Cnewr X, Sennybridge
Powys
Watching Brief Report
Planning Application Number:
14/10606/FUL (Brecon Beacons)

Report by: Trysor

For: TGVHydro Ltd

November 2016

trysor

Cnewr X, Sennybridge, Powys
Watching Brief Report
Planning Application Number: 14/10606/FUL (Brecon Beacons)

By

Jenny Hall, MCIfA & Paul Sambrook, MCIfA
Trysor

Trysor Project No. 2016/529

For: TGVHydro Ltd

November 2016

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Cover photograph: Excavation through the former line of tramway, looking north northeast.

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DYDDIAD 7fed Tachwedd 2016 DATE 7th November 2016

Paratowyd yr adroddiad hwn gan bartneriad Trysor. Mae wedi ei gael yn gywir ac yn derbyn ein sêl bendith.

This report was prepared by the Trysor partners. It has been checked and received our approval.

JENNY HALL MCIfA *Jenny Hall*

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Croesawn unrhyw sylwadau ar gynnwys neu strwythur yr adroddiad hwn.

We welcome any comments on the content or structure of this report.

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Jenny Hall (BSc Joint Hons., Geology and Archaeology, MCIfA) had 12 years excavation experience, which included undertaking watching briefs prior to becoming the Sites and Monuments Record Manager for a Welsh Archaeological Trust for 10 years. She has been an independent archaeologist since 2004 undertaking a variety of work that includes upland survey, desk-based appraisals and assessments, and watching briefs.

Paul Sambrook (BA Joint Hons., Archaeology and Welsh, MCIfA, PGCE) has extensive experience as a fieldworker in Wales. He was involved with Cadw's pan-Wales Deserted Rural Settlements Project for 7 years. He also undertook Tir Gofal field survey work and watching briefs. He has been an independent archaeologist since 2004 undertaking a variety of work including upland survey, desk-based appraisals/assessments, and watching briefs.

Contents

1. Summary

1.1 In July 2016, Trysor undertook a watching brief during groundworks for a water pipe, and an electricity cable centred on SN8908221934 as one of the condition on a consented hydro scheme at Cnewr, near Sennybridge.

1.2 Mitigation lessened the damage to the former tramway, CNX2016_007. The water pipe line was rerouted so that it would be laid in the same trench as the cable trench across the farm access track and through a gateway. This trench passed through the northern part of the gateway and the tramway passed through the southern side of the gateway.

1.3 The drainage gully, CNX2016_009, was not seen in the section of the cable trench, and presumably was a shallow feature that did not cut the subsoil.

1.4 The tramway, CNX2016_007, was cut by the water pipe trench at SN8908121935. Hand excavation of this part of the trench showed that the gentle slope had been cut into to create a level area and a layer of gravel and stones laid down. The bed of the tramway itself was a stone band placed on top of this layer.

2. Copyright

3. Introduction

3.1 TGV Hydro Ltd, of CRiC, Beaufort Street, Crickhowell, NP8 1BN, commissioned Trysor heritage consultants to write a Written Scheme of Investigation for Cnewr X, one of two consented, micro-hydro schemes on the Cnewr estate. Cnewr X relates to planning application number: 14/10606/FUL (Brecon Beacons) and utilises the Nant Cnewr Fach.

3.2 Trysor produced a written scheme of investigation for a watching brief, see Appendix B, and it was approved by the archaeological advisor to Brecon Beacons National Park.

4. The development

4.1 The development consists of a high head micro hydro scheme, with two intakes and shared forebay tank, pipeline and turbine house. It takes water from the Nant Cnewr Fach at SN8973521541 and SN8973321636, via two intakes on separate branches of the stream, and returns it at SN8906421914 via a turbine housing, see Figures 1 & 2.

4.2 The electricity cable runs from SN8973321636 to approximately SN8907222064.

4.3 In order to lessen impact on the tramroad, the cable trench and water pipe are to be placed in the same trench across the farm access track and through the northern side of the gateway at SN89098521936. This was an alteration from the plan in the WSI, see Appendix B.

5. Planning context of the proposed development

5.1 An archaeological condition was imposed on the granting of the planning application.

The developer will ensure that a suitably qualified archaeological contractor is present during excavation of trenches though archaeologically sensitive areas so that an archaeological watching brief can be maintained.

The archaeological watching brief will be carried out in accordance with a written scheme of investigation which has been submitted by the applicant and approved in writing by the Local Planning Authority and must meet the standards laid down by the Institute of Archaeologists in their Standard and Guidance for an Archaeological Watching Brief.

A copy of the watching brief report shall be submitted to the Local Planning Authority for approval, to the Royal Commission on the ancient and Historical Monuments of Wales for inclusion on the National Monument Record, and to Clwyd Powys Archaeological Trust for inclusion in the Regional Historic Environment Record (HER) within two months of the fieldwork being completed.

Reason
To allow for recording of the structure of archaeological interest during the construction phase.

5.2 Trysor produced a written scheme of investigation for the evaluation, see Appendix B, and this was approved by the archaeological advisor to Brecon Beacons National Park.

6. Scope of Work

6.1 The written scheme of investigation (Appendix B) stated that a watching brief would be undertaken on groundworks where the trench for the water pipeline crossed the former tramway CNX2016_007 at approximately SN8908221929. The watching brief would also include where the electricity cable trench cut the former drainage gully, CNX2016_009, which connected to a culvert, CNX2016_008, through the tramroad.

6.2 The watching brief was carried out in accordance with the Chartered Institute for Archaeologists' *Standard and Guidance for an Archaeological Watching Brief* (Chartered Institute for Archaeologists, 2014).

