeological features are recorded within the site itself (CA 2018). Preceding geophysical and borehole surveys indicate that in the early Holocene the area was characterised by gravel islands interspersed with numerous palaeochannel incursions. No Palaeolithic artefacts have been recovered in the vicinity of the site; however, the gravel islands and terraces of the Severn Valley were widely settled during the later prehistoric period. Both the overlying alluvial silts and the underlying gravels have contained evidence of prehistoric activity, for example at the sites of Saxon Lode Farm, *c.* 2.5km south-east of site, and south-west of Ripple, approximately 4.5km downstream. In the vicinity of the site, a probable prehistoric flint and a Neolithic axehead have been found on the west bank of the River Severn.

2.3. Archaeological recording during the adjacent Phases 1-3 extraction areas revealed a small assemblage of pottery and flints dating from the Mid Bronze Age to Late Iron Age, principally retrieved from the surface of buried land surfaces, suggesting the latter had formed during the prehistoric period. A pit alignment identified in Phase 2 is possibly of Late Iron Age date, although the excavated pits were artefactually sterile (CA 2019).

Roman (AD 43-410)

2.4. The assessment noted that Roman remains in the area are frequently found on the gravel terraces and have previously been investigated at Saxon Lode Farm and Ripple (ibid.). Closer to the current site an archaeological evaluation at Upton Marina identified a Roman ditch and fieldwalking and metal detector surveys on the opposite

bank of the Severn recovered Roman pottery, a 1st-century brooch and a 2nd to 3rd-century finger ring (ibid.).

2.5. Roman activity identified during the ongoing adjacent extraction works principally comprises features typical of a low-density agricultural landscape, cutting a preserved land surface, with evidence for field boundaries and trackways being encountered. Approximately 500m north of the proposed extension area (in the north-western corner of the Phase 1 and the south-western limit of the Phase 2) a dense area of pits and ditches containing an increased quantity of cultural material hints that settlement activity associated with the agricultural activity may survive beyond the extension area.

2.6. A cemetery containing at least 25 burials was encountered on the east side of a former the palaeochannel, towards the centre of the Phase 1 Quarry (CA 2019). A number of the burials were decapitations with their heads placed between their legs.

2.7. During the most recent works, five cremations were identified in the north-western extent of the Phase 3 area, all of which contained sherds of 1st-2nd century pottery.

Early Medieval (AD 410-1066)

2.8. Anglo-Saxon settlement remains have been found at the Saxon Lode Farm excavations and a find of a possible Saxon tombstone was recorded at Severn End, approximately 2km to the north-west of the site.

2.9. No evidence for Anglo-Saxon activity, nor indeed stray artefacts, has been identified during the previous archaeological recording in the adjacent Phases.

Medieval (AD 1066-1539)

2.10. Earthworks to the south-east of the site, indicating a possible deserted medieval settlement, are shown on aerial photographs depicting plot divisions and small house platforms. The Enclosure Award for the parish of Ripple in 1807 shows that some of these plots may have still existed then. There is no evidence for this settlement within the site limits. LiDAR survey shows extant ridge and furrow earthworks within the north-eastern part of the site and extending beyond the north-eastern boundary; extant ridge and furrow earthworks are also located to the south-east and east of the site.

2.11. Upton-on-Severn and Hanley Castle on the west bank of the river have medieval origins and a wealth of archaeological material has been recovered from various projects within these two locations. During a bankside survey in 2008 a possible medieval quay was recorded to the north of site on the eastern bank of the River Severn and the former location of a medieval ferry is located to the south of site.

2.12. No evidence for medieval activity has been identified during the previous archaeological recording in the adjacent quarry and it is likely that the site was subject to successive flooding events leading to the alluvial accumulation recorded sealing the Roman land surface described above.

Post-medieval and modern (AD 1540-present)

2.13. Post-medieval sites within the vicinity include an 18th-century deer park at Severn End and a brickworks and lime kiln at Upton-on-Severn. Two post-medieval ponds and a palaeochannel are recorded within the site.

2.14. To the south of the site the remains of Second World War defensive structures can be seen, including a gun emplacement, a pillbox and anti-landing trenches (see below).

2.15. During the Phase 3 fieldwork an ovoid bone-ash kiln was identified in the north-western extent of the area. The feature was cut through the upper alluvium and would have been nearly 1m deep. It was formed of a shaft and a down draft flue on its southern side to take air down to the cross flues in the base of the kiln. Two further examples from previous phases of fieldwork on the site have also been recorded, both of which were 19th-early 20th century in date.

Extant Earthworks

2.16. Historic cartographic sources depict the site as meadow land (CA 2018). The site is located in an area known as *Fish Meadow*, which was divided into elongated strips, with evidence that the water meadows may be related to flax retting, common pasture and fatting meadows. It is also evident that the north-eastern section of the Site falls into enclosed meadows (and possible droves) whereas the western portion appears to have been riverside common meadow (ibid.). No extant earthworks are visible relating to the use of the site as a water meadow.

2.17. At the time of the Second World War Upton-upon-Severn was part of the Western Command Stop Line 1, the line of the River Severn from Tewksbury to Shrewsbury

and then on to Llandrinio (CA 2018). Three defensive structures were present in the large field containing the proposed extension area, including a gun emplacement, pillbox, and anti-landing trench. An aerial photograph of 1941 shows that anti-landing trenches may once have extended across much of the area as an intersecting pattern of trenches. Later photographs do not show these trenches anymore, making clear that the earthworks were levelled at some point after the 1950s: the only visible features in later photographs are faint drainage ditches in 1980s aerial photographs (ibid.).

