

Archival research:

Kronospan, Holyhead Road, Chirk Access road, lorry park, 132kV substation and other ancillary works

February 2023



Report No. 2168

By

Susan Stratton PhD



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1	27.2.23	Original	Susan Stratton PhD	Irene Garcia Rovira MCIfA

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Summary

In September 2022 Archaeology Wales (henceforth - AW) conducted an archaeological field evaluation on land to the north of Kronospan, Holyhead Road, Whitehurst, Chirk, Wrexham (NGR SJ 328825 339096) at the request of AxisPED. The evaluation was part of pre-application works relating to the proposed development of the site as a lorry park, access road, 132kV substation and other ancillary works. The development area lies 140m to the east of the World Heritage Site (WHS) Pontcysyllte Aqueduct and Canal and within the WHS Buffer Zone.

The field evaluation encountered a large, circular feature of 4.5m diameter and over 4m in depth, which was interpreted as a lime kiln. During consultation, Cadw requested an archive search to attempt to establish whether the lime kiln was used to produce lime for the construction of the Chirk Aqueduct and canal.

Twenty-two documents of interest were identified for viewing from four different institutions. Of these, only five documents provided any information about the proposed development area or its immediate vicinity, and none provided any reference to a lime kiln.

A double limekiln (NPRN405795) is recorded 300m to the west of limekiln [5003], built into the edge of the former Fradley Wharf by the Canal Company for lime production used in the construction of the canal. The presence of these kilns adjacent to the canal suggests that [5003], at a greater distance, may have been built by a farmer to produce lime for soil improvement, rather than for the canal.

1 Introduction

- 1.1.1 In September 2022 Archaeology Wales (henceforth – AW) conducted an archaeological field evaluation on land to the north of Kronospan, Holyhead Road, Whitehurst, Chirk, Wrexham (NGR SJ 28825 39096) at the request of AxisPED. The evaluation was associated with the proposed development of the site as a lorry park, access road, 132kV substation and other ancillary works.
- 1.1.2 The development area lies 140m to the east of the World Heritage Site (WHS) Pontcysyllte Aqueduct and Canal and within the WHS Buffer Zone.
- 1.1.3 The field evaluation encountered a large, circular feature of 4.5m diameter and over 4m in depth, which was interpreted as a lime kiln (Garcia Rovira, 2022a). During consultation, Cadw requested an archive search to attempt to establish whether the lime kiln was used to produce lime for the construction of the Chirk Aqueduct and canal.
- 1.1.4 This report builds upon the desk-based assessment (Garcia Rovira, 2022b), which was produced prior to the field evaluation, and which produced no evidence for the lime kiln.
- 1.1.5 All work will conform to the *Standard and Guidance for Archaeological Desk-Based Assessment* (ClfA, 2020) and be undertaken by suitably qualified staff to the highest professional standards.

2 Site Description

- 2.1.1 The Proposed Development is located immediately to the north-east of an industrial estate which includes the main factory and other infrastructure associated with Kronospan. It lies on the west side of Chirk, and is bounded to the east by the B5070, to the west by the GWR railway and Llangollen Canal (DE 175; PRN 124694, NPRN 405725), to the south by the main Kronospan industrial complex, and to the north by open fields. The area consists of three pasture fields that have been used in recent years for grazing.
- 2.1.2 Pontcysyllte Aqueduct and Canal were inscribed as a WHS in 2009, as “early and outstanding examples of the innovations brought about by the Industrial Revolution in Britain” (ARCADIS, 2019). The canal was initially built as the Ellesmere Canal and was intended to provide transport of goods from the collieries and ironworks in the Ruabon area.
- 2.1.3 The proposed development area was subject to a geophysical survey carried out by AW in June 2022 (Muller, 2022). As a result of this, a programme of evaluation consisting of eight trenches, positioned to assess identified geophysical anomalies, was agreed with CPAT-DC (Griffiths, 2022). The evaluation encountered two cut features, a modern rubbish pit in Trench 2, and a probable lime kiln [5003] in Trench 5, on the eastern edge of the area (Garcia Rovira, 2022a).

