NATIONAL BOTANIC GARDEN OF WALES, WALLED GARDEN BIOMASS BOILER: ARCHAEOLOGICAL WATCHING BRIEF SN 51948 18136





Prepared by DAT Archaeological Services For: National Botanic Garden of Wales





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NATIONAL BOTANIC GARDEN OF WALES, WALLED GARDEN BIOMASS BOILER:

ARCHAEOLOGICAL WATCHING BRIEF

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SUMMARY

DAT archaeological Services was commissioned by the National Botanic Garden of Wales (NBGW) to undertake an archaeological watching brief during groundworks associated with the construction of a biomass boiler house. The new boiler was for the planned upgrade of the heating system for the Tropical House located within the inner walled garden at NBGW, with the site area lying within the outer walled garden on the northwestern side of the Tropical House. The gardens at NBGW are a Grade II Registered Historic Park and Garden. The new biomass boiler will replace the existing out dated and energy inefficient propane gas fuelled heating system.

The watching brief comprised the initial excavation of two slot trenches through the mound of earth which presently lies within the area of the proposed biomass boiler house. The slot trenches ran from the northwestern wall of the inner walled garden to a small retaining wall flanking a pathway through the outer walled garden.

The small retaining wall was in a relatively poor state of repair and only survived to its original full height of around 0.3m in a few places within the recorded area. It was built of roughly coursed local shale stone with some mortar surviving. It will be rebuilt following the construction of the boiler house. It had been constructed against a cut face of natural indicating some terracing had occurred for the path way flanking its northwestern side.

The walled garden wall was constructed of brick resting on a lower, offset rough limestone and shale footing. A slightly offset brick plinth of two brick courses lay above the stone footing. In total the brick wall above was approximately 3.30m in height from the offset brick plinth to the underside of the capping for the wall. The bricks used were a dark reddish brown colour.

No foundation trench for the wall could be seen and it appeared to have been built against a cut face associated with terracing of the area when the gardens were originally laid out.

The sections of the slot trenches indicated that the area between the small retaining wall and the walled garden wall was originally constructed as a sloping bed. The ground level had been reduced for the inner walled garden area to the southeast and for the pathway to the northwest. The ground level had then been raised using imported material before topsoil was laid above. A stone drain had also been cut through the bank, presumably when it had been constructed, aligned along its length.

The uppermost levels revealed within the trenches comprised a modern dump layer on the northwestern edge of the bed and a recently formed turf and vegetation layer across the entire surface of the area. The modern dump layer may have originated from when the adjacent propane tanks were inserted below ground to the southwest.

There is no evidence that there any structures or buildings associated with the original walled garden were present in this area. It would appear that the bed was built when the walled garden was constructed, forming a bed sloping down to the path, with a further sloping bed rising up on the northwestern side of the path. It is considered likely that the area was originally formally laid out, with the fairly ornate boiler house to the northeast and the sloping beds flanking the path way.

Further observation undertaken once the ground level across the entire footprint of the proposed boiler house revealed no further archaeological information.

1. INTRODUCTION

1.1 Project Commission

- 1.1 DAT Archaeological Services was commission by the National Botanic Garden of Wales (NBGW) to undertake an archaeological watching brief during groundworks associated with the planned upgrade of the heating system for the Tropical House located in the inner part of the double walled garden at Llanarthne, Carmarthenshire garden (SN 51948 18136; Figures 1 & 2). The proposals are for the replacement of the existing heating system with a new biomass boiler to be located on the northern side of the inner walled garden. The biomass boiler would improve energy efficiency and significantly reduce their carbon footprint.
- 1.2 The Heritage Co-ordinator of NBGW requested a programme of archaeological works be implemented to ensure that any archaeological deposits were appropriately investigated and recorded. Following discussions it was agreed that an archaeological watching brief during the construction of the biomass boiler would be the most appropriate form of archaeological mitigation.
- 1.3 The National Botanic Garden of Wales is a Grade II registered Historic Park and Garden containing a number of designated historic assets represented by Grade II listed buildings. The description for the group defines it as a 'Landscaped park with double walled garden, cascades, bridges and remains of extensive water features'.