3. AIMS AND OBJECTIVES

3.1. The general objectives of the EWS were:

- to record the position of any surviving earthworks within the site, particularly those relating to water meadow management or Second World War anti-landing trenches;
- at the conclusion of the project, to produce a report setting out the EWS results and the archaeological conclusions that can be drawn from the recorded data;
- at the conclusion of the project, to compile a stable, ordered, accessible project archive

4. METHODOLOGY

4.1. The earthwork survey comprised a programme of measured survey of earthwork features using multi-image photogrammetry, or structure-from-motion, with imagery captured using a UAV, direct measurement (using GPS) where appropriate, and analysis of existing lidar, historic mapping and aerial imagery which, following analysis, was ground-truthed on site.

The Photogrammetric Survey

4.2. The photogrammetric survey involved the capturing of overlapping photos of the site area. The images were processed in Agisoft Metashape software to produce orthographic plans of the site with an accuracy of 0.01-0.03m. The photographic equipment used was:

- DJI Mavic Pro 2 = Camera Hasselblad, Sensor 1” CMOS, Effective Pixels: 20 million. All images captured in RAW (DNG) format and 4K Video;

- DJI Mavic Mini 2 = Camera, Sensor 1/2.3", Effective Pixels: 12 million. All images captured in RAW (DNG) format and 4K Video.

4.3. The aerial photography was undertaken by Simon Batsman, Sumo Aerial-cam, who is a fully licensed UAV Remote Pilot, with permission for Commercial Operation (PfCO) from the Civil Aviation Authority.

4.4. Pre-flight checks were undertaken before and during the survey to ensure safe operating procedures to be kept at all times. Due care and consideration was given to people and properties on the ground

The GPS survey

4.5. The photogrammetric survey was supplemented by measured survey of earthwork features where appropriate using a Leica Viva/Captivate survey grade RTK (real-time kinematic) GPS capable of +/- 20mm accuracy in all 3D observations.

4.6. The resulting data was processed using Leica Infinity software package and exported as Esri shapefiles.

LiDAR analysis

4.7. Existing Environment Agency data was analysed with the specific aim of clarifying the extent any potential archaeological earthworks within the site.

4.8. DTM and DSM tiles (2019) were obtained from the DEFRA portal. The data was available at 1m resolution, for the full extent of the site. DTM and DSM tiles were downloaded as .tif files. DTM and DSM data was also available at 0.25m and 0.5m resolution for parts of the site, however upon processing it was found that the 1m LiDAR provided the better results.

4.9. The associated .tfw files use British National Grid as the “native” coordinate reference system.

4.10. Where necessary, the tiles were combined into a mosaic raster dataset using Esri ArcPro 3.0.1 and exported as a .TIFF

4.11. The resulting .TIFF was then processed using Relief Visualisation Toolbox (RVT) (Kokalj et al 2019 and Zakšek et al 2011) to create a number of visualisations including a hillshade, positive and negative openness, multi-hillshade and local relief model following Historic England guidelines (HE 2010) and guidance in *Airbourne*

Laser Scanning Raster Visualisation: A guide to good practice (Kokalj & Hesse 2017). The parameters were set to those appropriate for the topography of the area.

4.12. The output images from the RVT software were then imported into ESRI ArcPro 3.0.1 where further settings manipulation was undertaken to enhance the visualization for archaeological feature detection.

4.13. The DSM tile formed the basis within the EWS and is illustrated on Figs 2 to 4

4.14. The best resolution of digital terrain model lidar imagery with full coverage of the study area, available from the EA, is 1m. There appeared to be no significant issues with the data.

5. RESULTS

5.1. Many of the recorded earthworks were difficult to define at ground level and appeared much clearer during LiDAR analysis. It was apparent that many of the linear features were almost entirely infilled and obscured by vegetation growth in parts of the site and were too shallow for stratigraphic relationships to be established. Ditches **D**, **Q** and Mound **C** were the best-defined features.

5.2. Part of a curvilinear ditch, Ditch **A**, was recorded in the easternmost corner of the site. The section of ditch within the site measured 14m in length and 1.5m in width with a depth of 0.08m. The ditch had a slight bank on its western edge of approximately 0.1m height.

5.3. Immediately to the south-west of Ditch **A**, Ridge and Furrow **B** were present on a north-east/south-west alignment and ran for a maximum of 155m, with a maximum depth of 0.05m and widths of between 6.3 and 12m. These features were very poorly defined on site but correlate to ridge and furrow features shown on LiDAR data. They do not extend beyond Ditch **A**.

5.4. At the southern end of Ridge and Furrow **B** was Mound **C**, which was sub-ovoid in form with a flat top. It was aligned north-east/south-west and only partially extended into the site by 8m. It measured 16.5m by 14.8m with a height of approximately 0.4m. The mound may overlie the ridge and furrow but due to the shallow nature of the ridge and furrow this was difficult to establish.

5.5. In the field adjacent to Ridge and Furrow **B** a network of sinuous ditches was recorded (Ditches **D**-**N**), none of these ditches are apparent on historic mapping. Ditch **D**, which falls completely within the site boundary and is well defined, is aligned north-east/south-west and ran for 269m, and was approximately 2m wide, with a depth of 0.15m. Four 'spurs' of similar depth ran from the south-western and north-eastern edges of Ditch **D**, each of approximately 10m length.