3 Methodology

- 3.1.1 The primary objective of this report is to establish whether or not the lime kiln encountered during the field evaluation was related to the construction of the Ellesmere Canal. A desk-based assessment (Garcia Rovira, 2022b) had previously found no evidence of the lime kiln.
- 3.1.2 In order to produce this report, archives were searched for items of potential relevance to Ellesmere Canal and the development area, which at the time of the Canal's construction was part of the Chirk Castle Estate. Search terms used included "Ellesmere canal," "Chirk," "Chirk Aqueduct," "Chirk tunnel," and "Chirk Castle Estate," with additional modifiers and filters. The online collections consulted were:
- Archives Hub;
 - Canal & River Trust; and,
 - Llyfrgell Genedlaethol Cymru/The National Library of Wales.
- 3.1.3 The searches identified four archives holding items of potential relevance which were then visited to be viewed in person:
- Canal & River Trust;
 - Llyfrgell Genedlaethol Cymru/The National Library of Wales;
 - North East Wales Archives - Denbighshire; and,
 - North East Wales Archives - Flintshire.
- 3.1.4 This work conforms to the *Standard and Guidance for Archaeological Desk-Based Assessment*, as produced by the Chartered Institute for Archaeologists (CIfA 2021).

4 Archive search results

- 4.1.1 A total of 22 primary documents were viewed across the four archives visited. No items were found that provided any positive information regarding lime kiln [5003]. However, items were encountered that provided information regarding the proposed development area. These fell into two clear categories, those relating to the construction of Ellesmere Canal and those relating to Chirk Castle Estate.
- 4.2 Ellesmere Canal**
- 4.2.1 The idea of a canal for the transportation of goods from the coal producing and ironworking region around Ruabon was first discussed in 1789. Two proposed routes gained support, one linking the River Mersey to the River Dee at Chester then via Overton to Shrewsbury, with a branch from Overton

to Ruabon then Llangollen and Bersham and another branch to Llanymynech, the other from the Chester Canal near Tattenhall to Ruabon via Whitchurch. A sketch plan from 1791 shows the proposed routes (D/BJ/432).

- 4.2.2 The Ellesmere Canal's Act was passed in 1793. Following surveys of the proposed routes, a compromise route had been agreed which primarily followed the first route but also included a branch to the Chester Canal that satisfied the supporters of the second route. Work on the Pontcysyllte to Chirk section was started within the year. A book of plans of extensions and deviations from the line with an accompanying book of reference was produced in late 1793 (QSD/DC/2). It includes a detailed plan of the section of the route from Moreton Hall to the south of Chirk to the River Dee to the north, passing to the west of the proposed development area.
- 4.2.3 The plan shows the fields the route passes through, and the accompanying book provides details of the fields, including ownership, tenants, and in some cases existing land use. The fields depicted do not extend as far as the proposed development area, but the plan does show Afon Bradley (here named Afon Fradley) Farm which still exists to the north-west. All of the Chirk fields were listed as being owned by Richard Myddelton, Esq. and none had any specific use listed. Plans of other sections of the canal included references to stone quarries and limeworks, but none were listed in the Chirk area.
- 4.2.4 In 1795, an intended plan of the route with an accompanying book of reference was produced (QSD/DC/4). It did not include the same detail as that from 1793; rather than showing individual fields the canal passed through it marked them with a line and reference number. This document also included field names. None of the names in the line near Chirk bore any reference to lime kilns.
- 4.2.5 No subsequent documents relating to the construction of the canal or aqueducts that could provide any information about the lime kiln were found. The Chirk section of the canal was opened in 1801.

4.3 Chirk Castle Estate

- 4.3.1 The Chirk Castle Estate records held at the National Library include various correspondence from Thomas Lovett, the Chirk Castle agent at the time of the construction of the canal. He wrote various letters concerning the canal, but none were found which made mention of a lime kiln in the fields near Chirk.
- 4.3.2 Only two estate plans were found which included detailed depictions of the proposed development area, both of which post-date the construction of canal. The earlier of the two was produced in 1820. It provides an extraordinary level of detail regarding the estate lands, including crops on individual fields for that year. The location of the lime kiln lies in the south-east corner of a field named Maes y felin ucha (upper mill field). No lime kiln is depicted on the plan.
- 4.3.3 An estate plan produced in 1875 shows the GWR line, which was built in 1848,

running along the east side of the canal. The plan shows that by this time the former Maes y felin ucha had been joined with the field to its south to create the modern field boundary. No lime kiln is depicted in the field.

- 4.3.4 Chirk Castle Estate was sold off in 1911. The sales particulars included plans and descriptions of each lot (D/BP/540). Lot 11 was Afon Bradley Farm, which included most of the proposed development area. Neither the plan nor the description noted any lime kiln on the plot.