1.2 Scope of the Project

- 1.2.1 The written scheme of investigation (WSI) prepared by DAT Archaeological Services stated the watching brief objectives:
 - To monitor ground works in order to identify the presence/absence of any archaeological deposits.
 - To establish the character, extent and date range for any archaeological deposits to be affected by the proposed ground works.
 - To appropriately investigate and record any archaeological deposits to be affected by the ground works.
 - To produce an archive and report of any results.
- 1.2.2 The overall aim of the work was described in the WSI as: Archaeological attendance during ground works associated the construction of a biomass boiler house to the north of the inner walled garden at the National Botanic Garden of Wales, Llanarthne, Carmarthenshire which could potentially expose, damage or destroy archaeological remains. Appropriate investigation and recording of any such remains will be undertaken if revealed. A report and archive of the results of the works will be prepared.

1.3 Report Outline

1.3.1 This report describes the location of the site along with its archaeological background, and provides a summary and discussion of the results of the watching brief. It has been prepared in accordance with the relevant CIFA standards and guidance (CIFA 2014).

1.4 Abbreviations

1.4.1 All sites recorded on the regional Historic Environment Record (HER) are identified by their Primary Record Number (PRN) and located by their National Grid Reference (NGR). Sites recorded on the National Monument Record (NMR) held by the Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW) are identified by their National Primary Record Number (NPRN). Scheduled Monument (SM). Altitude is expressed to Ordnance Datum (OD). References to cartographic and documentary evidence and published sources will be given in brackets throughout the text, with full details listed in the sources section towards the end of the report.

1.5 Illustrations

1.5.1 Printed map extracts are not necessarily reproduced to their original scale. North is towards the top of the page unless otherwise indicated.

1.6 Timeline

1.6.1 The following timeline is used within this report to give date ranges for the various archaeological periods that may be mentioned within the text (Table 1).

Period	Approximate date	
Palaeolithic -	<i>c</i> .450,000 – 10,000 BC	_
Mesolithic –	<i>c</i> . 10,000 – 4400 BC	Pre
Neolithic –	<i>c</i> .4400 – 2300 BC	hist
Bronze Age –	<i>c</i> .2300 – 700 BC	orio
Iron Age –	<i>c</i> .700 BC – AD 43	n
Roman (Romano-British) Period –	AD 43 - <i>c.</i> AD 410	
Post-Roman / Early Medieval Period -	<i>c</i> . AD 410 – AD 1066	_
Medieval Period –	1066 - 1536	Hist
Post-Medieval Period ¹ –	1536 - 1750	tori
Industrial Period –	1750 - 1899	C C
Modern –	20th century onwards	

Table 1:	Archaeological	and	Historical	Timeline	for	Wales
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¹ The Post-Medieval and Industrial periods are combined as the Post-Medieval period on the Regional Historic Environment Record as held by Dyfed Archaeological Trust



Figure 1: Map showing the location of the National Botanic Garden of Wales (red boundary).

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Figure 2: Map showing the location of the double walled garden within the red circle.

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Figure 3: Location plans of walled garden shaded red on top plan and location of proposed biomass boiler and area of Plan 4 show in in red on lower plan (plan supplied by client)

2. THE SITE

2.1 Location

- 2.1.1 The area of the proposed development is located within the double walled garden at NBGW, Llanarthne, Carmarthenshire (Figures 1, 2 & 3).
- 2.1.2 A site visit was undertaken on 5th April 2018 with Huw Davies of NBGW to view the proposed biomass boiler area and ascertain the present ground conditions. The site area lies in a presumed former planting bed on the northwestern side of the inner walled garden, with the Tropical House on the southeastern side of the wall. A small retaining wall defines its northwestern edge, made of rubble stone that is intended to be either retained during the development or rebuilt afterwards. A mound of spoil runs along the area at present which is likely to be material dug out from the area to the southeast where two large propane storage tanks are located. A trackway which runs between the inner walled garden and the outer wall of the double walled garden runs northwest of the site area.

2.2 Archaeological and Historical Background

2.2.1 The National Botanic Garden of Wales is a Grade II registered Historic Park and Garden containing a number of designated historic assets represented by Grade II listed buildings. The description for the group defines it as a 'Landscaped park with double walled garden, cascades, bridges and remains of extensive water features.' The reasons given for it being a registered Historic park and garden at grade II are:

Survival of late eighteenth-century landscaped park in fine countryside, with main feature of lakes.**There is an unusual doublewalled kitchen garden** & preserved ice house. The core of the park now converted into the National Botanic Garden of Wales. There are seven Grade II Listed Buildings within the NBGW area, although the double walled garden is not one of them.

