

Sands of LIFE Tywyn Aberffraw Dune Notch Creation

Briff Gwyllo Archeolegol / Archaeological Watching Brief



Ymddiriedolaeth Archeolegol Gwynedd
Gwynedd Archaeological Trust

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Digwyddiad Cofnod Amgylchedd Hanesyddol Rhif Cyfeirnod Cynradd: 46301 /
Historic Environment Record Event Primary Reference Number: 46301

Prosiect Rhif / Project No. G2742

Adroddiad Rhif / Report No. 1662

Paratowyd ar gyfer: Cyfoeth Naturiol Cymru / Prepared for: Natural Resources Wales

Tachwedd 2022 / November 2022

Ysgrifennwyd gan / Written by: Anne Marie Oattes

Delwedd clawr blaen: Gweld y Dune Notch o Draeth Aberffraw (cyfeirnod archif: G2742_075) /
Front cover image: View of the Dune Notch from Aberffraw Beach (archive reference: G2742_075)

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Published by Gwynedd Archaeological Trust
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Mae Ymddiriedolaeth Archaeolegol Gwynedd yn Gwmni Cyfyngedig (Ref Cof. 1180515) ac yn Elusen (Rhif Cof. 508849)
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CRYNHODEB ANHECHNEGOL

Comisiynwyd Ymddiriedolaeth Archeolegol Gwynedd gan Gyfoeth Naturiol Cymru yn ystod mis Medi 2022 i gynnal briff gwyllo archeolegol yn ystod gwaith twyni tywod yn Nhywyn Aberffraw, Ynys Môn. Er bod y safle wedi ei leoli o fewn ardal ehangach o archaeoleg hysbys, ni nodwyd unrhyw weithgaredd archeolegol o fewn cyfyngder yr ardal fer wyllo, a nodweddiad gan ddyddodion trwchus o dywod.

NON-TECHNICAL SUMMARY

Gwynedd Archaeological Trust was commissioned by Natural Resources Wales during September 2022 to undertake an archaeological watching brief during dune notch creation works at Tywyn Aberffraw, Ynys Môn. Whilst the site was located within a wider area of known archaeology, no archaeological activity was identified within the confines of the watching brief area, which was characterised by thick deposits of sand.

1 INTRODUCTION

Gwynedd Archaeological Trust was commissioned by Natural Resources Wales (NRW) to undertake an archaeological watching brief during works for the Sands of LIFE (SoLIFE) (LIFE17 NAT/UK/000023) conservation project at Tywyn Aberffraw, Ynys Môn (NGR SH35766765; postcode LL63 5EX; cf. Figure 01). The Sands of LIFE project is being led by NRW and supported by the EU LIFE fund and the Welsh Government, with the aim to restore threatened sand dune sites across Wales. As detailed in NRW document Twyni Byw - Sands of LIFE (SoLIFE) Contract Specification (dated 01/02/2022), the aim for this part of the project was to create one notch in the frontal dune ridge at Tywyn Aberffraw, by excavating an area of 0.28ha in the fore dunes to lower the profile of the dune by a depth of 2.5m on average, to create an irregularly shaped trapezoidal notch. Tywyn Aberffraw is a large dune system designated as a Special Area of Conservation because of its international importance for wildlife. However, most of the dunes have become excessively stabilised and vegetated over time and conservation management is required to improve the condition of the dune habitats. The creation of a notch in the frontal dune ridge will encourage the wind to move sand inland, creating areas of pioneer habitat, and increasing dune mobility. It will also increase calcareous 'sand rain' to habitat further inland, which helps to maintain a high pH which is important for plant diversity. The rejuvenation work will connect the beach front with the interior of the dunes and improve the condition of the designated sand dune habitats: shifting dunes, dunes with *Salix repens*, humid dune slacks and fixed dune grassland. The notch will be positioned to take account of pathways to the beach, to take advantage of trampling by the public to help keep the notch open. The notch will enable easier access for the public between the dunes and the beach. The existing grassy dune vegetation will be cut as part of a separate contract before excavation begins. The notch was created with the following measurements:

- Length: 90m (SE side) and 120m (NW side) as measured from the front of the dune ridge.
- Width: 40m width at crest frontal dune ridge, 20m at ground level; reducing to
- 15m width inland
- Depth: Beach level throughout
- Angle of slope: 30% - 35%

The groundworks and archaeological watching brief were undertaken between Monday 12th September 2022 and Monday 26th September 2022.

The watching brief was monitored by Gwynedd Archaeological Planning Service and undertaken in accordance with an approved written scheme of investigation ([Appendix I](#)). In line with the regional Historic Environment Record (HER) requirements, the HER was contacted at the onset of the project to ensure that any data arising was formatted in a manner suitable for accession to the HER and follows the guidance set out in *Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs)* (The Welsh Archaeological Trusts, 2018). The HER Event Primary Reference Number for this project was 46301.

The watching brief was completed in accordance with the following standards and guidance:

1. *Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs)* (The Welsh Archaeological Trusts, 2018)
2. *Guidelines for digital archives* (Royal Commission on Ancient and Historical Monuments of Wales, 2015).
3. *Management of Archaeological Projects* (English Heritage, 1991);
4. *Management of Research Projects in the Historic Environment: The MoRPHE Project Managers' Guide* (Historic England, 2015);
5. *Standard and Guidance for Archaeological Watching Brief* (Chartered Institute for Archaeologists, 2020); and
6. *Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives* (Chartered Institute for Archaeologists, 2020).

Gwynedd Archaeological Trust is certified to ISO 9001:2015 and ISO 14001:2015 (Cert. No. 74180/B/0001/UK/En) and is a Registered Organisation with the Chartered Institute for Archaeologists.

1.1 Fieldwork Aims and Objectives

The key aims and objectives of the archaeological watching brief were to:

- The objective would be to establish the date and nature of any archaeological remains identified and assess their implications for understanding the area, in conjunction with the known archaeological record; and
- To place the results in context, reference shall be made if necessary to *A Research Framework for the Archaeology of Wales*.

2 BACKGROUND

As summarised in the archaeological scoping report prepared by Andrew Davidson, Chief Archaeologist, Gwynedd Archaeological Trust (Davidson, 2022), the dune system lies on the east side of the Afon Ffraw. Aberffraw is located on the west bank of the river and during the medieval period, it was a *llys*, or court, of the Welsh Princes. The court is thought to have lain close to the church; excavations (Longley and White) have also suggested the possible presence of a Roman fortlet underlying the village. The scoping report also states that the dune system is thought to have formed from sand incursions during a period of high winds and storms in the 14th century, with one particular storm noted in historical sources as occurring in December 1330, when 186 acres (75 hectares) of land around Newborough and Llanddwyn were covered by sand (Carr, 7). The Historic Environment Record lists multiple archaeological assets within the local area (Figure 02), including the following:

- Primary Reference Number (PRN) 3011 Ffynon Bryn Fendigaid, Holy Well, Aberffraw; NGR SH36036913, c.1.5km north of the watching brief area, comprising a medicinal well in which a fish was kept for purposes of divination. In the 18th century Sir Arthur Owen of Bodeon enclosed it with a wall but it became ruined and neglected; it was reopened in 1861 and now consists of a small, low rectangular roofed building. There is no trace of a well within the structure. It lies alongside the road which links Aberffraw with Llangadwaladr across the dunes.
- PRN 68,578: Anti-Aircraft Obstacles; NGR SH3703569480, c.2.2km northeast of the watching brief area;
- PRN 68,579: Anti-Aircraft Obstacles; NGR SH3656169296, c.1.8km north of the watching brief area; and
- PRN 68,580: Anti-Aircraft Obstacles; NGR SH3607968422, c.850m north of the watching brief area.
- PRN 60,846: a shipwreck recently uncovered in the inter-tidal zone; NGR SH35456773, c.280m to the northwest; and
- Scheduled Monument An148: Trwyn Du prehistoric burial cairn; NGR SH35226788, c.550m to the northwest.

The anti-aircraft obstacles comprise trenches and mounds, the latter built up from the material dug out of the trench and were designed to prevent aircraft from landing. They are still visible in places on the ground and on modern aerial photographs, but mainly as trenches, with the mounds mostly eroded. The scoping report states they are clear on aerial photographs of the

1940's and that other examples may exist at Aberffraw but are now hidden by sand. The majority of similar coastal defences in Britain have been backfilled and are no longer visible, with those at Aberffraw a rare survival. Other defences consisting of concrete uprights (now fallen and buried) existed along the beach, just outside the study area, and are only occasionally uncovered

The First to Third edition Anglesey County Series 1-inch to 25-mile map Sheets X.3, X.4, X.7 and X.8 (published 1889, 1900 and 1922 respectively) show the targeted area as little changed from present, with the only noticeable differences between the respective maps and present are the subtle changes to the low water mark of ordinary tides and the boundary line between the beach and the dunes.

3 METHODOLOGY

3.1 Introduction

An archaeological watching brief is defined by the Chartered Institute for Archaeologists as a formal programme of observation and investigation conducted during any operation carried out for non-archaeological reasons 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 (CIfA, 2020).

The archaeological watching brief was required during dune notch works for the Sands of LIFE (SoLIFE) (LIFE17 NAT/UK/000023) conservation project at Tywyn Aberffraw, Ynys Môn (NGR SH40426384) and comprised a 0.28ha intervention area (Figure 01), where the site contractor was required to scrape away the vegetation and excavate the sand to lower the profile of the dune by a depth of 2.5m on average, to create an irregularly shaped trapezoidal notch to encourage the wind to move sand inland, creating areas of pioneer habitat, and increasing dune mobility. The notch also enabled easier access for the public between the dunes and the beach and was angled to the northeast, in line with the prevailing winds. The approximate extent of the notch was marked with stakes by the SoLIFE project officer on the ground, who was also on-site during the works to provide direction. The dune notch was excavated by plant machinery supplied and operated by a main contractor.

The groundworks and watching brief were undertaken between Monday 12th September 2022 and Monday 26th September 2022. The schedule was in line with European Protected Species Licence and SSSI Assent compliance.

3.2 Working Project Archive

Photographic images were taken using a digital SLR (Nikon D5100) camera set to maximum resolution (4928 x 3264) in RAW format and archived in TIFF format using Adobe Photoshop. A total of 86 photographic images were taken (archive reference numbers G2742_01 to G2742_86).

The written record was maintained on GAT pro-formas and comprised the following:

- 10No day record sheet; and
- 5No photographic record sheets.

