Brechfa Forest Connection, Carmarthen

Archaeological watching brief

October 2018

A report for Western Power Distribution
(South Wales) plc
By Richard Roberts BA (Hons)

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Cover: Cable trench excavation near Joint Bay 1/2 at HH214.

Summary

A watching brief has been undertaken by Glamorgan-Gwent Archaeological Trust Ltd, Projects Division (GGAT Projects) on the Brechfa Forest Connection, Carmarthen scheme; a new 132kV overhead line and underground cable route connecting the Brechfa Forest West wind farm with an existing National Grid substation at Swansea North. The watching brief, commissioned by RSK working for Western Power Distribution was undertaken between the 12/04/2017 and the 26/10/2017 in accordance with the Brechfa Forest Connection Archaeological WSI and an approved Method Statement.

The watching brief allowed the investigation and recording of archaeological interests identified in the Environmental Statement as potentially affected by the various works undertaken along the route of the Brechfa Forest Connection scheme. The watching brief identified five palaeochannel features (part of interest ND166); these were recorded, subjected to sampling and palaeo-environmental assessment. The latter identified a sequence of deposits and pollen assemblage typical of a floodplain environment, however, the absence of material suitable for radiocarbon dating, prevented the establishment of the age of the deposits. The watching brief covered works carried out at or near the locations of ND171 Possible quarry, ND186 Roman road, ND57 Site of earthworks/palaeochannels, ND173 Former track and ND174 Earthworks – no features or finds of particular archaeological significance were identified in relation to any of these interests. Eight historic field boundaries (HH209, HH210, HH212, HH213, HH214, HH240, HH262 and HH264), affected by the work, were recorded, whilst a few additional minor post-medieval and modern features, mostly agricultural, were also identified and recorded during the course of the watching brief. A large quantity of finds, mostly 19th century, some potentially related to lead mining, and likely the result of landfill or manuring, were recovered from topsoil contexts in the area south of the River Towy/Afon Tywi between the farmsteads of Pant and Nant.

No significant archaeological remains were encountered or identified during the course of the watching brief.

The archaeological work was carried out to the professional standards laid down by the Chartered Institute for Archaeologists.

Acknowledgements

The project was managed by Martin Tuck MCIfA (Senior Project Manager). The fieldwork was undertaken by Richard Roberts BA (Hons) (Project Manager), assisted by Hannah Bowden BA MSc (Project Archaeologist), Sarah Jayne Clements BA MA PCIfA (Project Archaeologist) and James Toseland BA PCIfA (Project Archaeologist) of the GGAT projects department. The report was produced by Richard Roberts, and the illustrations prepared by Paul Jones PCIfA (Senior Illustrator, GGAT). Internal specialist analysis and specialist reporting was undertaken by Charlotte James-Martin BA MCIfA (Assistant Project Manager) and Daria Dobrochna Dabal MA MA ACIfA (Project Archaeologist) of GGAT Projects, with external specialist analysis and reporting on pottery and glass undertaken by Joyce Compton and palaeo-environmental assessment and reporting carried out by Dr Robert Young of Quest Quaternary Scientific, University of Reading.

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This report has utilised HER data provided in the ES (Western Power Distribution 2015) and the related WSI (WPD 2017) for background information.

Abbreviations

GGAT – Glamorgan-Gwent Archaeological Trust
HER – Historic Environment Record (held at DAT, Llandeilo)
ND – Non Designated Asset identified in the ES/WSI (e.g. ND166)
NMR - National Monuments Record (held at the RCAHMW, Aberystwyth)
SM – Scheduled Monument (e.g. SM17)

1. Introduction

1.1 Project background

The Brechfa Forest Connection is a new 132kV overhead line (OHL) and underground cable comprising approximately 25.3km of OHL on mostly single or double wooden poles and approximately 3.3km of underground cable where the route crosses the Towy Valley. The development connects the Brechfa Forest West wind farm with an existing National Grid substation at Swansea North via a connection to an existing, currently redundant, OHL near Llandyfaelog.

The Glamorgan-Gwent Archaeological Trust Ltd, Projects Division (GGAT Projects) were commissioned by RSK on behalf of Western Power Distribution to undertake the archaeological works, i.e. watching brief. The work was carried out in accordance with the Brechfa Forest Connection Archaeological WSI and a Method Statement produced in advance (Toseland, T. 2017, *Brechfa Forest Connection: archaeological method statement* Report No. 2017/024), which provide a framework for the archaeological programme.

The watching brief took place intermittently between the 12/04/2017 and the 26/10/2017, inclusive with between 1 and 2 members of GGAT staff in attendance. The weather was largely fine and dry, though with interludes of heavy rain. The results of the watching brief form the subject of the current report.

The archaeological work was carried out to the professional standards laid down by the *Chartered Institute for Archaeologists*.

1.2 Historic landscape character

The development crossed a complex and varied historic landscape. To the south and west are areas of rolling terrain with small irregular fields, woodland and plantations on steep valley sides and dispersed farms, with small-scale modern residential development. There are some areas where pasture improvement has created medium-sized fields, particularly to the south-west where a contrast can be seen with the small and irregular woods and fields further north towards the Towy valley. Elsewhere, the ancient settlement pattern of dispersed farms has been supplemented by linear development along main roads. The Towy valley is predominately a mixture of small irregular fields and woodlands, with flood plain along the valley floor, dispersed farms and small settlements. There are a few small areas of strip fields in the Towy valley, and to the south along the Taff and Tawe Estuaries. The area around Burry Port contains more industrial and residential development than other areas, but also retains ancient woodland and scrubland. From the Towy valley, a series of steep valleys extend northeast, containing small irregular fields and woodlands, and dispersed farms and settlements. The northern end of the development route extends into areas of extensively wooded uplands, including some ancient woodland and some areas of plantation.

1.3 Historical background

The historic background has been comprehensively detailed within the Brechfa Forest Connection Environmental statement, Volume 6.4, Appendix 11.1 (WPD 2015) and a brief summary is reproduced here.

The historic environment resource contains assets from all periods from the Bronze Age to the Modern, as well as passing through a broad area of designated historic landscape (the Towy Valley). There are no Scheduled Monuments, Listed buildings, Historic Parks and Gardens or

Conservation areas but there is one Registered Landscape of Outstanding Historic Interest: the Towy Valley (RHL2), which follows the course of the Towy River.

The historic environment for most periods is primarily rural and agricultural in character. Some Iron Age, Roman and Medieval settlements are present within the area, but these are typically isolated homesteads, with the exception of Merlin's Hill hillfort and Carmarthen. Elsewhere, remains of transport and industrial activities survive from the Roman period onwards. Surviving built heritage largely comprises farmsteads dating to the last two or three hundred years, although a number of Medieval churches survive, as well as a few Medieval and Post-medieval dwellings.

The historic landscape is dominated by Post-medieval field systems, but fragments of earlier landscapes survive in places, including Medieval lynchets. The known historic environment resource includes a number of areas where significant remains are known to be present, and has been used to predict the potential for and character of previously unknown remains that may be present.

There are 229 hedgerows within the works boundary that meet the archaeological and historic criteria for 'important' hedgerows, as defined by the Hedgerow Regulations.

1.4 Palaeo-environmental background

The development passes through a region including upland areas as well as valleys. In the valleys, superficial geological strata have developed as a result of rockslides or hill wash ('colluvium'), or in the lower levels by deposition of material into watercourses and by flooding events ('alluvium'). In places, these deposits are several metres deep; for example, in the Towy Valley. On the upland areas, there are examples of periglacial landforms such as pingos, moraines, and caves. There are also areas of upland peat formation.

1.5 Identified archaeological potential

The ES and the WSI identified a range of archaeological potential:

- A very high potential for the remains of landscape features such as tracks and historic hedgerows, which may date from the Medieval to Modern periods, and palaeochannels of unknown date, to be present was identified. The following 'important' hedgerows were considered likely to be affected: HH59, HH61, HH65, HH77, HH84, HH93, HH139, HH142, HH144, HH148, HH149, HH150, HH152, HH153, HH154, HH155, HH164, HH166, HH181, HH182, HH202, HH209, HH210, HH269, HH305, HH320, HH328, HH357, HH361, HH372, HH374, HH387, HH390, HH400, HH403, HH408, HH412, HH411, HH414, HH434, HH436, HH447, HH449, and HH452. Their locations are indicated in the ES (WPD 2015, Vol. 6.3, Figure 11.3).
- A high potential for the remains of Roman roads to be present within the easement.
- A moderate potential for the presence of buried remains of isolated dwellings or agricultural buildings dating from the Post-medieval or Industrial period.
- A low potential for Bronze Age buried archaeological remains to be present either in the context of upland funerary deposits or within fluvial deposits in valley bottoms. There is also low potential for the presence of Early Medieval, Medieval or Post-medieval settlements, or Roman remains in the form of settlement or industrial activity alongside the roads leading from Carmarthen.
- A very low potential for Palaeolithic or Mesolithic artefacts, Neolithic remains, Iron Age settlements, or remains dating to the Second World War, and extremely low potential for the remains of crannogs or boats from the prehistoric periods onwards, to be present.

Early prehistoric artefacts, boats or crannogs are likely to be of high heritage significance. Any late prehistoric remains, or remains of Roman or Medieval settlement, are likely to be of medium heritage significance. All other types of archaeological remains described above would be of low heritage significance.

The development crossed areas of known palaeo-environmental importance: the Towy Valley contains sequences of river development and alluviation that contain preserved botanical remains, which can be used to reconstruct past landscapes. As a result, it was considered that further potentially significant palaeo-environmental sequences might be encountered during the current works.

1.6 Methodology

The Specification & Methodology as identified within the WSI (RSK) and within the Method Statement (GGAT) is presented within Appendix III. The details of the construction work in relation to the watching brief and recording methodology are provided below:

1.6.1 Construction works subject to archaeological watching brief

All construction activities that may result in a significant impact on an intact archaeological horizon below ground, or features surviving above ground were monitored. These included, but were not limited to the following:

- Topsoil stripping of the underground cable section working width;
- Excavation of launch and reception pits for non-open cut horizontal directional drilling (HDD) sections;
- Excavation of pits as part of pole erection, where these were located within archaeologically sensitive areas;
- Any significant drainage excavations within archaeologically sensitive areas;
- Breaches through 'important' historic hedgerows; and
- Where necessary, reinstatement within archaeologically or historically sensitive areas. It was not envisaged that reinstatement works would require archaeological monitoring.

1.6.2 Specific recording measures after the WSI

Where potential archaeological remains were encountered, the machine driver was required to pause works:

The area was then hand-cleaned in order to assess the complexity and quantity of remains: as only simple remains (i.e. those that could be investigated and recorded rapidly) were present, these were recorded and construction works were allowed to continue. No complex remains were encountered during the works.

Had complex remains been found to be present, these would have been fenced off and the exact archaeological response determined by the Main Contractor and Archaeological Contractor with WPD's Archaeologist (RSK), in consultation with Dyfed Archaeological Trust's Development Management section (DAT DM) and/or Cadw as necessary. In the event that complex remains had been found the Main Contractor and WPD's Archaeologist (RSK) would have determined whether a variation in the works programme was required; and WPD's Archaeologist (RSK) would have determined whether additional staffing or other resources were necessary to carry out mitigation work, following discussion with the Archaeological Contractor.

Archaeological recording was undertaken for all breaches through 'important' historic hedgerows, to record in section the hedgerow profile and record any associated structures, archaeological features such as earthworks and ditches, or dating evidence.

1.6.3 Palaeo-environmental Sampling

Appropriate features and deposits were sampled to effect the retrieval of palaeo-environmental and economic data. Provision for sampling a wide range of contexts for potential assessment and analysis for plant and animal micro/macro fossils and soils/sediments was undertaken in order to fulfil the research aims set out in the WSI and RAMS.

The selection, preparation for and methods of taking samples together with their size, presentation and processing was undertaken in accordance with current best practice (e.g. English Heritage 2007, 2011; CIfA 2014g).

The Trust was responsible for the protection of all samples and finds and for their transport (including loading and unloading) from the development. Samples were protected at all times from temperatures below 5 and above 25 degrees Celsius and from wetting and drying out due to weather exposure.

1.6.4 General method of recording

The techniques employed conformed to best current professional practice. All archaeological deposits were recorded with a single continuous context numbering system. Contexts were drawn at a suitable scale in plan, and, where appropriate, in section. All significant contexts were digitally photographed, with a resolution of no less than ten megapixels. Survey information was related to the Ordnance Survey National Grid and levels related to the Ordnance Survey Datum. All survey work where appropriate was carried out using a total station or survey grade GPS.

All classes of finds were retained, cleaned, and catalogued until arrangements for final deposition have been agreed, in line with the requirements of the Chartered Institute for Archaeologist's *Standard and Guidance for the collection, documentation, conservation and research of archaeological materials* (2014).

The management of environmental recording and sampling followed the principles and tenets laid down in English Heritage's *Environmental Archaeology: A guide to the theory and practice of Methods, from sampling and recovery to post-excavation* published in 2011. All deposits with a high potential for the preservation of palaeo-environmental material were sampled using column and bulk method, for possible subsequent analysis, in accordance with a sampling strategy overseen by GGAT's in-house specialist with appropriate expertise.

An archive of records relating to the preparation of the reports has been prepared to the specifications in *Management of Archaeological Projects* (English Heritage, 1991) Appendix 6, and in line with ICON's and CIfA guidelines *Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives* (2014).

After an appropriate period has elapsed, copies of the report and archive index will be deposited with the regional Historic Environment Record (HER), curated by DAT. A copy of the report and archive index will also be deposited with the National Monuments Record, RCAHMW, Aberystwyth.

2. Results

The results are presented below under headings related to development components (after the WSI) covered by the watching brief; where these components relate to specific planned watching brief mitigation on previously identified assets given in the WSI, these assets are noted in brackets within the sub-heading for reference.

2.1 Over Head Line (OHL) construction works

2.1.1 Pole location 34 (ND178 Possible Roman road)

The excavation carried out for the location of pole 34 within enclosure FRS76 adjacent to the route of ND178 Possible Roman road was not covered by the watching brief undertaken by GGAT, but was monitored separately by John Daw of RSK.[1]

2.1.2 Pole location 50 (ND171 Possible quarry; Figure 11, Plates 68-70)

The excavation for Pole 50 within enclosure FRS101 was carried out on the 05/06/2017; heavy rain hampered the site recording, in particular site photography.

The pole location at NGR SN43911618 is situated on the north-west edge of 'ND171 Possible quarry'. A rapid visual inspection of the site noted that it comprised a very slight depression with areas of irregular undulations, again very slight, in the area adjacent, perhaps indications of former access points to the main feature; the main 'quarry' site itself was not disturbed by the works.

A rectangular area 4m by 3m, aligned SW-NE, was stripped of topsoil to a depth of *c*. 0.25m, a mid-brown sandy silty loam (**093**). Within this area a smaller trench, 1m in width by *c*. 2m in length was excavated to a depth of 2.4m below the topsoil. This was found to contain an upper layer (**094**) of yellow brown sandy silt subsoil, 0.25m in depth, with frequent stone inclusions, angular and sub-angular stones 0.01-0.20m+ in size, beneath this was a grey gritty sandy clay horizon (**095**), 0.25m in depth, containing frequent angular and sub-angular grey and red stone fragments (sandstone), 0.01m-*c*. 0.15m in size. It was considered that these two stone-rich horizons might represent redeposited material, although this was unconfirmed, and the relationship of this material to feature ND171 remains speculative. No definite man-made features or finds were identified or recovered from the site.

Two natural horizons were encountered towards the base of the excavation: below horizon (**095**) was 1.2m of natural stiff purple-reddish brown clay or slightly silty clay (**096**) extending to 1.95m below current ground levels and directly overlying the bedrock (**097**), a grey-purple sandstone, exposed to a depth of 0.6m below the current ground surface.

Given the location of the excavation on the margins of the 'quarry' site, away from the main depression of the feature, it was not possible to confirm the exact nature/purpose of the or depression identified as a 'possible quarry'. However, the very ephemeral nature of the feature as a low depression of slight depth might indicate a marl pit, clay pit, or borrow pit (e.g. for hedge bank construction?), or possibly even a dewpond for stock watering, rather than a stone quarry. The stone horizons, (**094**) and (**095**) might be interpreted as debris from quarrying activity, but might relate to remnants of stone/boulder clearance, material imported to improve access for livestock, or even natural glacial drift. It should be noted that the sandstone bedrock was found to underlie the current ground surface by *c.* 2.05m, whilst the shallow depression of site ND171, was no more than *c*. 0.5m in depth and therefore unlikely to have reached the bedrock horizon, though the depression might have been infilled.

[1] GGAT were not contacted to attend site.

2.1.3 Pole location 54 (ND174 Earthworks; Figure 11; Plate 83)

Groundworks within the area of Pole 54, i.e. within enclosure FRS108, were watched as part of temporary works undertaken for Local Under Ground Cable (UGC (local) carried out on the 08/08/2017 in the area between Poles 53 & 54 (see section 2.4.1, below). The excavations for Pole 54, carried out to a depth of c. 1.85m, revealed only natural horizons: beneath 0.25m of dark-brown, almost black peaty topsoil (**102**), a subsoil (**103**), a grey mottled yellow-brown clay with isolated medium sized rounded/sub-rounded cobbles/boulders, in places reddish brown (decayed stone) was revealed to a depth of c. 1.3m. This overlay deeper boulder clays (**104**), yellow brown clay/sandy clay horizon greying at depth with frequent small - medium sized rounded and sub-angular stones, exposed to a depth of over 1.85m. No finds or features of archaeological significance were noted. No features or finds were noted relating to the archaeological site identified as ND174 Earthworks, which is located to the north within a separate enclosure (not numbered) near the boundary with FRS111.

2.1.4 Pole location 55 (ND174 Earthworks)

The excavation for Pole 55 within enclosure FRS109 was not monitored by the watching brief.[2] The reason for the watching brief coverage, archaeological feature ND174 Earthworks, was located outside the immediate area of the pole excavation within enclosure FRS108.

2.1.5 Pole location 59 (ND173 Former track)

The excavation for Pole 59 was not monitored by the watching brief.[3] The Pole's proposed location, however, lay within the adjacent enclosure FRS121 and excavation for its setting would not have directly impacted on feature ND173 itself.

2.1.6 Additional Pole Monitored: 169 (Figure 7; Plate 99)

Also monitored was the excavation for Pole 169 within enclosure FRS302 due to its proximity to hedge boundary HH434. The excavation (at NGR SN45233126) revealed two natural horizons - a topsoil (**120**), *c*. 0.25m deep, of light yellow-brown sandy clay loam with moderate small angular/sub-angular gravel inclusions, overlying *c*. 0.4m thick horizon of clayey sand, shale-rich subsoil (**121**) lying directly over shale bedrock at 0.65m. No finds or features of archaeological interest were noted.

2.2 Under Ground Cable (UGC) works

2.2.1 Topsoil stripping, cable trenching, and HDD Pits (ND166 Palaeochannels; ND186 Roman road)

The watching brief on the topsoil stripping of the easement corridor for the Underground Cable (UGC) Works was carried out intermittently between 18/02/2017 and 30/08/2017, dovetailed to the ground disturbing works being undertaken. No previously identified interests, apart from Palaeochannels (ND166), the possible line of a Roman Road (ND186), and a number historic hedgerows (see section 2.5 Temporary Works, below) were directly affected by the works. The main cable trenching excavation was watched, again intermittently, between the following dates 04/05/2017 – 03/06/2017, and 29/08/2017-31/08/2017. In addition to affecting a number of historic hedgerows (see section 2.5 Temporary Works, below), the UGC work was identified as affecting two previously identified interests: the potential Palaeochannels (ND166) and the possible line of a Roman Road (ND186).

[2] GGAT were not made aware that the works were being carried out.
[3] Ibid.

ND166 Palaeochannels (Figures 8 & 9; Plates 17-56)

The line of the trenching works either cut across or lay in close proximity to 14 linear features identified from aerial photographs and considered to be possible palaeochannels in the ES and WSI (Numbered ND166 (A – Q) from south to north). Of the identified linear features, just five related to actual identified 'palaeochannels' ND166 (K/M, O, P & Q; see Figures 8 & 9) noted during the watching brief, the remainder were all identified as being either shallow surface drainage features (removed by the topsoil stripping operations) or slight undulations in the underlying riverine deposits, forming gravel banks. The linear features confirmed as palaeochannels are described below; no archaeological finds were recovered from the palaeochannels, but palaeo-environmental samples were taken for further analysis (see Appendix VII for further details):

Palaeochannel (**020**) at NGR SN43352134 (between the locations of ND166 K/M within enclosure FRS 161), comprises a gentle U-shaped negative feature or channel, 6.66m wide and 0.8m in depth, containing three fills (**021**, **022** and **023**), sampled by monotin sample *001. The basal or primary fill (**021**) of the palaeochannel (**020**) is a light-blue grey clay, mottled mid-orange brown silty grey, 0.05m - 0.07m deep, noted between 0.75m and 0.8m below the current ground level. Overlying this was a secondary fill (**022**) of light yellow grey brown sandy clay with mid-orange mottling and moderate sub-rounded/sub-angular stones (1mm-0.2m in size), 0.1m-0.21m in depth, between 0.65m and 0.75m below the current ground level. The upper fill (**023**), immediately below the removed topsoil, comprised mid-grey brown sandy-silt with frequent sub-angular and sub-rounded stones (0.01m to 0.2m in size), 0.55m deep, extending from depths of *c*. 0.1m to 0.65m below the ground surface.

Palaeochannel (**031**) at NGR SN43282183 (at the location of ND166 P within enclosure FR168), comprises a U-shaped negative feature or channel, 2.8m wide at the top and over 1m in depth (not bottomed) with a shallower angled side to SW, and a steeper side to its NE. The channel, which cuts through gravels (**027**) and (**035**), **c**ontains three fills (**032**, **033**, and **034**), which were sampled by monotin samples *002 and *003. The primary or basal fill (**032**) of palaeochannel (**031**), a moist grey clay, c.18cm deep (14cm in sample tin), which extended down the west side from *c*. 0.4m to over 1m below the current ground level. Above this was secondary fill (**033**), a mid-brown alluvial sandy/gritty clay, 21cm deep, which similarly extended further up the SW side of the palaeochannel, between 0.3m and over 1m below the current ground levels. The uppermost fill (**034**), 2.80m wide within palaeochannel, and varying in depth between 10cm and 1m was a yellow-brown grey sandy clay/alluvium deposit with frequent stones generally deposited in linear bands; this material essentially filled the palaeochannel, exposed from its top to the base of the trench (over 1m in depth below current ground levels).

Palaeochannel (**044**) at NGR SN43202170 (at the location of ND166 O within enclosure FR168), comprises a shallow U-shaped negative feature or channel, 7m wide (NE-SW) with a gradual slope on its NE side descending to a slight shelf at *c*. 0.6m below current ground levels. The deepest part of the feature, at base of its steeper SW side, extends to 0.9m below current ground levels, and is 1.4m wide at this point. This feature contains two main fills (**045** and **046)**, and a discontinuous lens of sand (**047**) at the interface with the river gravels (**035**), through which the palaeochannel had cut its course; these context were sampled by monotin sample *009. The upper fill (**045**), directly below the removed topsoil, is a yellow-brown grey silty clay with FE/Manganese mottling towards base and isolated small rounded pebbles (<1mm-10mm). The latter extended to a maximum depth of 0.6m and overlies a basal fill (**046**) of grey gleyed clay, varying in depth between 0.16m and 0.3m, and extending from c. 0.4m to 0.52m (on shelf), and 0.6m to 0.9m below current ground levels within deeper part of channel. A thin

discontinuous and variable deposit (**047**) of orange Sand, *c*. 0.08m deep and approx. 2.9m SW-NE in length, was noted at the interface of **046** and **035** on the shelf located at NE side of palaeochannel, located at levels of between 0.52m and-0.61m below the current ground level.

Further potential palaeochannel related horizons were identified underlying alluvium (**036**) in the general area of feature ND166 Q, located northeast of palaeochannel (**031**) also within enclosure FRS168 as gleyed clays and an organic river clay horizon, specifically contexts (**037**) and (**038**).

Beneath a deposit of yellow-brown grey silty clay alluvium (**036**), ranging in depth from 0.65m to 0.85m, a light-grey gleyed clay (**037**), *c*. 0.33m deep, with occasional patches of mid-orange brown iron staining was first noted at the base of trench at SN43422188. This horizon was found to follow undulations in underlying gravel (**040**), disappearing below the base of trench and eventually re-emerging to rise up to top of trench at SN43372190, where the fine alluvial deposits were interrupted by higher 'embanked' river gravel. Between SN43382183 and SN 4334 2182, an organic river clay deposit (**038**), related to episodic flooding (perhaps along the course of a wide palaeochannel) was exposed beneath deposit (**037**). This organic clay deposit (**038**) comprised a mid-brown organic rich clay (fibrous woody/peaty inclusions & roots), c. 0.14m in depth (but varying along the horizon). Interrupted by a modern drain & ash deposit, it was seen again at SN43382183 and then dipped below base of trench at SN43342182, from here only the horizons above (i.e. **037**/**036**) were exposed in the trench as it continued towards the northeast. A discontinuous horizon of mid-grey sandy clay (**039**), approximately 10cm deep at its maximum, was noted at the interface with the underlying gravel (**040**). The sequence of deposits (**036**) to (**039**) were sampled in monotins *004 and *005, and bulk samples *006, *007 and *008.

Area of ND186 Roman Road (Figure 8; Plates 67, 71 & 72)

The watching brief was conducted on the initial cutting, 0.75m wide, of the cable trench as it crossed to the far lane of the A485 (at SN43222203) from the entrance to the Towy Compound at Dolgwili; the route of the A485 was considered to take a similar route to that projected for a former Roman Road ND186. This trench revealed a basal horizon (**077**), exposed to a depth of 0.05m but not bottomed, of dark grey gravels/shale material with slate fragments, and a single large stone block, *c*. 0.05m by 0.20m, some 1.8m to the SW of which was a substantial block of modern concrete (0.5m by 0.25m) within the same horizon. This horizon underlay a redeposited horizon (**076**) of yellow-brown gravel/shale within a gritty/sandy matrix, 0.05m deep. Both of these deposits are considered to be of recent date and immediately underlay 0.5m of modern road sub-base material (gravel/chippings or scalping), sealed by one or more deposits of recent road surface (tarmacadam), 0.4m in depth. No finds or features of Roman date were noted.

The initial excavation of the trench on the A485 Road, which crossed the road diagonally on a southwest-northeast alignment was undertaken by machine and was watched. The excavation along the length of the Road was undertaken using a different method, and the use of a mechanical stone wheel cutter was employed, which prevented the observation of any underlying horizons/material of potential archaeological resource. In the light of the methodology employed, the watching brief excavation along the length of the road was removed from the watching brief coverage with the agreement of the DAT's archaeological planning advisor to the local planning authority. Instead, the machine-excavated joint bay excavations on the line of the road were observed – the watching brief, however, identified only modern road make-up and natural horizons (bedrock) in the areas observed. In the area of the watching brief, previous modern road-construction (substantial embankments and cuttings) had

removed all trace of the previous land surface and any remains that may have related to the course of the Roman Road (ND186).

Additional Features (Figures 9 & 20; Plates 8-10, 15, 16, 21, 24 & 73)

Three additional features (both linear agricultural features of post-medieval/modern date and therefore of limited archaeological interest) were exposed during the topsoil-stripping phase:

In the area immediately east of the confluence of the Afon Gwili and Afon Tywi within enclosures FRS152 and FRS154 (at NGR SN43332062) at the break of slope on the west side of the cable route corridor an agricultural track (**006**), *c*. 2.3m-3m in width and aligned northwest – southeast, was revealed immediately beneath the turf. Its make-up comprised c. 0.3m depth of angular, sub-angular, & rounded stones set within sand & grit matrix. The southwest side of the feature followed a break in the slope. The track is in line with the current field openings and modern ditch crossings and is likely a modern feature. Beyond this the topsoil strip revealed the stone-footings of a truncated and partly robbed-out (undated but likely of post-medieval/modern date) stone-faced bank/field boundary (**005**) on the same line as the current post & wire boundary, projecting from W side of corridor at SN43362064, and aligned west northwest–east southeast. This feature, *c*. 1.4m in width (tangent), and *c*. 2m wide (exposed) and 0.2m in height, exposed for *c*. 1m (east-west from W side of corridor, comprised two parallel lines of stone, each a single course high, *c*. 1.25m apart, with a light-brown silty-clay between. The ploughed-out remains of a post-medieval/modern midden feature (**079/083**; Plate 73), 0.2m+ deep by 18-20m southeast - northwest, were revealed during the topsoil strip for an access route; this was located within the topsoil and at the interface of the subsoil (**081/085**) below at the entrance to enclosure FRS149 at SN4338020200 to the east northeast of Pant Farm. The horizon comprised mid-brown sandy silty loam topsoil mixed with large quantity of post-medieval pottery and glass (mostly 19th and 20th century), likely representing a concentration of material discarded on a midden or manure heap.

Other than numerous modern drainage features (clay pipe drainage and stone-scalping filled drains) encountered, two features, both within enclosure FRS155, were recorded where they were cut by the line of the trench for the 'Under Ground Cable (UGC) Works':

A straight-sided machine cut feature **[008**] of modern date, over 1m in depth (not bottomed), c. 6m in length, filled with rubble (**009**), includes plastic, broken bottle with plastic top, and other recent waste material. Visible in west side of trench only, the feature extended c. 0.1m into trench from the west at SN43382290.

Whilst cuts [**010**] & [**011**] for an east northeast - west southwest aligned ditch feature (see Figure 20) of unconfirmed date were also recorded in a narrow area adjacent to the east bank of the Afon Gwili at NGR SN43392087. The ditch feature ([**010**] & [**011**]), 2.23m wide north - south just below the topsoil and 1.34m wide at the base of the trench (1.3m below current ground levels), is over 0.9m deep (not bottomed) with a steep side to the south [**010**] and more gradual side to the north [**011**]. The feature contained two fills: a truncated upper fill (**012**), 0-0.3m/0.4m in depth, of light-grey brown to grey sandy-clay mixed topsoil/alluvial fill with occasional platy stone frags/small pebbles 1mm-60mm), likely relates to the final abandoning of the feature during the post-medieval and modern period. Below this was a lower fill (**013**) of grey alluvial sandy silty clay, *c*. 6m in depth (not bottomed), 2.05m across the upper interface with (**012**) and 1.34m across at base of trench, likely of post-medieval date but without finds. Whilst no finds were found to confirm the date of the cut feature, given its similarity with and close proximity to extant ditches belonging to the adjacent field boundary system to east

northeast and the likelihood that it formerly drained the system into the Afon Gwili to the west, it is considered most likely to be of post-medieval date.

2.3 Towy compound

2.3.1 Topsoil stripping (ND57 Site of earthworks/palaeochannels; Figures 3 & 8; Plate 1)

The initial phase of topsoil strip from the compound at Dol-Gwili (FRS169), revealed a light-brown silty clay loam (**001**), *c*. 0.4m (max) depth, which was largely the same as recorded for all enclosures to the south as far as the northern bank of the River Towy (Afon Tywi), i.e. FRS169, FRS168, FRS166, FRS161, FRS159, FRS155, FRS165, FRS154, FRS152, and FRS151.

Topsoil stripping in the area of the compound did not reveal any remains or features that could definitely confirm the identification/location of specific earthworks or palaeochannels (i.e. ND57) previously identified within the area. The removal of topsoil within FRS169 (i.e. in the area cleared of topsoil for the compound) revealed a linear area of gravel (**002**) at just 0.2m below the surface 15m wide (east-west), aligned approximately NNW-SSE and located at NGR SN43272202 some 300m northwest of the given location of ND57. This horizon coincided with raised ground on the surface beyond the compound boundary and comprised a discrete area characterised by frequent small to medium sized sub-angular and rounded stones in a sandy, gritty matrix. No archaeological finds of significance were revealed in association. The most likely interpretation for this material is as natural derived and deposited river gravels – a number of similar banks of riverine gravels set on similar alignments were identified close to the surface within the general area further to the south during the watching brief.

2.4 Local Under Ground Cable (UGC (local)) works

2.4.1 Between Poles 53 & 54 (ND174 Earthworks; Figures 6 & 11; Plates 83 & 84)

The watching brief monitored the excavation for Pole 54 (see section 2.1.3., above), and the excavation of temporary/local cable trench works carried out in the vicinity within enclosure FRS108. The identified earthwork site ND174 is located in the adjacent enclosure FRS111 to the north, an area not directly affected by the works. No features or finds of archaeological significance were identified during the course of the works carried out near Pole 54 at NGR SN44261662. Within the trenching for the cable works excavated to a depth of 1.2m, similar natural horizons to those encountered in the excavation for Pole 54 were encountered, i.e. horizons (**105**) and (**106**). At NGR SN44281670, a modern surface drainage gully [**107**], 0.5m in depth, was exposed in the trench. This feature, aligned northeast – southwest, had sloping sides and flat base - filled with redeposited topsoil/subsoil mix (**108**), equivalent to contexts (**105**/**106**) over basal fill of sub-angular and angular stone (**109**), *c*. 10cm deep. A plastic drainage pipe was encountered 5m to the northeast; likely related to the same feature.

2.4.2 Between Poles 143 &144

Area not monitored - the Trust (GGAT) was not triggered to undertake the watching brief in this area.

2.4.3 Between Poles 147, 148 & 149

Area not monitored - the Trust (GGAT) was not triggered to undertake the watching brief in this area.

2.5 Temporary works

2.5.1 Hedgerow HH209 (Figures 10 & 17; Plates 81 & 82)

This hedgerow bank was breached on the 26/07/2017 at NGR SN43521959, with c.5m of the boundary length affected by the works. On its NNE side, the boundary borders the farm track leading from Nant Farm, whilst the SSW- facing side of the boundary encloses enclosure FRS144. This boundary, aligned approximately ESE-WNW connects with boundaries HH207 & HH208 at its WSW end. This substantial boundary bank has rounded curving sides and a flat top surmounted by a hedge and comprises a single horizon of bank material, an orange yellow-brown sandy clay (**101**) 1.66m in height, *c*. 0.65m wide at the top and *c*. 3.1m wide near the base. The actual base was spread to *c*. 5.4m wide, though its exact extent was obscured by loose material and tree root disturbance. To SSW of the bank a mid-brown sandy silt loam topsoil (**100**), 0.2m deep, with isolated small angular and sub-angular stones (with extensive tree roots in the area adjacent to the hedge). The topsoil (**100**) and the bank material (**101**) directly overlay a yellow grey-brown mottled orange brown clay subsoil (**118**), *c*. 0.2-0.4m deep, with occasional to moderate small to medium rounded and sub-angular cobbles/boulders, which in turn overlay a further natural boulder clay (**119**). Whilst the NNE side of the boundary is bounded by a worn stone-set track surface (**117**), 3.10m wide and *c*. 0.16m deep (varies) of the lane to Nant, also directly over subsoil (**118**).

This boundary hedge, set on a full earthen hedge bank, is tall and leggy with evidence of former having been formerly coppiced/laid, but appears untrimmed with outgrowth down the bank's SSW side (which bounds enclosure FRS144) and slightly beyond. The hedge height from top of bank is generally 1.2m, its width 3m, though frequent taller mature trees (likely earlier hedge remnants) also on the line. Species noted include Ash, Blackthorn, Holly, Field Maple, Oak and Rose.

2.5.2 Hedgerow HH210 (Figures 10 & 16; Plates 79 & 80)

This hedgerow bank was breached on the 26/07/2017; the breach was located at NGR SN43581976, and the works affected *c*. 5m of the boundary length. The boundary borders a farm track (see (**117**) in 2.5.1 above) from Nant Farm lane on its SSW side, and on its NNE side enclosure FRS145. This boundary, aligned ESE-WNW, connects with boundary HH211 at its ESE end and HH212 at its WNW end, the latter hedges adjoin from the N. This substantial hedgerow bank comprised a linear bank 3m wide 1.18m high. The make-up material comprises orange–yellow brown sandy clay (**099**) with occasional – moderate medium and large angular and sub-angular stones especially at base. Indications of possible substantial stone facing on N side were noted. Some root disturbance form the mature hedge, overgrown hedge noted in the section and a considerable amount of loose debris and humic material was encountered on the NNE side in particular, indicating an area of historic erosion from its upper portion. The bank appears to directly overly a yellow-brown sandy/silty clay subsoil (**089**), over 0.9m deep, with moderately frequent angular, sub-angular and rounded gravels and small – medium sized stones, which continued under 0.2m of topsoil (**088**) within enclosure FRS145 to the NNE side of the bank.