5.6. Approximately 53m to the west of Ditch **D**, and on a broadly parallel alignment was Ditch **E**. Ditch **E** measured approximately 73m in length before it turned north-west to form Ditch **G**, which after 170m turned to the south-west, running towards the River Severn. Both Ditches **E** and **G** were approximately 2m in width and 0.08m in depth. Immediately to the south of Ditch **E** and on a broadly similar alignment was Ditch **F**; however, Ditch **F** was shallower, with a depth of 0.04m and was less well defined than Ditch **E**. Ditch **D** appeared to have a break in it shortly before it turned to the south-west, however this coincided with an intersection with Ditch **T**, which is likely the reason for the break, rather than a deliberate opening.

5.7. Ditches **H**, **I** and **J** intersected the south-west/north-east aligned section of Ditch **G** and ran perpendicular to it. Ditch **H**, which curved slightly, measured 37m in length, 2m in width and 0.08m in depth, Ditch **I** measured 45m in length, 2m in width and 0.08m in depth, and Ditch **J** measured 40m in length, 1.5m in width and 0.1m in depth. Ditch **H** extended beyond Ditch **G** to the south by 30m, as did Ditch **I**, by 10m. Ditch **J** appeared to end within Ditch **G** but no relationship could be established. Ditches **H** to **J** both appeared to end within Ditch **Q.**

5.8. Ditches **K** and **L** crossed the site boundary to the south-west and ran broadly south-west/north-east and intersected Ditch **J** and come to a point within Ditch **I**, forming a triangular enclosure. Ditch **K** measured 125m long within the site, with a width of 2m and a depth of 0.08m. Ditch **L** measured 118m long within the site, with a width of 2m and a depth of 0.07m.

5.9. Ditch **M** ran broadly parallel to Ditch **L,** approximately 55m to the north, and measured 196m in length within the site boundary and was 4m in width and 0.04m in depth. Ditch **M** was very poorly defined and almost imperceptible from ground level.

5.10. Ditch **N** entered the site from the northern boundary and ran for 22m before terminating and was 1.4m in width and 0.08m in depth. It was intersected by Ditch **O**,

which ran on a north-east/south-west alignment. However, the ditches were too shallow to determine a stratigraphic relationship.

5.11. Ditch **Q** was very well-defined and ran from the north of site for 65m then turned and ran west for 162m before it crossed the site boundary. Ditch **P** ran north-east/south-west and ended within the east/west aligned section of Ditch **Q**. Ditch **P** formed a very subtle earthwork and was much more apparent during Lidar analysis, it measured 70m in length within the site boundary, and was 3.5m in width and 0.03m in depth.

5.12. Ditch **R** ran parallel to an extent hedgerow boundary on a north-west/south-east alignment and was intersected by Ditches **D**, **E**, and **T**. It crossed the site boundary to the north-west and ran 213m before terminating within the site. It measured 2.5m wide and 0.1m deep.

5.13. Ditch **S** formed a very shallow earthwork and was mostly imperceptible from ground level. It entered the site from the north and ran south for 85m before turning south-west and running for a further 62m before crossing the site boundary to the west. It measured 2m in width and 0.04m in depth.

5.14. Ditch network **T** comprised of a series of straight ditches on north-east/south-west and north-west/south-east alignments. The north-east/south-west aligned ditches extended beyond the site boundary to the south-west, where it was apparent from LiDAR data that the series of intersecting ditches continued. The ditches were much more visible during LiDAR analysis than at ground level, where it was evident that the ditches were almost entirely infilled, with depths ranging from 0.03m to 0.05m and were nearly imperceptible from the ground.

6. DISCUSSION

6.1. The EWS identified the presence of a potential enclosure ditch and bank relating to a deserted settlement immediately to the east of the site boundary, ridge and furrow, an unidentified mound, former parish/district boundary ditches, a possible remnant of a strip field boundary, a series of possible field boundary or drainage ditches and ditches relating to WWII anti-glider defences. These features were all visible on the LiDAR survey, and it was possible to determine the extent and survival during the survey fieldwork. It was found that, except for Ditches **Q** and **D** and Mound **C**, all of the earthworks were almost entirely infilled or levelled, and it was not possible to determine stratigraphic relationship at ground level where features intersected.

6.2. Ditch **A** may form the western edge of an enclosure ditch surrounding an undated deserted settlement immediately to the east of the site boundary. The ditch is depicted on the 1807 Ripple Enclosure Map (Figs 5-7) and aerial photographs of the site from 1941 and the 1950s show Ditch **A** in use as a field boundary.

Ditch and Bank **A** looking south

6.3. Ditches **D** to **O** (with the possible exception of Ditch **F**) are not depdicted on any available historic mapping and as such it is difficult to identify their date. Ditches **H**, **I** and **J** do not extend beyond Ditch **Q**, which suggests they were at one time contemporary; however, potentially different land use on either side of Ditch **Q** may have affected survivability. Ditches **D** to **O** may represent one or several phases of drainage ditches channelling water down-slope to the river. Profile analysis of LiDAR data show that Ditches **K**, **L** and the north-east/south-west aligned section of Ditch **G** are located at the lowest point along a north-west/south-east profile of the site, typically where ground water would settle. They may potentially be related to water meadow activity, however the absence of other features related to water meadow use and the sinuous irregularity of the ditches suggests this is unlikely.