3.3 Data Management Plan

Archiving was completed based on following task list;

1. Pro-formas: all cross referenced and scanned for digital archiving; and
2. Photographic Metadata: cross-referenced with all pro-formas and completed in *Microsoft Excel*.

This data was used as the basis for the physical and digital dataset archives. Information from these was used to compile the project report. The physical archive was stored in a designated project folder and the location confirmed in the Trust project database; the digital dataset has been stored on a dedicated Trust server, with the location confirmed in the Trust project database via a specific hyperlink.

External datasets for the HER and RCAHMW are as defined in the dissemination strategy below. De-selected digital data will be confirmed in an updated digital management plan appended to the final report.

On final approval, the following dissemination and archiving of the report and digital dataset will apply:

- A digital report(s) will be provided to the client and GAPS (draft report then final report);
- A digital report will be provided to the regional Historic Environment Record; this will be submitted within six months of project completion (final report only), along with a digital dataset comprising an Event PRN summary. The report and dataset will be submitted in accordance with the required standards set out in *Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs)* (Version 1.1); and
- A digital report and digital archive dataset will be provided to Royal Commission on Ancient and Historic Monuments, Wales (final report only), in accordance with the *RCAHMW Guidelines for Digital Archives Version 1*. The dataset will be prepared in the format required by RCAHMW and will include:
 - Photographic metadata (Microsoft Access);
 - Photographic archive (TIFF format);
 - Project Information form (Excel);
 - File Information form (Excel) – Microsoft Word report text final;
 - File Information form (Excel) – Photographic metadata (general);

- File Information form (Excel) – Adobe PDF report final; and
- File Information form (Excel) - Photographic metadata (detail).

3.4 Selection Strategy

As defined in *Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives* (Chartered Institute for Archaeologists, 2020) section 3.3.1, a project specific selection strategy and data management plan should be prepared. In support of this, the Chartered Institute for Archaeologist (CIfA), have stated that it is “widely accepted that not all the records and materials collected or created during the course of an Archaeological Project require preservation in perpetuity. These records and materials constitute the Working Project Archive which will be subject to Selection, in order to establish what will be retained for long-term curation”. The aim of selection is to ensure that all the elements retained from the Working Project Archive for inclusion in the Archaeological Archive are appropriate to establish the significance of the project and support “future research, outreach, engagement, display and learning activities”. As stated in the guidance, selection has been “focused on selecting what is to be retained to support...future needs, rather than deciding what can be dispersed” and has been qualified by a selection strategy that details the project-specific selection process (cf. [Appendix II](#)).

4 RESULTS

The dune notch creation works were carried out between the 12th September and the 26th September 2022. A pre-commencement meeting was held with the contractors in the car park at Tywyn Aberffraw, where toolbox talks were given by the Natural Resources Wales (NRW) representative, the Amphibian and Reptile Conservation (ARC) ecologist, the Unexploded Ordnance (UXO) expert, the site contractors, and the archaeologist from Gwynedd Archaeological Trust (GAT). The team then proceeded to the site of the notch.

Prior to the start of works, the UXO expert conducted a visual search of the area by walking the site and using a metal detector to check for any dangerous objects. Once the area was declared clear by the UXO expert, work commenced at the foredunes with the excavator to search for sand lizards (*Lacerta agilis*) or any other species inhabiting the dunes. The dune vegetation had been strimmed in mid-August over the notch area itself and areas to both sides of the notch to disperse any lizards or other wildlife (Plates 02 and 03). A programme of capturing and translocating sand lizards in the notch area was carried out prior to the works commencing. The ARC ecologist was in attendance and monitored the excavation with Jake Burton, and several sand lizards were translocated to an area of dunes away from the site. Once the intervention area at the fore dunes was declared lizard-free by the licenced ecologist, the removal of the vegetation continued in a north-easterly direction from the beach across the whole notch area. (Plates 02, 05 and 06)

The excavation was carried out using a tracked excavator with two tracked dumpers to remove the sand. Initially, the sand from the frontal incursion was removed by the tracked dumpers to the base of the frontal dunes above the High-Water Mark to the north-west of the intervention area (Plates 01 and 16). Once the removal of the vegetation was completed across the whole site, the ground reduction continued with the removal of sand to the required depth along the northwest and southeast sides of the notch, creating a slope of between 30% and 35% on each side towards the centre of the notch (Plate 17). Sand was placed on the north-west side of the notch area on the strimmed grass to form a wall to funnel the wind and blow sand inland (Plate 13). A breakthrough opening into the dunes inland (Plate 04) was created at the northeast of the site and the remaining sand was removed and placed inland where it will form unfixed dunes and be dispersed by the wind (Plate 14). The frontal dunes were reduced to beach level.

A deeper excavation to reduce the ground level was carried out across the centre of the notch area to a depth of 2m to 3m (Plates 07 and 08). This was aligned NE/SW and measured approximately 40m long and between 15m and 20m wide. The sides of the trench were graded to form the sloping sides of the notch (Plates 09 and 10). The ground was then graded up

towards the breakthrough into the inland dunes at the northeast end of the site, and the sides of the breakthrough notch were battered to create a slope which would reduce the risk of the sides collapsing (Plates 11, 12 and 18).

Some bottles and various bits of plastic debris were noted within the sand; however, no archaeological features were observed during the watching brief.

5 CONCLUSION

Gwynedd Archaeological Trust were commissioned to undertake an archaeological watching brief during dune notch creation works for the Sands of LIFE (SoLIFE) (LIFE17 NAT/UK/000023) conservation project at Tywyn Aberffraw, Ynys Môn. The Sands of LIFE project was led by NRW and supported by the EU LIFE fund and the Welsh Government, with the aim to restore threatened sand dune sites across Wales. At Tywyn Aberffraw, the works comprised excavating an area in the fore dunes to lower the profile of the dune and create an irregularly shaped trapezoidal notch.

Whilst the site was located within a wider area of known archaeology, including a prehistoric burial cairn, a shipwreck and anti-aircraft obstacles, no archaeological activity was identified within the confines of the dune notch creation works.

6 SOURCES CONSULTED

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Legend



Frontal Dune Notch 0.28 ha



Y Twyni o Abermenai i Aberffraw / Abermenai to Aberffraw Dunes SAC



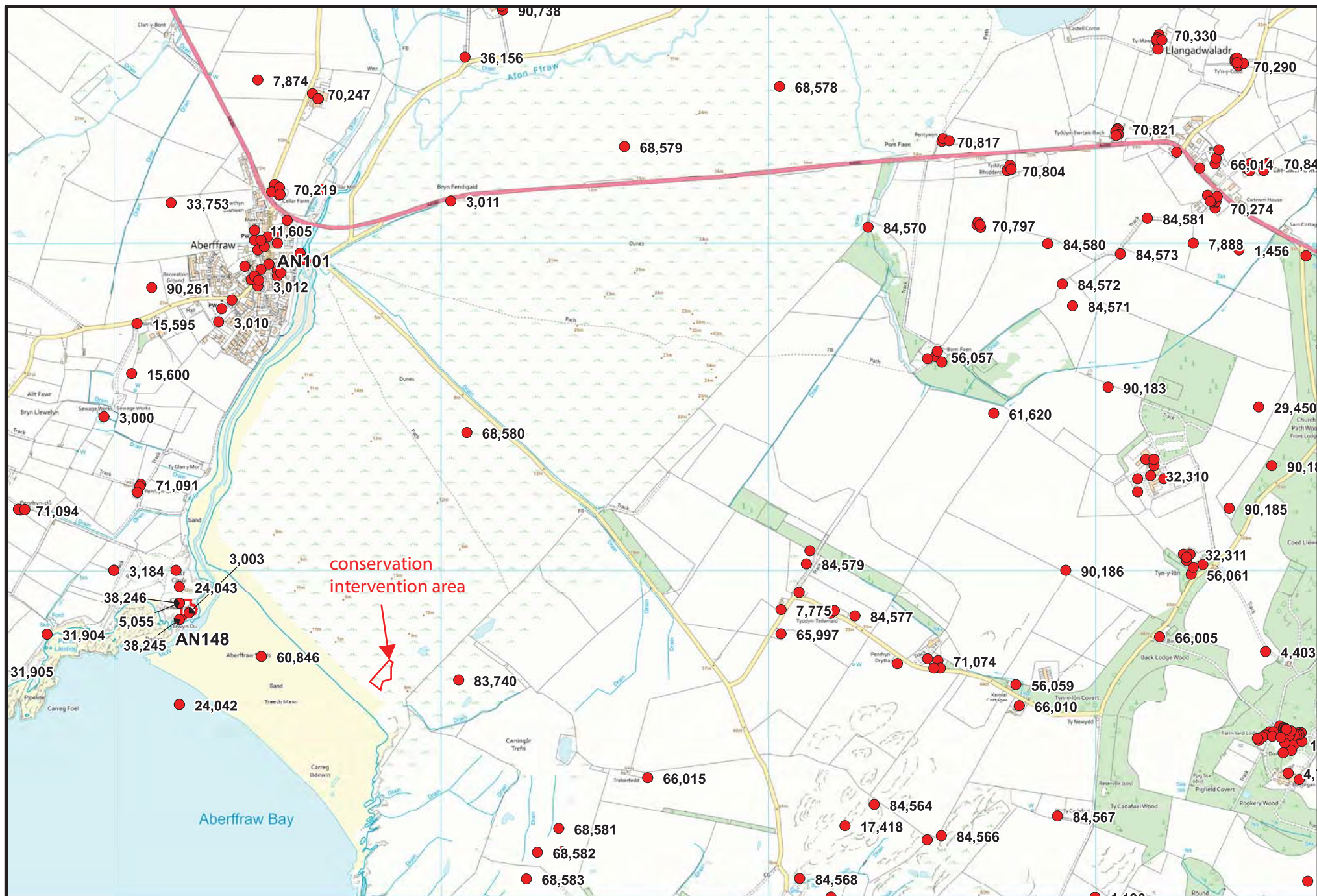


FIGURE 02: Location of proximity archaeological assets, based on Ordnance Survey Sheets SH36NW. The conservation intervention area is highlighted in red.

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Plate 01: view of south-west facing dunes before work commenced; (archive reference: G2742_02).



Plate 02: view of the frontal notch area before work commenced from the south-east; (archive reference: G2742_13).



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Plate 07: Central area of notch showing the depth of the south-east facing section of the trench;
(archive reference: G2742_34).