- 2.2.2 The double walled garden is recorded on the Dyfed Historic Environment Record (HER), Primary Record Number (PRN) 30968.
- 2.2.3 The area has the potential for remains associated with the former planting beds on the northern side of the walled garden, this could include cut features associated with planting as well as artefacts associated with its horticultural use (including plant labels).
- 2.2.4 An archaeological watching brief was undertaken on the southern side of the wall prior to the Tropical House being built in 2007 by Dyfed Archaeological Trust. This identified a few archaeological features, but none that appeared to project towards the site area. No flues, voids, pipework or other features were identified within the wall itself indicating features or structures on the side where the biomass boiler is proposed.

3. WATCHING BRIEF METHODOLOGY

3.1 Fieldwork

- 3.1.1 This watching brief was undertaken in accordance with the relevant CIfA Standard and Guidance for an Archaeological Watching Brief (2014). The Written Scheme of Investigation (Appendix I), outlining the archaeological works proposed and providing a detailed methodology for the watching brief, was approved by the Development Management section of Dyfed Archaeological Trust and the heritage Coordinator of NBGW prior to the commencement of the works.
- 3.1.2 Recording of all archaeological features or deposits conformed to best current professional practice and was carried out in accordance with the Recording Manual² used by DAT Archaeological Services.
- 3.1.3 The groundworks were carried out using a mini tracked 360 excavator fitted with a mix of flat and toothed buckets.
- 3.1.4 Two small trenches were excavated through the mound of spoil between the northwestern wall of the inner walled garden and the small retaining wall.
- 3.1.5 The retaining wall was also cleared of vegetation and a photographic record made.

3.2 Post-Fieldwork Reporting and Archiving

- 3.2.1 All data recovered during the fieldwork has been collated into a site archive structured in accordance with the specifications in *Archaeological Archives: a guide to best practice in creation, compilation, transfer and curation* (Brown 2011). *The National Standards for Wales for Collecting and Depositing Archaeological Archives* have also been adhered to (The Federation of Museums & Art Galleries of Wales 2017). A digital archive will be deposited with the Royal Commission on the Ancient and Historical Monuments Wales (RCAHMW), created to their requirements (ibid.).
- 3.2.2 The results of the fieldwork have been assessed in local, regional and wider contexts. The report includes a desk-based research element to ensure that the site is placed within its wider archaeological context.
- 3.2.3 This report is fully representative of the results of the fieldwork.

3.3 Timetabling of Fieldwork

3.3.1 The watching brief was undertaken on the 23rd and 24th of April 2018.

² DAT Archaeological Services has adopted the Recording Manual developed by English Heritage Centre for Archaeology.



Figure 4: Plan of excavated areas (area indicated on Figure 3 in red box)

4. **RESULTS**

4.1 It was determined that the supervision of two slot trenches abutting the inner walled garden walls would be excavated ahead through the raised bank of material within which the new biomass boiler was to be located (Figure 4; Photo 1). This was done in advance of the development. The reasoning behind this approach was that the two slot trenches would determine the nature and derivation of the material forming the bank down to the formation layer for the proposed biomass boiler.



Photo 1: View southwest with showing the proposed location of the biomass boiler prior to works commencing

- 4.2 The slot trenches through the bank were dug out using a mini tracked 360 excavator fitted with a 0.60m toothed bucket. After excavation the trenches were cleaned by hand and then recorded in plan and section by the attending archaeologist.
- 4.3 Trench 1 refers to the northeastern trench and Trench 2 that to the southwest (Figure 4). The archaeological horizons detected in both trenches revealed a near identical sequence of deposits and build up and are discussed together (Figures 5 & 6). Context numbers of layers within Trench 1 run from 100 to 108, those in Trench 2 from 200 to 207. Layers contexts are shown in round brackets and cuts for features in square brackets.
- 4.4 Trench 1 measured 3.95m long and *c*.0.70m wide and was aligned roughly northwest southeast with a maximum depth of 1.60m (Figures 4 and 5). Trench 2 measured 3.90m x *c*.0.70m and was also aligned northwest southeast with a maximum depth of 1.50m (Figures 4 and 6).



Photo 2: Initial excavation of Trench 2 showing start of removal of layer of modern rubble overlaying plastic sheeting.