Ditch **D** looking south-west

6.4. Ditch **P** and the eastern half of Ditch **Q** form the parish boundary ditches between Ripple to the north-east and Upton-upon-Severn to the south-west. Both ditches are depicted on the 1807 Ripple Enclosure Map (Figs 5-7), but Ditch **P** appears to have been infilled by the early part of the 20th century when it is no longer shown on mapping as a physical feature. Ditch **R**, which runs approximately 14m parallel to an extant north-west/south-east aligned hedgerow, may have formed the south-western roadside ditch for the former Bishops Meadow Road which ran between Ditch **R** and the hedgerow, bordering and just within the Upton-upon-Severn parish boundary and shown on the 1807 Ripple Enclosure Map.

6.5. Ditch **S** represents a former field boundary, forming the western boundary of a field enclosed by Ditch **Q** to the south and east. Ditch **S** is depicted on the 1864 Upton Enclosure Award map (Figs 8-10) and exists as a field boundary until the mid-20th century.

Ditch **S** looking north

Ditch **Q** looking south-west

6.6. Ditch **F** may be the only surviving remnant visible at ground level of the strip-field system depicted on the 1864 Upton Enclosure Award map as Fish Meadow (Figs 8-

10). Some anomalies, possibly representing boundary features relating to the strip-field system, were evident during LiDAR analysis but were shown as very feint, subtle earthworks.

6.7. Ditch network **T** correlates very closely to anti-glider defences shown on a 1941 aerial image as linear features, possibly containing solid obstacles. Only small parts of the ditches were visible at ground level, possibly due to wholesale backfilling during the 1950s or perhaps because they were only intended to provide shallow footings for the obstacles, rather than the ditches themselves forming the defence.

1941 Aerial photograph showing anti-glider defence locations

6.8. Mound **C** appears to overlie Ridge and Furrow **B** and is therefore likely post-medieval or modern in date. Its form appears to suggest that it is a building platform, however its location on lower lying ground away from the deserted settlement to the east would suggest otherwise. It is also possible that the mound is formed from a levelled remnant spoil-heap in the corner of the field.

Mound **C** looking north-west

7. CA PROJECT TEAM

7.1. Fieldwork was undertaken Tom Weavill whom also prepared the report and illustrations. The project archive has been compiled by Tom Weavill and prepared for deposition by Hazel O'Neill. The project was managed for CA by Alex Thomson.

8. REFERENCES

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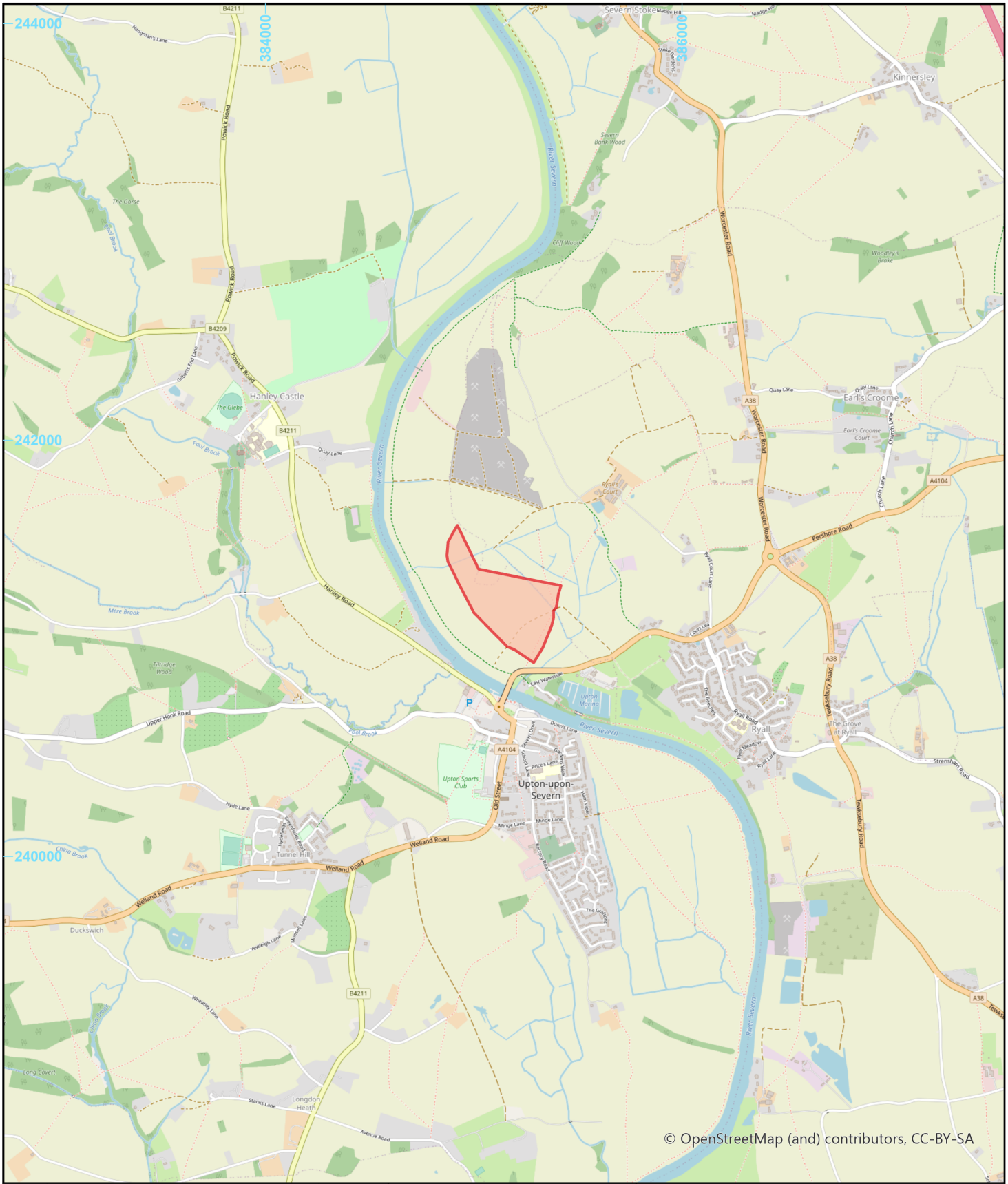
WCC (Worcestershire County Council) 2019 *Standards and Guidelines for Archaeological Projects in Worcestershire*