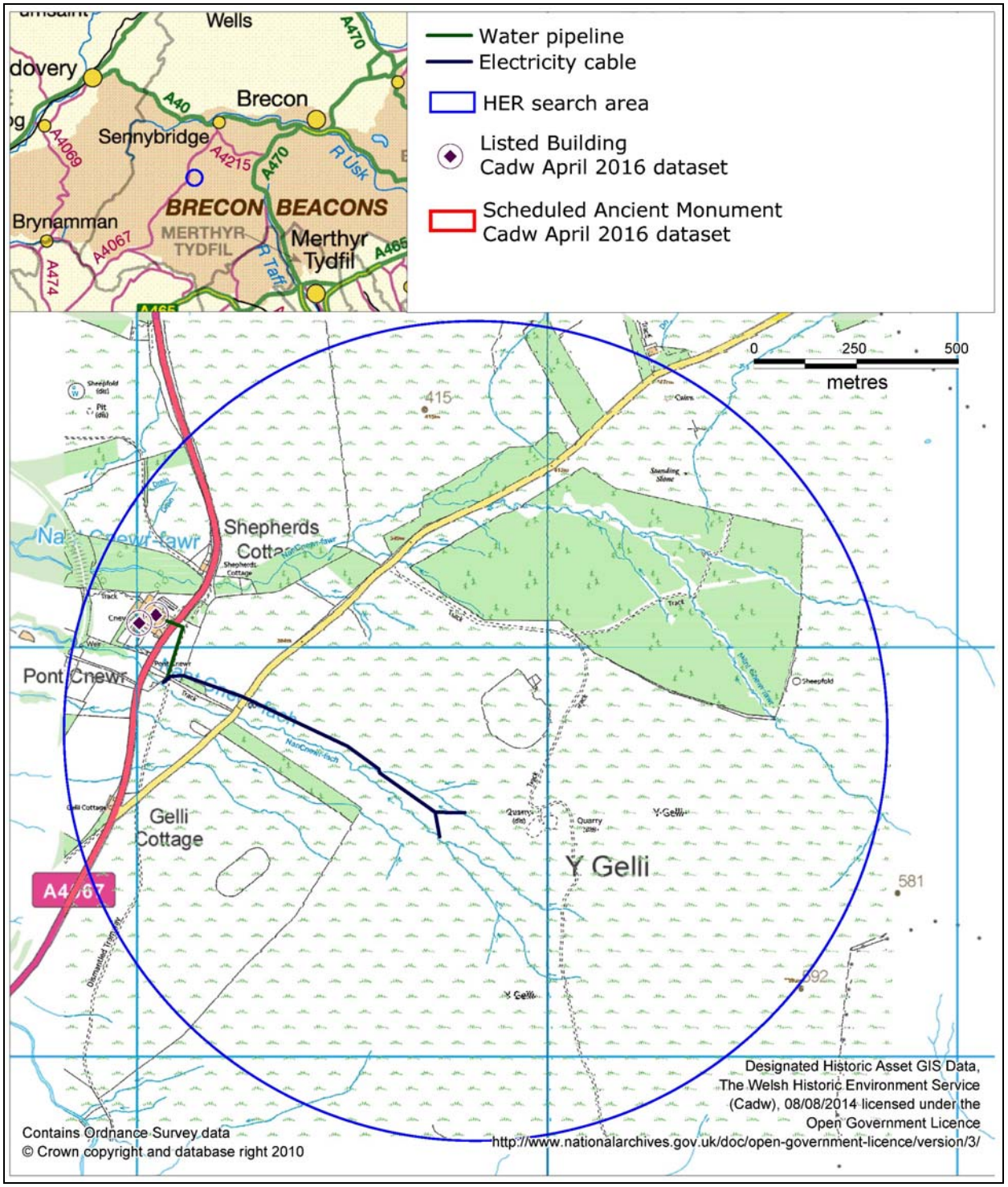

Figure 1: Location of proposed development

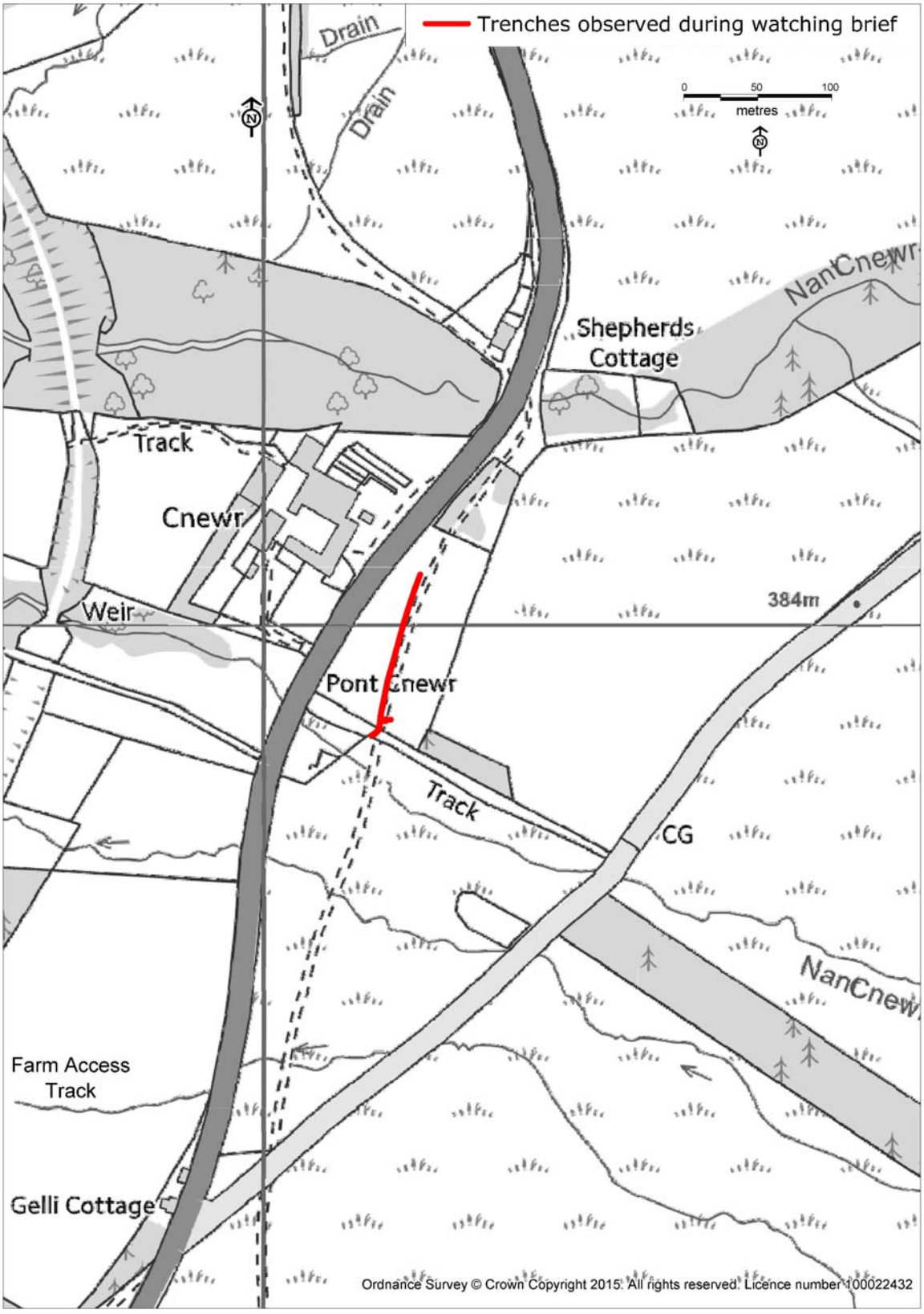

Figure 2: Location of the trenches that were observed during the watching brief

7. The Development Site

7.1 The development site lies on a gentle northwest facing slope on the northeast side of the Nant Cnewr Fach, on Cnewr estate land.

7.2 The underlying strata at the development site consist of interbedded argillaceous rocks and sandstones, part of the St Maughans Formation. These rocks were formed from river deposits in the Devonian Period, approximately 398 to 416 million years ago.

7.3 Glacial till laid down over 2 million years ago in the Quaternary period overlies the hard rock.

8. Historical and Archaeological Overview

8.1 The Brecon Forest Tramroad network was created during the first half of the 1820s, to enable the raw materials of the Great Forest estate to be moved for export out of the district. A limestone quarry at Pwll Byrfe was initially favoured, but rapidly abandoned in favour of the lower-lying Penwyllt Quarry. The tramroad network ran southwards to the Swansea Canal at Gurnos, from where minerals could be sent by barge to Swansea and onwards through its busy port. This also gave access to the coal reserves of the upper Swansea valley around Ystradgynlais. Northwards, the Tramroad system went as far as Sennybridge, where limekilns were to produce the valuable lime fertiliser required on several farms owned by Christie in the Usk valley at Sennybridge, as well as at Cnewr. This also allowed Christie to supply the market for lime further away from the valuable limestone outcropping in the upper Swansea valley.

8.2 Cnewr Farm, one of Christie's main farms in the Great Forest, was built in 1821. It stood immediately alongside the main tramroad to Sennybridge and was supplied with the lime required to improve the holding via the tramroad, but also became an important point on the network. Lime sheds, stables and housing were all constructed at Cnewr to be of use to the operation of the tramroad system.

8.3 The tramroad bed, CNE2016_007, see appendix B, is still visible immediately to the east of the farm buildings at Cnewr, surviving as a linear feature, with sections of cuttings and embankments. There is no evidence within the development area and adjacent ground that the tramroad connected directly to the building complex.

9. Fieldwork Methodology

9.1 The watching brief was carried out on 15th July 2016.

9.2 The site code used was CNX2016.

9.3 The excavation of the cable trench was watched from SN8907221925 to SN8910622034, see Figure 2 and 3.

9.4 The excavation of the water pipe was watched from SN8907221925 to SN8908621936, see Figures 2 and 3. Where the water pipe crossed the tramway, the turf was removed by machine and then the trench excavated and widened by hand.

10. Site Stratigraphy

10.1 The stratigraphy in the two trenches was recorded.

10.3 One metal pin, similar to those in situ within the gateway, was recovered from (203). It was not in situ and decayed. No other artefacts were recovered and no samples were taken.

10.2 Context Catalogue

Table 1: Context catalogue

Context Number	Trench	Depth	Description	Interpretation
201	Both	Up to 0.2m, but generally less than this	Uniform light brown loam	Topsoil
202	Water Pipe Only	Up to 0.15m	Band of stones,	Tramway bed of tramway CNX2016_007
203	Water pipe Only	<0.08m	Stone/gravel layer extending for a width of at least 6 metres. A metal spike or pin was found lying on this surface, similar to metal pins still in situ in the gateway to the west. The pin was not retained as it was in poor condition.	Stone/gravel layer laid down on the surface of the cutting before the tramway bed created.
204	Water Pipe only	Up to 0.30 metres at this point	A cut made into the gentle slope to create a level surface.	Cutting made to level the ground for the tramway bed.
205	Both	-		Natural subsoil

