

Archaeology Wales

Pont ar Daf, Storey Arms, Brecon, Powys

Topographical Survey



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
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Prepared For: National Trust


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Position: Project Manager

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Report No. 1562

March 2017

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Non Technical Summary

This report results from a topographical survey undertaken by Archaeology Wales Ltd (AW) in the area of the former Storey Arms Public House and Enclosure, Pont-ar-Daf, Brecon, Powys, for the National Trust. The work was in support of a planning application (Brecon Beacons National Park Authority (BBNPA), Application Number: 15/11835/FUL) prior to the proposed development of the area to provide a larger car park facility.

The site had previously been planted by the Forestry Commission and as such features which might have been mapped by a topographic survey would have been destroyed. The forestry ditches not only masked and re-contoured much of the site but became an impediment to traversing the site safely. The undergrowth and the stumps of felled trees along with large piles of forestry waste made certain areas impractical to survey in more detail if not impassable.

The survey did map the footprint of the former Storey Arms Public House (NPRN115060) and the attached enclosure to the north (NT860993). This comprised of very minor positive and negative features within the landscape which were virtually invisible on the ground. The enclosure was made more apparent by small streams which ran along three of its sides. The upstanding archaeology included the north south aligned boundary walls (NPRN23090, NT860986, NT860987, NT860994) which appeared to have more than one phase and the Second World War defensive installations which sit along the river cliff toward the east of the site (NPRN115061/2) and at the far southern corner (NPRN110475). No other features were identified through the topographical survey or walk over.

1 Introduction

Location and scope of work

In March 2017 Archaeology Wales Ltd (AW) carried out a topographical survey of the former Storey Arms Public House and surroundings located in the Brecon Beacons National Park, Pont-ar-Daf, Powys, NGR: SN 98744 19898 (Fig 1). The work was carried out as support for a planning application to redevelop the site with a larger car park facility.

The requirements of the survey were set by the Archaeological Advisor to the Brecon Beacons National Park Authority.

As a consequence, a Written Scheme of Investigations (Appendix 3) was prepared by Rowena Hart (AW) prior to the work taking place. This was subsequently approved by the BBNPA Archaeologist prior to the work commencing.

Geology and topography

The bedrock geology of the area comprises sandstone and argillaceous rocks overlain by superficial deposits of alluvial fan deposits of sands and gravels (BGS 2017).

The development area lies immediately to the east of the A470 and comprises an existing car park and an open area that was previously plantation woodland. The land slopes upwards to the north-east from approximately 435m to 490m OD.

Historical background

A detailed archaeological background to the area has been prepared as part of a Desk Based Assessment (GGAT 2015).

The site is known to contain the Storey Arms Public House and Enclosure of Post Medieval date and Second World War defensive installations in the form of Pill boxes are present with further anti tank traps and slit trenches outside of the site boundary. The site is also thought to be along the route of a Roman road.

Map Regression

The 1885 First Edition OS map 6 Inch shows the 'Storey Arms' clearly. The building is rectangular orientated approximately north west to south east with a smaller outbuilding to the north west. A square enclosure of similar length to the building is located along its north east side. A small paddock is located along the north west side with the south west side open to the road which is flanked along its eastern edge by a wall (Fig 3). Two trapezoidal fields are located to the immediate south east and north west of the building with a further two rectangular fields to the north west. A large field is located along the top of these to the north east forming a straight sided rectangular plot of land which would make up the main and greater part of the Storey Arms enclosure. Two smaller field parcels are confined by the Blaen Taf Fawr and road to the south, with a single rectangular field located over the road opposite orientated north east to south west. A spring runs from the north east to the south west, south of the building through the enclosure. Across the Blaen Taf Fawr on the meander opposite the building Sheepfolds are present.

The 1903 Edition OS map 6 Inch shows the same layout as before but shows the outbuilding located to the north west of the main Storey Arms as attached now with a small extension to the north east corner of the building up alongside the enclosure to the rear. The Storey Arms is now annotated with the above and (PH). A small rectangular building is located in the field over the road and another entrance way is now located in the wall to the south of the Storey Arms with a small track which leads towards the Sheepfolds which are still present but no longer annotated. (Fig 4).

The 1905 Edition OS map 6 inch shows no changes to the previous (Fig 5).

The 1953 Edition OS map 6 Inch shows the Storey Arms no longer present. The parcels of land are all the same as previous. The only surviving upstanding building at this time is in the field across the road (Fig 7)

2 Survey Methodology

The survey was undertaken on an area as outlined in Figure 2. It comprised the detailed survey of all earthworks associated with the following sites:

PD006 Enclosure of old Storey Arms Pub Enclosure
PD011/NT 860993 Storey Arms Enclosure
115060/725 Storey Arms Inn

In addition, the AW surveyor will be aware of potential for, and record of all morphology of potential archaeological origin which will be impacted by the proposed development, for example the military remains at the south-eastern boundary of the site and the possible

Roman Road that passes through the proposed development area. The surveyor will examine the potential for such remains where they lie within the development boundary but outside the survey area (Figure 1). This will be achieved by a walkover survey. Any potential features will be added to the total survey area at the discretion of the surveyor. Spot heights will be recorded using the same methodology as that outlined below.

The survey will be undertaken using a GeoMax GPS Rover unit. All available mapping will be viewed prior to and during the site work. This will include historic mapping, existing topographic and Lidar data. Data points will be collected at a minimum of 0.5m spacing wherever possible. The frequency will be increased over areas requiring higher resolution.

Louis Stafford BA (Hons) undertook the survey. All photographs were taken in high resolution (18MP) digital format. These were converted to TIFF format for storage.

3 Survey Results

The initial site plan surveyed in 2013 shows the flat nature and the modern developments of the asphalt road and toilets along the western boundary of the site. The tree cover denied the use of the Geomax survey equipment in these areas. The walkover however showed this to be very flat and only slight undulation from the forestry furrows. No features could be identified along this western edge and further west of this the modern road had been cut leaving an embankment. Centrally the survey shows a modern forestry road had been put in with a lot of up cast forming a bank along the north edge of the site boundary (Fig 8).

The contour data shows a more detailed view of the site, what is predominant throughout this is the zig zag of contours up the slope to the eastern corner of site which is formed from the forestry furrows. Similarly in the central main area but perpendicular more furrows are clear (Fig 9).

The contour data does show the Storey Arms enclosure (NT860993) very clearly in its square form and also very clearly shown are the three Pill box defensive installations (NPRN115061/2, 110475). The rest of the dominant features present are natural slopes or river terracing. This area was extremely difficult to survey due to tree felling activity including tree stumps, piles of felled logs and the large furrows from felling machinery.

The plan view of the 3D imagery (Fig 10) produced from the contour data did not show a great deal clearly, however certain features could be highlighted better viewed from different perspectives (Fig 11-12). The forestry furrows are the most prominent feature alongside the natural stream depressions and the north south boundary wall. Although the Storey Arms enclosure is still very much present (NT860993). The lidar imagery is not very useful as it was taken prior to the felling of the trees on site and at a fairly large spacing of 2.0m, the Storey Arms enclosure however is just about visible in figure 13.

Figure 11 shows a rectangular structure with a small protrusion along the south east edge of the square enclosure. Adjoining the rectangular structure (NPRN115060) toward the north west of it was another smaller rectangular raised area. These structures were very faint but did appear to have straight uniform and parallel lines. The upstanding brick well was also apparent toward the north east corner of the square enclosure (NT860993) (Fig 12)

The 3D image also shows the upstanding brick faces of the Pill box defensive installations along the river terrace to the east of site (NPRN115061/2) and toward the southern point (NPRN 110475) (Fig 10, 12). There were no other features visible relating to these structures.

The 3D data showed the tumbled and incomplete nature of the western boundary stone wall.

4 Discussion and Interpretation

Reliability of field investigation

The majority of the site was planted by the Forestry Commission and the furrows and waste left behind was disruptive in giving a complete and detailed survey of the site (Fig 16-17). The survey still managed to record subtle features within the proposed development.

All photographs taken on site are included within the archive.

Data Interpretation

The cartographic evidence (Fig 2-6) for the Storey Arms Public House (NPRN115060) correlates with the findings of the topographic survey (Fig 10-11). The rectangular structure with a small protruding wing present at its south eastern corner as illustrated on the 1903 Edition OS map appears to match in size and form (Fig 6). The rectangular shape to the north west however appears larger although it starts along the north west side of the main rectangular structure at approximately the right place. It is possible that the upstanding wall along the south west road side of this feature is an upstanding building wall forming part of the Storey Arms Public House (Plate 9). The rough faced and coursed stone with lime mortar core differs dramatically from the soil core and mainly dry stone walls featured north and south. The orientation is slightly off as well veering more to the east at its northern end. The square enclosure to the rear is very clear and these features can be viewed as contemporaneous to each other and of Post Medieval date (Plates 1-2).

The well to the rear however appears to be a Second World War installation, or at least what is visible above ground (Plate 3). The probable sinking of the well is more likely to be a similar date to the Storey Arms. The lime mortar and cement used in its construction and the brick type are the same as those used in the Pill box construction and could be a water supply to the rear of the defences or at least 'made good' during this period.

The Pill boxes themselves are of differing types. The larger, longer splayed end Pill box (NPRN115061)(Bunker) has more care in its construction with tapered gantry, firing rest below the ports and consistent spacing (Plate 4). The Pill box to the east is a later add on to the defensive lines and appears to have been rebuilt at least three times, possibly after the Second World War in an attempt to conserve the structure (Plate 5). Stone, brick, lime and cement were all used in its construction. It is possible that the eastern end was the initial build and then extended westward and then later repaired which would account for the three phases apparent. The southern Pill box (NPRN110475) is of the same construction as the larger splayed end Pill box but is of a smaller simpler square design, still featuring a ledge below evenly spaced firing ports and a tapered gantry (Plate 6).

The western boundary walls appear to be of at least three phases. The north (NPRN23090) and southern ends (NT860986/7) appear contemporary with the Storey Arms Public House and are rough un-coursed walls with a soil and light mortar core (Plates 7-8). The central section of wall (NT860994) looks to have been repaired and stands to its full height with capping stones in place and is of probable later date or at least repaired in more recent times (Plate 10). The north wall (NPRN23090) is recorded on the regional HER as a bank although during the site visit this was clearly a stone wall.

The Roman Road which is known to cross the site (NPRN14900) has been asphalted. The last positive feature is the boundary bank forming part of the Storey Arms Public House enclosure (NT860990) which is the modern fence boundary.