Cartographic sources

1807	Parish of Ripple Enclosure Award Map
1841	1863 Tithe Map and Apportionment for the Parish of Upton-upon-Severn
1863	Parish of Upton-Upon-Severn Enclosure Map Award
1884	1st Edition Ordnance Survey Map
1903	2nd Edition Ordnance Survey Map
1926	3rd Edition Ordnance Survey Map
1954	Revised Edition Ordnance Survey Map
1971	Revised Edition Ordnance Survey Map

Aerial photographs

Jul 1941	V13
Jul 1941	N13
Nov 1941	T13
Apr 1946	106Q/UK/1345
Jul 1946	106Q/UK/1652
Jan 1949	PFFO 540/144
Jan 1949	540/144
Feb 1950	PFFO 54Q/292
May 1951	HAW 9414/5
Sep 1961	58/RAF/4683
Sep 1964	OS/164/150
Sep 1964	OS/164/163
Sep 1947	RAF/44/555/LT
Sep 1968	ZEISS 049
Mar 1988	ZEISS 054
Nov 2000	NMR 21025/04



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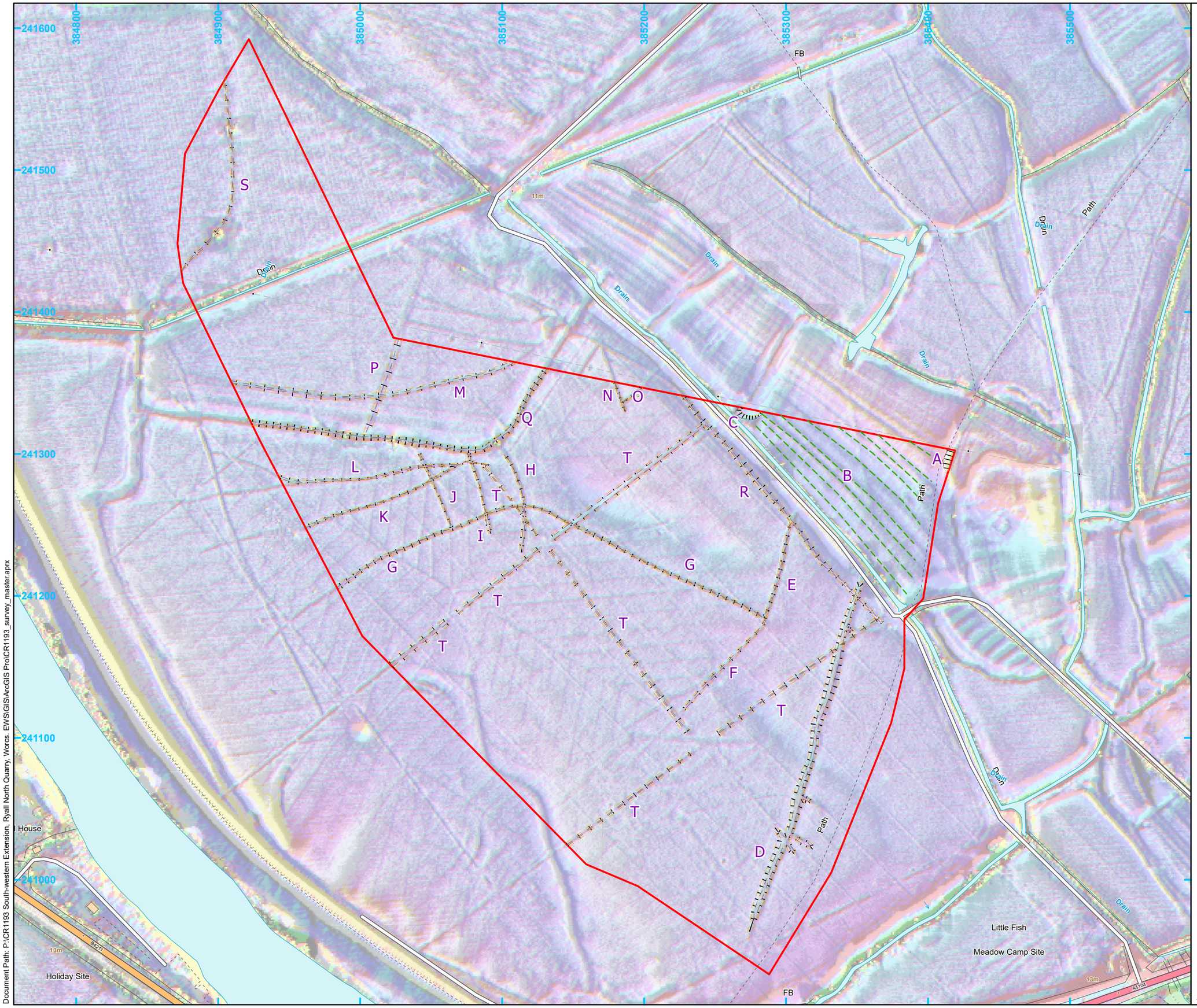
PROJECT TITLE
South-Western Extension, Ryall North Quarry, Worcestershire