5 Discussion

- 5.1.1 Limekiln [5003], found within the proposed development area, survived only as sub-surface remains and no structural elements were encountered. The surviving combustion chamber has no features that would provide a date for its construction. It could represent a pre-industrial clamp kiln, which was a pit cut directly into the ground within the base of which a hearth would be laid. Layers of limestone and fuel were stacked on top and covered with turf (Historic England, 2018). However, it could equally represent a later, Industrial period draw kiln. This type of kiln generally had combustion chambers lined with stone or brick, but it was common for these to be removed for reuse when the kiln was abandoned. Either type of kiln would have produced the heat-effected red burnt soil seen in [5003].
- 5.1.2 A small double limekiln (NPRN405795) is known in the vicinity of the proposed development area. It was built adjacent to Fradley (later Bradley) Wharf, to the south-west of Afon Bradley Farm, and 310m to the west of limekiln [5003]. The wharf was a short off-shoot from the canal on its east side, and was an important centre of commerce in Chirk. Unlike [5003], the kilns have a surviving structure visible above ground, although it is now heavily overgrown. They were originally constructed by the Canal Company but were later taken over by Bradley Farm (Hurdsman, 1996).
- 5.1.3 The construction of limekilns alongside canals was common, as canals provided a means for raw materials to be transported over long distances (Williams, 1989). Lime itself was difficult to transport as it would be ruined to any exposure to water. Canals also required large quantities of lime for their construction, particularly when structures such as aqueducts and tunnels were required. Limekilns like NPRN405795 were built by wharves as the canals were under construction, meaning lime could be produced on site (Williams, 1989).
- 5.1.4 Lime was in high demand during the 18th and 19th centuries, not only for its use in construction in making lime mortar but also in agriculture as a soil improver. It was not uncommon for farmers to build their own limekilns on their land (<https://www.cumbria-industries.org.uk/a-z-of-industries/lime-burning/>). These limekilns would have been used less intensively than those for industrial production, with burnings being carried out depending on the farmer's requirements. The distance of limekiln [5003] from the canal, in comparison with those constructed next to Bradley Wharf, may suggest that

this kiln was constructed by a farmer rather than for use in the construction of the canal.

6 Conclusions

- 6.1.1 In September 2022, Archaeology Wales conducted an archaeological field evaluation on land to the north of Kronospan, Holyhead Road, Chirk, Wrexham at the request of AxisPED. The field evaluation encountered a large, circular feature of 4.5m diameter and over 4m in depth, which was interpreted as a lime kiln (Garcia Rovira, 2022a). During pre-commencement consultation, Cadw requested an archive search to attempt to establish whether the lime kiln was used to produce lime for the construction of the nearby Pontcysyllte Aqueduct and Canal WHS.
- 6.1.2 Following an online search of archives for potentially relevant items, including consultation with archivists, 22 items were identified for viewing from four different institutions. Of these, only five documents provided any information about the proposed development area or its immediate vicinity, and none provided any reference to a lime kiln.
- 6.1.3 A double limekiln (NPRN405795) is recorded 300m to the west of limekiln [5003], built into the edge of the former Fradley Wharf by the Canal Company for lime production used in the construction of the canal. The presence of these kilns adjacent to the canal suggests that [5003], at a greater distance, may have been built by a farmer to produce lime for soil improvement, rather than for the canal.

7 Sources

General

ARCADIS, 2019. *Pontcysyllte Aqueduct and Canal World Heritage Site Management Plan 2019-2029*.

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Williams, R. 1989. *Limekilns and limeburning*. Shire Publications Ltd.

Wilson, E. 1975. *The Ellesmere and Llangollen Canal*. London: Phillimore.

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Industrial History of Cumbria, <https://www.cumbria-industries.org.uk/a-z-of-industries/lime-burning/> - accessed 22/02/2023.