- 4.5 The upper layer seen in across the tops of both trenches consisted of a turf and vegetation layer (100) and (200), only a few centimetres thick (not shown on Figures 5 and 6). This overlay a dump of rubble and modern detritus laid on top of blue plastic sheeting, which was present along the northwestern edge of the banked material, directly below the turf and vegetation horizon (101) and (201). This layer had a maximum depth of 0.21m in Trench 1 and 0.19m in Trench 2. In both trenches this layer was thickest at the edge closest to the path exaggerating the steepness of the slope of the existing bank.
- 4.6 The first archaeologically significant deposit in both trenches consisted of dark brown buried topsoil approximately 0.20m thick lying below the modern debris, layers (102) and (202). The profile of this layer indicated that it had previously formed a relatively gentle slope from the walled garden wall to the small retaining wall to the northwest.
- 4.7 In Trench 1 beneath the buried topsoil layer there was a disturbed reddish soil which was deepest nearest the walled garden wall to the southeast (102). This overlay a deposit of brick fragments and mortar which was piled against the wall (Figure 5). Trench 2 contained a similar deposit made up of dark brown silty-clay with inclusions of mortar and brick fragments (203) (Figure 6).
- 4.8 The deepest layer detected in both trenches was a fine silty-clay soil revealed at the base of the section and forming the base of the trench (105) (204). It is likely this represents the natural geological sub-strata. Both the walled garden wall to the southeast and the small retaining wall to the northeast appeared to have been cut into this layer (Figures 5 and 6).



Figure 5: Drawing of southwest facing section of Trench 1



Figure 6: Drawing of southwest facing section of Trench 2.



Photo 3: Southwest facing section of Trench 1



Photo 4: Southwest facing section of Trench 2.

- 4.9 Directly below layers (102) and (202) the cut for a steep sided feature could be seen, cuts [108] and [207]. This was also visible crossing the base of both trenches and evidently formed part of the same linear feature(Figures 4, 5, and 6, Photos 3, 4, 5 & 6). Close to the base of both trenches the feature was clearly filled with loose small to medium sized angular stones. It was of around 0.40m width.
- 4.10 To the northwest of both trenches the small retaining wall was visible. It was cleaned up and photographed for its entire length within the proposed development area. It was made of rough coursed stonework with very fragmentary mortar within it. The outer face was quite neatly faced where it survived, but the inner face was very rough and appeared to be pushed into the soil behind (Photos 3 and 4).



Photo 5: View southeast across retaining wall, with Trench 1 behind and walled garden wall in background



Photo 6: View southeast across retaining wall around Trench 2 to the end of area (panorama created with several photographs)

4.11 At the southeastern ends of both trenches the walled garden wall was exposed below ground level continuing to the base of both trenches (Photos 7, 8 & 9). The wall footings continued below the excavated level. No clear foundation cut for the wall could be discerned. Neat faced brickwork was visible for some 8 courses below the top of the trench. A layer of roughly finished brick and stone with slate levelling pieces lay beneath the neat brickwork, which projected slightly wider than the wall above. These in turn lay upon rough stone footings which projected even further out from the wall (Figures 5 & 6).



Photo 7: View southeast across Trench 1 showing full height of walled garden wall, with part of Tropical House visible behind



Photo 8: Overview of Trench 1 facing southeast with walled garden wall to rear



Photo 9: Overview of Trench 2 facing southeast with walled garden wall to rear

- 4.12 Following the results of the watching brief undertaken on 23rd April it was agreed that the site area could be reduced to the formation level required for the new boiler house with intermittent observation by an archaeologist. On the 24th of April the site area was observed nearing the completion of the ground reduction to formation level to confirm that the observations recorded within the two test trenches were the same across the entire site area (Photo 10).
- 4.13 No new archaeological features were noted during this second visit confirming the observations noted on the previous day. No further visits to the site area were necessary.



Photo 10: Showing stripped area surrounding Trenches 1 and 2.

5. DISCUSSION AND CONCLUSIONS

- 5.1 The archaeological watching brief undertaken at the site of the proposed new biomass boiler house at the National Botanic Garden of Wales was successful in recording the archaeology of the site area.
- 5.2 Initial works comprised the excavation of two test trenches through the mounded soil which lay within between the walled garden wall to the southeast and the small retaining wall to the northwest. These enabled the sequence of deposition of material to be ascertained and further information on later usage to be gleaned.

The retaining wall

- 5.3 The small retaining wall, which will either be retained or rebuilt following the installation of the boiler house was cleaned and recorded through detailed photographic record. This demonstrated that the wall was in a relatively poor state of repair and only survived to its original full height of around 0.3m in a few places within the recorded area.
- 5.4 The wall was constructed of roughly coursed local shale stone with poorly surviving mortar visible in only a few places. The northwestern side was neatly faced, but the southeastern side was roughly finished, suggesting that it was built up against a slight terrace in the ground level. This indicates that the original ground level was slightly cut into to form the trackway on the northwestern side of the wall.