FIGURE TITLE
Site location plan

DRAWN BY	TW	PROJECT NO.	CR1193	FIGURE NO.
CHECKED BY	AT	DATE	13/10/2022	1
APPROVED BY	AT	SCALE @ A4	1:25,000	

Document Path: P:\CR1193 South-western Extension, Ryall North Quarry, Worcs. EWS\GIS\ArcGIS Pro\CR1193_survey_master.aprx



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Legend

- Site boundary
- Topo top of slope
- Topo base of slope
- Ridge and Furrow

0 100m

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PROJECT TITLE

South-western Extension,
Ryall Quarry, Worcestershire

FIGURE TITLE

The site, showing earthwork survey results and LiDAR data (DSM 1m 2019) - SLRM 50% over PCA

DRAWN BY	**TW**	*PROJECT NO*	**CR1193**	*FIGURE NO.*
CHECKED BY	**AT**	*DATE*	**17/10/2022**	**2**
APPROVED BY	**AT**	*SCALE@A3*	**1:2,500**	

384900
385000
385100
385200
385300
241500
241400
241300
241200
FB
S
P
M
N
O
Q
C
T
H
B
L
J
T
R
K
I
G
G
E
T
T
11m
Drain
Drain
Drain
Drain

N

Legend

- Site boundary
- Topo top of slope
- Topo base of slope
- Ridge and Furrow

0 40m

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PROJECT TITLE

South-western Extension,
Ryall Quarry, Worcestershire

FIGURE TITLE

The site (north), showing earthwork survey results and LiDAR data (DSM 1m 2019) - SLRM 50% over PCA

DRAWN BY	**TW**	*PROJECT NO*	**CR1193**	*FIGURE NO.*
CHECKED BY	**AT**	*DATE*	**17/10/2022**	**3**
APPROVED BY	**AT**	*SCALE@A3*	**1:1,500**	

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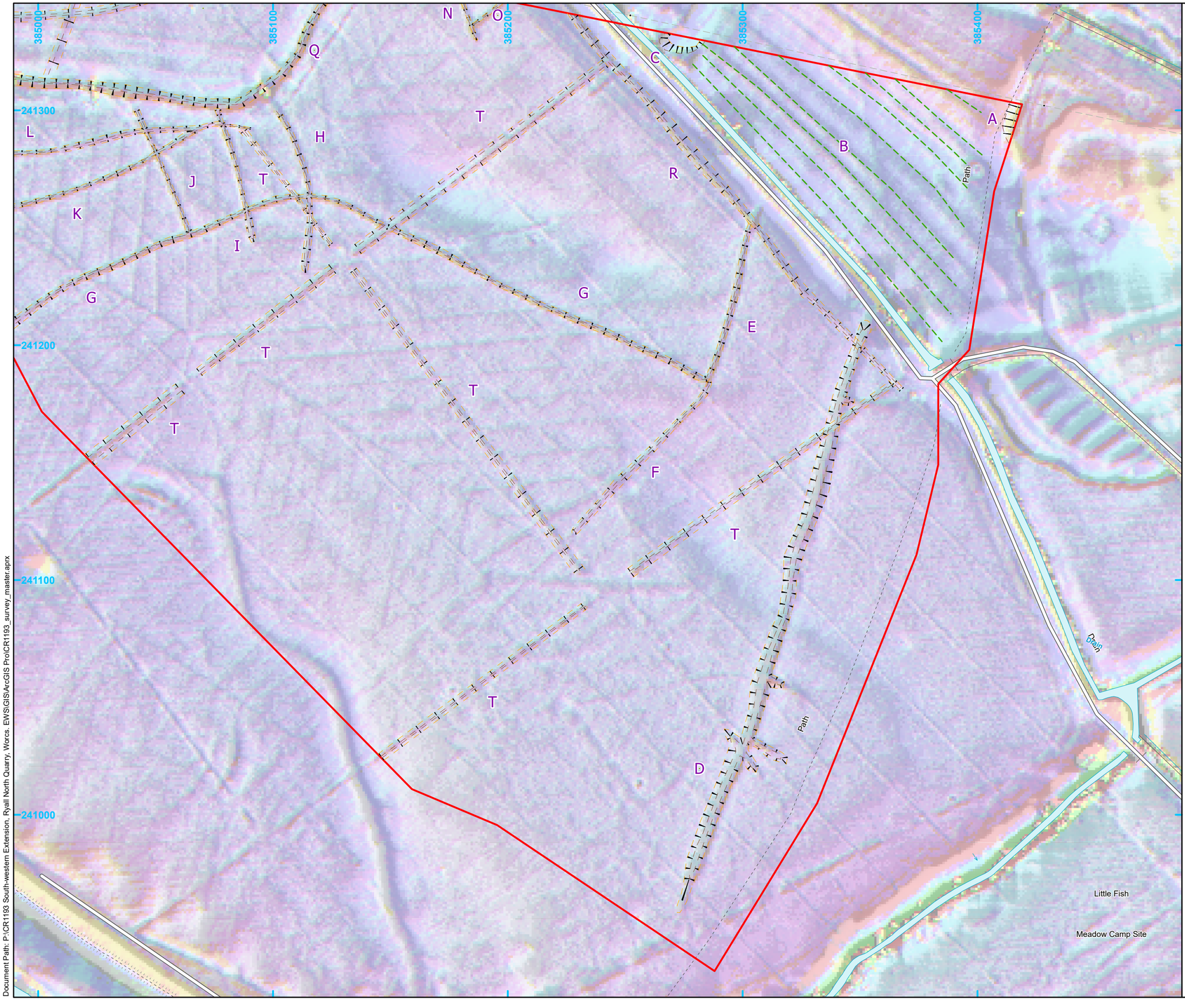