Archives

Denbighshire

QSD/DC/4

QSD/DR/165

QSD/DR/166

QSD/DR/310

DD/BK/15

DD/G/3282

QSD/DK/1/12

QSD/DC/13

QSD/DC/2

QSD/DK/1/13

Flintshire

D/GW/930

D/GW/931

D/GW/932

D/GW/933

D/BJ/432

D/BP/540

National Library of Wales

Nanteos 108 132/1/41

Roller Map C88

Roller Map C89

Roller Map C90

GB 210 E2/2/1

National Waterways Archive, Canal and River Trust

BW152/20/4

Plates

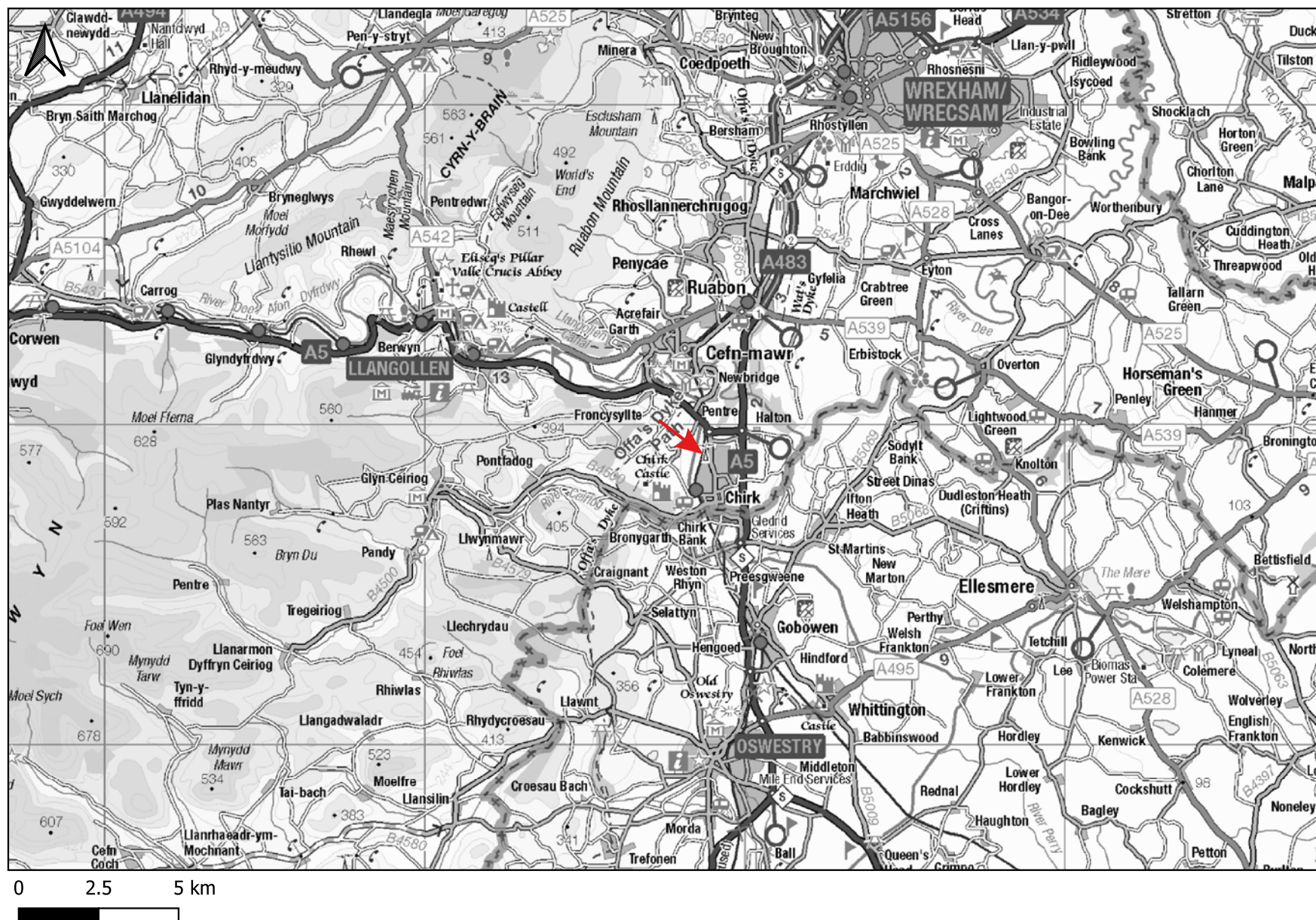


Figure 1. Site Location (red arrow).

