

Penrhyn Castle Renewable Heating Scheme

Archaeological Assessment



Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

Penrhyn Castle Renewable Heating Scheme

Archaeological Assessment

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TABLE OF CONTENTS

1	Introduction	5
2	Methodology	6
2.1	Assessment (Desktop Study).....	6
2.2	Walk-Over Survey	7
2.3	Data processing and report compilation.....	7
3	Results	9
3.1	Desk-Based Assessment	9
3.1.1	Historical Background	9
3.1.2	Cartographic Evidence.....	12
3.2	Site visit and walk over.....	15
3.2.1	Northern Option.....	15
3.2.2	Southern Option	16
3.2.3	Castle Cellars (Fig. 10).....	16
3.2.4	Discussion.....	17
4	SUMMARY OF ARCHAEOLOGICAL POTENTIAL	18
4.1	Location Summary.....	18
4.2	Statutory and Non Statutory Designations.....	18
4.3	Environmental Remains and Soil Morphology	19
4.4	Artefactual Potential	19
4.5	Aerial Photographs.....	19
4.6	Gazetteer of Features.....	20
	Feature 1 (PRN 61227).....	20
	Feature 2 (PRN 61228).....	21
	Feature 3 (PRN 61229).....	22
	Feature 4 (PRN 61230).....	23
	Feature 5 (PRN 61231).....	24

Feature 6 (PRN 61232).....	25
Feature 7 (PRN 61233).....	26
Feature 8 (PRN 61234).....	27
Feature 9 (PRN 61235).....	28
Feature 10 (PRN 61236)	29
Features 11 and 12 (PRN 61237 and 61238).....	30
Feature 13 (PRN 61239)	31
Feature 14 (PRN 61240)	32
Feature 15 (PRN 61241)	33
Feature 16 (PRN 61242)	34
Feature 17 (PRN 61243)	35
Feature 18 (PRN 61244)	36
5 Conclusions and Recommendations	37
5.1 Introduction	37
5.2 Table of Sites and Recommendations	38
5.3 Discussion and Conclusion	42
6 Acknowledgements.....	43
7 Bibliography	44
7.1 Primary Sources	44
Gwynedd Archives, Caernarfon	44
7.2 Secondary Sources	44
Appendix I: Project Design	46
APPENDIX II: photographic metadata	47
APPENDIX III: Sites Listed on the Gwynedd HER.....	48
APPENDIX IV: Sites Listed on the National Trust HBSMR	49
APPENDIX V: Definition of Terms	50

Figures

Figure 01: Location Map (based on 1:10000 Ordnance Survey County Series map sheets SH57SE & SH67SW).

Figure 02: Reproduction of National Trust plan of Penrhyn Castle renewable heating scheme North Option and South Option. Not to Scale.

Figure 03: Location of proposed North and South Option routes and information from the Historic Environment Record and National Trust. Scale: 1:2500@A4.

Figure 04: Reproduction of 1768 Penrhyn Estate Map and location of proposed North and South Option routes and information from the Historic Environment Record and National Trust. Scale: 1:2500@A4. (Source: National Trust)

Figure 05: Reproduction of 1803 Penrhyn Estate Map and location of proposed North and South Option routes and information from the Historic Environment Record and National Trust. Scale: 1:2500@A4. (Source: National Trust)

Figure 06: Reproduction of 1828 Penrhyn Estate Map and location of proposed North and South Option routes and information from the Historic Environment Record and National Trust. Scale: 1:2500@A4. (Source: National Trust)

Figure 07: Reproduction of the 1841 Llandygai Parish Tithe Map. Scale: 1:2500@A4.

Figure 08: Reproduction of 1890 First Edition 1 inch to 25 mile Carnavonshire County Series Map Sheets VII.9 and VII.10 and location of proposed North and South Option routes. Scale: 1:2500@A4.

Figure 09: Reproduction of Penrhyn Castle "Buried Services as Fitted Plan" . Source: National Trust; scale: not to scale.

Figure 10: Reproduction of Penrhyn Castle "Cellars & Lower Ground Floor Plan", with amendments from GAT to illustrate proposed heat main through building. Note: location based on GAT walkover; illustrative only. Source: National Trust; scale: not to scale.

Plates

Plate 01: North Option - view north towards location of the energy centre building, which will be screened by existing vegetation.

Scale: 1 x 1m.

Plate 02: North Option - view south towards location of the energy centre building, which will be screened by existing vegetation.

Scale: 1 x 1m.

Plate 03: North Option - view south of heat main route.

Plate 04: North Option - view south of heat main route which will follow the existing path.

Scale: 1 x 1m. Scale: 1 x 1m.

Plate 05: North Option - view south along heat main route, which follows the existing path. Scale: 1 x 1m.

Plate 06: North Option - view north along heat main route, which follows the existing path. Scale: 1 x 1m.

Plate 07: North Option - view south of heat main route. Route marked by 1 x 1m scale.

Plate 08: South Option - view south-southeast of heat main route. Scale 1 x 1m.

Plate 09: North Option - view north-northwest of heat main route at access point to the cellar. Scale: 1 x 1m.

Plate 10: Penrhyn Castle courtyard - view north of courtyard that will be crossed by the heat main.

Plate 11: Cellar - view from within cellar of access point for the heat main from the courtyard. The heat main will use the same access point and route as the existing pipes. Scale: 1 x 1m.

Plate 12: Cellar - view from the south of the proposed route for the heat main which will enter the room through the hatch. Scale: 1 x 1m.

Plate 13: Cellar - view north of cellar within Penrhyn Castle that will incorporate the heat main along the elevated duct line.

Plate 14: Cellar - view southeast of cellar within Penrhyn Castle that will incorporate

the heat main along the elevated duct line.

Plate 15: South Option - view south of heat main route. Scale: 1 x1m.

Plate 16: South Option - view north of heat main route. Scale 1 x1m.

Plate 17: South Option - view north of castle keep along the line of the heat main towards the location of the boiler room within Penrhyn Castle. Scale 1x1m.

Plate 18: South Option - view east-southeast of heat main route (ii). Scale 1x1m

Plate 19: South Option - view east of heat main route (i). Scale: 1 x 1m.

Plate 20: South Option - view west of heat main route (i). Scale: 1 x 1m.

Plate 21: South Option - view west along heat main route (i)

Plate 22: South Option - view north-northeast along access track; the heat main would be laid along the verge. Scale: 1 x 1m.

Plate 23: South Option - view northwest of heat main route (i), from Penrhyn Castle to the energy centre building. Route marked by 1 x 1m scale.

Plate 24: South Option - view southeast of heat main route (i), from Penrhyn Castle to the energy centre building. Route marked by 1 x 1m scale.

Plate 25: South Option - view northwest from woodland near energy centre building location towards Penrhyn Castle. Scale 1 x 1m

Plate 26: South Option - view east of energy centre building location. Scale 1 x 1m.

Plate 27: South Option - view north from energy centre building location towards Penrhyn Castle, which is obscured by trees)

Plate 28: South Option - view west-northwest of energy centre building location

SUMMARY

Gwynedd Archaeological Trust (GAT) has been asked by The National Trust to carry out an archaeological assessment in advance of proposals for a renewable heating scheme at Penrhyn Castle, Llandygai, Gwynedd. The proposed scheme consists of an Energy Centre Building, approximately 10m long by 3m wide, with a 200mm diameter buried heat main pipe, approximately 250m in length leading from it and pipes within Penrhyn Castle linking up existing boiler rooms. There are two possible routes, a northern option and a southern one, but both schemes are of similar length. One of these options will be selected for the energy scheme.

The demesne at Penrhyn can be shown to have originated in medieval times. A hall house was built on the site in the 15th century by Gwilym ap Gruffydd, which stood until 1781 when a new house designed by Samuel Wyatt was built. From 1765 the estate came into the hands of the Pennant family. From this time a predominantly agricultural demesne was transformed into a landscaped park. This transformation gained new impetus by the building of a neo Romanesque castle on the site from 1822. Some later developments in the park and garden took place, before the castle and demesne were handed over to the National Trust in 1951.

The surrounding area is rich in prehistoric and medieval archaeology and although none has been identified in this part of the park at Penrhyn, its presence has to be considered a strong possibility.

*Eighteen post-medieval sites relating to former landscape usage at Penrhyn have been identified as lying close to the proposed heat main routes, and the proposed northern Energy Centre building. These consist of fourteen sites on the northern option route, and four on the southern one. In the event of the northern option being chosen, it is recommended that five of these are evaluated by **archaeological trenching** in order to assess their potential survival and to inform a mitigation strategy. The remaining identified sites could be recorded as part of the watching brief proposed during ground works over the whole scheme, with the exception that **archaeological trenching** is recommended over Feature 6 in the southern option.*

*It is therefore recommended that a **Comprehensive Watching Brief** be carried out by an archaeologist during the heat main trench and Energy Centre platform excavation across the open ground, paths and woodland, whichever heat main option is chosen. No further action is recommended in the cellar of the Castle, as existing ducts are to be used to enable the pipework to reach the boilers with no significant excavation work to be carried out.*

The permanent visual impact of the scheme is considered to be low, as neither proposed Energy Centre building is visible to or from the castle, and both are also to be well screened by trees or shrubs. The southern option site will be slightly visible from the public car park at Penrhyn Castle, but is close to the modern visitor centre in any case.

1 INTRODUCTION

Gwynedd Archaeological Trust (GAT) has been asked by *The National Trust* to carry out an archaeological assessment in advance of proposals for a renewable heating scheme at Penrhyn Castle, Llandygai, Gwynedd (NGR SH60277193; Figure 01). The scheme is currently at the pre-planning stage.

The Penrhyn Estate as a whole (both National Trust owned land and the Penrhyn Family land) is a Grade II* registered park and garden reference number PGW (Gd)40 (GWY). The Castle is Grade I, the Chapel is Grade II, the Grand Lodge is Grade II and the Walled Garden is also Grade II. Penrhyn is also part of the Ogwen Valley Registered Historic Landscape, HLW (Gw) 10.

The National Trust prepared a project brief (Appendix I) that summarises the proposals for the renewable heating scheme and the archaeological assessment requirements. The brief states that the proposed scheme consists of an energy centre building [approx. 10m(l) x 3m(w) x 3m(h) in size], a 200mm diameter buried heat main pipe [approx. 250m in length] and pipes within Penrhyn Castle linking up existing boiler rooms (q.v. Figure 1). The aim of this archaeological assessment is to examine the impact of these proposals on the archaeology at Penrhyn Castle and to make recommendations for further archaeological evaluation and/or mitigation.

The assessment will be monitored by the Gwynedd Archaeological Planning Services (GAPS) and the National Trust Archaeologist.

The assessment conforms to the guidelines specified in the Chartered Institute for Archaeologists *Standard and Guidance for Historic Environment Desk-Based Assessment* (Chartered Institute for Archaeologists, 2014). Gwynedd Archaeological Trust is a Chartered Institute for Archaeologists *Registered Archaeological Organisation*.

2 METHODOLOGY

2.1 Assessment (Desktop Study)

A desk-based assessment is defined as “a programme of study of the historic environment within a specified area or site on land, the inter-tidal zone or underwater that addresses agreed research and/or conservation objectives. It consists of an analysis of existing written, graphic, photographic and electronic information in order to identify the likely heritage assets, their interests and significance and the character of the study area, including appropriate consideration of the settings of heritage....Significance is to be judged in a local, regional, national or international context as appropriate” (ClfA 2014b, 4).

The desk-based assessment involved a study of the following resources:

1. The regional Historic Environment Register (Gwynedd Archaeological Trust, Craig Beuno, Garth Road, Bangor, Gwynedd LL57 2RT) was examined for information concerning the study area. This included an examination of the core HER, the 1:2500 County Series Ordnance Survey maps and any secondary information held within the HER.
2. The National Monuments Record (NMR RCAHMW, National Monuments Record of Wales, Plas Crug, Aberystwyth SY23 1NJ) was checked for sites additional to the HER.
3. On-line catalogue search of the National Library of Wales.
4. Archive data and maps, where relevant, were consulted in the regional archives at the Gwynedd Archives Service (Caernarfon Record Office, Caernarfon, LL55 1SH) and at the Bangor University Department of Manuscripts.
5. The National Trust *Penrhyn Castle Historic Landscape Assessment* report (2015) was consulted for background map data.

The archaeological Assessment was also carried out using the following as guidelines.

- English Heritage, 2015, *Management of Research Projects in the Historic Environment (MoRPHE)*.
- English Heritage, 1991, *Management of Archaeological Projects*

- Royal Commission on Ancient and Historic Monuments of Wales 2015 *Guidelines for digital archives*.
- *Standard and Guidance for Historic Environment Desk-Based Assessment* (Chartered Institute for Archaeologists, 1995, rev. 2001, 2008 and 2014).
- *Standard and Guidance for the Creation, Compilation, Transfer and Deposition of Archaeological Archives* (Chartered Institute for Archaeologists, 2009 and 2014).

2.2 Walk-Over Survey

Part of the assessment involved a walkover of the study area. The aims of this stage of the work were to:

- verify the results of the desktop study.
- identify any further archaeological sites which may exist as above ground features
- photograph and record the present condition of all sites noted.

The walkover survey, carried out on the 4th December 2015, visited the proposed locations for the energy centres (north option and south option) and heat main route; this included an examination of the main route of the main within the castle. A descriptive record was maintained on GAT *pro formas*. A photographic record was taken of the energy centre locations, including views from these locations to the castle, along with views on the proposed heat main routes. A complete table of metadata with details of each image, including descriptions and directions of shot was produced using Microsoft Access; a total of 42 images were taken (archive ref. G2447-001 to G2433_042; cf. Appendix II);

A service plan for the castle and castle grounds was also be sought for comparison with the proposed works to determine whether any of the locations and heat main routes will be in proximity to areas already disturbed by existing services.

2.3 Data processing and report compilation

Following completion of the stages outlined above, this report was produced incorporating the following:

1. A non-technical summary

2. The results of the desk top analysis
3. Copies of historic maps where copyright restrictions allow
4. Results of the walk over survey
5. A map locating all recorded features and the extent of the walk over survey
6. An assessment of the impact of the development on the known or potential archaeological resource
7. Recommendations for more detailed field survey if appropriate
8. Recommendations for mitigation
9. Conclusions
10. Sources
11. Summary list of sites
12. Photographic index
13. A gazetteer of all sites and features

Illustrations include plans of the location of the study area and archaeological sites. Historical maps where available have been included. Photographs of the optional routes for the heat mains and the energy centre locations have also been included.

A copy of this report will be sent to Gwynedd Archaeological Planning Services and the National Trust. It will be to the Historic Environment Record located at the Gwynedd Archaeological Trust. Submission of digital information to the Royal Commission on the Ancient and Historical Monuments of Wales will be undertaken in accordance with the RCAHMW Guidelines for Digital Archives Version 1 (2015). Digital information will include the photographic archive and associated metadata.

3 RESULTS

3.1 Desk-Based Assessment

3.1.1 *Historical Background*

3.1.1.1 Prehistoric and Roman

Extensive archaeological investigations have been carried out by Gwynedd Archaeological Trust (GAT) c.145m to the southwest of Penrhyn Castle, at Parc Bryn Cegin and Llandygai Industrial Estate, located on the same plateau as Penrhyn Castle (Kenney 2009). These have recorded extensive multi-period remains including an early Neolithic timber building, dated to about 3760 BC, a mid Neolithic pit group, a late Neolithic ceremonial complex (Scheduled Ancient Monument; Cn153), an early bronze age barrow, sixteen burnt mounds, a settlement of the mid iron age and late iron age/Roman periods, early medieval smithing activity, an early medieval cemetery, and further medieval and post-medieval features (*ibid.*, 9). Stray finds including worked flint, stone hammers and bronze palstaves have been found in the vicinity of the study area. A large Early Bronze Age burial cairn, known as Carnedd Howel, is located about 1.5km to the south, and cropmarks indicate that there may have been others much closer in Parc Penrhyn. Nearly 4km to the south is the remains of a Neolithic chambered tomb at Sling and about 4km to the north there used to stand another chambered tomb. The site of this is now on the Lavan Sands and it has been entirely destroyed by the sea, but it was visible in 1805 (Williams 1806, 206). A burnt mound was found at Rhos Uchaf, 208m to the south-east (PRN 815; SH 59786978) and some probably prehistoric hearths 400m to the south on the line of the A55 (PRN 877; SH 59356945).

Excavations in 1967-8 under the present Llandygai Industrial Estate revealed the presence of a group of Later Neolithic ceremonial monuments of national significance. These included two henges, large circles, about 90m in diameter, defined by banks and ditches, and a cursus, an embanked linear enclosure. Associated with them were two lesser circles and the complex was preceded by an earlier Neolithic building. The site was subsequently used for Early Bronze Age funerary activity, Iron Age and Romano-British settlement and an Early Medieval inhumation cemetery (Lynch and Musson 2004). A possible late prehistoric enclosure is located within Penrhyn Park (PRN 24769; SH 59627204). The presence of such prehistoric finds on the same topographical plateau suggests that there may well be prehistoric activity surviving under Penrhyn Park, although those identified are some distance from the scheme route itself.

The Roman road between Caerhun and Segontium probably passed about 200m to the south-east of Penrhyn (PRN 17,567; SH 59556998), with the suspected site of a Roman fortlet at Tal-y-Bont (PRN 2456; SH 60697068). A possible Roman site is known within Penrhyn Park at the Home Farm, Llandegai (PRN 2370; SH 59757180), although this is believed by some to be a natural feature.

3.1.1.2 Medieval and Post-medieval Penrhyn

Whilst there is no known medieval archaeological activity within the development area, within the wider area, archaeological sites include an Early Medieval square barrow cemetery (PRN 24776; SH 59667120) within the grounds of Penrhyn Castle. Llandygai village has medieval origins, its church dating from the 14th century but there are records of an earlier church, and earthwork hut platforms in Parc Penrhyn are probably medieval (Smith 2005). There is also the potential for remains associated with medieval and post-medieval activity centred on the village, in particular the post-medieval flint mill to the south-east (PRN 6387).

Penrhyn Castle is reputed to occupy the site of Roderic Malwynog's palace who is considered to have been an 8th century King of Gwynedd, grandson of Cadwalader the last king of the Britons (Black 1870). The land became the property of the Gruffydd family who after advantageous marriage alliances had established a substantial estate in the area by the 14th century. They were one of the first to establish a modern landed estate in Wales (Gee and Laws 2015, 6).

In the early 15th century a Hall House with two end wings was built for Gwilym ap Gruffydd, a house that was to stand until the late 18th century. The family remained successful throughout the troubles of the 15th and 16th centuries, and at the end of this time the estate passed to John Williams the Dean of Westminster, who became Archbishop of York in 1641. He played a role as an intermediary between English and Welsh Royalists, and was involved in the siege of Conwy Castle, before he died in 1650 and was buried in Llandegai church. In 1684 when Sir Gruffydd William died without an heir the estate passed through various hands, until between 1765 and 1785 it was acquired by Richard Pennant. The medieval house, with additional buildings of possibly later date, is shown on an estate map of 1768 surveyed by G. Leigh (Fig. 04). This shows the medieval house set in a landscape of small enclosures, some clearly agricultural, some planted with trees. The approach to the house is shown striking off at right angles to the drive across an outer courtyard, through the stable

block and up to the front door of the house (National Trust 1991, 76). The parkland was described by Thomas Pennant in 1773 as 'once beautifully embosomed with venerable oaks' (*ibid.*, 77). Aerial photographs from the National Monuments Record show extensive parching of the land in the vicinity of the former medieval house, and this may reflect the survival of buried remains below the ground relating to the pre 1781 occupation of the area (Gee and Laws 2015, 24-25).

In 1781 a new house began to be constructed at Penrhyn. This was designed by Benjamin Wyatt, and was built in a form of castellated gothic of yellow brick (*ibid.*, 11). This was built on the same site of and incorporating some elements of the previous house. It was described by Edmund Hyde-Hall as 'a gateway, a chapel, a tower and a vast hall' (Hyde-Hall 1952, 115). The parkland also was being developed at this time. In 1780 a surviving account relates that £2 2s was paid to William Humphrey and his partner for 'carrying young trees from Wilmington (Cheshire) being three horse loads' (National Trust 1991, 76). An 'estimated 600,000 trees [were] planted on the estate by 1800, and at the same time an enlargement of the house was being carried out (Cadw/ICOMOS 1998a, Fig. 05). In 1797 'many young plantations' are noted as being associated with the house. The estate map of 1803 (Fig.5) shows parkland, woodland and a garden demonstrating that development of the parkland was well underway. The agricultural landscape associated with the medieval house was also undergoing significant alteration at this time (*ibid.*, Gee and Laws 2015, 12-14). It is stated as being remodelled 'in the English style' (National Trust 1991, 76).

This Wyatt house of 1781 was short lived, as the considerable profits that were being returned by the Pennant's slate quarries by the early 19th century enabled an extravagant new house to be constructed.

The present castle was built between 1822 and 1838 for George Hay Dawkins Pennant and designed by Thomas Hopper. Dawkins Pennant had inherited the estate in 1808 and did not care for the Wyatt house of 1781. It was built in a giant neo-Romanesque style with a keep, courtyards, barbican and towers, and of Anglesey stone (Cadw/ICAMOS 1998, 251). There were also many outbuildings, particularly on the northern side of the castle, where stables were located. It was sited and built on a hill so that it was visible from the quarries, and much of the estate in the surrounding area. This was an indication of the dominance of the Pennants in the area by this time.

The park is roughly circular in shape, with the house at the centre, and occupies an area between the mouths of the Afon Ogwen and the Afon Cegin. The ground rises to the centre of the park, levelling out into a flat topped ridge with a couple of knolls, offering exceptional views. The long axis of the castle is north-south (Figs 06 to 07), and the area around the

castle remains open lawn, as appears to have been the case from the early days of the Hopper castle, with garden areas at a little distance and the park surrounding the whole. This is shown on the estate map of 1828 (Fig.06), and by 1841 the plantations are more complete (Fig.07).