Plate 08: Central area of notch showing the depth of the north-west facing section of the trench;
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Plate 09: View of the north-west side of the notch after excavation completed
(archive reference: G2742_52).



Plate 10: View of the notch after excavation completed from the beach;
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Plate 11: View of the notch through the dunes at the north-east of the area; (archive reference: G2742_71).



Plate 12: View of the notch at the north-east of the area showing some of the sand spoil heaps; (archive reference: G2742_72).



Plate 13: View of the north-west of the notch area showing sand spoil forming wall;
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Plate 14: View of the notch at north-east of intervention area showing sand spoil heaps on inland dunes;
(archive reference: G2742_73).



Plate 15: Sand spoil at the base of the sand dunes; (archive reference: G2742_63).



Plate 16: Frontal dune notch view from the beach to northwest; (archive reference: G2742_67).



Plate 17: View to southeast showing completed notch; (archive reference: G2742_80).



Plate 18: View to northeast showing breakthrough notch to inland dunes; (archive reference: G2742_79).

APPENDIX I

Reproduction of Approved Written Scheme of Investigation

**TWYNI BYW - SANDS OF LIFE (SOLIFE):
DUNE NOTCH WORKS AT TYWYN ABERFFRAW, YNYS MON
(G2742)**

**WRITTEN SCHEME OF INVESTIGATION FOR AN
ARCHAEOLOGICAL WATCHING BRIEF**

Prepared for

Natural Resources Wales

August 2022



Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

TWYNI BYW - SANDS OF LIFE (SOLIFE):

DUNE NOTCH WORKS AT TYWYN ABERFFRAW, YNYS MON (G2742)

Prepared for *Natural Resources Wales*, August 2022

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1 INTRODUCTION

Gwynedd Archaeological Trust has been commissioned by Natural Resources Wales (NRW) to undertake an archaeological watching brief during works for the Sands of LIFE (SoLIFE) (LIFE17 NAT/UK/000023) conservation project at Tywyn Aberffraw, Ynys Môn (NGR SH35766765; postcode LL63 5EX; cf. [Figure 01](#)). The Sands of LIFE project is being led by NRW and supported by the EU LIFE fund and the Welsh Government, with the aim to restore threatened sand dune sites across Wales. As detailed in NRW document Twyni Byw - Sands of LIFE (SoLIFE) Contract Specification (dated 01/02/2022; cf. [Appendix I](#)), the aim for this part of the project will be to create one notch in the frontal dune ridge at Tywyn Aberffraw, by excavating an area of 0.28ha in the fore dunes to lower the profile of the dune by a depth of 2.5m on average, to create an irregularly shaped trapezoidal notch. Tywyn Aberffraw is a large dune system designated as a Special Area of Conservation because of its international importance for wildlife. However, most of the dunes have become excessively stabilised and vegetated over time and conservation management is required to improve the condition of the dune habitats. The creation of a notch in the frontal dune ridge will encourage the wind to move sand inland, creating areas of pioneer habitat, and increasing dune mobility. It will also increase calcareous 'sand rain' to habitat further inland, which helps to maintain a high pH which is important for plant diversity. The rejuvenation work will connect the beach front with the interior of the dunes and improve the condition of the designated sand dune habitats: shifting dunes, dunes with *Salix repens*, humid dune slacks and fixed dune grassland. The notch will be positioned to take account of pathways to the beach, to take advantage of trampling by the public to help keep the notch open. The notch will enable easier access for the public between the dunes and the beach. The existing grassy dune vegetation will be cut as part of a separate contract before excavation begins. The notch will be created with the following measurements:

- Length: 90m (SE side) and 120m (NW side) as measured from the front of the dune ridge.
- Width: 40m width at crest frontal dune ridge, 20m at ground level; reducing to
- 15m width inland
- Depth: Beach level throughout
- Angle of slope: 30% - 35%

The groundworks are scheduled between Monday 12th September 2022 and Friday 30th September 2022, with the archaeological watching brief currently scheduled to be undertaken throughout this timeframe. The schedule is in line with European Protected Species Licence and SSSI Assent compliance.

The watching brief will be completed in accordance with the following standards and guidance:

1. *Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs)* (The Welsh Archaeological Trusts, 2018)
2. *Guidelines for digital archives* (Royal Commission on Ancient and Historical Monuments of Wales, 2015).
3. *Management of Archaeological Projects* (English Heritage, 1991);
4. *Management of Research Projects in the Historic Environment: The MoRPHE Project Managers' Guide* (Historic England, 2015);
5. *Standard and Guidance for Archaeological Watching Brief* (Chartered Institute for Archaeologists, 2020); and
6. *Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives* (Chartered Institute for Archaeologists, 2020).

Gwynedd Archaeological Trust is certified to ISO 9001:2015 and ISO 14001:2015 (Cert. No. 74180/B/0001/UK/En) and is a Registered Organisation with the Chartered Institute for Archaeologists.

1.1 Monitoring Arrangements

The watching brief will be monitored by the Gwynedd Archaeological Planning Service (GAPS). The content of this WSI and all subsequent reporting by GAT must be approved by GAPS prior to final issue. The GAPS Planning Archaeologist will be kept informed of the project timetable and subsequent progress and findings. This will allow time to arrange monitoring visits and attend site meetings (if required) and enable discussion about the need or otherwise for further works (if required) as features of potential archaeological significance are encountered. GAPS contact details are:

- Tom Fildes | tom.fildes@heneb.co.uk | 07920264232.

1.2 Fieldwork Aims and Objectives

The key aims and objectives of the archaeological mitigation are to:

- The objective would be to establish the date and nature of any archaeological remains identified and assess their implications for understanding the area, in conjunction with the known archaeological record; and
- To place the results in context, reference shall be made if necessary to *A Research Framework for the Archaeology of Wales*.

1.3 Historic Environment Record

In line with the Gwynedd Archaeological Trust Historic Environment Record (HER) requirements, the HER has been contacted at the onset of the project to ensure that any data arising is formatted in a manner suitable for accession to the HER and follows the guidance set out in *Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs)* (The Welsh Archaeological Trusts, 2018). The HER has been informed of the project start date, location including grid reference, estimated timescale for the work, and further relevant information associated with the project.

The GAT HER Enquiry Number for this project is GATHER 1704 and the Event PRN is 46301. The GAT HER will also be responsible for supplying Primary Reference Numbers (PRN) for any new assets identified and recorded.

Prior to submission of data to the HER on completion of the project, a bilingual event summary document will be prepared in *Microsoft Word* based on the format defined in section 4.2 of *Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs)* (Version 1.1).

2 BACKGROUND

2.1 Introduction

As summarised in the archaeological scoping report prepared by Andrew Davidson, Chief Archaeologist, Gwynedd Archaeological Trust (Davidson, 2022), the dune system lies on the east side of the Afon Ffraw. Aberffraw is located on the west bank of the river and during the medieval period, it was a *llys*, or court, of the Welsh Princes. The court is thought to have lain close to the church; excavations (Longley and White) have also suggested the possible presence of a Roman fortlet underlying the village. The scoping report also states that the dune system is thought to have formed from sand incursions during a period of high winds and storms in the 14th century, with one particular storm noted in historical sources as occurring in December 1330, when 186 acres (75 hectares) of land around Newborough and Llanddwyn were covered by sand (Carr, 7).

2.2 Historic Environment Record

The Historic Environment Record lists multiple archaeological assets within the local area, including the following:

- Primary Reference Number (PRN) 3011 Ffynon Bryn Fendigaid, Holy Well, Aberffraw; NGR SH36036913, c.1.5km north of the watching brief area, comprising a medicinal well in which a fish was kept for purposes of divination. In the 18th century Sir Arthur Owen of Bodeon enclosed it with a wall but it became ruined and neglected; it was reopened in 1861 and now consists of a small, low rectangular roofed building. There is no trace of a well within the structure. It lies alongside the road which links Aberffraw with Llangadwaladr across the dunes.
- PRN 68,578: Anti-Aircraft Obstacles; NGR SH3703569480, c.2.2km northeast of the watching brief area;
- PRN 68,579: Anti-Aircraft Obstacles; NGR SH3656169296, c.1.8km north of the watching brief area; and
- PRN 68,580: Anti-Aircraft Obstacles; NGR SH3607968422, c.850m north of the watching brief area.
- PRN 60,846: a shipwreck recently uncovered in the inter-tidal zone; NGR SH35456773, c.280m to the northwest; and
- Scheduled Monument An148: Trwyn Du prehistoric burial cairn; NGR SH35226788, c.550m to the northwest.

The anti-aircraft obstacles comprise trenches and mounds, the latter built up from the material dug out of the trench and were designed to prevent aircraft from landing. They are still visible in places on the ground and on modern aerial photographs, but mainly as trenches, with the mounds mostly eroded. The scoping report states they are clear on aerial photographs of the 1940's and that other examples may exist at Aberffraw but are now hidden by sand. The majority of similar coastal defences in Britain have been backfilled and are no longer visible, with those at Aberffraw a rare survival. Other defences consisting of concrete uprights (now fallen and buried) existed along the beach, just outside the study area, and are only occasionally uncovered before being covered over again by sand.

2.3 Historic Mapping

A brief examination of the First to Third edition Anglesey County Series 1-inch to 25-mile map Sheets X.3, X.4, X.7 and X.8 (published 1889, 1900 and 1922 respectively; cf. Figures [02](#), [03](#) and [04](#)) shows the targeted area as little changed from present, with the only noticeable differences between the respective maps and present are the subtle changes to the low water mark of ordinary tides and the boundary line between the beach and the dunes.

3 METHODOLOGY

3.1 Introduction

An archaeological watching brief is defined by the Chartered Institute for Archaeologists as a formal programme of observation and investigation conducted during any operation carried out for non-archaeological reasons 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 (CIfA, 2020).

The archaeological watching brief is required during dune notch works for the Sands of LIFE (SoLIFE) (LIFE17 NAT/UK/000023) conservation project at Tywyn Aberffraw, Ynys Môn (NGR SH40426384) and will comprise a 0.28ha intervention area (Figure 01), where the site contractor is required to scrape away the vegetation and excavate the sand to lower the profile of the dune by a depth of 2.5m on average, to create an irregularly shaped trapezoidal notch that will encourage the wind to move sand inland, creating areas of pioneer habitat, and increasing dune mobility. The notch will also enable easier access for the public between the dunes and the beach and will be angled to the northeast, in line with the prevailing winds. The approximate extent of the notch will be marked with stakes by the SoLIFE project officer on the ground, who will also be on-site, daily, during the works to provide direction. The dune notch will be excavated by plant machinery supplied and operated by the main contractor.