5 Bibliography and references

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English Heritage, 2006, *Understanding Historic Buildings*, English Heritage

GGAT, 2015, Pont Ar Daf Car Park, Brecon, Powys: Archaeological Desk Based Assessment

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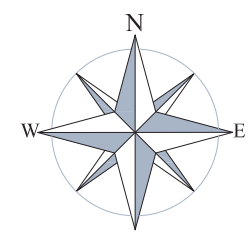
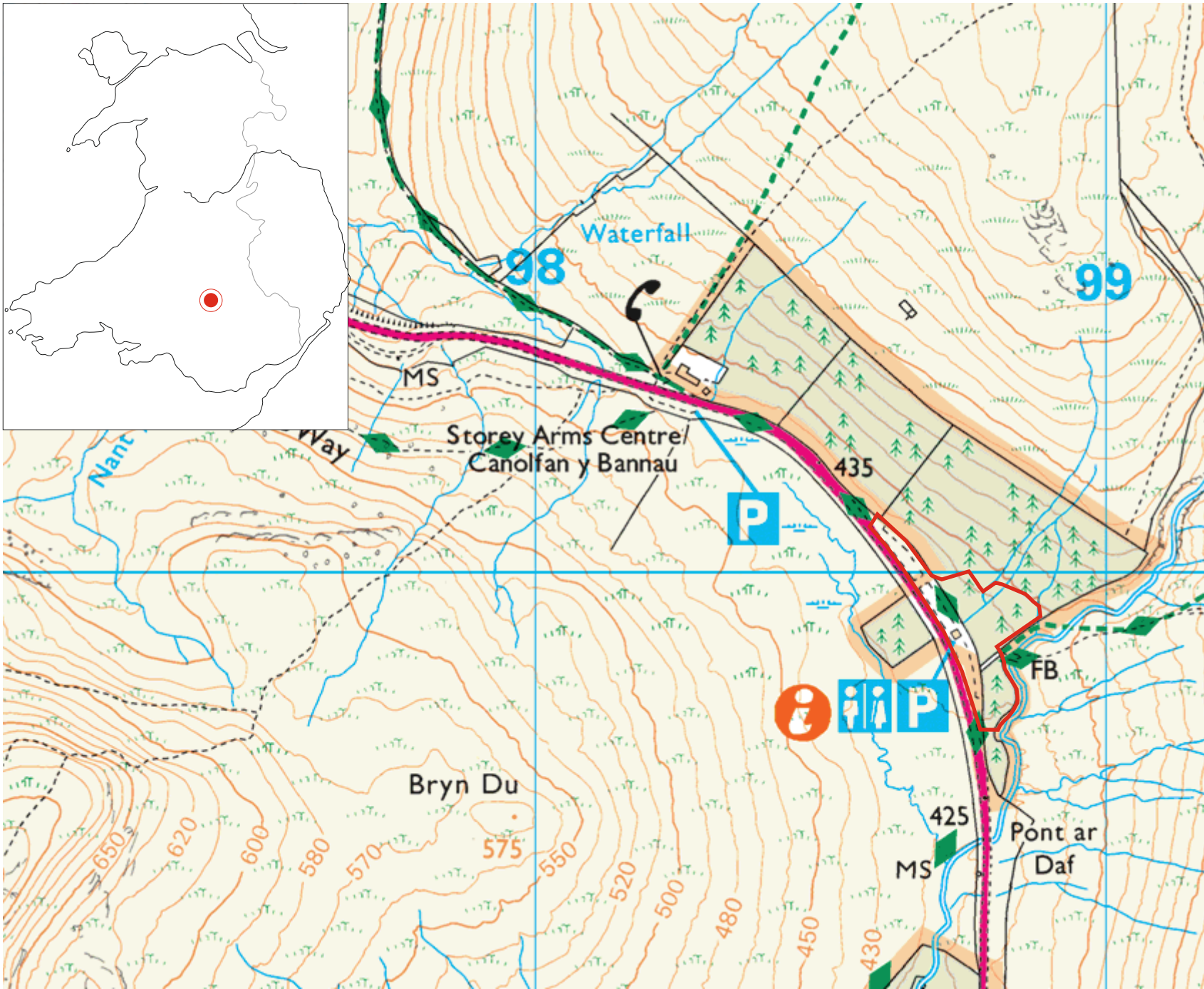
<http://archaeologydataservice.ac.uk> (accessed 11/04/16)

<http://www.cofiadurcahcymru.org.uk> (accessed 11/04/16)

<http://map.coflein.gov.uk/> (accessed 11/04/16)

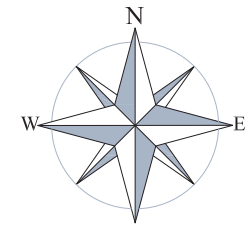
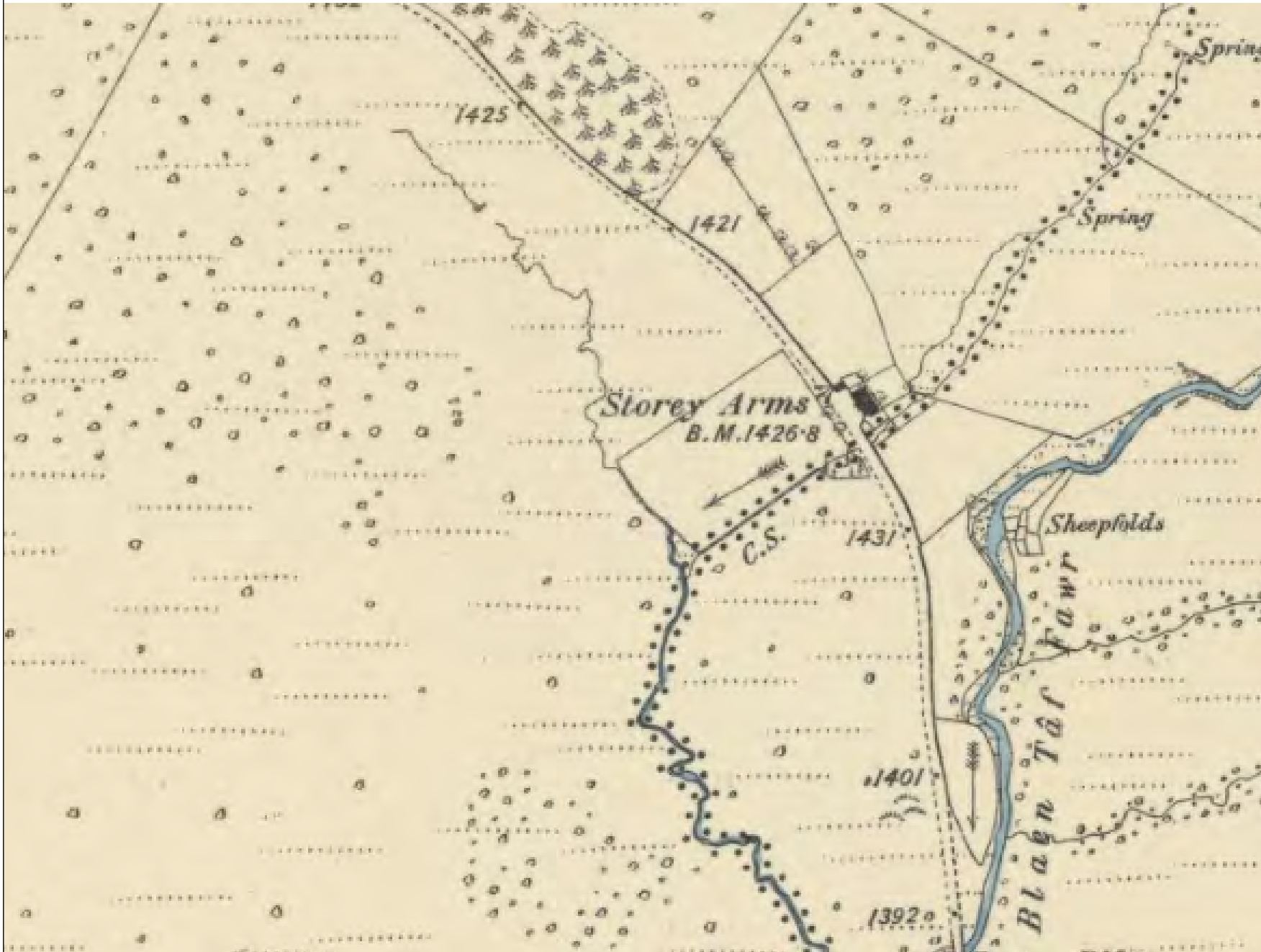
<http://data.gov.uk/data/> (accessed 11/04/16)

<https://content.historicengland.org.uk/images-books/publications/national-farm-building-types/> (accessed 11/04/16)



Site Boundary

Fig 1: Site Location



Site Boundary

Fig 2: 1885 First Edition OS

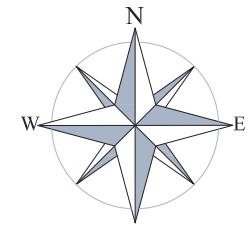
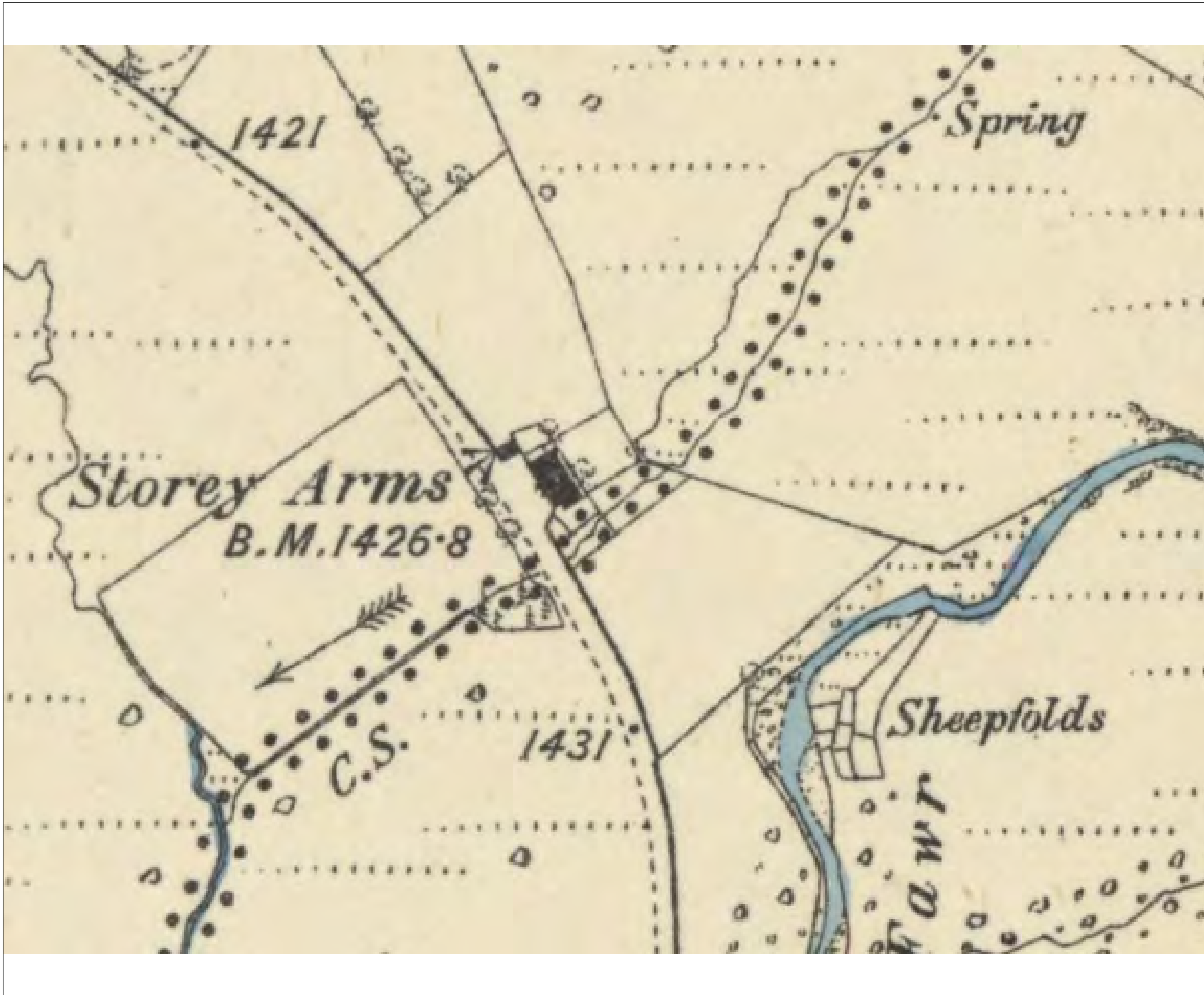