This boundary hedge, set on a full earth and stone built hedge bank, is tall and leggy with evidence of former having been formerly coppiced/laid, but appears untrimmed with outgrowth down the bank's NNE side (which bounds enclosure FRS145) and slightly beyond. The hedge height is generally 1.1m from the top of the bank, though taller mature trees (earlier hedge remnants) also on the line. Species noted include Ash, Blackthorn, Hazel, Field Maple, Oak and Rose.

2.5.3 Hedgerow HH212 (Figures 10 & 19: Plates 87-89)

This hedgerow bank was breached on the 29/08/2017 at NGR SN43531978 (SN43202192 – GPS reading) for c. 8m of its length. The hedgerow forms an irregular snaking boundary between enclosures FRS145 and FRS146, following a break of slope with the ground generally rising to the S (i.e. from FRS146 to FRS145). The boundary is aligned WSW - ENE at the point of the breach and connects with boundary HH210 at its SW end (the latter adjoins from the SE), whilst at its ENE end it is connected to boundaries HH214 and, via a gated field entrance, HH213. Boundary HH212 is formed by a hedge bank/scarp, or lynchet, 0.3m high and 1.1m wide at the top, topped by a coppiced hedge; the bank comprised a single horizon of orange-yellow brown sandy silty loam (**114**), mixed with moderate small, occasional larger sub-rounded, sub-angular and angular stones and isolated boulders. This material represents a 'redeposited' subsoil/topsoil mix and field clearance material - a single sherd of pottery (local courseware of post-medieval, i.e. 17th-19th century date) was recovered from this horizon; however this was recovered by machine excavation and may have originated from the surface of the deposit. The material making up the scarp, i.e. deposit (**114**), was defined largely by the break in slope and an increase in stone inclusions/roots; the exact meeting point with topsoil deposits from within the adjacent enclosures of FRS145 (topsoil (**088**)) and FRS146 (topsoil (**115**)) was difficult otherwise to define and establish. The scarp (**114**) deposit directly overlay natural subsoil (**089**/**116**), a varied light yellow-brown sandy and sandy/silty clay (boulder clay) over 0.9m deep, containing frequent small and moderate larger rounded and sub-angular gravels/cobbles. Notably, the scarp (**114**) material appears to respect and follow a change in level visible in the underlying subsoil – the scarp hedge bank may therefore be an enhanced natural feature, perhaps caused by a fault line in the underlying geology; the irregular line of the boundary when viewed in plan would appear to support this.

This boundary, a lynchet with hedge, the latter is a dense shrubby hedge, with some outgrowth down the slope to the NNW, general height of hedge is *c*. 2m (in places taller - mature trees also incorporated on line), spread to a width of 3.5m (post & wire fence along SSE side). The hedge has evidence of having been previously coppiced (typical size of coppiced bole 0.54m x 0.65m) and laid, and it may have been flail trimmed more recently (unconfirmed). Species noted include Ash, Blackthorn, Elder, Hawthorn, Hazel, Holly, Field Maple and Rose.

2.5.4 Hedgerow HH213 (Figures 10 & 15; Plate 78)

This hedgerow bank was breached by the 25/07/2017 at NGR43571977 by *c*. 2m of its length adjacent to an existing field entrance (i.e. the existing entrance was widened). The hedge bank forms the boundary between enclosures FRS 147 and FRS145. This boundary, aligned NW-SE connects with boundary HH211 at its SE end, the latter hedge adjoins from the S, whilst it is connected, via a gated entrance, at its NW end to HH212 and HH214. Boundary HH213 comprised a linear bank, 2.57m wide at base & 0.98m high (max), surmounted by overgrown hedge with sloping sides and associated U-shaped ditch to the NE; the bank slope to the NE (i.e. on the ditch side) being more acute than that to the SW. The material for hedge bank HH213 comprises a redeposited yellow-brown sandy clay (**090**) with moderate small-medium sized angular/sub-angular stones; this material likely originated from the cutting of ditch [**091**] to SE. The associated U-shaped ditch cut [**091**], 1.95m wide by 0.95m deep from the upper surface of the topsoil, contains a single basal fill (**092**), a dark brown silty sludge, organic-rich deposit (leaf mould). This fill appears to be of recent date – the ditch appeared to have been recently re-excavated/cleared, and appears to be re-cut through the topsoil (**086**) at this point within enclosure FRS147. The bank directly overlies subsoil context (**087**/**089**), into which the ditch [**091**] is also cut; a yellow mottled orange brown silty clay and clay subsoil, c. 1m in depth, with occasional – to frequent angular, sub-angular and rounded stones and cobbles and isolated larger boulders.

This boundary is a full hedge bank of earthen construction with an associated ditch (water at this point at base of fill) to the NE. The hedge is now overgrown and in the form of multi-stemmed hedge trees (tree stump 0.25m in dia.), evidence of having been coppiced, height of hedge over c. 8m. Species noted include Ash, Blackthorn, Elder, Hawthorn, Hazel, Field Maple and Rose.

2.5.5 Hedgerow HH214 (Figures 10 & 18; Plates 85 & 86)

This hedgerow bank was breached on the 21/08/2017 at NGR SN43531984 for *c*. 5m of its length. The hedgerow bank with its associated drainage ditch forms the boundary between enclosures FRS147 (SW side) and FRS146 (NE side). This boundary is aligned NW-SE and connects with boundary HH212 at its SE end, the latter adjoins from the SW, whilst HH213 continues SE of and on the same alignment as HH214, separated by a gated field entrance. The boundary's main feature was a low earthen hedge bank/scarp (**113**), *c*. 0.6m – 0.65m in height, *c*. 1.65m wide, alignment NW-SE, comprised of a single horizon of dark brown loam with organic leaf mould/roots. This bank had been constructed over yellow brown silty clay subsoil (**111**/**116**), which ranges between 0.3m and over 0.7m in depth to a light yellow-brown sandy/silty clay over 0.4m deep beneath the boundary bank and ditch itself. A post & wire sheep-proof fence runs along the base of the SW side of the bank. On the NE side of the bank is an open U-shaped ditch cut (**112**), 0.7m deep by c. 1.4m wide, alignment NW-SE with slight lip (c. 1.1m wide) on SW edge, surmounted by a post & wire sheep-proof fence. The ditch, cut into the underlying subsoil (**111**), appeared to have been recently cleared (no fills were noted) and was dry at the time of the work. The excavation of the ditch is considered to have been the likely origin of at least some of the bank material, mixed with topsoil and colluvium from the adjacent slope to the SW.

This boundary is a full hedge bank (earth bank plus hedge and dry ditch), having a dense but overgrown coppiced shrubby hedge with areas of outgrowth into the adjacent ditch to the NE, height of hedge *c*. 1.8m from top of bank. The boundary has post & wire fences along NE side of accompanying ditch and the SW side of the bank. Species noted include Ash, Blackthorn, Elder, Hawthorn, Hazel, Field Maple and Rose.

2.5.6 Hedgerow HH240 (Figures 8 & 12; Plates 3-6)

This hedgerow boundary HH240 - the boundary between enclosures FRS161 and FRS166 was breached on the 12/04/2017 for 10m of its length at NGR SN43241956, *c*. 22.5m from its junction with boundaries HH238 and HH241. The boundary, aligned SW-NE connects to field boundaries HH239, HH238 and HH241, comprises a gently spread earth bank, 0.5m height above ground level, max width 2.7m seen in section. The hedge bank comprises an upper horizon of redeposited topsoil (**003**) - a dark brown-black silt loam 0-0.1m deep, over an earth bank material (**004**), a light brown silt loam with stone inclusions (0.1m max).

This boundary is an intensively managed full hedge bank, height of shrubby hedge 1m-1.4m in height (post and wire fence along N side, hedge coppiced, pollarded and flail trimmed; Species: Hawthorn and Rowan).

2.5.7 Hedgerow HH262 (Figures 8 & 14; Plates 65 & 66)

This hedgerow bank was breached on the 16/05/2017-17/05/2017 at NGR SN42992271 for c. 5m of its length. This boundary, aligned E-W connects with HH261 and HH262 at its E end, and borders a minor tarmacadam lane on its N side. A low earth bank *c*. 0.7m wide, and c. 0.5m high on N, where adjacent to the lane, and *c*. 0.65m high to the S, where set on gentle slope on N side of enclosure FRS 472, with no obvious accompanying ditch. The hedge bank comprises a single horizon (**065**), of bank material, 0.5m high, 0.67m wide at top, a redeposited dark

brown stony sandy loam and is crumbly and root filled with moderate amount of small gravel/stones. This immediately overlies a natural subsoil (**066**), a continuous horizon, 0.2m-0.7m deep (varies) of yellow-brown sandy silty clay with isolated – occasional sub-rounded pebbles.

This boundary, a full hedge bank, is trimmed and dense, but also tall and leggy in places, height of hedge over *c*. 1.2m (remains of post & wire fence along S side, hedge laid, possibly also coppiced and more recently flail trimmed. Species noted include Ash, Blackthorn, Hawthorn and Hazel with Sycamore immediately adjacent).

2.5.8 Hedgerow HH264 (Figures 8 & 13; Plates 63, 64 & 66)

This hedgerow bank was breached on the 16/05/2017-17/05/2017 at NGR SN42992270 for c. 5m of its length. The boundary borders a minor tarmacadam lane on its S side. This boundary, aligned E-W connects with boundary HH266 at its E end, the latter hedge adjoins from the N. A low earth bank (**061**), *c*. 1m wide, and *c*. 0.5m high on S, but appears higher owing to the fact that the adjacent road has been cut into the natural horizons below (**062**) - its surface a further 0.68m below making a combined height of *c*. 11.8m. To the N is a shallow gently sloping and partially silted ditch (**064**), 0.5m deep (max) and 2.2m wide (max), partly cut into the natural slope above to the N, but largely formed by the angle of the sloping ground and the bank (**061**); the hedge on the bank has overgrown to cover the ditch. The single fill (**063**) of the ditch is a loose dark brown organic rich soil/ numerous roots. The hedge bank itself comprises a single horizon (**061**), of bank material, 0.5m high, *c*. 1m wide at base and *c*. 0.6m wide at top, comprising mid-brown redeposited topsoil and small stone fragments (shale). This immediately overlies a natural light yellow-brown subsoil (**062**), *c*. 0.8m (max) depth, which in turn overlies the shale bedrock.

This boundary, a full hedge bank, has a trimmed and dense shrubby hedge, but with outgrowth into the adjacent dry ditch to the N, height of hedge *c*. 0.7m (remains of post & wire fence along N side, hedge previously laid (?) and more recently flail trimmed. Species noted include Ash, Blackthorn, Hawthorn, Hazel and Sycamore.

2.5.9 Hedgerow HH434 (Figure 7; Figures 97 & 98)

This hedgerow at NGR SN45253129 was included at a late stage. This feature was subject to photographic and preliminary recording undertaken on the 08/09/2017; the bank was not breached by the works, but left intact. The hedge bank, aligned WNW-ESE and adjoining boundaries HH430 and HH436 at its E end, and boundary HH438 at its W end, a comprised a low curved earth bank, 0.8m high, by 3.6m wide at its base and 0.8m wide at its top surmounted by a coppiced hedge with modern post and wire fences noted to either side. The hedge, generally *c*. 2m in height from top of bank, though, was a dense coppiced shrubby hedge with taller trees interspaced (i.e. overgrown into hedge trees). Species noted include Gorse, Hawthorn, Hazel, Oak, Privet and Rose.

An inventory of all contexts recorded during the watching brief is included in Appendix I.

3. *The Figures*

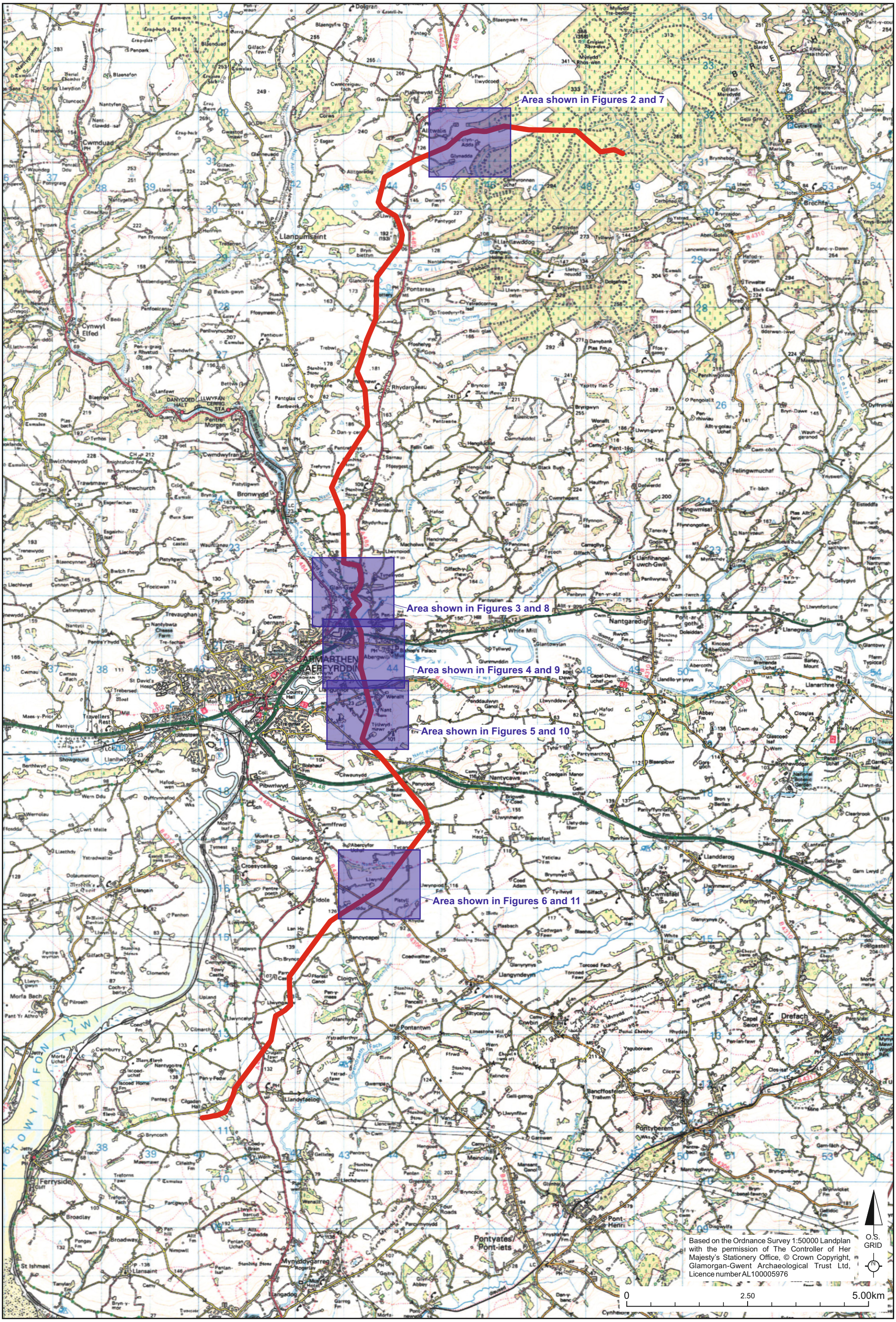

Figure 1. Site location plan and areas of watching brief.

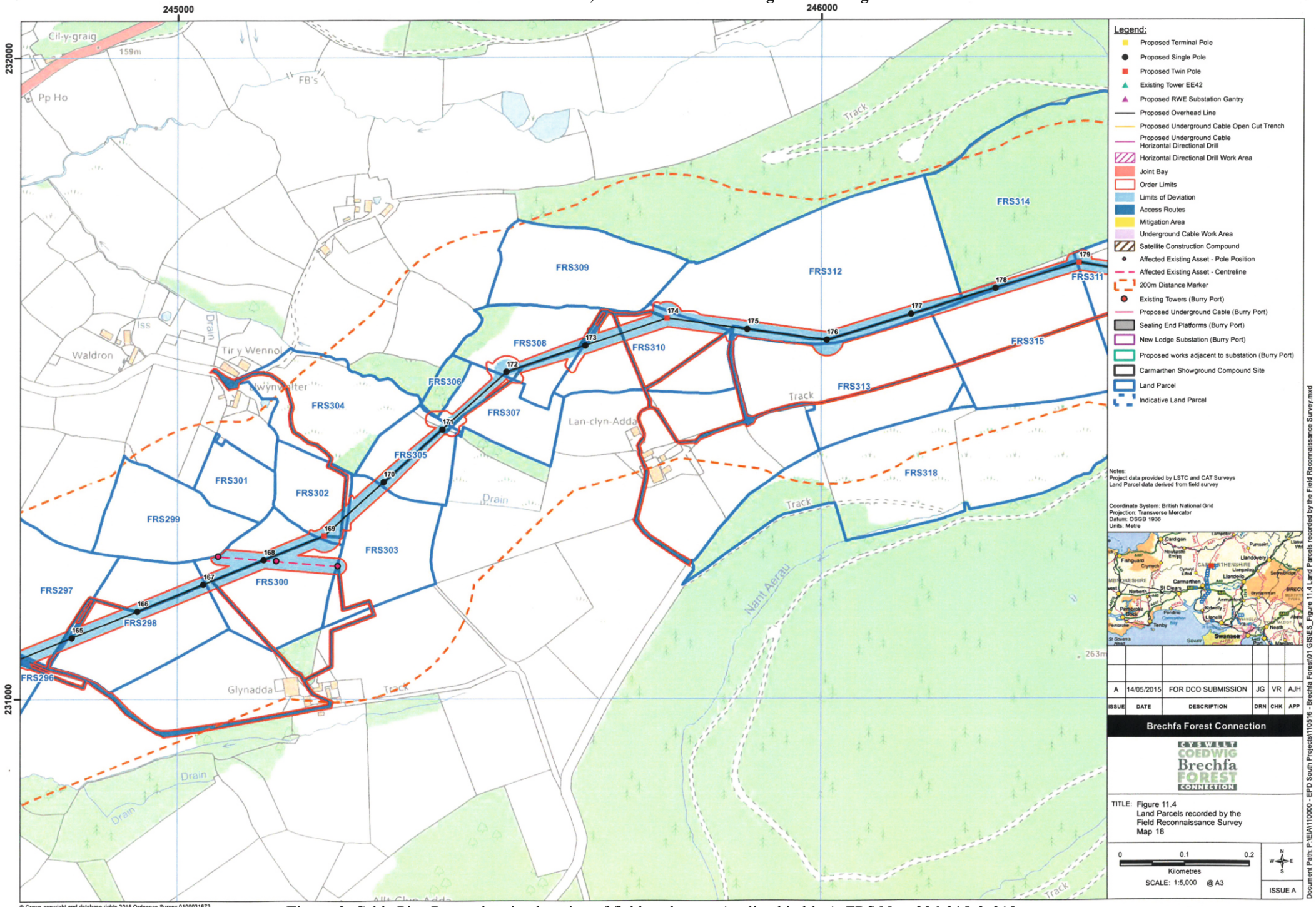

Figure 2. Cable Pipe Route showing location of field enclosures (outlined in blue): FRS Nos. 296-315 & 318.

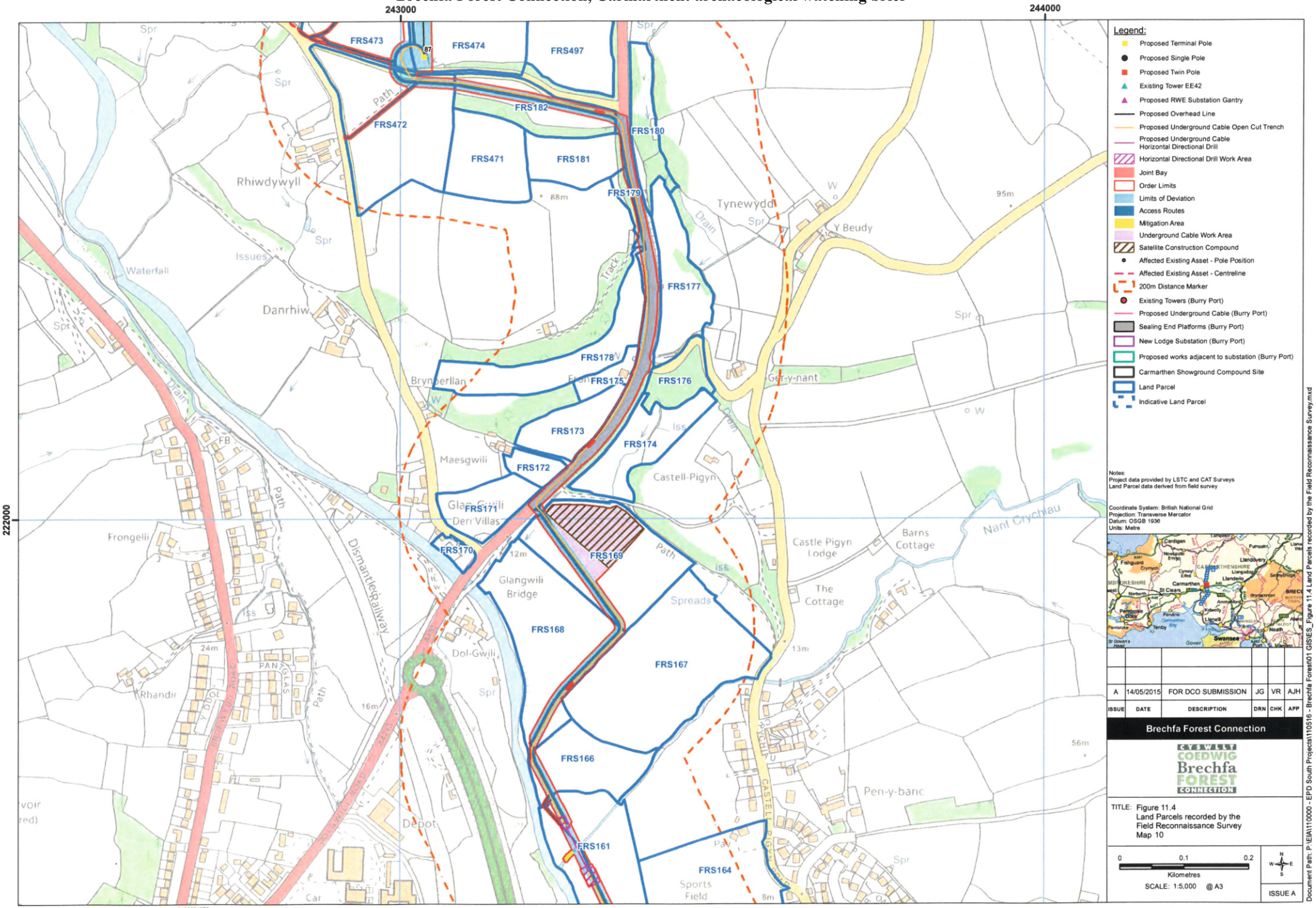

Figure 3. Cable Pipe Route showing location of field enclosures (outlined in blue): FRS Nos. 161, 164, 166-182, 471-474 & 497.

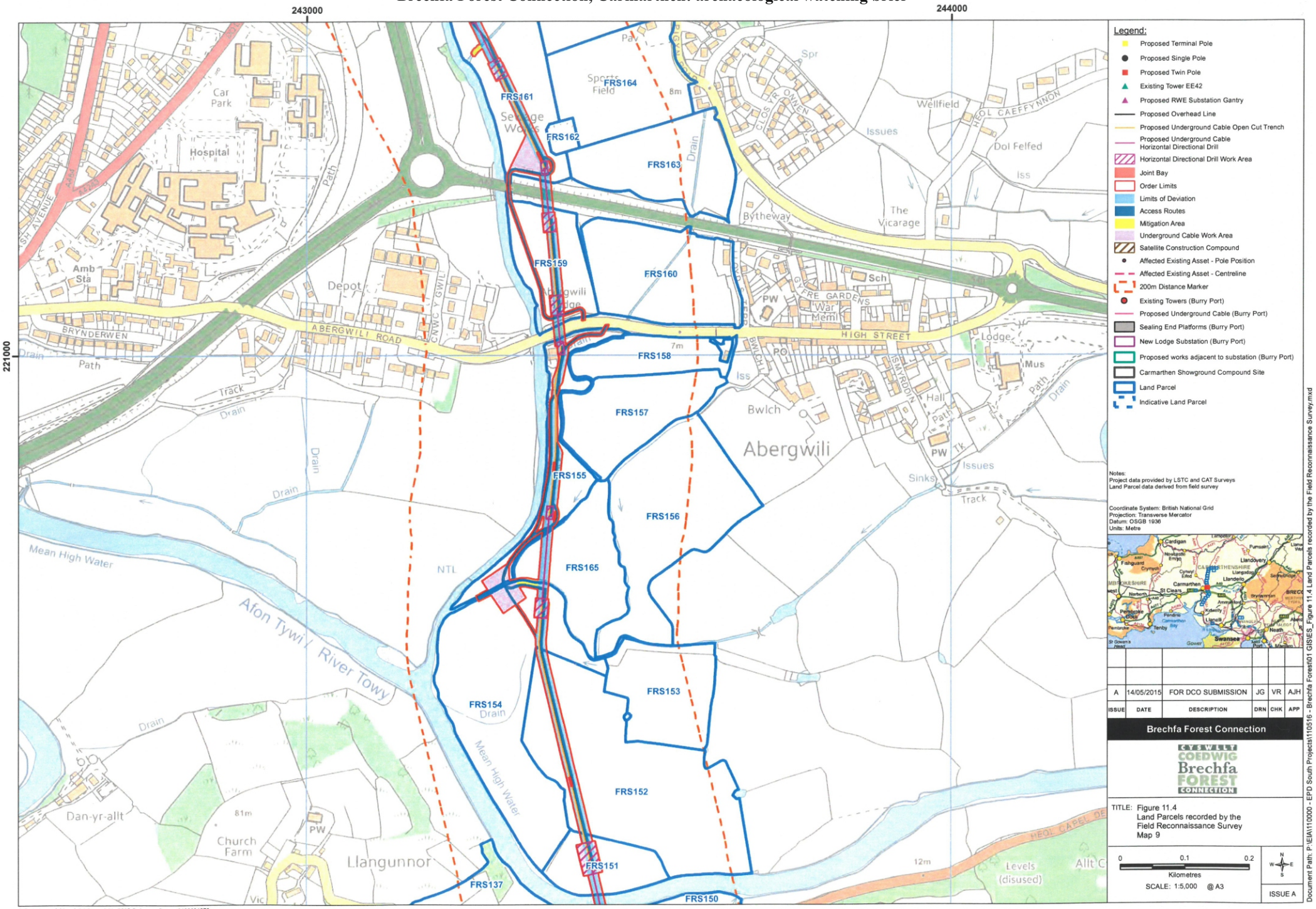

Figure 4. Cable Pipe Route showing location of field enclosures (outlined in blue): FRS Nos. 137 & 150-164.

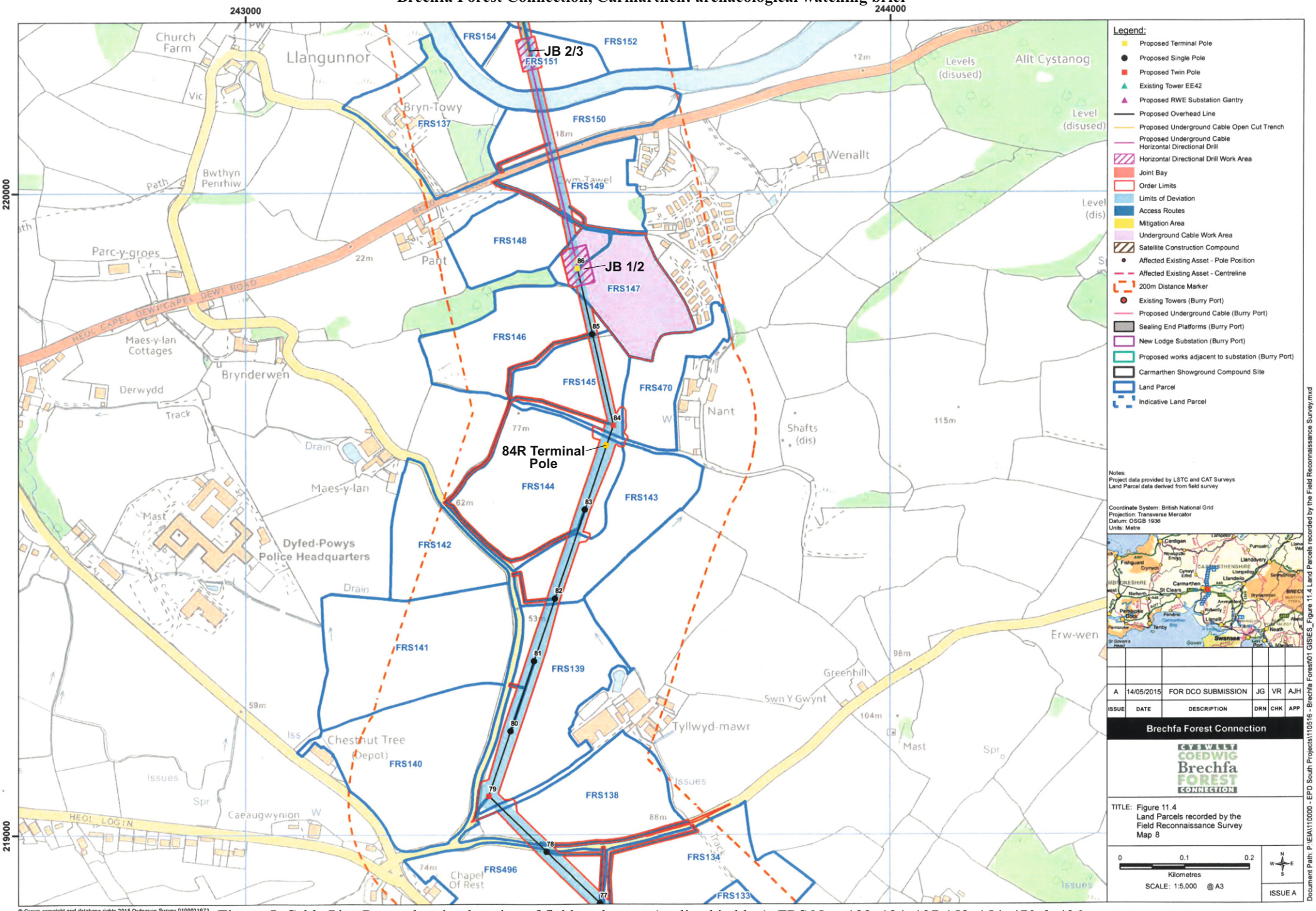

Figure 5. Cable Pipe Route showing location of field enclosures (outlined in blue): FRS Nos. 133, 134, 137-152, 154, 470 & 496.

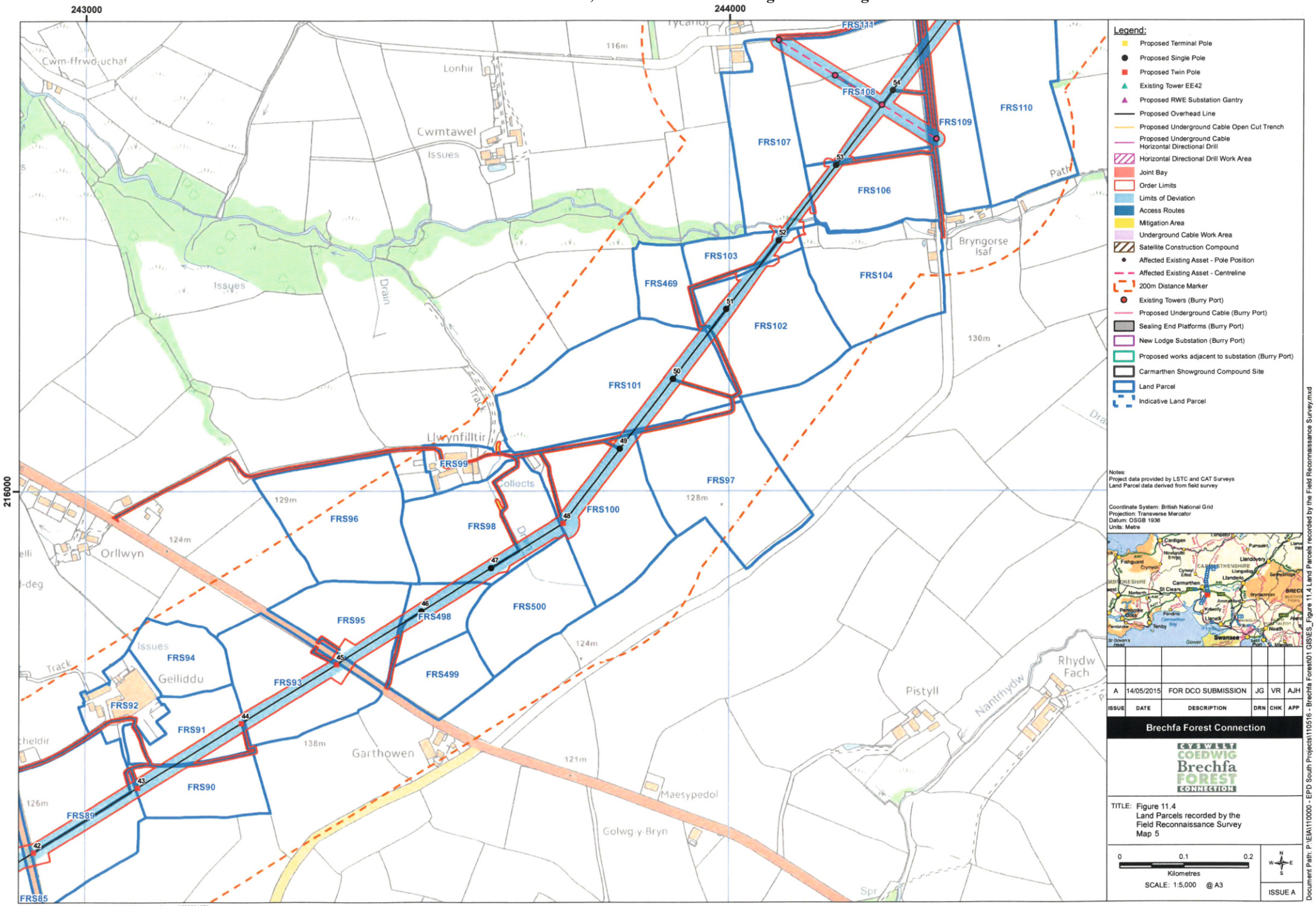

Figure 6. Cable Pipe Route showing location of field enclosures (outlined in blue): FRS Nos. 85, 89-104, 106-111, 469 & 498-500.