Table 2: Site Stratigraphy

201 Topsoil
↓
202 Tramway bed
↓
203 Stone/gravel surface
↓
204 Cut to create level surface
↓
205 Natural Subsoil

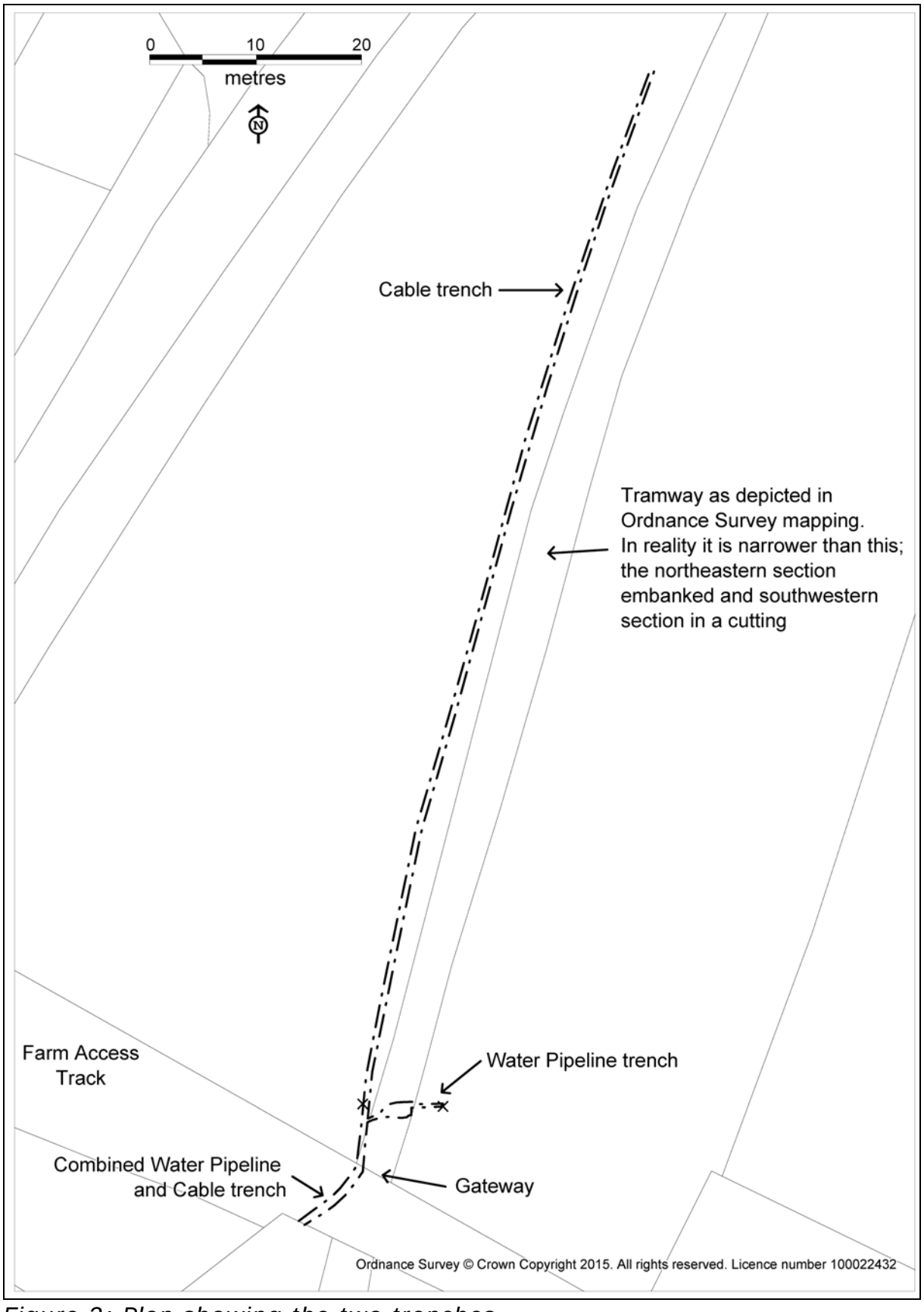

Figure 3: Plan showing the two trenches

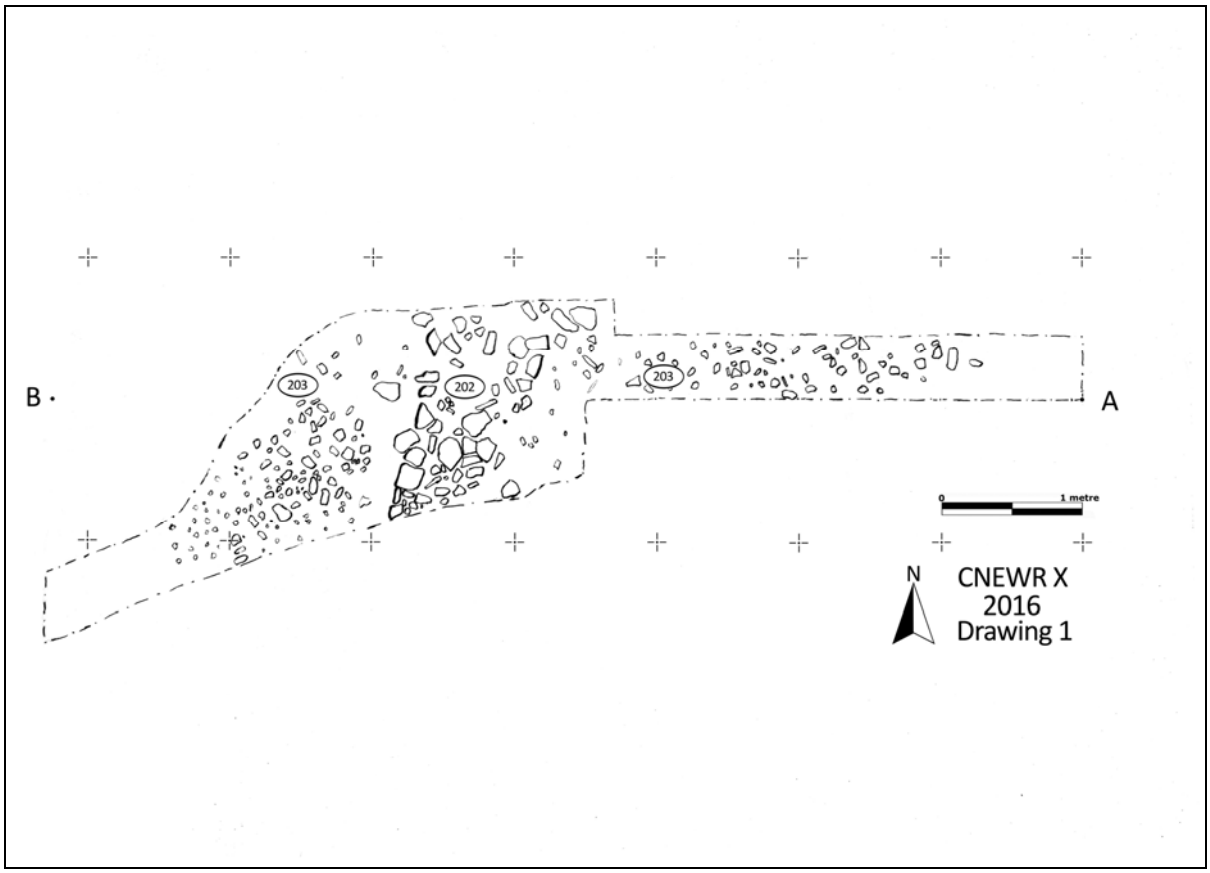

Figure 4: Detail of trench across tramway. The remains of the tramway bed, (202), overlies a stone/gravel layer (203). Drawn at 1:20 in the field, scale in this drawing as shown by scale bar.

11. Photographs

11.1 Colour digital photographs were taken during the watching brief and excavation of trenches using a 16M pixel camera. The following table describes the content of each photograph included in the project archive and their locations are provided in the following map, see Figure 5. The photographs are included in Appendix A at the end of the report.

Table 5: Photographs

Photo Number	Description	Date Taken	Direction
CNX2016_123	Excavation of the electricity cable trench, looking south southwest.	15/07/2016	Looking south southwest.
CNX2016_124	Excavation of the waterpipe/cable trench through the gateway to the east of the access track.	15/07/2016	Looking northeast
CNX2016_125	The excavated electric cable trench where it crossed the line of linear feature, CNX2016_009.	15/07/2016	Looking southwest
CNX2016_126	The hand excavated area of the water pipeline trench, showing the remains of the tramway, CNX2016_202.	15/07/2016	Looking north
CNX2016_127	Tramway bed, CNX2016_202	15/07/2016	Looking north northeast.
CNX2016_128	Tramway bed, CNX2016_202	15/07/2016	Looking west
CNX2016_129	Tramway bed, CNX2016_202	15/07/2016	Looking east

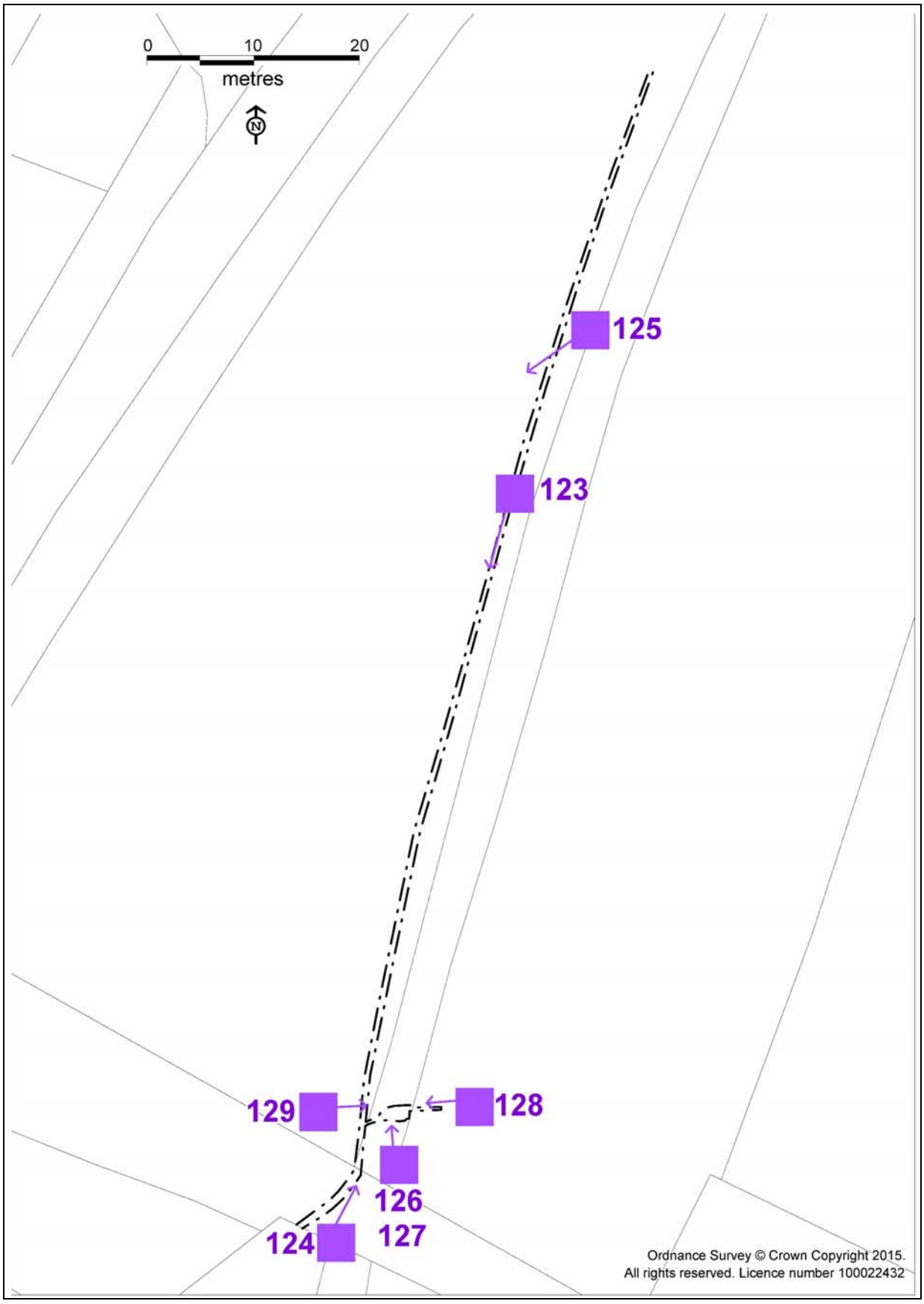

Figure 5: Location of photographs

12. Conclusion

12.1 By taking the combined water pipe trench and cable trench through the northern side of the gateway, damage to the remains of the tramway here was avoided. Metal pins recorded during the WSI were left in situ.