Fig 3: Close up of Storey Arms Public House on 1885 First Edition OS Map

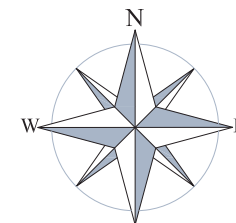
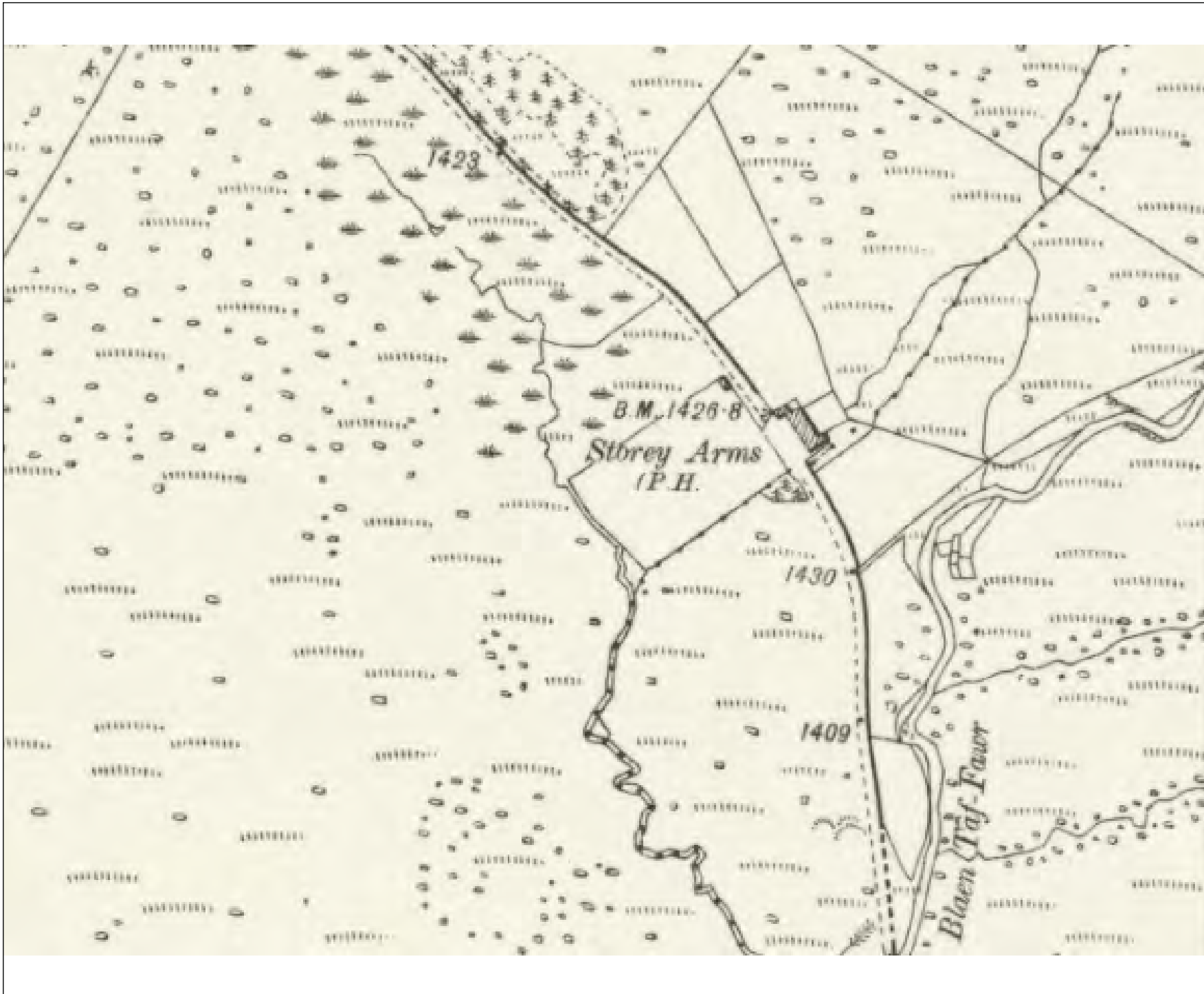


Fig 4: 1903 OS Edition
6 Inch Map

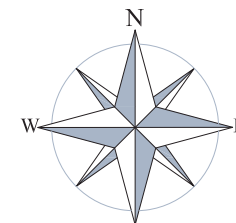
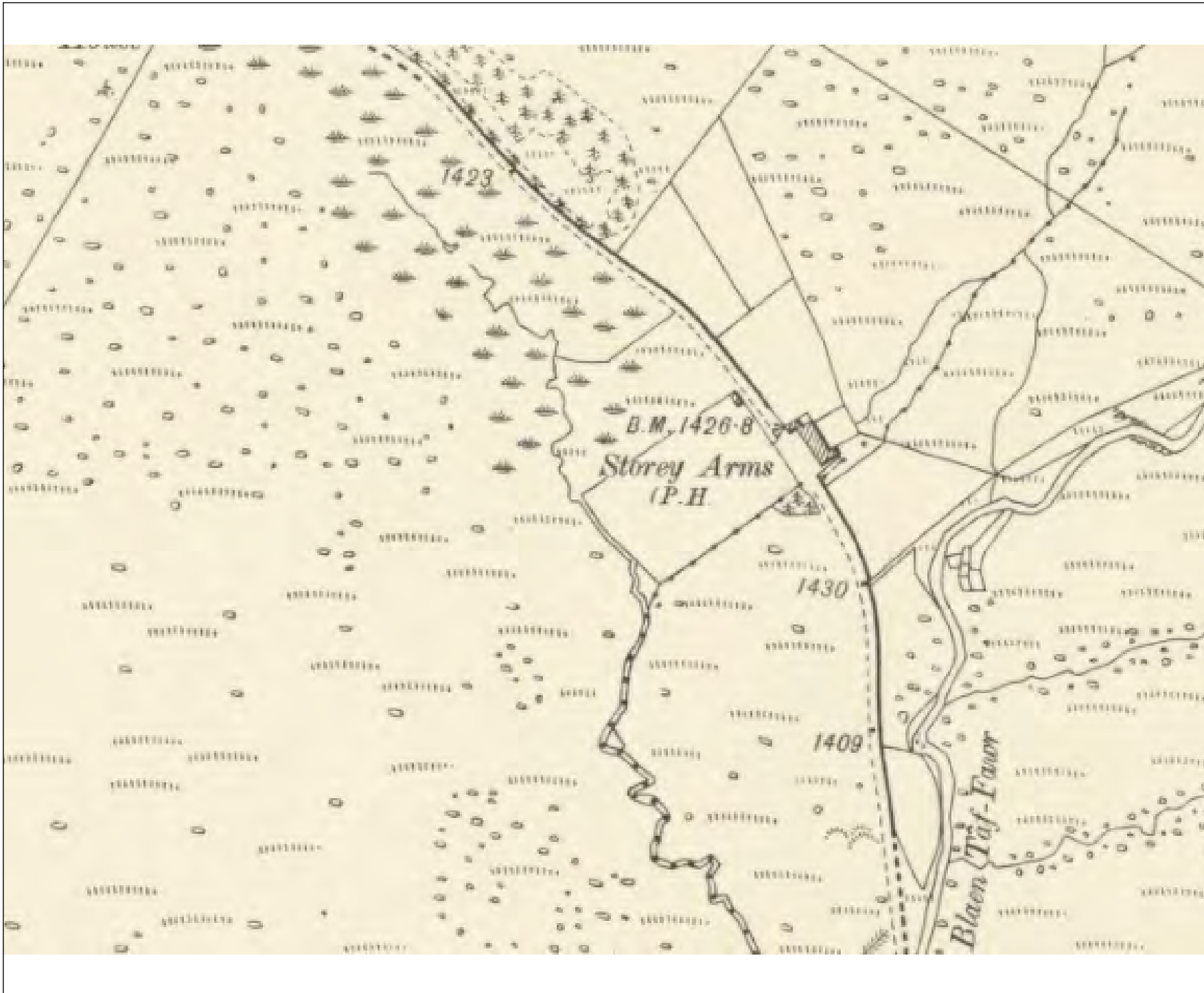


Fig 5: 1905 OS Edition
6 Inch Map

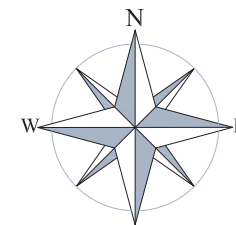


Fig 6: Close up of Storey Arms Public House on 1905 OS Edition 6 Inch Map

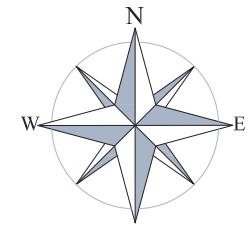
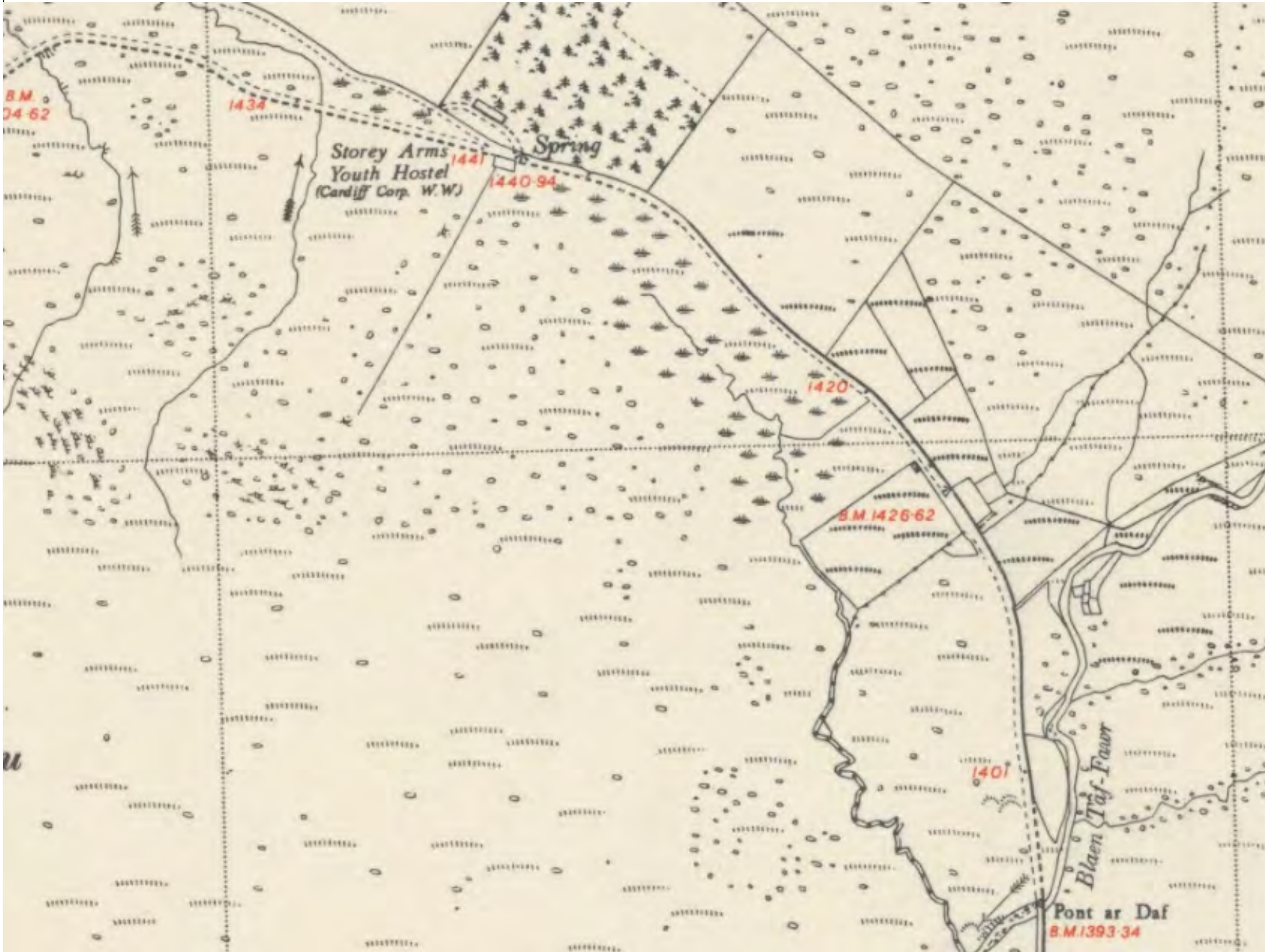