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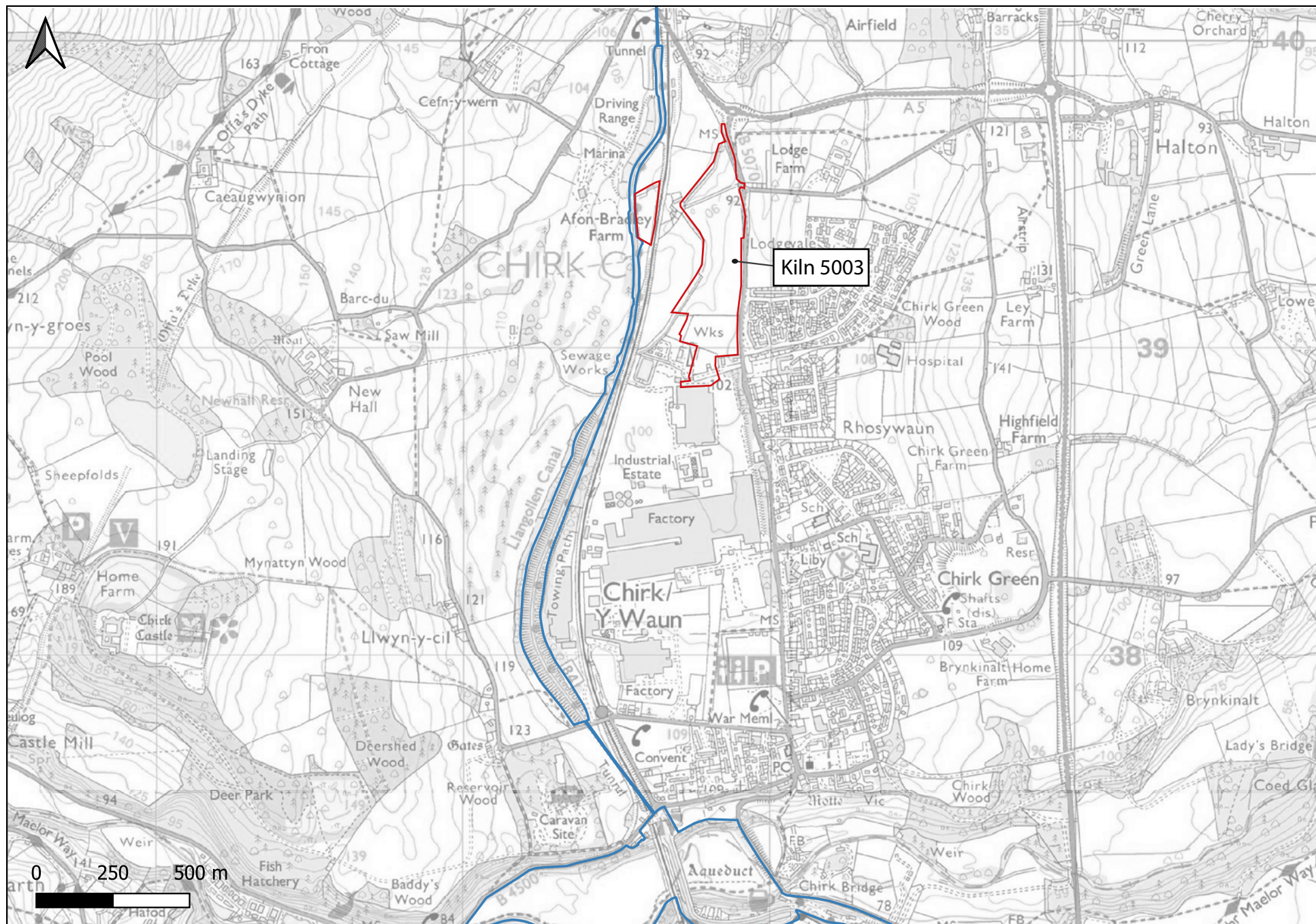


Figure 2. Location of evaluated kiln.