Initial modelling of the parkland was begun in association with the Wyatt house of 1781. The parkland was subsequently remodelled in association with the rebuilding of the main house, in addition to estate buildings of a size and scale commensurate with the new development. The two estate lodges were demolished and rebuilt on different sites, in a style similar to that employed on the castle, and the home farm was moved to a site further from the house. The park was extended beyond the Afon Ogwen to the east; and the drives were reorganised. A completely new drive was laid out, replacing one from the south-west, approaching from the south and incorporating most of the old drive to the church, with a neo Romanesque lodge and park boundary wall constructed (Fig.07, Gee and Laws 2015, 18-19). The wall has been described as the first major early 19th century wall to enclose a Gwynedd demesne. It is 2.5m high, built in 0.6m coursed of limestone rubble with a coping of broken Bethesda Slate (Haslam *et al.* 2009, 404). This was also a time of extensive new planting within the park. By the latter part of the 19th century much of the parkland was laid out as it is seen today, with the latest significant developments in the park layout having taken place in 1889. The garden however was laid out as a flower garden and redesigned by Sybil, Lady Penrhyn in the 1920s and 1930s. The castle and demesne became the property of the National Trust in 1951.

3.1.2 *Cartographic Evidence*

Five main historic maps were studied in order to assess the development of Penrhyn Park over the route of the proposed heat mains. These consist of three estate maps dating from 1768, 1803 and 1828, and the tithe map of the parish of Llandegai of 1841, and the 1889 first edition 25 inch Ordnance Survey Map Caernarvonshire County Series sheets VII.9 and VII.10 (Figs 04 to 08). The cartographic evidence shows the significant development of the Penrhyn Demesne between 1768 and 1841. The park is shown to develop from an essentially agricultural holding shown on the estate map of 1768 where small parcels of woodland and agricultural land surround the medieval house and a significant number of outbuildings (Fig. 04). There were also small paddocks immediately surrounding the house and home farm. The main route to the house ran north south to the west of its present location and to the west of the main house, with a significant building to the west of the road. There appears also appear to be a lodge to the north (PRN 61241). The 1768 map indicates

that the focus of the estate was somewhat to the west of where it was after the building of the 1781 Wyatt house. With particular reference to the proposed heat main route, there appear to be four field boundaries shown on this 1768 map, the locations of which will be crossed by the heat main route (Features 1-4; PRNs 61227, 61228, 61229, 61230), and one possible gatehouse (Feature 15; PRN 61241). With the exception of Feature 15, which lies close to the proposed northern Energy Centre, the proposed heat main route avoids the main structures noted on the 1768 map.

The 1803 map (Fig. 05) shows the Wyatt house, constructed on the same footprint on which the Hopper castle was to be built. The parkland around the estate has now been significantly developed, and woodland surrounds the house, with ornamental features now present. The walled kitchen garden has been constructed to the west and some open areas of lawn created. Nine features appear on the map that lay close to the proposed heat main route. Three features to the south of the house were noted Feature 5 (PRN 61231) and Feature 7 (PRN 61233) appear to have been field boundaries, and Feature 6 (PRN 61232) appears as a building. This is possibly an agricultural building, but its purpose is not clear. To the north, near the proposed northern option Energy Centre location is a collection of buildings. Their purpose is not clear. They include a 'horseshoe shaped' building (Feature 8; PRN 61234) and a small rectangular building with wings to the north and south to the east of it on the east side of the track (Feature 9; PRN 61235). Three structures to the north (Features 11 and 12; PRNs 61237 and 61238) form an 'L' shaped building at this time, and Feature 10 (PRN 61236) is a rectangular building in a small enclosure. Feature 15 (PRN 61241) appears to be an unroofed enclosure by this time. Their purpose is unknown (Gee and Laws 2015, 23-24), however they form a discrete group of structures and may be either a home farm and outbuildings, or an estate yard. The horseshoe shaped building is intriguing, very speculatively it could be stables. Feature 10 is situated within a small sub circular enclosure. It is also of unknown purpose, but could be a former dovecote. At any rate the buildings date from between 1768 and 1803, and form a discrete area of activity, almost certainly associated with the management of the estate.

The 1828 estate map (Fig. 06) shows the parkland significantly developed with a large area of woodland surrounding the house, with open patches of lawn. The home farm/estate yard area is still present, although there appears to have been some rebuilding. Features 13 and 14 (PRNs 61239 and 61240) are buildings at the same location as Features 11 and 12, but they appear to have been rebuilt on a somewhat different footprint between 1803 and 1828. A new boundary around the estate yard group (Feature 16; PRN 61242) appears also to have been created between these dates.

The 1841 tithe map (Fig. 07) shows the parkland in a similar form to that seen in 1828; however the wooded areas are more extensive than previously seen. The castle is also seen in more or less its current form. There appears to have been some building in the home farm/estate yard area, with the construction of an 'S' shaped building (Feature 18; PRN 61244), and the enclosed area around the buildings has been extended (Feature 17; PRN 61243).

By the time of the 1st edition 25 inch Ordnance Survey map of 1889 (Fig. 08), the estate is shown in its current form. The northern group of estate buildings is no longer present, indicating that they have been demolished by this time. No new sites on the proposed heat main route dating from this period or later have been identified from cartographic evidence.

All the sites recorded in this report potentially lie within 50m either side of the proposed heat main routes or the Energy Centre buildings. Sites recorded on the Gwynedd HER and the National Trust HBSMR are shown on Fig. 03, and listed in Appendices III and IV.

3.2 Site visit and walk over

There are two proposed routes for the heat main and for the location of the associated Energy Centre buildings, one to the north of the castle and one to the south (Fig.2). These will be discussed in turn, along with the proposed route of the heat main through the castle cellars. It is proposed that the excavation for the heat main pipe will be 560mm wide and up to 1m deep, for a 200mm pipe, where open cut excavation is required. The Energy Centre buildings will be 10m by 3m, with a 300mm excavation of the ground level required for the concrete base, whichever route is eventually chosen.

3.2.1 Northern Option

The northern option for the heat main follows the macadamised path to the north of the castle through the managed parkland for a distance of approximately 250m. There is a small staff car-park to the west which is clearly visible from the castle (Plate 05-06). Beyond this various areas of planting are noted on the west side of the path. The proposed heat main route leaves the edge of the macadamised path at NGR SH 60247217 in a north westerly direction, to the site of the proposed Energy Centre building at NGR SH 60207218 (Plate 04). This is proposed to be 10m long by 3m wide and to be constructed on a concrete platform to a depth of 300mm. There is currently a large rhododendron bush immediately to the south of the proposed location, which will screen the structure from visibility in the surrounding area (Plates 01-02). The heat main route then follows a court to the west of the castle across a macadamised area (Plate 07) before entering the service courtyard through a gateway (Plate 08). The route then crosses a cobbled and macadamised courtyard into a cellar building (Plates 09-10). The route from the macadamised area to the west of the castle and in to the courtyard area appears to be crossed with many services, some of which are shown on the service plan (Fig. 09). A small amount of excavation work in disturbed ground (Plates 09-10) will be required in order to access the boiler room. This is expected to be in ground that has previously been heavily disturbed (Fig. 09)

The proposed structure is not visible from the castle itself (Plate 03), as it round a bend in the path from it, and is well screened by planting and the topography of the area.

3.2.2 *Southern Option*

The southern heat main route crosses lawn and a small open copse of trees south and east of the castle (Plates 15-28). There are two proposed routes that this might take, a northern one (designated 'I' in this report), and a southern one (designated 'ii' in this report) (Fig. 02). Both routes are approximately 250m in length, but the northern one requires a short length of heat main route along the north-south driveway to the east of the castle (Plate 22).

The northern route 'I' cuts through a small open copse (Plates 19-21), and the southern route 'ii' cuts across open lawn (Plates 18, 23). A spur pipe will lead to a boiler under the keep (Plate 17). After both routes meet the macadamised track to the east of the castle at NGR SH 60367173 they follow a single route through dense woodland and a northwest-southeast slope to the southern option Energy Centre building. This building will be completely obscured by mature trees, and will be placed within a small clearing just above the Penrhyn Castle public car park at NGR SH 60407170 (Plate 28).

The proposed Energy Centre building is not visible from either the building to the castle (Plate 27) or the castle to the building (Plate 24). It is low lying and shrouded in trees.

3.2.3 *Castle Cellars (Fig. 10)*

The heat main route through the cellars under Penrhyn Castle (coloured blue on Figure 02), is mainly associated with the proposed southern route. This will enter the cellar to the south through a duct under the castle (Fig. 10; Plate 12) and leave through another duct (Plate 11). Within the cellars the heat main will follow a route through the cellars, with the pipes mounted against the walls (Plates 13-14). This will require no additional disturbance to the fabric of the building, although the pipes will have to be mounted on the cellar walls up to their attachment to the boilers. These will form part of many pipe and other services located in the cellars.

The cellars observed during the walk-over survey are of brick and stone construction, and are brick vaulted tunnels in places. They appear to be late 18th century or 19th century in date. No medieval fabric was observed, despite potentially being in the area of the former medieval house. This suggests that any medieval structure has been lost under post-medieval cellar construction during the building of both the Wyatt house in 1781 and the 1820s castle.

3.2.4 Discussion

No new archaeological features were identified during the walk-over of the proposed heat main routes. This is perhaps not altogether surprising as the route crosses parkland that has been extensively landscaped in the late 18th and the 19th centuries. Sub surface archaeological features may survive however from both earlier estate landscape layouts and the more agricultural landscape of medieval times. Post-medieval cartographic evidence has suggested features on the route relating to former estate layouts which may survive below the ground, where 18 potential sites have been identified. The surrounding area is rich in prehistoric archaeology and although none has been identified in this part of the park, its presence has to be considered a possibility. The levels of the natural subsoils beneath the landscaping works in the area are not currently known, but trench excavation up to a depth of 1m is likely to disturb pre-modern deposits, in an area of known intensive activity from medieval times, and possible prehistoric activity.

4 SUMMARY OF ARCHAEOLOGICAL POTENTIAL

4.1 Location Summary

Penrhyn Castle, Llandygai, Gwynedd (NGR SH60277193; Figure 1) is located adjacent to and to the north-east of the City of Bangor, near to the North Wales Coast and with good access to it, and to the north of the A55 expressway. The castle is located in a prominent position on the top of a hill and is surrounded by extensive landscaped wood and parkland of 18th and 19th century date.

The park is roughly circular in shape, with the house at the centre, and occupies an area between the mouths of the Afon Ogwen and the Afon Cegin. The ground rises to the centre of the park, levelling out into a flat topped ridge with a couple of knolls, offering exceptional views. The long axis of the castle is north-south, and the area around the castle remains open lawn, as appears to have been the case from the early days of the Hopper built Penrhyn Castle, with garden areas at a little distance and the park surrounding the whole.

4.2 Statutory and Non Statutory Designations

The Penrhyn Estate as a whole (both National Trust owned land and the Penrhyn Family land) is a Grade II* registered park and garden reference number PGW (Gd)40 (GWY), where it is described as retaining *'much of its 19th century character and the gardens, which have an exceptional collection of woody plants, are well preserved. The setting, and relationship of the house with the park and landscape, is outstanding'* (Cadw/ICOMOS 1998a, 251). The Castle is Grade I listed (Ref: 3659), the Chapel is Grade II (Ref: 3658), the Grand Lodge is Grade II (Ref: 3661) and the Walled Garden is also Grade II listed (Ref: 23375). Penrhyn is also part of the Ogwen Valley Registered Historic Landscape, HLW (Gw) 10, which is described as a *'classic glaciated valley in north Snowdonia, containing contrasting evidence of prehistoric and later land use, superimposed by the extensive and visually dramatic remains of the recent and continuing industrial exploitation of slate.. Penrhyn Castle and Park; Telford's Holyhead Road, historic literary and social associations'* (Cadw/ICOMOS 1998b, 108).

Sites noted on the Gwynedd HER and sites on the National Trust HBSMR within 200m of the proposed scheme are shown on Fig. 03 and listed in Appendices III and IV. These consist of 14 sites, all of post medieval date and associated with the Penrhyn estate.

4.3 Environmental Remains and Soil Morphology

The potential for the survival of environmental remains on the site is considered to be fairly low, as the area of the proposed heat main passes through ground that has been much landscaped in post-medieval times, and the higher dry ground over which the heat main options pass is thought unlikely to preserve much in the way of waterlogged deposits.

4.4 Artefactual Potential

There is considered to be some potential for the survival of artefactual remain from the site from the prehistoric to post-medieval periods. Whilst early archaeology has not been located within the immediate landscape of the castle, evidence from the surrounding area has revealed a very significant amount of prehistoric archaeology, so prehistoric artefacts may be recovered. The park is well known to have been intensively used and occupied from the medieval period, and there is also evidence for medieval and post medieval structures on the site. The recovery of medieval and post medieval artefacts has to be considered moderately likely.

4.5 Aerial Photographs

RAF vertical aerial photograph 106G/UK655 frame 034 taken on 13th August 1945 of Penrhyn Park was examined. It was a clear image of the castle park, but little detail of the park was observed as much of it was obscured by trees. This problem remains on vertical images taken in more recent times. Recent oblique aerial photographs taken in 2008 and 2014 by the Royal Commission on Ancient and Historic Monuments in Wales show evidence of parching on the lawned parkland in the proposed area of the medieval house (965126-55, D12008_0359; Fig. 04; Gee and Laws 2015, 34-35). Whilst none of the parch marks represent features identified along the route of the proposed heat main, and some of them

may represent modern features, their visibility does suggest that a good palimpsest of below ground archaeological may survive at Penrhyn.

4.6 Gazetteer of Features

The features listed below (located on Fig. 03) was identified during the analysis of the cartographic evidence at Penrhyn, with recommendations for further assessment and mitigatory measures, where appropriate. It is noted whether they are situated on the northern or southern heat main options. Definitions of the categories used and impact assessments are given in Appendix IV.

NB: The archaeological recommendations reflect the information currently provided by the client; any change to the route of the proposed heat main may require the recommendations to be reconsidered.

Feature 1 (PRN 61227)

Site Name: Field Boundary

Grid reference: SH60307175 (A) (approximate, taken from historic map evidence, may involve error)

Period: Medieval/Post-medieval

Category: E

Impact: Slight – the heat main trench will be cross this former boundary

Description: A field boundary is shown on the 1768 Penrhyn estate map, running in a northeast- southwest direction. It crosses both southern heat main routes 'I' and 'ii'. As it is shown on the earliest surviving cartographic evidence, it is of unknown date, but forms part of the pre-parkland system of enclosures at Penrhyn.

Located within the South Option

Recommendations for further assessment: None

Recommendations for mitigatory measures: Record during comprehensive watching brief if noted during works

Feature 2 (PRN 61228)

Site Name: Field Boundary

Grid Reference: SH60267210 (A) (approximate, taken from historic map evidence, may involve error)

Period: Medieval/Post-medieval

Category: E

Impact: Slight – the heat main trench will cross this former boundary

Description: A field boundary shown on the 1768 Penrhyn estate map, running in a northwest- east south east direction. It crosses the northern option heat main route. As it is shown on the earliest surviving cartographic evidence, it is of unknown date, but forms part of the pre-parkland system of enclosures at Penrhyn.

Located within to the North Option

Recommendations for further assessment: None

Recommendations for mitigatory measures: Record during comprehensive watching brief if noted during works

Feature 3 (PRN 61229)

Site Name: Field Boundary

Grid Reference: SH60267208 (A) (approximate, taken from historic map evidence, may involve error)

Period: Medieval/Post-medieval

Category: E

Impact: Slight – the heat main trench will cross this former boundary

Description: A field boundary to the north of the house shown on the 1768 Penrhyn estate map, running in a sinuous east- west direction. It crosses northern option heat main route and forms a boundary between woodland and open fields. As it is shown on the earliest surviving cartographic evidence, it is of unknown date, but forms part of the pre-parkland system of enclosures at Penrhyn.

Located within the North Option.

Recommendations for further assessment: None

Recommendations for mitigatory measures: Record during comprehensive watching brief if noted during works

Feature 4 (PRN 61230)

Site Name: Field Boundary

Grid Reference: SH60247217 (A) (approximate, taken from historic map evidence, may involve error)

Period: Medieval/Post-medieval

Category: E

Impact: Slight – the heat main trench will cross this former boundary

Description: A field boundary is shown on the 1768 Penrhyn estate map, running in a northeast-southwest direction. It crosses the northern option heat main route creating a small paddock near the 'T' junction in the track system. As it is shown on the earliest surviving cartographic evidence, it is of unknown date, but forms part of the pre-parkland system of enclosures at Penrhyn.

Located within to the North Option

Recommendations for further assessment: None

Recommendations for mitigatory measures: Record during comprehensive watching brief if noted during works

Feature 5 (PRN 61231)

Site Name: Field Boundary

Grid Reference: SH60377173 (A) (approximate, taken from historic map evidence, may involve error)

Period: Post-medieval

Category: E

Impact: Slight – the heat main trench will cross this former boundary

Description: A field boundary is shown on the 1803 Penrhyn estate map, following a northeast-southwest course within woodland. It crosses southern option heat main route 'ii' and forms a boundary between different types of woodland. It dates probably between 1768 and 1803.

Located within the South Option.

Recommendations for further assessment: None

Recommendations for mitigatory measures: Record during comprehensive watching brief if noted during works

Feature 6 (PRN 61232)

Site Name: Agricultural Building

Grid Reference: SH60347174 (A) (approximate, taken from historic map evidence, may involve error)

Period: Post-medieval

Category: E

Impact: Likely – the heat main trench will be very close to or on the location of this former building

Description: A small rectangular building noted on the 1803 Penrhyn Estate map, orientated northeast-southwest. The southern option route 'ii' appears to be located through or close to this location. It is a building of unknown purpose, but may be related to agriculture. It cannot be located on the ground.

Located within the South Option.

Recommendations for further assessment: Evaluation Trenching

Recommendations for mitigatory measures: Await the results of the Archaeological Evaluation

Feature 7 (PRN 61233)

Site Name: Field Boundary

Grid Reference: SH60287178 (A) (approximate, taken from historic map evidence, may involve error)

Period: Post-medieval

Category: E

Impact: Slight – the heat main trench will cross this former boundary possibly in more than one place

Description: A field boundary is shown on the 1803 Penrhyn estate map bounding woodland of different density, following a sinuous northwest-southeast course. It crosses southern option heat main route 'ii'. It dates probably between 1768 and 1803.

Located within the South Option

Recommendations for further assessment: None

Recommendations for mitigatory measures: Record during comprehensive watching brief if noted during works

Feature 8 (PRN 61234)

Site Name: 'Horseshoe shaped' Building

Grid Reference: SH60247212 (A) (approximate, taken from historic map evidence, may involve error)

Period: Post-medieval

Category: E

Impact: Likely – the heat main trench will be very close to the former location of this building

Description: A horseshoe shaped building noted on the Penryn estate map of 1803. It is located with a group of buildings (Features 8-16) which seem to form a group of buildings that may be part of the home farm or an estate yard area. The building is of an unknown purpose, but could be a stables block.

Located within the North Option

Recommendations for further assessment: Evaluation Trenching

Recommendations for mitigatory measures: Await the results of the archaeological evaluation

Feature 9 (PRN 61235)

Site Name: Rectangular Building with small Wings

Grid Reference: SH60287212 (A) (approximate, taken from historic map evidence, may involve error)

Period: Post-medieval

Category: E

Impact: Possible – the heat main trench will be close to, but probably avoiding, the location of this building

A north-south orientated rectangular building with small wings noted on the Penryn estate map of 1803. It is located with a group of buildings (Features 8-16), opposite and on the east side of the track from horseshoe Structure 8 which seem to form a group of buildings that may be part of the home farm or an estate yard area. The building is of an unknown purpose.

Located close to the North Option

Recommendations for further assessment: None

Recommendations for mitigatory measures: Avoidance. The general area will be covered by the comprehensive watching brief

Feature 10 (PRN 61236)

Site Name: Rectangular Building within Circular Enclosure

Grid Reference: SH60267217 (A) (approximate, taken from historic map evidence, may involve error)

Period: Post-medieval

Category: E

Impact: Possible – the heat main trench will be close to, but probably avoiding, this former building

Description: An east-west orientated rectangular building is noted on the Penryn estate map of 1803 at this location. It is located to the north of buildings (Features 8-16) which seem to be part of a group of buildings that may be part of the home farm or an estate yard area. The building is of an unknown purpose, but could be a dovecote, as it lies within its own small separate sub circular enclosure.

Located close to the North Option

Recommendations for further assessment: None

Recommendations for mitigatory measures: Avoidance. The general area will be covered by the comprehensive watching brief.

Features 11 and 12 (PRN 61237 and 61238)

Description: 'L' Shaped Building

Grid Reference: SH60227217 (A) (approximate, taken from historic map evidence, may involve error)

Period: Post-medieval

Category: E

Impact: Likely – the heat main trench will be very close to the location of the heat main as will the proposed northern Energy Centre building

Description: An 'L' shaped building noted on the Penryn estate map of 1803, orientated west northwest- east southeast, and north northeast- south southwest. It is located with a group of buildings (Features 8-16) which seem to form a group of buildings that may form part of the home farm or an estate yard area. The building is of an unknown purpose. It has two PRNs as it is not clear from the later 1828 Penrhyn estate map whether the two wings are separate buildings or not.