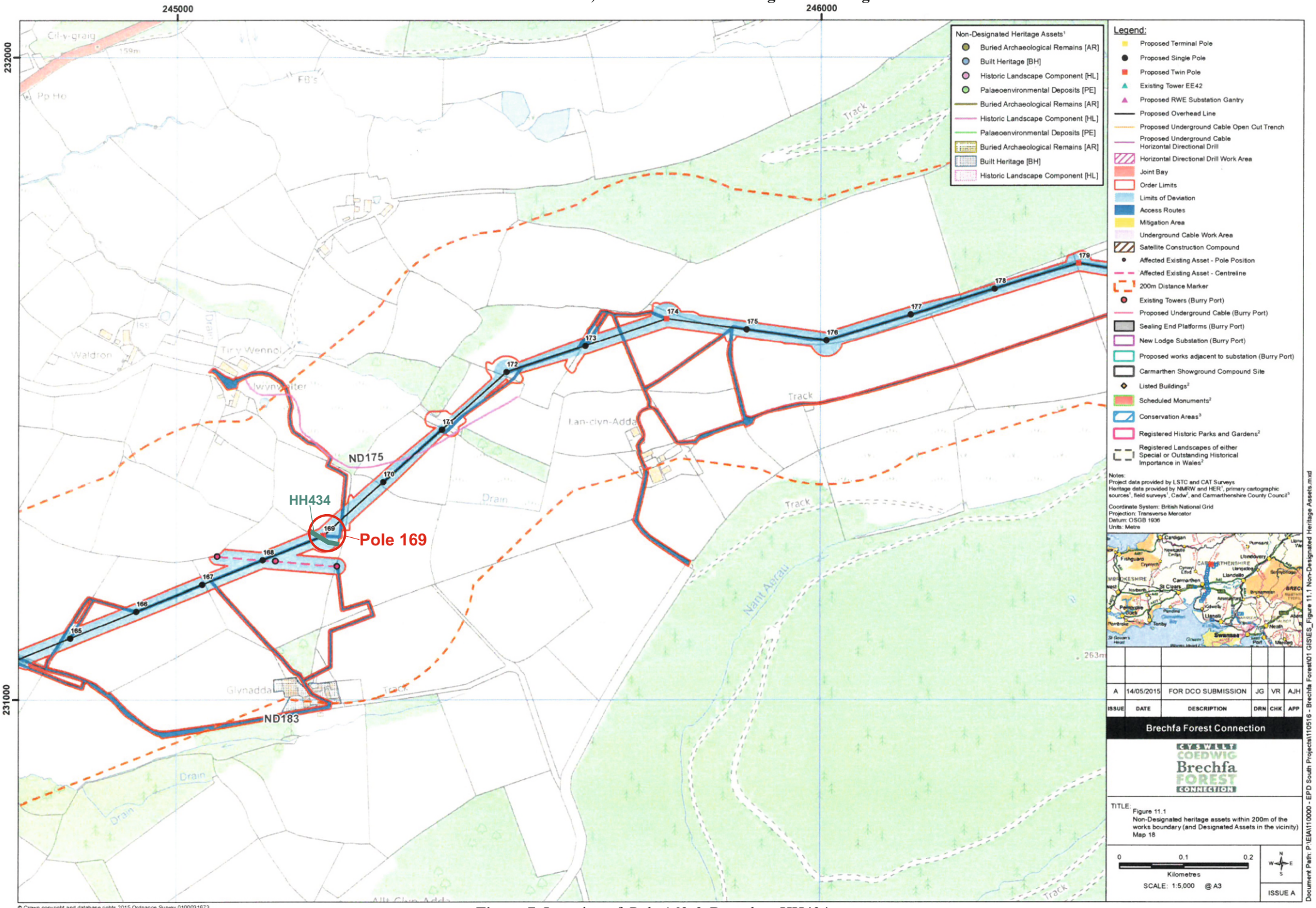

Figure 7. Location of Pole 169 & Boundary HH434.

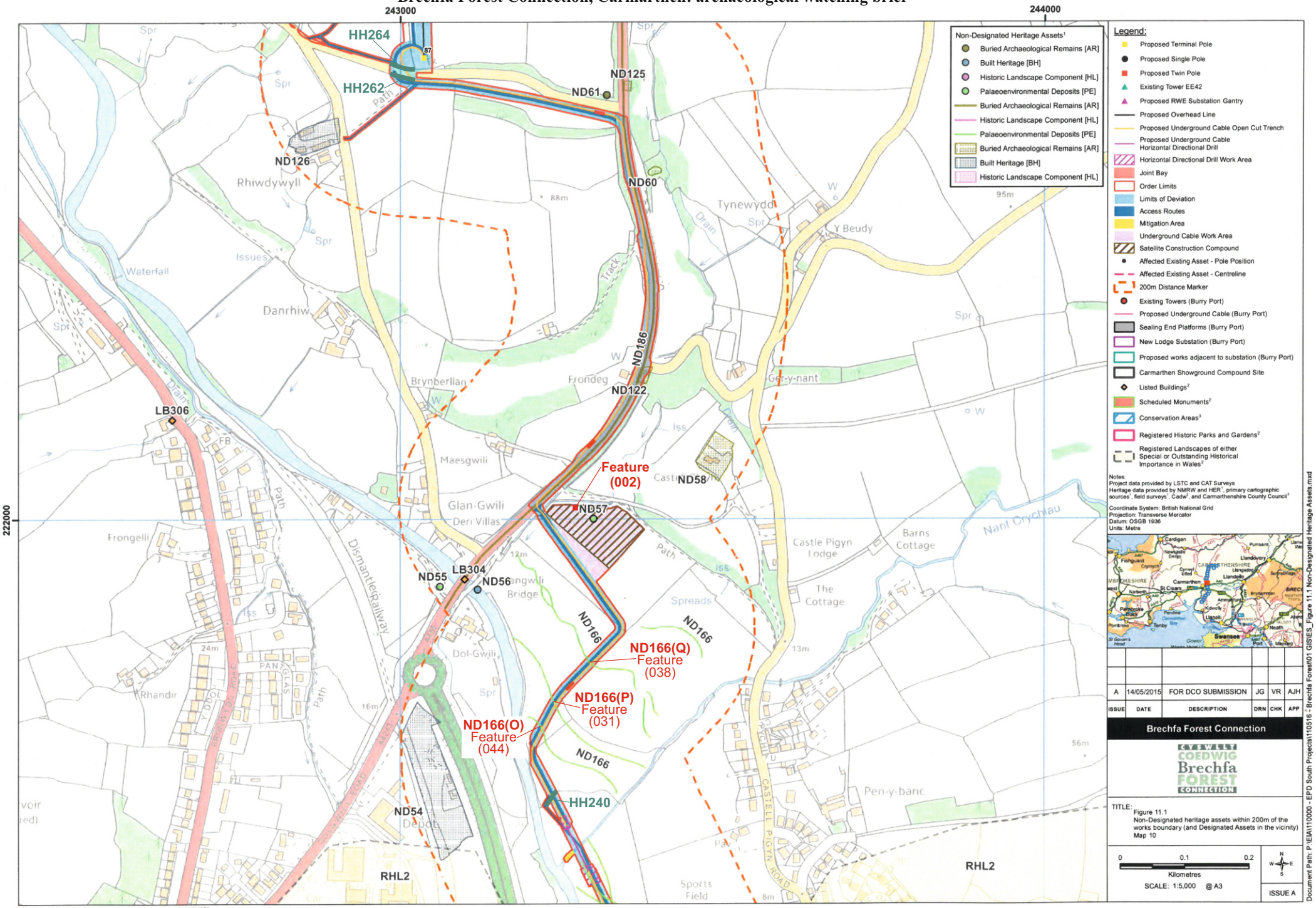

Figure 8. Location of Boundaries HH240, HH262 & HH264 and sites ND57, ND122, ND166 & ND186, indicating individual Palaeochannel features of ND166

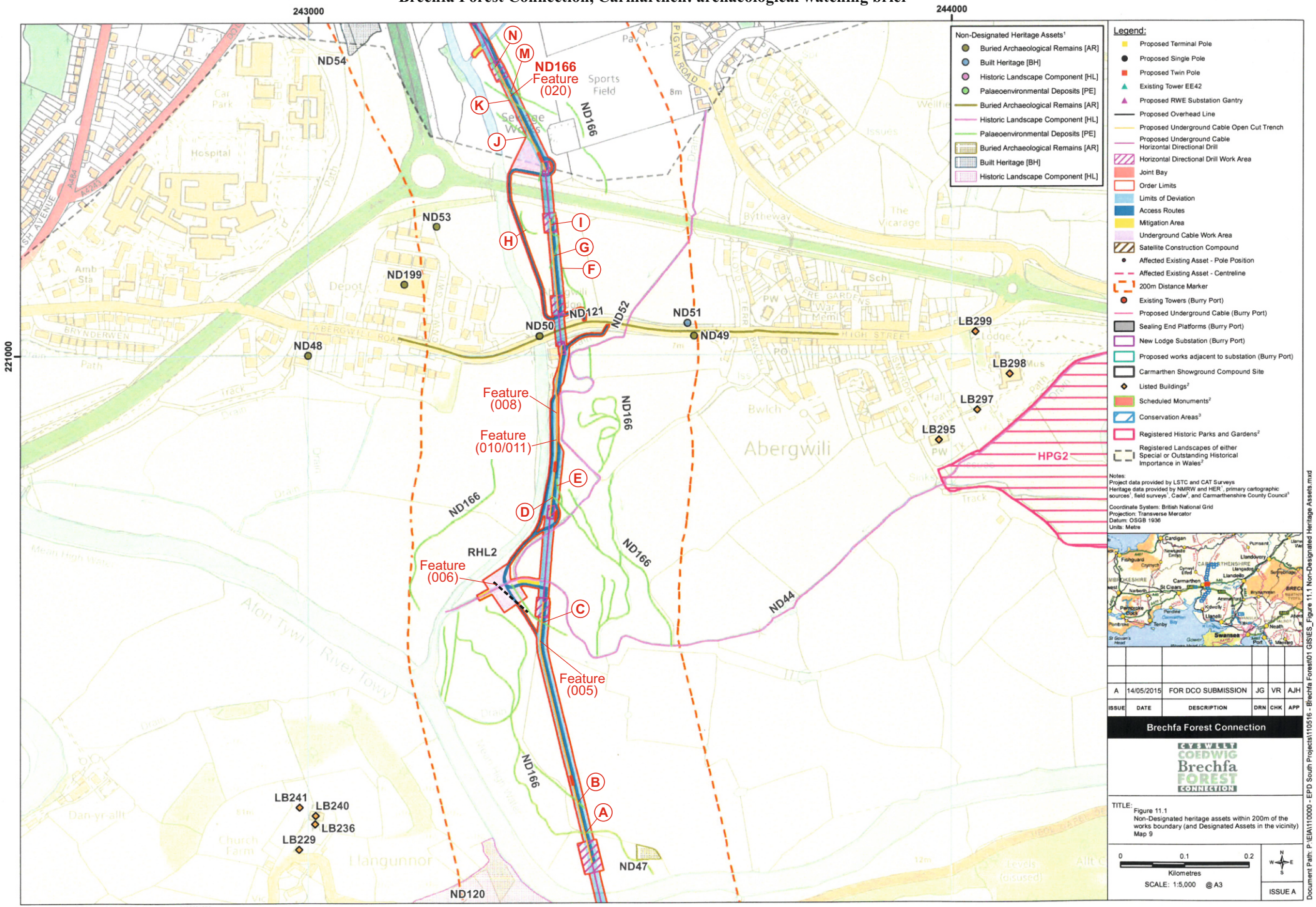

Figure 9. Location of Site ND166, indicating individual Palaeochannel features of ND166.

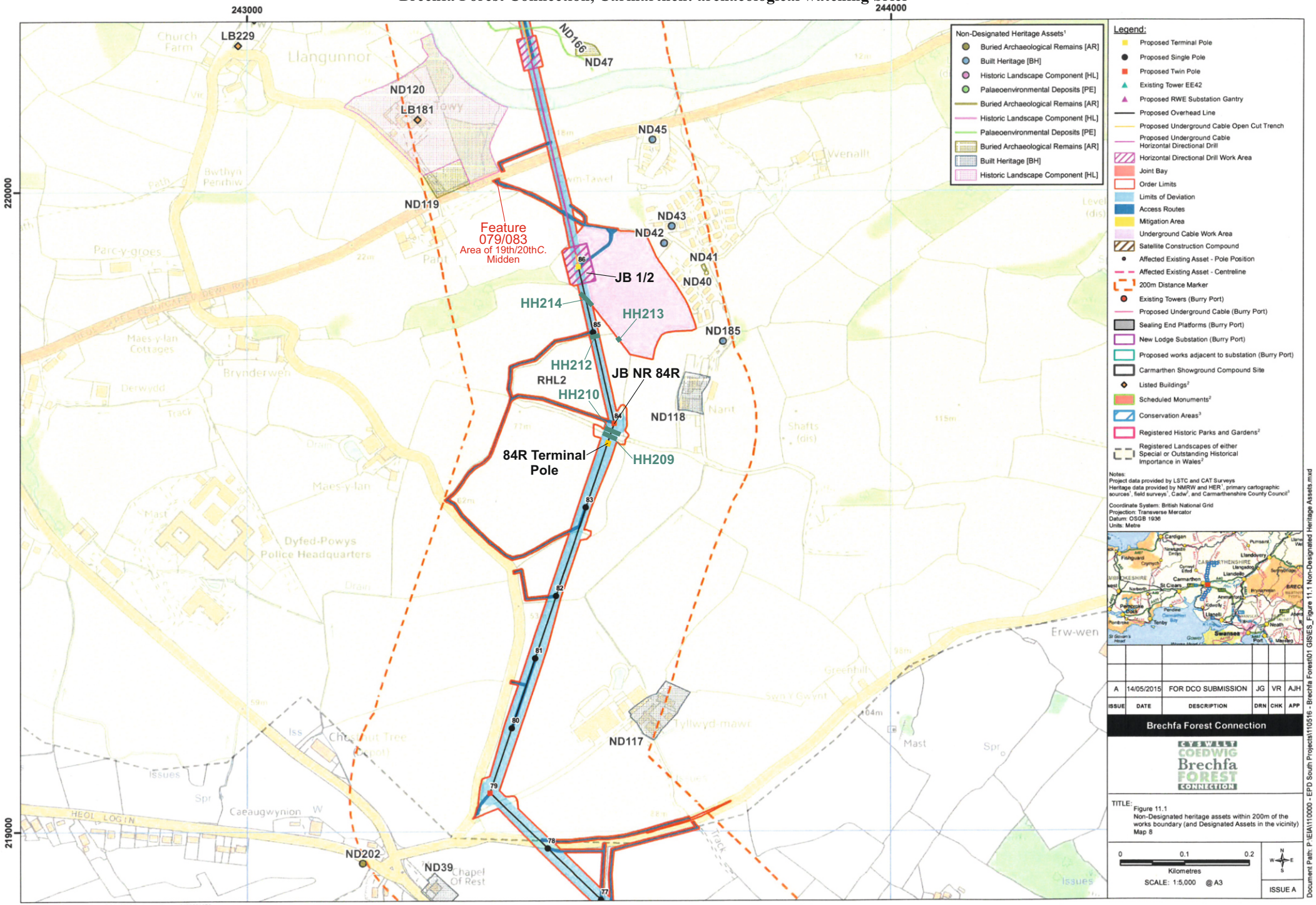

Figure 10. Location of Boundaries HH209, HH210 & HH212-HH214 and site ND166, indicating individual Palaeochannel features of ND166.

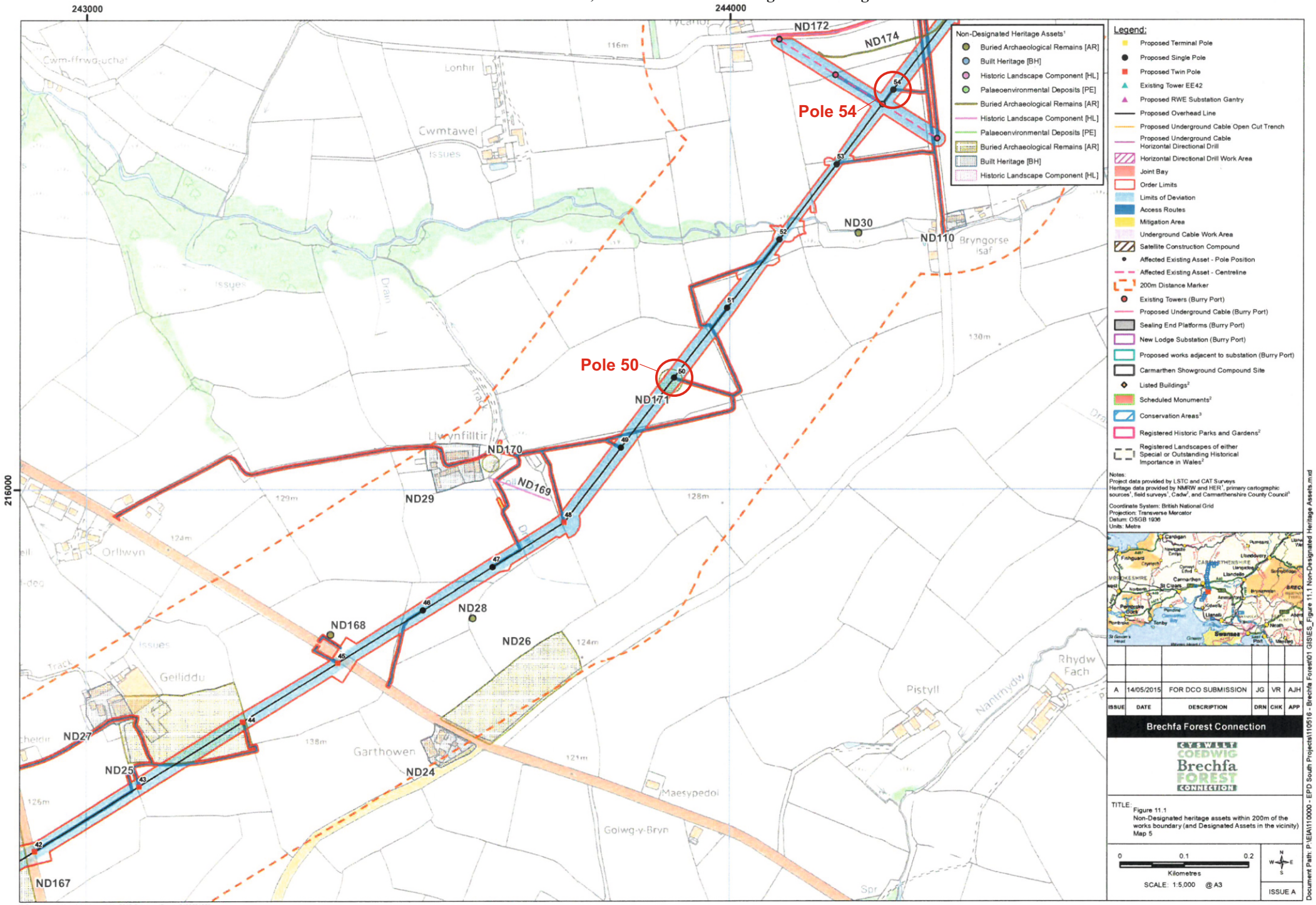

Figure 11. Location of Poles 50 & 54 and Site ND171 and ND174.

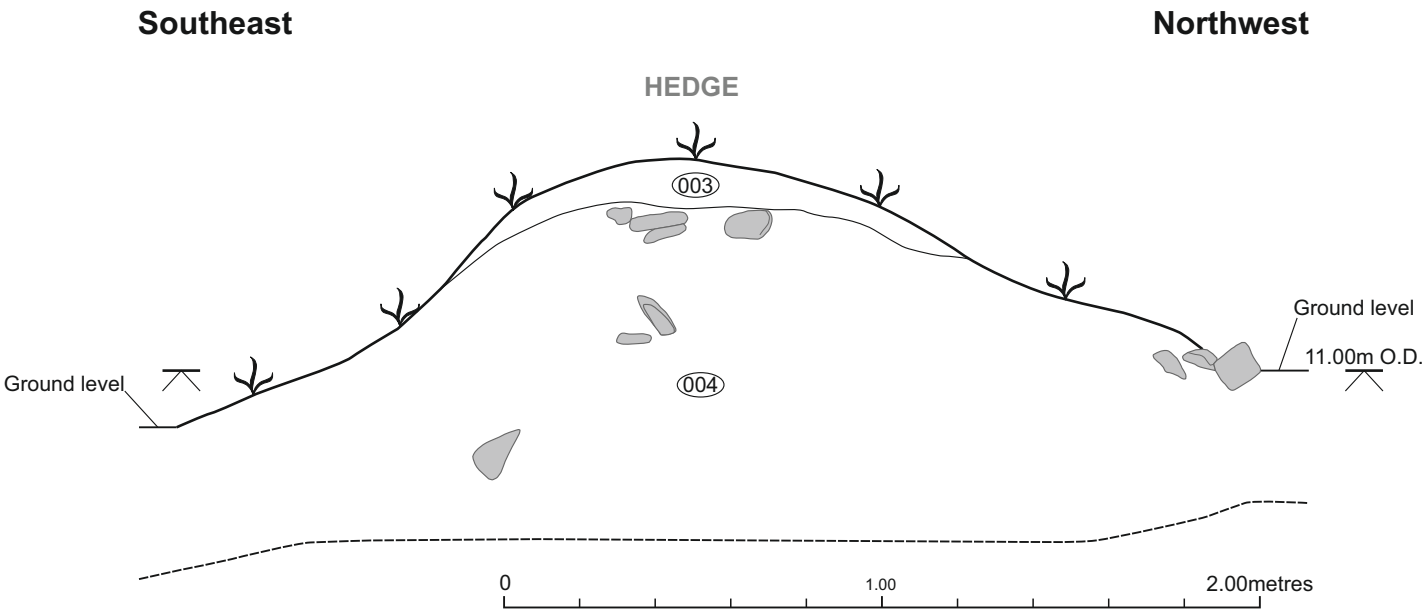

Figure 12. Boundary HH240: Northeast facing section/profile.

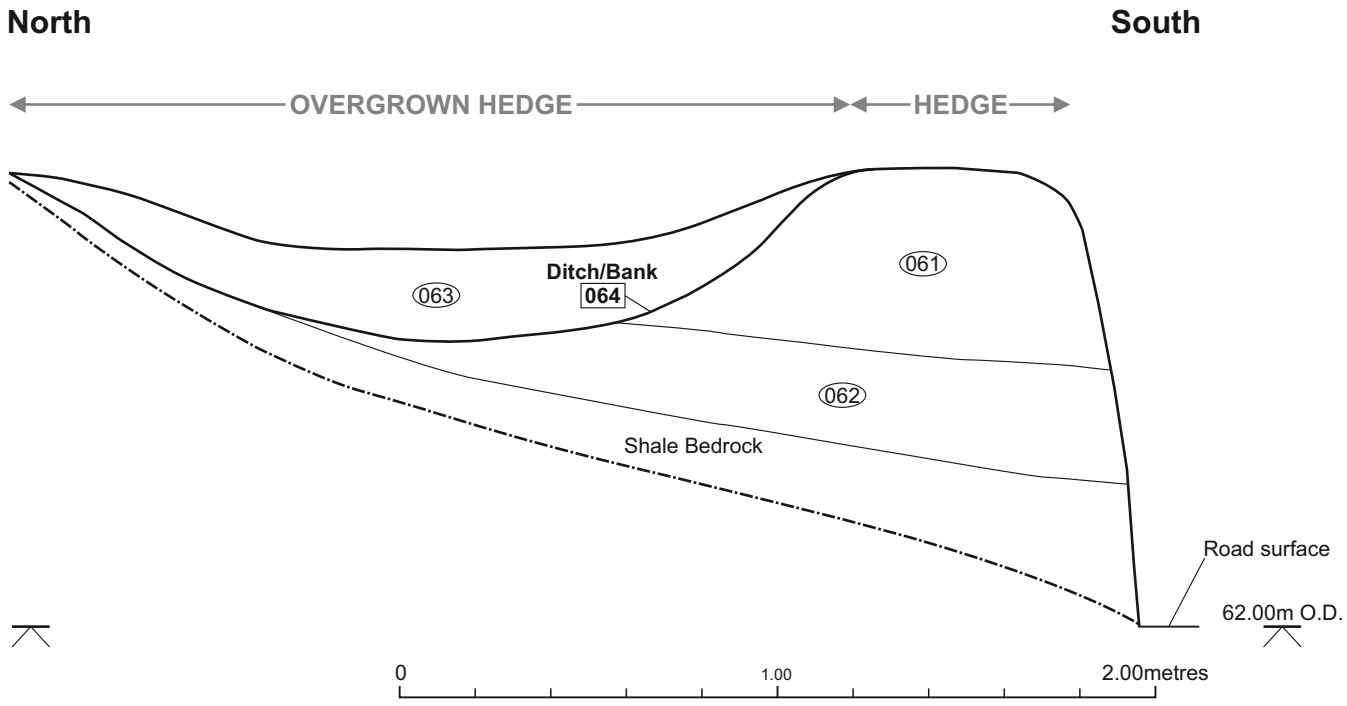

Figure 13. Boundary HH264: West facing section/profile.

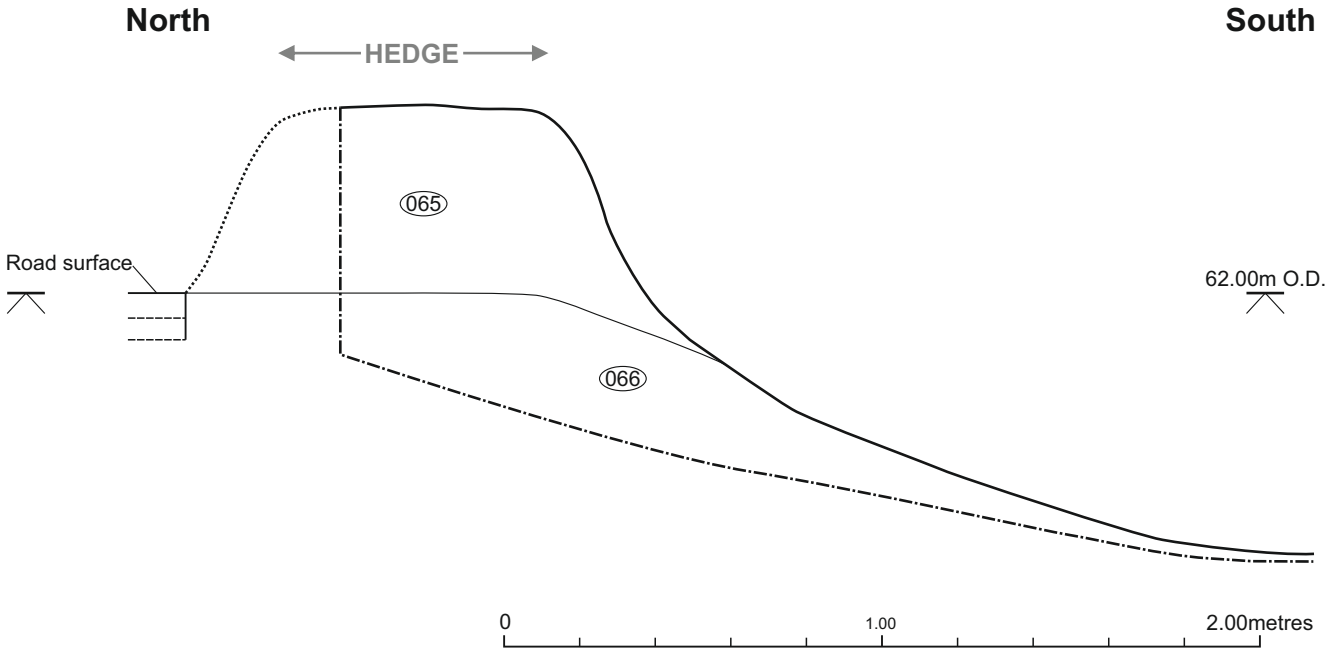

Figure 14. Boundary 262: West facing section/profile.

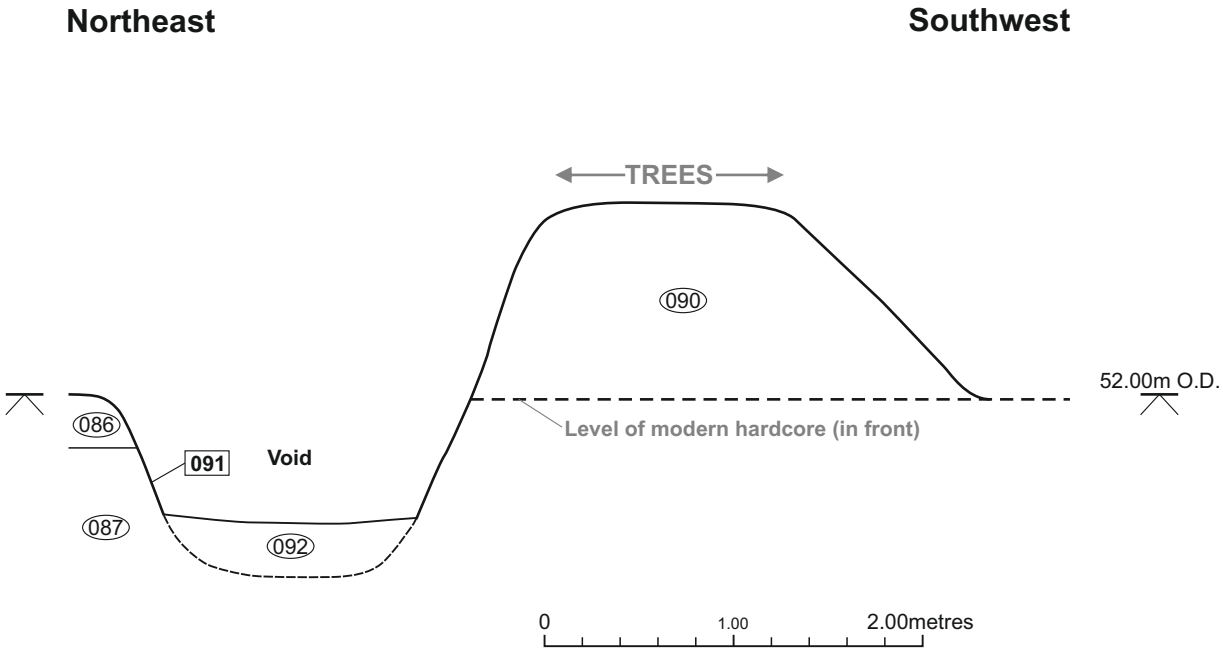

Figure 15. Boundary HH213: Northwest facing section/profile.

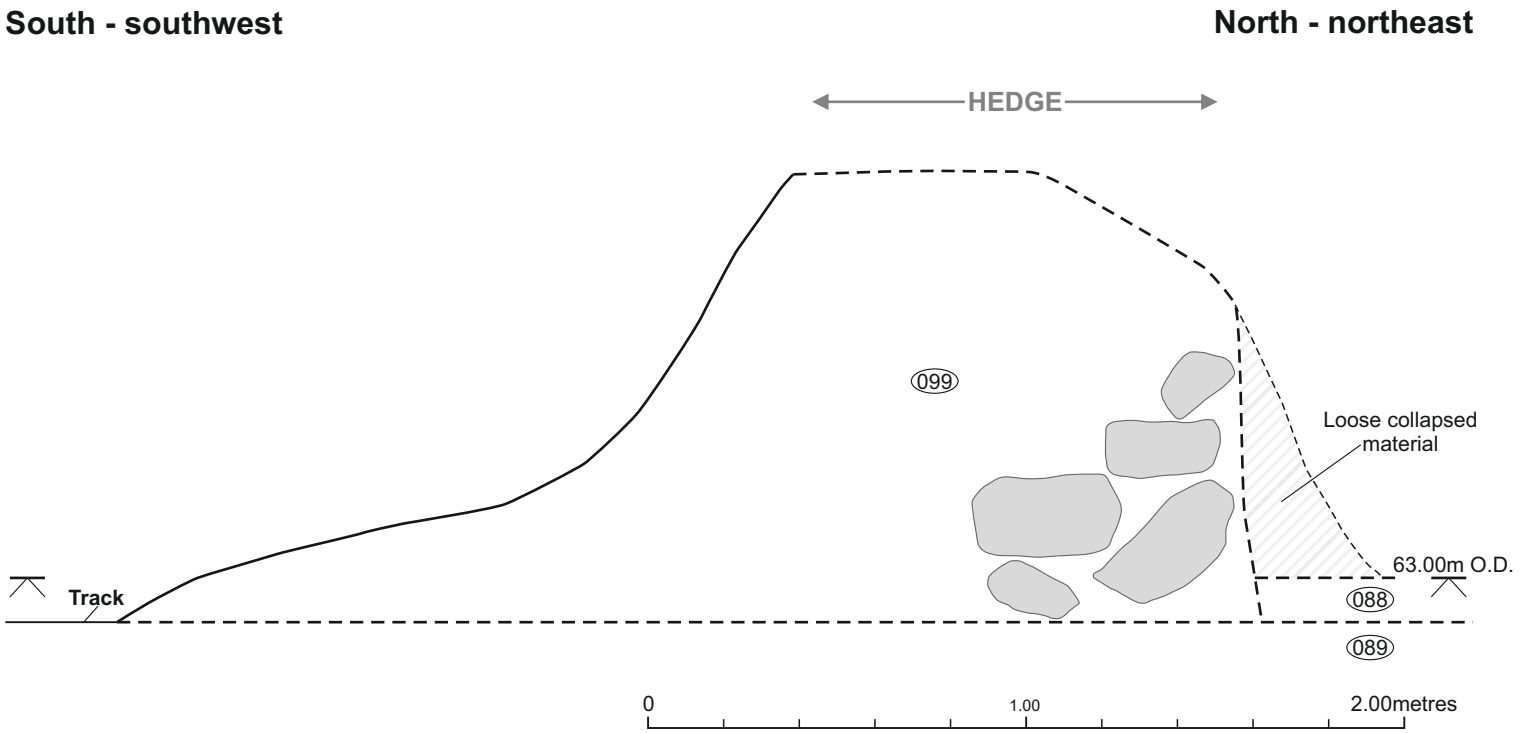

Figure 16. Boundary HH210: East southeast facing section/profile.

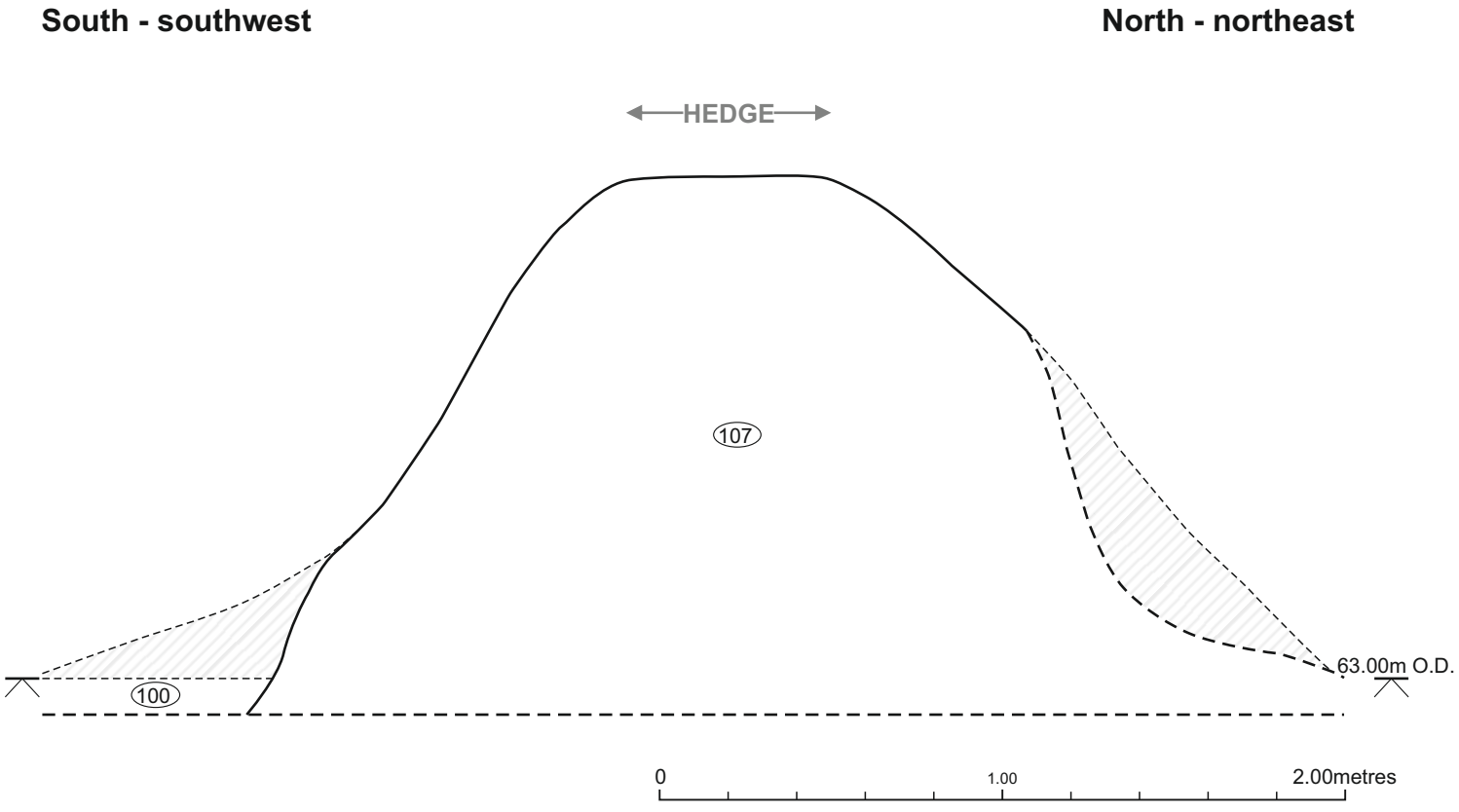

Figure 17. Boundary HH209: East southeast facing section/profile.