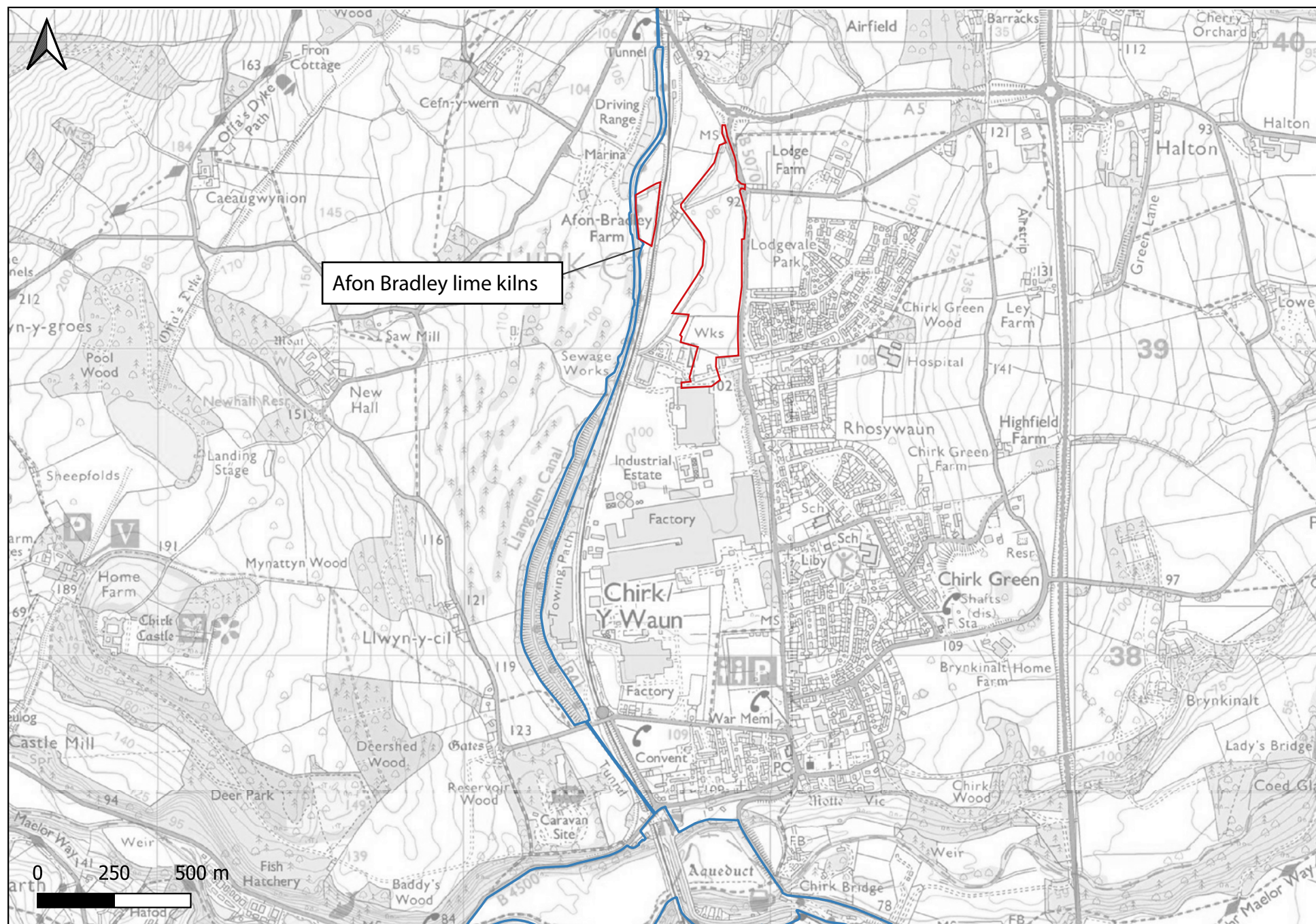


Figure 3. Location of Afon Bradley lime kilns.