Legend

- Site boundary
- Topo top of slope
- Topo base of slope
- Ridge and Furrow

N

0 40m

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PROJECT TITLE

South-western Extension,
Ryall Quarry, Worcestershire

FIGURE TITLE

The site (south), showing earthwork survey results and LiDAR data (DSM 1m 2019) - SLRM 50% over PCA

DRAWN BY	**TW**	*PROJECT NO*	**CR1193**	*FIGURE NO.*
CHECKED BY	**AT**	*DATE*	**17/10/2022**	**4**
APPROVED BY	**AT**	*SCALE@A3*	**1:1,500**	

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PROJECT TITLE
South-western Extension,
Ryall Quarry, Worcestershire

FIGURE TITLE
The site, showing earthwork survey results and 1807 Ripple enclosure map

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CHECKED BY	AT	DATE	17/10/2022	5
APPROVED BY	AT	SCALE@A3	1:2,500	

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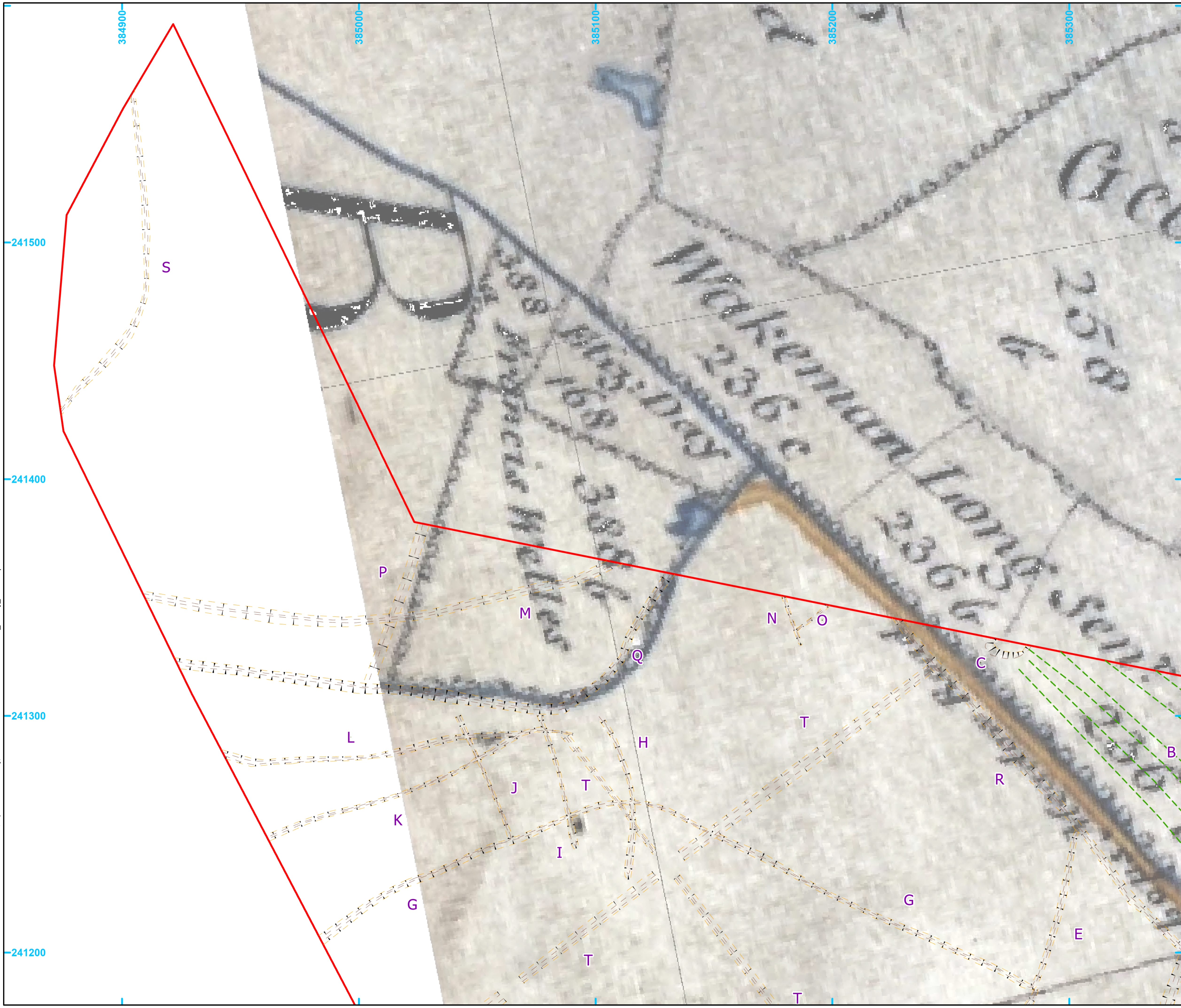

N

Legend

- Site boundary
- Topo top of slope
- Topo base of slope
- Ridge and Furrow

0 40m

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PROJECT TITLE
South-western Extension,
Ryall Quarry, Worcestershire

FIGURE TITLE
The site (north), showing earthwork survey results and 1807 Ripple enclosure map

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CHECKED BY	AT	DATE	17/10/2022	6
APPROVED BY	AT	SCALE@A3	1:1,500	