The walled garden wall

- 5.5 The walled garden wall formed the southeastern boundary of the development area. It is constructed of brick resting on a lower, offset rough stone (limestone? and shale) footing. The full depth of the footing was not exposed and would appear to have been deeper than the 0.40m maximum height exposed in Trench 2.
- 5.6 Above the stone footing was a slightly offset roughly finished brick plinth of around 0.18m height, and two brick courses. This also contained a few flat slate pieces, presumably to create a level plinth above the rubble stone base footing.
- 5.7 Above this level were eight courses of brick that were covered by the mounded soil, although the bricks had been neatly pointed as though meant to be visible or at least were originally above ground level in order for them to be pointed on both sides.
- 5.8 In total the brick wall was approximately 3.30m in height from the offset brick plinth to the underside of the capping for the wall. The bricks used were a dark reddish brown colour.
- 5.9 It was not possible to discern a foundation cut for a foundation trench for the wall, other than a thin layer of soil between the wall face and the material behind. Being as the walled garden area to the southeast was at a lower level than this side of the wall, it is suggested that the interior of the inner walled garden was partly terraced into the hillslope to create a level area, and that the northern wall of the walled garden was then built up against the exposed terraced edge rather than being built into a foundation trench.

The earth bank

5.10 The sections recorded of the slot trenches through the earth bank in the area of the proposed biomass boiler indicate that probable fine silty clay natural ground was cut through for a depth of between 0.30m – 0.50m across the lengths of the trench (105) and (204). In general the top of

natural was relatively level, but with a definite slope down to the small retaining wall to the northwest in both trenches.

- 5.11 The slot trenches through the earth bank as well as the information gleaned from behind the retaining wall and northern wall of the inner walled garden, suggest that the ground level had been significantly landscaped when the double walled garden was constructed. The whole area lies on a southeastern facing slope, with the ground rising up quite sharply to the northwest. The area between the two walls of the double walled garden would appear to have been dug out to create both the pathway at a lower level and the lower area of the inner walled garden to the southeast. The two planting beds to either side of the pathway were landscaped to create slopes flanking and dropping down to the path level, both with low retaining walls. The slope to the northwest was greater than that to the southeast.
- 5.12 The bed to the southeast, in which the biomass boiler is proposed, was raised using redeposited material to create more of a slope running down from the wall of the walled garden to the retaining wall/path. In Trench 1 this comprised both a dump of brick fragments and mortar immediately adjacent to the walled garden wall on top of natural (104) and a redeposited soil containing red clays and charcoal (103) above that which sloped off to the northwest. In Trench 2 there was merely a single level of redeposited soil which could only be seen in the southeastern half of the trench (203), again sloping to the northwest. As these layers lay directly upon natural soils with no buried topsoil layer visible between, it is presumed that they were deposited when the beds were created, rather than material deposited during their use.
- 5.13 Above these redeposited layers was a layer of topsoil (102) and (202), notably thicker in Trench 2. This also appeared to slope downwards towards the northwest.
- 5.14 In both trenches a stone drain was encountered, cut from directly below the topsoil layer. The drain was near vertical sided, with loose stone seen at a level close to the base of the trenches (the formation level for the biomass boiler) and definitely continuing further below. The drain was presumably a measure to prevent waterlogging in the sloping beds. Whether it was an original feature put in during construction, or a later addition is uncertain as the topsoil above had evidently been regularly cultivated after it had been put in.
- 5.15 The uppermost levels revealed within the trenches comprised a modern dump layer on the northwestern edge of the bed (101) and (102), and an upper turf and vegetation layer across the entire surface of the area (100) and (200).
- 5.16 The modern dump layer was laid on top of blue plastic sheeting and was presumably intended to be removed. It is likely to have originated from when the propane tanks for the existing heating system for the Tropical House were inserted in recent years. The plastic sheeting suggests it was meant to have been removed. As this material had been placed on the northwestern edge of the bed, it disrupted what would have been a more evident and gentle slope that would have existed previously (more akin to that on the northwestern side of the path).
- 5.16 There is no evidence that there any structures or buildings associated with the original walled garden were present in this area. It would appear that the bed was built when the walled garden was constructed. Lying on the northwestern side of the main wall, the area would have almost always

been in shade and thus was probably designed for shade loving plants. No plant tags were found during the works, but it is possible that the area was used for ferns. It is likely that the area was originally a formal layout, with the fairly ornate boiler house to the northeast and the sloping beds flanking the path way.