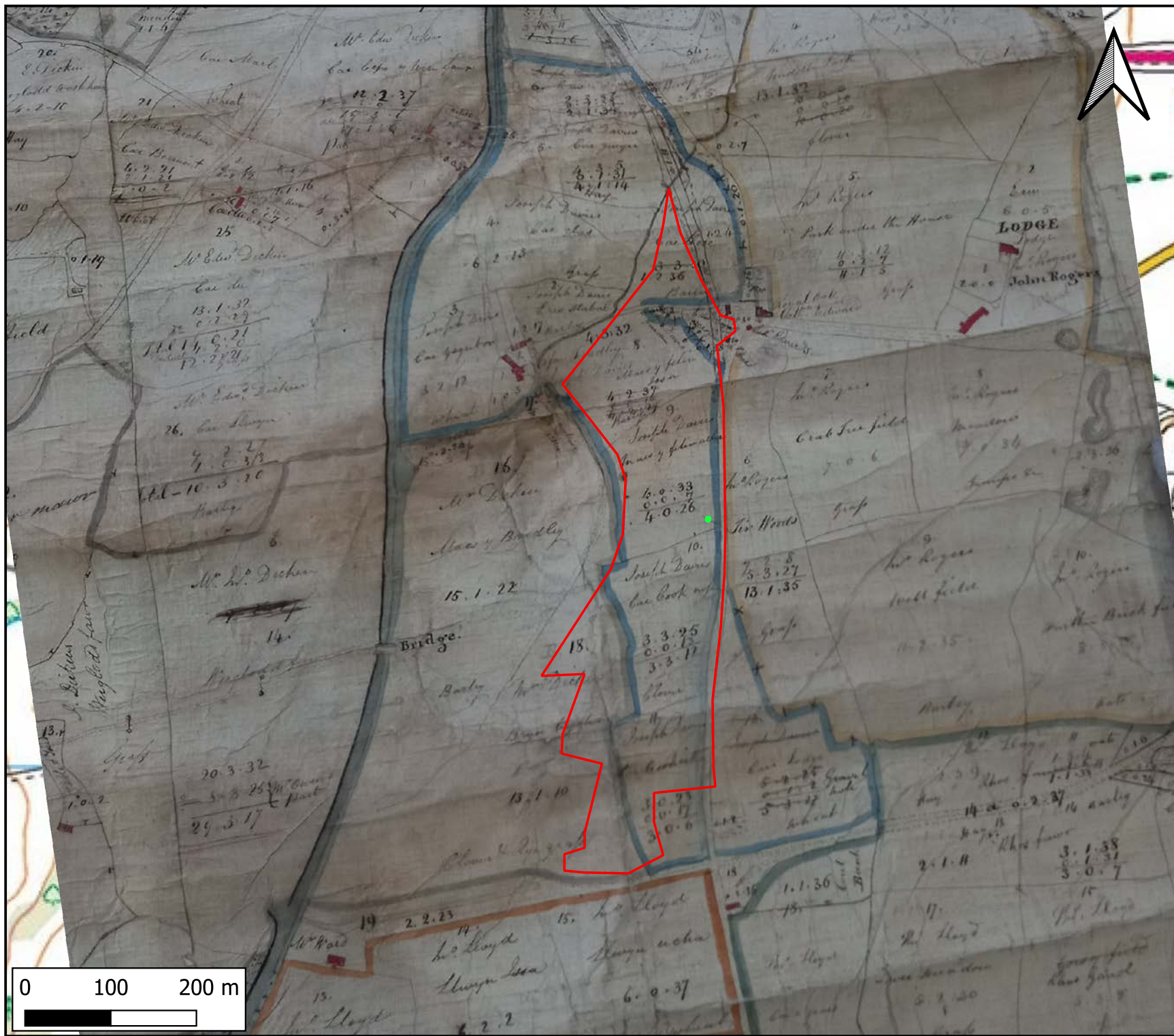


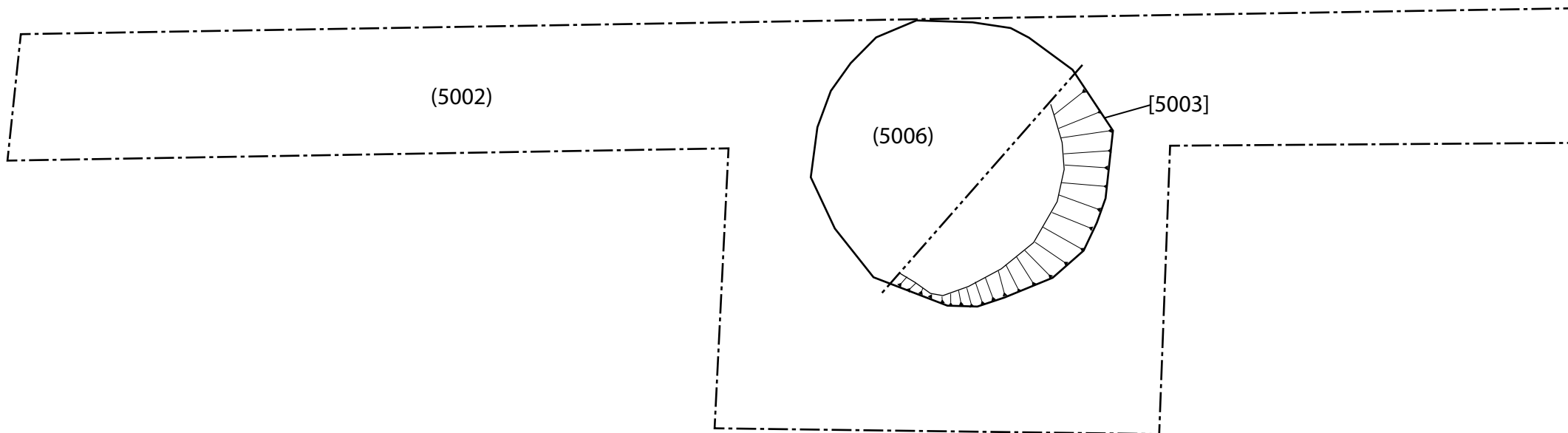
Figure 4. Extract of Chirk Castle Estate Map from 1820, georeferenced, showing the proposed development area (red), and location of limekiln [5003] (green).