Located within the North Option

Recommendations for further assessment: Archaeological Evaluation Trenching

Recommendations for mitigatory measures: Await the results of the archaeological evaluation

Feature 13 (PRN 61239)

Site Name: Rectangular Building

Grid Reference: SH60217218 (A) (approximate, taken from historic map evidence, may involve error)

Period: Post-medieval

Category: E

Impact: Likely – the heat main trench will be very close to the location of this former building

Description: A rectangular building is noted on the Penrhyn estate map of 1828. It appears to be a replacement for features 11 and 12, as it is located on the same ground. It is located with a group of buildings (Features 8-16) which seem to form a group of buildings that may be part of the home farm or an estate yard area. Although it appears to have been built between 1803 and 1828, it could be the same building recorded as feature 11, and therefore earlier in date. The building is of an unknown purpose, and lies next to a very similar structure to the west. The home farm or estate yard area appears to be bordered with walls by 1828, but they may be small buildings. The heat main route will avoid these however.

Located within the North Option

Recommendations for further assessment: Archaeological Evaluation Trenching

Recommendations for mitigatory measures: Await the results of the archaeological evaluation

Feature 14 (PRN 61240)

Site Name: Rectangular Building

Grid Reference: SH60207219 (A) (approximate, taken from historic map evidence, may involve error)

Period: Post-medieval

Category: E

Impact: Likely – the building is very close to the location of the heat main trench and the footprint of the northern option Energy Centre building

Description: A rectangular building is noted on the Penryn estate map of 1828. It appears to be a replacement for features 11 and 12, as it is located on the same ground. It is located with a group of buildings (Features 8-16) which seem to form a group of buildings that may be part of the home farm or an estate yard area. Although it appears to have been built between 1803 and 1828, it could be the same building recorded as feature 12, and therefore earlier in date. The building is of an unknown purpose, and lied next to a very similar structure to the east. The home farm or estate yard area appears to be bordered with walls by 1828, but they may be small buildings. The heat main route will avoid these however.

Located within the North Option

Recommendations for further assessment: Archaeological Evaluation Trenching

Recommendations for mitigatory measures: Await the results of the archaeological evaluation

Feature 15 (PRN 61241)

Site Name: Rectangular Building

Grid Reference: SH60187221 (A) (approximate, taken from historic map evidence, may involve error)

Period: Post-medieval

Category: E

Impact: Possible – the heat main trench will be close to the location of this building, but it is likely that it will be avoided

Description: A rectangular building orientated west-east is noted on the Penryn estate map of 1756 at the 'T' junction of the track to the north of the house shown on that map. It may be a former lodge building to the house. By the time of the 1803 Penrhyn estate map it is shown as an open enclosure adjacent to the track, suggesting either that it is by that time a roofless building or the enclosure is a later build. By 1828 it is incorporated into later buildings.

Located close to the North Option

Recommendations for further assessment: None

Recommendations for mitigatory measures: Avoidance. The general area will be covered by the comprehensive watching brief

Feature 16 (PRN 61242)

Site Name: Enclosure Boundary

Grid Reference: SH60247215 (A) (approximate, taken from historic map evidence, may involve error)

Period: Post-medieval

Category: E

Impact: Slight – the heat main trench will cross the boundary enclosure

Description: A boundary enclosure for the polygonal northern home farm/estate yard area, which is shown on the Penrhyn estate maps of 1803 and 1828. At the point the heat main trench is likely to cross its location it appears as though it is a boundary wall, but further west and north it appears to have buildings bounding the small enclosure. It is not thought likely that the heat main trench will disturb the buildings.

Located within the North Option.

Recommendations for further assessment: None

Recommendations for mitigatory measures: Record during comprehensive watching brief if noted during works

Feature 17 (PRN 61243)

Site Name: Polygonal Enclosure

Grid Reference: SH60227214 (A) (approximate, taken from historic map evidence, may involve error)

Period: Post-medieval

Category: E

Impact: Slight – the heat main trench will cross the boundary enclosure

Description: A boundary enclosure for the polygonal northern home farm/estate yard area is shown on the tithe map of 1841. It appears different from that enclosure shown on the 1828, with the buildings around the edge having been lost, and buildings surviving in only the northern part, with a new building (Feature 18) having been built. This suggests that significant modifications took place between 1828 and 1841. It is not thought likely that the heat main trench will disturb the buildings, but will possibly cut through the enclosure wall.

Located within the North Option

Recommendations for further assessment: None

Recommendations for mitigatory measures: Record during comprehensive watching brief if noted during works

Feature 18 (PRN 61244)

Site Name: Irregular Shaped Building

Grid Reference: SH60187218 (A) (approximate, taken from historic map evidence, may involve error)

Period: Post-medieval

Category: E

Impact: Unlikely – the heat main trench will avoid this building location

Description: An irregular 'W' shaped building is shown within the home farm/estate yard area to the north of Penrhyn Castle on the tithe map of 1841. It is located in the north west of the enclosure (Feature 17), and appears to have been built between 1828 and 1841.

Located close to the North Option

Recommendations for further assessment: None

Recommendations for mitigatory measures: Avoidance. The general area will be covered by the comprehensive watching brief.

5 CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

Despite being an intensively managed landscape with a long history back to medieval times, no new archaeological features were identified during the walk-over of the proposed heat main routes and Energy Centre buildings at Penrhyn. This is likely to be due to the fact that the park is a heavily landscaped and managed estate, which was much modified in the 19th century obscuring much earlier evidence. However the cartographic evidence suggests that the Penrhyn Castle landscape has been significantly altered between 1768 and 1841 from a predominantly agricultural landscape originating in medieval times to an important landscaped park. Eighteen potential features were identified on the estate maps, which may survive as archaeological features below ground in the proximity of the proposed heat main route. In the event of the northern route being chosen, five of these features have been recommended for **archaeological evaluation** trenching in advance of ground works, on the grounds that significant and complex archaeology might be present in these areas. It would therefore be necessary to evaluate their archaeological potential. These evaluation trenches, probably 20m long by 2m wide, would be located in such a manner as to minimize damage to the park, in agreement with the National Trust. One site is recommended for **archaeological evaluation** trenching if the southern option is chosen, all other identified sites could be recorded as part of the archaeological watching brief.

All the sites are listed in the gazetteer, section **4.2.5**, and recommendations for mitigation of these are given there. A table of these sites and the recommendations is given below.

5.2 Table of Sites and Recommendations

No.	PRN	Name	Impact	Recommendations for Further Assessment	Recommendations for Mitigatory Measures
1	61227	Field Boundary	Slight	None	Record During Comprehensive Archaeological Watching Brief
2	61228	Field Boundary	Slight	None	Record During Comprehensive Archaeological Watching Brief
3	61229	Field Boundary	Slight	None	Record During Comprehensive Archaeological Watching Brief
4	61230	Field Boundary	Slight	None	Record During Comprehensive Archaeological Watching Brief
5	61231	Field Boundary	Slight	None	Record During Comprehensive Archaeological Watching Brief
6	61232	Agricultural Building	Likely	Archaeological Evaluation trenching	Await results of Evaluation
7	61233	Field Boundary	Slight	None	Record During Comprehensive Archaeological Watching Brief
8	61234	'Horseshoe shaped' Building	Likely	Archaeological Evaluation trenching	Await results of Evaluation

No.	PRN	Name	Impact	Recommendations for Further Assessment	Recommendations for Mitigatory Measures
9	61235	Rectangular Building with small Wings	Possible	None	Avoidance
10	61236	Rectangular Building within a Circular Enclosure	Possible	None	Avoidance
11	61237	'L' Shaped Building	Likely	Archaeological Evaluation Trenching	Await results of Evaluation
12	61238	L' Shaped Building	Likely	Archaeological Evaluation Trenching	Await results of Evaluation
13	61239	Rectangular Building	Likely	Archaeological Evaluation Trenching	Await results of Evaluation
14	61240	Rectangular Building	Likely	Archaeological Evaluation Trenching	Await results of Evaluation
15	61241	Rectangular Building	Possible	None	Avoidance

No.	PRN	Name	Impact	Recommendations for Further Assessment	Recommendations for Mitigatory Measures
16	61242	Enclosure Boundary	Slight	None	Record During Comprehensive Archaeological Watching Brief
17	61243	Polygonal Enclosure	Slight	None	Record During Comprehensive Archaeological Watching Brief
18	61244	Irregular shaped Building	Unlikely	None	Avoidance

5.3 Discussion and Conclusion

Eighteen post-medieval features relating to former landscape usage at Penrhyn have been identified as lying close to the proposed heat main routes, and the proposed northern Energy Centre building. **Fourteen of those are located on the northern heat main option and four on the southern option.** In the event of the northern option being chosen, it is recommended that five of these are evaluated by **archaeological trenching** in order to assess their potential survival and to inform a mitigation strategy. This work would be carried out in advance of the development ground works. The remaining identified sites, including all but one of those on the southern heat main route, could be recorded as part of the watching brief proposed during ground works over the whole scheme. Here one site (Feature 6) is recommended to be evaluated by **archaeological trenching**.

The surrounding area is rich in prehistoric and medieval archaeology and although none has been identified in this part of the park at Penrhyn, its presence has to be considered a strong possibility. Oblique aerial photographs have demonstrated the presence of parch marks on the lawns in dry conditions, and although none of them directly relate to the features identified on the heat main route, they do suggest that the presence of buried archaeology might be good despite the extensive landscaping that has been carried out. The levels of the natural subsoils beneath the landscaping works in the area are not currently known, but trench excavation to a depth of 1m is likely to disturb pre-modern deposits, in an area of known intensive activity from medieval times, if any survive on the route of the heat main.

It is therefore recommended that a **Comprehensive Watching Brief** be carried out by an archaeologist during the heat main trench and Energy Centre platform excavation across the open ground, paths and woodland, whichever heat main option is chosen. Time would need to be made available for any archaeological features identified to be fully recorded.

No further action is recommended in the cellar of the Castle, as existing ducts are to be used to enable the pipework to reach the boilers with no significant excavation work to be carried out.

The permanent visual impact of the scheme is considered to be low, as neither proposed Energy Centre building is visible to or from the castle, and both are to be well screened by trees or shrubs. The southern option site will be slightly visible from the public car park at Penrhyn Castle, but is close to the modern visitor centre in any case and will not be visually intrusive.

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Royal Commission on Ancient and Historic Monuments in Wales 2015 *Guidelines for Digital Archives*

Smith, S, 2005 *Parc Bryn Cegin, Bangor: Revised Archaeological Assessment* GAT Report No. **565**

Williams, W, 1806 'A survey of the ancient and present state of the county of Caernarvon III', Reproduced in *Caernarvonshire Historical Society Transactions* **36**, 1975, 194-231

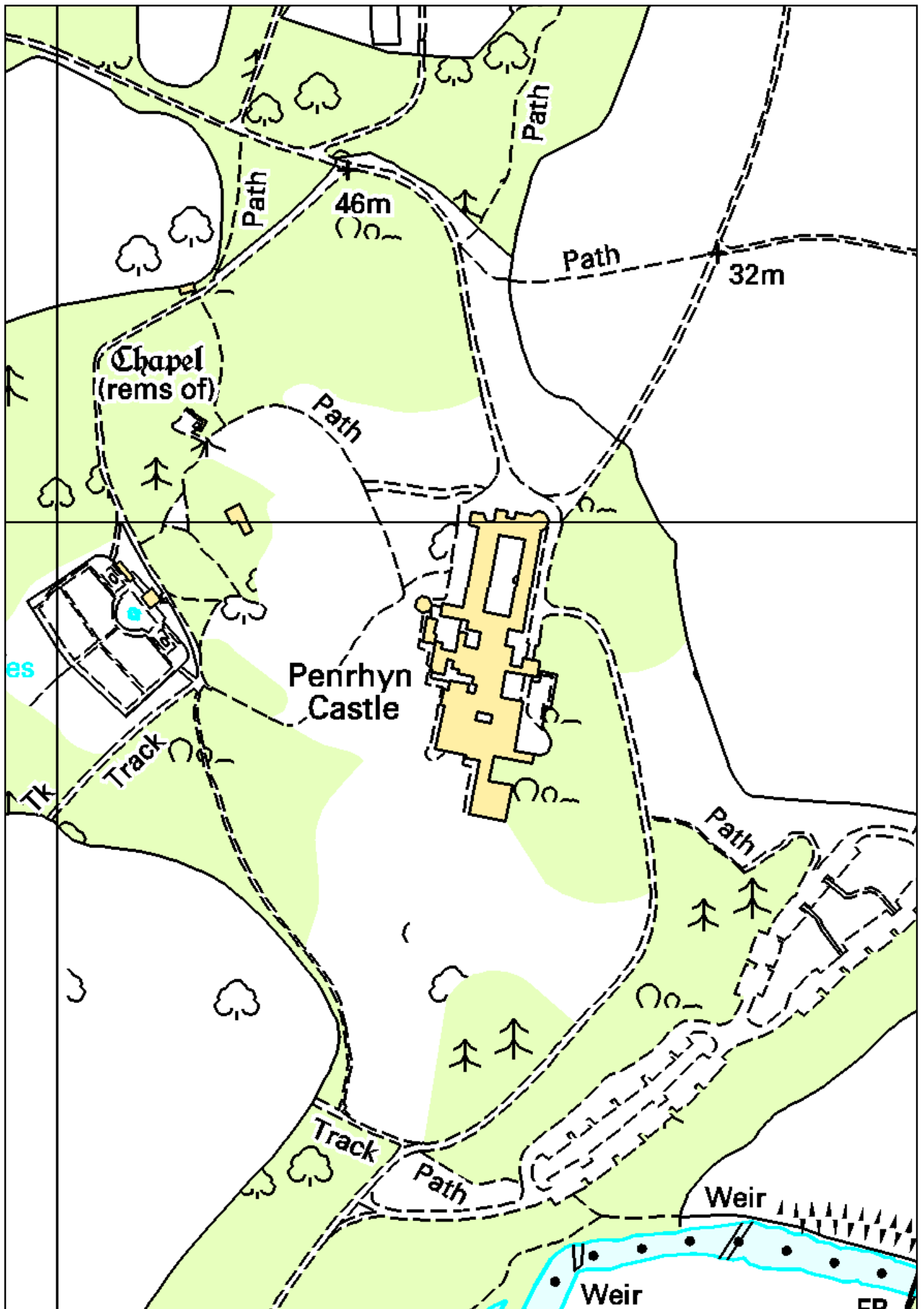


Figure 01: Location Map (based on 1:10000 Ordnance Survey County Series map sheets SH57SE & SH67SW. Scale: 1:3000@A4. Crown Copyright. All Rights Reserved. License number AL100020895.

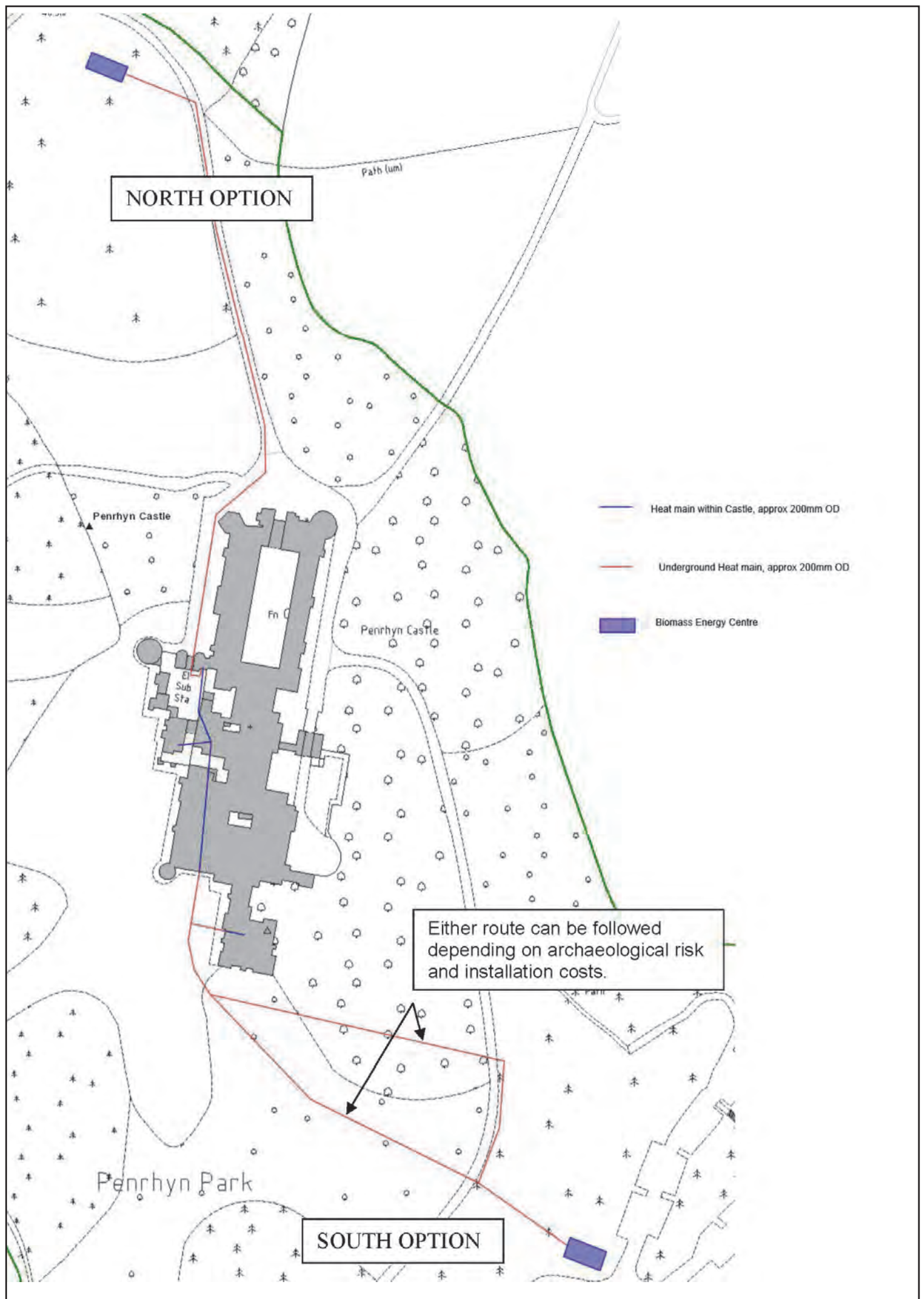


Figure 02: Reproduction of National Trust plan of Penrhyn Castle renewable heating scheme North Option and South Option. Not to Scale.

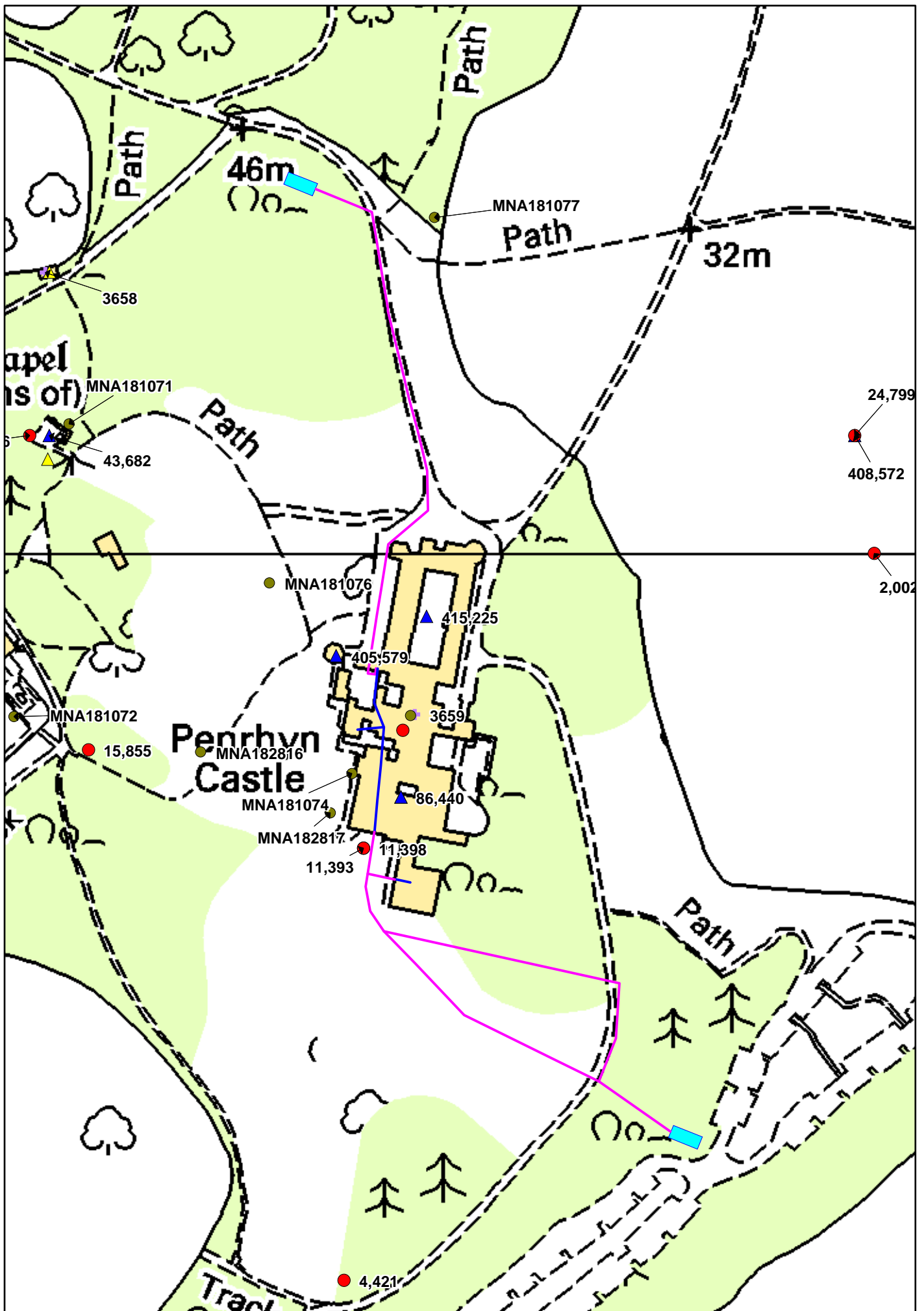


Figure 03: Location of proposed North and South Option routes and information from the Historic Environment Record and National Trust. Scale: 1:2500@A4.