The groundworks are scheduled between Monday 12th September 2022 and Friday 30th September 2022, with the archaeological watching brief currently scheduled to be undertaken throughout this timeframe. The schedule is in line with European Protected Species Licence and SSSI Assent compliance.

The following watching brief methodology will be applied:

- During the watching brief all attendances and any identified features will be recorded using GAT watching brief pro-formas ([Appendix II](#));
- Photographic images will be taken using a digital SLR (camera set to maximum resolution in RAW format; a photographic record will be maintained on site using GAT pro-formas ([Appendix III](#)) and digitised in *Microsoft Access* as part of the fieldwork archive and dissemination process. Photographic images will be archived in TIFF format using Adobe Photoshop; the archive numbering system will start from G2742_001. When practical, a photographic ID board will be used during the watching brief inspection to record site code, image orientation and any relevant context numbers.

- Any subsurface features will be recorded photographically, with detailed notations and a measured survey (completed using a *Trimble* R8 GPS unit);
- The archaeological structure will be manually cleaned and examined to help determine visible extent, function, date and relationship to any adjacent activity; and
- Any required plans or sections to be drawn at a minimum 1:10 scale using GAT A4, A3 or A2 pro-forma permatrace.

3.2 Ecofacts

Should any archaeological features and/or sealed deposits be identified that are deemed suitable for post-excavation assessment and analysis, ecofact samples will be taken of not less than 40 litres for bulk samples, or 100% if the feature is smaller.

The samples will be subsequently assessed and analysed by an appropriate palaeoenvironmental specialist for plant species and charcoal, with the results used to inform agrarian practices and wood fuel use, as well as radiocarbon dating strategies.

Any ecofact assessment/analysis proposals will require additional resourcing and cost and will only be undertaken further to agreement with GAPS and the client.

Any ecofact samples taken from human burials will be recovered in accordance with the appointed osteologist's guidance.

3.3 Artefacts

Diagnostic artefacts will be retained for further examination and identification. Pottery sherds of 19th and 20th century date will be examined on site and the context from which they were retrieved noted but the sherds will not be retained. The artefacts will be treated according to guidelines issued by the UK Institute of Conservation (Watkinson and Neal 2001) in particular the advice provided within *First Aid for Finds* (Rescue 1999) and Historic England.

Any waterlogged artefacts (e.g. wood or leather) that are to be recovered for post-excavation assessment and analysis will be processed in accordance with *Environmental Archaeology: a guide to the theory and practice of methods, from sampling and recovery to post-excavation* (English Heritage, 2011) and specifically in accordance with Brunning and Watson (2010) for waterlogged wood and Historic England (2012) for waterlogged leather. In such cases an external specialist will be contacted to agree an appropriate sampling and recovery strategy via Lucy Whittingham | Project Manager (post-excavation) | AOC Archaeology | telephone: 0208 843 7380 | email: lucy.whittingham@aocarchaeology.com).

All finds are the property of the landowner; however, it is Trust policy to recommend that all finds are donated to an appropriate museum (in this case Oriel Ynys Môn, Rhosmeirch, Llangefni, LL77 7TQ), where they can receive specialist treatment and study. Access to finds must be granted to the Trust for a reasonable period to allow for analysis and for study and publication as necessary. Trust staff will undertake initial identification, but any additional advice would be sought from a wide range of consultants used by the Trust, including National Museums and Galleries of Wales at Cardiff.

All finds of treasure must be reported to the coroner for the district within fourteen days of discovery or identification of the items. Items declared Treasure Trove become the property of the Crown, on whose behalf the Portable Antiquities Scheme acts as advisor on technical matters, and may be the recipient body for the objects.

The Treasure Valuation Committee, based at the British Museum, and informed by the Portable Antiquities Scheme, will decide whether they or any other museum may wish to acquire the object. If no museum wishes to acquire the object, then the Secretary of State will be able to disclaim it. When this happens, the coroner will notify the occupier and landowner that he intends to return the object to the finder after 28 days unless he receives no objection. If the coroner receives an objection, the find will be retained until the dispute has been settled.

GAT will contact the landowner (via client) for agreement regarding the transfer of artefacts, initially to GAT and subsequently to the relevant museum (Oriel Ynys Môn). A GAT produced

pro-forma will be issued to the landowner where they are given the option to donate the finds or to record that they want them returning to them once analysis and assessment has been completed. Artefacts will be transferred to the Oriel Ynys Môn in accordance with their guidelines.

3.4 Human Remains

Whilst human remains are not expected, if any human remains are identified that cannot be preserved in situ, any excavation will take place under appropriate regulations and with due regard for health and safety issues. In order to excavate human remains, a Ministry of Justice licence is required under Section 25 of the Burials Act 1857 for the removal of any body or remains of any body from any place of burial. In accordance with the Ministry of Justice licence, recovered remains will be reburied once the investigation and/or assessment/analysis are complete.

Non-fragmented skeletal remains will be excavated using wooden tools and collected and stored in polyethylene bags (with appropriate references for context, grave number, et al) and placed in a lidded cardboard archive box (note: separate boxes for each grave) and stored in a suitable manner. If significant quantities of human remains are encountered, a human osteologist should be contacted and appointed to advise the team during the fieldwork. The osteologist should also help to ensure that adequate post-excavation processing of human remains is carried out so that the material is in a fit state for assessment during the post-excavation stage. For inhumations, this will involve washing, drying, marking and packing.

If human remains are recovered that are deemed suitable for further assessment/analysis, this will be completed in accordance with the osteologist's requirements and with *Human Bones from Archaeological Sites Guidelines for producing assessment documents and analytical reports* (Historic England, 2004).

3.5 Data Management Plan

Archiving will be completed based on following task list;

1. Pro-formas: all cross referenced and scanned for digital archiving;
2. Photographic Metadata: cross-referenced with all pro-formas and completed in *Microsoft Excel*;
3. Project register (*Microsoft Excel* format): cross-referenced with all pro-formas and completed in *Microsoft Excel*; and
4. Measured drawings (permatrace) (if relevant): all cross referenced and scanned for digital archiving.

This data will then be used as the basis for the physical and digital dataset archives. Information from these will be used to compile the project report. The physical archive will be stored in a designated project folder and the location confirmed in the Trust project database; the digital dataset will be stored on a dedicated Trust server, with the location confirmed in the Trust project database via a specific hyperlink. External datasets for the HER and RCAHMW are as defined in the dissemination strategy below. De-selected digital data will be confirmed in an updated digital management plan appended to the final report.

A draft report will be submitted within one month of fieldwork completion and a final report will be submitted to the regional Historic Environment Record within six months of project completion. The report will include the following:

1. Non-technical summary (Welsh and English)
2. Introduction
3. Background
4. Methodology
5. Results
6. Conclusion
7. List of sources consulted.
8. Appendix I – approved GAT project specification
9. Appendix II – photographic metadata

On final approval, the following dissemination and archiving of the report and digital dataset will apply:

- A digital report(s) will be provided to the client and GAPS (draft report then final report);
- A digital report will be provided to the regional Historic Environment Record; this will be submitted within six months of project completion (final report only), along with a digital dataset comprising an Event PRN summary. The report and dataset will be submitted in accordance with the required standards set out in *Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs)* (Version 1.1); and
- A digital report and digital archive dataset will be provided to Royal Commission on Ancient and Historic Monuments, Wales (final report only), in accordance with the *RCAHMW Guidelines for Digital Archives Version 1*. The dataset will be prepared in the format required by RCAHMW and will include:
 - Photographic metadata (Microsoft Access);
 - Photographic archive (TIFF format);
 - Project Information form (Excel);
 - File Information form (Excel) – Microsoft Word report text final;
 - File Information form (Excel) – Photographic metadata (general);
 - File Information form (Excel) – Adobe PDF report final; and
 - File Information form (Excel) - Photographic metadata (detail).

3.6 Selection Strategy

As defined in *Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives* (Chartered Institute for Archaeologists, 2020) section 3.3.1, a project specific selection strategy and data management plan should be prepared. In support of this, the Chartered Institute for Archaeologist (CIfA), have stated that it is “widely accepted that not all the records and materials collected or created during the course of an Archaeological Project require preservation in perpetuity. These records and materials constitute the Working Project Archive which will be subject to Selection, in order to establish what will be retained for long-term curation”. The aim of selection is to ensure that all the elements retained from the Working Project Archive for inclusion in the Archaeological Archive are appropriate to establish the significance of the project and support “future research, outreach, engagement, display and learning activities”. Selection should be “focused on selecting what is to be retained to support these future needs, rather than deciding what can be dispersed” and can be qualified by a selection strategy, which details the project-specific selection process, agreed by all parties (including GAPS, client and/or landowner), which will be applied to a Working Project Archive prior to its transfer into curatorial care as the Archaeological Archive.

The selection strategy will be confirmed in the watching brief report and will take into account:

- The aims and objectives of the project.
- The brief and/or Written Scheme of Investigation (WSI)).
- The Collecting Institution’s collection policy and/or deposition guidelines.
- Local and regional research frameworks.
- Relevant thematic or period specific research frameworks.
- The project’s Data Management Plan (DMP).
- Internal recording and reporting policies.
- Material-specific guidance documents.

The selection strategy pro-forma is included as [Appendix IV](#).

4 PERSONNEL

The project will be managed by John Roberts, Principal Archaeologist GAT Contracts Section with attendances on-site undertaken by a GAT Project Archaeologist(s). The Project Archaeologist will be responsible for following:

- All archaeological watching brief duties on site;
- Client/contractor liaison;
- GAPS liaison, with regular updates;
- specialist liaison (if relevant);
- completing all on site pro-formas and the fieldwork archive itemised in [para. 2.5](#);
- sourcing Primary Reference Numbers (PRN) from the GAT HER for any new features identified;
- completing an event summary and creating or updating PRN data, dependent on results; and
- for submitting a draft final report (or interim report) for project manager review and approval, to then be submitted as per the arrangements defined in [para. 4](#).