12.2 The cable trench cut through the line of drainage gully, CNX2016_009, did not show anything in section and it would seem that the drainage gully was shallow and did not cut through the subsoil.

12.3 Where the water pipe trench diverged from the cable trench, it crossed the former line of the tramway. The gentle, northwest-facing slope had been cut into (context 204), and then a stone, gravel surface (context 203) laid down. A stone bed (202) for the tramway (CNX2016_007) was placed on to of this stone/gravel surface, becoming covered by topsoil (context 201) since it went out of use.

13. Archive

13.1 The archive and a copy of the report and photographs will be deposited with the National Monuments Record, Aberystwyth. Photographs are in TIFF format, following the standard required by the RCAHMW.

13.2 A further copy of the report will be supplied to the Historic Environment Record at Clwyd Powys Archaeological Trust, Welshpool.

14. Sources

14.1 Standards and Guidance

Chartered Institute for Archaeologists, 2014a, *Standard and Guidance for the Collection, Documentation, Conservation and Research of Archaeological Materials*

Chartered Institute for Archaeologists, 2014b, *Standard and Guidance for an Archaeological Watching Brief*

Chartered Institute for Archaeologists, 2014c, *Standard and Guidance for the creation, compilation, transfer and deposition of archaeological archives*

APPENDIX A

PHOTOGRAPHS FROM WATCHING BRIEF

Plate 1: CNX2016_123. Excavation of the electricity cable trench, looking south southwest. The cable trench is to the north of the tramway.

Plate 2: CNX2016_124. Excavation of the waterpipe/cable trench through the gateway to the east of the access track, looking northeast. The trench was at the northern side of the gateway, and avoided the tramway which passed 1 metre or so to the south.

Plate 3: CNX2016_125. The excavated electric cable trench where it crossed the line of linear feature, CNX2016_009, looking southwest. Although the feature can be clearly seen crossing the field north of the trench, nothing was visible in the trench itself. Presumably the feature was shallow and had not cut the subsoil.

Plate 4: CNX2016_126. Looking north across the hand excavated area of the water pipeline trench, showing the remains of the tramway, context, CNX2016_202.

Plate 5: CNX2016_127. Tramway bed, CNX2016_202, looking north northeast.

Plate 6: CNX2016_128. Tramway bed, CNX2016_202, looking west.

Plate 7: CNX2016_129. Tramway bed, CNX2016_202, looking east.

APPENDIX B

WRITTEN SCHEME OF INVESTIGATION

CNEWR X HYDRO SCHEME, SENNYBRIDGE
WRITTEN SCHEME OF INVESTIGATION
PLANNING APPLICATION 14/10606/FUL

Contents

**CNEWR HYDRO SCHEME, CNEWR ESTATE,
SENNYBRIDGE, BRECON, POWYS
WRITTEN SCHEME OF INVESTIGATION**

Planning application – 14/10606/FUL (Brecon Beacons)

1. Introduction

1.1 TGV Hydro have commissioned Trysor heritage consultants to write a Written Scheme of Investigation for Cnewr X, one of two consented, micro-hydro schemes on the Cnewr estate. This one relates to planning application number: 14/10606/FUL (Brecon Beacons) and utilises the Nant Cnewr Fach.

1.2 The development runs between SN8973521541 and SN8906421914, southeast of the Cnewr estate buildings at Crai, Sennybridge, Powys. The export electricity cable will run from SN8906421914 northeast to the estate buildings, see Figure 1.

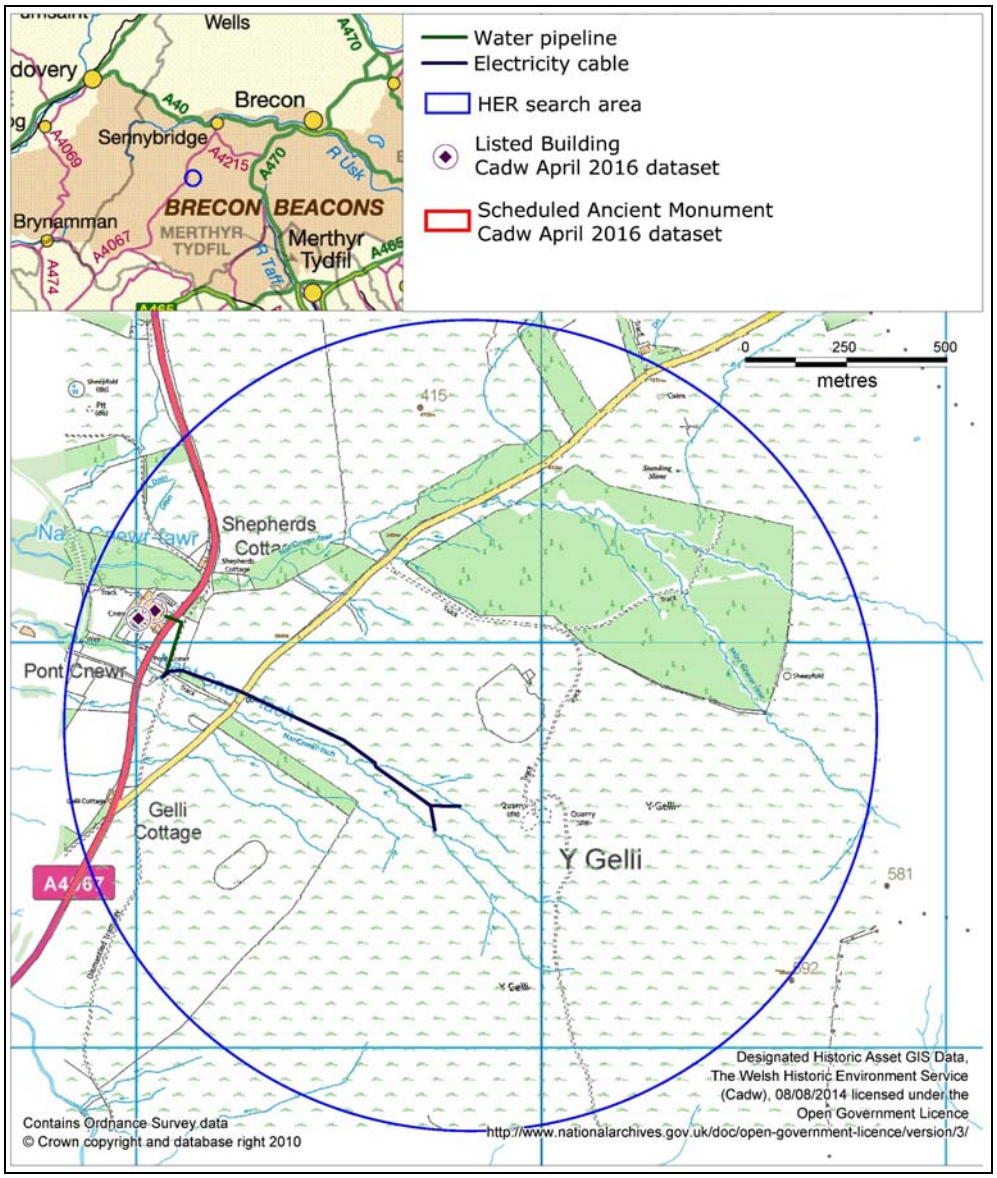

Figure 1: Location of the hydro scheme at Cnewr X.

2. Objective of the Written Scheme of Investigation
2.1 The objective of this written scheme of investigation (WSI) is to specify the method to be used for a programme of archaeological work prior to or during construction of the consented hydro scheme for Cnewr X on the Cnewr Estate, near Sennybridge.

3. The development
3.1 The development consists of a high head micro hydro scheme, with two intakes and shared forebay tank, pipeline and turbine house. It takes water from the Nant Cnewr Fach at SN8973521541 and SN8973321636, via two intakes on separate branches of the stream, and returns it at SN8906421914 via a turbine housing.

3.2 The electricity cable runs from SN8973321636 to approximately SN8907222064.

4. Conditions on the planning consent
4.1 In granting approval for the application, the Local Planning Authority imposed a condition on the consent; the condition specifies the actions necessary to mitigate the impact of the development on the archaeological resource.

The developer will ensure that a suitably qualified archaeological contractor is present during excavation of trenches though archaeologically sensitive areas so that an archaeological watching brief can be maintained.

The archaeological watching brief will be carried out in accordance with a written scheme of investigation which has been submitted by the applicant and approved in writing by the Local Planning Authority and must meet the standards laid down by the Institute of Archaeologists in their Standard and Guidance for an Archaeological Watching Brief.

A copy of the watching brief report shall be submitted to the Local Planning Authority for approval, to the Royal Commission on the ancient and Historical Monuments of Wales for inclusion on the National Monument Record, and to Clwyd Powys Archaeological Trust for inclusion in the Regional Historic Environment Record (HER) within two months of the fieldwork being completed.

Reason
To allow for recording of the structure of archaeological interest during the construction phase.

4.2 No brief for the watching brief was supplied by Brecon Beacons National Park, (BBNP, undated)

5. Nature of the archaeological resource
5.1 In the delegated decision report dating to June 2014 it was stated that the Brecon Forest Tramroad would be impacted on by the hydro scheme.

5.2 In order to write this WSI, the relevant data was acquired from the Clwyd Powys Historic Environment Record, search area shown on Figure 1, and historic mapping consulted.