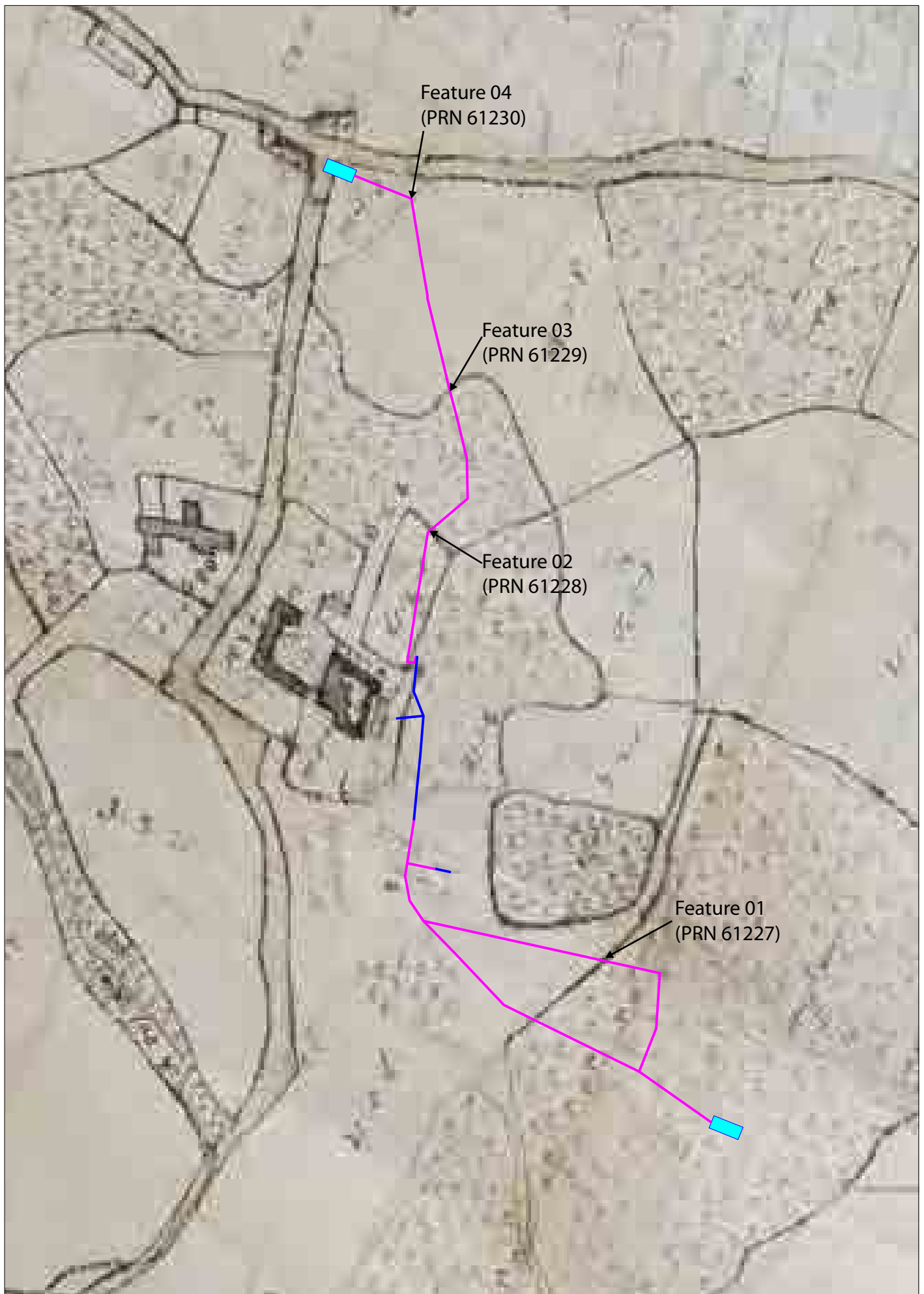


Figure 04: Reproduction of 1768 Penrhyn Estate Map and location of proposed North and South Option routes and information from the Historic Environment Record and National Trust. Scale: 1:2500@A4. (Source: National Trust)

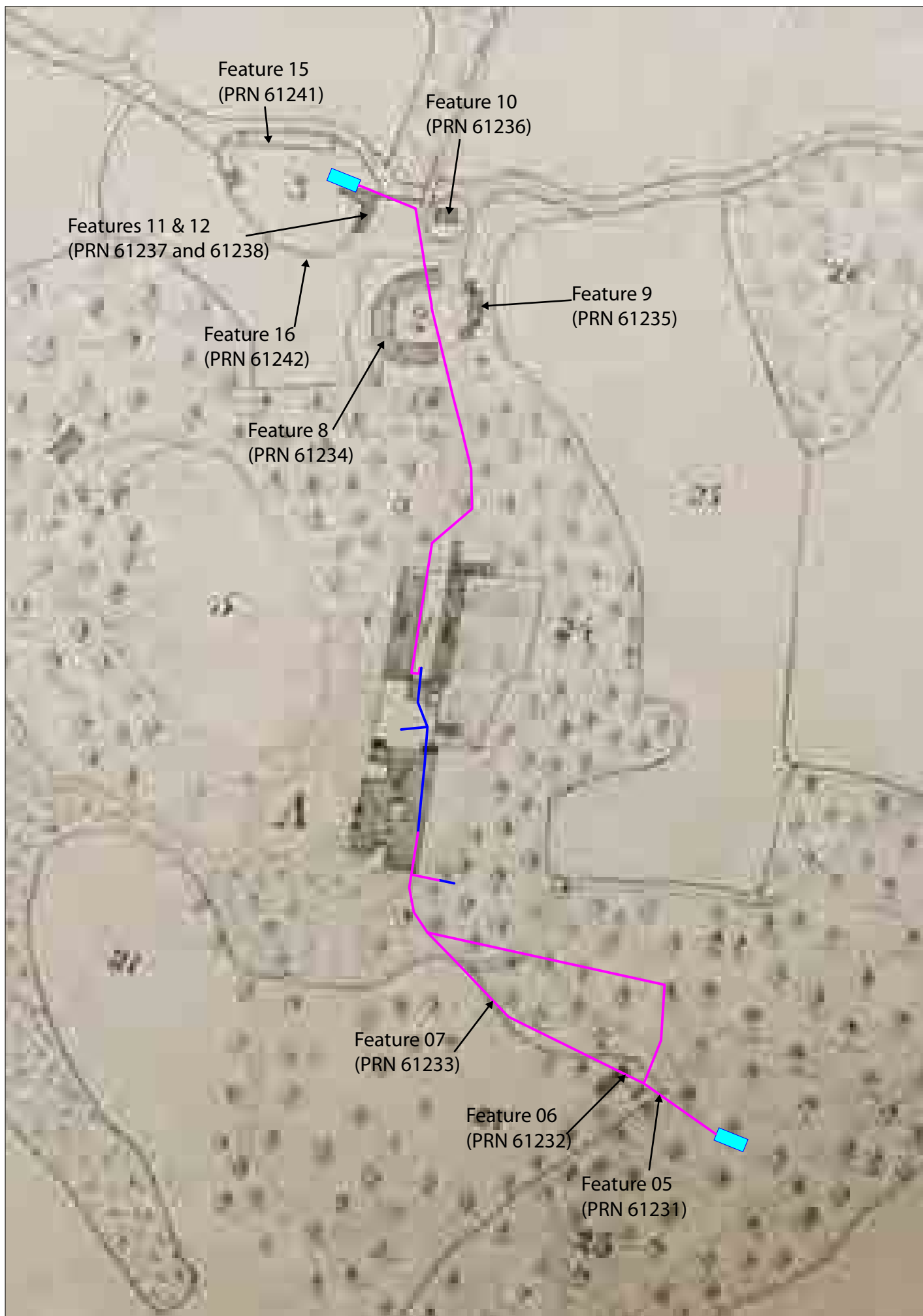


Figure 05: Reproduction of 1803 Penrhyn Estate Map and location of proposed North and South Option routes and information from the Historic Environment Record and National Trust. Scale: 1:2500@A4. (Source: National Trust)



Figure 06: Reproduction of 1828 Penrhyn Estate Map and location of proposed North and South Option routes and information from the Historic Environment Record and National Trust. Scale: 1:2500@A4. (Source: National Trust)

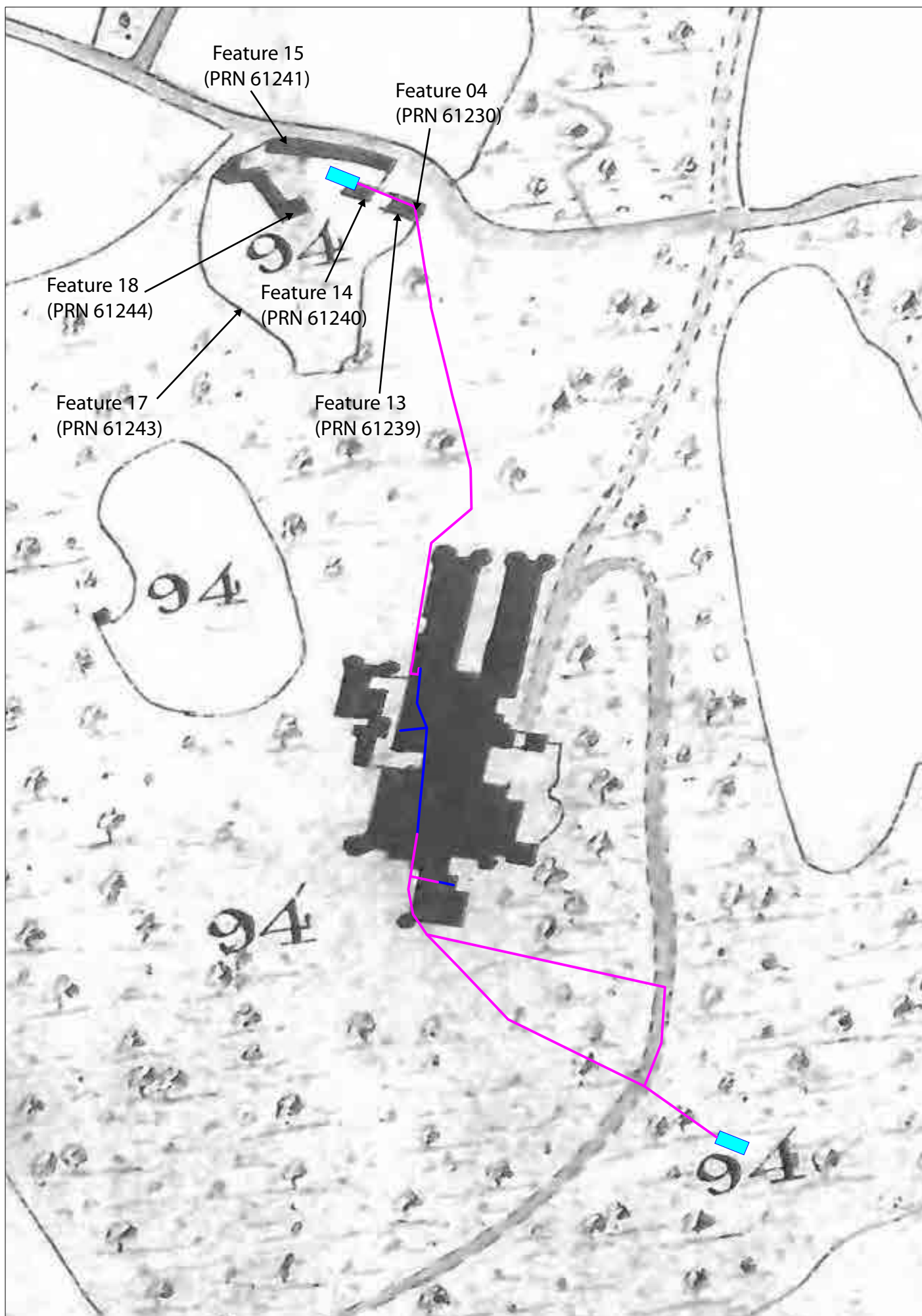


Figure 07: Reproduction of the 1841 Llandygai Parish Tithe Map. Scale: 1:2500@A4.

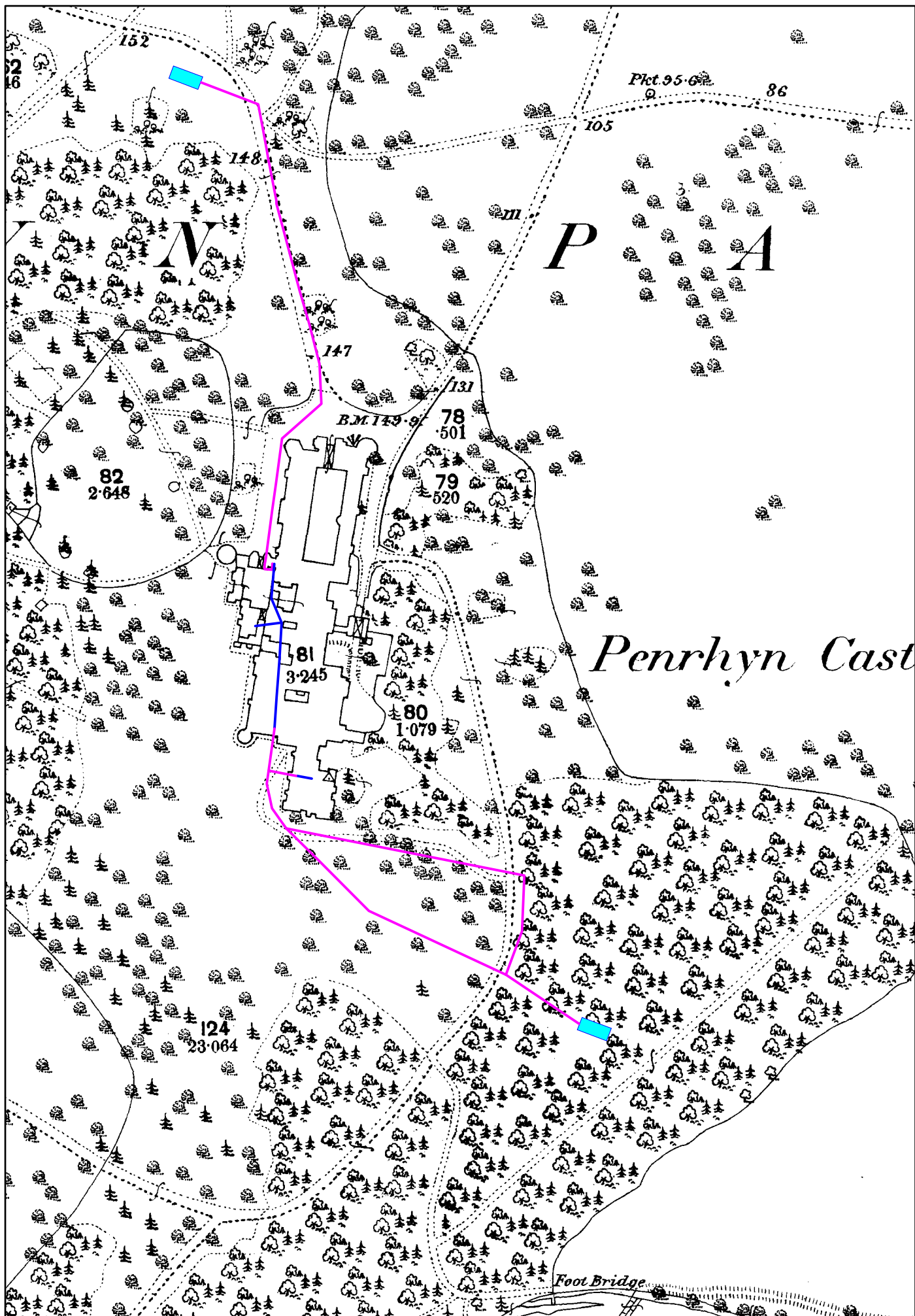


Figure 08: Reproduction of 1890 First Edition 1 inch to 25 mile Carnarvonshire County Series Map Sheets VII.9 and VII.10 and location of proposed North and South Option routes. Scale: 1:2500@A4.

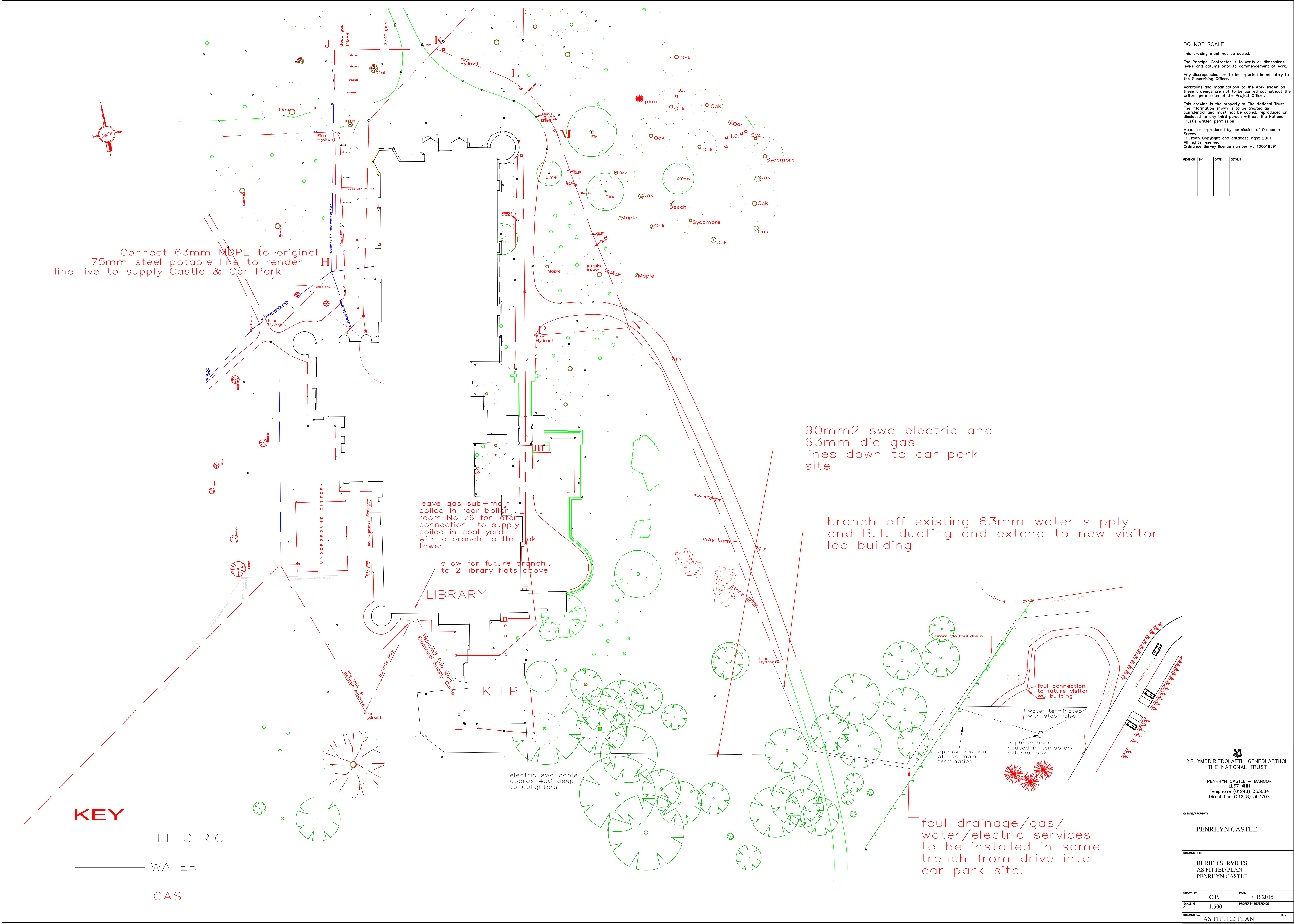


Figure 09: Reproduction of Penrhyn Castle “Buried Services as Fitted Plan”. Source: National Trust; scale: not to scale.

REVISION	BY	DATE	DETAILS
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Source: National Trust; scale: not to scale.



Plate 01: North Option - view north towards location of the energy centre building, which will be screened by existing vegetation.
Scale: 1 x 1m.



Plate 02: North Option - view south towards location of the energy centre building, which will be screened by existing vegetation.
Scale: 1 x 1m.



Plate 03: North Option - view south of heat main route. Scale: 1 x 1m.



Plate 04: North Option - view south of heat main route which will follow the existing path. Scale: 1 x 1m.



Plate 05: North Option - view south along heat main route, which follows the existing path. Scale: 1 x 1m.



Plate 06: North Option - view north along heat main route, which follows the existing path. Scale: 1 x 1m.



Plate 07: North Option - view south of heat main route. Route marked by 1 x1m scale.



Plate 08: South Option - view south-southeast of heat main route. Scale 1 x 1m.



Plate 09: North Option - view north-northwest of heat main route at access point to the cellar. Scale: 1 x 1m.