5 HEALTH AND SAFETY

Copies of the site specific risk assessment will be supplied to the client and sub-contractor prior to the start of fieldwork. Any risks and hazards will be indicated prior to the start of work via a submitted risk assessment. All GAT staff will be issued with required personal safety equipment, including high visibility jacket, steel toe-capped boots and hard hat. All GAT fieldwork is undertaken in accordance with the Trust's Health and Safety Manual, Policy and Handbook which were prepared by Ellis Whittam. All work will be undertaken in accordance with the client and site contractors Health and Safety requirements.

There will be no livestock grazing in the vicinity of the work area. The site is open access to the public and is regularly used by walkers, cyclists and horse riders. The main contractor will ensure appropriate demarcation of work zones via safety signs and warning tape.

6 SOCIAL MEDIA

One of the key aims in the GAT mission statement is to improve the understanding, conservation and promotion of the historic environment in our area and inform and educate the wider public. To help achieve this, GAT maintains an active social media presence and seeks all opportunities to promote our projects and results. With permission, GAT would like the opportunity to promote our work on this scheme through our social media platforms. This could include social media postings during our attendance on site as well as any postings to highlight results. In all instances, approval will be sought from client prior to any postings.

Any social media output will be further to the agreement of NRW.

7 INSURANCE

7.1 Public/Products Liability

Limit of Indemnity- £5,000,000 any one occurrence and in the aggregate in respect of Product Liability

INSURER Ecclesiastical Insurance Office Plc.

POLICY TYPE Public/Products Liability

POLICY NUMBER UN/000375

EXPIRY DATE 21st June 2023

7.2 Employers Liability

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

INSURER Ecclesiastical Insurance Office Plc.

POLICY TYPE Employers Liability

POLICY NUMBER 24765101 CHC / UN/000375

EXPIRY DATE 21st June 2023

7.3 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 PL-PSC10002389775/01

EXPIRY DATE 22nd July 2023

8 SOURCES CONSULTED

1. Brunning, R and Watson, J 2010, Waterlogged Wood: Guidelines on the Recording, Sampling, Conservation and Curation of Waterlogged Wood (3rd edition)
2. Carr, A. D., 2011 Medieval Anglesey (2nd edition) Jones, F., 1954 The Holy Wells of Wales
3. Chartered Institute for Archaeologists, 2020, Standard and Guidance for Archaeological Watching Brief
4. Chartered Institute for Archaeologists, 2020, Standard and guidance for the collection, documentation, conservation and research of archaeological materials
5. Chartered Institute for Archaeologists, 2020, Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives
6. English Heritage, 1991, Management of Archaeological Projects (MAP2)
7. English Heritage, 2011, Environmental Archaeology: a guide to the theory and practice of methods, from sampling and recovery to post-excavation
8. English Heritage, 2012, Waterlogged Organic Artefacts, Guidelines on their Recovery, Analysis and Conservation
9. Geomorphology of Great Britain, Geological Conservation Review Series.
10. Historic England, 2004, Human Bones from Archaeological Sites Guidelines for producing assessment documents and analytical reports
11. Historic England, 2015, Management of Research Projects in the Historic Environment (MoRPHE)
12. May, V. J., 2003 'Tywyn Aberffraw, Anglesey' in V. J. May and J. D. Hansom (ed) Coastal
13. Natural Resources Wales, 2021. Twyni Byw - Sands of LIFE (SoLIFE) Specification
14. Robinson A. H. W., 1980 'The Sandy Coast of SW Anglesey', Transactions of the Anglesey Antiquarian Society, 37-66
15. Royal Commission on Ancient and Historical Monuments of Wales, 2015, Guidelines for digital archives
16. The Welsh Archaeological Trusts, 2018, Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs) (Version 1.1)
17. Watkinson, D and Neal, V, 2001, First aid for finds (3rd edition).

18. White, R. B., and Longley, D., 1995 'Excavations at Aberffraw', Transactions of the Anglesey Antiquarian Society, 13-21.

FIGURE 01

Reproduction of Plan 1: Site Location, from Natural Resources Wales, 2022. Twyni Byw - Sands of LIFE (SoLIFE) Specification

Plan 1

Sands of LIFE: LIFE 17 NAT/UK/000023



Legend



Frontal Dune Notch 0.28 ha

Y Twyn o Abermenai / Abermenai to Aberffraw Dunes SAC



0 0.225 0.45 0.9 1.35 Kilometers

Map Author: Jake Burton, Sands of LIFE Project and Monitoring Officer North Wales
 Copyright: Natural Resources Wales 2022
 Ordnance Survey Licence Number: 100010941
 All Rights Reserved

FIGURE 02

Location of proximity archaeological assets, based on Ordnance Survey Sheets SH36NW. The conservation intervention area is highlighted in red. Scale 1:15000@A4.

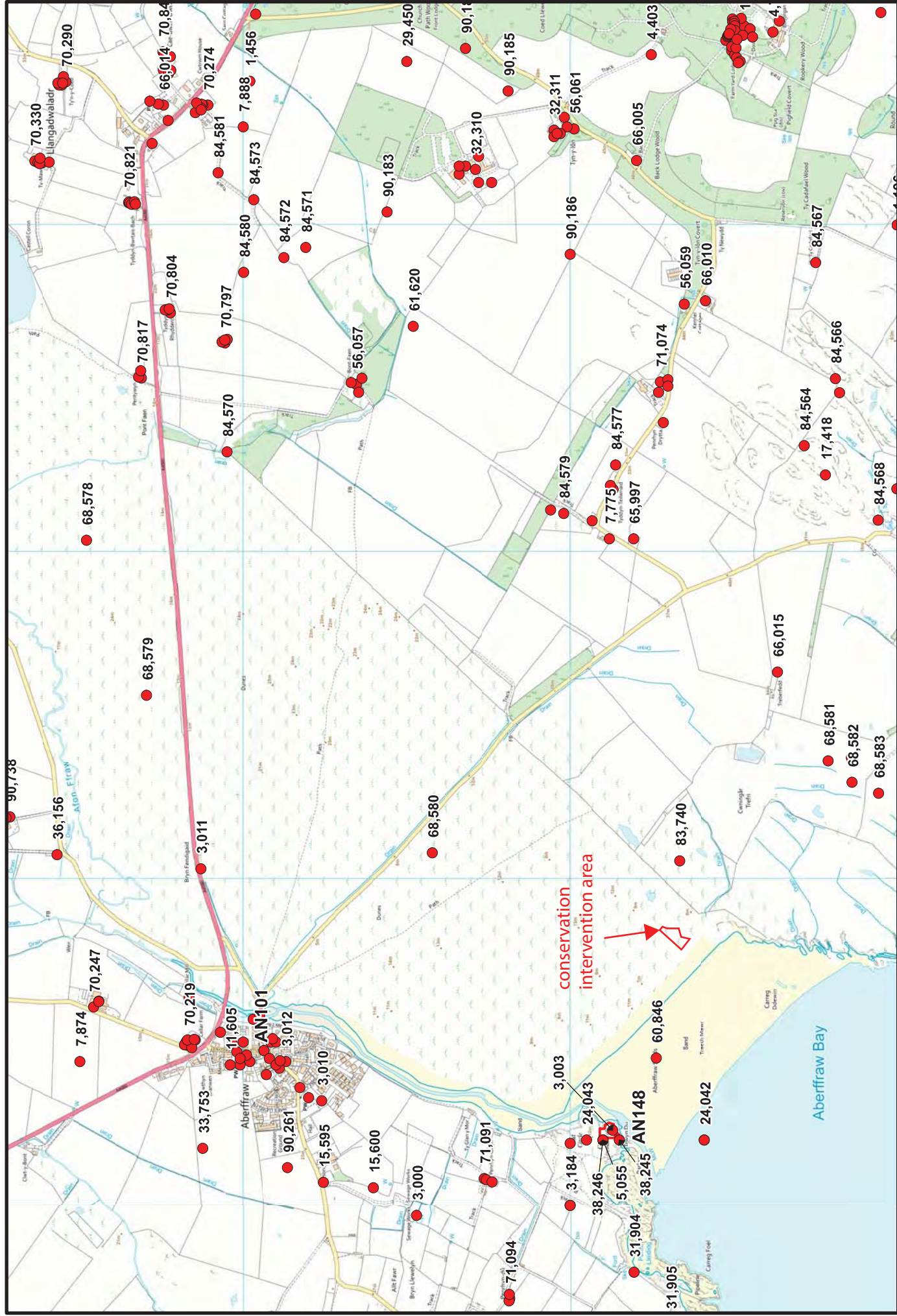


FIGURE 02: Location of proximity archaeological assets, based on Ordnance Survey Sheets SH36NW. The conservation intervention area is highlighted in red. Scale 1:15000@A4. © Crown copyright. All rights reserved. License number AL100020895.

FIGURE 03

Reproduction of First Edition Anglesey County Series 1-Inch to 25-Mile Map Sheets X.3, X.4, X.7 and X.8, published 1889. The conservation intervention area is highlighted in red. Scale 1:15000@A4.