5.3 The entire route of the pipeline was walked with Gemma Samuel of TGV Hydro and areas where there would be groundworks identified. Historic assets on the line of the pipeline or other groundworks were recorded as well as other historic assets close by.

5.4 This information was collated and can be seen in Figure 2, Appendix A and B. An assessment of the significance of the historic asset and the level of impact and appropriate mitigation was made.

5.5 Eleven historic assets were recorded by Trysor, along the route of the scheme, most of minor importance. The water pipeline, or electricity cable, will cut through parts of six of these, a small leat (CNX2016_002, a trackway of unknown date (CNX2016_003), a stone boundary wall (CNX2016_005), a former field boundary (CNX2016_006), now just a low earthwork, the Brecon Forest Tramroad (CNX2016_007) and a drainage gully (CNX2016_009) associated with the Tramroad.

5.6 The Brecon Forest Tramroad network was established by John Christie, a wealthy man who had amassed a fortune in the indigo trade, after he acquired much of the crown lands known as the Great Forest of Brecon, when it was sold by the Crown during 1819-20 to raise funds following the Napoleonic wars.

5.7 Christie was intent exploiting the mineral wealth of his large estate, which included important outcrops of limestone, a source of the lime used as an agricultural fertiliser to improve the land, especially useful on the acidic soils of upland Wales.

5.8 The Brecon Forest Tramroad network was created during the first half of the 1820s, to enable the raw materials of the Great Forest estate to be moved for export out of the district. A limestone quarry at Pwll Byrfe was initially favoured, but rapidly abandoned in favour of the lower-lying Penwyllt Quarry. The tramroad network ran southwards to the Swansea Canal at Gurnos, from where minerals could be sent by barge to Swansea and onwards through its busy port. This also gave access to the coal reserves of the upper Swansea valley around Ystradgynlais. Northwards, the Tramroad system went as far as Sennybridge, where limekilns were to produce the valuable lime fertiliser required on several farms owned by Christie in the Usk valley at Sennybridge, as well as at Cnewr. This also allowed Christie to supply the market for lime further away from the valuable limestone outcropping in the upper Swansea valley.

5.9 Cnewr Farm, one of Christie's main farms in the Great Forest, was built in 1821. It stood immediately alongside the main tramroad to Sennybridge and was supplied with the lime required to improve the holding via the tramroad, but also became an important point on the network. Lime sheds, stables and housing were all constructed at Cnewr to be of use to the operation of the tramroad system.

5.10 The tramroad bed, CNX2016_007, is still visible immediately to the east of the farm buildings at Cnewr, surviving as a linear feature, with sections of cuttings and embankments. It is not thought that the tramroad connected directly to the building complex.

5.11 The tramroad bed, CNX2016_007, will be directly affected by both the water pipeline and the electricity cable trench.

5.12 A former drainage gully, CNX2016_007, that connected with a culvert, CNX2016_008, through the tramroad, will be cut by the electricity cable trench.

5.13 The former field boundary, CNX2016_006, will be cut by the water pipeline.

5.14 The stone built boundary wall, CNX2016_005, will be cut by the water pipe. The wall is tumbled at this point and damage to the standing wall should be avoided. Another option could be to pass the pipeline through sheep crawl nearby to the east SN8927821907.

5.15 The trackway, CNX2016_003 will be cut by the water pipeline.

5.16 The leat, CNX2016_002 will be cut by the water pipeline.

5.17 The other features recorded will not be affected by the development.

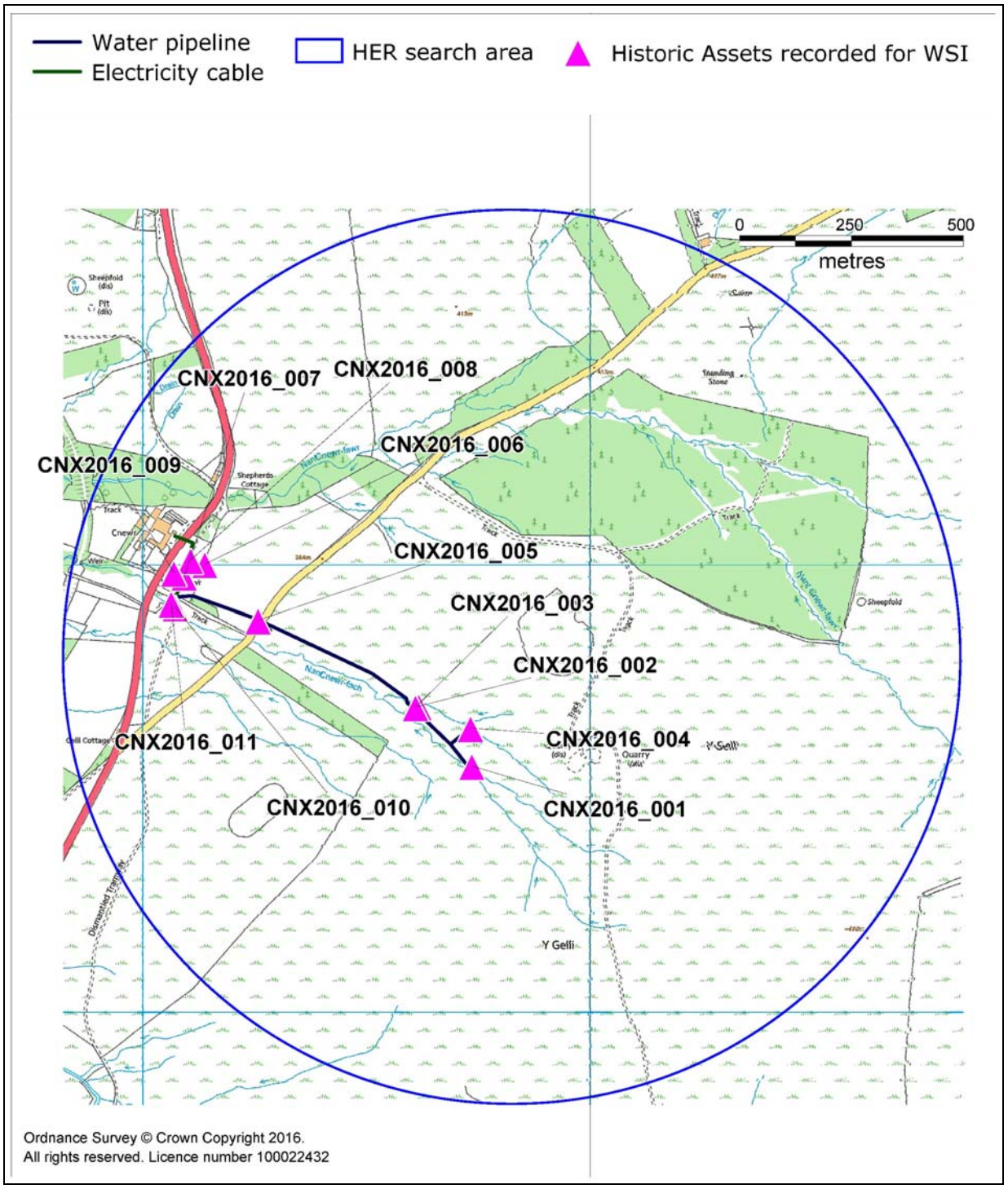

Figure 2: Historic assets recorded during WSI

6. Aims and Objectives of Proposed Mitigation

6.1 The objectives of the archaeological works are:

- to monitor groundworks, and to identify, investigate and record all significant buried archaeological deposits revealed on the site during the course of the development groundworks;

- at the conclusion of the project, to produce an integrated archive for the project work and a report setting out the results of the project and the archaeological conclusions that can be drawn from the recorded data.

6.2 The report will be provided to the NMR and regional HER, along with project database so that information can be added to the existing information about the archaeological resource.

6.3 The Industrial to Modern (1750 to present) theme, in the Research Framework for the Archaeology of Wales, cites transport links as an area of interest. The most recent document in 2011, from the first review of the framework, identified that active research was being undertaken in transport systems, including railways pre 1850. The research aim was identified as :

The significance, form and archaeological survival of transport corridors – turnpikes, government-sponsored roads, canals, railways – in terms of their engineering, the industries they served and the settlements they sustained; their context and significance in terms of similar sites elsewhere in the world
Industrial and Modern, A Research Framework for the Archaeology of Wales
Version 02, Final Paper February 2011

6.4 The investigation of the tramway will provide some information towards this research aim.

7. Scope of Mitigation

7.1 A watching brief will be undertaken on groundworks where the pipeline and electricity cable crosses the former tramway CNX2016_007 at approximately SN8908221929. The watching brief should also include the former drainage gully CNX2016_007 that connected with a culvert CNX2016_008 through the tramroad, where it would be cut by the electricity cable trench.

7.2 No watching brief is thought necessary on field boundary CNX2016_006, the stone boundary wall CNX2016_005, the trackway CNX2016_003 and the leat CNX2016_002, all of which are minor features which would experience very low impacts. Care should be taken in each case however to minimise direct and indirect physical impacts on these features i.e. heavy machinery should avoid further erosion or damage to earthwork features and in the case of the boundary wall CNX2016_005 disturbance should be minimal and any section of walling dismantled should be reinstated.

7.3 The Chartered Institute for Archaeologists' Standard and Guidance for Archaeological Watching Brief (CIfA, 014b) was used to write this Written Scheme of Investigation. They define a watching brief as:

"*…..a formal programme of observation and investigation conducted during any operation carried out for non-archaeological reasons. This will be within a specified area or site on land, inter-tidal zone or underwater, where there is a possibility that archaeological deposits may be disturbed or destroyed. The programme will result in the preparation of a report and ordered archive.*"

7.4 The purpose of a watching brief is described as:

"a. to allow, within the resources available, the preservation by record of archaeological deposits, the presence and nature of which could not be established (or established with sufficient accuracy) in advance of development or other potentially disruptive works

b. to provide an opportunity, if needed, for the watching archaeologist to signal to all interested parties, before the destruction of the material in question, that an archaeological find has been made for which the resources allocated to the watching brief itself are not sufficient to support treatment to a satisfactory and proper standard

A watching brief is not intended to reduce the requirement for excavation or preservation of known or inferred deposits, and it is intended to guide, not replace, any requirement for contingent excavation or preservation of possible deposits.