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N

Legend

- Site boundary
- Topo top of slope
- Topo base of slope
- Ridge and Furrow

0 40m

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PROJECT TITLE

South-western Extension,
Ryall Quarry, Worcestershire

FIGURE TITLE

The site (south), showing earthwork survey results and 1807 Ripple enclosure map

DRAWN BY	**TW**	*PROJECT NO*	**CR1193**	*FIGURE NO.*
CHECKED BY	**AT**	*DATE*	**17/10/2022**	**7**
APPROVED BY	**AT**	*SCALE@A3*	**1:1,500**	

N

Legend

- Site boundary
- Topo top of slope
- Topo base of slope
- Ridge and Furrow

0 100m

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PROJECT TITLE

South-western Extension, Ryall Quarry, Worcestershire

FIGURE TITLE

The site, showing earthwork survey results and 1864 Upton Enclosure Award map

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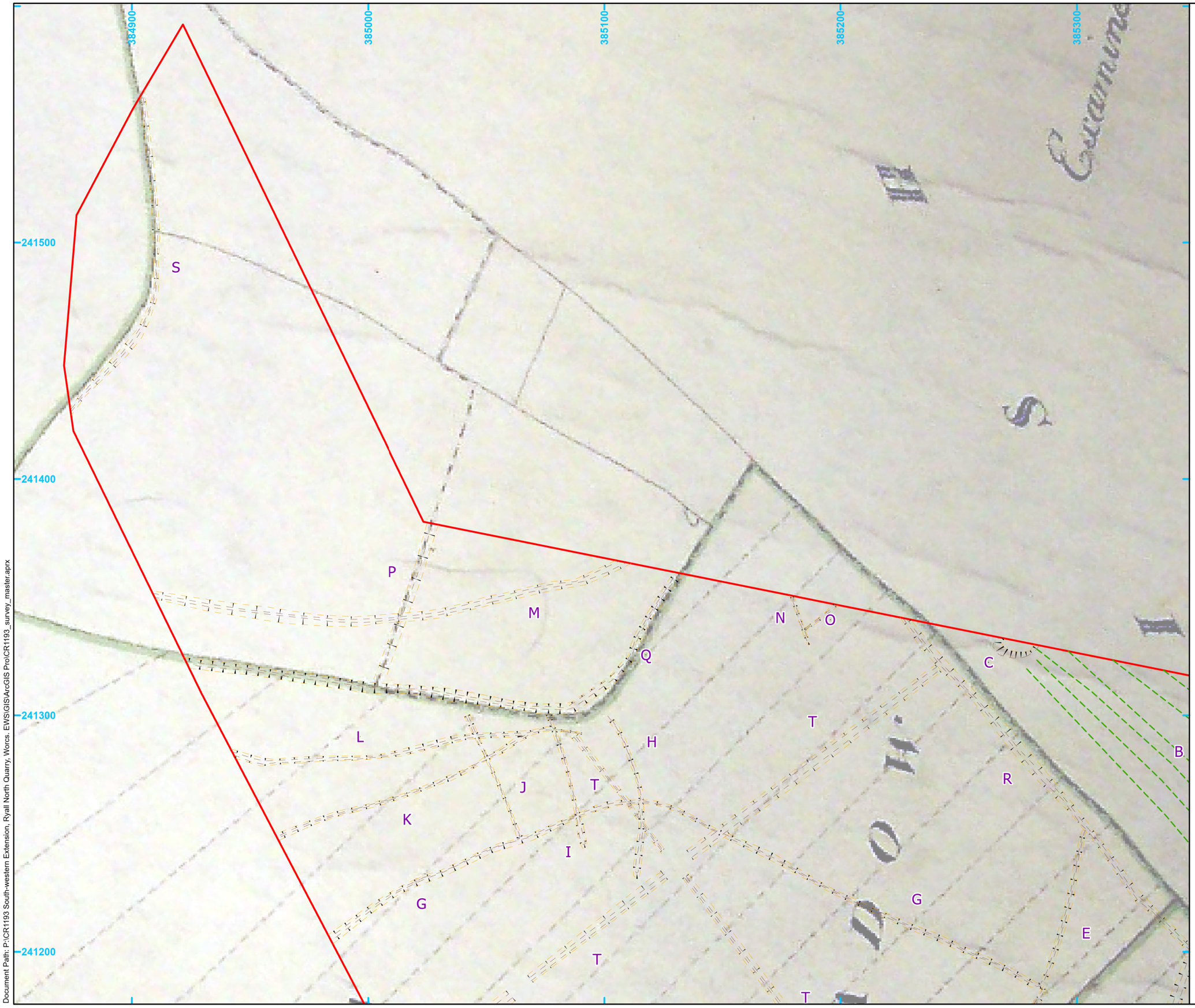

N

Legend

- Site boundary
- Topo top of slope
- Topo base of slope
- Ridge and Furrow

0 40m

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PROJECT TITLE

South-western Extension,
Ryall Quarry, Worcestershire

FIGURE TITLE

The site (north), showing earthwork survey results and 1864 Upton Enclosure Award map

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APPROVED BY	**AT**	*SCALE@A3*	**1:1,500**	

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Legend

- Site boundary
- Topo top of slope
- Topo base of slope
- Ridge and Furrow

N

0 40m

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PROJECT TITLE

South-western Extension, Ryall Quarry, Worcestershire

FIGURE TITLE

The site (south), showing earthwork survey results and 1864 Upton Enclosure Award map

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APPROVED BY	**AT**	*SCALE@A3*	**1:1,500**	

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