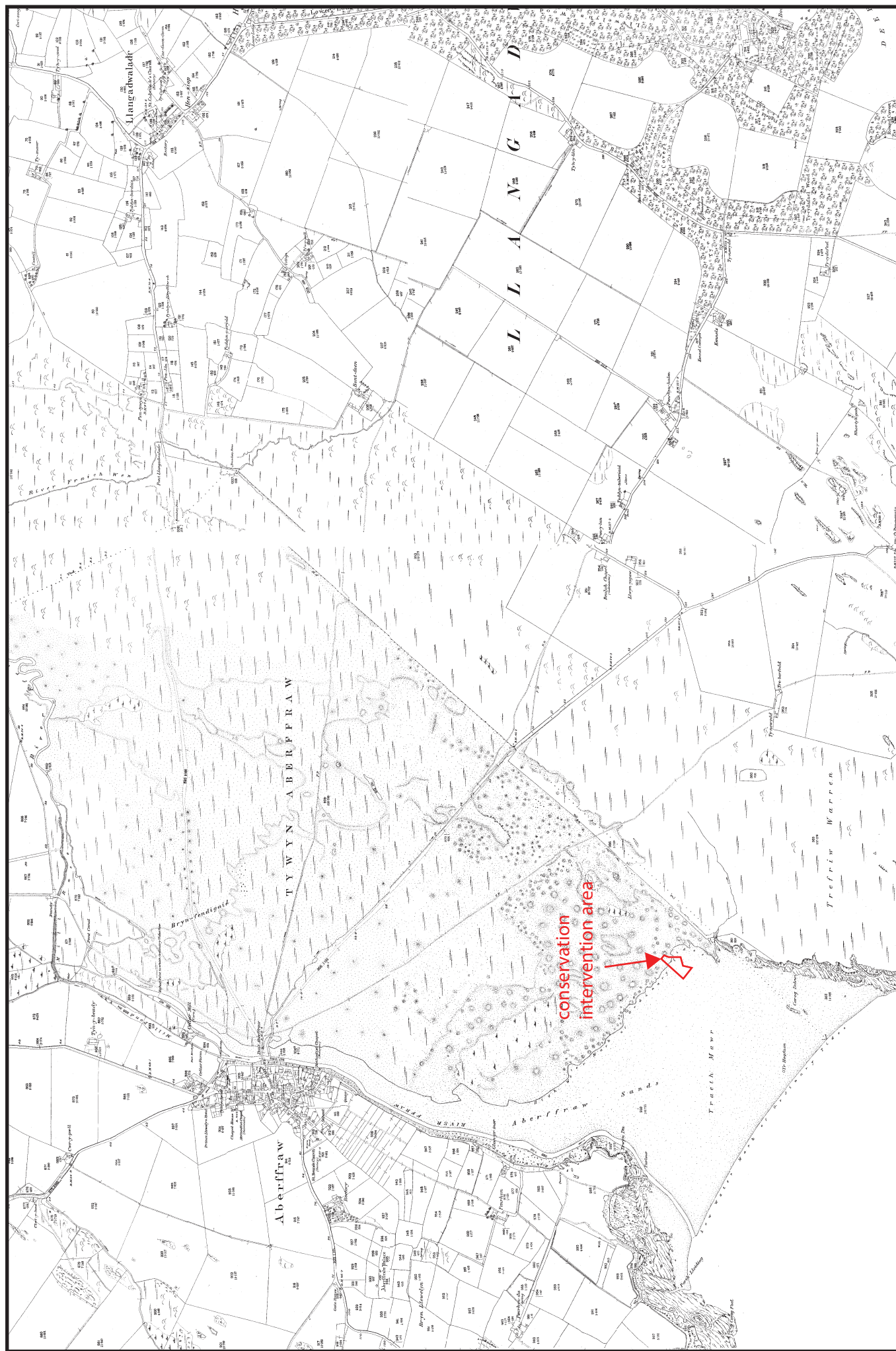


FIGURE 03: Reproduction of First Edition Anglesey County Series 1-Inch to 25-Mile Map Sheets X.3, X.4, X.7 and X.8, published 1889. The conservation intervention area is highlighted in red. Scale 1:15000@A4.

FIGURE 04

Reproduction of Second Edition Anglesey County Series 1-Inch to 25-Mile Map Sheets X.3, X.4, X.7 and X.8, published 1900. The conservation intervention area is highlighted in red. Scale 1:15000@A4.

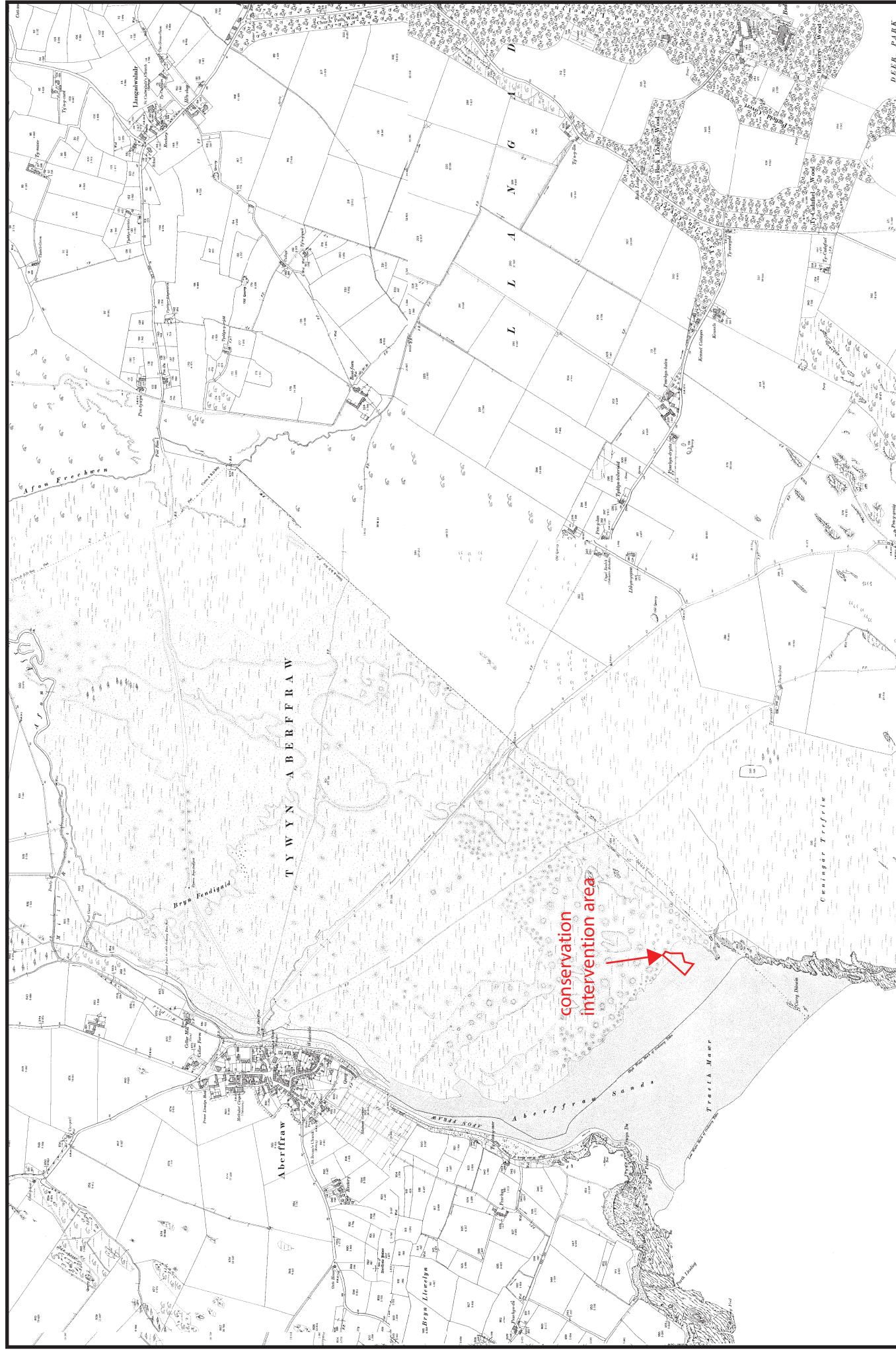


FIGURE 04: Reproduction of Second Edition Anglesey County Series 1-Inch to 25-Mile Map Sheets X.3, X.4, X.7 and X.8, published 1900. The conservation intervention area is highlighted in red. Scale 1:15000@A4.

FIGURE 05

Reproduction of Third Edition Anglesey County Series 1-Inch to 25-Mile Map Sheets X.3, X.4, X.7 and X.8, published 1922. The conservation intervention area is highlighted in red. Scale 1:15000@A4.

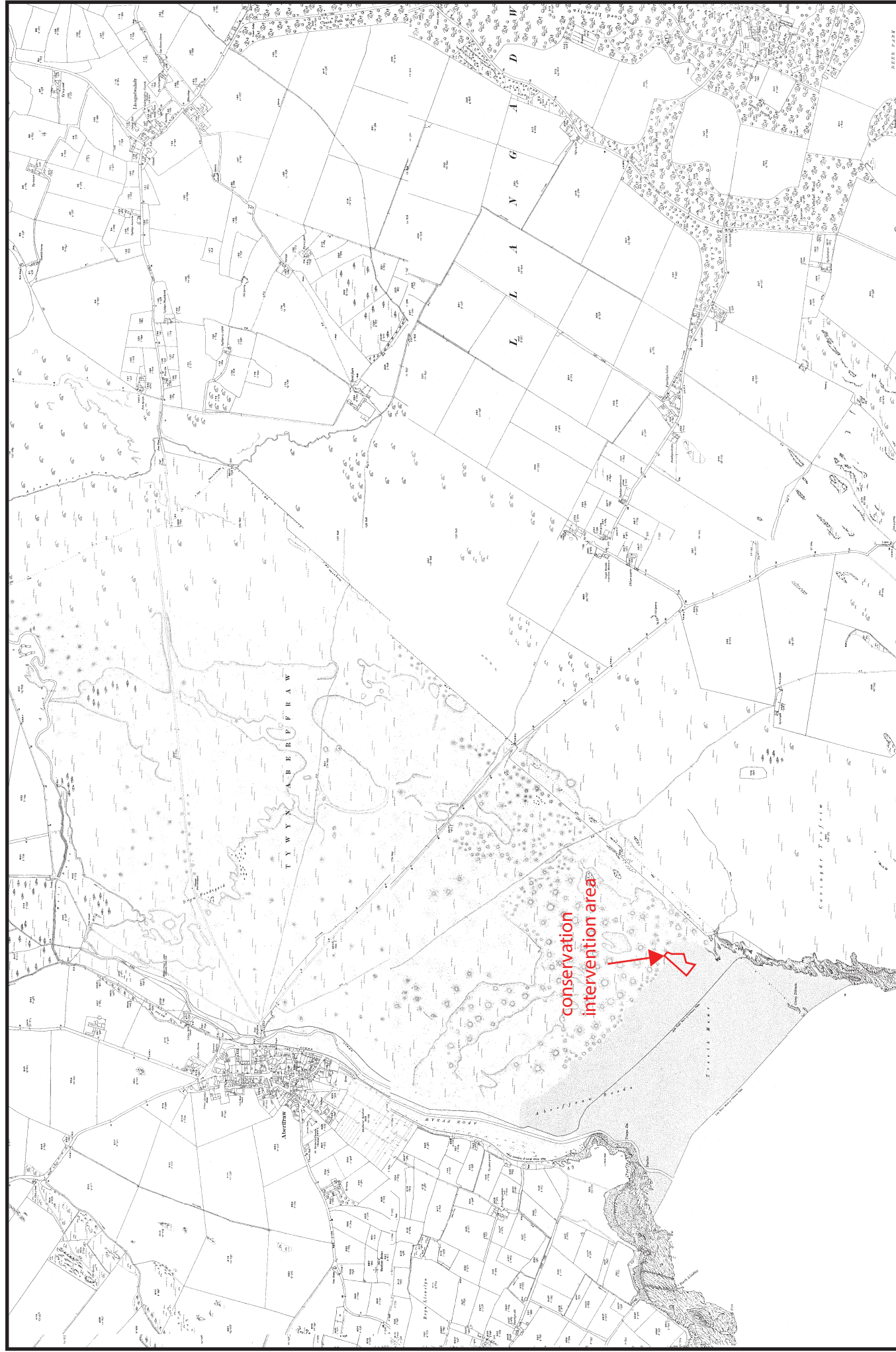


FIGURE 05: Reproduction of Third Edition Anglesey County Series 1-Inch to 25-Mile Map Sheets X.3, X.4, X.7 and X.8, published 1922. The conservation intervention area is highlighted in red. Scale 1:15000@A4.