- 5.17 The only activity revealed later beyond the original construction was a large rubble dump which was likely associated with the ground works for the propane tanks for the current greenhouse heating system.
- 5.18 In the topsoil layer behind the small retaining wall in Trench 2, a dump of broken flower pots was revealed (Photo 11). These were of different sizes and bore no manufacturing marks or emblems associated with estate. The material has been retained by NBGW for their handling collection.



Photo 11: Collection of broken flower pots recovered from topsoil (202) within Trench 2

APPENDIX I: WRITTEN SCHEME OF INVESTIGATION

NATIONAL BOTANIC GARDEN OF WALES, WALLED GARDEN BIOMASS BOILER: ARCHAEOLOGICAL WRITTEN SCHEME OF INVESTIGATION

1 INTRODUCTION

- 1.1 National Botanic Garden of Wales (NBGW) are proposing to upgrade the heating system to the Tropical House within the double walled garden (SN 51948 18136; Figures 1 & 2) to improve energy efficiency and significantly reduce their carbon footprint. This will involve the replacement of the existing heating system with a new biomass boiler to be located on the northern side of the walled garden (Figures 3).
- 1.2 The Heritage Co-ordinator of NBGW has requested a programme of archaeological works be implemented to ensure that if any archaeological deposits are present they can be appropriately investigated and recorded. Following discussions it has been agreed that an archaeological watching brief during the construction of the biomass boiler would be the most appropriate form of archaeological mitigation. This document lays out the methodology by which DAT Archaeological Services will implement these works.
- 1.3 The National Botanic Garden of Wales is a Grade II registered Historic Park and Garden containing a number of designated historic assets represented by Grade II listed buildings. The description for the group defines it as a 'Landscaped park with double walled garden, cascades, bridges and remains of extensive water features.' The reasons given for it being a registered Historic park and garden at grade II are:

- 1.4 The double walled garden is recorded on the Dyfed Historic Environment Record (HER), Primary Record Number (PRN) 30968.
- 1.5 A site visit was undertaken on 5th April 2018 with Huw Davies of NBGW to view the proposed biomass boiler area and ascertain the present ground conditions. The site area presently lies in a former planting bed on the northwestern side of the inner walled garden, with the Tropical House on the southeastern side of the wall. A small retaining wall defines its northwestern edge, made of rubble stone that is intended to be either retained during the development or rebuilt afterwards. A mound of spoil runs along the area at present which is likely to be material dug out from the area to the southeast where two large propane storage tanks are located. A trackway which runs between the inner walled garden and the outer wall of the double walled garden runs northwest of the site area.
- 1.6 The area has the potential for remains associated with the former planting beds on the northern side of the walled garden, this could include cut features associated with planting as well as artefacts associated with its horticultural use (including plant labels).
- 1.7 An archaeological watching brief was undertaken on the southern side of the wall prior to the Tropical House being built in 2007 by Dyfed Archaeological Trust. This identified a few archaeological features, but none that appeared to project towards the site area. No flues, voids, pipework or other features were identified within the wall itself indicating features or structures on the side where the biomass boiler is proposed.

- 1.8 This WSI details the methodology of the evaluation which will be undertaken and has been prepared in accordance with the *Standard and Guidance for an Archaeological Watching Brief* (CIfA³ 2014).
- 1.9 The Trust always operates to best professional practice. DAT Archaeological Services has its own Health and Safety Policy, and all works are covered by appropriate Employer's Liability and Public Liability Insurances. Copies of all are available on request.
- 1.10 **Dyfed Archaeological Trust is a CIfA Registered Organisation**.
- 1.11 All permanent staff members of DAT Archaeological Services are CSCS⁴ registered.

³ Chartered Institute for Archaeologists.