The objective of a watching brief is to establish and make available information about the archaeological resource existing on a site.

7.5 This watching brief should establish whether any features can be identified as of possible archaeological significance within the groundworks of the proposed development.

7.6 If archaeological features are encountered further mitigation may be required.

8. Methodology

8.1 The watching brief will be carried out in accordance with Chartered Institute for Archaeologists' *Standard and Guidance for an Archaeological Watching Brief* (CIfA, 2014a)

8.2 A two-person team will undertake the watching brief and features of archaeological interest recorded. Excavation of any features will be limited to that necessary to establish their extent and character, unless their excavation is required to allow the development to proceed.

9. Recording

9.1 A plan of the groundworks, and representative sections if appropriate, will be drawn, at an appropriate scale, recording all features of archaeological interest. The plan will be based on the applicants' survey drawings of the development area. If archaeological features of contexts are encountered, plans will be drawn on permatrace to a scale of 1:10, 1:20 or 1:50, as appropriate.

9.2 A written record of all activity will be kept in a project specific notebook. If archaeological contexts are encountered they will be recorded following the *Central Excavation Unit Manual: Part 2: Recording*, 1986, using a consecutive numbering system.

9.3 Any artefacts will be dealt with in accordance with the guidance provided in the Chartered Institute for Archaeologists *Standard and Guidance for the collection, documentation, conservation and research of archaeological materials* (CIfA, 2014b). Any artefacts will be retained, cleaned and stored. Following reporting they will be returned to the applicant.

9.4 In the event of human burials being discovered the Ministry of Justice will be informed. The remains will initially be left *in situ*, and if removal is required, a Ministry of Justice licence will be applied for under the Burial Act 1857.

9.5 Colour digital photographs will be taken, as appropriate, using a 16M pixel camera. A written record will be made on site of the photographs taken. Appropriate photographic scales will be used.

10. Contingency arrangements if archaeological features are discovered

10.1 In the event that archaeological remains are encountered, where appropriate investigation falls outside the scope of this specification, a meeting between Trysor, the applicant, Brecon Beacon National Park Heritage Officer Archaeology or their representative, and the Local Planning Authority case officer will be convened in order to agree a course of action. The applicant will be responsible for paying for any further work necessary such as curatorial monitoring, finds conservation, finds specialist, radio-carbon dating etc.

11. Health & Safety

110.1 Trysor will undertake a risk assessment in accordance with their health and safety policy. Managing safe working alongside machinery within confined spaces will be a priority.

12. Reporting

12.1 A report on the watching brief will be prepared according to the requirements of section 3.8 of the Chartered Institute for Archaeologists' *Standard and Guidance for an Archaeological Watching Brief* (CIfA, 2014a, p.14) following the completion of the work. Copies of the report will be provided to the client, the Regional Historic Environment Record and the National Monuments Record.

13. Dissemination

13.1 A summary of the work undertaken and its findings will be submitted to *Archaeology in Wales*, the annual review of archaeological work in Wales collated the Council for British Archaeology Wales (CBA Wales).

12.2 The project will be entered onto OASIS.

14. Archive

14.1 The archive will be deposited with the National Monuments Record, including a copy of the final report in accordance with the CIfA's *Standard and Guidance for the creation, compilation, transfer and deposition of archaeological archives* (IfA, 2013c). This archive will include all written, drawn and photographic records relating directly to the investigations undertaken. Digital archives will follow the standard required by the RCAHMW (RCAHMW, 2015).

14.2 The significance of any artefacts retrieved will be assessed and this will determine where may be an appropriate place for deposition, subject to agreement by the legal owner, the landowner. Brecknock Museum in Brecon has limited storage space and does not take human remains (National Panel for Archaeological Archives in Wales, 2008). The National Monuments Record again has limited scope for storing artefacts but they are well equipped for storing paper and digital records.

14.3 If the artefacts are deposited separately to the rest of an archive, a copy of the report and archive will be deposited with the artefacts.

15. Resources to be used

15.1 Two members of staff will undertake the watching brief. They will be equipped with standard field equipment, including digital cameras, GPS and first aid kits. Trysor have access to the computer hardware and software required to deliver the completed final report and archive to a professional standard.

16. Qualification of personnel

16.1 Trysor is a Registered Organisation with the Chartered Institute for Archaeologists and both partners are Members of the Chartered Institute for Archaeologists, www.archaeologists.net

16.2 Jenny Hall (BSc Joint Hons., Geology and Archaeology, MCIfA) had 12 years excavation experience, which included undertaking watching briefs prior to becoming the Sites and Monuments Record Manager for a Welsh Archaeological Trust for 10 years. Since 2004 she has been an independent archaeologist undertaking a variety of work that includes upland survey, desktop assessments and watching briefs.

16.3 Paul Sambrook (BA Joint Hons., Archaeology and Welsh, MCIfA, PGCE) has extensive experience as a fieldworker in Wales. He was involved with Cadw's pan-Wales Deserted Rural Settlements Project for 7 years. He also undertook Tir Gofal field survey work and watching briefs. Since 2004 he has been an independent archaeologist undertaking a variety of work that includes upland survey, desktop assessments and watching briefs.

16.4 Dee Williams (BA Archaeology and Classical Studies) graduated from the University of Wales, Lampeter. After University she pursued a career in field archaeology. Her first supervisory post was with Wessex Archaeology (Manpower Service Commission 1984-5) as the Finds Officer on a large multi-period urban excavation in Dorchester. From 1986 to 1994 she was employed as the Finds Officer with the Dyfed Archaeological Trust. From 1994 to the present she has worked as an administrator in the Department of Archaeology

at Lampeter but continues her research interests in finds with specialisms in ceramics and glass.

16.5 Martin Locock (BA, MCIfA) – Martin has undertaken many bone reports for Glamorgan Gwent Archaeological Trust and others. He has also undertaken studies of bricks and mortar.

16.6 Dr Ian Brooks (PhD, BA, MCIfA, FSA) - Flint assemblages of any size from a single artefact to many thousands of artefacts can be analysis. Recent projects have varied from a few artefacts recovered during the excavation of a late medieval house in North Wales to over 16,000 Mesolithic artefacts from Bath. In addition to standard typological studies Ian Brooks has developed specialist techniques to investigate the original source of the flint and the deliberate heat treatment of flint by the use of micropalaeontology.

16.7 Wendy Carruthers (BSc, MSc) has worked as a freelance archaeobotanist for over 30 years, mainly analysing plant macrofossils from sites in southern and central England and Wales. After graduating in Manchester she worked as a field botanist for a year, followed by a couple of years on archaeological excavations as a digger and planner. I then took the Masters course in Plant Taxonomy at Reading, and started working as a freelance archaeobotanist after I graduated. In the early 1990s she was the English Heritage Archaeobotanist at the Ancient Monuments Laboratory for four years.
Over the years she has analysed charred, waterlogged, mineralised, silicified and desiccated plant remains. She is particularly interested in preservation by mineralisation.

17. Insurance & Professional indemnity
17.1 Trysor has Public Liability and Professional Indemnity Insurance.

18. Project identification
18.1 The project has been designated Trysor Project No. 2016/509. Site code is CNX2016.

19. Monitoring
19.1 Staff from Brecon Beacons National Park will be welcome to visit the site and monitor the work. They will be informed as to when work will start on site and contact details given.

20. Sources

Ordnance Survey, 1813, Original Surveyors Drawings
Ordnance Survey, 1832, 1 inch to a mile survey
Ordnance Survey, 1887, 1:2500
Ordnance Survey, 1905, 1:10560

20.1 Non-published

Central Excavation Unit, 1986, *Central Excavation Unit Manual: Part 2: Recording*, 1986

National Panel for Archaeological Archives in Wales, *2008, National Standards for Wales for Collecting and Depositing Archaeological Archives*

RCAHMW, 2015, *RCAHMW guidelines for Digital Archives,* Version 1

20.2 Published

CIfA, 2014a, *Standard and Guidance for an archaeological watching brief*

CIfA, 2014b, *Standard and Guidance for the collection, documentation, conservation and research of archaeological materials.*

CIfA, 2014c, *Standard and Guidance for the creation, compilation, transfer and deposition of archaeological archives*

20.3 Web based materials

Historic Landscape Characterisation, http://www.ggat.org.uk/cadw/historic_landscape/main/english/historical.htm, accessed 06/05/2016
Historic Wales, http://historicwales.gov.uk/, accessed 06/05/2016

20.4 Data Sources

Cadw, Historic Landscape all-Wales dataset, supplied 31/07/2014
Cadw, Historic Landscape Character Areas, supplied 08/08/2014
Cadw, Listed Building all-Wales dataset, supplied April 2016
Cadw, Parks and Gardens all-Wales dataset, supplied August 2015
Cadw, Scheduled Ancient Monument all-Wales dataset, supplied April 2016

Jenny Hall & Paul Sambrook
Trysor, May 2016, revised June 2016

Appendix A
Site Gazetteer

ID number:	CNX2016_001	NANT CNEWR FACH HYDRO INTAKE	
Clwyd Powys HER PRN:		***NMR NPRN:***	
NGR:	SN8973621551		
Period:	21st century	***Broadclass:***	Industrial
Form:	Other Structure	***Condition:***	Intact
Site Status:			

SAM number: ***LB number:*** ***grade:***

Trysor Description:	An intake, part of a micro hydro scheme on the Nant Cnewr Fach. It takes the form of a concrete dam across the stream. A slot was cut into the slope to its southwest to take the bypass water pipe whilst it was being constructed.
Rarity:	Not rare
Documentation:	
Group Value:	Part of micro hydro scheme
Evidential Value:	Extant structure, planning documents
Historical Value:	None
Aesthetic Value:	None
Communal Value:	None
Significance:	Minor Importance
Any Direct Impact?:	No None
Any Indirect Impact?:	No None
Comment on Impact:	The intake is part of the consented hydro scheme. It has not impacted on any historic asset.