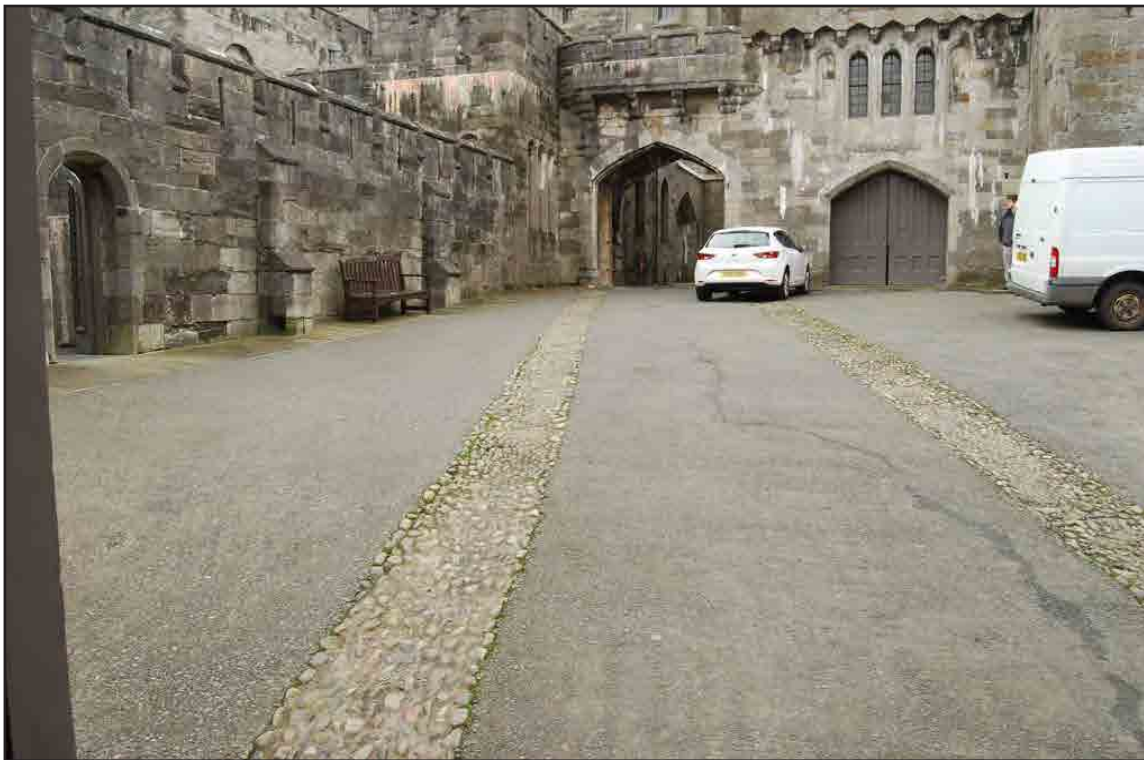


Plate 10: Penrhyn Castle courtyard - view north of courtyard that will be crossed by the heat main.



Plate 11: Cellar - view from within cellar of access point for the heat main from the courtyard. The heat main will use the same access point and route as the existing pipes. Scale: 1 x1m.



Plate 12: Cellar - view from the south of the proposed route for the heat main which will enter the room through the hatch.



Plate 13: Cellar - view north of cellar within Penrhyn Castle that will incorporate the heat main along the elevated duct line. Scale: 1 x 1m.



Plate 14: Cellar - view southeast of cellar within Penrhyn Castle that will incorporate the heat main along the elevated duct line.



Plate 15: South Option - view south of heat main route. Scale: 1 x1m.



Plate 16: South Option - view north of heat main route. Scale 1 x1m.



Plate 17: South Option - view north of castle keep along the line of the heat main towards the location of the boiler room within Penrhyn Castle. Scale 1x1m.



Plate 18: South Option - view east-southeast of heat main route (ii). Scale 1x1m.



Plate 19: South Option - view east of heat main route (i). Scale: 1 x 1m.



Plate 20: South Option - view west of heat main route (i). Scale: 1 x 1m.



Plate 21: South Option - view west along heat main route (i).



Plate 22: South Option - view north-northeast along access track; the heatmain would be laid along the verge. Scale: 1 x 1m



Plate 23: South Option - view northwest of heat main route (i), from Penrhyn Castle to the energy centre building. Route marked by 1 x 1m scale.



Plate 24: South Option - view southeast of heat main route (i), from Penrhyn Castle to the energy centre building. Route marked by 1 x 1m scale.



Plate 25: South Option - view northwest from woodland near energy centre building location towards Penrhyn Castle. Scale 1 x 1m.



Plate 26: South Option - view east of energy centre building location. Scale 1 x 1m.



Plate 27: South Option - view north from energy centre building location towards Penrhyn Castle, which is obscured by trees)



Plate 28: South Option - view west-northwest of energy centre building location

Appendix I: Project Design

PENRHYN CASTLE RENEWABLE HEATING SCHEME (G2447)




PROJECT DESIGN FOR ARCHAEOLOGICAL ASSESSMENT

Prepared for

The National Trust

December 2015

Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

Approvals Table				
	Role	Printed Name	Signature	Date
Originated by	Document Author	John Roberts		04/12/15
Reviewed by	Document Reviewer	Stuart Reilly		04/12/15
Approved by	Principal Archaeologist	John Roberts		04/12/15

Revision History			
Rev No.	Summary of Changes	Ref Section	Purpose of Issue

PENRHYN CASTLE RENEWABLE HEATING SCHEME

PROJECT DESIGN FOR ARCHAEOLOGICAL ASSESSMENT

Prepared for *The National Trust*, November 2015

CONTENTS

1	INTRODUCTION	4
2	Archaeological and historical background	5
3	METHODOLOGY.....	6
3.1	Assessment (Desktop Study).....	6
3.2	Data processing and report compilation.....	7
4	PERSONNEL.....	9
5	HEALTH AND SAFETY	10
6	INSURANCE.....	11
7	SOURCES CONSULTED	12
	FIGURE 1.....	13
	Reproduction of Map showing proposed layouts (Source: The National Trust)	13
	APPENDIX I	14
	Reproduction of Project Brief Penrhyn Castle Renewable Heating Scheme - Archaeological Assessment.	14
	APPENDIX II	15
	Reproduction of The National Trust report Penrhyn Castle Historic Landscape Assessment.	15

1 INTRODUCTION

Gwynedd Archaeological Trust (GAT) has been asked by *The National Trust* to prepare a project design for an archaeological assessment in advance of proposals for a renewable heating scheme at Penrhyn Castle, Llandygai, Gwynedd (NGR SH60277193; Figure 1). The scheme is currently at the pre-planning stage.

The Penrhyn Estate as a whole (both National Trust owned land and the Penrhyn Family land) is a Grade II* registered park and garden reference number PGW (Gd)40 (GWY). The Castle is Grade I, the Chapel is Grade II, the Grand Lodge is Grade II and the Walled Garden is also Grade II. Penrhyn is also part of the Ogwen Valley Registered Historic Landscape, HLW (Gw) 10.

The National Trust has prepared a project brief (Appendix I) that summarises the proposals for the renewable heating scheme and the archaeological assessment requirements. The brief states that the proposed scheme consists of an energy centre building [approx. 10m(l) x 3m(w) x 3m(h) in size], a 200mm diameter buried heat main pipe [approx. 250m in length] and pipes within Penrhyn Castle linking up existing boiler rooms (q.v. Figure 1). The aim of the archaeological assessment will be to examine the impact of these proposals on the archaeology of Penrhyn Castle and to make recommendations for further archaeological evaluation and/or mitigation.

The assessment will be monitored by the Gwynedd Archaeological Planning Services (GAPS) and the National Trust Archaeologist.

The assessment will conform to the guidelines specified in the Chartered Institute for Archaeologists *Standard and Guidance for Historic Environment Desk-Based Assessment* (Chartered Institute for Archaeologists, 2014). Gwynedd Archaeological Trust is a Chartered Institute for Archaeologists *Registered Archaeological Organisation*. The format of this design corresponds to the requirements of section 2.3 of MoRPHE (English Heritage 2015) and to MAP2 (English Heritage, 1991, *Management of Archaeological Projects*).

2 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

Penrhyn Castle was, built in 1822-38 for George Hay Dawkins Pennant and designed by Thomas Hopper. The castle was constructed in a neo-Norman style with a keep, courtyards, barbican and towers, built using stone from Ynys Mon. The castle remains very little changed since construction and has been in the hands of the National Trust since 1951, open to the public since 1952. The present house replaces a late eighteenth-century Gothic 'castle' of yellow brick, on the same site, designed by Samuel Wyatt, which probably retained the plan and part of the chapel of the previous medieval house. The medieval house is thought to have been built in the fifteenth century. The Wyatt-designed house was subsumed by the later Penrhyn Castle but the great hall survives in the present drawing-room.

The National Trust produced a *Penrhyn Castle Historic Landscape Assessment* report in January 2015 (cf. Appendix II for a reproduction of the report). The Historic Landscape Assessment was completed to establish the known and potential historic and archaeological sites at Penrhyn Castle to provide a baseline for further investigation. The assessment covered the development of the current estate, its history, and significant findings with a view to informing management decisions concerning conservation and future development. The Historic Landscape Assessment report examines the development of the estate landscape between 1768 and 1950, through the use primarily of available estate maps. The current archaeological assessment will use information from the *Penrhyn Castle Historic Landscape Assessment*.

3 METHODOLOGY

3.1 Assessment (Desktop Study)

A desk-based assessment is defined as “a programme of study of the historic environment within a specified area or site on land, the inter-tidal zone or underwater that addresses agreed research and/or conservation objectives. It consists of an analysis of existing written, graphic, photographic and electronic information in order to identify the likely heritage assets, their interests and significance and the character of the study area, including appropriate consideration of the settings of heritage....Significance is to be judged in a local, regional, national or international context as appropriate” (ClfA 2014, 4).

The desk-based assessment will involve a study of the following resources:

1. The regional Historic Environment Register (Gwynedd Archaeological Trust, Craig Beuno, Garth Road, Bangor, Gwynedd LL57 2RT) will be examined for information concerning the study area. This will include an examination of the core HER, the 1:2500 County Series Ordnance Survey maps and any secondary information held within the.
2. The National Monuments Record (NMR RCAHMW, National Monuments Record of Wales, Plas Crug, Aberystwyth SY23 1NJ) will be checked for sites additional to the HER, and if required additional supporting information will be examined at the NMR.
3. On-line catalogue search of the National Library of Wales.
4. Archive data and maps, where relevant, will be consulted in the regional archives at the Gwynedd Archives Service (Caernarfon Record Office, Caernarfon, LL55 1SH) and at the Bangor University Department of Manuscripts.
5. The National Trust *Penrhyn Castle Historic Landscape Assessment* report (2015) will be consulted for background map data.

Part of the assessment will involve a walkover of the study. The aim of this stage of the work are to:

- verify the results of the desktop study.
- identify any further archaeological sites which may exist as above ground features
- photograph and record the present condition of all sites noted.

The walkover survey will visit the proposed locations for the energy centre (north option and south option) and heat main; this will include an examination of the heat main route within the castle. A photographic record will be taken of the energy centre locations, including views from these locations to the castle. A service plan for the castle and castle grounds will also be sought for comparison with the proposed works to determine whether any of the locations and heat main routes will be in proximity to areas already disturbed by existing services.

Any previously unrecorded features identified should be recorded in full and allocated a PRN No. if appropriate. The record for any new sites should be compatible with the National Trust Historic Buildings, Sites and Monuments Record (HBSMR) and should include:

1. Site name Grid reference
2. PRN/NPRN/SAM numbers
3. Site type
4. Period
5. Summary description
6. Description
7. Assessment of significance, vulnerability, condition and threats
8. Management recommendations as appropriate
9. A digital photograph with appropriate scale

3.2 Data processing and report compilation

Following completion of the stages outlined above, a report will be produced incorporating the following:

1. A non technical summary
2. The results of the desk top analysis
3. Copies of historic maps where copyright restrictions allow
4. Results of the walk over survey
5. A map locating all recorded features and the extent of the walk over survey
6. An assessment of the impact of the development on the known or potential archaeological resource
7. Recommendations for more detailed field survey if appropriate
8. Recommendations for mitigation
9. Conclusions

10. Sources
11. Summary list of sites
12. Photographic index
13. A gazetteer of all sites and features

Illustrations will include plans of the location of the study area and archaeological sites. Historical maps, when appropriate and if copyright permissions allow, will be included. Photographs of the optional routes for the heat mains and the energy centre locations will be included.

A draft copy of the report will be sent to Gwynedd Archaeological Planning Services and the National Trust. Once approved, a copy of the report will be submitted to Gwynedd Archaeological Planning Services and the National Trust and to the Historic Environment Record located at the Gwynedd Archaeological Trust. Submission of digital information to the Royal Commission on the Ancient and Historical Monuments of Wales will be undertaken in accordance with the RCAHMW Guidelines for Digital Archives Version 1 (2015). Digital information will include the photographic archive and associated metadata.

4 PERSONNEL

The project will be managed by John Roberts, Principal Archaeologist GAT Contracts Section. The assessment will be completed by a project archaeologist who will have responsibility for completing the desk based assessment, completing the walkover survey, maintaining the site archive, liaising with GAPS and National Trust and submitting the draft report and final report. The project manager will be responsible for reviewing and approving the report prior to submission.

5 HEALTH AND SAFETY

The GAT project archaeologist will be CSCS certified. A site specific risk assessment will be prepared prior to the start of fieldwork. The site archaeologist will be issued with required personal safety equipment appropriate for the walkover survey.

6 INSURANCE

Public Liability

Limit of Indemnity- £5,000,000 any one event in respect of Public Liability

INSURER Aviva Insurance Limited

POLICY TYPE Public Liability

POLICY NUMBER 24765101CHC/000405

EXPIRY DATE 22/06/2016

Employers Liability

Limit of Indemnity- £10,000,000 any one occurrence.

The cover has been issued on the insurers standard policy form and is subject to their usual terms and conditions. A copy of the policy wording is available on request.

INSURER Aviva Insurance Limited

POLICY TYPE Employers Liability

POLICY NUMBER 24765101CHC/000405

EXPIRY DATE 22/06/2016

Professional Indemnity

Limit of Indemnity- £5,000,000 in respect of each and every claim

INSURER Hiscox Insurance Company Limited

POLICY TYPE Professional Indemnity

POLICY NUMBER

HU PI 9129989/1208

EXPIRY DATE 23/07/2016

7 SOURCES CONSULTED

English Heritage, 2015, *Management of Research Projects in the Historic Environment (MoRPHE)*.

English Heritage, 1991, *Management of Archaeological Projects*

Gee, L. and Laws, K. 2015. *Penrhyn Castle Historic Landscape Assessment*. The National Trust

Royal Commission on Ancient and Historic Monuments of Wales 2015 *Guidelines for digital archives*

Standard and Guidance for Historic Environment Desk-Based Assessment (Chartered Institute for Archaeologists, 2014).

FIGURE 1

Reproduction of Map showing proposed layouts (Source: The National Trust)



Figure 2 – Map showing proposed layouts for consideration

APPENDIX I

Reproduction of Project Brief Penrhyn Castle Renewable Heating Scheme - Archaeological Assessment.



Yr Ymddiriedolaeth Genedlaethol
The National Trust

Project Brief

Penrhyn Castle Renewable Heating Scheme - Archaeological Assessment

1. Site Location and Description:

- 1.1 The proposed Penrhyn Castle Renewable Heating Scheme is located at Penryn Castle, Llandygai, Gwynedd. The scheme is currently at the pre planning stage.
- 1.2 A number of options for the precise location of the scheme are currently being proposed, see map in figure 2, and an archaeological assessment is required to help evaluate these different options.
- 1.3 The proposed scheme consists of an Energy Centre building [approx. 10m(l) x 3m(w) x 3m(h)], a 200mm diameter buried heat main pipe [approx. 250m in length] and pipes within Penrhyn Castle linking up existing boiler rooms. The trench will be excavated to the measurements detailed in the spec in figure 1 for a 200mm diameter pipe. The ground where the Energy Centre will be located will be excavated level and an area of approximately 10m x 6m (0.3m depth) will be concreted as a base and access to the building.

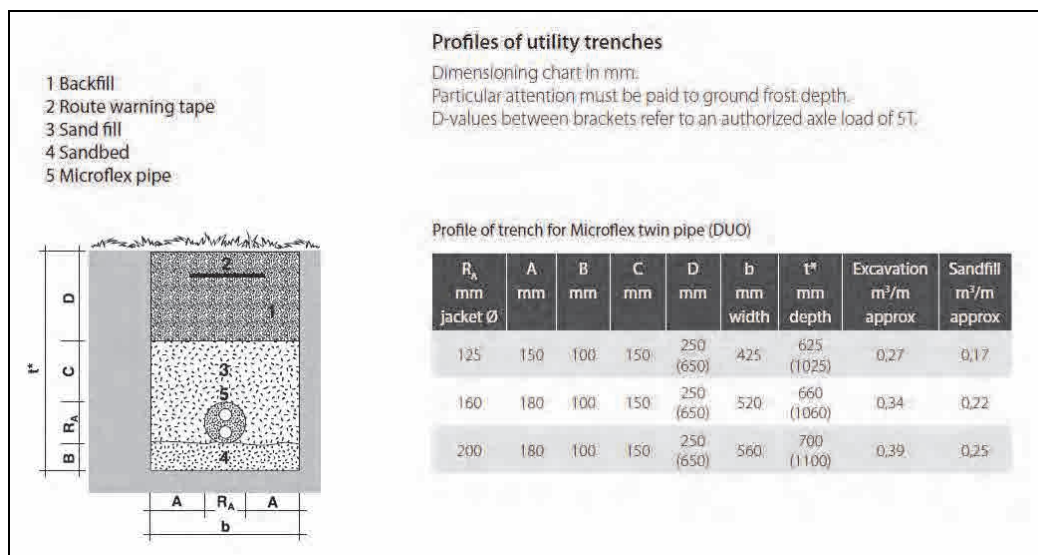


Figure 1 – Profile of heat main trench

2. Archaeological Background:

- 2.1 Penrhyn Castle, as it currently stands is a Normanesque castle that was built between 1820 and 1837.
- 2.2 At least two previous houses are thought to have existed on the site, the earliest being medieval in origin.
- 2.3 The landscape around the castle has also developed over time, with changes to the driveways in and out of the property, changes to associated structures and garden layouts.
- 2.4 While early archaeology has not previously been located within the immediate landscape of the Castle, evidence from the surrounding landscape indicates a strong presence in the area during the Prehistoric period.
- 2.4 A historic landscape assessment carried out recently by a National Trust intern student is a useful guide to historic mapping available for the property.

3. Objectives:

- 3.1 To provide an archaeological assessment for the Penrhyn Castle Renewable Energy Scheme which identifies, records and evaluates the impact of the development on the archaeology of Penrhyn Castle.
- 3.2 To make recommendations for more detailed field evaluation work if appropriate.
- 3.2 To make recommendations for a programme of archaeological works as necessary to mitigate the impact of the development.

4. Methodology:

- 4.1 Desk top analysis:
 - 4.1.1 Examination of readily available cartographic and documentary material to provide an overview of the history and potential archaeology of the area through which the scheme runs.
 - 4.1.2 Sources investigated should include, where appropriate:

Records held by the National Trust.
Records held by the Gwynedd Historic Environment Record
Records and cartographic materials held by Gwynedd Archive Services.

Records and cartographic materials held by Bangor University
Department of Manuscripts.
Records and cartographic materials held by the National Library of
Wales, Aberystwyth.
Archive material and aerial photographs held by the RCHAMW,
Aberystwyth.

4.1.3 Copies of key maps and photographs should be included in the
assessment report where copyright restrictions allow.

4.1.4 All sources consulted must be listed in the report whether or not they
have been productive.

4.2 Site visit:

4.2.1 A walk over survey of the whole area should be carried out.

4.2.2 All features identified as part of the desk top analysis should be visited,
their location and record details checked and updated as necessary.

4.2.3 Any previously unrecorded features identified should be recorded in full
and allocated a PRN No. if appropriate. The record for any new sites
should be compatible with the National Trust HBSMR (guidance to be
provided) and should include:

Site name
Grid reference
PRN/NPRN/SAM numbers
Site type
Period
Summary description
Description
Assessment of significance, vulnerability, condition and threats
Management recommendations as appropriate
A digital photograph with appropriate scale (format for archive to be
discussed with the archaeologist).

5. Reporting:

5.1 A draft report to be submitted for consultation prior to submission of the
final report.

5.2 A final report of the findings of the assessment to be submitted within one
month of the completion of the work. Please supply digital copies in Word
and as a pdf.



Figure 2 – Map showing proposed layouts for consideration

5.3 Copies of the completed report to be provided to, Gwynedd Historic Environment Record and RCHAMW.

5.4 The report should include:

- A non technical summary
- The results of the desk top analysis
- Copies of historic maps where copyright restrictions allow
- Results of the walk over survey
- A map locating all recorded features and the extent of the walk over survey
- An assessment of the impact of the development on the known or potential archaeological resource
- Recommendations for more detailed field survey if appropriate
- Recommendations for mitigation
- Conclusions
- Sources
- Summary list of sites
- Photographic index
- A gazetteer of all sites and features

6. Access and Monitoring Arrangements:

6.1 Arrangements for site access should be made through the National Trust Archaeologist / Penrhyn Castle.

6.2 The project will be monitored by the National Trust Archaeologist.

7. Insurance:

7.1 Contractors must hold Public Liability Insurance with a minimum indemnity level of £2,000,000 for each and every claim for up to 12 months after the completion of work.

7.2 Contractors must hold Employers Liability of £5,000,000.

7.3 It is recommended that Contractors hold Professional Indemnity Insurance with a minimum indemnity level of £1,000,000 for each and every claim up to 6 years after the Contractor completes their services.

8. Health and Safety:

8.1 It is the responsibility of the Contractor to take all reasonable steps to ensure the health and safety of themselves, their staff and members of the public.

8.2 The contractor should have in place an effective Health and Safety Policy.

8.3 Contractors should comply with the requirements of the Health and Safety at Work Act (1974) and the Management of Health and Safety at Work Regulations (1992).

8.4 A risk assessment should be prepared in advance of the commencement of the project.

9. Copyright and Intellectual Property:

9.1 The copyright in all documents, reports, notes, drawings and similar material provided by the contractor in connection with the Project shall vest in the National Trust, except insofar as they are reserved to Crown copyright (ie OS maps) or unless previously owned (record offices etc).