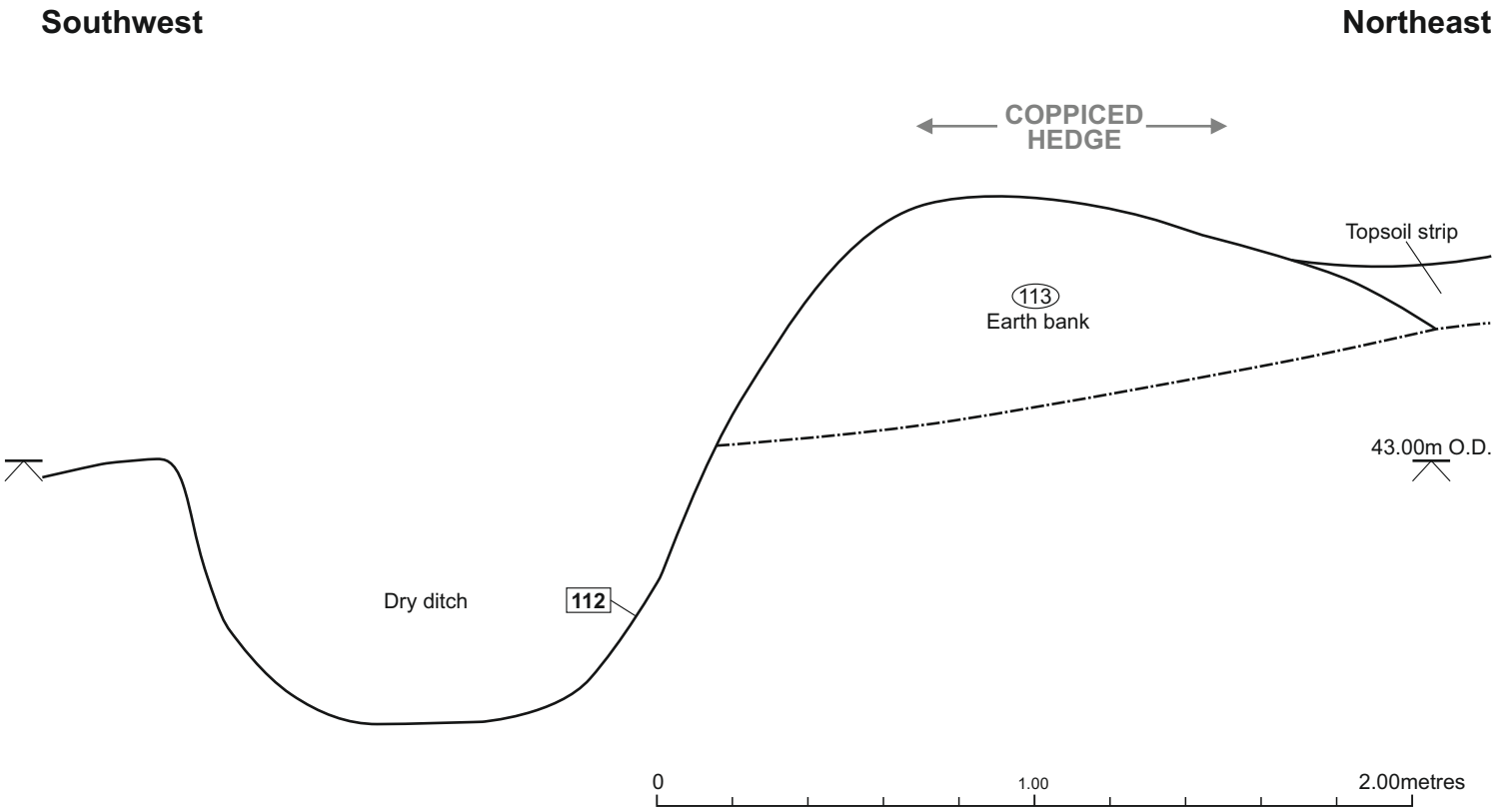

Figure 18. Boundary HH214: Northwest facing section/profile.

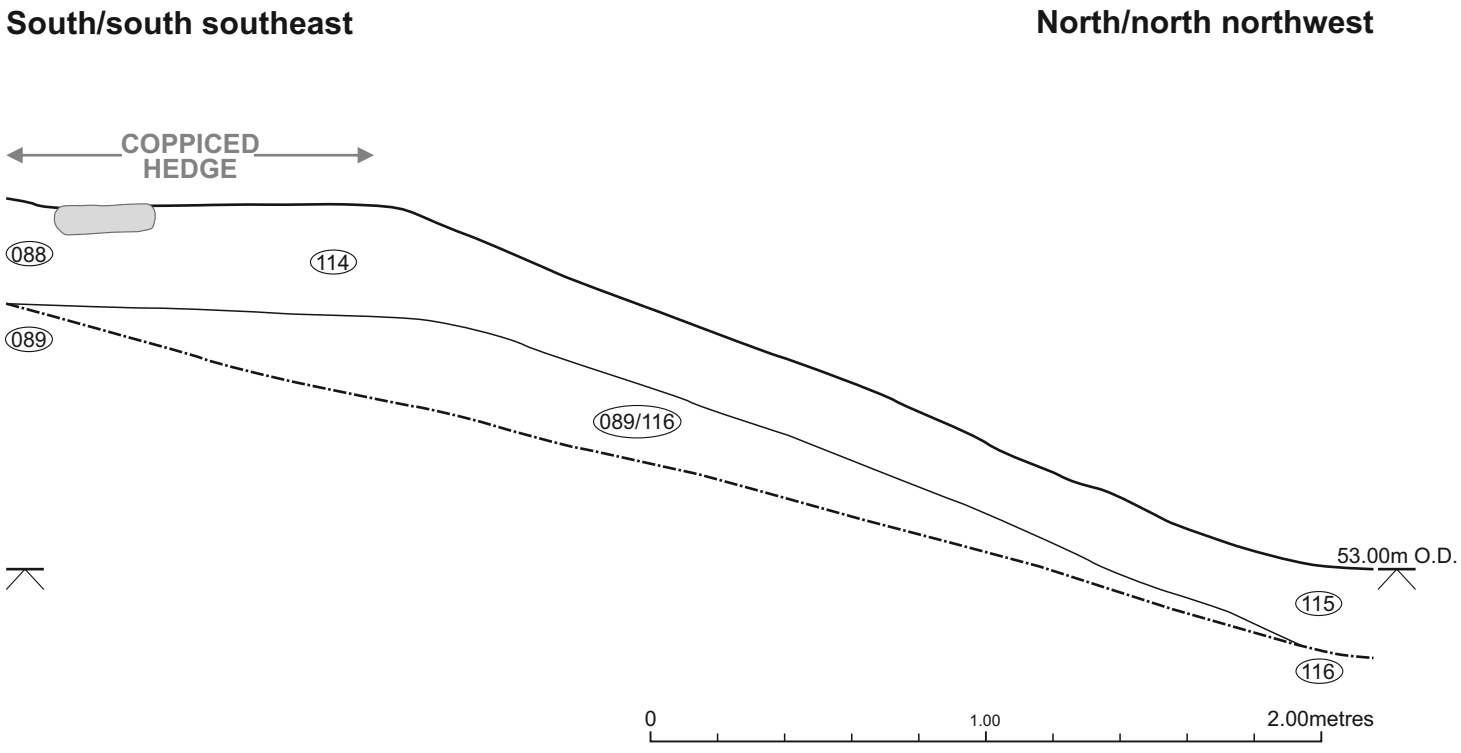

Figure 19. Boundary HH212: West facing section/profile.

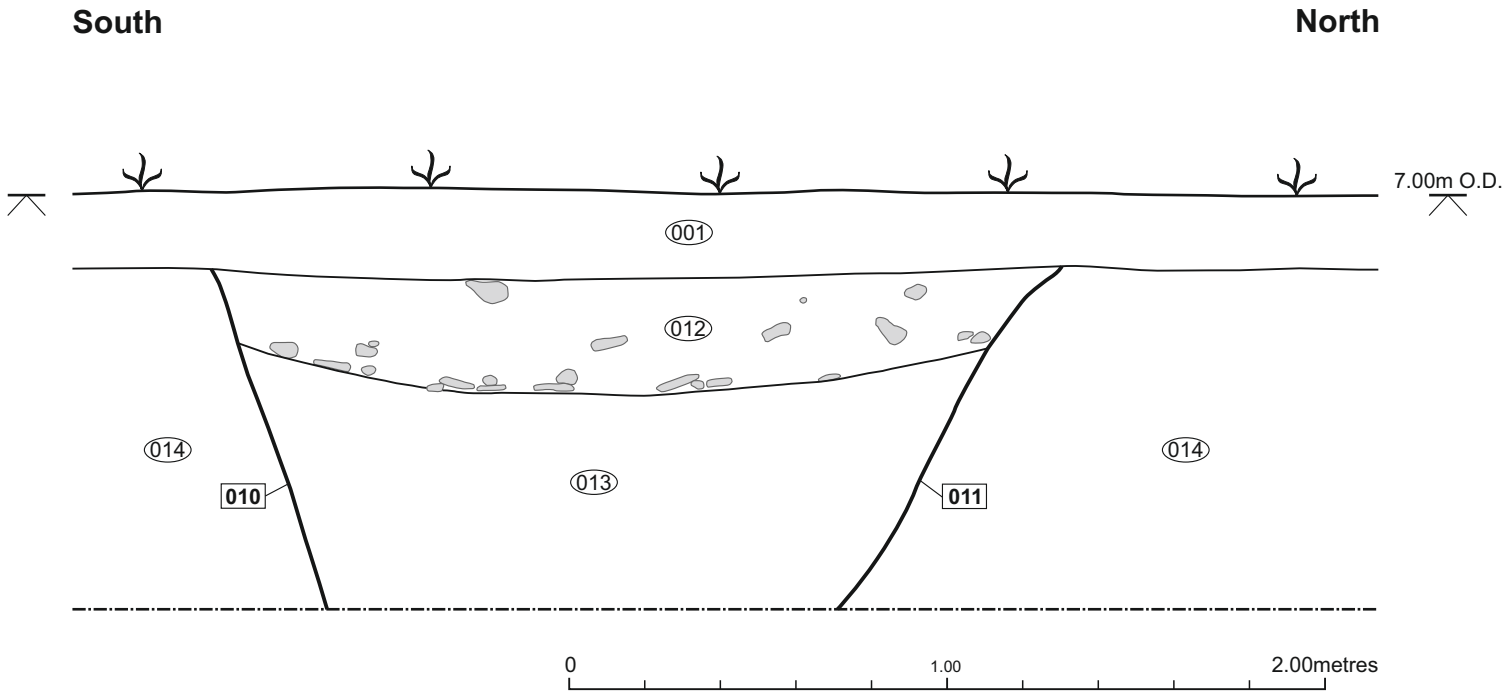

Figure 20. Cut Feature **010** & **011**, infilled Post-medieval drainage ditch: East facing section.

4. The Finds

4.1 Post-medieval and modern pottery report by Joyce Compton

4.1.1 Introduction and Methodology

Pottery of mainly 19th-century date was recovered from several locations in the Llangunnor area, near Carmarthen. All of the pottery has been recorded by sherd count and weight, in grams, by context, and the data entered onto an Excel spreadsheet for ease of manipulation. The spreadsheet forms part of the archive. The pottery assemblage amounts to a total of 3,735 sherds, weighing 25,756g. The assemblage is fragmentary (average sherd weight 6.9g) and generally in very poor condition, with much staining and spalling. In some cases, the staining is so severe it has masked the colour of the transfer-printing.

Pottery types of earlier post-medieval date were recorded in most contexts, always with pottery of more recent date. Modern ceramics form the highest proportion throughout the collection. There are hardly any groups of joining sherds and very few makers' marks; those present are mainly incomplete and thus difficult to identify. Works used to produce this report include Godden (1991) for identification of the stamps, Coysh and Henrywood (1982; 1989) for information on designs and patterns. Information on Staffordshire potters and their stamps was also obtained from www.thepotteries.org/.

The pottery is described by category below (for the complete data see Appendix IV):

4.1.2 Early post-medieval pottery types

These are present in small quantities, in total forming just over 2% of the total assemblage. The largest proportion is in context 088, although this context contains the most pottery anyway (36% of the total pottery assemblage by weight). Two contexts produced 16th- or 17th-century Cistercian-type ware, including a base sherd from a reeded mug with a thick black glaze, inside and out. Slightly more numerous are tin-glazed earthenwares (three examples) and West Country slipwares (nine examples). The tin-glazed earthenwares include a plate sherd with blue-painted decoration. In the same context (088) were two sherds of blue-painted 'Delft' tile, not necessarily imported, despite the name. A broad 17th to 18th century date is normally given to tin-glazed (Delft) earthenware. The West Country or North Devon slipwares (also 17th/18th century) include a jug rim sherd with handle springing.

Staffordshire or Bristol slipwares were recorded in six contexts. These have a buff fabric, coated with either brown or yellow glazes, the latter normally decorated with piped brown slip in various schemes of decoration. Identified forms comprise tankards, posset pots and press-moulded dishes, dating from the 17th century into the mid-18th. Among the salt-glazed stonewares are a small sherd of blue and grey imported Westerwald, another small sherd with 'scratch-blue' decoration, probably Staffordshire, and two small sherds of Nottingham stoneware. Most of the stoneware assemblage comprises fine white Staffordshire, mainly from plates. Some of these plate sherds are from heavy vessels and most carry moulded decoration, such as 'dot-and-diaper', 'basket-and-dot' and 'feather-edge'. White Staffordshire and Nottingham stonewares date to the 18th century and the Westerwald could be the same date or slightly earlier.

Creamware was first produced in the mid-18th century, gradually superseding Staffordshire stonewares and slipwares. Initially, creamware was a warm cream colour and was either left plain, painted by hand or transfer-printed. Sherds of this early creamware type were recorded in context 088, comprising bowl rim and plate sherds with brown sponged decoration, a sherd

with brown and green sponged decoration, two sherds with brown marbled slip decoration, two with moulded flower decoration beneath brown and green slip and a small sherd with applied rusticated decoration.

4.1.3 Post-medieval coarsewares

Local red earthenware (225 sherds, weighing 4.6kg) and North Devon gravel-tempered ware (248 sherds, weighing 3.25kg) are present in most contexts, although the North Devon is slightly less frequent. Both pottery types are normally given a broad 17th to 19th century date. Coarsewares form the utilitarian element of the assemblage, with vessel types comprising bowls, jugs, pancheons and large pans. These heavy vessels tend to break into larger fragments than the finer wares, but this pottery is in fairly poor condition with frost-shattering noted in several contexts. Of interest among the local red earthenwares are a number of heavily-rilled large vessels in red poorly-mixed clay and thick black glaze inside and out. Their function is unclear but they would have made attractive kitchen wares.

4.1.4 Modern ceramics

Just over 17kg of modern ceramics were recorded and this category is in the poorest condition, with an average sherd weight of 4.8g. The modern ceramics have been loosely grouped by subtype; modern stoneware, plain white earthenware, earthenware in other colours, mocha ware, hand-painted earthenware and transfer-printed ware in cobalt blue and in other colours, although some plain sherds may have broken from sherds of any of the other groups. Note was made of the manufacturers' stamps on the undersides or lower walls of a number of vessels and dating supplied where possible. In most cases, the sherdage is too small for individual schemes of decoration to be described but some contexts produced notable pieces and these are mentioned below.

The modern stoneware assemblage mainly comprises sherds from jars, bottles and flagons. The highly-fired fabric and vitreous glaze prevented any leakage or contamination of the contents and stoneware could be used to store fizzy drinks or beer, preserves and corrosive substances. The stoneware is a small collection but with much variety; besides the usual buff and grey fabrics, there are small quantities of blue, tan and cream stoneware. These sherds are too small to identify vessel forms but they may be from cosmetic jars, or similar; for example, the blue sherds in 079 are ribbed externally as if for decoration. A large rim sherd in 083 also has external moulded fluting, purpose unknown. The usual bottles, flagons and ribbed jars are present, although not in any great quantity. A bottle base in 080 has a black transfer-printed label on its side which reads '…anelly Brewery'. This is likely to be Buckley's Brewery, Llanelli, in operation from 1824 until 1998. A lower wall sherd from a second bottle (in 086) is stamped with the maker's mark, Price Bristol. This firm, and rival firm Powell of Bristol, cornered the market for stoneware containers, especially after Powell invented the Bristol Glaze, which gave stoneware bottles and jugs a smooth finish, very often with a two-tone brown wash. Price and Powell amalgamated in 1906 to become Price, Powell & Co.

White earthenwares, including transfer-printed, account for more than half of the total pottery by weight and, of this, approximately half has cobalt-blue transfer-printing. Pottery with other colours of transfer-printing is poorly represented in comparison but a full range of shades, including multi, was recorded. The plain white earthenware includes utilitarian vessels as well as plain cups, plates and saucers. A lid-seated rim sherd in 079 may be from a sugar-bowl and there is most of a rim from a narrow-necked porcelain flask in 080. Plate sherds in several contexts have moulded flower decoration in a band along the rim and others have moulded feather-edges, either plain, or in blue or green. Context 080 produced a plate rim with dot-and-basket moulded decoration, commonly seen on white stonewares, and three jug or bowl body sherds with a moulded semi-Greek-key design arranged as lozenges. Two pierced sherds from

a strainer or salad plate were found in 088 and a large jug handle from 086 has a handle-springing in the form of a shell. A nursery plate rim with green edging from 083 is embossed with 'T, V and W' and another in 100 has a moulded 'A'. A cup rim sherd, also from 100, has blue sprig decoration in the form of vine leaves; further sherds with the more common rose and thistle sprigs were recorded in other contexts. Straight-sided potted meat, jam and marmalade jars are much in evidence, mostly unmarked, but a base sherd in 083 has a stamp reading NEWC.., for Newcastle, and a rim sherd in 080 has the characteristic black-printed oak-leaf-and-acorn wreath associated with Keillers Dundee marmalade. During the Victorian period, the Newcastle firm C.T. Maling cornered 90% of the market for utilitarian jars (Bell 1986, 6), supplying Cooper of Oxford and Keiller of Dundee, among others. The 'Newcastle' base stamp could be from any of the Newcastle potteries, however.

It is unfortunate that the transfer-printed pottery is so fragmentary, as this hampers description of the schemes of decoration. As may be expected, the ubiquitous Willow Pattern appears to be much in evidence, along with other chinoiserie designs. Plates with Asiatic Plants, Lily and Lorna transfer-printed marks imply the presence of these patterns, and sherds with animals and birds, such as the giraffe noted below, and a crane, both in 088, reflect the fashion for zoological scenes in the early 19th century. Sherds from a large Willow Pattern dish or meat platter has combed swirls on the underside, beneath the glaze. Other designs of note are cup and footring sherds showing ladies in Welsh costume in black transfer-print, and two nursery plate sherds, one in black, the other in brown, all from 083. In the same context is part of a plate showing a scene from *Human Passions Delineated* by Timothy Bobbin (published in 1773). The scene is printed in several colours and the incomplete legend is in pale blue; its expansion reads 'the patient roar'd with pain and hideously did grin'. The complete design shows a tooth extraction in progress and seems a strange subject to apply to pottery. Context 080 produced a sherd with a black transfer-print of a lady carrying a parasol and, also in black, is part of a mug showing a ball game in progress (context 088). Joining mug sherds in brown transfer-printing came from the same context. The sherds show a wharfside scene with sailing vessels and a family with luggage with the ?mother in tears; above the scene are the words 'To Australia'. A web page for the saleroom Trevanion and Dean (twitter.com, accessed 6th June 2018) reveals the sale of a mug with identical print in magenta with the complete legend 'Emigrants To Australia', and a date for the mug in the 1840s.

Early blue-and-white pottery was noted among the mass of sherds, mostly in context 088. Part of a fine tea bowl may be one of the sole pieces of true porcelain in the assemblage but occasional sherds of finer pottery, including semi-porcelain or bone china, were present in other contexts.

Kitchen ware describes vessels in a cream fabric, covered with yellow glaze inside and out. More than 200 sherds, with a total weight of almost 2kg, were recorded and, as might be expected, mixing bowls, basins and jugs form the bulk of the assemblage. Many are decorated with groups of white, brown, cream or blue lines; some have bands of blue feather decoration on white, between single blue lines. A mixing bowl sherd in 100 has external moulded decoration and a basin rim sherd in 080 has a moulded beaded edge. A handle springing in 083 has a moulded leaf terminal.

Teapots in buff fabric with brown glaze, along with other tea wares with brown, red or blue fabric, were noted but not in any great quantity. In Victorian times, the so-called Brown Betty teapot was thought to make the best pot of tea because the shape enabled the tea to brew properly and the brown glaze was supposed to mask inevitable tea stains. It seems odd, therefore, that so few were found in this assemblage. Spouts, lid-seated rim sherds and handles were all identified, along with plain or decorated body sherds. Two examples in 083 have

moulded decoration, one with vertical lines, and the other with the representation of a pineapple. Further teapot sherds in harder brown, red or blue fabrics were also noted. Jugs and other tea wares appear in these fabrics, most with internal white or cream glaze. Some have external decoration in the form of contrasting stripes; a sherd in 088 has tan-coloured glaze both sides and a hand-painted decoration of yellow leaves. A shoulder sherd in red fabric which is almost a stoneware (in 083) has engine-turned decoration along the carination.

Mocha ware is part of the larger family of industrial slipwares, which includes the kitchen ware described above, and blue and white striped jugs and bowls also found in this assemblage. Mocha ware jugs and tankards were used in the pub trade and very often have the imperial standard as a sprig beneath the spout. Mocha ware is very colourful, with predominantly blue or green bodies, although grey and brown also occur. Various decorative schemes in the form of groups of stripes, usually brown, are found at the rim and at the foot, and the body is decorated with 'feathers', sometimes called 'trees', which are formed when drops of tobacco juice are introduced to the wet glaze and allowed to diffuse through it to great effect. Marbled decoration also occurs, along with multi-coloured twisted strands, known as 'earthworms', used especially on bowls. Sherds with earthworm decoration in greeny-grey were noted in context 088. Context 083 produced a group of sherds with an abstract blue, tan and brown design and a second group with black and salmon pink marbled decoration.

Hand-painted pottery is present in surprisingly small amounts. Most of the decoration appears to consist of sprays of flowers, leaves and berries in magenta, green and blue. There are also saucer sherds (in 083) painted in orange and green, and others with designs in blue, including a jug handle with painted leaves along the central rib (086). Joining bowl rim sherds in 080 have blue painted leaves along the rim edge; the paint has run and bled down the inner surface. A small number of sherds have sponged decoration in blue and green. Most of these schemes of decoration include magenta, green, brown, pink or blue lines as part of the decoration or as rim edgings, both inside and out. Sherds with lustre embellishment are scarce and a single saucer rim in 083 has gold leaf decoration.

4.1.5 Stamps and marks

All of the stamps and marks have been listed and identified where possible; nearly all are partial, making many identifications tentative. The stamps fall into two classes, those which have been impressed into the leather-hard vessel (only two in this assemblage), and stamps and marks which are either printed or painted before firing. Marks became common during the early years of the 19th century and were even more prolific from about 1820 when printed marks began to be used. There are relatively few fully-identified stamps and marks in the current assemblage, amounting to just twelve. The low average sherd weight of most of the modern ceramics may indicate why so few can be identified. However, the identified stamps and marks are all likely to be 19th century, with an emphasis on the mid to late 19th century. The main suppliers, based on the admittedly-scarce evidence of the stamps, are the Staffordshire potteries.

Merchant's marks are not common and were applied to pottery during the manufacturing process. These marks are usually distinctive, printed in large lettering, and very often including the address, which is not usual with makers' marks (Coysh and Henrywood 1982, 300). The inclusion of a merchant's mark made it difficult for substandard stock to be sold as seconds, because retailers who sold seconds were reluctant to take goods marked with another retailer. Despite the apparent rarity of merchant's marks, two were identified, Primavesi and Son on a Willow Pattern plate in context 060, and Ovingtons in context 088. Fidele Primavesi and Son, located in Cardiff and Swansea, were active from 1850 to 1915 and served as middlemen between the potteries and china retailers. The Ovington Brothers, Theodore and Edward,

founded their glass and pottery merchant business in 1843 in the Brooklyn Heights area of New York city and this plate with the Ovingtons stamp must surely have been a 'second'.

A local pottery stamp was identified, Evans and Co, Swansea, on a Willow Pattern plate. Visible beneath the name is a three-feather trade mark. David Evans leased the Swansea pottery from 1862 to 1870 when the lease was handed back to Ll. Dillwyn. Of interest is another plate sherd in blue transfer-print, showing a set of animal's legs. Underneath is a part-stamp, '…affe' in a cartouche. The design is obviously 'Giraffe' but the maker has not been identified. Both Ridgeway and Minton produced Giraffe designs but, for both, the legs in the design are different and so are the maker's marks. A Giraffe design was used by the Llanelly pottery between 1840 and 1855 (Pugh 1995, 45) although there is no illustration of either the stamp or the design to confirm the attribution.

4.1.6 Ornaments

At least thirty sherds from ornaments or figurines are present, although some may be from opaque white glass items. Others may be from mould-decorated ewers and the like. Notable sherds include part of figurine in the form of seated male figure, in 058, missing the head, in breeches and short coat, holding a tub of grapes in the right hand and a bunch of grapes in the left, a sherd showing a moulded bunch of flowers in 060, a broken figurine in the form of a naked torso, and a pink pottery 'branch' with overlapping scales, both from 083. The most complete ornament is represented by a figure of Lord Nelson, crudely fashioned and lacking its base, from 088. This is unlikely to be a Staffordshire figurine and so may be locally-made; it probably dates to the early decades of the 19th century.

4.1.7 Conclusions

Much of the pottery was excavated from topsoil contexts at separate locations along the pipeline easement. Each location produced similar types of pottery, although since 088 and 083 contain the largest amounts, these have the most variety within the pottery types. White earthenware is by far the largest component in the assemblage, mostly dating to the 19th century. Some pottery types continue into the 20th century but there is nothing present which is exclusively 20th century. There are small amounts of earlier pottery throughout, mainly 18th century, but these form a small proportion of the total.

Transfer-printing was perfected during the 1760s, initially on creamware, and the Willow Pattern design was invented by Josiah Spode in around 1800 (Copeland 1988, 14). Spode was instrumental in enabling mass production of blue-and-white transfer-printed pottery and vast quantities were produced by various potteries from the 1780s onwards. Transfer-printing was at its zenith by 1816 (Copeland 1988, 12). The preponderance of blue transfer-printed pottery in the Brechfa Forest assemblage, therefore, may indicate main accumulation during the 19th century, perhaps with a start date in the 18th.

The fragmentation of the pottery is noteworthy. As noted above, there are few groups of joining sherds and, although vessel equivalence was not attempted, the minimum number of vessels is likely to be very high. This has made sourcing the pottery difficult, although the few stamps certainly denote Staffordshire, Llanelli and Swansea. In addition, the nature of the pottery, coupled with the fragmentation, points to secondary deposition rather than gradual accumulation from local domestic sources. The whole assemblage has the appearance of a deliberate single act, and perhaps brought from further afield, as landfill.

4.1.8 References

Bell, R. C.	1986	*Maling and other Tyneside Pottery,* Shire, Princes Risborough.
Copeland, R.	1988	*Blue and White Transfer-Printed Pottery,* Shire, Princes Risborough.
Coysh, A. W. and Henrywood, R. K.	1982	*Dictionary of Blue and White Printed Pottery 1780-1880, vol 1,* Antique Collectors' Club, Woodbridge, Suffolk.
Coysh, A. W. and Henrywood, R. K.	1989	*Dictionary of Blue and White Printed Pottery 1780-1880, vol 2,* Antique Collectors' Club, Woodbridge, Suffolk.
Godden, G. A.	1991	*Encyclopaedia of British Pottery and Porcelain Marks,* rev. ed., Barrie and Jenkins, London.
Pugh, R.	1995	*Welsh Pottery,* Towy Publishing, Bath.

4.2 Report on the post-medieval and modern glass by Joyce Compton

4.2.1 Introduction and Methodology

Post-medieval and modern glass, amounting to a total of 482 sherds, weighing 5240g, was recorded. All of the glass has been counted and weighed (in grams) by context and type, and the data entered onto an Excel spreadsheet which forms part of the archive. The glass is fragmentary with an average sherd weight of 10.9g. Bottle glass of all types dominates the assemblage, forming almost 90% by weight of the total.

4.2.2 Descriptions and Dating

The few diagnostic bottle sherds were dated using Dumbrell (1992). Almost all of the glass dates to the 19th century and is described briefly by category, as follows (for the complete data see Appendix V):

Bottles

Approximately half of the bottle glass assemblage derives from green beer and wine bottles. There are no identifiable maker's marks, although several sherds carry moulded letters. Diagnostic sherds include 19th-century phial and wine bottle bases with a high kick-up. Bottle rim sherds include two with 'blob' tops, one in 080 has a striated neck, and one each from 088 and 100 have applied double rims, all of which are 19th-century features. Also in 088 is a bottle rim with an applied strip at the rim edge, dated by similar examples in Dumbrell (1992) to the 18th century. A bottle sherd in 080 with a plain rim, made to receive a cork, and with visible mould lines on the neck is likely to be the most recent and could date into the 20th century.

The blue-green bottle glass probably represents 19th-century mineral water, medicine and sauce containers. There is a base from a Bowler-type mineral water bottle, from 088; its moulded lettering includes part of the word 'Superior' but nothing else identifiable. The assemblage in 083 includes a crown-top pop bottle rim, one of two mineral water bottles has a double rim, and there is a sherd from a large jar with internal screw-thread neck. Maker's marks may include Thomas and Evans and Llanelly Brewery, although all lettering is partial and these are interpolations of the extant letters.

Some of the colourless bottle glass may derive from ornaments or vessels and this includes a tiny sherd with ruby-coloured paint (context 086). Diagnostic sherds are few; there is the base from a small flat-bottomed bottle in 080 and a four-sided bottle shoulder with moulded letters 'OKEL..' and 'MONA B..', whose expansion remains obscure. Also present are medicine bottle sherds in blue and dark blue glass, one of which is from an eight-sided bottle. The bottle glass assemblage is completed by three sherds in brown glass, one of which is from a ribbed, wide-necked jar with external screw-thread rim.

Vessel glass

Fifty-seven sherds of vessel glass were noted; the largest proportion is colourless but there are two sherds of ruby-coloured glass and a number of opaque fragments in several colours. The three coloured sherds, noted below with the window glass, could just as easily be from vessels. The colourless glass includes at least twelve lead-glass tumbler sherds, some with 'cut-glass' decoration, and a similar sherd from a stemmed glass. There is also a rim sherd from a screw-topped jar and part of a press-moulded dish or saucer. A colourless sherd of note comes from a thin-walled vessel, perhaps a bowl with a folded-over rim or, more likely, from a footring, and probably dating to the 18th century. The opaque sherds comprise eighteen in turquoise, eleven in white and one bright-blue. Since these sherds are very small, it is unclear from what they are derived, although ornaments, cosmetic jars and lampshades are all possibilities.

Windows

The window glass is a small assemblage of 75 sherds, weighing 186g, evenly split between colourless glass and blue-green. In addition, there are three small, flat, strongly-coloured sherds, one ruby, one dark-blue and one amber, which are probably from window panes but could equally derive from vessels. Some blue-green and colourless sherds have misted translucent surfaces and two are ribbed. Six sherds each have one fire-rounded edge.

Objects

There are two glass objects, a colourless, flat, 8mm-thick sherd with one bevelled straight edge, now chipped along its length, from context 086, and a large (60mm diameter) green stopper from 088. The flat sherd is heavily scratched on both sides and may be from a glass display shelf, or similar. The stopper is presumably from a large container and is embossed along the upper circumference with 'Aire and Calder Bottle Co., Castleford & London'.

4.2.3 Conclusion

This is a relatively small assemblage which is also fragmentary, and so the information provided is minimal. The bulk of the assemblage is 19th century in date. There is nothing obviously 20th century among the pieces but several are types whose date range may extend into the 20th century. Of interest is the handful of 18th century sherds, although these are very small. On the whole, this is a typical Victorian assemblage representing domestic rubbish disposal and there is very little which could be regarded as noteworthy.

4.2.4 References

Dumbrell, R.	1992	*Understanding antique wine bottles*, Antique Collectors' Club, Woodbridge, Suffolk.

4.3 Metallurgical materials and artefacts by Daria Dobrochna Dabal

4.3.1 Summary

Archaeometallurgical materials recovered during the archaeological watching brief for Brechfa Forest Connection in Carmarthen formed 7.67kg assemblage of metal artefacts and metallurgical residues (123 artefacts). All artefacts were obtained from contexts of post-medieval and modern date.

The collection included a variety of materials in addition to archaeometallurgical residues; including corroded iron-artefacts and various natural materials like iron ore, galena and coal. Most of the iron finds were of domestic and agricultural origin. A small amount of iron slag was recovered representing iron smelting using blast furnace fuelled with charcoal and more recent furnace fuelled with coke.

None of the objects derived from the watching brief are of particular archaeological note and no further analysis has therefore been recommended.

4.3.2 Methodology

The archaeometallurgical materials described here were recovered during the archaeological watching brief for Brechfa Forest Connection, Carmarthen (GGAT 904). All specimens were inspected visually, using a 40x magnification microscope where necessary, and were described and recorded in a database (see Appendix VI). The materials were not subjected to any form of instrumental analysis; therefore, their identification and interpretation are limited and must be regarded as provisional.

The following paragraphs describe the materials and their distribution. Archaeometallurgical finds are listed in the catalogue arranged by context number (Appendix VI).

4.3.3 Results

This assemblage forms a small collection of metal artefacts and metallurgical residues (123 artefacts, approximately 7.67kg). All of them were obtained from several contexts of post-medieval and modern date.

The metal objects and small amount of metallurgical residues can be divided into the following groups:

Iron nails and staples

The largest group of iron artefacts from the site comprised handmade nails. They were all characterised by square-section shanks and asymmetric heads. Some of them varied in thickness through the length of the shank, which suggested that they were forged. Other examples were characterised by square profile showing even thickness as they were cut from a plate of uniform thickness (Hillman-Crouch 2003). Some 30 nails were derived from contexts: **005**, **079/083**, **080/084**, **086**, **088** and **100** (weight of approximate 0.8kg). They appeared in many sizes from 3.5cm (3g) to 12.3 cm (107g) in length. Most of them were too deeply corroded to allow further identification criterion, but within the collection, the following nail types were identified:

- **Rose-head** nails appear in various sizes from length of 4.5cm (weight 3g) to 9.5cm (weight 43g). Some of specimens had rounded heads; others were flat but with short slopes near the edges.