Fig 7: 1953 OS Edition
6 Inch Map

220350N

298900E

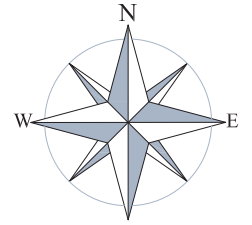
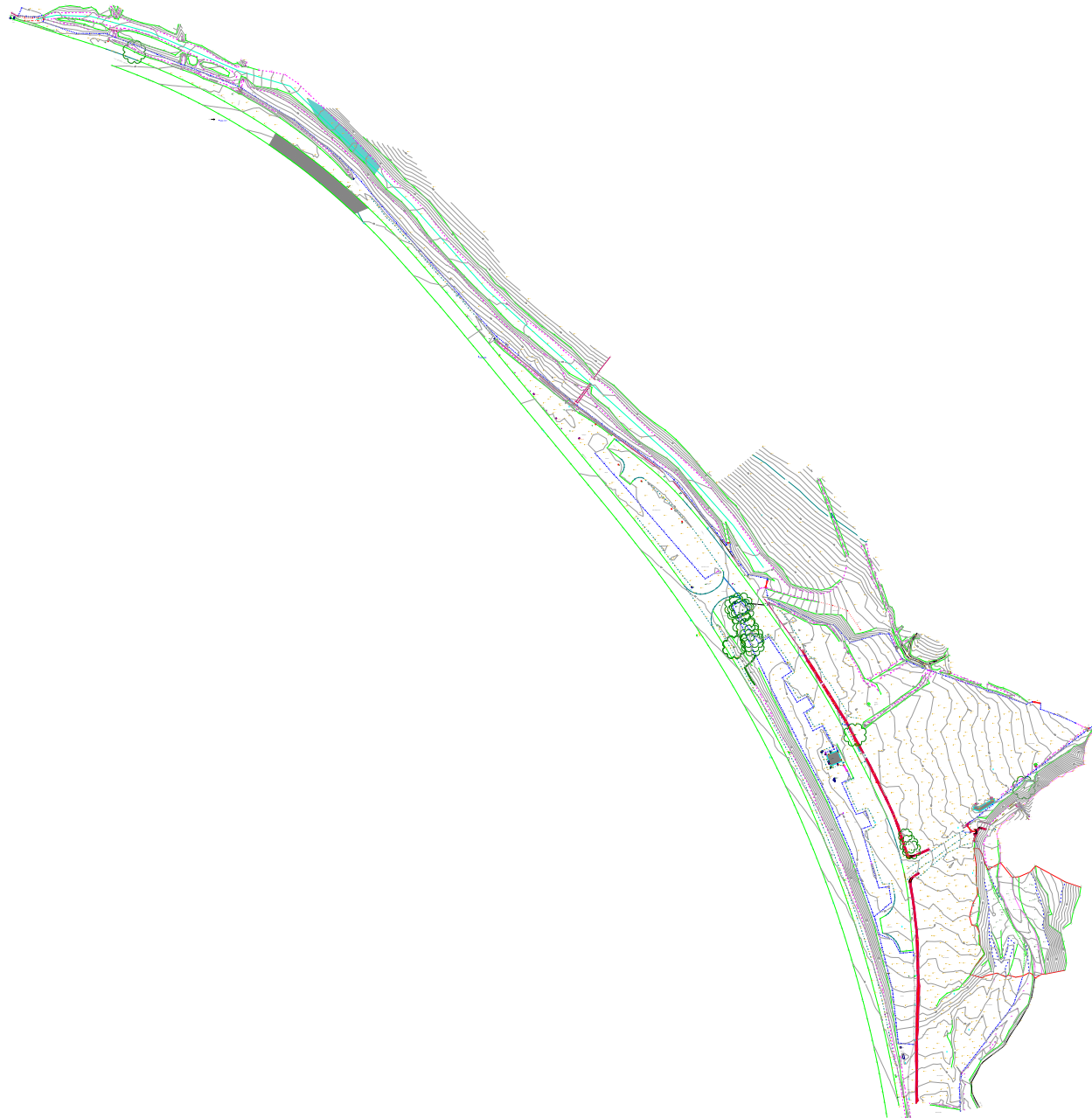


Fig 8: Existing Site Plan Based on John I Jones Land and Mineral Surveys March 2013

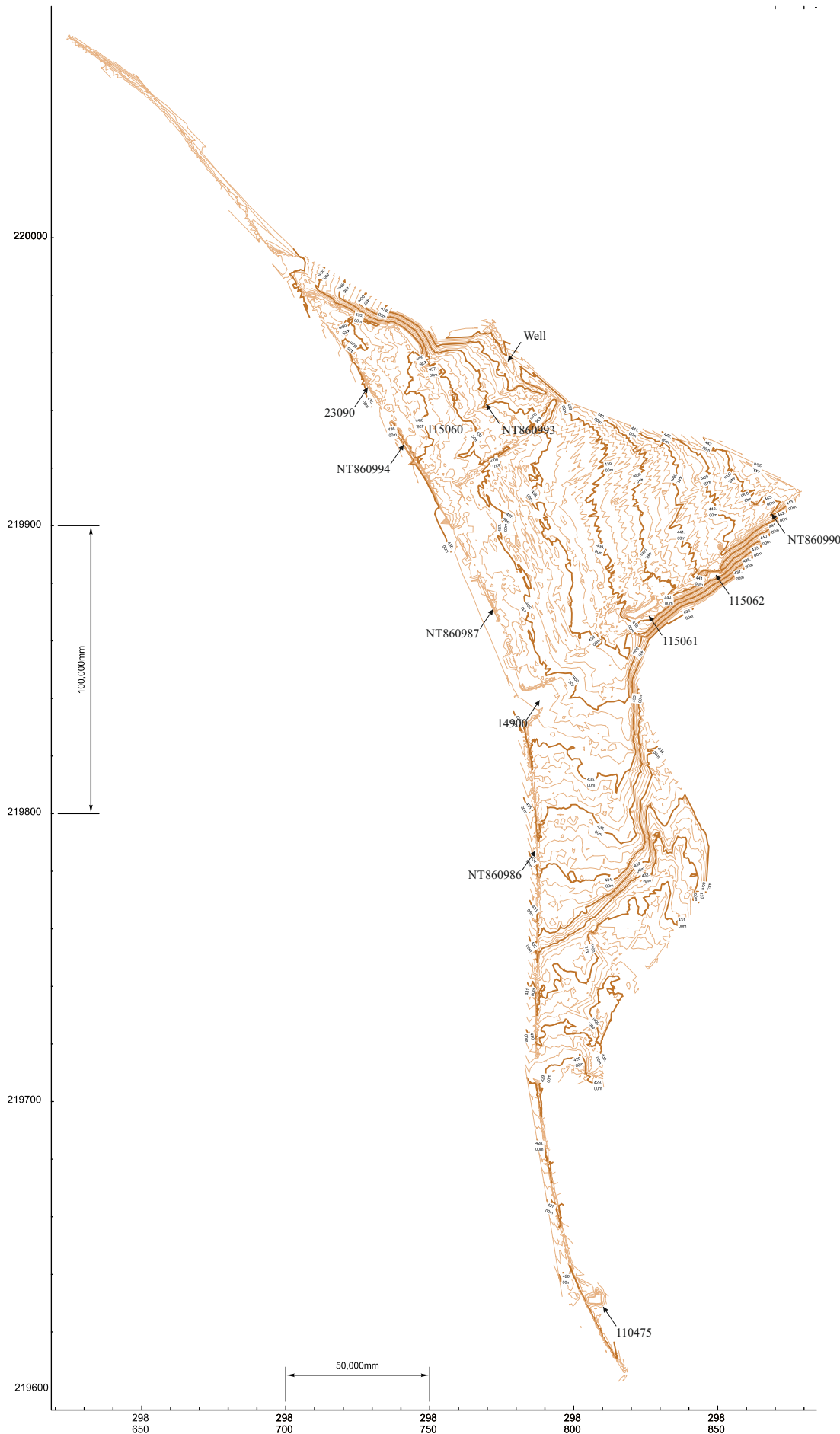
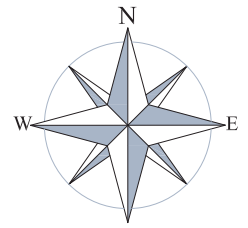


Fig 9: Contour Survey

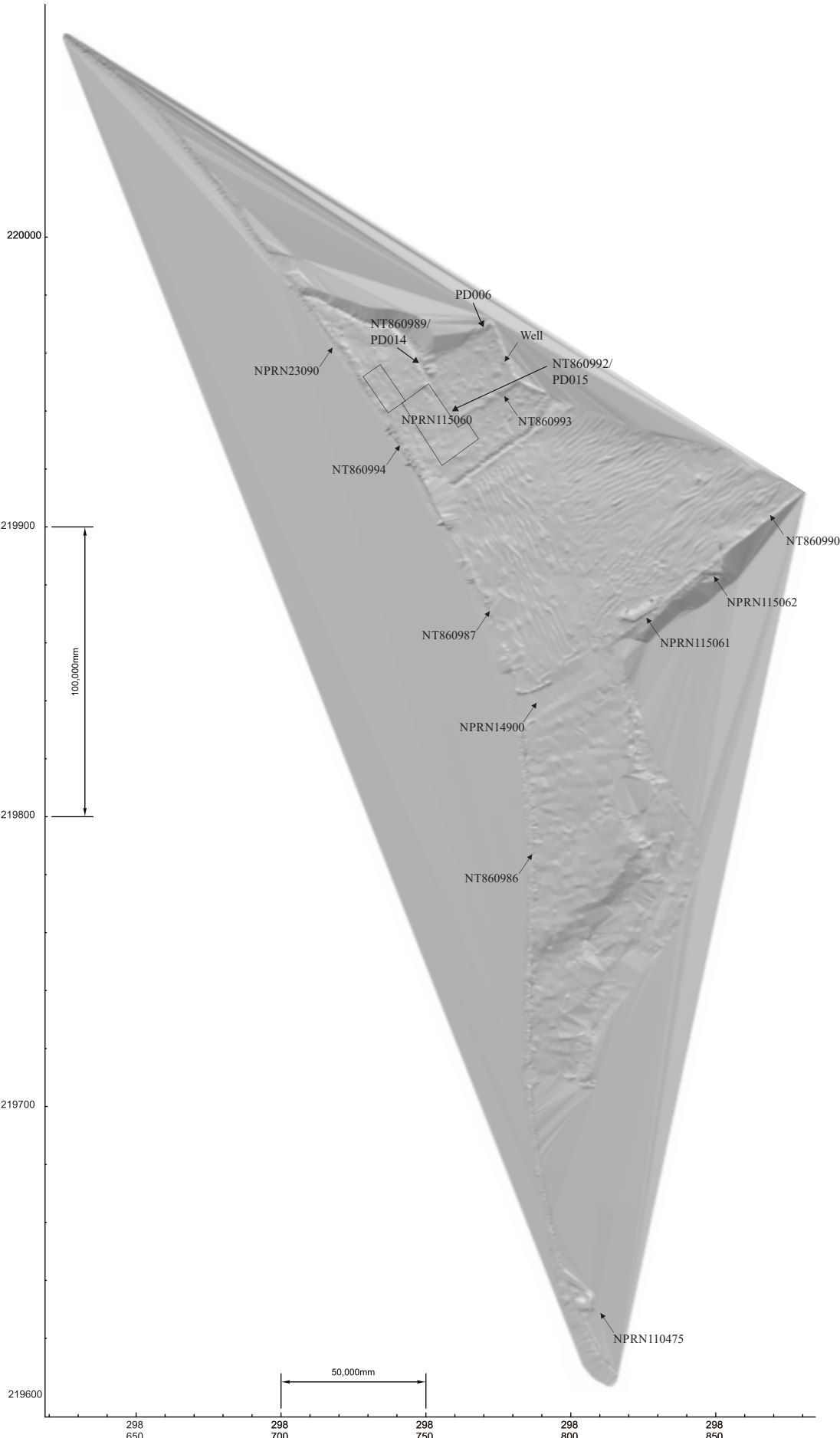
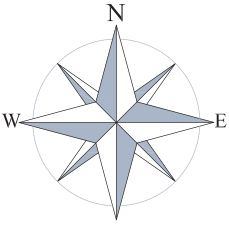
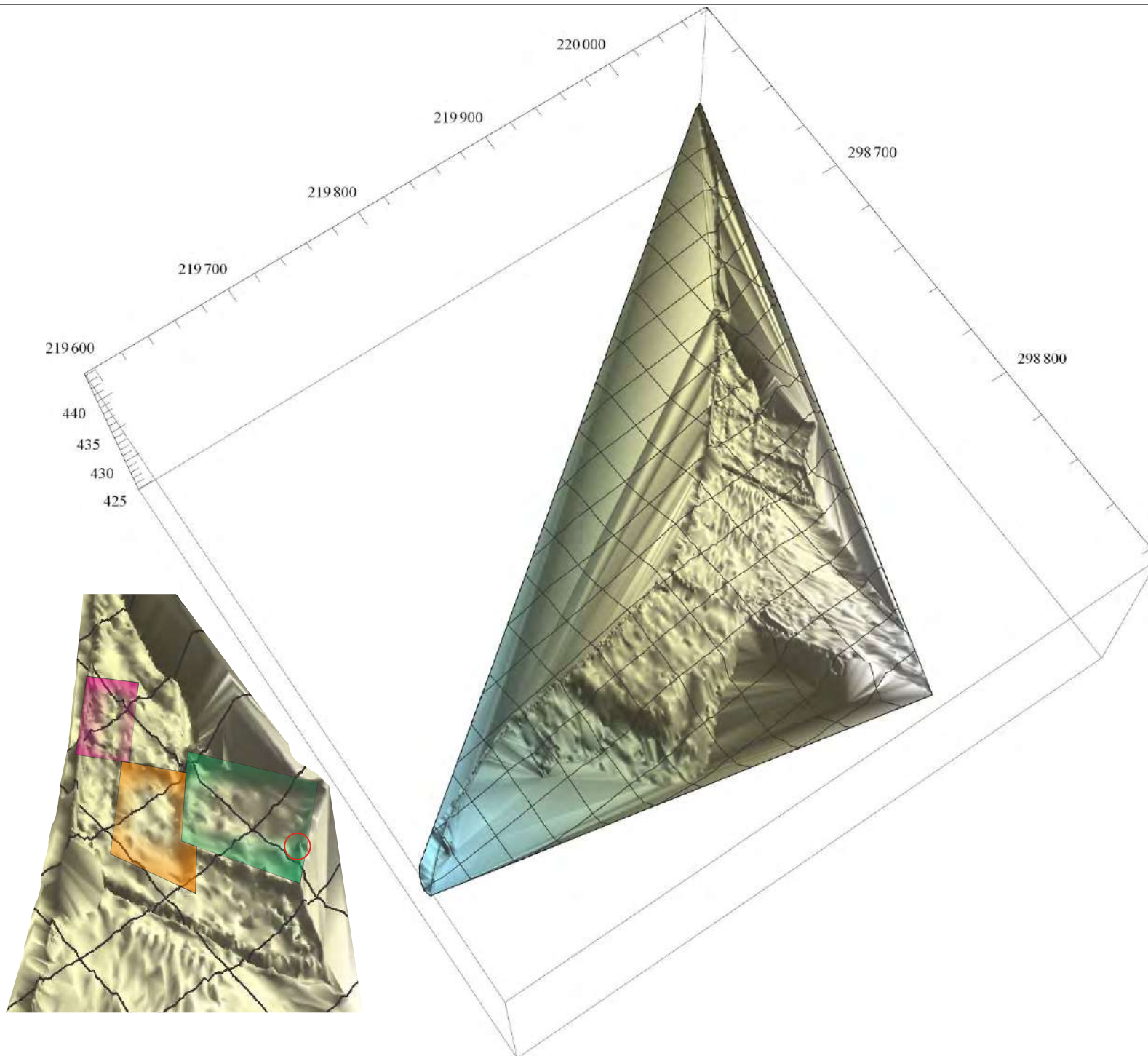