⁴ Construction Skills Certification Scheme (Health and Safety Tested)

National Botanic Garden of Wales, Walled Garden Biomass Boiler: Written Scheme of Investigation for Archaeological Watching Brief



Figure 1: Map showing the location of the National Botanic Garden of Wales (red boundary)

Reproduced from the Ordnance Survey 1:50,000 scale Explorer Map with the permission of The Controller of Her Majesty's Stationery Office, © Crown Copyright Dyfed Archaeological Trust Ltd., The Shire Hall, Carmarthen Street, Llandeilo, Carmarthenshire SA19 6AF.Licence No 100020930 National Botanic Garden of Wales, Walled Garden Biomass Boiler: Written Scheme of Investigation for Archaeological Watching Brief



Figure 2: Map showing the location of the double walled garden within the red circle

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Figure 3: Location plans of walled garden shaded red on top plan and location of proposed biomass boiler show in in red on lower plan

(plan supplied by client)

2. WATCHING BRIEF

- 2.1 The definition of archaeological watching brief, taken from the Chartered Institute for Archaeologists Standards and Guidance: for Archaeological Watching Briefs (CIFA S&G: AWB 2014) 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.
- 2.2 The purpose of a watching brief, as laid down in the CIfA S&G AWB is:

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

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

- 2.3 This document provides a scheme of works for: **Archaeological attendance** during ground works associated the construction of a biomass boiler house to the north of the inner walled garden at the National Botanic Garden of Wales, Llanarthne, Carmarthenshire which could potentially expose, damage or destroy archaeological remains. Appropriate investigation and recording of any such remains will be undertaken if revealed. A report and archive of the results of the works will be prepared.
- 2.4 The following tasks will be completed:
 - Provision of a written scheme of investigation to outline the methodology for the archaeological watching brief which DAT Archaeological Services will undertake (this document);
 - To monitor ground works in order to identify the presence/absence of any archaeological deposits.
 - To establish the character, extent and date range for any archaeological deposits to be affected by the proposed ground works.
 - To appropriately investigate and record any archaeological deposits to be affected by the ground works.
 - To produce an archive and report of any results.

3 FIELDWORK

- 3.1 The watching brief would entail an archaeologist being present during all ground works where there is a potential for archaeological remains to be exposed, damaged or destroyed. This will be carried out during the initial site strip for the biomass boiler.
- 3.2 An initial clean-up of the small stone retaining wall present along the northern side of the biomass boiler area will be undertaken and a photographic record made. It is hoped that the wall will be retained undisturbed by the development proposals, but potentially it may have to be removed and rebuilt.
- 3.3 It is suggested that an initial trench is excavated through the mound of soil which presently exists within the footprint of the proposed building, between the trackway and the wall. This will quickly determine if the material derives from the adjacent location of two subterranean propane tanks which lie to the southwest. Following this, the archaeologist will observe the remainder of the groundworks down to formation level for the building.
- 3.4 It is essential coordination between the site contractor's and archaeologist is established at the outset to avoid any potential disturbance to archaeology without an archaeologist being present, or unnecessary visits to the site when works are being carried out that do not require the presence of an archaeologist.
- 3.5 Adequate time must be made available to the visiting archaeologist to ensure that appropriate recording can be undertaken of any archaeological features or deposits exposed during ground works.
- 3.6 Recording of all archaeological features or deposits will conform to best current professional practice and be carried out in accordance with the Recording Manual⁵ used by DAT Archaeological Services. Significant archaeological features or deposits will be drawn at a suitable scale (no less than 1:20) and photographed in an appropriate format.
- 3.7 All archaeologically significant finds will be retained and, where possible, related to the contexts from which they derived. Finds will be temporarily stored by DAT Archaeological Services in stable conditions. All finds, except those deemed to be Treasure, will remain the property of the landowner.
- 3.8 Under the 1996 Treasure Act, "treasure" can be summarised as:
 - Any object other than a coin containing at least 10% gold or silver and at least 300 years old;
 - Any prehistoric assemblage of base metal;
 - Coins found together which contain 10% gold or silver (but no single coins) and groups of at least 10 coins of other metals, provided they are at least 300 years old;
 - Any object found associated with treasure except unworked natural objects; and
 - Any object which would have been Treasure Trove before the 1996 Act but not covered above.
- 3.9 In the unlikely event that unforeseen archaeological discoveries are made during the development, or that archaeological remains of high significance are exposed, DAT Archaeological Services shall have the power to halt any ground works and shall inform the site agent/project manager and the curatorial officer, and prepare a written statement with plan detailing the archaeological evidence. Following assessment of the archaeological remains by the curatorial officer, DAT

⁵ DAT Archaeological Services have adopted the Recording Manual developed by English Heritage Centre for Archaeology. A copy will be available on-site for inspection if required.

Archaeological Services shall, if required, implement on behalf of the Client a contingency scheme for salvage excavation of affected archaeological features. In these instances it would be necessary to employ extra resources to record such features to an appropriate standard.