Elgan Roberts

Rheolwr Proiect (Cymru) / Project Manager (Wales)

Rhaglen Buddsoddiad Ynni Adnewyddadwy

Renewable Energy Investment (REI) Programme



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APPENDIX II

**Reproduction of The National Trust report Penrhyn Castle Historic
Landscape Assessment.**

THE NATIONAL TRUST

Penrhyn Castle

Historic Landscape

Assessment

Laura Gee and Kathy Laws

1/1/2015

An investigative report on the landscape of the National Trust held portion of the Penrhyn Estate to highlight potential areas of interest and areas that need further investigation.

Contents

Introduction	page 3
The Estate	page 3
Historic Landscape Analysis	page 3
The Brief	page 4
Sources	page 4
Recommendations	page 5
Historical context of the Penrhyn Estate	page 6
The succession of the houses	page 10
Landscape Development	page 11
1768-1803	page 11
1828-1841	page 14
1900-1950	page 15
Areas of significance	page 17
The Gatehouse	page 17
The Current Drive	page 17
The 1803 Drive	page 18
The 1768 Drive	page 19
The Chapel	page 20
The Walled (flower) Garden	page 21
Medieval Structure	page 22
Early nineteenth century structure	page 23
Possible site of Medieval Building Range	page 23
Discussion	page 25
Appendix 1 – Map Catalogue	page 28
Appendix 2 – Aerial Photographs	page 34
Appendix 3 – Wyatt Plan	page 37

Introduction

The Estate

Penrhyn Castle is a Normanesque castle, adjacent to the city of Bangor, sitting near the edge of the North Wales Coast with easy access to the sea. On the top of a hill surrounded by woodland the castle and the buildings that preceded it, have always held a position of power in North Wales. The castle as it currently stands, although depicting a Normanesque castle, was actually built between 1820-32 by Thomas Hopper to demonstrate the wealth that had been accumulated over the previous two centuries. The grounds around the castle were developed over the eighteenth and nineteenth centuries importing trees from around the world. In 1856 the house and grounds were opened to the public and have been ever since, emphasising their purpose as a means of demonstrating the power and grandeur of the Pennant family and their ability to accommodate distinguished guests. The Penrhyn Estate as a whole (both National Trust owned land and the Penrhyn Family land) is a Grade II* registered park and garden reference number PGW (Gd)40 (GWY). The Castle is Grade I, the Chapel is Grade II, the Grand Lodge is Grade II and the Walled Garden (as opposed to the kitchen garden) is also Grade II. Penrhyn is also part of the Ogwen Valley Registered Historic Landscape, HLW (Gw) 10. This makes clear its significance as a historic landed estate and a place of particular historic interest.

Historic Landscape Analysis

This Historic Landscape survey for Penrhyn Castle has been conducted by Laura Gee BA (hons) for its owners the National Trust. This survey is to establish the known and potential historic and archaeological sites at Penrhyn Castle to provide a baseline for further investigation. It covers the development of the current estate, its history, current state and significant findings to inform management decisions concerning conservation and future development.

The Brief

The brief of this project was to provide the National Trust with a report, which outlines the known and potential archaeological/ historic sites within the National Trust held part of the estate using both desktop research and field evaluation. The scope of the project is an introductory analysis of the landscape and potential archaeological finds with the aim to inform and act as a basis for further investigation.

The demesne lands although still existing will not be covered in the report, just the NT held lands, however it must be noted that they are a key feature of the Penrhyn landscape and they make up part of its history.

To conduct this analysis an overlay of each map was created and then used to conduct the analysis, both desktop and field, however it is crucial at this point to highlight that due to the historic nature of some of the maps geospatial accuracy was hard to achieve and therefore this may affect some of the result. To achieve as accurate a representation as possible key landmarks such as the river adjacent to the estate and key roads were used to create a common element between all the maps.

Information gathered was used to create new records for input into the Historic Building Sites and Monuments Record.

Sources

A large collection of documents including estate maps, accounts and letters are held at the University of Bangor Archives, which cover the mid eighteenth century onwards. The estate maps have formed the basis of the survey to contribute and guide the field survey. This along with discussions with staff and a walk over study have greatly contributed towards this project. It is important to note that there may be other sources that are waiting to be catalogued and were therefore unavailable for analysis and that there is room in the future for further analysis.

Recommendations

- One of the key things that would contribute towards our knowledge of the Penrhyn estate and inform the public would be a greater understanding of the land before the current castle was built. Such information would contribute towards local understanding of the area in the context of other significant events across England and Wales.
- This report has underlined important areas for further investigation that could lead towards previously unknown areas of significance. Further investigation would also clear up certain uncertainties and misinterpretations of where the previous buildings existed.
- Geophysical survey techniques would be the first line in further investigation.
- The old chapel needs stabilizing to protect it from further deterioration.
- Attention is needed on the walled garden as there are serious signs of deterioration.
- Archaeological finds unearthed during gardening activities should be analysed for relevance.
- A detailed historic building analysis of early masonry in the basement of the existing castle may provide relevance to earlier structures.

Historical context of the Penrhyn Estate

This section will aim to give an overview of the history of the Penrhyn estate highlighting the key points in its history to enable us to better understand it in its present form. This will also allow us to place the maps that make up this report into context. The Penrhyn estate has been in existence in some form or another since the Middle Ages and has been seen as a valuable asset to both the Welsh and the English. The situation of the land with its proximity to the sea and its place upon the hill made it a valuable asset to any potential lord and during the time of the Welsh princes it was a highly favourable piece of land.

Penrhyn Castle is thought to occupy the site of King Roderic Malwynog's palace who was said to be an eight-century King of Gwynedd or Prince of North Wales, grandson of Cadwalader the last King of the Britons.¹ This site therefore has held great significance for over a thousands years being a valuable strong hold in North Wales. It would have been valuable in terms of its accessibility to the coast and its proximity to the Land of Mercia (North West England) for raids. After King Roderic the land became connected to the Gruffydds of the time of Henry VI.² The Gruffydds are one of the first families to emerge in Wales holding what we could call a modern landholding estate. They began to emerge in the fourteenth century but it wasn't until its end after three marriage alliances, that they accumulated substantial land in northwest wales. This period in history especially in Wales is synonymous with land and power, which could be gained by alliances and war. These alliances and the exchange of land could change regularly not

¹ Black. Charles., *Black's guide to England and Wales: containing plans of the principal cities, charts, maps and views and a list of hotels...*, (1870).

² GB Historical GIS / University of Portsmouth, History of Penrhyn Castle, in Gwynedd and Caernarvonshire | Map and description, *A Vision of Britain through Time*.

URL: <http://www.visionofbritain.org.uk/place/25723>
(accessed 09th January 2015)

only through war, but through marriage and birthrights. Primogeniture was not necessarily the norm and was not fully adopted in Wales until much later on in the Middle Ages, which meant that land would be fiercely fought over for possession and split up among family members. To keep an estate such as Penrhyn fully intact would have been vital to hold onto power.

The Gruffydd's ³are descendants from Ednyfed Fychan whose valuable services to Llewelyn the Great were rewarded with land in Anglesey and across North Wales. This demonstrates the various ways in which land could be passed around and also the way in which land was passed around within the same family over the centuries.

In the early fifteenth century a Hall House⁴ with two end wings was built for Gwilym ap Gruffydd and it is this house that is known as the medieval house and was to stand until the late eighteenth century. After the Glyndwr revolt in the fourteenth century English families moved in and became more prominent across Wales. The Gruffydd family proved successful in steering themselves through these tough times for prominent Welsh families as from 1431-1531 they held on to their estates and even added to them.⁵ Their success can be said to have begun when they allied themselves with the prominent English family the Stanley's, with Gwilym ap Gruffydd marrying Joan Stanley of Hooton.⁶ The family and their heirs continued to remain strong throughout the fifteenth and sixteenth centuries.

³ Just a note of the spelling of the name Gruffydd. Due to the years of historical writing and the change in commonality of the Welsh language the spelling of the name has developed a number of variations. This at times can become confusing as who the source is talking about becomes unclear. For the purpose of the report the name shall be spelt as Gruffydd and will endeavour to make it clear through use of date who we are discussing.

⁴ Richard Haslan, Julian Orbach, Adam Voelcher, *Pevsner Architectural Guides: Buildings of, Gwynedd*, (2009).

⁵ *Dictionary of Welsh Biography: Griffith of Penrhyn*
<http://wbo.llgc.org.uk/en/s1-GRIF-PEN-1300.html> (accessed 09th January 2015).

⁶ Ibid.

By the end of the sixteenth century the estate passed to John Williams the Dean of Westminster, who descended from Robin ap Gruffydd brother of Gwilym ap Gruffydd, and in 1641 he became the archbishop of York. John Williams' life was dominated by the English civil war playing a central role as he acted as an intermediary between the English and Welsh Royalists,⁷ and was involved in a siege at Conwy castle. This demonstrates how North Wales was very much a part of national events and not just local concerns, demonstrating that the area was by no means isolated.

In 1650 John Williams died and was buried at Llandegai church. On his death the estate passed to Gruffydd Williams his nephew and it stayed within the Williams family until 1684 when Sir Gruffydd William died without an heir and it went to the Williams family of Marl. Despite the apparent frequent change of families many were interlinked showing how all the prominent families in North Wales and their estates were connected. Between 1765 and 1785 the estate passed to Richard Pennant and it was through his acquisition of the estate that the journey began towards the estate, as we now know it.

From 1768 until 1803, before the start of the construction of the current castle a house that we know as the Wyatt house, stood on this site. This most likely came about because of the profits from the sugar plantations. During the eighteenth century there was much debate over the slave trade as the political scene across England and Wales began to shift and in 1787 William Wilberforce began to campaign for the abolition of slavery. On the 9th May 1788 Lord Penrhyn spoke in the House of Commons in defence of the slave trade and its value to the Jamaican economy and on its abolition in 1807, which he regarded as a dangerous experiment.⁸ It was this and as a result of changes in taxation on slate in 1794 that meant that business survival

⁷ *Dictionary of Welsh Biography: Griffith of Penrhyn*
<http://wbo.llgc.org.uk/en/s1-GRIF-PEN-1300.html> (accessed 09th January 2015).

⁸ Oxforddnb Richard Pennant
<http://www.oxforddnb.com/view/article/21859?docPos=2> (accessed 09th January 2015).

became difficult for Lord Richard Penrhyn.⁹ He had, however, received a grant from the crown in 1784 and was therefore able to build an enclosure and the village of Llandygai.¹⁰ On his death in 1808 he was childless and therefore left £150,000 of debt to his heir, Lord Penrhyn cousin's second son, George Hay Dawkins.¹¹ The estate was mortgaged and the debt was paid off.

The next period in the history of the estate was when the castle as we now know it was designed and built by the architect Thomas Hopper for George Hay Dawkins-Pennant who was able to move in before his death in 1840. The next family to hold the estate was Douglas Pennant family and they held it until 1951 when the castle and 40,000 acres of land was passed to the National Trust.

⁹ Ibid.

¹⁰ Oxforddnb Richard Pennant
<http://www.oxforddnb.com/view/article/21859?docPos=2>

¹¹ Ibid.

The Succession of Houses

Introduction

This section is designed to give a brief overview of the succession of the properties that have existed at Penrhyn.

Medieval House

The medieval house is thought to have been built in the fifteenth century¹² and was known as the Hall House because of its design as a long building containing a central hall that was multi functional. This property was to remain in probably what was an altered form until the late eighteenth century.

Wyatt House

The Wyatt House was built in the late eighteenth century and designed by Samuel Wyatt, who probably remodelled the medieval house using what is often described as yellow brick. Plans drawn up by Wyatt in the 1780's incorporated the service buildings associated with the earlier house, however it seems likely that these were swept away during the construction. Wyatt's plans show various versions of the house especially alteration with service ranges. The house itself, however, had a relatively short life, as by 1820 the building of Penrhyn Castle was underway to create a much grander home for the Pennants.

Penrhyn Castle

The present house was built between 1822 and 1838 for George Hay Dawkins Pennant and was designed by Thomas Hopper in a Neo-Norman style. Hopper designed the layout for the entire estate including the castle and the gatehouse and it was designed to reflect the wealth and power of the

¹² Richard Haslan, Julian Orbach, Adam Voelcher, *Pevsner Architectural Guides: Buildings of Gwynedd*, (2009).

Penrhyn Estate. Since then the house is very little changed and has been in the hands of the National Trust since 1951.

Landscape development

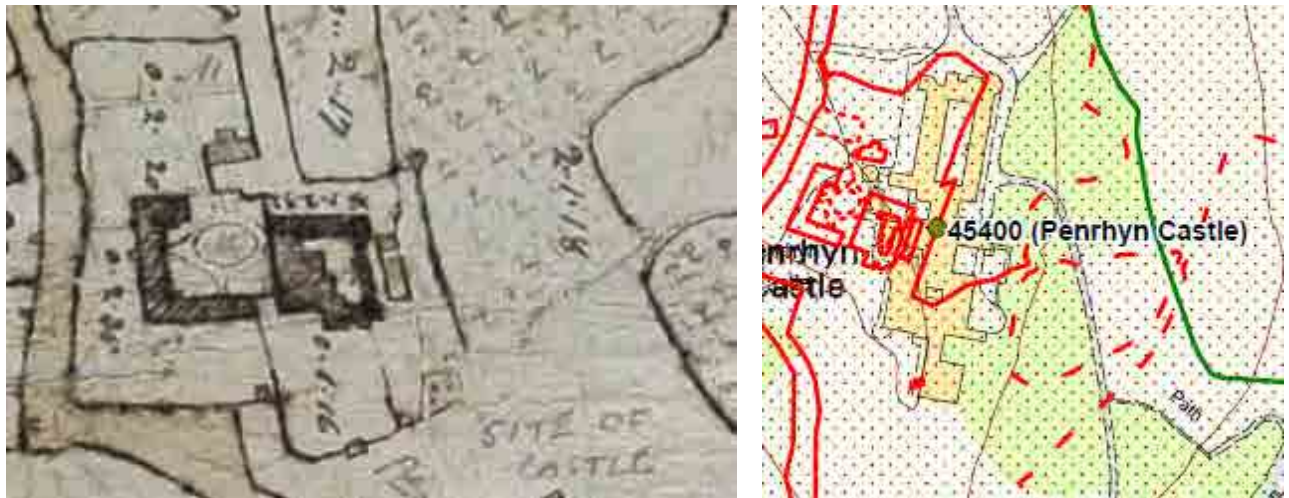
This section will contain a series of original Penrhyn estate maps obtained from the Bangor Archives. These maps will demonstrate the historical landscape development dating from 1768 to the present day and the key areas of development will be highlighted. This is the key section of the report as it enables us to easily locate areas of interest and those in need of further investigation. This section will also work well with the information given in the historical context section of the report as this will visualise many of the points discussed in that section. The maps will be discussed in groups of two to provide a simple comparison and then an overview of the development from 1768 will be given. The maps that will be discussed in their groups are, 1768 and 1803, 1828 and 1841, and then 1900 and 2014. Relevant map extracts are incorporated in the text below, with a full map catalogue presented in appendix.

1768 and 1803

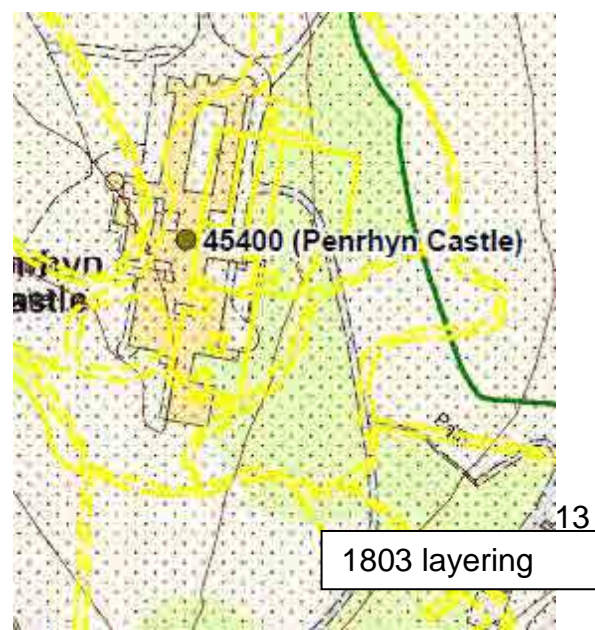
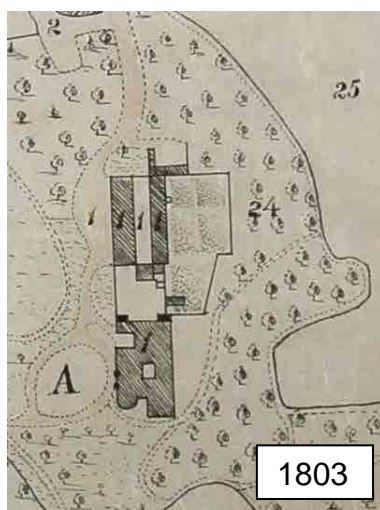


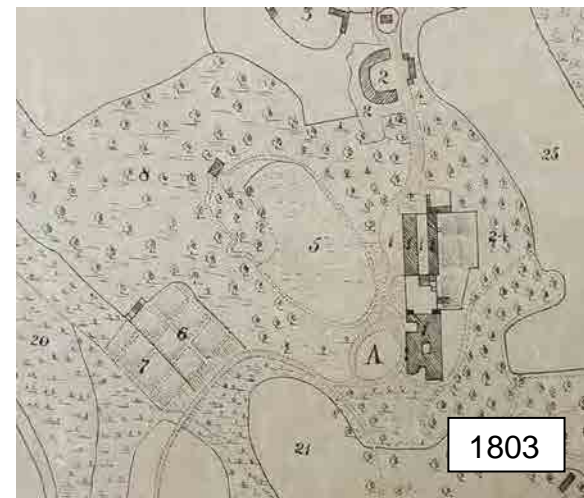
The 1768 estate maps depicts several key features including the original house which has become known as the medieval house. Although the

precise date of its construction is unknown secondary sources suggest the early fifteenth century. These feature will now be highlighted and discussed.



The image on the above left is an enlargement from the original whereas the image on the right shows us roughly where the medieval house was in comparison to the current castle. What we can see from the image of the original map is that the house was a fairly substantial development with what appears to be a courtyard. By 1803 however we can see that substantial changes have occurred, however we are not able to tell whether the 1768 dwelling has been remodeled or if the 1803 building is completely new. It is possible that the original house was remodeled and that the service areas were removed. Although this will be discussed further in other sections, on investigation of the castle basement older foundations are visible, however it is not clear to which property they belong but it is suspected that they belong to the 1803 house. Because of inaccuracies with mapping the historic maps with our current maps it is difficult to estimate whereabouts the 1803 dwelling would have sat in the landscape .





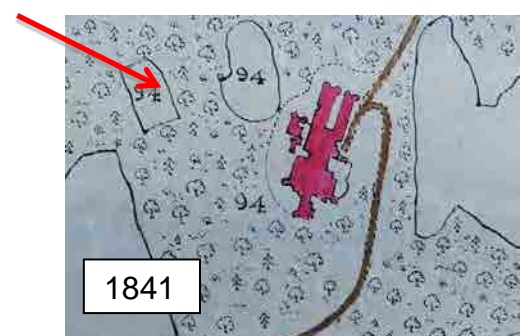
In the 1768 map we can see some outbuildings to the west of the medieval property, however, along with the rebuilding or reconstruction of the property with the Wyatt hall house these outbuildings disappear. In the 1803 map to the north of the property there appears to be another building in the shape of a horseshoe along the road going northwards, however, it is not in existence before this period or in any of the estate maps afterwards. There is also during this period a change in the driveway and approach to the property (for more see areas of significance section). Between 1768 and 1803 there seems to have been some more thought into the planning of the garden as in the 1803 map we can see an organised formation of the parkland and suggestion of planting. There is an area to the west of the property where we can see a grid like formation, which suggests formalised planning. This is what has become known as the walled flower garden (as opposed to the Kitchen Garden in the current demesne lands.)

In terms of land use in 1768 areas of land appear to be designated to others possibly for farming (see larger map in appendix). By 1803 there appears to be more formalised garden planning and planting especially closer to the property, however, there is still evidence that could suggest some of the land was used for farming or grazing. As we move through the years this falls into decline and a more formalised parkland develops, although the formalised planting moves away from the house.

1828-1841

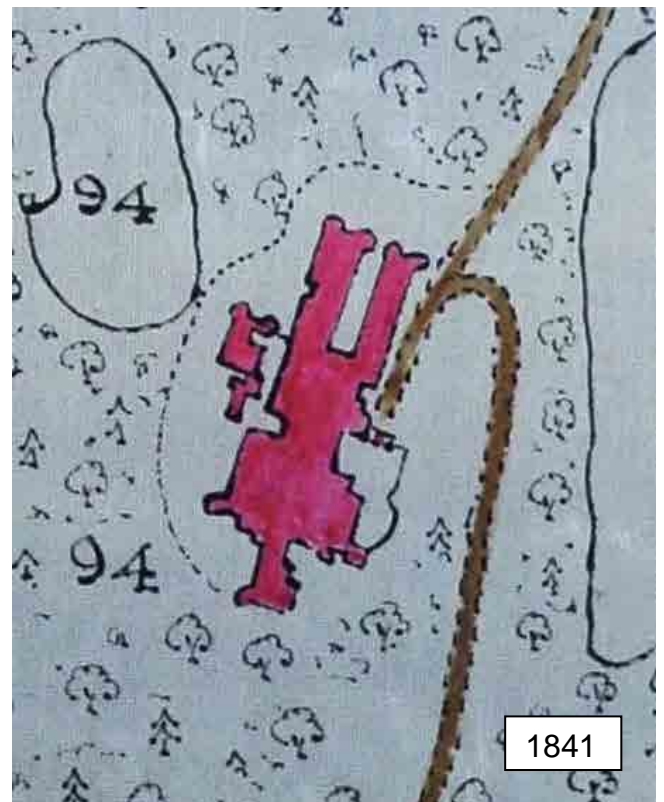


By 1828 the house on the estate is beginning to resemble what we recognise as the castle we see today although it was not yet complete. The Wyatt property is no longer in existence and you can see that there has been a deliberate attempt to completely remodel the property with a more elaborate architectural style. The layout of the grounds seems planned out and certainly more controlled than in 1768, which shows that some thought was



being put into how the estate would be experienced by its visitors. What is now known as the walled garden can be seen, with the grid like formation that suggested planned out sections.