Fig 10: Topographic Survey



Enclosure
NT860993



Storey Arms Public House
NPRN115060

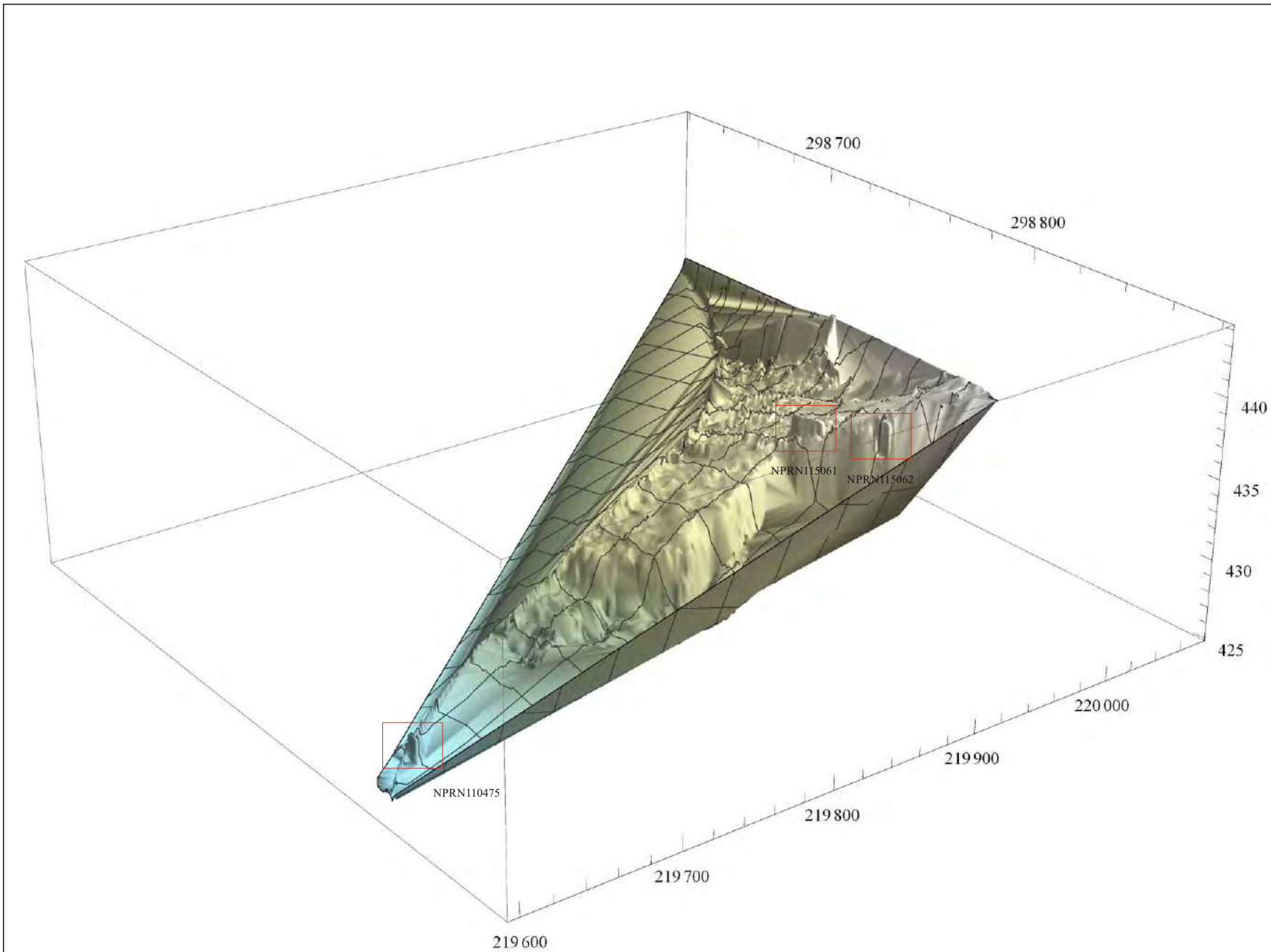


Storey Arms Public House
Outbuildings/Extension
Circa 1880-1900
NPRN115060



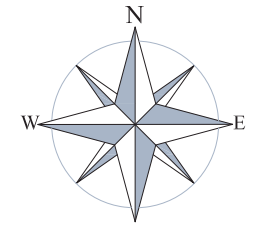
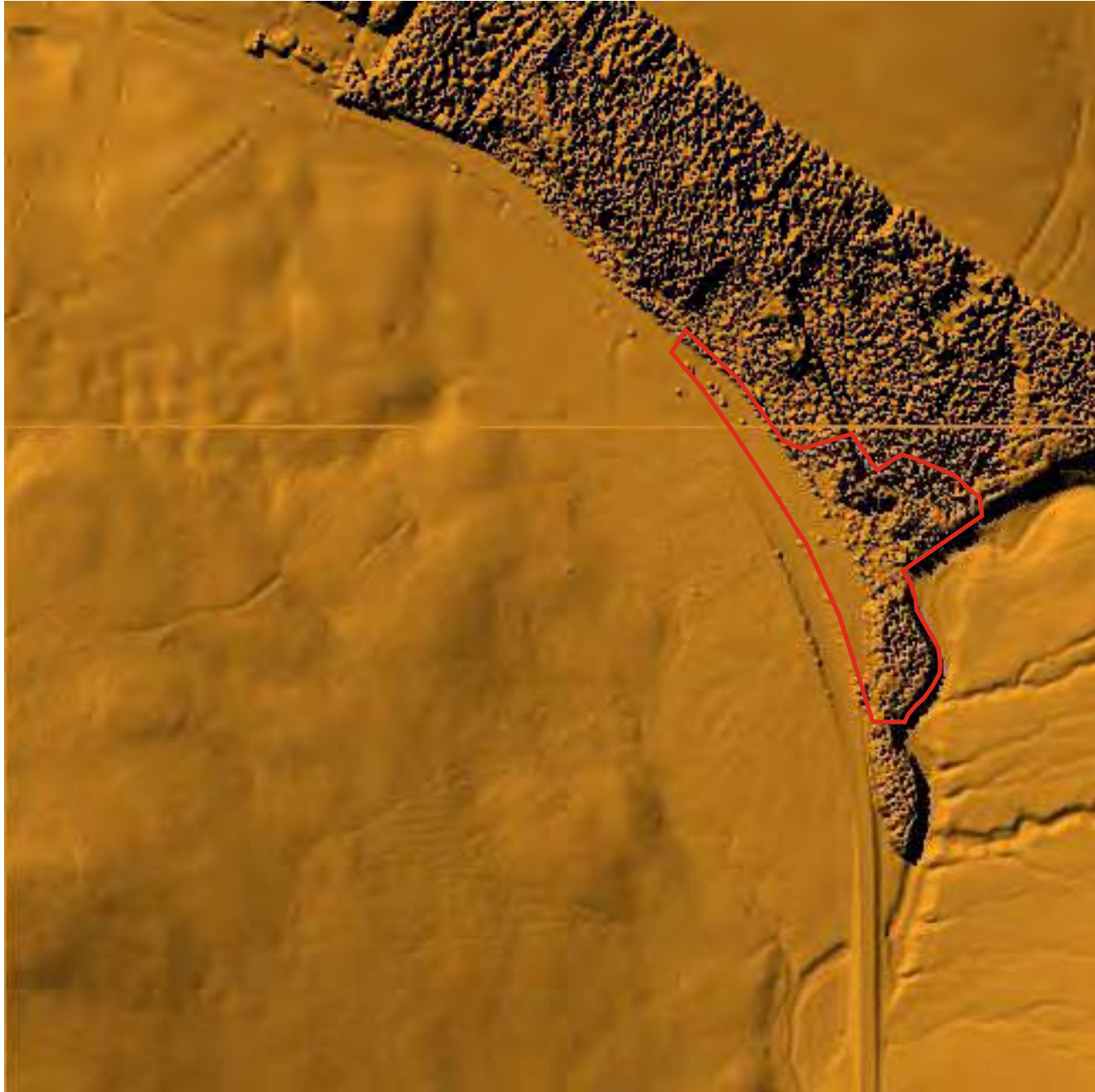
Well
Made Good in Second World
War, Probable Earlier Date