APPENDIX I

Reproduction of Twyni Byw - Sands of LIFE (Solife) Specification, Natural Resources Wales, November 2020

Twyni Byw - Sands of LIFE Specification

Contract Title: Sands of LIFE Tywyn Aberffraw Dune Notch Creation

Date: 01/02/2022

Sands of LIFE Code: SoLIFE: LIFE17 NAT/UK/000023

Sands of LIFE Contract Reference Number: SoLIFE N2022/02

Framework to be let under: Sands of LIFE (LIFE 17 NAT/UK/000023): Conservation and Fencing Framework Lot 1b

Introduction

Sands of LIFE (SoLIFE) (LIFE17 NAT/UK/000023) is a major conservation project, led by NRW and supported by the EU LIFE fund, which is restoring threatened sand dune sites across Wales.

SoLIFE is now seeking to let a contract to create one notch in the frontal dune ridge at Tywyn Aberffraw, by excavating an area of 0.28ha in the fore dunes.

Please note, this contract is subjected to strict and legally binding SSSI assent and EPS compliances. Detailed requirements are explained throughout.

Project Actions

This contract will contribute to the delivery of the following SoLIFE action:

- C1.1 Frontal Dune Notch

Background

Tywyn Aberffraw is a large dune system designated as a Special Area of Conservation because of its international importance for wildlife. However, most of the dunes have become excessively stabilised and vegetated over time and conservation management is required to improve the condition of the dune habitats.

The creation of a notch in the frontal dune ridge will encourage the wind to move sand inland, creating areas of pioneer habitat, and increasing dune mobility. It will also increase calcareous 'sand rain' to habitat further inland, which helps to maintain a high pH which is important for plant diversity. The rejuvenation work will connect the beach front with the interior of the dunes and improve the condition of the designated sand dune habitats: shifting dunes, dunes with *Salix repens*, humid dune slacks and fixed dune grassland.

The notch will be positioned to take account of pathways to the beach, to take advantage of trampling by the public to help keep the notch open. The notch will enable easier access for the public between the dunes and the beach.

Roles, Responsibilities and Contract Liaison

The contacts for this contract are as follows:

Jake Burton (primary point for all contract liaison)

Sands of LIFE Project and Monitoring Officer (North Wales)

Email: jake.burton@cyfoethnaturiolcymru.gov.uk

Mobile: 07814 362403

Lucy Smith

Sands of LIFE Project Assistant

Email: lucy.smith@cyfoethnaturiolcymru.gov.uk

Mobile: 07977060045

Roles: The CDM Regulations apply to this contract. The SoLIFE Project is the Client and Principal Designer, and the winning contractor shall be the Principal Contractor.

The SoLIFE Project Officer will represent the SoLIFE project and be responsible for the duties described below, however, in some instances this role will be delegated to the SoLIFE Project Assistant.

The contractor shall specify a site manager or supervisor for the contract prior to the start of works, who will also be the primary point of contact during the contract.

Key documentation: SoLIFE sets the scope and design of the works, including H&S aspects, via this specification document. Supplementary site and H&S information, such as a Site Hazard List is also provided. (See Appendices section). Any changes to the specification must be agreed with the Project Officer **in writing**.

As part of the tender submission, the contractor shall provide a full method statement for the works, including H&S issues, personnel, and machinery to be used; as well as a detailed risk assessment. The contractor shall prepare a Construction Phase Plan as required by the CDM Regulations. Relevant certification and assessments shall also be supplied as described elsewhere in this specification.

Inception meeting/site induction: The SoLIFE Project Officer and the contractor will meet on site before commencement to discuss the details of the works, H&S matters, access routes, environmental sensitivities, no-go areas etc. The meeting must include the site manager/supervisor and, as far as possible, all team members. The contractor is responsible for fully communicating induction information to new workers or sub-contractors entering the work site.

Ongoing oversight and communication: The SoLIFE Project Officer will undertake regular site visits during the works to provide additional direction if required, and check standards are being met. The contractor must communicate with the SoLIFE Officer on a daily basis when on site, by text or phone, giving details of personnel and plant

on site, start-finish times, progress made, etc. Photographs of the work site and progress should be provided where possible.

Works management and supervision: The contractor shall ensure the works are carried out in a safe and time-efficient manner in a logical sequence, whilst discharging all legally required safety requirements on site.

The contractor shall be responsible for the management and supervision for all of the contractor's personnel on site, including all sub-contractors. The site manager/supervisor or a lead responsible worker shall be on site at all times. Adequate worker supervision shall be provided.

Sub-contractors shall only be used with the express permission of the Project Officer, and full names and qualifications paperwork shall be provided. The principle contractor shall take full responsibility of sub-contractors and pass on all information provided by SoLIFE.

Period of Work

All works will begin from **Monday 12th September 2022** and must be completed before **Friday 30th September 2022** due to European Protected Sand Lizard compliance.

All works must be completed before the localized sand lizard population enter hibernation from October onwards. **The SoLIFE Project Officer must be present at the start of all workdays on the frontal dunes of Tywyn Aberffraw because of Site of Special Scientific Interest (SSSI) Assent and European Protected Species (EPS) license conditions.**

The contractor shall confirm in their tender if the period of work indicated above is acceptable and any proposed variations.

The contractor shall submit a proposed detailed timetable for delivering the work with the tender. Any subsequent changes to this timetable shall be agreed with the Sands of LIFE Project Officer at least 4 weeks in advance.

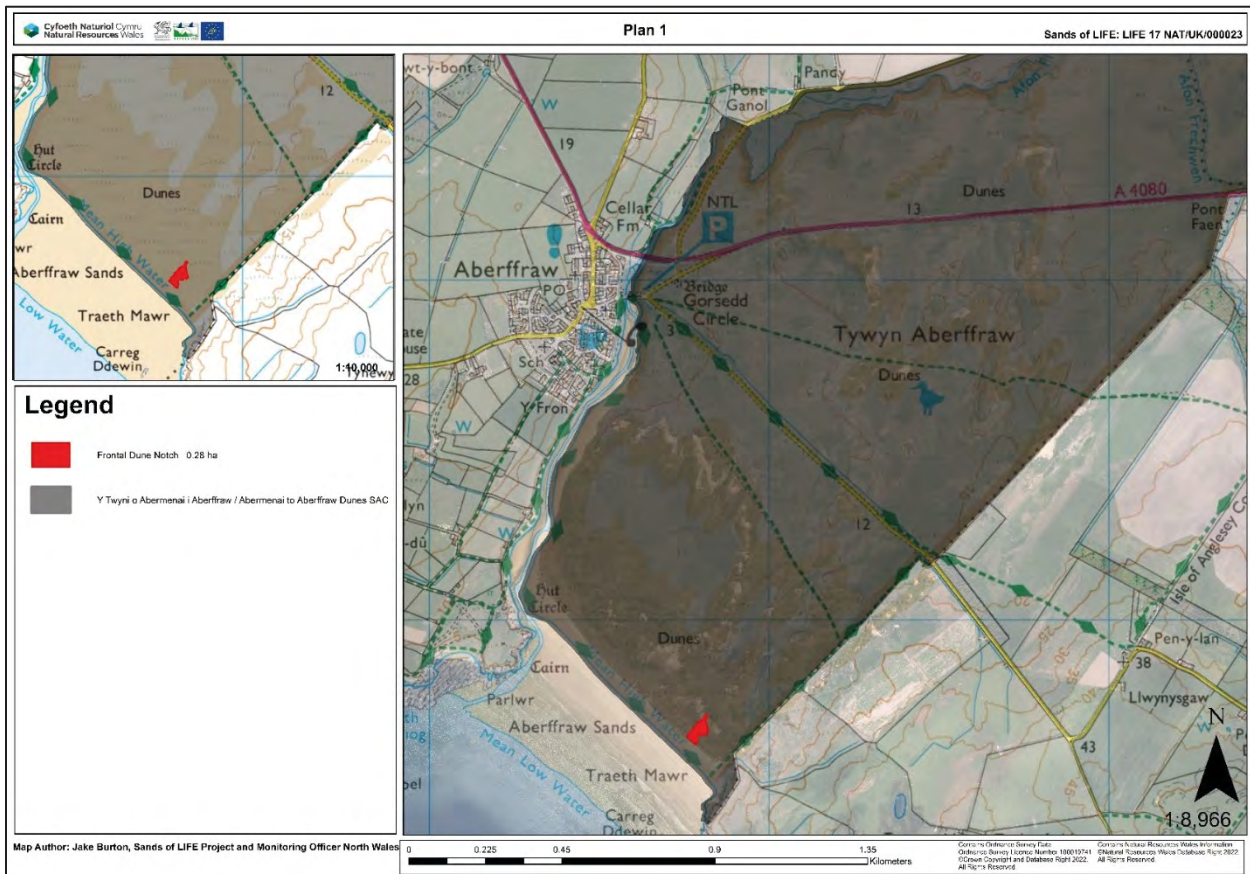
The exact timing of work will be dependent on events out of our control such as adverse weather or the re-imposition of Coronavirus restrictions.

Location

The work will take place at Tywyn Aberffraw (Aberffraw Common), located near the village of Aberffraw, on Ynys Môn/ Isle of Anglesey in north-west Wales – see plan below.

SoLIFE can provide a geospatial shapefile or centroid grid references of the intervention area on request.

Plan 1. Tywyn Aberffraw (SoLIFE project site) location map.



Detailed Requirements

In the **0.28ha** intervention area (marked in red on the plan below), the contractor is required to scrape away the vegetation and excavate the sand to lower the profile of the dune by a depth of 2.5m on average, to create an irregularly shaped trapezoidal notch.