- **T-head** nails also appear in various sizes. Some were obviously rose-head nails with two sides flattened to form the "T", but the large spikes have flat heads and are not reshaped rose-heads (max. 8.5cm length, 40g).
- Four **hexagonal head** nails in various sizes ranging from 4.8cm in length (weight 8.2g) to 9cm in length (34.6g) all characterised by even thickness through the entire length of their shanks, which indicates they were cut from plate (Hillman-Crouch 2003).
- One **L-head** nail (length 6cm, weight 13g), one **headless** nail (length 12.3cm, max. diameter 1.4cm, 107g), and one small **U-shaped staple** (weight 4g) were noted within the collection. Staples, the same as nails, are common method of fixing and are often used to join wooden elements or to fasten hasps for doors or strongboxes, etc. (Hillman-Crouch 2003).

Iron spike
One large iron spike (20cm in length and 283.2g weight), probably a railroad spike, was found in context **086**.

Nuts, bolts, screws and washers
Three iron bolts some with attached nuts, two screws and one washer (approximate total weight 0.56kg) were recovered from contexts **005**, **079/083** and **086**. The largest specimen measured 13.5cm long by 1cm thick (150.2g). Such bolts and screws could have a wide variety of possible uses as structural or mechanical elements. In this case, it is most likely they formed part of agricultural implements.

Springs
Two iron springs (184g and 31.2 g), one with attached plastic hoop, were found in contexts **079/083** and **088**. These likely originated from agricultural vehicle or machinery.

Railing
A fragment of round iron rod with pyramidal head (weight 170.5g) was discovered in context **100**. It could be fragment of gate, railing or fence.

Plates and strips
A few complete examples and fragments of flat iron strips and plates with constant thickness were found in contexts (**078/083**, **080/084**, **086**, **088** and **100**). Such strips and plates were used to bind across failing scarf joints or set at angles across corners to prevent these from pulling out. They were fixed with staples and/or nails, and small fixing holes were noted on some examples.

Gate holder, fastenings and latches/hasps
Iron fastening (length 9cm (3.54 inch), context **001**) and gate holder (weight 238.2g, context **079/083**).

Hinges
One fragment of a hinge (weight 11g, context **080/084**) and one-half of a hinge (weight 23.2g, context **086**).

Pin
Iron pin (length 9.4cm, weight 59g, context **080/084**) with roughly square head, which may have been be used to lock a door.

Bracket
One iron bracket (weight 49g) was found in context **080/084**.

Barrel hoop
Iron hoop (dimensions: *c.*24.5cm (9.5 inch) diameter and 5cm wide; 1654.6g found in context **001**; might be a hoop from a small wooden barrel or a bucket.

Horseshoe
Right front horseshoe (645.6g) found in context **079/083**.

Horseshoe heeltap
Few 'U'-shaped iron strips with nails were found in contexts **079/083** and **100**. These could be fragments of horseshoe heeltaps attached to hob-nailed boots. Hob-nailed boots had nails inserted into their soles, whilst toes and heels were strengthened with metal. The hobnails and toe/heel taps provide traction on soft, rocky or steeply sloping ground. This form of footwear was typically used by miners, quarry men and farmers.

Knife handle
An iron strip, probable knife handle (weight 51g) was fond in context **086**.

Rods and wires
Fragments of iron rods were notices in context **005** (stone-footings of robbed out stone-faced bank/field boundary) and **079/083**, **080/084**, **086** and **100**. They are most likely remains of old wire fences, which formed part of the boundary.

Concretions and indeterminate iron objects
Concretions were found in contexts **005** and **058**; all are likely to have formed around small iron objects, such as nails or metal plates/straps.

Lead artefacts
Five indeterminate lead scraps (total weight of 35.7g, contexts 079/83, 088 and 115) and a piece of galena (lead ore) (82g, context 079/083) were recovered from the site. The lead scraps various from 1.3cm to 2.5cm width and as they are very fragmented, it is impossible to determinate their exact purpose. The galena was characterised by creamy coloured surface from the formation of lead carbonate and displayed shiny silver crystals on the chipped edge. Galena is most common lead bearing mineral (Rocks and Minerals 1998). This fragment might be example of locally obtained ore from Llangunnor Lead Mine located to the east of the site (NGR SN437197, Llangunnor Lead Mine 2018).

Slag
Two fragments of dense, dark-green glassy slag similar to the slags made in a cold blast, charcoal-fuelled iron smelting furnace (post-medieval). Such blast furnaces were used for production of pig iron (Tylecote 1986).

One fragment of dense matt grey coloured (of stony appearance) slag with few vesicles. Probably made in hot-blast coke fuelled blast furnace of 19th – 20th century date (Tylecote 1986).

Coal
Four small fragments of coal (23.4g) were found in contexts 001 and 086. In general, coal was used in great amounts as a domestic fuel and is not necessarily evidence of metallurgical activity.

Iron ore
Four fragments of iron ore were noticed within the collection (contexts 079/083 and 100).

4.3.4 Interpretation

The assemblage comprises 106 iron artefacts, 5 indeterminate lead scraps, 1 lump of galena, 4 iron stones, 4 pieces of coal and 3 slags.

The materials from the site are typical of the 19th – 20th century period. The iron nails, staples, strips and plates are likely associated with farm buildings and related structures, fences and gates. A few items (like bolts and screws) recovered from the site might have originated as parts of agricultural machinery.

The collection from the Brechfa Forest Connection contains a small amount of iron making residues. Slags represent iron smelting in blast furnaces. However, the small number of slag fragments make it less likely that metal working activities were carried out on the site or nearby. The lump of galena might come from a nearby lead-silver mine. The fragments of coal are likely to have come from domestic contexts.

4.3.5 Evaluation of potential

Further detailed investigation of the artefacts from the Brechfa Forest Connection watching brief would only have a limited potential to aid the interpretation of the site. None of the objects derived from the excavations are of great importance. X-radiography could be used to confirm the interpretation of badly corroded iron finds and concretions, but because the assemblage has little potential to yield additional archaeological information, no further analysis is recommended.

In addition, the few examples of iron smelting slags are isolated from any metallurgical structures. The blast-furnace slags were often re-used as hardcore and can be found far away from furnace sites. Therefore, these artefacts have very limited potential for further work and none is recommended.

4.3.6 References

Hillman-Crouch, B. 2003, *Historic Ironwork Repairs to Timber-framed Buildings*. Published on the web: http://www.dowsingarchaeology.org.uk/index.htm

Llangunnor Lead Mines, published on the web:
http://www.carmarthenmuseum.org.uk/articles/mines.html (seen on 24th of September 2018)

Rocks and Minerals. A pocket compilation; 1998, Grange Books, London.

Tylecote, R. F. 1986, *The Prehistory of Metallurgy in the British Isles.* London: Institute of Metals.

4.4 The stone objects by Daria Dobrochna Dabal

4.4.1 Overview of Stone Objects

The majority of stone material collected from the site was found to be of natural origin. It was impossible to identify the origin of the numerous quarts and calcite crystals from the site with confidence. The quartz and calcite crystals (which ranged from white/milky to yellow/orange in colour; the maximum dimension being 9.5cm) may have been result of mining activity, possibly from the nearby Llangunnor Lead Mines (NPRN 33736, SN 43711988). The small number of siltstone and chalk fragments noted within the collection seems to be of natural origin.

The only artefacts recovered from the site were a slate pencil (context **079/083**) and two probable whetstones (contexts **005** and **058**). Identifying whetstones was particularly problematic: wear marks, which are the result of deliberate use of the stone rather than some form of natural abrasion, are difficult to distinguish. Slate pencils were most commonly used in 19th/20th century schools. The pencils were either made of a softer grade slate than that used for the slate boards/tablets, or chalk, to allow them to used for writing.

Site no	Site name	Context	Type	Description/Detail	Period	Quantity	Weight (g)
904	Brechfa Forest	005	Stone object	Probably whetstone	Post-medieval?	1	72.8
904	Brechfa Forest	058	Stone object	1 x chalk piece; 1 x probably whetstone	Post-medieval?	2	68.2
904	Brechfa Forest	079/083	Geological	2 x probably quartz, largest piece dimensions 3cm x 2cm x 1.5cm	U/D	2	10.2
904	Brechfa Forest	079/083	Geological	Quartz, 4.5cm x 3cm x 2.5cm	U/D	1	31.6
904	Brechfa Forest	079/083	Geological	Quartz, 3cm x 2.5cm x 1.3cm	U/D	1	9.6
904	Brechfa Forest	079/083	Geological	Quartz. Max. diameter 7cm x 5.5cm x 2cm	U/D	3	174.6
904	Brechfa Forest	079/083	Stone object	Slate pencil used to write on a slate board, 7cm length, 0.8cm diameter	Post-medieval/ Modern	1	5.8
904	Brechfa Forest	079/083	Geological	Quartz, max. dimensions 9.5cm x 4.5cm x 4cm	U/D	7	541.6
905	Brechfa Forest	079/083	Geological	Quartz crystals, the largest stone dimensions: 9cm x 7cm x 4cm	U/D	5	673.4

Site no	Site name	Context	Type	Description/Detail	Period	Quantity	Weight (g)
906	Brechfa Forest	079/084	Geological	3 x fragments of a stone with low iron content, very weathered	U/D	3	51.8
904	Brechfa Forest	080/084	Geological	2 x calcite, max. dimensions 5.5cm x 2.5cm x 2 cm	U/D	2	140.8
904	Brechfa Forest	080/084	Geological	1 x Quartz crystal dimensions 9.5cm x 6cm x 4 cm; 13 x calcite/quarts stones	U/D	14	564.6
904	Brechfa Forest	080/084	Geological	Quarts fragments ranging from white/milky to yellow/orange coloured, largest fragment dimensions: 8cm x 4 cm x 3.5cm	U/D	13	988
904	Brechfa Forest	086	Geological	Quartz, max. dimensions 8.5zm x 4cm x 1.5cm	U/D	25	595
904	Brechfa Forest	086	Geological	1 x grey sedimentary rock with fossils, probably siltstone, dimensions 6.5cm x 3.5cm x 3cm	U/D	1	85.4
904	Brechfa Forest	088	Geological	1 x grey sedimentary rock with fossils, probably siltstone, dimensions 7cm x 2.5cm x 2 cm; 4 x quartz fragments max. dimensions: 8cm x 5.5cm x 2.5cm	U/D	5	194.4
904	Brechfa Forest	088	Geological	1 x chalk?	U/D	1	21.2
904	Brechfa Forest	100	Geological	1 x quartz and 1 x calcite 8.5cm x 5.5cm x 3cm	U/D	2	237.4
904	Brechfa Forest	100	Geological	fragment of sedimentary rock	U/D	1	6
904	Brechfa Forest	115	Stone object	2 x grey sedimentary rock with fossils, probably siltstone, max. dimensions 5.6cm x 5.5cm 3.5cm	U/D	2	189.6
Total:						**92**	**1713.2**

4.5 The clay pipes by Charlotte James-Martin

4.5.1 Summary

A total of 136 fragments of clay pipe were reported on for the watching brief carried out Brechfa Forest, Carmarthenshire. The pipes were retained from 7 contexts, the largest collection being from context 088, all bar one (058, subsoil) of the contexts were topsoil deposits, and therefore the assemblage did not contain valuable dating evidence to aid reporting. The greater part of the assemblage (107 pieces) consisted of undiagnostic pipe stem fragments. The remainder of the assemblage comprised a number of Southorn, Brosely examples including some maker's marks as well as some unknown maker's stamps. A number of interesting decorated pieces were recovered including a hoof heeled design and a bowl with common Masonic symbolism. None of the identifiable pieces was of significantly early date, with most dating to the late 19th century onwards.

4.5.2 Catalogue

Context	Description	Quantity
058	• One unmarked stem fragment • One stem fragment with the start of a Broseley style tailed heel	2
079	• Three unmarked stem fragments • One mouth piece, not glazed	4
080	• 24 unmarked stem fragments • One stem fragment with the start of a tailed heel • One partial pipe bowl, no decoration, with a conical spur	26
083	• Six unmarked stem fragments • One stem fragment with broken heel, no makers mark • One mouth piece, not glazed • One large thick stem where it meets the bowl, some ribbed design visible. • One stem with the partial remains of a tailed heel with a flower and leaf design (possibly rose) on each side, no makers name • One stem with a hoof design heel • One stem with the makers mark 'W.SOUTH/BROS' on two lines with the rest of the stem missing. This would be from W. Southorn of Broseley, Shropshire. A well-known pipe maker with this example of mark dating from the early- mid-19th century until the 1950s.	12
086	• 12 unmarked stem fragments • One mouth piece, not glazed • One stem with incuse maker's mark, stem broken at the beginning of the stamp, 'SOUTHORN&Co/BROSELEY16' over two lines. Mid-19th century until the 1950s.	14

088	• 60 unmarked stem fragments • One stem fragment with conical spur • One stem fragment with the start of a tailed heel • Four partial bowl fragments, no heel, no makers mark • One fragment of plain bowl with a single line in relief around the rim • One fragment of bowl with leaves on the mould line and branch design on both sides. • One fragment of bowl with leaf mould line • One fragment of bowl with leaves on the front mould line and a leaf design on the bowl. • One partial fluted leaf bowl • One partial bowl fragment with Masonic symbols with fluted from mould line, similar seen in Carmarthen Greyfriars (MLPW 1996), dated *c.*1800 • One stem fragment with 'THO' stamped relief. No known maker found. Most likely referring to the name Thomas.	73
100	• One unmarked stem fragment • Four fragments of a single bowl, leaf design on front and back mould lines, scalloped bowl with a row of small circles around the rim. Slightly forward tipping bowl, possibly late 19th century.	5

4.5.3 References

Harley, L. 1963, 'The Clay Tobacco-Pipe in Britain with special reference to Essex and East Anglia', *Essex Field Club Special Memoirs* **8**.

Brennan, D. Evans, G. James, H. & Dale-Jones, E. 1996, 'Excavations in Carmarthen, Dyfed, 1976-1990. Finds from the Seventeenth to the Nineteenth Centuries', *Medieval and Later pottery in Wales*, **14**, 15-108.

5. Discussion

The watching brief was designed to allow the investigation and recording of archaeological interests, where encountered, as identified in the ES as potentially being affected by the various works undertaken along the route of the Brechfa Forest Connection scheme. The archaeological interests potentially affected comprised ND57 Site of earthworks/palaeochannels, ND166 Palaeochannels, ND171 Possible quarry, ND173 Former track, ND174 Earthworks, ND178 Possible Roman road, ND186 Roman road and a number of historic field boundaries.

Of these features only ND166 Palaeochannels was directly encountered during the watching brief with five of the potential palaeochannel features (i.e. ND166 K/M, O, P & Q) identified as actual palaeochannels (**020**, **031**, **044**, and **038**); these were recorded and subjected to environmental sampling. Palaeo-environmental analysis to establish the nature and age of the deposits, assess the palaeo-environmental potential of the sequence, highlight any indications of nearby human activity, and provide recommendations for further analysis was carried out. The results of the analysis identified a sequence of deposits representative of deposition within a fluvial environment, modified by subsequent terrestrial and soil forming processes. The pollen assemblage was typical of a floodplain environment dominated by alder carr woodland and sporadic willow, with a ground flora of grasses, sedges and ferns. Due to an absence of material suitable for radiocarbon dating, the exact age of the sequences remains undetermined.

Outlying stratigraphy associated with ND171 Possible quarry was encountered, however this did not confirm the exact nature of ND171 itself, but rather raised further questions as to the initial interpretation of the site. No finds were recovered.

The watching brief did not reveal any remains associated with the route of ND186 Roman road; the area open to examination was found to have been heavily disturbed by recent road construction works associated with improvements to the B4243 Road. The archaeological interest ND57 Site of earthworks/palaeochannels was not discernible in the topsoil strip covered by the watching brief, although natural river gravel banks were noted nearby close to the current ground surface. The features of ND173 Former track and ND174 Earthworks were not directly encountered by watching brief, whilst ND178 Possible Roman road was monitored by others (RSK).

The watching brief encountered a few additional minor post-medieval and modern features, mostly agricultural in nature, the most significant of which was an infilled drainage ditch (**010**/**011**; Figure 20) likely part of the adjacent post-medieval field system.

The watching brief allowed the recording of historic field boundaries affected by the cable route, nine of which were subject to hedgerow recording, whilst eight of which were recorded in section/profile (Figures 12-19) where they were breached by the works. The following six broad variations of field boundary type were encountered:

- Simple earth and stone lynchet bank (one-sided, no ditches) with coppiced hedge on an enhanced natural feature (HH212)
- Simple earth/stone bank (rounded-sides, no obvious ditches) with coppiced and pollarded overgrown shrubby hedge (HH240)
- Simple earth/stone bank associated with lane (steep sides, no ditches) with coppiced shrubby hedge (HH262; HH209)
- Earth/stone bank associated with lane (steep sides, no ditches) with stone boulder facing on field side only and coppiced shrubby hedge (HH210)
- Earth/stone bank associated with lane (steep side to lane with wide shallow U-shaped ditch on upper field side only) with laid shrubby overgrown hedge (HH264)

- Earth or earth/stone bank (steep side to U-shaped ditch on lower side only) with laid shrubby overgrown coppiced hedge (HH213; HH214)

During the course of the watching brief species dating analysis of the hedgerows using 'Hooper's Rule' (Pollard, Hooper & Moore 1974) was attempted.[4] Based on species dating it was found that the majority of hedges recorded might date approximately to between 580 and 690 years old, with two exceptions: one dating to c. 800 years old, a hedged lynchet boundary (HH212) possibly following the enhanced route of a natural geological feature. The other, a simple earth and stone bank with coppiced hedge (HH240), just 240 years old, considered likely to represen relatively late post-medieval enclosure of the river terraces at the confluence of the Afon Gwili with the River Towy/Afon Tywi. It should be stressed that the above dates are at best indicative, and cannot be relied upon in place of other more reliable dating techniques (e.g. tree-ring analysis).

A large quantity of finds were recovered, mostly from topsoil contexts in the area south of the River Towy/Afon Tywi from the enclosures between the farmsteads of Pant and Nant with contexts **088** and **083** containing the greatest quantity of material. The pottery in these assemblages ranged from the 18th to 20th century with most dating from the 19th century. It has been noted that the nature of the pottery and the fragmentation of the material might point to secondary deposition rather than gradual accumulation from local domestic sources. Additionally, it has been speculated that the assemblage might relate to a single deliberate act with the material being brought from further afield and deposited as landfill. Alternatively, this distribution might also be explained by episodic manuring activity with waste pottery and other material placed on a centralised manure heap (or heaps) to be redistributed over a wider area as part of the manuring process. The ploughed remains of the Post-medieval/Modern midden feature (**079/083)**, recorded near Pant Farm would fit well with both hypotheses, whilst manuring would also explain the relatively poor condition of the pottery assemblage. In addition, the quantity of quartz and calcite crystals recovered from the same area is of note; given the proximity of the Llangunnor Lead Mines (NPRN 33736, SN 43711988) and the fact that it was found in association with a fragment of Galena, or lead ore, this material has been tentatively identified as waste produced from processing lead ore.

[4] This method, which employs counting of woody species to ascertain age (Age = (no of species in a 30 yard stretch) x 110 + 30 years.), has previously been criticised (e.g. Williamson 2003) and has definite limitations. For example it assumes the gradual accumulation of woody species in hedgerows over time, as opposed to planting a variety of available species as a single event – which is perhaps more credible – and as such it is unreliable. It also does not take into account previous episodes hedge denudation, or the age of mature hedgerow trees, which might be a more useful indicator.

6. Conclusion

The watching brief was successfully undertaken and no significant archaeological remains were encountered or identified during the course of the work.

The watching brief, carried out in accordance with the previously submitted WSI and Method Statement, provided suitable mitigation against the impact of the scheme on the identified archaeological resource affected; it ensured that the surviving archaeological resource within the area of the scheme was investigated and recorded.

7. Bibliography

Pollard, E., Hooper, M.D. and Moore N.W., 1974, *Hedges* (London)

Toseland, J, 2017, *Brechfa Forest Connection: archaeological method statement.* GGAT Report no. **2017/024**.

Western Power Distribution, May 2015, Brechfa Forest Connection, Development Consent Order Application Reference EN020016, Environmental 11 Historic environment.

Western Power Distribution, May 2015, Brechfa Forest Connection, Environmental Statement 6.4 Appendix 11.1 Historic environment supporting information.

Western Power Distribution, May 2015, Brechfa Forest Connection, Development Consent Order Application Reference EN020016, Environmental Statement Appendix 11.2 Historic environment planning compliance.

Western Power Distribution, January 2016 V.01, Brechfa Forest Connection Project, Addendum to the Environmental Statement, Potential Undergrounding of an additional part of the Brechfa Connection.

Western Power Distribution, February 2017, *Brechfa Forest Connection Project, Archaeological WSI*.

Williamson, T. 2003, 'Understanding Fields' in *Local Historian* (Volume **33**, No **1**, 2003).

Websites

http://mapapps.bgs.ac.uk/ British Geological Survey accessed 27/10/2015

Maps

1st Edition Ordnance Survey Map 1873
2nd Edition Ordnance Survey Map 1900
3rd Edition Ordnance Survey Map 1920

8. The Archive

8.1 Archive contents

An archive (GGAT Site No: **P1946/904**; Name: Brechfa Forest Connection, Carmarthen; Archive Category: Watching Brief) has been created consisting of the following contents:

A REPORTS
a) P1946 Report - Final
b) P1946 Electronic sign off
c) P1946 Report approval
d) P1946 Front cover

B SITE DATA
a) Context index, context sheets, drawing index, drawings

C NON-PUBLICATION DATA
N/A

D PHOTOGRAPHS
a) Catalogue of photographs
b) Digital copies on disk

E FINDS DATA
a) Finds databases
b) Finds reports (external reports on pottery &glass only, see main P1946 Report for internal reports)
c) Finds – discarded (pending approval by RSK/Dyfed archaeological curator)

F ENVIRONMENTAL AND TECHNOLOGICAL DATA
a) Sample index
b) Sample forms
c) Samples discarded - no further analysis required
d) Palaeo-environmental assessment report (Quest, Reading University)

G DOCUMENTARY
N/A

H HUMAN REMAINS
N/A

I DRAFT REPORT
N/A

J PUBLICATION DRAWINGS
a) Figure 1. Site location plan and areas of watching brief.
b) Figure 2. Cable Pipe Route showing location of field enclosures (outlined in blue): FRS Nos. 296-315 & 318.
c) Figure 3. Cable Pipe Route showing location of field enclosures (outlined in blue): FRS Nos. 161, 164, 166-182, 471-474 & 497.
d) Figure 4. Cable Pipe Route showing location of field enclosures (outlined in blue): FRS Nos. 137 & 150-164.
e) Figure 5. Cable Pipe Route showing location of field enclosures (outlined in blue): FRS Nos. 133, 134, 137-152, 154, 470, & 496.

f) Figure 6. Cable Pipe Route showing location of field enclosures (outlined in blue): FRS Nos. 85, 89-104, 106-111, 469 & 498-500.
g) Figure 7. Location of Pole 169 & Boundary HH434.
h) Figure 8. Location of Boundaries HH240, HH262 & HH264 and sites ND57, ND122, ND166 & ND186, indicating individual Palaeochannel features of ND166.
i) Figure 9. Location of Site ND166, indicating individual Palaeochannel features of ND166.
j) Figure 10. Location of Boundaries HH209, HH210 & HH212-HH214 and Site ND166, indicating individual Palaeochannel features of ND166.
k) Figure 11. Location of Poles 50 & 54 and Site ND171 and ND174.
l) Figure 12. Boundary HH240: Northeast facing section/profile.
m) Figure 13. Boundary HH264: West facing section/profile.
n) Figure 14. Boundary HH262: West facing section/profile.
o) Figure 15. Boundary HH213: Northwest facing section/profile.
p) Figure 16. Boundary HH210: East southeast facing section/profile.
q) Figure 17. Boundary HH209: East southeast facing section/profile.
r) Figure 18. Boundary HH214: Northwest facing section/profile.
s) Figure 19. Boundary HH212: West facing section/profile.
t) Figure 20. Cut Feature [010] & [010], infilled Post-medieval drainage ditch: East facing section.

K EXHIBITION MATERIAL
N/A

L PRE- AND POST-EXCAVATION RESEARCH DESIGNS AND ADMINISTRATIVE
a) WSI and Method Statement

M MISCELLANEOUS CORRESPONDENCE (NON-ARCHAEOLOGICAL)
N/A

N GENERAL MISCELLANEOUS AND PARALLELS
N/A

8.2 Recommendations

None of the artefacts (all from topsoil contexts) recovered by the watching brief was of sufficient interest to recommend further analysis or record beyond that undertaken for the purposes of the current report and retention is not considered necessary. It is therefore recommended that the retained artefacts are discarded or returned to the landowners (subject to approval of Dyfed Archaeological Trust's Development Management section (DAT DM)/ WPD's Archaeologist (RSK) and the wishes of the landowners).

8.3 Archive deposition

It is recommended that, along with a copy of the report, that the project archive (provided in digital format on disc) is deposited (subject to approval of Dyfed Archaeological Trust's Development Management section (DAT DM) with the Regional Historic Environment Record (HER), curated by Dyfed Archaeological Trust (DAT). A digital copy of the report and the archive index will be deposited with the National Monuments Record, RCAHMW, Aberystwyth.

Appendix I

Inventory of contexts

Area/Field/Pole Number	Location	Context	Type	Depth below current ground surface (m)	Description	Sample	Period (Where natural horizon NH)
From FRS169 – FRS151	General	001	D	0-0.3m (average) 0-0.4m (max)	Topsoil - light-brown silty clay loam.		
FRS169		002	D	0.2m-0.4m (N.B)	Gravel/stone river material, 15m wide (W-E) aligned NNW-SSE across area cleared of topsoil for compound. Comprises frequent small-medium sized sub-angular and rounded stones in a sandy, gritty matrix. Coincides with area of raised ground at the surface.		NH
FRS161 & FRS166	HH240	003	D	0-0.1m	Topsoil - dark brown-black silt loam.		
FRS161 & FRS166	HH240	004	D	(0.5m above ground level)	Hedge bank 2.7m wide of light brown silt loam with stone inclusions (0.1m max).		Post-medieval?
FRS152 & FRS154	Remains noted projecting from W side of corridor	005	D/S	0.2m-0.4m	Stone-footings of robbed out stone-faced bank/field boundary, aligned WNW-ESE. Feature, c.1.4m in width (tangent), and c.2m wide (exposed) at edge of corridor. Approx. 1m exposed (W-E) into the excavated area from W side of corridor. Two parallel lines of stone, each a single course high, c. 1.25m apart, with light brown silty clay between.		Post-medieval
FRS152 & FRS154	At break of slope to W of corridor	006	D/S	0.1m-0.4m	Embankment/agricultural track, c. 2.25m-3m in width – angular, sub-angular, & rounded stones within sand & grit matrix. West side of feature follows marked break in slope. Aligned NW-SE.		Post-medieval/Modern

Area/Field/Pole Number	Location	Context	Type	Depth below current ground surface (m)	Description	Sample	Period (Where natural horizon NH)
FRS151/152/155		007	D	0-1m (N.B)[5]	Alluvium (mid-grey brown silty clay subsoil).		NH
FRS155		008	N	0-1m (N.B)	Straight-sided machine cut, c. 6m in length, filled with rubble, includes plastic, broken bottle with plastic top, etc. Visible in W-side of trench only; feature extended c.0.1m into trench from W.		Modern
FRS155		009	D	0-1m (N.B)	Fill of 008 – mixed rubble/stone fill with a silty sand matrix. Includes modern finds, plastic & modern bottle.		Modern
FRS155		010	N	0-0.9m (N.B)	Cut for post-medieval ditch (S side). Ditch feature 2.23m wide N-S at top & 1.34m at base – relates to adjacent field boundary system to ENE. Steep sided cut equivalent to [011].		Post-medieval?
FRS155		011	N	0-0.9m (N.B)	Cut for post-medieval ditch (N side). Ditch feature 2.23m wide N-S at top & 1.34m at base – relates to adjacent field boundary system to ENE. Gradual sided cut equivalent to [010].		Post-medieval?
FRS155		012	D	0-0.3m/0.4m	Upper fill of [010/011] (truncated light-grey brown – grey sandy clay mixed topsoil/alluvial fill with occasional platy stone frags/small pebbles 1mm-60mm).		Post-medieval/Modern
FRS155		013	D	0.3m/0.4m - 0.9m (N.B)	Lower fill of [010/011**] (**grey alluvial sandy silty clay), c.6m in depth, 2.05m across upper interface with 012 & 1.34m across at base of trench.		Post-medieval?
FRS155		014	D	0-0.8/0.9m	Alluvium (mid-grey brown – grey silty clay varying to clay at depth.		NH
FRS155		015	D	0.8m–0.9m (N.B)	Riverine Gravels within a sand/grit matrix exposed for c.35m in trench Typical rounded and sub-rounded cobles and small rounded boulders. Manganese staining.		NH

[5] Note following topsoil removal in easement corridor depths given, were calculated from the base of the topsoil (i.e. an average depth 0.3m needs to be added to establish true depths below ground surface).

Area/Field/Pole Number	Location	Context	Type	Depth below current ground surface (m)	Description	Sample	Period (Where natural horizon NH)
FRS159		016	D	0-0.8m	Alluvium (mid-grey brown – grey silty clay, occasional patches of mottled mid-orange/brown clay).		NH
FRS159		017	D	0.8m-0.9m (N.B)	Gravel/river deposit rising from 0.8m BCGL to 0.40m BCGL. Undulating natural gravel deposit, well sorted, and responsible for feature noted in WSI.		NH
FRS161		018	D	0-0.3m/0.4m	Alluvium Subsoil (mid-grey brown sandy clay) similar to 016.		NH
FRS161		019	D	0.6m/0.7m–1m (N.B)	Gravel/river deposit (frequent sub-angular/sub rounded and rounded stone, cobbles and gravel within a mid-grey brown sandy silty clay) equivalent to 017, but poorly sorted material – surface undulating between 0m and 0.7m BCGL Deposit 0.24m thick at location of sample 001 (SN 4335 2134). Occasional white quartz pebbles/stones. Gravel rises to form ridge/bank at SN 4332 2139.		NH
FRS161	SN 4335 2134 Centred	020	N	0-0.8m	Palaeochannel, 6.66m wide - a gentle U-shaped profile to cut/channel contains 3 fills (021, 022 & 023).		NH
FRS161		021	D	0.75m-0.8m	Basal or primary fill of 020; light-blue grey clay, mottled mid-orange brown silty grey 0.05m - 0.07m deep (at SN 4335 2134).	001	
FRS161		022	D	0.65-0.75m	Secondary fill of 020; light yellow grey brown sandy clay with mid-orange mottling and moderate sub-rounded/sub-angular stones (1mm-0.2m in size), 0.1m -0.21m deep (at SN 4335 2134).	001	
FRS161		023	D	0.1m-0.65m	Upper fill of 020; mid-grey brown sandy silt with frequent sub-angular and sub-rounded stones (0.01m to 0.2m in size), 0.55m deep (at SN 4335 2134).	001	
FRS161	Between SN 4335 2155 & SN 4332 2160	024	D	0-0.55m	Alluvium – mid-grey brown – orange sandy clay; comprises multiple lenses of sand and clay (at lease 12) with occasional small gravel (12mm-10mm), charcoal		NH

Area/Field/Pole Number	Location	Context	Type	Depth below current ground surface (m)	Description	Sample	Period (Where natural horizon NH)
					flecks (includes a narrow band of clay 0.04m deep).Relates to natural flooding events, 0.55m deep.		
FRS161/166		025	D	0-1m (N.B)	Gravel deposit/river bank material; Poorly sorted frequent sub-angular, rounded and sub-rounded stone, gravels and cobbles ranging between <1mm and 0.2m+ within dark brown silty clay matrix. Similar to other gravel spreads (e.g. 019). Occasional quartz pebbles/stones.		NH
FRS161/166		026	D	0.35m-0.95m (max)	Alluvium, 0.2m to 0.6m deep - a mid-grey brown sandy clay with moderate sub-angular/sub-rounded stones (20mm/2cms to 50mm/5cm). Roots within transitional upper part to a depth of 0.3m. Occasional flecks of charcoal. Includes Sandy layer 0.13m deep at interface with gravels 025, below.		NH
FRS168	SN 4329 2166	027	D	0-1m+ (variable)	Gravel Spread with in very loosely compacted mid-grey brown silty clay matrix, occasional pockets of light-grey clay. Comprises frequent very poorly sorted mix of sub-angular, sub-rounded & rounded, pebbles/cobbles and boulders, (<1mm -0.2m+), includes quartz. Similar to 025 Fills trench to surface at SN 4329 2168.		NH
FRS168	SN 4329 2166	028	D	0–1m (max)	Alluvial clays/spread; light grey-brown sandy clay with occasional sub-rounded/sub-angular stones (c.1cm-10cm). Horizon ends where gravel 027 rises to surface of trench at SN 4329 2168.		NH
FRS168	SN 4329 2166	029	D	0-0.1m+	Light blue –grey clay with mottled mid orange brown staining, 5cm to 20cm in depth following contour of gentle sloping underlying gravel 027, at SN 4329 2166.		NH
FRS168	SN 4335 2171	030	D	0-0.60m	Alluvium, 0.6m in depth, light mid-grey brown sandy clay occasional sub-rounded and sub-angular stone		NH

Area/Field/Pole Number	Location	Context	Type	Depth below current ground surface (m)	Description	Sample	Period (Where natural horizon NH)
					(10mm-0.12m in size). Deepest point, 0.6m, at SN 4335 2173. At SN 4335 2175, deposit is 0.2m deep.		
FRS168	SN 4328 2183 Centred	031	N	0-1m (N.B)	Palaeochannel, 2.80m (top) to 1.2m (base) wide. U-shaped with shallower angled side to SW, steeper angle NE. The channel cuts through gravels 027 and 035). Contains 3 fills (032, 033 & 034).		NH
FRS168		032	D	*c*.0.4m-1m	Primary or basal fill of palaeochannel (031), c.18cm deep (14cm in sample tin); moist grey clay at W and base of palaeochannel.	003	NH
FRS168		033	D	*c*.0.3m-1m	Secondary fill of palaeochannel (031); mid-brown alluvial sandy/gritty clay, 21cm deep. Slopes towards SW side of palaeochannel.	003	NH
FRS168		034	D	0m–1m	Uppermost fill of palaeochannel (031), 2.80m wide within palaeochannel, varies in depth from 10cm to 1m; Yellow-brown grey sandy clay/alluvium deposit with frequent stones generally in linear bands	002/003	NH
FRS168		035	D	0–1m (max)	Riverine Gravels, horizon of varying depth. Similar to 027, interrupted by palaeochannel 031. Frequent gravels, pebbles and cobbles (<1mm – 0.2m+) within a matrix of mid brown sandy clay - moderate iron panning visible.		NH
FRS168	SN 4326 2158-SN 4330 2189	036	D	0-0.85m (max)	Alluvium, 0.65m to 0.85m (max) in depth - a yellow-brown grey silty clay similar to 034, overlies 037.	004/005/008	NH
FRS168	SN 4342 2188	037	D	Varies 0.9m (max)	Light grey gleyed clay, *c*.0.33m deep, with occasional patches of mid orange brown iron staining. Deposit noted at base of trench at SN4342 2188, with alluvium 036 continuing above. Following undulation in underlying gravel (040), the horizon disappears below base of trench to re-emerge and rise up to top of trench at SN 4337 2190, where interrupted by underlying gravel.	004/005/007	NH