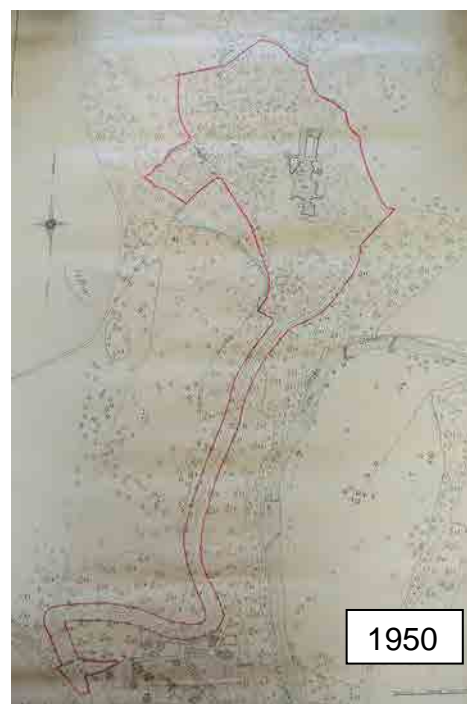
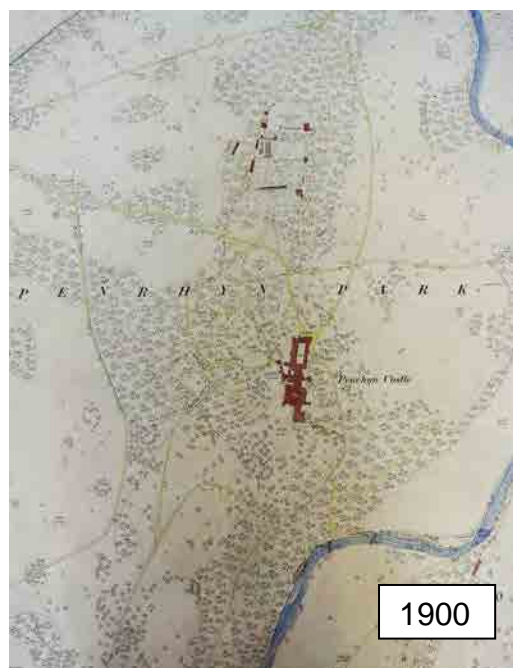
By 1841 the house appears to be complete, and the grounds more developed. The driveway to the castle is now clearly defined, with formalised planting of woodland surrounding it and is approaching from a different direction to the previous development. The estate is now fully ready for visitors of which it had many over the course of the end of the nineteenth century.



1900-1950

Between 1900-1950 very little in terms of land development has changed. In 1900 we can see a large network of pathways and also listed is the waterworks system. The trees appeared to have been substantially thinned over the years to maintain the parkland. World War Two took its toll and the

garden fell from its high status.¹³ This was an issue that affected many great estates across the whole of Britain. Although this doesn't explain the overcrowded nature of the planting that we see in the 1900 map we do see that when the National Trust inherited part of the estate in 1951 (the area which we see outlined in red in the 1950 map) many changes took place. These included new planting and new paths with the aim not being to change the character of the garden but to bring it back to its earlier condition. In recent years more focus has been put on thinning the trees that surround the driveway and creating clear pathways throughout the garden.



¹³ Penrhyn Castle. Conwy, Gwynedd and Isle of Anglesey. Register of landscapes, parks and Garden of special historic interest in Wales. Cadw 1998.

Areas of significance

This section will give an analytical overview of the key areas of significance within the Penrhyn estate.

The Gatehouse

The lodge and gatehouse a grade II listed building appear to have been built at the beginning of the nineteenth century as is seen on an 1828 estate map along with the exterior wall surrounding the parklands. Although not designed by the architect of the Castle, Thomas Hopper, it has clearly been heavily influenced by his style and he was probably involved in part of the process as the gatehouse sets up the entire estate and the experience of visiting it.

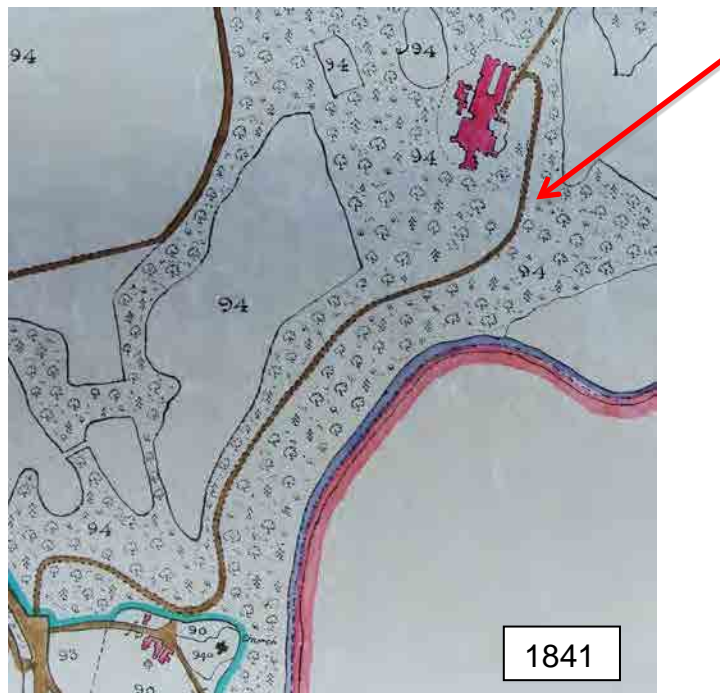
Everything about the construction of the newly styled estate was to be an experience, to show off the wealth of the Douglas Pennant family in physical form. Therefore the gatehouse, its look and character would have been of extreme importance.



Current Drive

The current drive is a clearly defined feature that was instigated when the current castle was built to create a long dramatic entrance to the castle further adding to the visitor's experience. The drive goes through now dense woodland and then opens up with a view across the park and to the castle. It is likely that the woodland was not originally as dense as there are records of

trees being thinned, however, it was clearly designed as a woodland park and to be viewed as such.



The 1803 Drive

The original drive into the Penrhyn estate approached the property from the South West of the current property and was in use definitely from 1803 but is not depicted on an 1841 estate map, which would lead us to believe that once the Castle had finished its construction in 1835 the current drive was the main entrance. The route of the old drive is still visible today and is used as a path down to the edge of the estate alongside the walled gardens with evidence of cobbled surface. The extent of the drive can be seen on the 1803 estate map and its full extent lies outside National Trust lands. The eastern extent of the drive approaching the house has been lost, however, from investigating the maps it would be plausible to assume a similar grand approach to the Wyatt house or the so called medieval house of the eighteenth century. Further investigation into this approach and perhaps a degree of reinstating would be beneficial, as it would highlight the development of the estate.



The 1768 Drive

It would appear that the 1768 drive begins at a similar point as the current drive, although it follows a different path, the approach is coming from the village as it does now. However because of the dramatic change in the surrounding landscape around the drive it is difficult to determine the exact path of the 1768 drive. What we can determine however is that by 1803 this is no longer shown as the main drive, as we have seen from the previous discussion the approach had moved further west.



Chapel

The chapel ruin in the garden is a grade II listed feature and has been created as a feature and is not in its original location, however, it is possible that a 1768 estate map depicting the medieval house shows the original location. In the current castle's chapel there is some panelling that may have come from the original chapel although it is possible that it was brought from elsewhere.



The old chapel ruin now stands with no interior features or roof. The ruin has stone facing and medieval stone tracery around the window attached to brick skin and also some concrete supporting one of the windows. The chapel remains one of Penrhyn's biggest mysteries and certainly needs further analysis, as there are so many factors that we're unsure of. For instance, when was the chapel moved to its current location? We know that during the interim period between the medieval house and the current castle that Samuel Wyatt designed a new house that may have redeveloped much that was already there. Therefore when the chapel was moved isn't easy to tell. From plans drawn up by Wyatt it seems that it was intended to be incorporated in his designs. However, it is not seen in an 1803 map so it was probably moved during the construction of the Wyatt house. The chapel needs significant repairs to prevent further damage.

Walled Garden (Flower Garden as opposed to the Kitchen garden)

The walled flower garden is a grade II listed feature and is a key part of the Penrhyn Park and its landscape. Dating from the early nineteenth century it can clearly be seen on an 1803 estate map, however, the extent to which it was a fully formed walled garden is unclear. What is clear though is that this section of the garden has been planned out in a formal structure since 1803, which demonstrates that even before the current castle was built and the estate remodelled there was clear development in the layout of the estate. On some of the estate maps of the nineteenth century there is evidence of buildings around the exterior of the walled garden, which are no longer in existence, however, there is still some evidence of this in the form of an archway at ground level, which needs further investigation as it may relate to the use of glass houses in this area. At the bottom of the walled garden is a bog area, however, talking to some of the gardeners it seems to have once been a water garden where the water was controlled. The build of wall varies considerably with some areas needing immediate attention to prevent further damage.



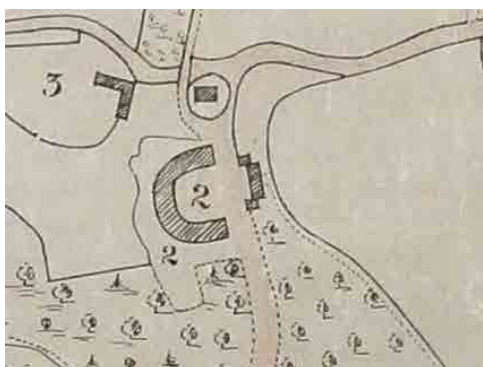
Medieval Structure

To the west of Penrhyn castle is an area of disturbed ground consisting of shallow scoops, which seems consistent with a structure seen on a 1768 estate map. Although it is unclear what this structure is the parching of grass would suggest stone or brick foundations measuring roughly 12m x 12m. The structure relates in some way to the medieval house as in 1803 estate map it is no longer in existence which leads us to believe that under the construction of the Wyatt house there was extensive land development and changes to the structure of the park. Further investigation of this area would undoubtedly lead to a greater understanding of the estate and its history.



Early nineteenth century structure

To the north of Penrhyn Castle there is another area of slightly disturbed ground on the border of National Trust ownership, which is consistent with a structure that is in existence between 1803 – 1828. The structure depicted on the 1803 estate map is in the shape of a horseshoe on the edge of the top road although its function is unclear and it is not in existence by 1828. Further investigation is suggested.



Possible sight of the medieval building range

To the southwest of Penrhyn Castle is the potential site of the medieval house. The exact start date of this house is unknown which therefore throws the term medieval into question; however, on a 1768 estate map we know that there was a house on this site. Although there is little evidence on the surface to demonstrate the site of the pre-nineteenth century house aerial photos acquired from the National Monuments Record for Wales do show extensive parching on the land. Some of this could be a garden feature but there are the possibilities that some may be stone or brick foundations. There has been a recent find of a possible medieval date in a flower bed that may relate to earlier buildings. Stone footings in the basement of the current castle also may relate to earlier buildings. Therefore further investigation is undoubtedly needed in this area to add and improve upon our knowledge of the history of the Penrhyn Estate.





Discussion

This report has highlighted that there are areas of potential archaeological significance that require further investigation. In terms of historical context we have found that it is possible that Penrhyn Castle occupies the site of an eighth century King of Gwynedd's palace. This demonstrates that further investigation, both historical and archaeological, is required to understand this fully. We have also found that the land in general remained in the Gruffydd family throughout the Middle Ages although national events, marriages and issues over inheritance often affected how the land changed hands and how much remained intact. We know that events such as the English Civil War had an impact on North Wales with a siege at Conwy Castle, which the owner of Penrhyn estate at the time was involved in. This demonstrates that further historical investigation would provide further context to the history of the castle and its lands as we can see that there is a long and vibrant history that pre-dates the present castle.

To determine landscape development and aid with field research, geospatial imagery was used. Through this we can demonstrate that the area to the west of the castle holds potential archaeological significance, as it is possible that remains of the previous properties lie there. We can certainly see from the map progressions that further planning went into the landscape as they developed into pleasure grounds. Through the map comparisons we can see not only how the property has developed but also the grounds. You can see how the approach has changed to maximise the effect of the property and highlight its grandeur and dominance.

In terms of areas of significance there are many sites that deserve attention. The succession of the drives is perhaps a key feature change, aside from the houses. The earliest approach comes from the direction of the village of Llandegai as does the current drive however they both follow different routes. For a period during the early 19th Century the drive approached from the west and is still visible and partly used as a pathway today. The reason for the change in approach is likely to be to maximise the impact of the castle, however, further investigation into the western approach may produce insightful information and possible archaeological interest. The chapel ruin in

the garden has been highlighted as a feature that needs significant repairs to prevent further damage. Although it is not conclusive, evidence suggests that the chapel may have been part of previous dwellings and moved to its current location with the construction of the present castle. It is also possible that wooden panelling in the current chapel inside the castle is from the original chapel, however this is not conclusive. There are also various outbuildings that are no longer in existence but if investigated could tell us much about the history of the land and its various functions. These outbuildings could relate to the Wyatt house or the medieval hall house that stood on the land for many years pre-late eighteenth century. Archaeological investigation into these areas is therefore necessary to tell us more about the historic landscape of Penrhyn.

Penrhyn Castle is a house that was made to be seen and has a significant heritage. The site of the castle has a longer history than has perhaps been focused on previously. The houses and buildings that occupied this land before the castle potentially had equal stature as the current house. Furthermore archaeological sites discovered on, what is now the industrial estate nearby, demonstrate that there has been human occupation in this area for thousands of years. In 1870 Black wrote his principle guide to England and Wales where he mentions the historic nature of the site on which Penrhyn castle had been built.¹⁴ This demonstrates that even centuries after, the land's heritage still had an impact on how it was viewed. Thus adding to the estate's prestige. The current castle and the design of the extensive parkland estate are all designed to represent, in physical form, the wealth and power of the Pennant family. To fully grasp the history of the current estate and its landscape development further investigation must be carried out to add to our understanding of the area's heritage and significance.

¹⁴ Black. Charles., *Black's guide to England and Wales: containing plans of the principal cities, charts, maps and views and a list of hotels...*, (1870).

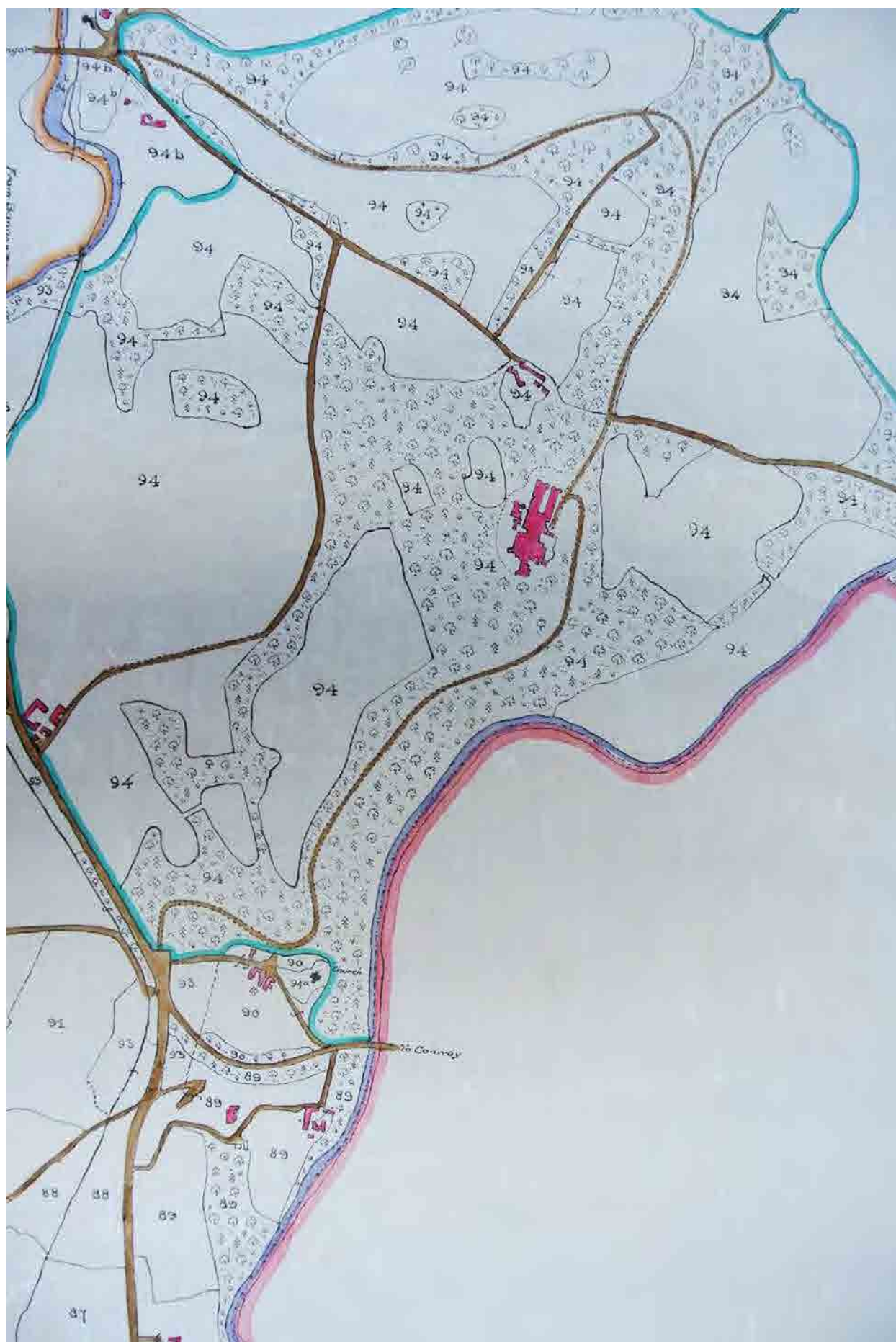
Appendix 1 – Map Catalogue (These sources are deposited in the archive of Bangor University, North Wales, Bangor.)



Penrhyn Estate map 1950



Penrhyn Estate Map 1900



Penrhyn Estate map 1841



Penrhyn Estate map 1828



Penrhyn Estate map 1803



Penrhyn Estate map 1768

Appendix 2 – Aerial Photographs



Image 965126-55 (DI2014_0583)



Image DI2008_0359

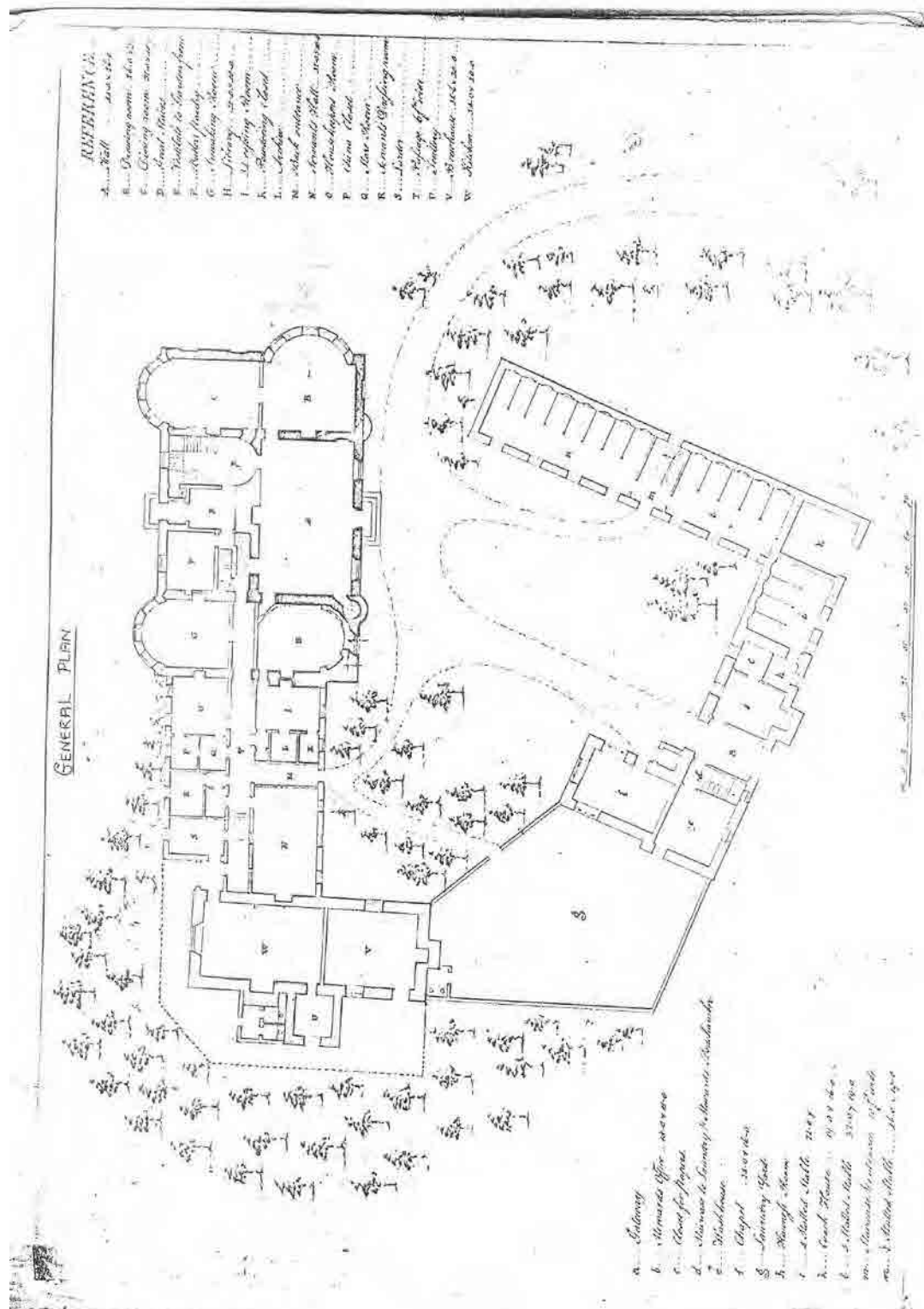
Crown copyright: Royal Commission on the Ancient and Historical Monuments of Wales