ID number:	CNX2016_002	NANT CNEWR FACH LEAT	
Clwyd Powys HER PRN:		***NMR NPRN:***	
NGR:	SN8961721685		
Period:	Post Medieval?	***Broadclass:***	Water Supply and Drainage
Form:	Earthwork	***Condition:***	Damaged
Site Status:			

SAM number: ***LB number:*** ***grade:***

Trysor Description: This small leat links two branches to the Nant Cnewr Fach. It is now grassed cover and no longer holds water. The northern end is not as clear as the rest of it but it is approximately 80 metres long. It is approximately 0.80 metre to 1 metre wide and up to 0.30 metres deep with a low bank on its downslope side. Its purpose is not known but is it not shown on historic Ordnance Survey maps. There is a trackway, CNX2016_003 just downslope of it and it is possible that it is

Rarity: Not common

Documentation:

Group Value: None

Evidential Value: Earthwork feature

Historical Value: None

Aesthetic Value: None

Communal Value: None

Significance: Minor Importance

Any Direct Impact?: Yes
Low

Any Indirect Impact?: No
None

Comment on Impact: The water pipe will be placed through the leat.

ID number:	CNX2016_003	NANT CNEWR FACH TRACKWAY	
Clwyd Powys HER PRN:		***NMR NPRN:***	
NGR:	SN8961021683		
Period:	Post Medieval?	***Broadclass:***	Transport
Form:	Earthwork	***Condition:***	Damaged
Site Status:			

SAM number: ***LB number:*** ***grade:***

Trysor Description: An earth-cut trackway recorded on the ground running between two branches of the Nant Cnewr Fach stream. It aligned roughly north to south and on aerial photographs it can be seen running beyond the stream in both directions.

Rarity: Common

Documentation:

Group Value: None

Evidential Value: Earthwork

Historical Value: None

Aesthetic Value: None

Communal Value: None

Significance: Minor Importance

Any Direct Impact?: Yes
Low
The pipeline will cut through the trackway

Any Indirect Impact?: No
None

Comment on Impact: The water pipeline will cut through the trackway.

ID number: CNX2016_004 NANT CNEWR FACH HYDRO INTAKE

Clwyd Powys HER PRN: ***NMR NPRN:***

NGR: SN8973321636

Period: 21st century ***Broadclass:*** Industrial

Form: Other Structure ***Condition:*** Intact

Site Status:

SAM number: ***LB number:*** ***grade:***

Trysor Description: An intake, part of a micro hydro scheme on the Nant Cnewr Fach. It takes the form of a small concrete dam across the stream.

Rarity: Not Rare

Documentation:

Group Value: Part of micro hydro scheme

Evidential Value: Extant structure, planning documents

Historical Value: None

Aesthetic Value: None

Communal Value: None

Significance: Minor Importance

Any Direct Impact?: No
None
The intake is part of the consented scheme

Any Indirect Impact?: No
None

Comment on Impact: The intake is part of the consented hydro scheme. It has not impacted on any historic asset.

ID number: CNX2016_005 CNEWR FACH BOUNDARY WALL

Clwyd Powys HER PRN: ***NMR NPRN:***

NGR: SN8925821877

Period: Post Medieval ***Broadclass:*** Monument (By Form)

Form: Other Structure ***Condition:*** Damaged

Site Status:

SAM number: ***LB number:*** ***grade:***

Trysor Description: A drystone boundary wall that runs along the northwestern side of the minor road and defines the southeastern side of a pasture field. The wall is in various states of repair and is reinforced by a post and wire fence. At SN8927821907 is a sheep crawl through the base of fence, see photo CNX2016_110.

Rarity: Common

Documentation:

Group Value: Part of the farmed landscape

Evidential Value: Extant wall

Historical Value: None

Aesthetic Value: None

Communal Value: None

Significance: Minor Importance

Any Direct Impact?: Yes
Low
The pipeline needs to pass through this wall.

Any Indirect Impact?: No
None

Comment on Impact: The pipeline needs to pass through this wall. Either a more tumbled section of the wall should used, or look at if is possible to use a former sheep crawl through the base of the wall at SN8927821907.

ID number: CNX2016_006 CNEWR
FIELD BOUNDARY

Clwyd Powys HER PRN: ***NMR NPRN:***

NGR: SN8913922002

Period: Post Medieval ***Broadclass:*** Monument (By Form)

Form: Other Structure ***Condition:*** Near Destoyed

Site Status:

SAM number: ***LB number:*** ***grade:***

Trysor Description: A denuded, former field boundary, now a stone spread up to 2 metres wide and 0.30 metres high. The boundary is shown on historic Ordnance Survey maps. This feature is also recorded as CNE2016_006 in the Cnewr 1 database

Rarity: Common

Documentation:

Group Value: Part of field system

Evidential Value: Remains of boundary, boundary line shown on Ordnance Survey maps.

Historical Value: None

Aesthetic Value: None

Communal Value: None

Significance: Minor Importance

Any Direct Impact?: Yes
Very Low
The pipeline will pass through this feature.

Any Indirect Impact?: No
None

Comment on Impact: The water pipeline will pass through this feature.

ID number: CNX2016_007 BRECON FOREST TRAMROAD - CNEWR TRAMROAD

Clwyd Powys HER PRN: ***NMR NPRN:***

NGR: SN8909321974

Period: Post Medieval ***Broadclass:*** Transport

Form: Earthwork ***Condition:*** Various

Site Status:

SAM number: ***LB number:*** ***grade:***

Trysor Description: The Brecon Forest Tramroad network was established by John Christie, a wealthy man who had amassed a fortune in the indigo trade, after he acquired much of the crown lands known as the Great Forest of Brecon, when it was sold by the Crown to raise funds for the Napoleonic wars during 1819-20.

Christie was intent exploiting the mineral wealth of his large estate, which included important outcrops of limestone, a source of the lime used as an agricultural fertiliser to improve the land, especially useful on the acidic soils of upland Wales.

The Brecon Forest Tramroad network was created during the first half of the 1820s, to enable the raw materials of the Great Forest estate to be moved for export out of the district. A limestone quarry at Pwll Byrfe was initially favoured, but rapidly abandoned in favour of the lower-lying Penwyllt Quarry. The tramroad network ran southwards to the Swansea Canal at Gurnos, from where minerals could be sent by barge to Swansea and onwards through its busy port. This also gave access to the coal reserves of the upper Swansea valley around Ystradgynlais. Northwards, the Tramroad system went as far as Sennybridge, where limekilns were to produce the valuable lime fertiliser required on several farms owned by Christie in the Usk valley at Sennybridge, as well as at Cnewr. This also allowed Christie to supply the market for lime further away from the valuable limestone outcropping in the upper Swansea valley.

Cnewr Farm, one of Christie's main farms in the Great Forest, was built in 1821. It stood immediately alongside the main tramroad to Sennybridge and was supplied with the lime required to improve the holding via the tramroad, but also became an important point on the network. Lime sheds, stables and housing were all constructed at Cnewr to be of use to the operation of the tramroad system.

The tramroad bed is still visible immediately to the east of the

farm buildings at Cnewr, surviving as a linear feature, with sections of cuttings and embankments. It is not thought that the tramroad connected directly to the building complex.

In the field opposite Cnewr, the centre and northern tramroad of the tramroad are an embankment, at least 2 metres wide at base and up to 0.60 metres high. The north northeastern end has been truncated along its eastern side by. The central

section survives in good condition, including a culvert, CNX2016_008, through it, at SN8910722011. This culvert was presumably for drainage to stop water building up on the eastern up slope side of the tramroad embankment. A slight earthwork feature, CNX2016_009, can be seen running southwest to the corner of the field, and appears to have been a gully to take water from the culvert and away for the buildings at Cnewr.

The western section of the tramroad in this field is a cutting rather than an embankment. It passes through the modern gateway, at SN8908421930, and in the stone/cobble surface of the trackway, iron pegs set in the ground can be found, and a stone with a bored hole in it is cast to one side. These appear to be the remains of the tram bed.

This feature is also recorded as CNE2016_007 in the Cnewr 1 database.

Rarity: Not rare

Documentation:

Group Value: Part of Brecon Forest Tramroad

Evidential Value: Earthwork, historical documents and research

Historical Value: Part of the Brecon Forest Tramroad

Aesthetic Value: None

Communal Value: None

Significance: Regionally Important

Any Direct Impact?: Yes
Low/Moderate
The pipeline will have to dug through part of the trackbed, where the tramroad crosses the modern track. Although this area is eroded, what appear to be in situ iron pegs/bolts remain.

Any Indirect Impact?:	Yes Low There is potential for the edge of the tramroad to be damaged during pipe laying.
Comment on Impact:	The pipeline will have to dug through part of the trackbed, where the tramroad crosses the modern track. Although this area is eroded, what appear to be in situ iron pegs/bolts remain. There is also potential for damage of the western side of the tramroad during the trenching for the electricity cable.