Fig 11: Storey Arms
Public House
Interpretation



Pill Box Defensive Complex

Fig 12: Second World War Defensive Installations



Site Boundary

Fig 13: Lidar Imagery
2.0m

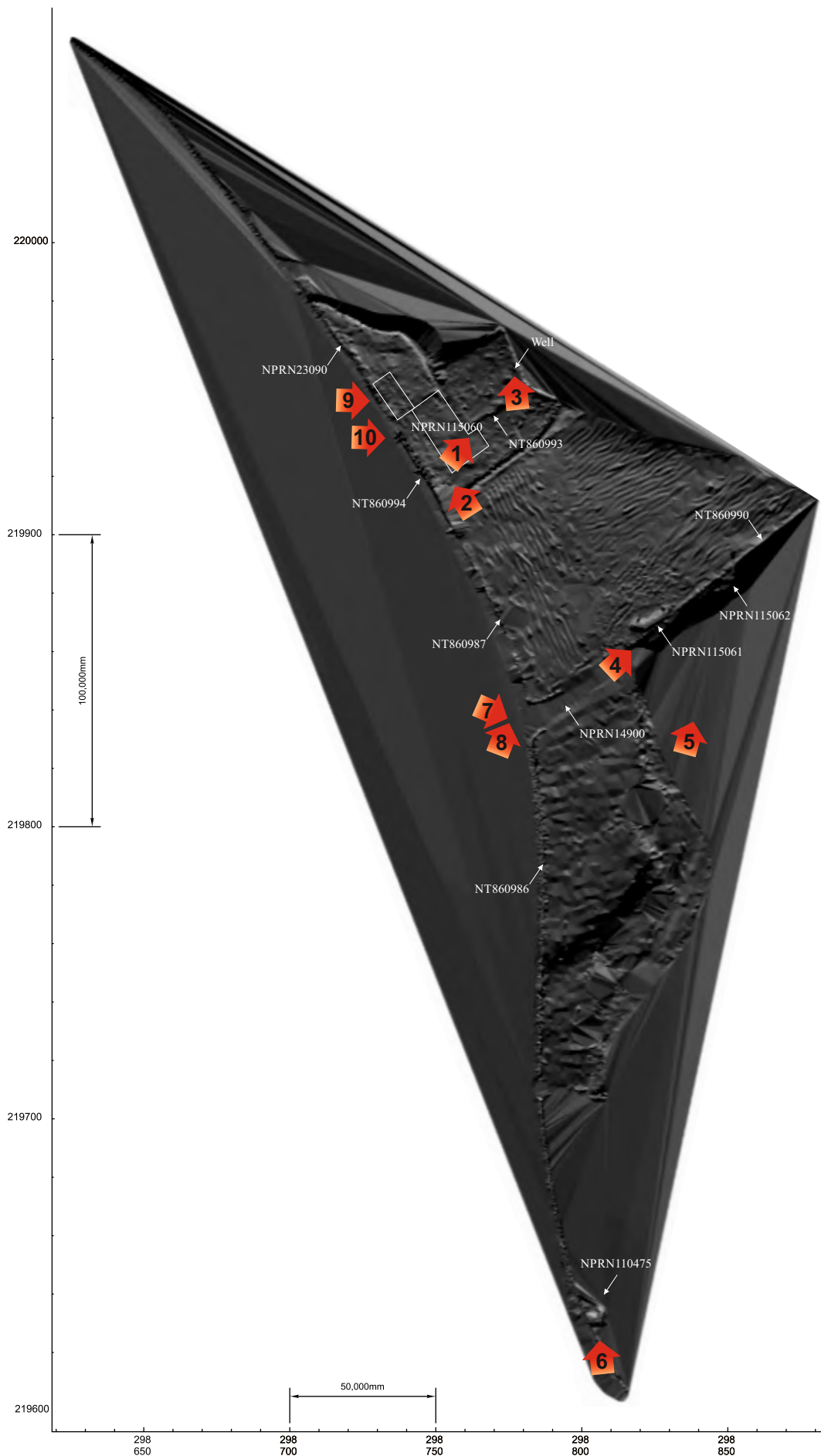
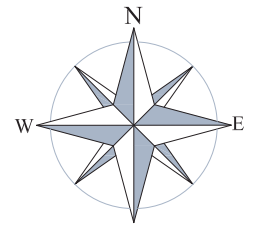


Fig 14: Photographic Location Plan, Arrow Corresponds to Plate Number and Direction

SURFACE LEVEL DATA			
NUMBER	MINIMUM LEVEL	MAXIMUM LEVEL	COLOUR
1	-2.00	-1.50	Red
2	-1.50	-1.00	Orange
3	-1.00	-0.50	Yellow
4	-0.50	0.00	Light Green
5	0.00	0.50	Green
6	0.50	1.00	Dark Green

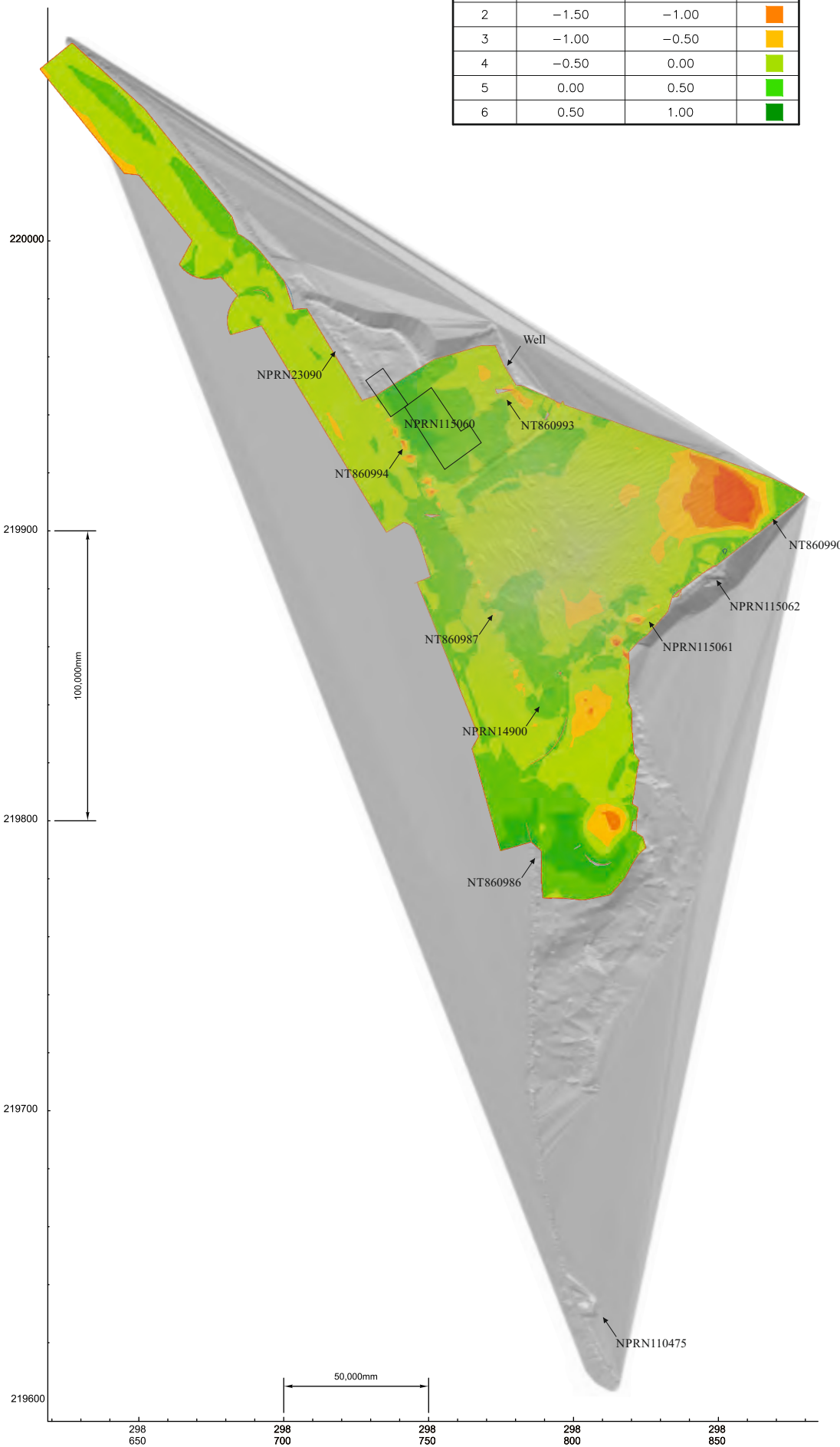
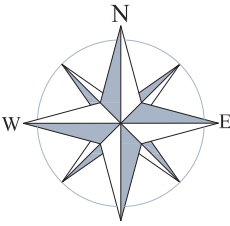


Fig 15: Proposed Development Impact Plan

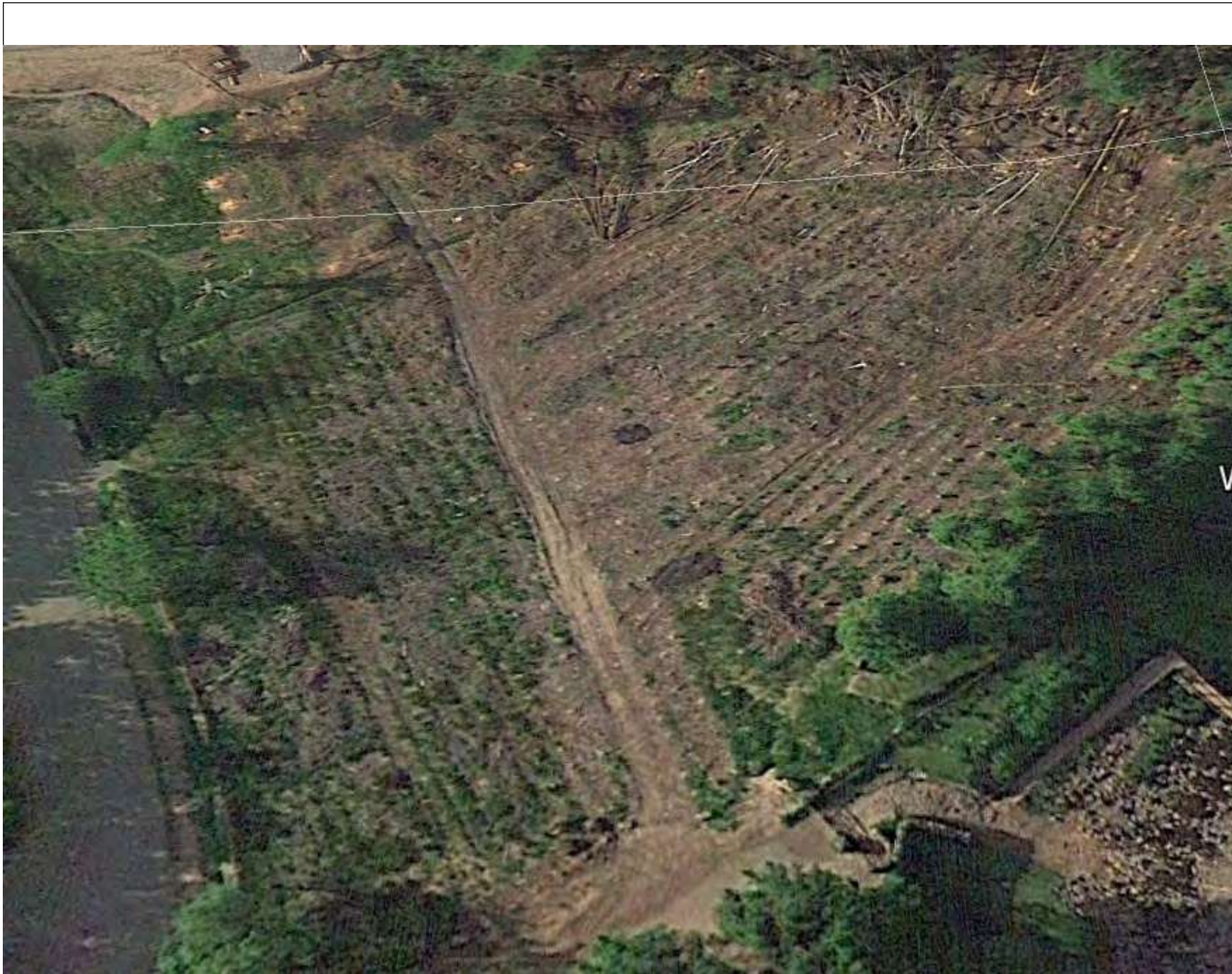


Fig 17: 2013 Satellite
Image Google Earth



Plate 1: View along south east bank of enclosure NT860993



Plate 2: View along south west 'front' of probable buried wall of Storey Arms NPRN115060



Plate 3: View north of well to rear of enclosure NT860993



Plate 4: View north of Pill box installation NPRN115061



Plate 5: View north of Pill box installations NPRN115062



Plate 6: View north of lone Pill box NPRN110475



Plate 7: View south of wall NT860986



Plate 8: View north of wall NT860987



Plate 9: View south of wall, probably part of extension of Storey Arms PRN115060



Plate 10: View south of wall NT860994

**WRITTEN SCHEME OF INVESTIGATION (WSI)
FOR A TOPOGRAPHICAL SURVEY**

AT

Pont ar Daf, Storey Arms, Brecon

Prepared for:

The National Trust

February 2017



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Figure 1. Survey Location

Figures 2-4: Design layout plans

Summary

This Written Scheme of Investigation (WSI) details the topographic survey to be undertaken by Archaeology Wales at the request of the National Trust. The topographic survey will allow the archaeological features associated with the Storey Arms public house and enclosure to be recorded prior to the proposed development of a car park facility at Pont-ar-Daf, Storey Arms, Brecon, Powys. The survey will be centred on NGR SN 98744 19898.