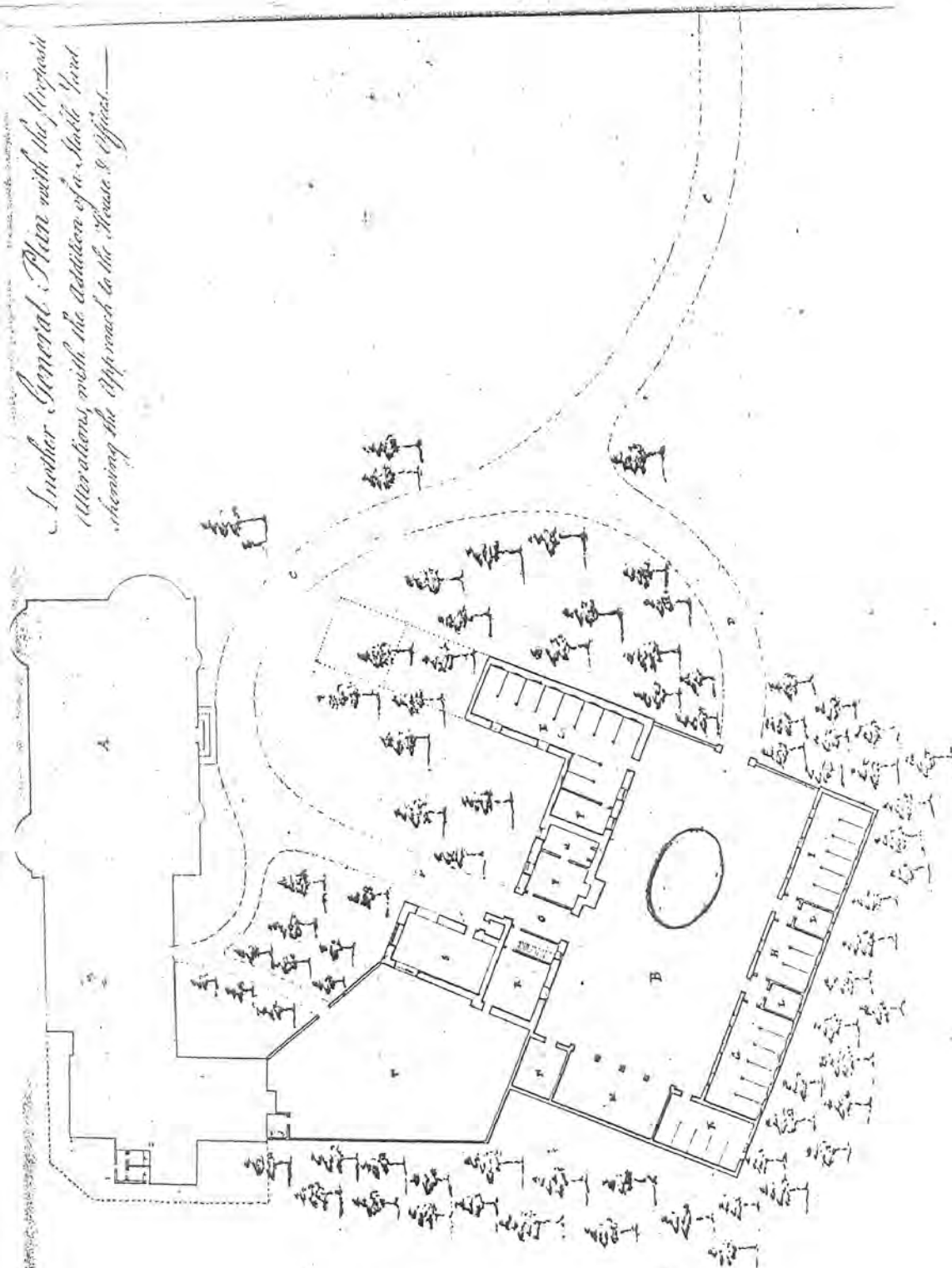
Image 965126-54 (DI2014_0582)

Crown copyright: Royal Commission on the Ancient and Historical Monuments of Wales

Appendix 3 – Samuel Wyatt plans (source unknown, but appear to contain plans for possible reconstructions of the medieval house at Penrhyn, earliest date 1782)



Another General Plan with the proposed alterations, with the addition of a Stable Yard, showing the Approach to the House & Offices.



REFERENCE.

- A... House & Offices
- B... Stable Yard
- C... Approach Road
- D... Road to Stables &c.
- E... Coach House
- F... Horse Room
- G... 4 Stalls
- H... 5 Stalls
- I... 4 Stalls
- K... Stable for 5 Horses
- LL... Stable Room
- M... Coach house for 4 Carriages
- N... Open Stable for a shed Horse
- O... Stationary
- P... Stables Office
- Q... Room for Carriage
- R... Wash house & Laundry room
- S... Chapel
- T... Laundry Yard

APPENDIX II: photographic metadata

File reference	Project name	Project phase	Site sub-division	Description	View from	Scale (s)	Date	Originating person	Originating organisation
G2447_Penrhyn_001	G2447 Penrhyn Castle	Assessment	N	View of proposed north option building location	S	1 x1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust
G2447_Penrhyn_002	G2447 Penrhyn Castle	Assessment	N	View of proposed north option building location	N	1 x1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust
G2447_Penrhyn_003	G2447 Penrhyn Castle	Assessment	N	View from north option building towards castle (not visible)	N	1 x1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust
G2447_Penrhyn_004	G2447 Penrhyn Castle	Assessment	N	View towards castle from path (under which pipe trench will be buried)	N	1 x1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust
G2447_Penrhyn_005	G2447 Penrhyn Castle	Assessment	N	View away from castle from path (northern route)	S	1 x1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust
G2447_Penrhyn_006	G2447 Penrhyn Castle	Assessment	N	View towards castle from path (northern route)	N	1 x1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust
G2447_Penrhyn_007	G2447 Penrhyn Castle	Assessment	N	View towards castle from path (northern route)	N	1 x1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust
G2447_Penrhyn_008	G2447 Penrhyn Castle	Assessment	N	View from castle along proposed northern route	S	1 x1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust
G2447_Penrhyn_009	G2447 Penrhyn Castle	Assessment	N	Location pipe of proposed northern route, passing castle corner toer	NW	1 x1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust

File reference	Project name	Project phase	Site sub-division	Description	View from	Scale (s)	Date	Originating person	Originating organisation
G2447_Penrhyn_010	G2447 Penrhyn Castle	Assessment	N	Northern pipe route to the west of the castle	N	1 x1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust
G2447_Penrhyn_011	G2447 Penrhyn Castle	Assessment	N	orthern pipe route to the west of the castle	S	1 x1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust
G2447_Penrhyn_012	G2447 Penrhyn Castle	Assessment	N	View gateway through which pipe will pass	NNE	1 x1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust
G2447_Penrhyn_013	G2447 Penrhyn Castle	Assessment	N	View of northern pipe route into cellar from the courtyard	W	1 x1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust
G2447_Penrhyn_014	G2447 Penrhyn Castle	Assessment	N	View of northern pipe route into cellar from the courtyard	SSE	1 x1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust
G2447_Penrhyn_015	G2447 Penrhyn Castle	Assessment	courtyard	View of courtyard across which pipe is proposed	N	1 x1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust
G2447_Penrhyn_016	G2447 Penrhyn Castle	Assessment	courtyard	View of courtyard across which pipe is proposed	S	1 x1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust
G2447_Penrhyn_017	G2447 Penrhyn Castle	Assessment	Cellar [s]	Duct where pipe will enter house	ESE	1 x1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust
G2447_Penrhyn_018	G2447 Penrhyn Castle	Assessment	Cellar [s]	Route of pipe-leads to boiler	SSW	1 x1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust
G2447_Penrhyn_019	G2447 Penrhyn Castle	Assessment	Cellar [s]	Cellar pipe route through duct and open cellar area	N	1 x1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust

File reference	Project name	Project phase	Site sub-division	Description	View from	Scale (s)	Date	Originating person	Originating organisation
G2447_Penrhyn_020	G2447 Penrhyn Castle	Assessment	Cellar [s]	Cellar pipe route through duct and open cellar area	S	1 x1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust
G2447_Penrhyn_021	G2447 Penrhyn Castle	Assessment	Cellar [s]	View of cellar and ducts through which pipe will take	S	1 x1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust
G2447_Penrhyn_022	G2447 Penrhyn Castle	Assessment	Cellar [s]	View of cellar and ducts through which pipe will take	NE	1 x1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust
G2447_Penrhyn_023	G2447 Penrhyn Castle	Assessment	Cellar [s]	View of cellar and ducts through which pipe will take	SE	1 x1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust
G2447_Penrhyn_024	G2447 Penrhyn Castle	Assessment	S	View of southern pipe route	N	1 x1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust
G2447_Penrhyn_025	G2447 Penrhyn Castle	Assessment	S	View of southern pipe route	S	1 x1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust
G2447_Penrhyn_026	G2447 Penrhyn Castle	Assessment	S	View of castle keep, on line of spur pipe to boiler in keep	W	1 x1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust
G2447_Penrhyn_027	G2447 Penrhyn Castle	Assessment	S	View of southern pipe route (ii)	WNW	1 x1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust
G2447_Penrhyn_028	G2447 Penrhyn Castle	Assessment	S	View of southern pipe route (ii)	SE	1 x1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust
G2447_Penrhyn_029	G2447 Penrhyn Castle	Assessment	S	View of southern pipe route (i), from castle to proposed southern building [not visible]	NW	1 x1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust
G2447_Penrhyn_030	G2447 Penrhyn Castle	Assessment	S	View of southern pipe route (i)	W	1 x1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust

File reference	Project name	Project phase	Site sub-division	Description	View from	Scale (s)	Date	Originating person	Originating organisation
G2447_Penrhyn_031	G2447 Penrhyn Castle	Assessment	S	View of southern pipe route (i)	E	1 x1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust
G2447_Penrhyn_032	G2447 Penrhyn Castle	Assessment	S	View of southern pipe route (ii)	NW	1 x1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust
G2447_Penrhyn_033	G2447 Penrhyn Castle	Assessment	S	View of southern pipe route (ii)	SE	1 x1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust
G2447_Penrhyn_034	G2447 Penrhyn Castle	Assessment	S	View of southern pipe route (ii)	SE	1 x1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust
G2447_Penrhyn_035	G2447 Penrhyn Castle	Assessment	S	View along access track, pipe would possibly be laid on eastern verge	SSW	1 x1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust
G2447_Penrhyn_036	G2447 Penrhyn Castle	Assessment	S	View along access track, pipe would possibly be laid on eastern verge	N	-	04/12/15	Robert Evans	Gwynedd Archaeological Trust
G2447_Penrhyn_037	G2447 Penrhyn Castle	Assessment	S	View along southern option route (i)	E	-	04/12/15	Robert Evans	Gwynedd Archaeological Trust
G2447_Penrhyn_038	G2447 Penrhyn Castle	Assessment	S	View in woodland towards south option building location	NW	1 x1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust
G2447_Penrhyn_039	G2447 Penrhyn Castle	Assessment	S	View towards castle from woodland near south option building locationm	SE	1 x1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust
G2447_Penrhyn_040	G2447 Penrhyn Castle	Assessment	S	View of southern option building location	W	1x 1m	04/12/15	Robert Evans	Gwynedd Archaeological Trust

File reference	Project name	Project phase	Site sub-division	Description	View from	Scale (s)	Date	Originating person	Originating organisation
G2447_Penrhyn_041	G2447 Penrhyn Castle	Assessment	S	View from the southern option building towards the castle [not visible]	S	-	04/12/15	Robert Evans	Gwynedd Archaeological Trust
G2447_Penrhyn_042	G2447 Penrhyn Castle	Assessment	S	General view of southern option building from the public car park	ESE	-	04/12/15	Robert Evans	Gwynedd Archaeological Trust

APPENDIX III: Sites Listed on the Gwynedd HER

APPENDIX III

Sites on Gwynedd HER within 200m of the heat main route

Monument ID	Site Name	Form	Period	Grid Reference	Type	Status	Status Grade
2316	Chapel, Llandegai	Building	Medieval	SH60077206	CHAPEL	Listed Building	II
24799		Cropmark, Possible Former Folly, Penrhyn Park	Unknown	SH6049072060	CROPMARK		
11393	Penrhyn Castle	Building	POST- MEDIEVAL	SH60247185	CASTLE	Listed Building	I
4421	Penrhyn Castle Park and Gardens, Bangor	Landscape	POST- MEDIEVAL	SH60237163	PARK	National Trust; Registered Parks and Gardens	
2325	Penrhyn Castle, Llandegai, Bangor	Building	POST- MEDIEVAL	SH60267191	CASTLE	Listed Building;National Trust	I
15855		Penrhyn Demesne - Landscape	MULTI- PERIOD	SH60107190	LANDSCAPE		
11398		Penrhyn Walled Flower Gdn.wall	POST- MEDIEVAL	SH60247185	BUILDING	Listed Building	II
2002	Site of Fulling Mill, Creuwriion			SH60507200	FULLING MILL		

APPENDIX IV: Sites Listed on the National Trust HBSMR

Monument ID	Monument Record Type	Year Minimum	Year Maximum	Period	Monument Types	Grid Reference	Map Sheet	Topology	NGR Qualifier	Easting	Northing	Pref Ref	Name	NT Property
MNA179256	Building	1801	1832	Early 19th C	Castle	SH 6026 7191	SH67S W	Point		260264	371918	4540 0	Penrhyn Castle	Penrhyn Castle; Wales
MNA181071	Monument	1803	1832	Early 19th C	Chapel	SH 60090 72066	SH67S W	Point	GPS derived	260090	372066	4540 1	Chapel, Penrhyn Castle Grounds, Penrhyn Castle	Penrhyn Castle; Wales
MNA181072	Building	1801	1832	Early 19th C	Walled Garden	SH 60062 71917	SH67S W	Point	GPS derived	260062	371917	4540 4	Walled Garden, Penrhyn Castle Garden, Penrhyn Castle	Penrhyn Castle; Wales
MNA181073	Routeway	1803	1841	Early 19th C to Mid 19th C	Drive	SH 60003 71817	SH67S W	Point	GPS derived	260003	371817	4540 6	Drive, Penrhyn Castle Woodland, Penrhyn Castle	Penrhyn Castle; Wales
MNA181074	Monument	-500000	1803	Unknown to Early 19th C	House	SH 60234 71888	SH67S W	Point	GPS derived	260234	371888	4540 5	House, Penrhyn Castle Garden, Penrhyn Castle	Penrhyn Castle; Wales
MNA181076	Monument	1801	1832	Early 19th C	Structure	SH 60192 71985	SH67S W	Point	GPS derived	260192	371985	4540 3	Structure, Penrhyn Castle Garden, Penrhyn Castle	Penrhyn Castle; Wales
MNA181077	Monument	1803	1828	Early 19th C	Structure	SH 60276 72171	SH67S W	Point	GPS derived	260276	372171	4540 2	Structure, Penrhyn Castle Garden, Penrhyn Castle	Penrhyn Castle; Wales
MNA182149	Monument	1801	1900	19th C	Water Pumping Station	SH 60158 71368	SH67S W	Point	GPS derived	260158	371368	4541 1	Pumphouse, Afon Ogwen, Penrhyn Castle	Penrhyn Castle; Wales
MNA182358	Monument	1801	1900	19th C	Emergency Water Supply	SH 60172 71386	SH67S W	Point	GPS derived	260172	371386	4540 7	Water Storage shaft (possibly)	Penrhyn Castle; Wales
MNA182815	Monument	1801	1900	19th C	Water Tank	SH 60158 71368	SH67S W	Point		260158	371368	4541 0	Rain Storage or Water Channel?	Penrhyn Castle; Wales
MNA182816	Monument	1801	1900	19th C	Water Tap	SH 60157 71899	SH67S W	Point		260157	371899	4541 2	Water Valve	Penrhyn Castle; Wales
MNA182817	Monument	1801	1900	19th C	Water Tank	SH 60223 71868	SH67S W	Point		260223	371868	4541 3	Water Tank, Penrhyn Castle	Penrhyn Castle; Wales
MNA182813	Monument	1801	1900	19th C	Water Tank	SH 60158 71368	SH67S W	Point	GPS derived	260158	371368	4540 8	Rain Storage Tank - Penrhyn Wood, Penrhyn Castle	Penrhyn Castle; Wales
MNA182814	Monument	1801	1900	19th C	Waterworks	SH 60158 71368	SH67S W	Point	GPS derived	260158	371368	4540 9	Water Inspection Channel	Penrhyn Castle; Wales

APPENDIX V: Definition of Terms

APPENDIX IV

Definitions of terms used within the report

Categories of importance

The following categories were used to define the importance of the archaeological resource.

Category A - Sites of National Importance.

Scheduled Ancient Monuments, Listed Buildings of grade II* and above, as well as those that would meet the requirements for scheduling (ancient monuments) or listing (buildings) or both.

Sites that are scheduled or listed have legal protection, and it is recommended that all Category A sites remain preserved and protected *in situ*.

Category B - Sites of regional or county importance.

Grade II listed buildings and sites which would not fulfil the criteria for scheduling or listing, but which are nevertheless of particular importance within the region.

Preservation *in situ* is the preferred option for Category B sites, but if damage or destruction cannot be avoided, appropriate detailed recording might be an acceptable alternative.

Category C - Sites of district or local importance.

Sites which are not of sufficient importance to justify a recommendation for preservation if threatened.

Category C sites nevertheless merit adequate recording in advance of damage or destruction.

Category D - Minor and damaged sites.

Sites that are of minor importance or are so badly damaged that too little remains to justify their inclusion in a higher category.

For Category D sites, rapid recording, either in advance of or during destruction, should be sufficient.

Category E - Sites needing further investigation.

Sites, the importance of which is as yet undetermined and which will require further work before they can be allocated to categories A - D are temporarily placed in this category, with specific recommendations for further evaluation. In this report several sites of unknown potential have been allocated to this category.

Definition of Impact

The impact of the proposed development on each feature was estimated. The impact is defined as *none, slight, unlikely, likely, significant, considerable or unknown* as follows:

None:

There is no construction impact on this particular site.

Slight:

This has generally been used where the impact is marginal and would not by the nature of the site cause irreversible damage to the remainder of the feature, *e.g.* part of a trackway or field bank.

Unlikely:

This category indicates sites that fall within the band of interest but are unlikely to be directly affected. This includes sites such as standing and occupied buildings at the margins of the band of interest.

Likely:

Sites towards the edges of the study area, which may not be directly affected, but are likely to be damaged in some way by the construction activity.

Significant:

The partial removal of a site affecting its overall integrity. Sites falling into this category may be linear features such as roads or tramways where the removal of part of the feature could make overall interpretation problematic.

Considerable:

The total removal of a feature or its partial removal which would effectively destroy the remainder of the site.

Unknown:

This is used when the location of the site is unknown, but thought to be in the vicinity of the proposed works.

Definition of field evaluation techniques

Field evaluation is necessary to fully understand and assess most class E sites and to allow the evaluation of areas of land where there are no visible features but for which there is potential for sites to exist. Two principal techniques can be used for carrying out the evaluation: geophysical survey and trial trenching. Topographic survey may also be employed where sites are thought to survive as earthworks.

Geophysical survey most often involves the use of a magnetometer, which allows detection of some underground features, depending on their composition and the nature of the subsoil. Other forms of geophysical survey, including resistivity survey and ground penetrating radar might also be of use.

Trial trenching allows a representative sample of the development area to be investigated at depth. Trenches of appropriate size can also be excavated to evaluate category E sites. Trenching is typically carried out with trenches of between 20 to 30m length and 2m width. The topsoil is removed by machine and the resulting surface is cleaned by hand, recording features. Depending on the stratigraphy encountered the machine may be used to remove stratigraphy to deeper levels.

Definition of Mitigatory Recommendations

Below are the measures that may be recommended to mitigate the impact of the development on the archaeology.

None:

No impact so no requirement for mitigatory measures.

Detailed recording:

This requires a full photographic record and measured survey prior to commencement of works.

Archaeological excavation may also be required depending on the particular feature and the extent and effect of the impact.

Basic recording:

Requiring a photographic record and full description prior to commencement of works.

Strip, Map and Sample:

The technique of Strip, Map and Sample involves the examination of machine-stripped surfaces to identify archaeological remains. The stripping is undertaken under the supervision of an archaeologist. Stripping and removal of the overburden is undertaken in such a manner as to ensure damage does not take place to surfaces that have already been stripped, nor to archaeological surfaces that have not yet been revealed.

Stripping is undertaken in as careful a manner as possible, to allow for good identification of archaeological features. A small team of archaeologists will be responsible for subsequently further cleaning defined areas where necessary. Complex sites which cannot be avoided will need to be fully excavated.

Watching brief:

This is 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.

Avoidance:

Features, which may be affected directly by the scheme, or during the construction, should be avoided. Occasionally a minor change to the proposed plan is recommended, but more usually it refers to the need for care to be taken during construction to avoid accidental damage to a feature. This is often best achieved by clearly marking features prior to the start of work.

Reinstatement:

The feature should be re-instated with archaeological advice and supervision.



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