ID number: CNX2016_008 CNEWR
CULVERT

Clwyd Powys HER PRN: ***NMR NPRN:***

NGR: SN8910722011

Period: Post Medieval ***Broadclass:*** Water Supply and Drainage

Form: Other Structure ***Condition:*** Damaged

Site Status:

SAM number: ***LB number:*** ***grade:***

Trysor Description: A stone built culvert, now partially collapsed, through the Brecon Forest tramroad, CNX2016_007, at SN8910722011.

It appears to have allowed drainage of water from upslope of the tramroad, through the tramroad, and then into a former gully, CNX2016_009, now a very shallow earthwork across the field.

Rarity: Not rare

Documentation:

Group Value: Part of Brecon Forest Tramroad

Evidential Value: Extant feature

Historical Value: Part of Brecon Forest Tramroad

Aesthetic Value: None

Communal Value: None

Significance: Minor Importance

Any Direct Impact?: No
None

Any Indirect Impact?: No
None

Comment on Impact: There would be no impact from the water pipe or the electricity cable.

ID number: CNX2016_009 CNEWR
DRAINAGE GULLY

Clwyd Powys HER PRN: ***NMR NPRN:***

NGR: SN8907021983

Period: Post Medieval ***Broadclass:*** Water Supply and Drainage

Form: Earthwork ***Condition:*** Damaged

Site Status:

SAM number: ***LB number:*** ***grade:***

Trysor Description: A drainage gully, now just visible as a slight linear depression , running from culvert CNX2016_008 southwest to the comer of the field. It appears that it would have taken water from culvert CNX2016_008, to aid drainage around tramroad, CNX2016_007

Rarity: Common

Documentation:

Group Value: Part of Brecon Forest tramroad

Evidential Value: Linear earthwork

Historical Value: None

Aesthetic Value: None

Communal Value: None

Significance: Minor Importance

Any Direct Impact?: Yes
Low
The electricity cable trench will be cut through it

Any Indirect Impact?: No
None

Comment on Impact: The electricity cable trench will cut through it.

ID number:	CNX2016_010	NANT CNEWR FACH BRIDGE	
Clwyd Powys HER PRN:		***NMR NPRN:***	416742
NGR:	SN8907321906		
Period:	Post Medieval	***Broadclass:***	Transport
Form:	Earthwork	***Condition:***	Near Intact
Site Status:			

SAM number: ***LB number:*** ***grade:***

Trysor Description: An earthwork bridge, that carried the Brecon Forest Tramroad over the Nant Cnewr Fach. The water runs through a stone built pipe and then an earthwork bridge built over it. The feature remains in good condition although the stone built pipe is starting to distort.

Rarity: Not Rare

Documentation:

Group Value: Part of Brecon Forest Tramroad

Evidential Value: Extant earthwork

Historical Value: Part of Brecon Forest Tramroad

Aesthetic Value: None

Communal Value: None

Significance: Locally Important

Any Direct Impact?: No
None

Any Indirect Impact?: No
None

Comment on Impact: There will be no impact on the bridge from the development.

ID number:	CNX2016_011	NANT CNEWR FACH TURBINE HOUSE	
Clwyd Powys HER PRN:		***NMR NPRN:***	
NGR:	SN8906421914		
Period:	21st century	***Broadclass:***	Industrial
Form:	Earthwork	***Condition:***	Intact
Site Status:			

SAM number: ***LB number:*** ***grade:***

Trysor Description:	The turbine house for the development has already been built on the northeast side of the Nant Cnewr Fach
Rarity:	Not Rare
Documentation:	
Group Value:	Part of the Cnewr X micro hydro scheme
Evidential Value:	Extant structure, planning documents
Historical Value:	None
Aesthetic Value:	None
Communal Value:	None
Significance:	Minor Importance
Any Direct Impact?:	No None
Any Indirect Impact?:	No None
Comment on Impact:	The intake is part of the consented hydro scheme. It has not impacted on any historic asset.

Appendix B:
Site Photographs

Plate 1: CNX2016_101, Micro hydro intake, CNX2016_001, on the southwestern branch of the Cnewr Fach stream, looking east northeast.

Plate 2: CNX2016_102, Cut created in slope to the southwest of the micro hydro intake, CNX2016_001, on the Nant Cnewr Fach to take the bypass water pipe when the intake was being built, looking southwest.

Plate 3: CNX2016_103, Leat, CNX2016_002, parallel to the Nant Cnewr Fach at this point, looking southeast.

Plate 4: CNX2016_104, Leat, CNX2016_002, as it crosses the slope between the two branches of the Nant Cnewr Fach stream at SN8961721685, looking southwest,

Plate 5: CNX2016_105, Trackway, CNX2016_003, where it crosses the Nant Cnewr Fach, on the southernmost branch, looking southeast.

Plate 6: CNX2016_106, Micro hydro scheme intake, CNX2016_004, across the northeastern branch of the Nant Cnewr Fach, looking southeast.

Plate 7: CNX2016_107, Micro hydro scheme intake, CNX2016_004, across the northeastern branch of the Nant Cnewr Fach, looking east.

Plate 8: CNX2016_108, Soil stratigraphy, just up stream of CNX2016_004, looking southwest.

Plate 9: CNX2016_109, Boundary wall, CNX2016_005, at approximate location that the pipeline will pass through it, looking northwest.

Plate 10: CNX2016_110, Boundary wall, CNX2016_005. At SN8927821907 is a sheep crawl which could be utilised so that the boundary wall does not have to be damaged, looking southeast.

Plate 15: CNX2016_111, Denuded former field boundary, CNX2016_006, looking south southwest.

Plate 16: CNX2016_112, Tramroad, CNX2016_007, looking south southwest.

Plate 17: CNX2016_113, Tramroad, CNX2016_007, looking north northeast.

Plate 18: CNX2016_114, Detail of iron pegs/bolts, possible remains of tramroad CNX2016_007, looking east.

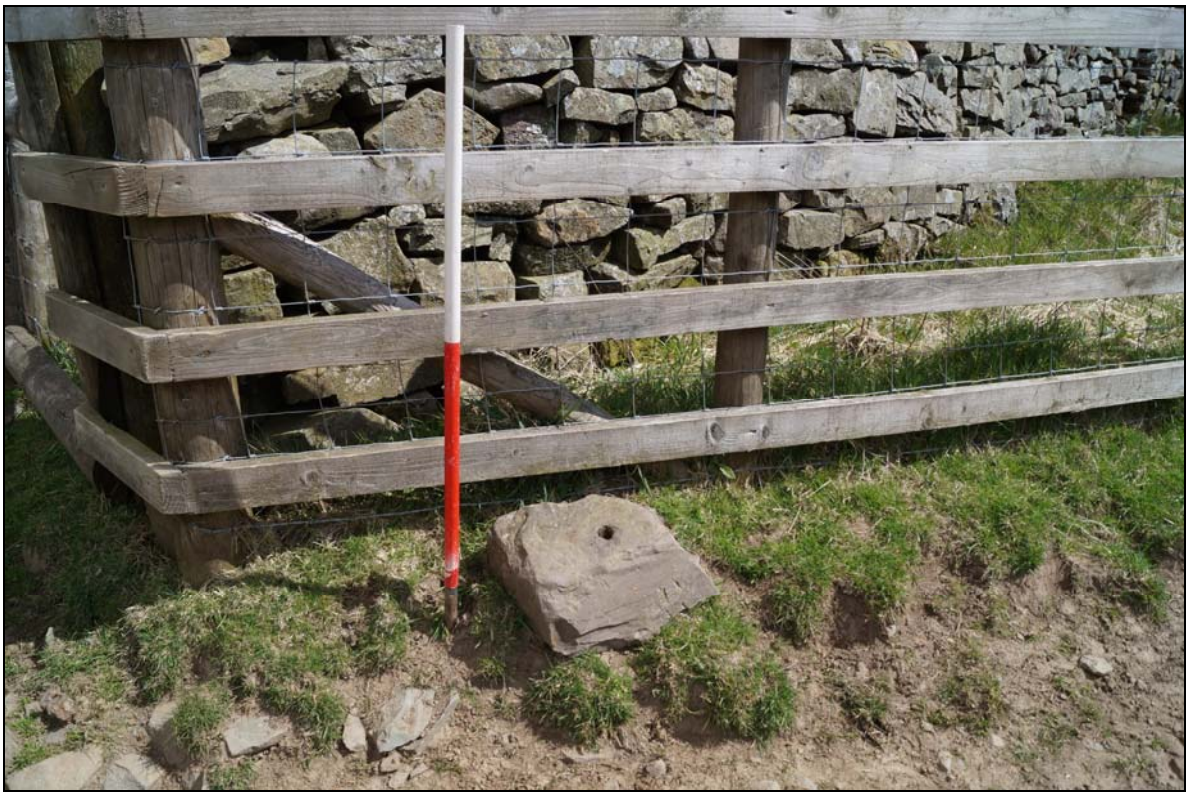

Plate 15: CNX2016_115, Detail of bored stone, possible remains of tramroad CNX2016_007, looking east.

Plate 16: CNX2016_116, Culvert, CNX2016_008, through tramroad, CNX2016_007, looking southeast.

Plate 17: CNX2016_117, Culvert, CNX2016_008, through tramroad, CNX2016_007, looking southwest.

Plate 18: CNX2016_118, Shallow linear gully, CNX2016_009, looking north northwest

Plate 19: CNX2016_119, Earth bridge/culvert, CNX2016_010, looking south, part of Brecon Forest Tramroad, CNX2016_007.

Plate 20: CNX2016_120, Detail of stone-built culvert pipe within the earth bridge CNX2016_010, looking east,

Plate 21: CNX2016_121, Earth bridge, CNX2016_010, looking north northeast, part of Brecon Forest Tramroad, CNX2016_007

Plate 22: CNX2016_122, Micro hydro turbine housing, CNX2016_011, where water will be returned to the Nant Cnewr Fach stream.