The application proposes that the site be redeveloped in an appropriate, sustainable way, to provide a total of 263 car parking spaces including spaces for disabled users, together with parking for minibuses and coaches and secure provision for cyclists (GGAT 2015).

A Desk Based Assessment was prepared by the Glamorgan Gwent Archaeological Trust (GGAT 2015) which summarised that five sites within the development area will be subject to a 'major' effect by the development, one to a 'minor' effect and seven to a 'beneficial' effect. Of these, three sites will be surveyed in detail using GPS.

A topographic plan will be produced of earthworks associated with the Storey Arms building, enclosure and this data will also be used to complement existing topographic data and Lidar data. A 3D view will also be generated from the survey data.

1. Introduction and project background

This Written Scheme of Investigation (WSI) details the topographic survey to be undertaken by Archaeology Wales at the request of the National Trust. The topographic survey will allow the archaeological features associated with the Storey Arms public house and enclosure to be recorded prior to the proposed development of a car park facility at Pont-ar-Daf, Storey Arms, Brecon, Powys. The survey will be centred on NGR SN 98744 19898 (Figure 1). Design information has been made available by the National Trust with regard to the lay out of the new Car Park facility (Figures 2-4).

The topographic survey has been commissioned in support of a planning application for redevelopment of the site (15/11835/FUL) following advice from the archaeological advisor at the Brecon Beacons National Park Authority (BBNPA).

This WSI has been prepared by Rowena Hart MCI(A) Project Manager, Archaeology Wales Ltd (henceforth - AW).

The methodology set out in this WSI will be agreed with the BBNPA Archaeologist, prior to the commencement of the work.

2. Site Description

The development area lies immediately to the east of the A470 and comprises an existing car park and an open area that was previously plantation woodland. The land slopes upwards to the north-east from approximately 435m and 490m OD.

The bedrock geology of the area comprises sandstone and argillaceous rocks overlain by superficial deposits of alluvial fan deposits of sands and gravels (BGS 2017).

3. Archaeological background

A detailed archaeological background to the area has been prepared as part of a Desk Based Assessment (GGAT 2015).

Known earthworks at the site comprise the remains of the earthwork platform and boundary banks/enclosures associated with the Storey Arms. Consequently, the survey will detail the topographic remains of three sites (site codes taken from GGAT 2015):

- PD006 Enclosure of old Storey Arms Pub Enclosure
- PD011/NT 860993 Storey Arms Enclosure
- 115060/725 Storey Arms Inn

In addition, other topographic features of potential archaeological interest may be contained within the site. These include:

- the military remains at the south-eastern boundary of the site
- a Roman Road, the possible line of which passes through the proposed development area.

4. Objectives

This WSI sets out a program of works to ensure that the topographic survey will provide sufficient detail to allow BBNPA to use the survey detail in their consideration of the car park development.

A written report comprising the topographic data will be compiled following the fieldwork and an archive of all collected data will be produced and deposited with an appropriate receiving institution.

5. Timetable of works

5.1. Fieldwork

The fieldwork will be undertaken at the convenience of the client. The work is proposed to start on 20 February 2017. Archaeology Wales will update BBNPA with the exact date.

5.2. Report delivery

The report will be submitted to the client and to BBNPA within a month of the completion of the fieldwork. A copy of the report will also be sent to the regional HER.

6. Fieldwork

6.1. Scope of survey

The survey will be undertaken on an area as outlined in Figure 1. It will ensure the detailed survey of all earthworks associated with the following sites:

PD006 Enclosure of old Storey Arms Pub Enclosure

PD011/NT 860993 Storey Arms Enclosure

115060/725 Storey Arms Inn Inn

In addition, the AW surveyor will be aware of potential for, and record of all morphology of potential archaeological origin which will be impacted by the proposed development, for example the military remains at the south-eastern boundary of the site and the possible Roman Road that passes through the proposed development area (see Section 3).

The surveyor will examine the potential for such remains where they lie within the development boundary but outside the survey area (Figure 1). This will be achieved by a walkover survey. Any potential features will be added to the total survey area at the discretion of the surveyor. Spot heights will be recorded using the same methodology as that outlined below.

6.2. Survey Methodology

The survey will be undertaken using a GeoMax GPS unit. All available mapping will be viewed prior to and during the site work. This will include historic mapping, existing topographic and Lidar data. Data points will be collected at a minimum of 0.5m spacing. The frequency will be increased over areas requiring higher resolution.

6.3. Recording

The data will be recorded onto a GeoMax logger using X-Pad survey software. The data will be downloaded as ASCII files and as DXF format and processed using LSS survey software of Surfer software.

The processed will be delivered as lines/polygons in a shapefile format, using GB OSNG coordinate reference system (OSGB 1936).

7. Monitoring

AW will make its survey fieldwork available for monitoring by the client (and their appointed agents) and the BBNPA Archaeologist. All site attendants should follow Health and Safety requirements. If site visit reports are made AW would be grateful to receive copies.

8. Post-fieldwork programme

8.1. Archive assessment

8.1.1. Site archive

An archive of archaeological site records will be prepared in accordance with *Management of Archaeological Projects* (English Heritage, 1991) Appendix 3.

The site archive will be deposited with an appropriate receiving organisation, in compliance with the ICON and CIfA Guidelines (*Archaeological Archives: a guide to best practice in creation, compilation, transfer and curation* (2007)). Copies of the report and archive index will be deposited with the *National Monuments Record*, RCAHMW, Aberystwyth and the *Regional HER*.

In addition, an archive of records made during the post-fieldwork phase will be prepared to the specifications in *Management of Archaeological Projects*, (English Heritage, 1991) Appendix 6.

8.1.2. Analysis

Following a review of the survey data it will be processed and displayed to best present the features associated with the Storey Arms Inn. This will result in the following inclusions in the final report:

- Non-technical summary
- Location plan showing the area covered by the survey
- Written description and interpretation of all features mapped, including their character, function, potential dating and relationship.
- Topographic representation of the detailed survey along with its integration into existing topographic and Lidar data
- 3D representation of the topographic data.
- A discussion of the local context of the remains by means of reviewing historical maps, and recent topographical survey data, Lidar data and the recently prepared Desk Based Assessment (GGAT 2015).
- An archive list including data file types. This will include a statement of the intent to deposit, and location of deposition, of the archive.

8.2. Reports and archive deposition

8.2.1. Report to client and LPA

A report, comprising a synthesis of data gathered, will be submitted upon completion of the survey.

Subsequently, the report will be submitted to the LPA for approval.

8.2.2. Additional reports

Following approval, and after an appropriate period has elapsed, copies of the report will be deposited with the relevant county Historical Environment Record, the National Monuments Record and, if appropriate, Cadw.

8.2.3. Summary reports for publication

Short archaeological reports will be submitted for publication in relevant journals; as a minimum, a report will be submitted to the annual publication of the regional CBA group or equivalent journal.

8.2.4. Notification of important remains

Where it is considered that remains have been revealed that may satisfy the criteria for statutory protection, AW will submit preliminary notification of the remains to Cadw.

8.2.5. Archive deposition

The survey data will be archived as part of the report but also as raw data in the form of DXF and ASCII files. The research archive will, whenever appropriate, be deposited with a suitable receiving institution, usually the relevant Local Authority museums service. The site archive will be deposited with an appropriate institution. A digital copy of the archive will be deposited with the RCAHMW.

9. Staff

The project will be managed by Rowena Hart MCIfA (AW Project Manager) and the fieldwork undertaken by Louis Stafford (Archaeology Wales). Any alteration to staffing before or during the work will be brought to the attention of BBNPA and the client.

Additional Considerations

10. Health and Safety

10.1. Risk assessment

Prior to the commencement of work AW will carry out and produce a formal Health and Safety Risk Assessment in accordance with *The Management of Health and Safety Regulations* 1992. A copy of the risk assessment will be kept on site and be available for inspection on request. A copy will be sent to the client (or their agent as necessary) for their information. All members of AW staff will adhere to the content of this document.

10.2. Other guidelines

AW will adhere to best practice with regard to Health and Safety in Archaeology as set out in the FAME (Federation of Archaeological Managers and Employers) health and safety manual *Health and Safety in Field Archaeology (2002)*.

11. Insurance

AW is fully insured for this type of work, and holds Insurance with Aviva Insurance Ltd and Hiscox Insurance Company Limited through Towergate Insurance. Full details of these and other relevant policies can be supplied on request.

12. Quality Control

12.1. Professional standards

AW works to the standards and guidance provided by the *Chartered Institute for Archaeologists*. AW fully recognise and endorse the Chartered Institute for Archaeologists' *Code of Conduct*, *Code of Approved Practice for the Regulation of Contractual Arrangements in Field Archaeology* and the *Standard and Guidance for archaeological watching briefs* currently in force. All employees of AW, whether corporate members of the Chartered Institute for Archaeologists or not, are expected to adhere to these Codes and Standards during their employment.

12.2. Project tracking

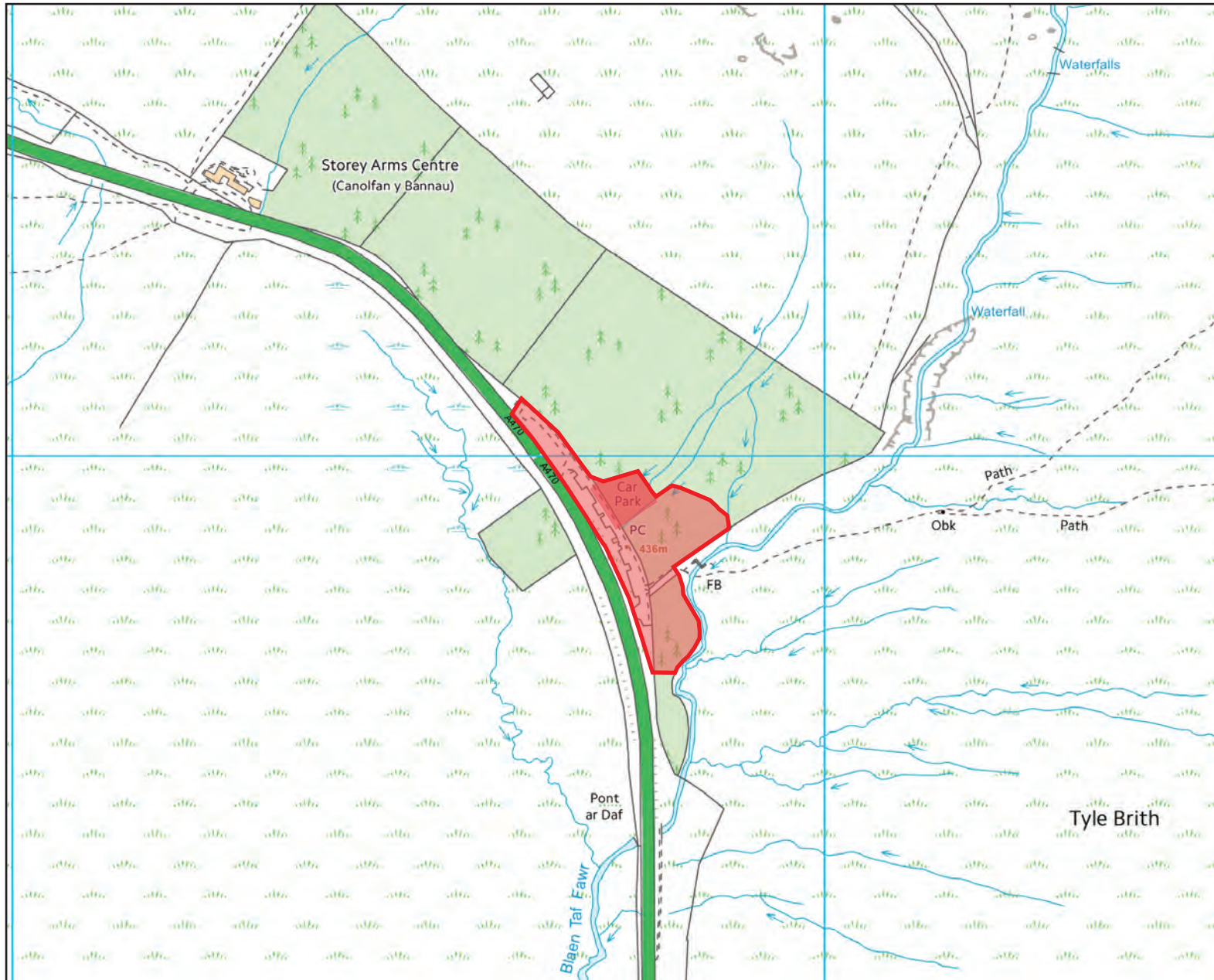
The designated AW manager will monitor all projects in order to ensure that agreed targets are met without reduction in quality of service.