Area/Field/Pole Number	Location	Context	Type	Depth below current ground surface (m)	Description	Sample	Period (Where natural horizon NH)
FRS168	SN 4338 2183 - SN 4334 2182	038	D	Varies 0.9m + (max)	Palaeochannel/Organic river clay deposit, 0.14m in depth (varies along horizon). A mid brown organic rich clay (fibrous woody/peaty inclusions & roots). Located NE of palaeochannel (031). Interrupted by modern drain & 'ash deposit', noted again at SN 4338 2183 and then dips below base of trench at SN 4334 2182, from here only the horizons above (i.e. 037/036) continue.	004/005/006	NH
FRS168	SN 4315 2183	039	D	Varies	Mid grey sandy clay overlying gravels (035) and underlying organic clay spread (038) at SN4315 2183, to NE of palaeochannel (031).	005	NH
FRS168	SN 4339 2190	040	D	0-0.9m (N.B)	Grey gravels, 0.9m in depth, with orange/brown iron-panning noted similar to 035, i.e. frequent gravels, pebbles and cobbles (<1mm – 0.2m+). Deposit starts at SN 4339 2190.		NH
FRS168	SN4339 2190 – SN 4327 2168	041	D	0-0.54/0.68mm	Yellow-brown grey gravel horizon within a sandy silty clay matrix; frequent gravels, pebbles and cobbles (<1mm – 0.2m+). Varying in depth between 0.68m and 0.54m. Similar to & likely part of 035/040. Recorded at SN43272168. Overlies 042.		NH
FRS168	SN4339 2190 – SN 4327 2168	042	D	0.54m-0.83m	Blue grey sandy clay alluvial deposit with moderate small gravel inclusions (1mm-60mm in size). Part of 035/040. Underlies 041/Overlies 043.		NH
FRS168	SN4339 2190 – SN 4327 2168	043	D	0.83-1.03m	Yellow-brown gravels, 0.20m deep, with orange-brown iron panning at interface with 042, above. Frequent gravels, pebbles, cobbles (<0.1mm-0.2m+). Between SN 4327 2168 and SN 4330 2166 (i.e. location of palaeochannel 044) it returns to uniform gravel bank material similar to 035/040.		NH

Area/Field/Pole Number	Location	Context	Type	Depth below current ground surface (m)	Description	Sample	Period (Where natural horizon NH)
FRS168	SN 4320 2170 (SN 4319 2170 – SN 4330 2166)	044	N	0-1m	Palaeochannel, 7m wide (NE-SW); shallow U-shaped negative feature or channel. Gradual slope on NE side descending to slight shelf at c. 0.6m BCGL, with deeper area, 1.4m wide to depth of 0.9m BCGL, at base of steeper SW side.	009	NH
FRS168	(SN 4319 2170 – SN 4330 2166)	045	D	0-0.6m	Upper fill of palaeochannel 044; yellow-brown grey silty clay with FE/Manganese mottling towards base and isolated small rounded pebbles (<1mm-10mm). Overlies 046.	009	NH
FRS168	(SN 4319 2170 – SN 4330 2166)	046	D	c. 0.4m-0.52m (on shelf), 0.6m-0.9m within deeper part of channel	Basal fill of palaeochannel 044; grey gleyed clay, varying in depth between 0.16m and 0.3m.	009	NH
FRS168	(SN 4319 2170 – SN 4330 2166)	047	D	0.52m-0.61	Orange Sand, c. 0.08m deep & 2.9m SW-NE in length, at interface between 046 and 035 on shelf located on NE side of palaeochannel 044, a thin discontinuous and variable deposit, overlies gravel 035/040 and contained by 044.	009	NH
FRS168/FRS169	At SN 4331 2166	048	D	0-0.5m and 0-1m+	Alluvium, yellow brown mottled grey-brown silty clay, greying at depth. Varying depth - reflecting undulations in underlying gravel. Between 0.5m and 1m in depth. Overlying gravel 049. Deposit is at deepest at c. SN 4362 2188.		NH
FRS168/FRS169	At SN 4331 2166	049	D	1m (at bottom of trench, but varies)	Gravels, continuous but undulating horizon generally grey (including red, orange) within a sandy matrix. Frequent gravels, cobbles & pebbles (<1mm – 0.2m+). Underlies 048.		NH

Area/Field/Pole Number	Location	Context	Type	Depth below current ground surface (m)	Description	Sample	Period (Where natural horizon NH)
FRS168/FRS169	At SN 4362 2188 & SN 4328 2196	050	D	0.4m-0.8m (max)	Water re-deposited gravel. Orange gravel/sand band, c. 0.10m thick but increases to 0.4m thick as nears gravel bank 051 (i.e. at SN 4329 2193), discontinuous band within 048.		NH
FRS169	SN 4329 2193 - SN 4325 2192	051	D	0.28m–1m+	Gravel bank, 0.72m deep, steep sided (likely a continuation of 049, interrupted by depth of alluvium 048, as rises to near surface). Grey, orange to red gravels as 049.		NH
FRS169	At SN4325 2192	052	D	0-0.20m (max)	Mixed/disturbed grey-brown gravel/sand horizon just below topsoil (possibly associated with site of former '*eisteddfod*'). NW part of FRS169.		Modern
FRS169	At SN4325 2192 – SN 4338 2192	053	D	0.5m–0.7m	Orange grey sands and fine gravels – numerous intercalated lenses (similar to 050, but on NW side of 051).		NH
FRS169	At SN 4321 2192	054	D	0.7m-1m (but varies)	Soft grey silty clay, 0.3m thick, lower part of 048 on NW side of 051.		NH
FRS169	At SN 4321 2192	055	D	0.7m-0.73m	Discontinuous thin organic lens, 0.03m thick, directly below gravel band 053, brief episode of stabilisation, and part of numerous intercalated lenses that make up alluvial deposits. Light-brown sandy silty.		NH
-	-	056	-	-	-	-	-
FRS182		057	D	0-0.3m/0.4m (max)	Topsoil - light brown silty clay Topsoil/Plough soil, soft.		Post-medieval/modern
FRS182/FRS472		058	D	0.3m/0.4m–1m (N.B)	Subsoil - light yellow-brown silty clay.		NH
FRS472		059	D	0-0.3m	Topsoil - light yellow-brown sandy silty loam topsoil.		Post-medieval/modern
FRS473/FRS474		060	D	0-0.15m/0.2m	Topsoil - dark brown friable sandy loam topsoil (straight over bedrock).		Post-medieval/modern

Area/Field/Pole Number	Location	Context	Type	Depth below current ground surface (m)	Description	Sample	Period (Where natural horizon NH)
HH264		061	D		Bank material, 0.5m high bank, c. 1m wide at base & c.0.6m wide at top, comprising mid-brown redeposited topsoil and small stone fragments (shale).		Medieval/post-medieval?
HH264		062	D		Subsoil - light yellow-brown sandy clay subsoil, c. 0.8m (max) depth, lying over shale bedrock.		NH
HH264		063	D		Fill of ditch 064, loose dark brown organic rich soil/ numerous roots.		
HH264		064	N		Ditch cut, 2.2m wide (max) & c. 0.5m deep, excavated gently into slope to N, its S edge defined by redeposited soil bank 061.		
HH262		065	D		Bank material, 0.5m high, 0.67m wide at top. Redeposited dark brown stony sandy loam. Crumbly root filled with moderate amount of small gravel/stones. Overlies subsoil 066. Road surface to N, scarp to field surface to S.		Medieval/post-medieval?
HH262		066	D	0-1m (max) varies	Subsoil - yellow-brown sandy silty clay 0.2/0.7m deep (varies). Isolated – occasional sub rounded pebbles. Continuous horizon.		NH (partly re-profiled)
HH262	SN 4326 2198	067	D	0.2m-0.5m & 0.4m-0.8m/1m (varies)	Orange-brown gravels, 0.3m-0.4m deep, within a sand/sandy clay matrix. Moderate amount of gravel (1mm-10mm in size). Continuous horizon. Overlies shale bedrock at E side and 067 to west.		NH
HH262	SN 4326 2198	068	D	0.8m-1m+, 0.5m–1.1m, 1m+ (varies)	Yellow-brown clay with blue patches/organic staining, 0.6m in depth but likely varies; upper surface varies between 0.5m and 1m below current ground surface (excluding topsoil). Base of horizon seen to overlie gravel (069 at 1.1m below current ground surface (i.e. excluding topsoil).		NH
HH262	SN 4326 2198	069	D	1.1m + (N.B)	Gravels, natural geological/glacial drift. Continuous horizon.		NH

Area/Field/Pole Number	Location	Context	Type	Depth below current ground surface (m)	Description	Sample	Period (Where natural horizon NH)
Minor road between HH264 & HH262		070	D	0-0.1m	Level Tarmac road surface (multiple lenses), 0.1m thick by 2.5m wide (N-S).		Modern
Minor road between HH264 & HH262		071	D	0.1m-0.3m	Level hard standing/sub base – grey gravel, 0.2m thick by 2.5m wide (N-S).		Modern MG
Minor road between HH264 & HH262		072	D	Between 0.3m-0.6m & 0.3m-0.4m	Mixed horizon – yellow-brown subsoil & shale mix, Level surface with thickness of between 0.1m (N) and 0.3m (S) over sloping shale bedrock. Frequent stone mostly angular shale fragments. Road make-up (no finds), possibly post-medieval date.		Modern-Post-medieval? MG
Minor road between HH264 & HH262		073	D	0.4m-1m & 0.6m-1m (N.B)	Underlying shale bedrock. Surface slopes from N-S (0.2m difference). Natural geology, possibly re-profiled – but no clear evidence.		NH (re-profiled)
A485 Road (potential location of ND186)		074	D	0-0.4m	Tarmacadam		Modern
A485 Road (potential location of ND186)		075	D	0.4m-0.9m	A road sub-base gravel deposit.		Modern MG
A485 Road (potential location of ND186)		076	D	0.9m-0.95m	Yellow-brown shale/gravel within sandy gritty matrix, 0.05m deep – construction horizon/temporary surface?		Modern MG
A485 Road (potential location of ND186)		077	D	0.95m-1m	Grey gravel/shale layer containing stone block and concrete. Modern road embankment material. The modern road has been raised or embanked by over a metre in this area.		Modern MG
-		078	-		Void		

Area/Field/Pole Number	Location	Context	Type	Depth below current ground surface (m)	Description	Sample	Period (Where natural horizon NH)
FRS149		079/083	D	0-0.2m+	Topsoil – mid-brown sandy silty loam mixed rubbish dump/manure midden of 19th-20th century date.		
FRS149		080/084	D	0-0.3m	Topsoil – predominantly yellow brown sandy silty clay, 0.2m to 0.3m deep. Moderate angular/sub-angular stone frags at interface with horizon below.		
FRS149		081/085	D	0.3m-(N.B)	Subsoil – light yellow-brown sandy silty clay with frequent angular and sub-angular stones.		NH
-		082	-		Void		
FRS147		086	D	0-0.2m	Topsoil – dark grey brown mottled silty clay with occasional angular, sub-angular and rounded stones/cobbles.		
FRS147		087	D	0.2m-1.2m	Subsoil - yellow mottled orange brown silty clay and clay with occasional – to frequent angular, sub-angular and rounded stones and cobbles and isolated larger boulders. Overlies 122.		NH
FRS145		088	D	0-0.2m	Topsoil – mid-brown sandy clay loam with occasional rounded, sub-angular and angular gravels/small stones.		
FRS145		089	D	0.2m-(N.B)	Subsoil - yellow-brown sandy/silty clay with moderately frequent angular, sub-angular and rounded gravels and small – medium sized stones (top of horizon only revealed in places).		NH
HH213 FRS 147/ FRS145		090	D		Bank material for hedge bank HH213 – 2.57m wide at base & 0.98m high (max). Linear curved bank comprising redeposited yellow-brown sandy clay with moderate small-medium sized angular/sub-angular stones. Material likely originated from ditch to SE. Overlies context 089.		Medieval/post-medieval?
HH213 FRS 147/ FRS145		091	N	0-0.95m	Ditch cut 1.95m wide by 0.95m deep. Shallow U-shaped cut associated with field bank 090. Cuts 089.		Medieval/post-medieval?

Area/Field/Pole Number	Location	Context	Type	Depth below current ground surface (m)	Description	Sample	Period (Where natural horizon NH)
HH213 FRS 147/ FRS145		092	D	0.3m deep	Fill of ditch cut 091 – dark brown silty loam leaf mould, organics-rich deposit. Recent ditch fill (ditch recently re-dug/cleared?)		Modern
Pole 50		093	D	0-0.25m	Topsoil – mid-brown sandy silty loam topsoil (currently permanent pasture), 0.25m in depth.		
Pole 50		094	D	0.25m–0.5m	Subsoil - yellow brown sandy silt subsoil with moderate –frequent stones, 0.25m deep. Detritus spread from (?) quarry/marl/clay pit.		
Pole 50		095	D	0.5m-0.75m	Grey gritty/stony sandy clay horizon, 0.25m deep, with occasional red coloured stones, sub-angular (10mm-0.2m +). Possibly detritus spread from quarry/marl/clay pit.		
Pole 50		096	D	0.75m-1.95m	Reddish-brown (purple) clay/silty clay, 1.2m thick. Marl or clay?		NH
Pole 50		097	D	1.95m–2.65m/2.7m	Grey/purple bedrock, excavated into by 0.6m/0.65m.		NH
Void		098	-	-	-		
HH210 FRS145	SN 4358 1976	099	D		Hedge bank – linear bank 3m wide 1.18m high. Material comprises orange–yellow brown sandy clay with occasional – moderate medium and large angular and sub-angular stones especially at base. Indications of possible stone facing on N side. Roots.		Medieval/post-medieval?
FRS144		100	D	0-0.2m (N.B)	Topsoil – mid-brown sandy silt loam with isolated small angular and sub-angular stones (extensive tree roots adjacent to hedge). Overlies subsoil 118.		
HH209 FRS144		101	D		Hedge bank material, 1.66m high c.3.1m wide (spread to c. 5.4m wide at base, but part obscured?), single horizon of orange yellow brown sandy clay.		Medieval/post-medieval?
FRS108/Pole 54		102	D	0-0.25m	Topsoil – dark brown to almost black peaty fibrous loam (no inclusions) – suggestive of damp depression/hollow.		

Area/Field/Pole Number	Location	Context	Type	Depth below current ground surface (m)	Description	Sample	Period (Where natural horizon NH)
FRS108/Pole 54		103	D	0.25m-1.3m	Subsoil (boulder clay) -grey mottled yellow-brown clay with isolated medium sized rounded/sub-rounded cobbles/boulders, in places reddish brown (decayed stone). Underlies 102 and overlies 103.		NH
FRS108/Pole 54		104	D	1.3m-1.85m (N.B)	Natural horizon – yellow brown clay/sandy clay horizon greying at depth with frequent small - medium sized rounded and sub-angular stones. Underlies 103.		NH
FRS108/Pole 54	SN4424 1669	105	D	0-0.3m	Topsoil – dark-brown- black peaty loam (same as 102).		
FRS108/Pole 54		106	D	0.3m-1.2m	Subsoil – grey clay/sandy clay mottled yellow brown with occasional rounded/sub-angular stone (a slight increase in stone frequency at depth of 0.7m possibly indicates an interface with a similar horizon below – but both natural).		NH
FRS108/Pole 54		107	N	0-0.5m	Modern drainage gully (NE-SW aligned?) with sloping sides and flat base. Feature filled with redeposited topsoil/subsoil mix 108 (equivalent to 105/106) over basal fill of stone 109. Plastic drainpipe encountered 5m to NE.		Modern
FRS108/Pole 54		108	D	0-0.4m	Fill - upper fill of 107: mostly redeposited topsoil (105) with some redeposited subsoil (106), c. 0.4m deep.		Modern
FRS108/Pole 54		109	D	0.4m-0.5m	Fill - basal fill of 107: medium sized sub-angular and angular stone, c.10cm deep.		Modern
Joint Bay 5/6	SN 4428 1670	110	D	c. 2.15m exposed depth	Riverine gravel bank – grey/orange brown horizon of natural river gravel deposits within sandy grit matrix. Frequent small - medium sized rounded and sub-rectangular stones (cobbles and pebbles) and occasional larger rounded boulders. Loose texture with iron panning a c. 1m depth.		NH
HH214 FRS147/FRS146		111	D	0.3m-0.7m+ (N.B)	Subsoil - light yellow-brown sandy/silty clay over 0.4m deep in area of HH214 (N.B. same as 116).		NH

Area/Field/Pole Number	Location	Context	Type	Depth below current ground surface (m)	Description	Sample	Period (Where natural horizon NH)
HH214 FRS147/FRS146		112	N	0-0.7m	U-shaped ditch cut, 0.7m deep by c. 1.4m wide, alignment NW-SE, open (no fill – recently cleaned?) with slight lip (c.1.1m wide) on SW edge and earth bank/scarp (113) to NE.		Medieval/post-medieval?
HH214 FRS147/FRS146		113	D		Hedge bank/scarp (lynchet with hedge), c. 0.6m – 0.65m in height, c.1.65m wide, alignment NW-SE, single horizon of dark brown loam with organic leaf mould/roots over yellow brown silty clay subsoil 111 (same as 116).		Medieval/post-medieval?
HH212 FRS146/FRS145		114	D		Hedge bank/scarp (lynchet with hedge), 0.3m high and 1.1m wide at the top, alignment WSW-ENE, single horizon of orange-yellow brown sandy silty loam, with moderate small, occasional larger sub-rounded, sub-angular and angular stones and isolated boulders. Redeposited subsoil/topsoil mix and field clearance. Single sherd of pottery.		Medieval/post-medieval?
HH212 FRS146		115	D	0-0.25m, occasionally 0.3m	Topsoil within enclosure FRS146 – yellow-brown silty clay loam with moderate small, occasional larger sub-rounded, sub-angular and angular stones and isolated small cobbles. Overlies 116. Adjoins 114.		
HH212 FRS146		116	D	0.25m (0.3m)-1.2m	Subsoil - light yellow-brown sandy clay (boulder clay) over 0.35m deep, frequent small and moderate larger rounded and sub-angular gravels/cobbles (equivalent to 111). Underlies 114/115.		NH
Between HH209 & HH210		117	D	0-0.16m (varies)	Metalled track surface – sporadic layer of boulders/cobbles, largely single cobble depth, c.3.1m wide in extent, but largely visible along lines of parallel vehicle tracks, otherwise similar to underlying subsoil/boulder clay in which the stones are set (018).		Medieval/post-medieval?

Area/Field/Pole Number	Location	Context	Type	Depth below current ground surface (m)	Description	Sample	Period (Where natural horizon NH)
Between HH209 & HH210 & in FRS144/FRS145		118	D	(0.16m on track) 0.2m-0.4m	Subsoil – yellow grey-brown mottled orange brown clay (boulder clay), greying at depth. Occasional to moderate small to medium rounded and sub-angular cobbles/boulders. Horizon c.0.2m deep (N.B topsoil noted under 100), overlies natural boulder clay 119.		NH
Between HH209 & HH210 & in FRS144/FRS145		119	D	0.4m-1.4m+	Natural boulder clay – grey mottled grey brown silty sandy clay (slight variant of 118, above). Underlies 118.		NH
Pole No. 169		120	D	0-0.25m	Topsoil – light yellow-brown sandy clay loam – moderate small angular/sub-angular gravels. Overlies 121.		
Pole No. 169		121	D	0.25m-0.65m	Subsoil – clayey sand, shale rich, directly over shale bedrock at 0.65m. Underlies 120.		NH F/S
FRS147/FRS146 JB 1/2		122	D	1.2m–3.2m+ (N.B)	Natural boulder clay – light yellow orange brown sandy clay (grey around boulders), moderate medium and isolated large rounded and sub-rounded boulders. Underlies 087. Similar to 119.		NH

Key: BGCL = below current ground level, D = deposit; F/S = frost/shattered; MG = Made ground; N = Negative feature (cut); N.B. = Not bottomed; NH = Natural horizon; RH = Redeposited horizon; S = Structure.

Appendix II

Selection of plates from site photographic archive

Plate 1: Gravel bank horizon (002) within enclosure FRS169 (1m scales; 0.5m divisions), view to E.

Plate 2: Hedgerow bank HH240, detail of NE facing section (1m scales; 0.5m divisions), view to SW.

Plate 3: Hedgerow bank HH240 (1m scales; 0.5m divisions), view to S.

Plate 4: Hedgerow bank HH240, detail of SE facing section (1m scales; 0.5m divisions), view to NE.

Plate 5: Hedgerow bank HH240 (1m scales; 0.5m divisions), view to NE.

Plate 6: Hedgerow bank HH240 showing breach, view to S.

Plate 7: Topsoil strip within enclosure FRS154 (1m scale; 0.5m divisions), view to S.

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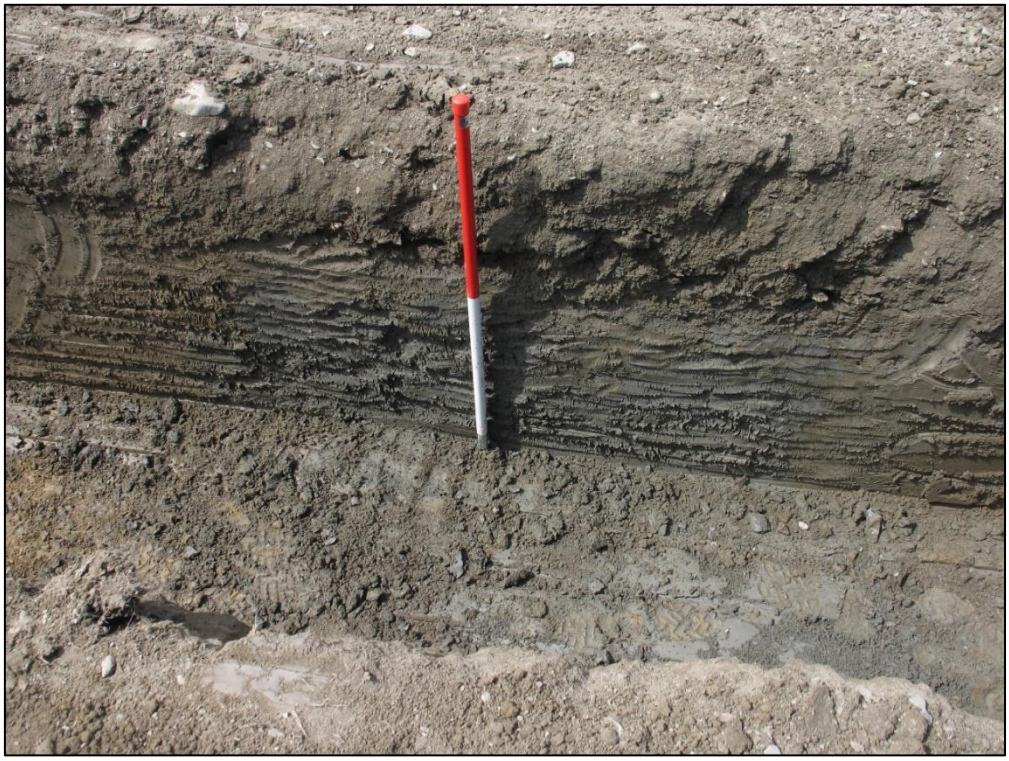

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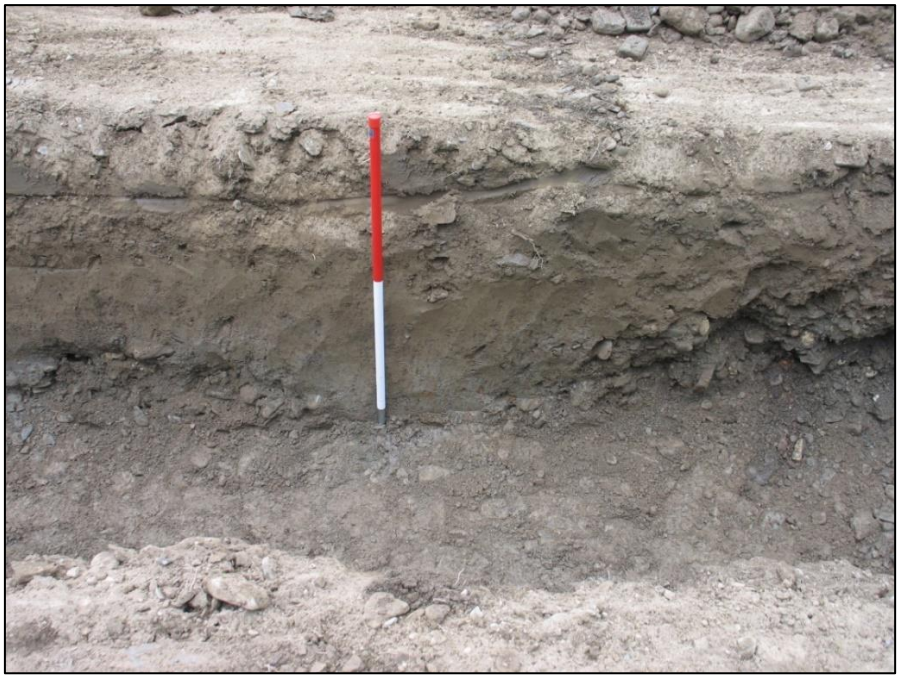

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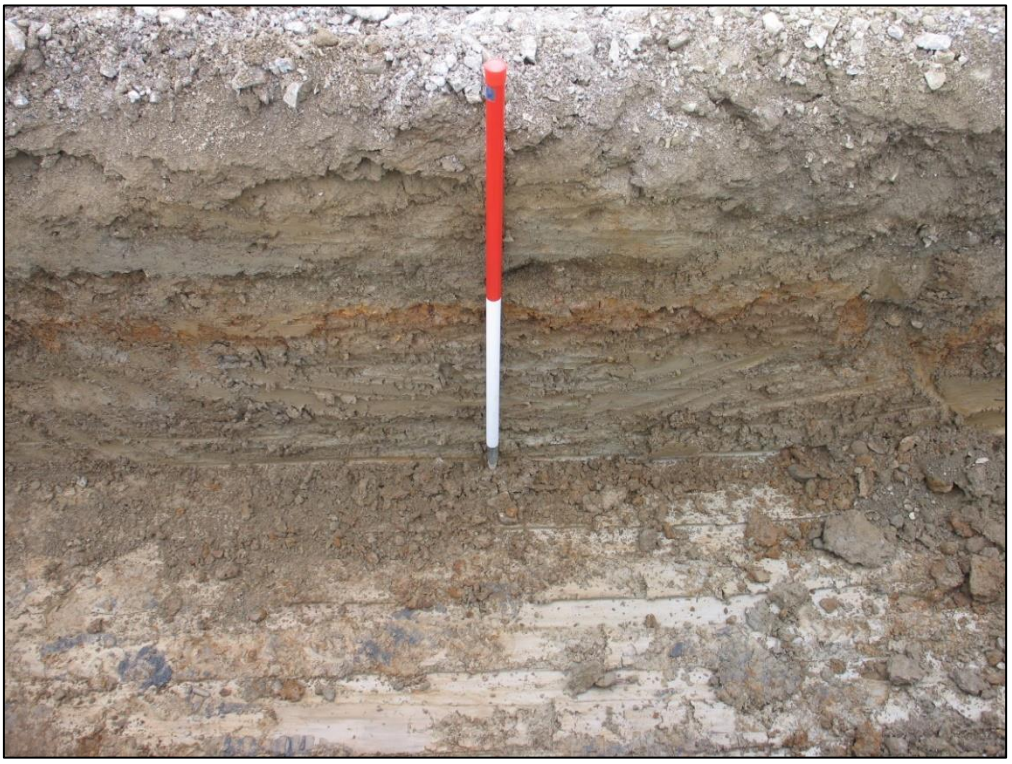

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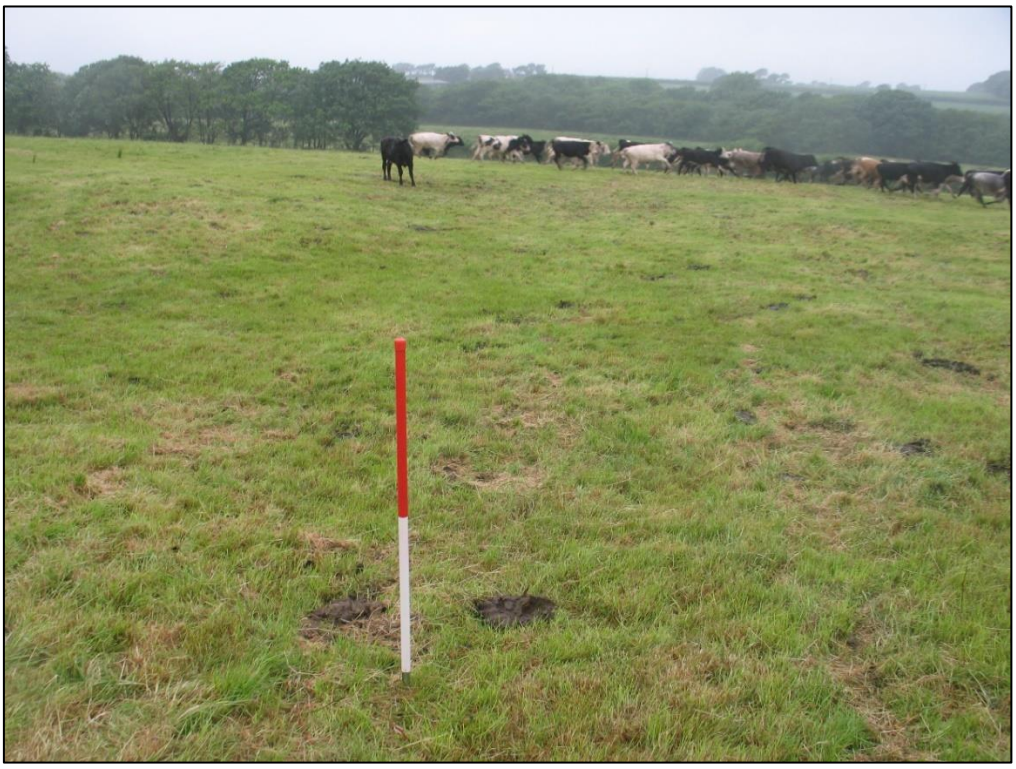

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Appendix III

Method Statement (Toseland 2017)

1 Introduction

1.1 Project background

The Brechfa Forest Connection will be a new 132kV overhead line (OHL) and underground cable comprising approximately 25.3km of OHL on mostly single or double wooden poles and approximately 3.3km of underground cable where the route crosses the Towy Valley. The development will connect the Brechfa Forest West wind farm with an existing National Grid substation at Swansea North via connection to an existing, currently redundant, OHL near Llandyfaelog.

Working to the Brechfa Forest Connection Archaeological WSI, the Glamorgan-Gwent Archaeological Trust Ltd, Projects Division (GGAT Projects) have been commissioned by RSK working for Western Power Distribution to undertake the archaeological works in accordance with the historic assets identified within the WSI and prepare this Method Statement thus providing the framework for the archaeological programme. The Method Statement describes a series of archaeological mitigation measures designed to provide suitable archaeological mitigation for the proposed development.

The archaeological works will be carried out to the professional standards laid down by *The Chartered Institute for Archaeologists*.

1.2 Acknowledgements

The project is managed by Martin Tuck MCIfA (Project Manager) and this method statement has been prepared by James Toseland BA PCIfA (Archaeologist) of GGAT Projects. RSK commented on an early draft of this Method Statement.

1.3 Copyright notice

2 Historic landscape character

2.1 The development crosses a complex and varied historic landscape. To the south and west are areas of rolling terrain with small irregular fields, woodland and plantations on steep valley sides and dispersed farms, with small-scale modern residential development. There are some areas where pasture improvement has created medium-sized fields, particularly to the south-west where a contrast can be seen with the small and irregular woods and fields further north towards the Towy valley. Elsewhere, the ancient settlement pattern of dispersed farms has been supplemented by linear development along main roads. The Towy valley is predominately a mixture of small irregular fields and woodlands, with flood plain along the valley floor, dispersed farms and small settlements. There are a few small areas of strip fields in the Towy valley, and also to the south along the Taff and Tawe Estuaries. The area around Burry Port contains more industrial and residential development than other areas, but also retains ancient woodland and scrubland. From the Towy valley, a series of steep valleys extend northeast,

containing small irregular fields and woodlands, and dispersed farms and settlements. The northern end of the development route extends into areas of extensively wooded uplands, including some ancient woodland and some areas of plantation.

3 Historic and palaeoenvironmental background

3.1 The historic background has been comprehensively detailed within the Brechfa Forest Connection Environmental statement, Volume 6.4, Appendix 11.1 (WPD 2015) and a brief summary is reproduced here.

3.2 The historic environment resource contains assets from all periods from the Bronze Age to the Modern, as well as passing through a broad area of designated historic landscape (the Towy Valley). There are no Scheduled Ancient Monuments, Listed buildings, Historic Parks and Gardens or Conservation areas but there is one Registered Landscape of Outstanding Historic Interest: the Towy Valley (RHL2), which follows the course of the Towy River.

3.3 The historic environment for most periods is primarily rural and agricultural in character, Some Iron Age, Roman and Medieval settlements are present within the area, but these are typically isolated homesteads, with the exception of Merlin's Hill hillfort and Carmarthen. Elsewhere, remains of transport and industrial activities survive from the Roman period onwards. Surviving built heritage largely comprises farmsteads dating to the last two or three hundred years, although a number of Medieval churches survive, as well as a few Medieval and Post-medieval dwellings.

3.4 The historic landscape is dominated by Post-medieval field systems, but fragments of earlier landscapes survive in places, including Medieval lynchets. The known historic environment resource includes a number of areas where significant remains are known to be present, and has been used to predict the potential for and character of previously unknown remains that may be present.

3.5 There are 229 hedgerows within the works boundary that meet the archaeological and historic criteria for 'important' hedgerows, as defined by the Hedgerow Regulations.

3.6 **Palaeoenvironmental background.** The development passes through a region including upland areas as well as valleys. In the valleys, superficial geological strata have developed as a result of rockslides or hillwash ('colluvium'), or in the lower levels by deposition of material into watercourses and by flooding events ('alluvium'). In places, these deposits are several metres deep; for example, in the Towy Valley. On the upland areas there are examples of periglacial landforms such as pingos, moraines, and caves (George 1970). There are also areas of upland peat formation.

4 Identified Archaeological potential

4.1 There is very high potential for the remains of landscape features such as tracks and historic hedgerows, which may date from the Medieval to Modern periods, and palaeochannels of unknown date, to be present. The following 'important' hedgerows are likely to be affected: HH59, HH61, HH65, HH77, HH84, HH93, HH139, HH142, HH144, HH148, HH149, HH150, HH152, HH153, HH154, HH155, HH164, HH166, HH181, HH182, HH202, HH209, HH210, HH269, HH305, HH320, HH328, HH357, HH361, HH372, HH374, HH387, HH390, HH400, HH403, HH408, HH412, HH411, HH414, HH434, HH436, HH447, HH449, and HH452. Their locations are indicated in the ES (WPD 2015, Vol. 6.3, Figure 11.3).

4.2 There is high potential for the remains of Roman roads to be present

4.3 There is moderate potential for the presence of buried remains of isolated dwellings or agricultural buildings dating from the Post-medieval or Industrial period.

4.4 There is low potential for Bronze Age buried archaeological remains to be present either in the context of upland funerary deposits or within fluvial deposits in valley bottoms. There is also low potential for the presence of Early Medieval, Medieval or Post-medieval settlements, or Roman remains in the form of settlement or industrial activity alongside the roads leading from Carmarthen.

4.5 There is very low potential for Palaeolithic or Mesolithic artefacts, Neolithic remains, Iron Age settlements, or remains dating to the Second World War, and extremely low potential for the remains of crannogs or boats from the prehistoric periods onwards, to be present.

4.6 Early prehistoric artefacts, boats or crannogs are likely to be of high heritage significance. Any late prehistoric remains, or remains of Roman or Medieval settlement, are likely to be of medium heritage significance. All other types of archaeological remains described above would be of low heritage significance.

4.7 The development will cross areas of known palaeo-environmental importance.

4.8 The Towy Valley contains sequences of river development and alluviation that are likely to include preserved botanical remains, which can be used to reconstruct past landscapes.

5 Specification

Purpose

5.1 The purpose of this method statement is to set out a quantifiable schedule ofworks against which performance, fitness for purpose and achievement of quality can be measured.

5.2 This method statement has been prepared to ensure that the work is undertaken to the standard required by The Chartered Institute for Archaeologist's: Standard and Guidance for Archaeological Watching-briefs 1994 (amended 2001, 2008 and 2014) Any subsequent work will follow relevant CIfA guidelines.

Objectives

5.3 An investigation of the potential archaeological resource through observation and recording in order to ensure the safeguarding of the resource in the development area during construction works. In addition to informing the general public about the archaeological resource of the area.

5.4 The presentation of these observations in a written report, taking account of related documentary and historical evidence.