Map held in the collection of The National Library of Wales.

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TRENCH 5



5m

Figure 4. Plan of Trench 5

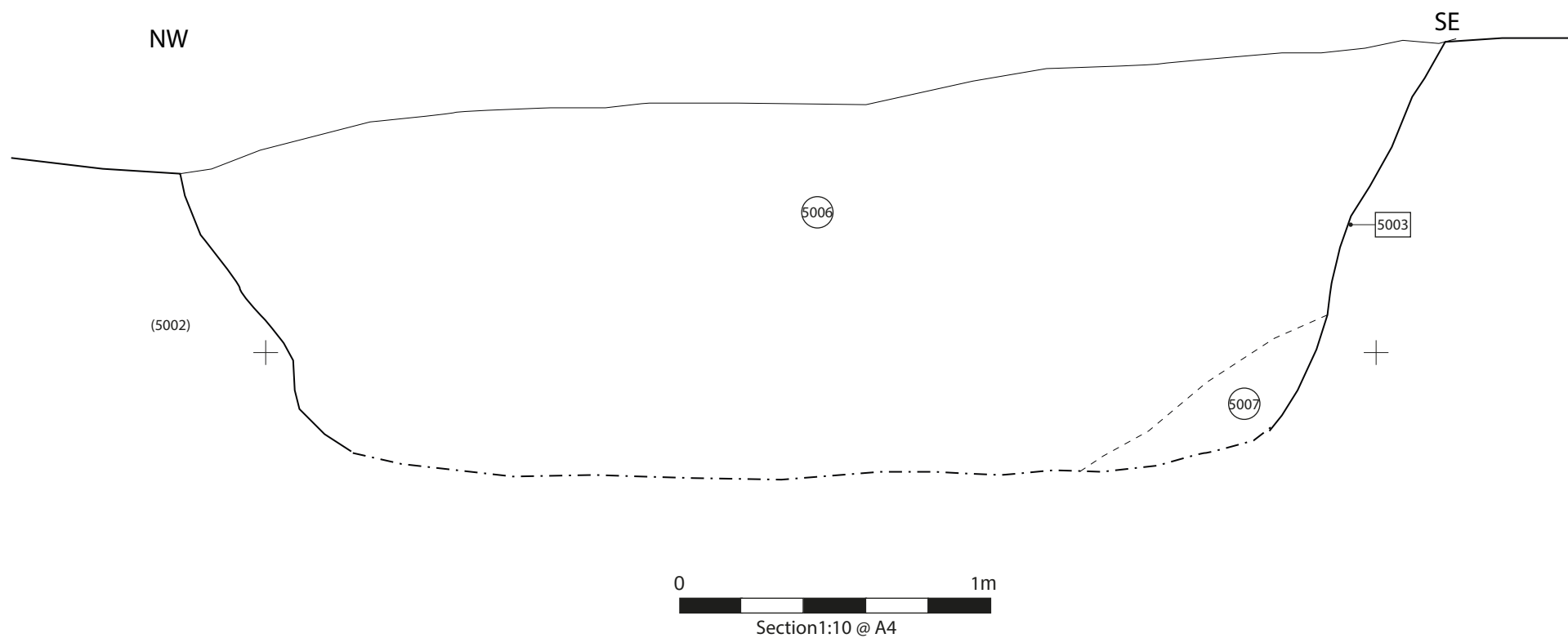


Figure 5.
SW facing section of [5003]



Plate 1. Limekiln [5003] before excavation.



Plate 2. Limekiln [5003] half-sectioned to 1.2m below ground level - not bottomed.