13. Arbitration

Disputes or differences arising in relation to this work shall be referred for a decision in accordance with the Rules of the Chartered Institute of Arbitrators' *Arbitration Scheme for the Institute for Archaeologists* applying at the date of the agreement.

14. References

GGAT, 2015, *Pont ar Daf Car park, Brecon, Powys: Archaeological Desk Based Assessment*. GGAT Report **2015/063**



□ Site boundary

Figure 1. Extent of detailed topographic survey



- LEGEND**
- MAJOR CONTOUR - 0.50m INTERVALS
 - MINOR CONTOUR - 0.25m INTERVALS
 - PROPOSED SW DRAINAGE - UTILISING EXISTING CONNECTION/ DISCHARGE POINTS
 - PROPOSED SW DRAINAGE - ATTENUATED FLOWS TO WATERCOURSE TO THE SOUTH EAST. - RESTRICTED TO GREENFIELD RUN OFF RATE
 - SWALE
 - HIGHWAY GULLY
 - INSPECTION CHAMBER (400)
 - MANHOLE
 - ALTKON - M3 PRECAST HEADWALL
 - 150mm PERFORATED PIPE

NOTES

- PURPLE COLOURED DRAINAGE TO INDICATE USE OF EXISTING SURFACE WATER DRAINAGE CONNECTION. PROPOSED DRAINAGE TO REMAIN UNRESTRICTED EXISTING SWALE AREA THAT DRAINS TO EXISTING DRAINAGE SYSTEM IS SHOWN. WHERE AN ALLOWANCE FOR A WORSE CASE INFILL INTERESTY OF 50mm/HR PROVIDES A DISCHARGE RATE OF 60L/S, THE PROPOSED SWALE AREA TO DRAIN TO EXISTING DRAINAGE IS SHOWN. AN INCREASE OF 70mm/HR PROPOSED FLOWS BASED UPON A 50mm/HR WORSE CASE INFILL INTERESTY A DISCHARGE RATE OF 65L/S IS ADVISED. AN INCREASE OF 80L/S, A PORTION OF THE EXISTING CAR PARK WHICH CURRENTLY DRAINS TO THE EXISTING SW SYSTEM (DOWNHILL AREA) WILL BE DRAINED TO THE POND THIS REDUCES THE "IMPEDIMENT" AREA TO DRAIN TO THE EXISTING SYSTEM.
- PROPOSED SURFACE WATER TO INCORPORATE PERCOLATION INTERCEPTORS
- ALL LAND DRAINS INSPECTION CHAMBERS/ MANHOLES TO INCORPORATE 30mm GULLIES
- ALL DRAINAGE IS SUBJECT TO DETAILED DESIGN
- NO PERCOLATION INTERCEPTOR REQUIRED TO GULLY PAVING AREAS. COATED STONE/PAVEMENT WILL PROVIDE IMPERMEABLE WHICH CONTAINS HYDROCARBONS, THIS CLEANING THE WATER PRIOR TO DISCHARGE TO THE POND
- ALL PERFORATED PIPES TO HAVE RIDDING PIPES

A 12 12 16 ENGINEERING UPDATED TO SUIT REVISED SITE LAYOUT

Project:	PONT AR DAF PROPOSED CAR PARK
Client:	NATIONAL TRUST
Drawing:	ENGINEERING PLAN
Scale:	1:250 BA1
Date:	NOVEMBER 2014
Drawing No:	10039-101_1
Rev:	A

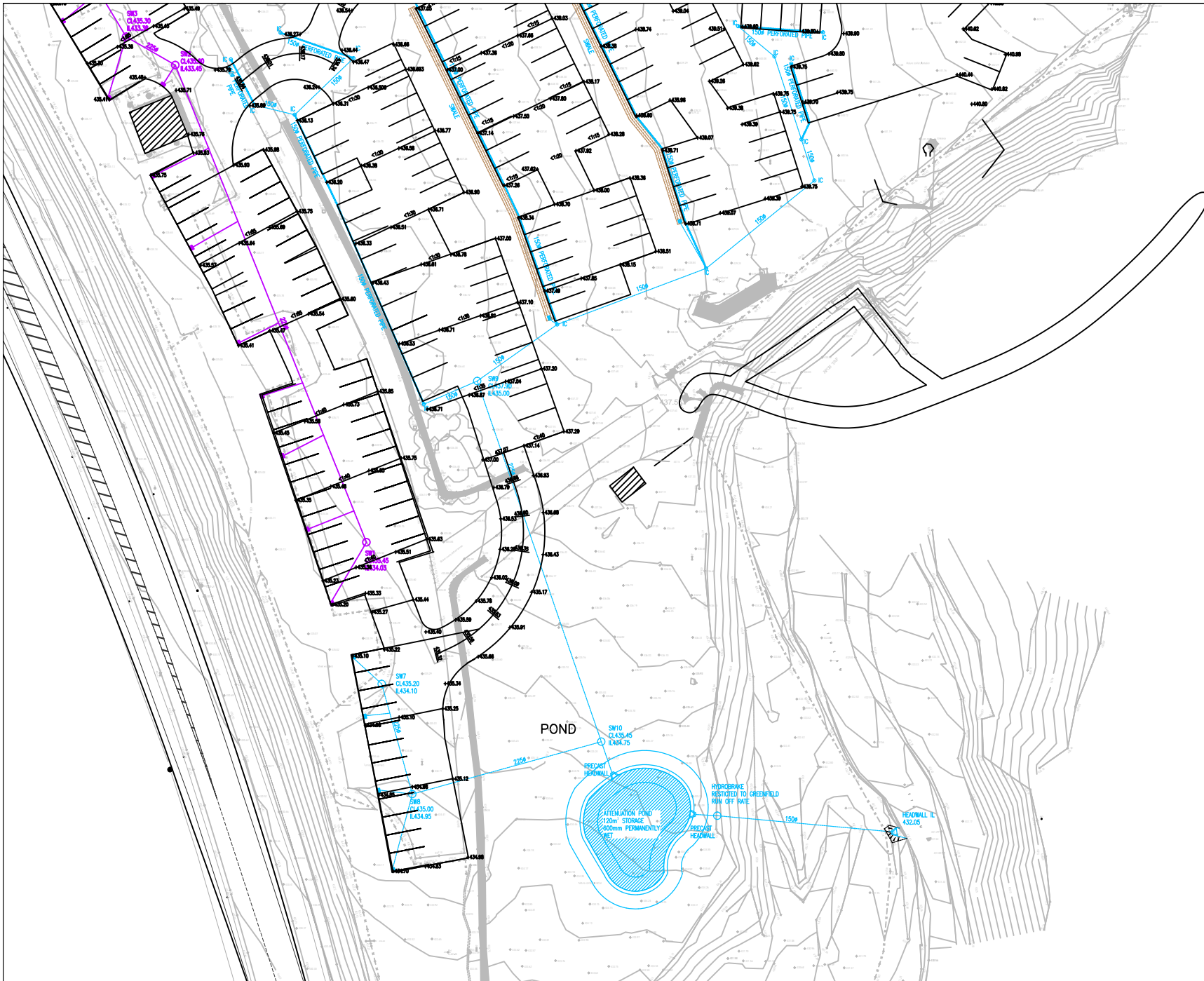
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Drp Status:



- LEGEND**
- MAJOR CONTOUR - 0.50m INTERVALS
 - MINOR CONTOUR - 0.25m INTERVALS
 - PROPOSED SW DRAINAGE - UTILISING EXISTING CONNECTION/ DISCHARGE POINTS
 - PROPOSED SW DRAINAGE - ATTENUATED FLOWS TO WATERCOURSE TO THE SOUTH EAST. - RESTRICTED TO GREENFIELD RUN OFF RATE
 - SWALE
 - HIGHWAY GULLY
 - INSPECTION CHAMBER (450)
 - MANHOLE
 - ALTHON - HC3 PRECAST HEADWALL
 - 150mm PERFORATED PIPE

- NOTES**
- * PURPLE COLOURED DRAINAGE TO MAKE USE OF EXISTING SURFACE WATER DRAINAGE CONNECTION. PROPOSED DRAINAGE TO REMAIN UNRESTRICTED. EXISTING TRUNC AREA THAT DROPS TO EXISTING DRAINAGE SYSTEM IS 'TRUNC' WITHIN AN ALLOWANCE FOR A ROUGH GUESS RAINFALL INTENSITY OF 50mm/hr PROVIDES A DISCHARGE RATE OF 20L/s. THE PROPOSED TRUNC AREA TO DRAIN TO EXISTING DRAINAGE IS 450m². AN INCREASE OF 70%. PROPOSED FLOWS BASED UPON A 100mm/hr ROUGH GUESS RAINFALL INTENSITY A DISCHARGE RATE OF 50L/s IS ADVISED. AN INCREASE OF 150%. A PORTION OF THE EXISTING CAR PARK WHICH CURRENTLY DRAINS TO THE EXISTING SW SYSTEM EQUIPMENT AREA WILL BE DRAINED TO THE POND THIS BEING THE 'IMPROVEMENT' AREA TO JOIN TO THE EXISTING SYSTEM.
 - * PROPOSED SURFACE WATER TO DISCHARGE PERIOD. INSPECTION CHAMBERS ALL LAND OWNERS INSPECTOR CHAMBERS/ MANHOLES TO BE OPENED UPON SITE.
 - * ALL DRAINAGE IS SUBJECT TO DETAILED DESIGN.
 - * NO PERIOD INSPECTION REQUIRED TO DRINK MAKING AREA.
 - * COLOURED DRAINAGE WILL HOUSE SCUM-BUILDERS WHICH CONTAIN HYDROCARBONS. THIS CLEANING THE WATER PRIOR TO DISCHARGING TO THE POND.
 - * ALL PERFORATED PIPES TO HAVE RIDDING POINTS.

B 13.12.18 ENGINEERING UPDATED TO SUIT REVISED SITE LAYOUT
 A 30.03.15 DISCHARGE HEADWALL RELOCATED TO SUITABLE LOCATION ON WATERCOURSE BANK
 Revisions

Project: **PONT AR DAF PROPOSED CAR PARK**

Client: **NATIONAL TRUST**

Drawing: **ENGINEERING PLAN**

Scale: 1:250 BA1 Date: NOVEMBER 2014 Drawn by: NL

Drawing No: **10039-101_3** Rev: B

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