5.5 The preparation of an archive of data recovered and records made as a result of the project, and the deposition of this archive in a suitable receiving museum or similar institution.

5.6 The presentation of these results to the wider academic and non-academic public through diverse means, including a grey literature report, a journal entry, popular booklet(s) and other media (web) and a number of public talks to local residents and interested parties.

5.7 The objectives of the proposed programme of archaeological works remain the responsibility of the developer and shall be implemented by GGAT.

Timing

5.8 The timing of on-site works will be phased according to the development programme and each component will be agreed in advance. Groundworks are expected to start in April 2017.

Nature of effect

5.9 The development will entail soil stripping and underground works, groundwork for the erection of poles and groundworks for access including breaches through hedgerows across all areas of the site.

Construction works subject to archaeological watching brief

5.10 All construction activities that may result in a significant impact on an intact archaeological horizon below ground, or features surviving above ground, will be monitored (See Figure 1, Drawing B/WP/PS/1 and B/WP/PS/2). These include, but are not limited to:

5.11 Topsoil stripping of the underground cable section working width;

5.12 Excavation of launch and reception pits for non-open cut horizontal directional drilling (HDD) sections;

5.13 Excavation of pits as part of pole erection, where these are within archaeologically sensitive areas;

5.14 Any significant drainage excavations within archaeologically sensitive areas;

5.15 Breaches through 'important' historic hedgerows; and

5.16 Where necessary, reinstatement within archaeologically or historically sensitive areas. It is not envisaged that reinstatement works require archaeological monitoring.

6 Specific recording measures as per WSI

6.1 If potential archaeological remains are encountered, the machine driver will be required to pause works;

6.2 The area will be hand-cleaned in order to assess the complexity and quantity of remains: if simple remains (i.e. that which can be investigated and recorded rapidly) are present, these will be recorded and construction works will continue; if complex remains are present, these will be fenced off and the Main Contractor and Archaeological Contractor with WPD's Archaeologist (RSK) will determine whether to excavate or preserve in situ, in consultation with Dyfed Archaeological Trust's Development Management section (DAT DM) and/or Cadw if necessary; the Main Contractor and WPD's Archaeologist (RSK) will determine whether variation in the works programme should be made; and WPD's Archaeologist (RSK) will determine whether additional staffing or other resources are necessary to carry out mitigation work, following discussion with the Archaeological Contractor.

6.3 Archaeological recording will be undertaken of all breaches through 'important' historic hedgerows, to record in section the hedgerow profile and record any associated structures, archaeological features such as earthworks and ditches, or dating evidence.

6.4 **Palaeoenvironmental Sampling**. Appropriate features and deposits will be sampled to effect the retrieval of palaeoenvironmental and economic data. Provision for sampling a wide range of contexts for potential assessment and analysis for plant and animal micro/macro fossils and soils/sediments will be undertaken in order to fulfil the research aims set out in the WSI and RAMS.

6.5 The selection, preparation for and methods of taking samples together with their size, presentation and processing shall be in accordance with current best practice (e.g. English Heritage 2007, 2011; CIfA 2014g).

6.6 The Trust will be responsible for the protection of all samples and finds and for their transport (including loading and unloading) from the development. Samples will be protected at all times from temperatures below 5 and above 25 degrees Celsius and from wetting and drying out due to weather exposure.

6.7 **Unexpected, highly significant remains.** In the event that human remains, treasure, or

potentially nationally significant archaeological remains are encountered, the Main Contractor and any subcontractors will be required to cease all works at that location until further instruction is provided by WPD's Archaeologist (RSK). The Archaeological Contractor will inform WPD's Archaeologist (RSK) and the Main Contractor immediately by telephone or in person. The Archaeological Contractor will also confirm the circumstances of the discovery in writing within 24 hours, providing digital photographs and as much information as is available that will assist in determining the heritage significance of the discovery.

6.8 Where recording and removal of grave goods, 'treasure', or highly significant archaeological remains deemed to be at risk of theft is not feasible or appropriate on the day of discovery, the Main Contractor will ensure that adequate site security is provided.

6.9 **Human remains.** Any discovered human remains will in the first instance be left in situ, covered and protected. WPD's Archaeologist (RSK) may inform the local Coroner as appropriate.

6.10 Advice will be sought by WPD's Archaeologist (RSK) from the Ministry of Justice as to whether a licence may be required to exhume any or all remains. Where possible, preservation in situ will be preferred to exhumation.

6.11 Where possible, visible grave goods and other obvious artefacts will be recorded and removed before the end of the day of discovery, to avoid the risk of vandalism or theft.

6.12 All treatment of human remains will follow best practice guidance.

6.13 **Treasure.** Under the 1996 Treasure Act, "treasure" can be summarised as: objects other than coins containing at least 10% gold or silver and at least 300 years old, coins found together (but not single coins) that contain at least 10% gold or silver, groups of 10 or more coins of other metals that are at least 300 years old, any object found associated with treasure except unworked natural objects, and any other object that will have been Treasure Trove before the 1996 Act. The Treasure order (2002) added to the definition of treasure including groups of base-metal objects, other than coins, of prehistoric date, from the same find, as well as objects, other than coins, of prehistoric date any part of which is precious metal, regardless of the percentage of precious metal by weight of metal. Subject to the Provisions of the Treasure Act, all material that is defined as Treasure is vested in the franchisee or, if none, the Crown.

6.14 Any finds made that are identified under this Act will be reported to WPD's Archaeologist (RSK), who will inform the local Coroner.

6.15 To protect the finds from theft, where possible, the Archaeological Contractor will record the finds and remove them to a safe place on the day of discovery.

6.16 **Potentially nationally significant archaeological remains.** In the event that unexpected, potentially nationally significant archaeological remains are identified during the construction phase, WPD's Archaeologist (RSK) will immediately inform Dyfed Archaeological Trust's Development Management section (DAT DM) for all non-scheduled archaeological sites, as well as CADW if appropriate. WPD's Archaeologist (RSK) will investigate, with the consultees, whether preservation in situ is feasible and any other constraints. If preservation in situ is not feasible, the Archaeological Contractor will produce an updated RAMS to include works appropriate to conduct an archaeological excavation on the site and achieve preservation by record. The Main Contractor will allow a time period for archaeological recording and excavation, which will be determined in consultation with Cadw, but shall not be less than 14 days.

6.17 In the event that well-preserved, waterlogged remains are located (e.g. preserved boats), consideration will be given, in consultation with Dyfed Archaeological Trust's Development Management section (DAT DM), for the appropriateness (or otherwise) and feasibility of their removal and conservation.

7 General method of recording

7.1 The following is supplementary to the specific mitigation (Section 6). The techniques employed will conform to best current professional practice. All archaeological deposits will be recorded with a single continuous context numbering system. Contexts will be drawn at a suitable scale in plan, and, where appropriate, in section. All significant contexts will be digitally photographed, with a resolution of no less than ten megapixels. Survey information will be related to the Ordnance Survey National Grid and levels related to the Ordnance Survey Datum. All survey work where appropriate will be carried out using a total station or survey grade GPS.

7.2 All classes of finds will be retained, cleaned, and catalogued until arrangements for final deposition have been agreed, in line with the requirements of the Chartered Institute for Archaeologist's Standard and Guidance for the collection, documentation, conservation and research of archaeological materials (2014). If substantial quantities of undiagnostic, residual or modern material are recovered, an on-site recording and discard policy for these classes of find will be devised. If human remains are encountered, they will be archaeologically recorded and removed under conditions, which comply with all current legislation, including reporting to the relevant authorities, the obtaining of proper licences, and the provision for eventual reburial following appropriate analysis. All human remains will be excavated by hand in accordance with the Chartered Institute for Archaeologists Excavation and Post-Excavation Treatment of Cremated and Inhumed Human Remains: Technical Paper Number 13 (1993).

7.3 The management of environmental recording and sampling will follow the principles and tenets laid down in English Heritage's Environmental Archaeology: A guide to the theory and practice of Methods, from sampling and recovery to post-excavation published in 2011. All deposits with a high potential for the preservation of palaeoenvironmental material will be sampled, by column, bulk and other method, for possible subsequent analysis, in accordance with a sampling strategy overseen by a specialist with appropriate expertise. Sampling and recording will be the responsibility of an identified member of the field team with relevant experience.

8 Post-excavation, reporting, archiving and dissemination

8.1 Following the completion of the fieldwork, an archive of archaeological records relating to the fieldwork will be prepared to the specifications in *The National Standard and Guidance to Best Practice for Collecting and Depositing Archaeological Archives in Wales 2017 (*National Panel for Archaeological Archived in Wales 2017).

8.2 Archaeological and historical sources will be consulted, in order to place the results of the fieldwork in an appropriate archaeological and historical framework.

8.3 Following a review of the potential of the recovered evidence, a programme of analysis and research will be undertaken, resulting in the preparation of a site narrative and supporting data, including finished drawings and photographs as necessary.

8.4 Reports on cultural or palaeoenvironmental material, dating, and remote sensing will be prepared either using GGAT's staff or sub-contracted from established specialists as and when required.

8.5 An archive of records relating to the preparation of the report will be prepared to the specifications in *The National Standard and Guidance to Best Practice for Collecting*

*and Depositing Archaeological Archives in Wales 2017 (*National Panel for Archaeological Archived in Wales 2017).

8.6 Reporting will be phased according to the construction programme but will include a synthesis of the data gathered, together with inclusion of supporting evidence in appendices as appropriate, and illustrations. Two hard copies and a PDF of the report will be supplied to the client.

8.7 After an appropriate period has elapsed, copies of the report will be deposited with the Regional Historic Environment Record (HER), curated by DAT.

8.8 Short archaeological digest reports will be submitted for publication in relevant regional, national and thematic learned journals; as a minimum, a report will be submitted to the annual publication of the regional CBA group or equivalent journal. Non-technical reports will also be produced to inform the general public of the archaeological investigations, this may also include web pages, posters, leaflets or other media forms. Presentation of the results to the local community and other interested parties will be made in a number of talks.

8.9 The site archive will be deposited with a suitable receiving institution.

8.10 The finds, including artefacts and ecofacts, excepting those which may be subject to the Treasure Act, will be deposited with the same institution, or retained by landowners as required.

8.11 A copy of the archive index will be deposited with the National Monuments Record, RCAHMW, Aberystwyth.

9 Staff Structure

The project staff involved will include:

- Martin Tuck MCIfA, Project Manager: responsible for the tracking of the project and maintaining quality
- Richard Roberts, Lead archaeologist: responsible for the day to day Watching Brief and palaeoenvironmental work
- Hannah Bowden, Palaeoenvironmentalist: responsible for sampling strategy and liaising with the lead archaeologist.
- Project Archaeologists: responsible for on-site excavation and recording
- Further specialist expertise, if required, will be obtained from suitably qualified internal and external individuals as established in the Written Scheme of Investigation.

10 Insurance

10.1 Cover

GGAT is fully insured for this type of work, and holds substantial Professional Indemnity and Public Liability cover.
Employers Liability: AVIVA, limit of indemnity £10,000,000.
Public liability: AVIVA, limit of indemnity £5,000,000.
Professional Indemnity: Towergate, limit of indemnity £2,000,000

10.2 Limitations

GGAT will not be liable to indemnify the client against any compensation or damages for or with respect to:

Damage to crops, structures *etc.* on the site as a necessary result of the site operations being carried out in accordance with the agreed scope of works (save in so far as permission to enter had not been given to GGAT).
The use or occupation of land (which has been provided by the client) for the purpose of carrying out site operations (including consequent losses of crops), or interference whether temporary or permanent with any right of way, light, air or water or other easement or quasi-easement which are the necessary result of the site operations being carried out in accordance with the agreed scope of works.
Damage to the site that is the necessary result of the site operations in accordance with the agreed scope of works.
Injuries or damage to persons or property resulting from any act of neglect or breach of statutory duty done or committed by the client or his agents, servants or their contractors or for or in respect of any claims, demands, proceedings, damages, costs, charges and expenses in respect thereof or in relation thereto.
Any claims for compensation or damages arising from the provision of incorrect or incomplete information to GGAT by or via the client.

11 Health and Safety

11.1 Health and Safety policies

GGAT will not endanger the health, safety and welfare of its employees or others in the execution of its projects. GGAT has prepared a Health and Safety statement in accord with *The Health and Safety at Work etc. Act 1974*, a copy of which is both available on request, and will be displayed in any site office, and will be supplied to any other contractors working on site during GGAT operations thereon.
Prior to commencement of work, GGAT will carry out a formal Health and Safety Risk Assessment in accordance with *The Management of Health and Safety Regulations 1999*. A copy of the risk assessment will be kept in any site office and be available for inspection on request. GGAT will assist with any documentation required by the *Construction Design and Management Regulations 2007.*
GGAT will require access to the health and safety policy of all other contractors and operators present at the work place in compliance with *The Management of Health and Safety Regulations 1999*.
In addition to statutory requirements, the GGAT will always follow best practice for Health and Safety in Archaeology as defined in the FAME (Federation of Archaeological Managers and Employers) (formerly SCAUM, Standing Conference of Archaeological Unit Managers) health and safety manual *Health and Safety in Field Archaeology (2010)*.

11.2 Risk assessment

Prior to commencement of work GGAT will carry out 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.

11.3 Other guidelines

In addition to statutory requirements, GGAT will follow best practice for Health and Safety in archaeology as defined in the Standing Conference of Archaeological Unit Managers (SCAUM) health and safety manual, *Health and Safety in Field Archaeology* (2002).

12 General Limitations

12.1 Scope of the work

The work outlined in this project design will be carried out to the highest professional standards, and the conclusions drawn will be based on a considered review of the evidence available. However, the archaeological resource is unpredictable, and the encountering of unexpected archaeological deposits on the site cannot be ruled out. Examination of such deposits is beyond the scope of the project design and must be agreed by separate negotiation.

12.2 Variations to the project design

The provisions of specification will be met, except where, in GGAT considered opinion, an alternative methodology is deemed to be more appropriate to the archaeological deposits under consideration. Such variations will be agreed in advance with the Client or their agents, Cadw and the Local Planning Authority, or their representatives.

13 Quality Control

13.1 Professional standards

The Glamorgan-Gwent Archaeological Trust Ltd is a Registered Archaeological Organisation (no 15) with the Institute for Archaeologists. All employees, whether corporate members of the Institute or not, are expected to adhere to the Chartered Institute for Archaeologist's *Code of Conduct, Code of Approved Practice for the Regulation of Contractual Arrangements in Field Archaeology*, and other related by-laws, and the *Standard and Guidance for archaeological watching briefs, Standard and Guidance For Archaeological Field Evaluation, Standard and Guidance For Archaeological Excavation* and the *Standard and Guidance For the Archaeological Investigation and Recording of Standing Buildings or Structures* currently in force.
GGAT senior managers monitor all projects in order to ensure that agreed targets are met without reduction in quality of service.

13.2 Monitoring

GGAT is content for its work to be monitored by: -

1. Carmarthen County Council and their appointed agents or representatives,
2. Dyfed Archaeological Trust (DAT DM),
3. The Client or their agents or appointed representatives, unless otherwise instructed by the Client, provided that in ii) the monitors: -
   i. Must where requested give advance notice and if necessary attend at the site at prearranged times, and, if required, in the company of the Client or their agents or their bona fide representatives
   ii. Cause no undue delay to the programme of works
   iii. Fully observe all Health & Safety requirements
   iv. Either have the appropriate academic and professional qualifications and relevant experience to comment on the works in hand, or in lieu of this are attended by appropriate specialist consultants
   v. Provide GGAT with copies of a report within two working days of the visit

The costs for monitoring are not included in our quotation.

14 Copyright

14.1 Holder and licence

GGAT shall retain full copyright of any commissioned reports, tender documents or other project documents, under the *Copyright, Designs and Patents Act 1988* with all rights reserved; excepting that it hereby provides an exclusive licence to the client for the use of such documents by the client in all matters directly relating to the project as described in this project design.

14.2 Assignment

GGAT will assign copyright to the client upon written request but retains the right to be identified as the author of all project documentation and reports as defined in the *Copyright, Designs and Patents Act 1988* (chapter IV, s, 79).

15 Arbitration

Any dispute or difference arising out of a contract 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.

16 Sources

Western Power Distribution, May 2015, Brechfa Forest Connection, Development Consent Order Application Reference EN020016, Environmental 11 Historic environment.

Western Power Distribution, May 2015, Brechfa Forest Connection, Environmental Statement 6.4 Appendix 11.1 Historic environment supporting information.

Western Power Distribution, May 2015, Brechfa Forest Connection, Development Consent Order Application Reference EN020016, Environmental Statement Appendix 11.2 Historic environment planning compliance.

Western Power Distribution, January 2016 V.01, Brechfa Forest Connection Project , Addendum to the Environmental Statement, Potential Undergrounding of an additional part of the Brechfa Connection.

Western Power Distribution, February 2017, Brechfa Forest Connection Project, Archaeological WSI.

Appendix IV

The Pottery Data

Site	Context	Pottery type	Description	Number	Weight (g)	Colour	Date	Notes
904	U/S	earthenware	North Devon gravel-tempered	1	9	buff	post med	b/s, green-brown internal glaze
904	001	earthenware	modern ceramics	15	79	white	modern	rim, base and b/s, three with blue transfer printing, one with magenta; bowl lower wall sherd with Mocha ware-type brown lines; b/s Mocha ware, grey background; b/s with blue internal glaze; plate base sherd with brown transfer printing and partial stamp 'GO...' within toothed border
904	001	earthenware	North Devon gravel-tempered	1	41	buff	post med	handle sherd, no glaze
904	001	earthenware	local coarse ware	1	8	red	post med	b/s, green-brown internal glaze
904	005	earthenware	modern ceramics	3	5	white	modern	b/s, one with dark blue transfer printing
904	005	earthenware	local coarse ware	2	8	buff	post med	b/s, brown internal glaze
904	005	stoneware	modern ceramics	1	3	buff	modern	b/s, one surface only
904	005	earthenware	modern ceramics	1	6	brown	modern	b/s, teapot, brown glaze both sides
904	005	earthenware	local coarse ware	3	318	red	post med	lower wall and b/s, large vessel, dark purple-brown internal glaze, possibly same vessel
904	058	earthenware	blackware	1	7	red	16th-18th C	base sherd, reeded mug, black lustrous glaze internally and on external lower wall
904	058	earthenware	modern ceramics	21	109	white	modern	rim, handle, base and b/s, six with blue transfer printing, one with Mocha ware-type stripe, some sherds crazed and stained
904	058	earthenware	local coarse ware	3	62	buff	post med	rim and b/s, two with internal brown glaze, one rim is from a large pan
904	058	earthenware	North Devon gravel-tempered	9	119	buff	post med	rim, handle and b/s, all but one with patchy green-brown glaze
904	060	earthenware	local coarse ware	2	26	buff	post med	rim and b/s, both with brown internal glaze
904	060	earthenware	North Devon gravel-tempered	7	77	buff	post med	rim and b/s, three join, five have internal green-brown glaze
904	060	earthenware	modern ceramics	20	74	white	modern	rim, base and b/s, seven with blue transfer printing, one with blue sprig decoration; a rim and four joining b/s have moulded flower decoration; a cup rim sherd has two brown lines inside the rim; a Willow Pattern plate sherd has a partial stamp beneath '...AVESI & SON... ...IFF & SWANSEA'
904	060	earthenware	modern ceramics	1	19	brown	modern	jug b/s with handle scar, internal cream glaze, external brown and blue glaze
904	060	stoneware	modern ceramics	4	38	cream	modern	rim, base and b/s, cream glaze, rim has beaded shoulder decoration
904	060	stoneware	modern ceramics	3	17	grey	modern	joining base and b/s from a cylindrical container, pale brown external glaze
904	079	earthenware	local coarse ware	2	12	red	post med	b/s, one with brown internal glaze
904	079	earthenware	modern ceramics	94	395	white	modern	rim, base, handle, b/s and jug spout, twenty one with blue transfer printing, three with green, one with black, two with brown, one with flow blue, one with dark brown stripes, plate sherd with narrow blue stripe at body junction, mug base with pink external glaze, saucer rim sherd with hand-painted leaves, flowers and berries, plain marmalade jar rim and base sherds, lid-seated ?sugar basin rim sherd; much crazing and staining
904	079	stoneware	modern ceramics	5	78	grey	modern	b/s, one has an edge, possible lid
904	079	earthenware	modern ceramics	1	5	brown	modern	b/s, teapot ware, brown glaze both sides
904	079	earthenware	modern ceramics	1	22	buff	modern	footring sherd, teapot, thick brown glaze both sides
904	079	earthenware	modern ceramics	13	67	buff	modern	rim and b/s, yellow glaze, two with brown stripes, kitchen ware
904	079	stoneware	modern ceramics	3	7	blue	modern	b/s, two with ribbed decoration, blue body and surfaces
904	080	earthenware	North Devon gravel-tempered	26	394	buff	post med	rim, body and lower wall sherds, three rims are lid-seated, one of these has yellow internal glaze, one rim is inturned and probably from a bowl, most sherds have green-brown internal glaze, one b/s has brown
904	080	earthenware	local coarse ware	26	384	red	post med	rim, base, handle and b/s, inc b/s with heavily ribbed exterior and thick black glaze internally, two b/s with thick black glaze inside and out, two with dark brown glaze inside and out, horizontal lug handle with splashes of glaze; some sherds have dark brown internal glaze, some have pale brown
904	080	slipware	yellow-glazed	5	20	buff	18th C	base and b/s, inc press-moulded dish sherds, one with brown feathered slip decoration internally, and base sherd from a cup
904	080	stoneware	modern ceramics	17	405	buff	modern	rim, base and b/s, inc jar rim with beaded shoulder and brown glaze over rim, bottle base with external brown glaze and '..ANELLY BREWERY.' printed in black on body, b/s with pronounced salt-glaze which may be 18th C
904	080	stoneware	modern ceramics	1	1	grey	modern	b/s, brown external glaze
904	080	earthenware	modern ceramics	6	124	buff	modern	spout, lid-seated rim, handle and b/s, dark brown glaze
904	080	stoneware	modern ceramics	2	1	blue/tan	modern	b/s and chip, one blue fabric with blue glaze both sides, one tan with tan-coloured glaze both sides
904	080	earthenware	modern ceramics	27	306	buff	modern	rim, base, footring and b/s, a basin rim sherd has moulded beaded edge, some sherds have brown and white stripes, some have blue and white, some have groups of narrow white stripes

904	080	earthenware	modern ceramics	371	2347	white	modern	rim, base, handle and b/s, 115 with blue transfer printing, five with brown, seven with sponged blue decoration, two with purple t-p, three with pink, three with multi, plate rim sherd with blurred pale green edging, two with blue sprig decoration, seven with black t-p inc rim sherd showing part of figure carrying a parasol, joining plate rim sherds with blue feather edging, plate sherd with dot and basket moulded decoration, three jug or bowl b/s with moulded semi-Greek-key design arranged as lozenges, marmalade jar rim sherd with '...AND MET... JAM', surrounded with garland of oak leaves and acorns, printed in black, four sherds with hand-painted flowers, leaves and berries, four b/s with garish yellow glaze, b/s with magenta stripe, joining bowl rim sherds with blue leaf painted decoration along rim edge - blue paint has bled down inner surface, twenty sherds with blue or brown mocha-type stripes, joining base sherds from a ?meat platter with Willow Pattern decoration and combed swirls beneath; much crazing and staining, some sherds so stained colour of t-p difficult to ID
904	080	earthenware	porcelain	4	5	white	modern	joining rim sherds from a narrrow-necked flask, 75% extant and b/s probably from ornament
904	083	earthenware	local coarse ware	54	673	red	post med	rim, base and b/s, most with brown glaze, four with dark brown or black glaze both sides, two with slipped yellow lines under the glaze
904	083	earthenware	North Devon gravel-tempered	25	456	buff	post med	rim and b/s, a ledge rim sherd has white slip under the glaze, most sherds have yellow-green glaze, seven have dark green glaze
904	083	earthenware	modern ceramics	77	542	buff	modern	kitchen ware, yellow glaze, rim, base, handle, footring and b/s, some sherds have brown and white stripes, some have blue and white, a handle springing has moulded leaf terminal, one thick b/s has beaded line decoration at the carination
904	083	earthenware	modern ceramics	14	151	buff	modern	teapot ware, lid-seated rim sherd with handle springing and vertical moulded line decoration, b/s, two from jug have white internal glaze, one b/s has moulded decoration in form of a pineapple
904	083	stoneware	modern ceramics	8	121	buff	modern	bottle rim sherd, jar rim sherd with brown glaze at rim, large vessel rim sherd with external moulded fluting decoration, b/s with oval scar
904	083	stoneware	modern ceramics	7	44	grey	modern	b/s, five are ribbed, two are brown glazed, one on both sides
904	083	slipware	yellow-glazed	2	7	buff	18th C	rim sherd, posset pot, b/s with trace of 'jewelled' decoration
904	083	slipware	brown-glazed	1	3	buff	18th C	b/s reeded mug
904	083	stoneware	Westerwald	1	3	grey	16th-18th C	b/s
904	083	stoneware	Staffs salt-glazed	1	3	white	18th C	footring sherd with trace of moulded rib decoration externally
904	083	earthenware	modern ceramics	2	11	red	modern	teapot ware, almost basaltes stoneware, brown glaze, shoulder sherd has engine-turned decoration along carination
904	083	earthenware	modern ceramics	683	3772	white	modern	rim, base, handle and b/s, inc base sherd with incuse letters 'NEWC…' underneath, marmalade jar rim sherd, plate rim sherd with moulded feather edging, two plate rim sherds with blue feather edging, teacup bases and handles, sixteen sherds with blue stripes, eight with blue or brown mocha stripes, six with green and magenta stripes, one with orange, three with thin brown stripe, five saucer sherds with green and orange hand-painted decoration, teapot spout with black transfer-printing, plate b/s, two cup sherds and footring sherd all with Welsh Costume in black transfer print, two b/s with nursery print, one with '...sts us...' in black t-p, the other in brown t-p, three joining jug lower wall sherds in black and salmon pink mocha-type decoration, nursery plate rim with green edging, embossed with 'T, V and W', plate base sherd in multi t-p with part of seated figure and '...oar'd with pain, ...grin.' beneath in blue and '...BIN' printed sideways also in blue, plate base sherd with 'BURSLEM' within cartouche with 'ENGLAND' beneath and 'LORNA' beneath that, all in black t-p, saucer b/s with a fish design in blue t-p, joining b/s with blue, tan and brown mocha type decoration, 358 sherds with blue transfer-printing, two with multi, one with orange, five with purple, ten with turquoise, twenty-six with magenta, seventeen with black, twenty-six with green, thirty-seven with brown, saucer rim sherd with gold leaf decoration, three joining footring sherds with blue hand-painted decoration, four sherds with blue and green sponged decoration, four sherds with blue sprigs, fifteen sherds with hand-painted flowers, leaves and berries
904	086	earthenware	modern ceramics	262	868	white	modern	rim, base, handle and b/s, seventy-four with blue transfer printing, five with brown, one with magenta, four with green, three with pink, one with black, five with multi, eight with mocha stripes in blue or brown, six with hand-painted berries, flowers and leaves, five with pink stripe, three with blue, one with brown, a Willow Pattern plate base sherd has part stamp beneath 'J... Staffordshi...', jug handle with painted leaves along central rib, jug handle springing in form of a shell, two plate rims with moulded feather edging, planter-type rim sherd with green glaze both sides, two b/s with moulded flower decoration; stained and crazed throughout
904	086	stoneware	Staffs salt-glazed	1	2	white	18th C	b/s with moulded dot and diaper decoration
904	086	earthenware	modern ceramics	4	42	buff	modern	teapot ware, footring, b/s and handle sherd, brown glaze
904	086	earthenware	modern ceramics	2	11	red	modern	b/s, thick brown glaze both sides
904	086	stoneware	modern ceramics	3	97	buff	modern	b/s, one ribbed, lower wall sherd from a bottle has incuse stamp 'Price Bristol'
904	086	stoneware	modern ceramics	6	73	grey	modern	b/s and handle sherds, brown glaze externally

904	086	earthenware	modern ceramics	36	196	buff	modern	kitchen ware, rim, base and b/s, yellow glaze, some have blue stripes, one has brown, some have blue mocha decoration on white ground, inc a jug rim, one ?jar rim sherd has embossed decoration externally and whiite glaze internally
904	086	earthenware	local coarse ware	19	225	red	post med	rim, base and b/s, one with horizontal lug handle and very dark brown glaze inside and out, two b/s have dark brown glaze, seven have pale brown glaze, entire base has amber glaze
904	086	slipware	West Country	1	8	buff	post med	b/s, yellow-green glaze over white slip
904	086	earthenware	North Devon gravel-tempered	49	578	buff	post med	rim, b/s and handle sherds, most have internal patchy green-brown or yellow glaze, frost shattered
904	088	earthenware	local coarse ware	31	1157	red	post med	rim, base and b/s, some from large vessels, in red poorly-mixed clay with thick dark brown or black glaze, some inside and out, some sherds are heavily rilled
904	088	earthenware	local coarse ware	66	1086	buff	post med	rim, base and b/s, some with brown internal glaze, some with amber, some sherds are spalled, others are frost-shattered
904	088	earthenware	North Devon gravel-tempered	128	1545	buff	post med	rim, base, handle and b/s, inc rim sherds from at least nine vessels, some sherds with green internal glaze, some with brown, several have white slip beneath the glaze
904	088	slipware	West Country	8	72	buff	17th/18th C	jug rim sherd with handle springing, base and b/s; possibly ND gravel-free
904	088	earthenware	tin-glazed	3	24	buff	17th C	b/s, one from a plate with blue-painted decoration
904	088	earthenware	blackware	2	4	red	16th-18th C	b/s, dark brown glaze both sides
904	088	stoneware	Nottingham	2	11	grey	18th C+	b/s, with decoration at broken edge, and handle sherd
904	088	slipware	yellow-glazed	13	82	buff	18th C	b/s, four from press-moulded dishes, seven with brown slip decoration
904	088	stoneware	salt-glazed	2	9	buff	18th/19th C	b/s, buff glaze externally, pale brown internally; lower wall sherd, buff glaze inside and out
904	088	stoneware	Staffs salt-glazed	23	165	white	18th C	rim and b/s, mostly from plates, one has moulded bead rim, one has moulded feather-edge rim, three have moulded seed decoration, one has moulded basket and dot decoration, four are plain; rim sherds from large bowl also present
904	088	earthenware	creamware	12	47	cream	18th/19th C	rim, base, footring and b/s, inc a bowl rim sherd and plate b/s with brown sponged decoration, b/s with brown and green sponged decoration, two sherds with brown marbled slip decoration, two b/s with moulded flower decoration beneath brown and green slip, small b/s with applied rusticated decoration
904	088	earthenware	modern ceramics	5	58	buff	modern	teapot ware, base and b/s, brown glaze both sides
904	088	earthenware	modern ceramics	4	43	brown	modern	footring sherd, brown glaze externally, cream int, b/s, one brown with cream stripe, one brown with blue stripe, one with tan glaze both sides and hand-painted design of yellow leaves
904	088	earthenware	modern ceramics	48	320	buff	modern	kitchen ware, yellow glaze, rim, base and b/s, some with cream glaze internally, some with cream stripes, one with brown and blue stripes, two b/s are blue externally and white int
904	088	earthenware	modern ceramics	6	72	blue	modern	joining plate rim and b/s and b/s with embossed design, one has handle springing, all blue fabric with blue glaze both sides
904	088	stoneware	modern ceramics	19	444	buff	modern	base and b/s, inc sherds from a large flagon
904	088	earthenware	modern ceramics	1037	4110	white	modern	rim, base, handle and b/s, inc joining mug sherds with brown transfer print showing wharfside scene with sailing ships and caption '...To Australia', mug base with black t-p showing part of a leg and ?bowls, plate sherds, two joining in black t-p with 'Brooklyn Ovingtons Chicago' on underside and floral design over, one with '...AFFE' in cartouche on underside and animal's legs over in blue t-p, one with part of a plant on underside with '...iatic Plant' across the leaves in blue t-p, one in brown t-p with '...N...' in cartouche on underside, one in pale blue t-p with 'LILY' in cartouche and 'WA...' above cartouche, one showing Willow Pattern in blue t-p with Evans & Co on underside, fifty-four sherds with mocha-type decoration, inc sherd with 'earthworm' design in greeny-grey, b/s with engine-turned decoration in the form of a band of squares, bowl and mug sherds with brown or blue stripes and feather decoration, seven sherds with blue sprig decoration, eighteen plate rim sherds with blue feather edge, two with green feather edge, 393 sherds in plain white earthenware, inc porcelain and semi-porcelain, inc two pierced sherds from strainer and four sherds with embossed decoration, six sherds with blue hand-painted decoration, inc porcelain tea-bowl and saucer with fluted rim, fourteen sherds with h-p flowers and leaves in pink, green and blue, some sherds with brown stripes, some with green or magenta, 428 sherds with blue t-p, twenty with brown, four with green, six with multi, ten with purple or magenta, seventeen with black, nine sherds with multi hand-painted designs
904	100	earthenware	modern ceramics	3	28	buff	modern	teapot ware, handle and b/s, brown glaze
904	100	stoneware	modern ceramics	4	64	buff	modern	rim and joining b/s, ribbed jar, bottle rim sherd, shoulder sherd, external brown glaze
904	100	earthenware	modern ceramics	28	393	buff	modern	kitchen ware, yellow glaze, base and b/s inc sherd from mixing bowl with external moulded decoration, some b/s have internal white glaze
904	100	stoneware	Staffs salt-glazed	2	3	white	18th C	b/s with moulded rib decoration externally, and base sherd, small vessel

904	100	earthenware	modern ceramics	296	1720	white	modern	rim, base, handle and b/s, seventy-one with blue transfer printing, nine with green, four with purple, two with magenta, six with brown, thirteen with black, five with hand-painted decoration of flowers and leaves, four with mocha-type stripes, two joining plate rim sherds with blue feather edging, cup rim sherd with blue sprig decoration in form of vine leaves, two b/s with similar blue sprigs, two b/s with pink lines, three with magenta, two with green, two with brown, one with blue stripe, five decorated sherds from planter-type vessels, jug handle with moulded decoration, poss stoneware, plate rim with moulded A, bowl rim sherd with moulded flower decoration, b/s with blue and green sponged decoration and magenta stripe internally
904	100	earthenware	local coarse ware	15	451	red	post med	rim, base, b/s and flakes, inc rim sherd from large pan and rim and b/s from flowerpot type; lower wall sherd in pinkish fabric with slip-decorated stripes externally; three b/s have internal brown glaze (two join)
904	100	earthenware	North Devon gravel-tempered	2	50	buff	post med	lid-seated rim sherd, large vessel, b/s with yellow internal glaze
904	100	stoneware	Staffs salt-glazed	5	44	white	18th C	plate rim sherd with moulded edge, plain rim sherd, footring sherd with trace of moulded decoration, b/s, one with moulded rib decoration externally
904	100	stoneware	salt-glazed	1	3	white	18th C	b/s with scratch blue decoration
904	100	slipware	yellow-glazed	2	24	buff	18th C	b/s, press-moulded dishes, one with broad slip-trail
904	100	slipware	brown-glazed	1	2	buff	18th C	mug rim sherd, reeded decoration externally
904	114	earthenware	local coarse ware	1	189	red	post med	lower wall sherd, large vessel, brown internal glaze
904	115	earthenware	modern ceramics	3	43	white	modern	plate b/s
904	115	ceramic	undiagnostic	2	9	red	n/a	fragments, may not be pottery, may not be modern
				3735	**25756**			