3.10 In the very unlikely event that human remains are encountered, the District Coroner's Office and the Police will be notified immediately. All human remains will, where possible, be left *in situ*. If preservation *in situ* is not possible all statutory permissions will be obtained in writing before removal begins.

4 **POST-FIELDWORK REPORTING AND ARCHIVING**

- 4.1 An archive will be prepared if it meets the requirements of the Dyfed Archaeological Trust archive retention policy (2018). If it does, then data recovered during the watching brief will be collated into a site archive structured in accordance with the specifications in *Archaeological Archives: a guide to best practice in creation, compilation, transfer and curation* (Brown 2011), and the procedures recommended by the National Monuments Record, Aberystwyth. The *National Standards for Wales for Collecting and Depositing Archaeological Archives* produced by the Federation of Museums and Art Galleries of Wales will also be adhered to. Digital archives will be collated using the Royal Commission on the Ancient and Historical Monuments of Wales systems (2015) and deposited with the RCAHMW.
- 4.2 The results of the fieldwork will be assessed in local, regional and wider contexts.
- 4.3 The results will be used to inform subsequent design considerations of the proposed development so that they will aim to avoid impacts upon any archaeological remains or that mitigation can be implemented before such remains are disturbed.
- 4.4 The report will include a desk-based assessment element to place the site into its wider context within the area and also more detail on and interpretation of the geophysical survey results.
- 4.5 The project archive, including all significant artefacts and ecofacts (excepting those which may be deemed to be Treasure) will be deposited with an appropriate body following agreement with the landowner.
- 4.6 DAT Archaeological Services will arrange for the deposition of finds, and ascertain the costs of storage and deposition, with an approved body before the project commences and inform the curator of the arrangement which has been made (it is anticipated that the archive will be deposited with the Carmarthen Museum or the NBGW themselves).
- 4.7 A summary of the project results, excluding any confidential information, may be prepared for wider dissemination (e.g. Archaeology in Wales and special interest and period-specific journals).
- 4.8 The report will be prepared to follow the *Standard and Guidance for an Archaeological Watching Brief* (CIfA 2014).
- 4.9 A digital copy and two bound copies of the reports will produced for the client. Digital copies of the report will be supplied to Dyfed Archaeological Trust -Development Management and the regional Historic Environment Record.

5 STAFF

5.1 The project will be managed by J Meek MCIfA.

5.2 The on-site works will be undertaken by experienced archaeologists, from DAT Archaeological Services.

6 MONITORING

6.1 The Dyfed Archaeological Trust – Development Management team should be told of the commencement of the works so that they can arrange a monitoring visit if needed. The fieldwork may need to be monitored by the Head of DAT Archaeological Services. All parties should be provided with free access to the site at any time during the watching brief works.

7 HEALTH AND SAFETY

- 7.1 Service information should be obtained prior to the start of the works.
- 7.2 A health and safety risk assessment must be prepared prior to the works commencing to ensure that all potential risks are minimised.
- 7.3 All relevant health and safety regulations must be followed.
- 7.4 All site inductions, H&S procedures, H&S constraints and site rules of the client or any on-site contractor will be made known to the archaeological contractor at the start of the works.
- 7.5 Safety helmets, safety boots and high visibility vests are to be used by all site personnel as necessary. The site contractors will make all archaeological staff aware of any other PPE that may be required and provide them. Archaeological staff must not enter any area where there is a considered to be a health and safety risk that has not or is not being appropriately mitigated against.
- 7.6 DAT Archaeological Services staff must ensure that their presence on site is communicated to all relevant site staff, especially machine operators.

CHIMNEY'S LINK, FISHGUARD, PEMBROKESHIRE: ARCHAEOLOGICAL WATCHING BRIEF

RHIF YR ADRODDIAD / REPORT NO. fS18- 001 RHIF Y PROSIECT / PROJECT RECORD NO.

01/06/18

Paratowyd yr adroddiad hwn gan / This report has been prepared by

LUKE JENKINS

Swydd / Position: Archaeologist

Mae'r adroddiad hwn wedi ei gael yn gywir a derbyn sêl bendith This report has been checked and approved by

JAMES MEEK

ar ran Ymddiriedolaeth Archaeolegol Dyfed Cyf. on behalf of Dyfed Archaeological Trust Ltd.

Swydd / Position: Head of DAT Archaeological Services

Llofnod / Signature Date 21/11/2017

Yn unol â'n nôd i roddi gwasanaeth o ansawdd uchel, croesawn unrhyw sylwadau sydd gennych ar gynnwys neu strwythur yr adroddiad hwn

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