ASW = 6.9

Appendix V

The Glass Data

Site	Context	Type	Number	Weight (g)	Colour	Date	Notes
904	005	bottle	1	6	colourless		b/s, embossed with 'HAR...'
904	079	bottle	1	11	colourless		base sherd
904	079	bottle	11	212	pale green		base and b/s, one complete base from phial with conical kickup, three b/s have embossed letters '…PE & Co'; '…RS'; '…RIO…'
904	079	bottle	3	17	blue-green		base and b/s, one ribbed, base sherd contains many bubbles
904	079	bottle	7	90	dark green		base, neck and b/s, one base sherd has remains of high kickup and semi-melted surfaces
904	079	window	2	6	blue-green		one has frosted surfaces, one has fire-rounded edge
904	079	vessel	2	47	colourless		b/s, leaded glass, one from stemmed glass, one from probable tumbler
904	079	vessel	1	1	dark blue		flat b/s, possibly window
904	079	vessel	5	5	turquoise		opaque b/s, from ornament or cosmetic jar or similar
904	080	bottle	13	211	dark green	19th/20th C	neck and rim sherds, base and b/s; one has applied 'blob top' rim and striated neck, the second has plain 'cork' rim and visible mould lines
904	080	bottle	28	402	blue-green		base and b/s, inc base sherd from an octagonal-sided medicine bottle, several b/s with embossed letters '…ELLY'; 'HA…'; '..& EVA…'; '…NUI…' and 'TRAD…'; four b/s are more blue than remainder
904	080	bottle	1	6	colourless		base sherd, small flat-bottomed bottle
904	080	vessel	2	6	colourless		rim sherd from ?tumbler and decorated (press-moulded) body sherd
904	080	window	6	12	colourless		two have fire-rounded edges, one of these is blue-green
904	083	vessel	10	24	white		opaque rim sherd and b/s, some with moulded decoration
904	083	vessel	5	7	turquoise		opaque b/s, some discolouration/weathering
904	083	vessel	1	12	bright blue		opaque handle sherd
904	083	vessel	2	3	ruby		b/s, one is probably window
904	083	window	19	64	blue-green		three have one frosted surface, one has ribbed surface
904	083	bottle	1	7	brown		rim sherd from wide-necked ?jar, three horizontal moulded ribs, ?external screw thread
904	083	bottle	7	31	blue-green		neck, base and b/s, some from octagonal-sided bottles
904	083	bottle	27	152	colourless		base and b/s, one embossed with '…M…', two ribbed sherds from dish or ornament
904	083	bottle	37	458	blue-green		rim, base and b/s, inc b/s embossed with '…& FRAN…', '…D's', '…RICH…', '…TED', '…B & Co', '…KERS', '…EFORD', '…ARD…'; two rim sherds from mineral water bottles, one with double rim, two joining sherds from crown-top pop bottle, rim sherd from large jar with external screw-thread rim
904	083	bottle	27	298	dark green		base and b/s
904	083	vessel	9	156	colourless		leaded glass base and b/s, inc two tumbler base sherds, one with impressed dimples, one crazed and stained; footring sherd
904	086	window	17	44	colourless		some have blue-green tinge, one has ribbed surface
904	086	object	1	65	colourless		flat sherd with one bevelled straight edge, heavily scratched both sides, 8mm thick
904	086	bottle	2	21	brown		rim and b/s
904	086	bottle	26	230	dark green		rim, base and b/s inc 'blob top' rim sherd and phial base with prominent kickup
904	086	bottle	48	221	blue-green		rim, base and b/s inc joining jar rim sherds with frosted surface, bottle rim sherds x 3, b/s embossed '…RMAR…', b/s embossed '…GAN & …'
904	086	bottle	21	148	colourless		rim, base and b/s inc four-sided bottle shoulder embossed 'OKEL…' 'MONA B…' jar base sherd, tumbler base sherd with moulded star design, leaded glass rim and b/s, two b/s with etched decoration, very small b/s with ruby-coloured paint
904	086	bottle	9	76	blue		base and b/s inc two joining base sherds from eight-sided medicine bottle, one b/s is dark blue
904	086	vessel	1	2	colourless	18th cent	bowl rim or footring sherd with folded-over edge
904	086	vessel	1	3	ruby		b/s
904	086	vessel	5	3	turquoise		opaque b/s
904	088	bottle	33	1033	dark green	18th cent +	rim sherd with applied rim similar to that in 100, rim sherd with applied strip at rim edge, base and b/s inc phial base with high kickup
904	088	bottle	5	201	blue-green		Bowler-type mineral water bottle base embossed with '…ERIOR' '…R.S.' '…RS', and b/s, one frosted
904	088	object	1	84	green		stopper, dia. 60mm, embossed with 'Aire and Calder Bottle Co Castleford & London'
904	088	bottle	3	40	dark blue		b/s
904	088	bottle	5	31	pale blue		b/s
904	088	bottle	19	135	blue-green		mineral water bottle rim sherds x2, base and b/s, inc b/s embossed with 'S', '…RAN…', '…A N…', '…A…'
904	088	vessel	2	2	turquoise		opaque b/s
904	088	vessel	1	2	white		opaque b/s
904	088	window	14	38	blue-green		one with impurities

904	088	window	12	15	colourless		two with fire-rounded edge
904	088	vessel	6	44	colourless		rim and b/s, inc tumbler rim sherd, screw-top jar rim sherd and two b/s with etched decoration
904	088	vessel	2	19	colourless		base sherds, leaded glass, inc one with 'cut glass' decoration
904	100	bottle	10	455	green	19th cent +	neck and rim sherd with applied rim, edge broken off, base and b/s, one with high kickup
904	100	bottle	4	52	blue-green		b/s
904	100	window	1	2	blue-green		fire-rounded edge
904	100	vessel	1	1	turquoise		opaque b/s
904	100	vessel	1	10	colourless		tumbler, leaded glass with 'cut glass' decoration
904	115	window	1	1	blue-green		one frosted surface
904	115	vessel	1	1	amber		flat body sherd, possibly window
904	115	bottle	1	17	dark green		body sherd, surface scratches
			482	**5240**			

ASW = 10.9

Appendix VI

The Metalwork Data

Metal objects and metallurgical artefacts by contexts

Site	Site name	Context	Type	Description/Detail	Period	Quantity	Weight (g)
904	Brechfa Forest Connection	001	Fe	Iron hoop (dimensions: *c*.24.5cm (9.5 inch) diameter and 5cm wide; might be a hoop from a small wooden barrel or a bucket.	U/D	1	1654.6
904	Brechfa Forest Connection	001	Fe	Probably iron fastening; length 9cm (3.54 inch)	U/D	1	67.8
904	Brechfa Forest Connection	001	Coal	2 x fragments of coal, probably anthracite	U/D	2	8.8
904	Brechfa Forest Connection	005	Fe	3 x fragments of iron rod/wire (max. length of 14.5cm; weight 30.2g), 1 x nail with a hexagonal head (length 8cm, weigh 9g); 1 x machine bolt with a square head fastened with square nut, the bolt diameter is 1cm and 13.5cm of length (150.2g); 1 x concretion, could be a nail (13.2g)	U/D	6	202.6
904	Brechfa Forest Connection	058	Fe	1 x concretion	U/D	1	17.6
904	Brechfa Forest Connection	079/083	Fe	1 x square nail with hexagonal head (length 9cm, diameter 0.8cm, weight 34.6g); 1 x indeterminate trapeze shaped small iron plate (dimensions: 4cm length x 3.4cm wide, weight 21g)	Post-medieval /Modern	2	55.6
904	Brechfa Forest Connection	079/083	Slag	1 x fragment of grey very dense slag, slightly magnetic, on one side visible thin layer of black slag	Post-medieval?	1	367.4
904	Brechfa Forest Connection	079/083	Pb Fe	1 x lump of lead, could be galena ore (82g); 1 x indeterminate fragment of iron object (13.8g)	U/D	2	95.8
904	Brechfa Forest Connection	079/083	Fe	1 x probably gate holder (238.2g); 1 x bolt with a square head (105.2g); 1 x fragment of spring with plastic (31.2g); 1 x square headless nail, 12.3cm length, max. diameter 1.4cm (107g); 1 x fragment of pipe, 0.9cm diameter (9.5g); 1 x fragment of curved metal strip, 7cm length and 1.2cm wide (33.9g)	Post-medieval /Modern	6	525.0

Site	Site name	Context	Type	Description/Detail	Period	Quantity	Weight (g)
904	Brechfa Forest Connection	079/083	Fe	1 x horseshoe (645.6g); 1 x square nail with hexagonal head, 4.8cm length (8.2g); 1 x slightly bend rounded iron rod, 12.5cm length (52.6g); 1 x probably a nail (14.4g)	Post-medieval /Modern	4	720.8
904	Brechfa Forest Connection	079/083	Fe	2 x 'T'-head nails (max. 8.5cm length, 40g and 31.2g); 1 x nail with rose head, 9.5cm long (43g); 2 x 'L'-head nails/fragments of nails, max 6cm length (13g and 3g); 2 x two fragments of indeterminate cast iron object (89g); 1 x indeterminate fragment of iron strip (15.6); 1 x fragment of 'u'-shaped iron strip with nails - probably horseshoe tap attached to a heel (22.4g)	Post-medieval /Modern	9	257.2
904	Brechfa Forest Connection	079/083	Fe	1 x fragment of a screw, 6.8cm length	Post-medieval /Modern	1	46
904	Brechfa Forest Connection	079/083	Geological	3 x fragments of the same lump of iron ore	U/D	3	51.8
904	Brechfa Forest Connection	079/083	Pb	1 x lead scrap, 1.3cm wide	U/D	1	11.2
904	Brechfa Forest Connection	080/084	Fe	1 x fragment of curved iron rod, 7.4cm length (19.8g); 1 x fragment of curved cast iron strip, 1cm wide and 5.6cm long (8g); 1 x nail with a square head, 4.5cm length (3g); 1 x indeterminate iron object hollow inside, 2.5cm length (1g)	Post-medieval /Modern	4	31.8
904	Brechfa Forest Connection	080/084	Fe	1 x fragment of curved iron rod, 6.6cm length (17g); 1 x fragment of cast iron strip (16.5g)	Post-medieval /Modern	2	33.6
904	Brechfa Forest Connection	080/084	Fe	1 x fragment of a hinge (11g); 1 x bracket (49g); 1 x nail with square head (length of 3.5cm, 3g); 5 x probably nails fragments max. length of 4.3cm- min.3.5cm (total weight 19g); 1 x staple (4g); 1 x 9.4cm long pin, with roughly square head, which could be used to lock a door (59g); 2 x probably door latches (22g and 18g).	Post-medieval /Modern	12	185

Site	Site name	Context	Type	Description/Detail	Period	Quantity	Weight (g)
904	Brechfa Forest Connection	086	Fe	1 x probably knife handle (51g); 1 x machine screw with hexagonal head (*c.*7.5cm (2.5inch) long; 175g); 1 x carriage bolt with rounded head and two square nuts (80.4g); 1 x fragment of cast iron object, probably agricultural implement (992g); 1 x spike, probably railroad spike (20cm length, 283.2g); 7 x nails (80.4g); 1 x fragment of square washer (5g); 1 x half of a hinge (23.2g); 2 x indeterminate iron objects (149.2g), 1 x fragment of metal strip (5.8g)	Post-medieval /Modern	17	1845.2
904	Brechfa Forest Connection	086	Fe	1 x fragment of an iron rod (129.1g); 4 x nails (total weight 59.7g); 1 x fragment of nail or rod (length 2cm; 0.9g) 1 x fragments of metal strip in rectangular shape (6g) 1 x very corroded fragment of iron scraps (7.9g); 2 x fragments of the same object, door hinge or plate (51.2g)	U/D	10	254.8
904	Brechfa Forest Connection	086	Coal	2 x fragments of coal, probably anthracite	U/D	2	14.6
904	Brechfa Forest Connection	086	Slag	fragment of glassy slag in dark green colour	Post-medieval?	1	147.2
904	Brechfa Forest Connection	088	Fe	2 x indeterminate iron objects (18g); 1 x rounded thin plate (0.4g)	Post-medieval /Modern	3	18.4
904	Brechfa Forest Connection	088	Fe	1 x spring (184g); 4 x square nails, max. length 9cm (total 114g), 5 x probably nails, very corroded (total 176.4g); 1 x indeterminate fragment of bend metal strip (6.6g)	Post-medieval?	11	481
904	Brechfa Forest Connection	088	Pb	3 x lead scraps, 1.9cm-2.5cm wide	U/D	3	18.9
904	Brechfa Forest Connection	100	Fe	2 x ‘U’-shaped metal straps, fragments of horseshoe heel tap (14.6g); 1 x round rod with pyramidal head, probably railing (170.5g); 1 x 'L'-shaped metal strip (16.2g); 3 x fragmented nails (20.3g); 1 x door latch (176.8g)	Post-medieval /Modern	8	398.4

Site	Site name	Context	Type	Description/Detail	Period	Quantity	Weight (g)
904	Brechfa Forest Connection	100	Fe	3 x indeterminate iron concretions (33.4g); 2 x indeterminate metal strips slightly bended (24g); 1 x nail (7cm length, 26.4g); 1 x metal rod with one end flattened (17.6g)	Post-medieval /Modern	7	101.4
904	Brechfa Forest Connection	100	Geological	fragment of sedimentary rock, iron ore	U/D	1	6
904	Brechfa Forest Connection	100	Slag	fragment of dense glassy slag in dark green colour	Post-medieval?	1	42.4
904	Brechfa Forest Connection	115	Pb	lead scrap, 2.1cm wide	U/D	1	5.6
Total:						**123**	**7666.5**

Appendix VII

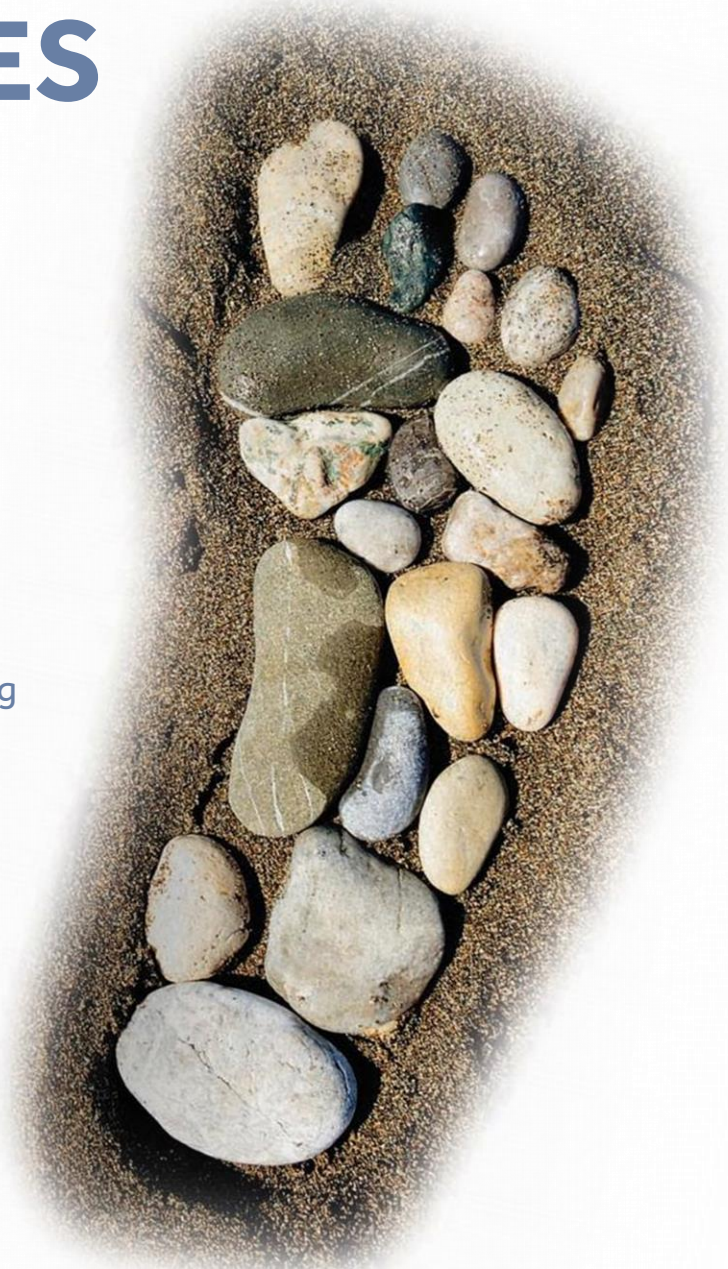
Geoarchaeological and Palaeoenvironmental Assessment Report by C.R. Batchelor & D.S. Young (Quest Quaternary Scientific, University of Reading)

QUEST
QUATERNARY SCIENTIFIC

University of Reading

BRECHFA FOREST CONNECTION NEAR CARMARTHEN WEST WALES

Geoarchaeological and Palaeoenvironmental Assessment Report



NGR: SN 2433 2214

Site code: FRS168

Date: 16th July 2018

Written by: C.R. Batchelor & D.S. Young

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CONTENTS

1. NON-TECHNICAL SUMMARY

A programme of geoarchaeological and palaeoenvironmental assessment was undertaken on monolith and bulk samples taken from the Brechfa Forest Connection site. This work was undertaken in order to: (1) establish the nature and age of the deposits preserved on site; (2) assess the palaeoenvironmental potential of the sequence; (3) highlight any indications of nearby human activity, and (4) provide recommendations for further analysis.

The results a sequence of deposits representative of deposition within a fluvial environment, modified by subsequent terrestrial and soil forming processes. The pollen assemblage is typical of a floodplain environment dominated by alder carr woodland and sporadic willow, with a ground flora of grasses, sedges and ferns. Due to an absence of material suitable for radiocarbon dating, the age of the sequences is unknown, and no further work is recommended.

2. INTRODUCTION

2.1 Site context

This report summarises the findings arising out of the geoarchaeological and palaeoenvironmental assessment undertaken by Quaternary Scientific (University of Reading) in relation to samples taken during the archaeological watching brief on the Brechfa Forest Connection, Towy Valley, near Carmarthen in West Wales (site code: FRS168; NGR: centred on SN 2433 2214; Figures 1 & 2). Quaternary Scientific were commissioned by Glamorgan-Gwent Archaeological Trust Ltd.

The site is located on the floodplain of the Afon Gwili (River Gwili) near its confluence with the Afon Tywi (River Towy). The British Geological Survey shows the site as located on Abergwilli Formation Mudstone bedrock overlain by alluvium incorporating gravel, sand, silt & clay, and capped by top-soil (http://mapapps.bgs.ac.uk/geologyofbritain/home.html?). Boreholes put down during construction of the Carmarthen Eastern by-pass and Abergwilli Bridge predominantly indicate sequences comprising 0.5-1m of top-soil resting on sand and gravel overlying Mudstone. However, in select sequences, finer grained, and more organic-rich deposits are recorded between the top-soil and sand & gravel deposits.

The Glamorgan-Gwent Archaeological Trust Ltd Archaeology carried out an archaeological watching brief in 2017. Nine samples (6 x monotin; 3 x bulk) were taken from four palaeochannels of unknown date. The samples taken relate to 14 horizons (overall), all apparently natural, unrelated to specific archaeological features.

2.2 Geoarchaeological and palaeoenvironmental significance

Organic-rich sediments (in particular peat) have high potential to provide a detailed reconstruction of prehistoric environments on both the floodplain and neighbouring dryland. In particular, there is the potential to increase knowledge and understanding of the interactions between hydrological change, human activity, vegetation succession and climate in the nearby area. Significant vegetation

changes could include the early Holocene/early Mesolithic transition from pine-dominated to mixed-deciduous dominated woodland; the late Mesolithic/Neolithic decline of elm woodland, and the late Neolithic/early Bronze Age decline of wetland and dryland woodland. Such investigations are carried out through the assessment/analysis of palaeoecological remains (e.g. pollen, plant macrofossils & insects) and radiocarbon dating.

2.3 Aims and objectives

A programme of geoarchaeological and palaeoenvironmental assessment is to be undertaken on monolith and bulk samples taken from the Brechfa Forest Connection site. The aims of this work are as follows: (1) to establish the nature and age of the deposits preserved on site; (2) to assess the palaeoenvironmental potential of the sequence; (3) to highlight any indications of nearby human activity, and (4) to provide recommendations for further analysis.

3. METHODS

3.1 Lithostratigraphic descriptions

Laboratory-based lithostratigraphic descriptions of the monolith samples from the four palaeochannels was carried out using standard procedures for recording unconsolidated sediment and peat, noting the physical properties (colour), composition (gravel, sand, clay, silt and organic matter) and inclusions (e.g. artefacts). The procedure involved: (1) cleaning the samples with a spatula or scalpel blade and distilled water to remove surface contaminants; (2) recording the physical properties, most notably colour; (3) recording the composition e.g. gravel, fine sand, silt and clay; (4) recording the degree of peat humification, and (5) recording the unit boundaries e.g. sharp or diffuse. The results are displayed in Tables 1-5 .

3.2 Pollen assessment

Nine subsamples were extracted for an assessment of pollen content. The pollen was extracted as follows: (1) sampling a standard volume of sediment (1ml); (2) adding two tablets of the exotic clubmoss *Lycopodium clavatum* to provide a measure of pollen concentration in each sample; (3) deflocculation of the sample in 1% Sodium pyrophosphate; (4) sieving of the sample to remove coarse mineral and organic fractions (>125µ); (5) acetolysis; (6) removal of finer minerogenic fraction using Sodium polytungstate (specific gravity of 2.0g/cm^3); (7) mounting of the sample in glycerol jelly. Each stage of the procedure was preceded and followed by thorough sample cleaning in filtered distilled water. Quality control is maintained by periodic checking of residues, and assembling sample batches from various depths to test for systematic laboratory effects. Pollen grains and spores were identified using the University of Reading pollen type collection and the following sources of keys and photographs: Moore *et al* (1991); Reille (1992). The assessment procedure consisted of scanning the prepared slides, and recording the concentration and preservation of pollen grains and spores, and the principal taxa on four transects (10% of the slide) (Table 6).

3.3 Macrofossil assessment

One macrofossil sample was extracted for the recovery of macrofossil remains including waterlogged plant macrofossils, wood, insects and Mollusca. The extraction process involved the following procedures: (1) removing a sample of 1 litre from select bulk samples; (2) measuring the sample volume by water displacement, and (3) processing the sample by wet sieving using 300µm and 1mm mesh sizes. Each sample was scanned under a stereozoom microscope at x7-45 magnifications, and sorted into the different macrofossil classes. The concentration and preservation of remains was estimated for each class of macrofossil. Preliminary identifications of the waterlogged seeds (Table 7) have been made using modern comparative material and reference atlases (e.g. Cappers *et al.,* 2006; NIAB, 2004). Nomenclature used follows Stace (2005).

4. RESULTS & INTERPRETATION OF THE LITHOSTRATIGRAPHIC DESCRIPTIONS

The lithostratigraphic descriptions of monolith samples <001> to <005> & <007> are displayed in Tables 1 to 5. The samples were taken from five separate sections, over a distance of ca. 550m between the A40 and A485. Each section contains a similar sequence of deposits consisting of clays, silts, sands and sub-angular to sub-rounded fine gravel. Most of the sequences are inorganic, but context (038) from [038] in <004> and <005> contain traces or low concentrations of organic-rich material and detrital wood. The deposits recorded in all sequences are consistent with those recorded in boreholes from the surrounding area (see 2.1). The finer grained deposits of clay and silt represent deposition under still and/or slow moving water conditions, whilst the sand and fine gravel represent deposition under low to moderate energy fluvial conditions. In addition, the sequences are very dry and contain evidence for subsequent terrestrial and soil forming processes in the form of rootlets, iron & manganese staining.

The sediment with greatest potential to provide a chronology for the sequences was the organic-rich silty clay of (036) from [038] recorded in <004> & <005>. A 1 litre bulk sample (<006>) from this unit was therefore processed for macrofossil remains (see section 6). Unfortunately however, no remains suitable for radiocarbon dating were recorded, and thus the sequences remain undated.

Table 1: Lithostratigraphic description of <001>, Palaeochannel [020], Brechfa Forest Connection, near Carmarthen, West Wales

Depth (m OD)	Depth (m bgl)	Context number	Description
8.30 to 8.05	0.70 to 0.95	(023) / (022)	10YR 5/3 to 10YR 5/4; Ag3, Ga1, Gg+; Brown to yellowish brown sandy silt, with traces of sub-rounded gravel up to 5cm in size. Iron-staining throughout with traces of microcharcoal / manganese; diffuse contact into:
8.05 to 8.00	0.95 to 1.00	(021)	10YR 5/1; Ag3, As1; Grey clayey silt with traces of iron-staining.

Table 2: Lithostratigraphic description of <002> & <003>, Palaeochannel [031], Brechfa Forest Connection, near Carmarthen, West Wales

Depth (m OD)	Depth (m bgl)	Context number	Description
Upper Tin <002>			
9.20 to 9.04	0.80 to 0.96	(034)	10YR 6/3; Ag4, Gg+; Pale brown silt with traces of gravel <2mm in size, and traces of iron staining; diffuse contact into:
9.04 to 8.90	0.96 to 1.10	(034)	10YR 6/3; Ag4, Gg+; Pale brown silt with traces of gravel <2mm in size, and traces of iron staining; more granular than 0 to 0.16m bgl.
Lower Tin <003>			
9.01 to 8.83	0.99 to 1.17	(033)	10YR 5/1; 10YR 5/1; Gg3, As1; Grey clayey gravel; gravel is sub-angular to angular and <2cm in size – frequently < 0.5cm in size; iron staining towards base of unit; sharp contact into:
8.83 to 8.71	1.17 to 1.29	(033) / (032)	10YR 5/1; Gg2, As2; Grey clayey gravel; gravel is fine and tends to occur in lenses within the clay.

Table 3: Lithostratigraphic description of <004>, Palaeochannel [038], Brechfa Forest Connection, near Carmarthen, West Wales

Depth (m OD)	Depth (m bgl)	Context number	Description
10.33 to 10.02	0.67 to 0.98	(036)	10YR 7/2; Ag4; Light grey silt with <2mm rootlet holes and rootlets; diffuse contact into:
10.02 to 9.92	0.98 to 1.08	(037)	10YR 6/2; Ag4, Ga+; Light brownish grey silt with traces of sand and rootlets; diffuse contact into:
9.92 to 9.85	1.08 to 1.15	(037)	10YR 6/2; Ag2, As2, Dl+, Sh+; Light brownish grey silty clay with traces of organic-matter and detrital wood; diffuse contact into:
9.85 to 9.83	1.15 to 1.17	(038)	10YR 5/2; As2, Sh1, Ag1, Dl+; Greyish brown organic-rich silty clay with traces of detrital wood.

Table 4: Lithostratigraphic description of <005>, Palaeochannel [038], Brechfa Forest Connection, near Carmarthen, West Wales

Depth (m OD)	Depth (m bgl)	Context number	Description
10.26 to 10.25	0.74 to 0.95	(036) / (037)	10YR 7/2; Ag4; Light grey silt with <2mm rootlet holes and rootlets; diffuse contact into:
10.25 to 9.94	0.95 to 1.06	(037)	10YR 6/2; Ag4, Ga+; Light brownish grey silt with traces of sand and rootlets; diffuse contact into:
9.94 to 9.86	1.06 to 1.14	(038)	10YR 6/2; Ag2, As2, Dl+, Sh+; Light brownish grey silty clay with traces of organic-matter and detrital wood; very crumbly; diffuse contact into:
9.86 to 9.76	1.14 to 1.24	(039)	10YR 5/2; As2, Gg2; Greyish brown fine gravelly clay; gravel is fine; very crumbly.

Table 5: Lithostratigraphic description of <009>, Palaeochannel [044], Brechfa Forest Connection, near Carmarthen, West Wales

Depth (m OD)	Depth (m bgl)	Context number	Description
9.39 to 9.19	0.61 to 0.81	(045)	10YR 5/4; Ag3, As1, Gg+; Yellowish brown clayey silt with traces of fine gravel & rootlets; diffuse contact into:
9.19 to 9.09	0.81 to 0.91	(046) / (047)	10YR 5/4; Ag3, Gg1; Yellowish brown silt with traces of fine gravel.

5. RESULTS & INTERPRETATION OF THE POLLEN ASSESSMENT

Samples were extracted for pollen assessment from those parts of the sequence containing the most fine-grained and organic-rich parts sediments, as these were deemed to have the greatest potential for the preservation of remains (contexts (030), (034), (036), (037) & (038)).

The results of the assessment indicate a generally very high concentration of pollen in a moderate state of preservation in those samples from (037) and (038) and the lower part of (036). Those samples from (030), (034) and the upper part of (036) contained a very low concentration of remains. The relatively poor preservation in all samples most likely relates to the very dry state, and relatively inorganic nature of the sediments highlighted during lithostratigraphic description. All samples contain a similar assemblage, with high levels of alder (*Alnus*), hazel (*Corylus* type), grasses (Poaceae) and polypody (*Polypodium vulgare*) with a range of other taxa including oak (*Quercus*), sedges (Cyperaceae), ferns (*Dryopteris* type) and more sporadic occurrences including plantain (*Plantago* type), dandelion (Lactuceae), pinks (Caryophyllaceae), willow (*Salix*) and elm (*Ulmus*).

This assemblage is typical of a floodplain environment dominated by alder carr woodland and sporadic willow, with a ground flora of grasses, sedges and ferns. Oak and hazel may also have occupied this woodland but is more likely to have grown towards the margins of the floodplain or on the dryland with elm. The pollen values of these dryland tree/shrub taxa are limited in comparison to alder, suggesting either that the fen carr woodland was dense and/or that the site was located at some distance from the dryland. Alternatively, it could suggest that the sequence is of late prehistoric or historic date, following dryland woodland clearance. The near absence of *Ulmus* pollen may also suggest that the sequence post-dates the well documented elm decline that occurred across north-western Europe during the early Neolithic. However, there is no palynological or microcharcoal evidence for human activity recorded within any of the samples assessed.

6. RESULTS & INTERPRETATION OF THE MACROFOSSIL ASSESSMENT

One bulk sample <006> from context (038) was extracted for the recovery of macrofossil remains including waterlogged plant macrofossils, wood, insects and Mollusca (Table 6).

The sample contained an absence of remains, with the exception of a very small number of very small and unidentifiable charcoal fragments, and a single Chenopodium cf album (fat hen) seed. No wood, insects, Mollusca or artefacts were recorded during the assessment. It is not possible to carry out any level of palaeoenvironmental reconstruction from this assemblage, and as outlined in section 4, none of these remains are suitable for radiocarbon dating.

Table 6: Results of the pollen assessment, Brechfa Forest Connection, near Carmarthen, West Wales

	Monolith sample	<2>	<3>	<4>	<4>	<4>	<4>	<4>	<5>	<5>
	Context	(034)	(033)	(036)	(036)	(037)	(037)	(038)	(038)	(038)
	Depth (m bgl)	0.88	1.19	0.85	0.93	1.01	1.09	1.17	1.04	1.08
Latin name	Common name									
Trees										
Alnus	alder			2	28	8	17	26	21	17
Quercus	oak				3	1	6	3	3	1
Ulmus	elm							1		
Betula	birch					2		1	1	
Shrubs										
Calluna vulgaris	heather					1			2	
Corylus type	e.g. hazel			3	14	15	15	8	14	14
Salix	willow							1		
cf Lonicera periclymenum	honeysuckle				1	1				
Herbs										
Cyperaceae	sedge family				2	1	1	1		
Poaceae	grass family	5			5	13	20	17	30	18
Cirsium type	thistle				1					
Lactuceae	dandelion family							1		1
Plantago type	plantain				3		2		1	1
Rumex acetosa / acetosella	sorrel				1			1		
Ranunculus type	e.g. buttercup				1					
Caryophyllaceae	pink family				3	1				1
Spores										
Pteridium aquilinum	bracken					1	5	1		1
Sphagnum	moss		1							1
Dryopteris	buckler fern	7	2		10	2		1		1
Polypodium vulgare	polypody	3	1	3	56	17	3	6	4	11
Unidentifiable					20		14			15
Total Land Pollen (grains counted)		5	0	5	63	43	59	60	71	53
Concentration*		1	0	1	5	5	5	5	5	5
Preservation**		2	0	2	3	3	3	3	3	3
Microcharcoal Concentration***		0	0	0	0	0	0	0	0	0
Suitable for further analysis		NO	NO	NO	YES	YES	YES	YES	YES	YES

*Key: *Concentration: 0 = 0 grains; 1 =1-75 grains, 2 = 76-150 grains, 3 =151-225 grains, 4 = 226-300, 5 =300+ grains per slide; **Preservation: 0 = absent; 1 = very poor; 2 = poor; 3 = moderate; 4 = good; 5 = excellent; ***Microcharcoal Concentration: 0 = none, 1= negligible, 2 = occasional, 3 = moderate, 4 = frequent, 5 = abundant*

Table 6: Results of the macrofossil assessment of samples from Brechfa Forest Connection, near Carmarthen, West Wales

				Charred					Waterlogged				Mollusca		Bone			
Sample & context number	Sample type	Volume processed (l)	Fraction	Charcoal (>4mm)	Charcoal (2-4mm)	Charcoal (<2mm)	Seeds	Chaff	Wood	Seeds	Sedge remains (e.g. stems/roots)	Identifications	Whole	Fragments	Large	Small	Fragments	Insects
<006> (038)	Bulk	1.0	>300µm	-	1	2	-	-	-	1	-	*Chenopodium* cf *album* (fat hen)	-	-	-	-	-	-

Key: 0 = Estimated Minimum Number of Specimens (MNS) = 0; 1 = 1 to 25; 2 = 26 to 50; 3 = 51 to 75; 4 = 76 to 100; 5 = 101+

7. CONCLUSIONS & RECOMMENDATIONS

A programme of geoarchaeological and palaeoenvironmental assessment was undertaken on monolith and bulk samples taken from the Brechfa Forest Connection site. This work was undertaken in order to: (1) establish the nature and age of the deposits preserved on site; (2) assess the palaeoenvironmental potential of the sequence; (3) highlight any indications of nearby human activity, and (4) provide recommendations for further analysis.

Each section contains a similar sequence of deposits consisting of clays, silts, sands and sub-angular to sub-rounded fine gravel. Most of the sequences are inorganic, but context (038) contains traces or low concentrations of organic-rich material and detrital wood. The finer grained deposits of clay and silt represent deposition under still and/or slow moving water conditions, whilst the sand and fine gravel represent deposition under low to moderate energy fluvial conditions. In addition, the sequences are very dry and contain evidence for subsequent terrestrial and soil forming processes in the form of rootlets, iron & manganese staining. The sediment is consistent with that recorded in nearby borehole records held by the BGS.

The pollen assemblage is typical of a floodplain environment dominated by alder carr woodland and sporadic willow, with a ground flora of grasses, sedges and ferns. The pollen values of dryland tree/shrub taxa are limited in comparison to alder, suggesting either that the fen carr woodland was dense and/or that the site was located at some distance from the dryland. Alternatively, the sequence could be of late prehistoric or historic date, postdating woodland clearance. However, there is no palynological or microcharcoal evidence for human activity recorded within any of the samples assessed. Overall, the assemblage similar to that recorded during investigation of samples from the River Taf, during work on the A477 from Red Roses to St Clears. Radiocarbon dating of the most organic-rich elements of this sequence took place from the early Neolithic to Iron Age (Batchelor & Marini, 2013).

Due to an absence of material suitable for radiocarbon dating, no further work is recommended on the recovered sequences.

8. REFERENCES

Batchelor, C.R. & Marini, N. (2013) *A477 St Clears to Red Roses, Carmarthenshire, Wales: pollen analysis*. Quaternary Scientific (QUEST) Unpublished Report November 2013; Project Number 061/12.

Cappers, R.T.J., Bekker R.M. & Jans J.E.A. (2006) *Digital Seed Atlas of the Netherlands*. Groningen Archaeological Series 4. Barkhuis, Netherlands

Moore, P.D., Webb, J.A. & Collinson, M.E. (1991) *Pollen Analysis*. Oxford: Blackwell Scientific.

Reille, M. (1992) *Pollen et spores D'Europe et D'Afrique du Nord*. Laboratoire de Botanique historique et Palynologie, Marsaille.

Stace, C. (2005) *New Flora of the British Isles. Cambridge*: Cambridge University Press.

Tröels-Smith, J. (1955) Karakterisering af løse jordater (Characterisation of unconsolidated sediments), *Danm. Geol. Unders.,* Ser IV 3, 73.

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QUALITY CONTROL

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As part of our desire to provide a quality service we would welcome any comments you may wish to make on the content or presentation of this report.

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