Plan 2. Frontal Dune Notch Location



The existing grassy dune vegetation will be cut as part of a separate contract before excavation begins.

The notch will be created with the following measurements:

Length: 90m (SE side) and 120m (NW side) as measured from the front of the dune ridge.

Width: 40m width at crest frontal dune ridge, 20m at ground level; reducing to 15m width inland

Depth: Beach level throughout

Angle of slope: 30% - 35%

The dimensions are shown diagrammatically below.

Proposed Notch Dimensions

N.B. not to scale but for diagrammatic purposes.

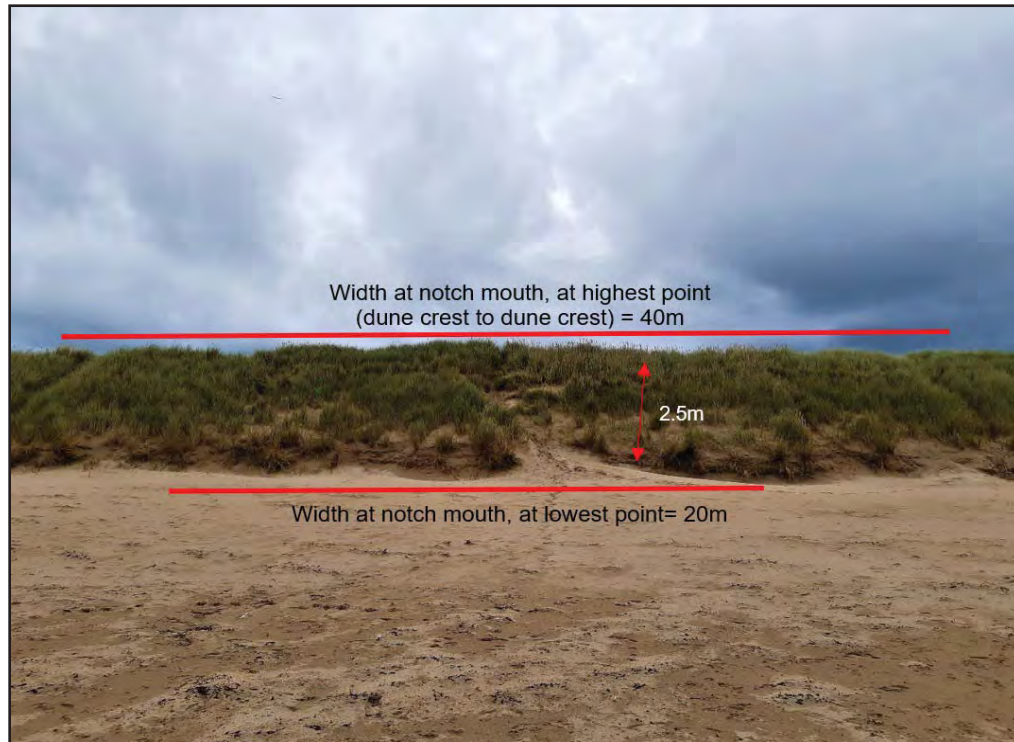


Figure 3. Notch mouth at beach



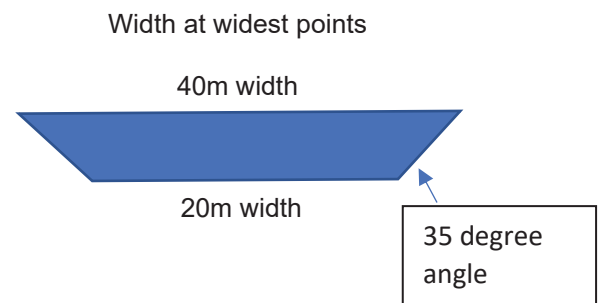
Figure 4. Notch view towards notch mouth from the inland end



Plan View



Cross-Section



The notch will be angled to the north-east, in line with the prevailing winds. The approximate extent of the notch will be marked with stakes by the SoLIFE project officer on the ground, who will also be on-site, daily, during the works to provide direction.

Disposal of excavated sediment

Initial spoil from the frontal incursion point through the first ridge can be placed above the Mean High-Water Mark at the base of the dunes as directed by the Project Officer.

Afterwards, remaining excavated sediment will be used to create walls to the excavation to the funnel the wind and to increase the amount of sand being blown inland.

All vegetated or organic rich (dark) sand must be inverted and covered with clean sand to a depth of at least 1m. This will smother the vegetation (and root fragments) restricting it from re-growing and allowing the bare sand to blow into the system naturally feeding the dunes further inland.

Machinery, Plant and Equipment

The contractor is required to supply all equipment and plant, which should be well maintained and suitable for the proposed purpose. Vehicles and plant must be tracked to reduce ground pressure. Vehicles to move arisings need to be capable of coping with steep, uneven slopes with loose substrate. Machinery to be used will be described in the method statement and will be approved by the SoLIFE Project Officer. Contractors shall follow a machinery Pollution Prevention Method Statement for Machinery and Plant as shown in **Annex C**.

Vehicles, machinery, equipment, and fuel are only to be used, parked, or stored where agreed with the Project Officer. Contractors will remove all vehicles, machinery, and equipment they brought onto the site at the end of each working day. The safety, protection and insurance of all equipment and machinery used by contractors on site must be the full responsibility of the contractors.

It is strongly recommended that the contractor carries out **a detailed site visit prior to quoting** to decide on the most suitable methods and required machinery for this work. This would take around ~1 hour.

Frontal Dune Notch - Example Pictures



Site Ownership and Access

The site is owned and managed by Bodorgan Estate Ltd. Permission from the estate manager for contractors to access and carry out this contract has been secured by the SoLIFE Project Officer. Limited parking is available at the main car park marked as P on the map below.

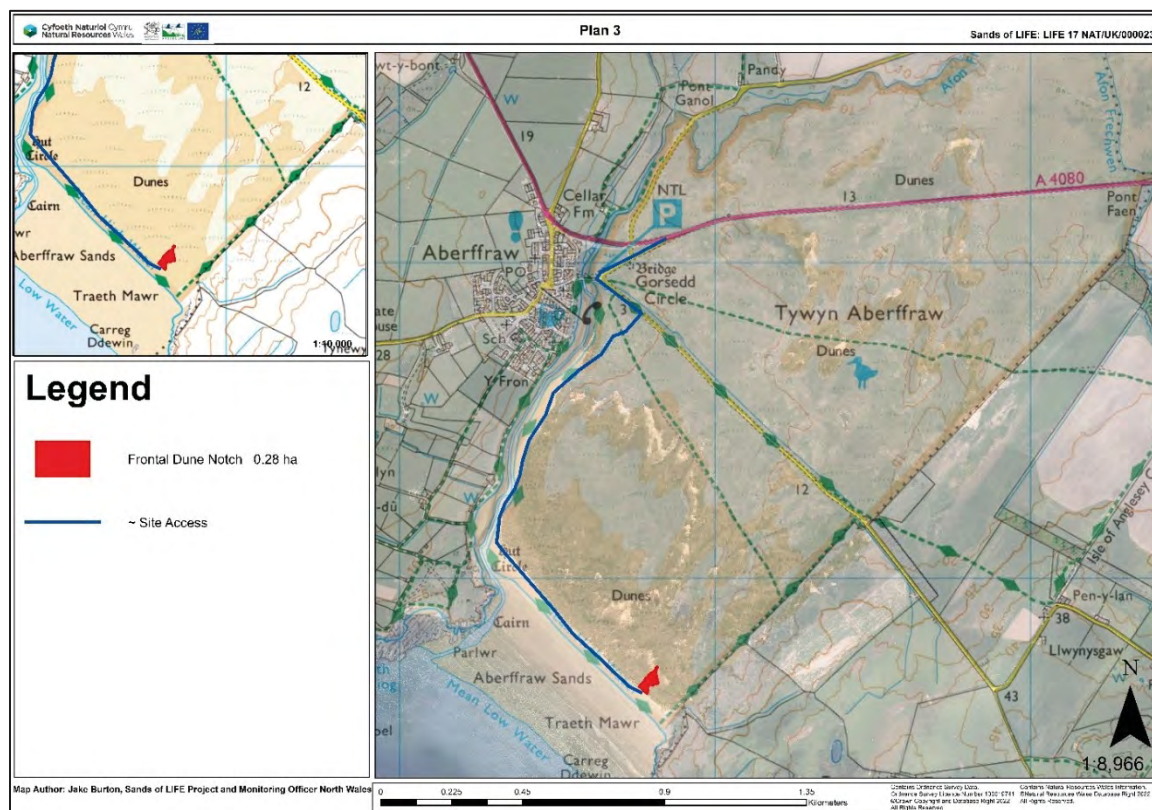
The access route to the intervention area is along the estuary foreshore and beach as shown below. This is impassable at high tide, so the contractor will have to take tide times into account when planning access. At the intervention area, the contractor will have to excavate access through the frontal dune ridge to access the rest of the intervention area.

The intervention area is characterised by loose, unstable, undulating sandy terrain, which is steep in places.

To access the foreshore, it is necessary to cross a short stretch of dune, near the main car park. This area is heavily used by visitors. Posts/banks etc may need to be removed to allow access – this is to be agreed in advance with the Project Officer. These must be reinstated before departure. If machinery is likely to cause excessive rutting or damage to the ground in this area, bog mats (or similar) shall be used. Any rutting or damaged shall be levelled and made good before departure.

It is essential that, vehicles and machinery only use access routes agreed with the SoLIFE Project Officer at all times

The contractor should satisfy themselves that access is feasible before submitting their tender.



Environmental Compliance

This site is a designated Site of Special Scientific Interest (SSSI) and Special Area of Conservation (SAC) and registered Common Land.

All necessary consents have obtained prior to the contract being let and are as listed:

- SSSI assent
- European protected species licence and mitigation
- Environmental Impact Assessment (EIA) (Agriculture) Consent

All necessary consents to be obtained before start of works and are as listed:

- Welsh Government Section 38 (Common Land) Consent
- Planning permission from Isle of Anglesey County Council

European Protected Species (EPS)

Tywyn Aberffraw has been screened for European Protected Species (EPS) by Jake Burton and a detailed survey of the sand lizard population was carried out in 2019 by JBA. There are sand lizards records, throughout the foredunes, including within the intervention area. The SoLIFE project have obtained an EPS license for the contracted works. To avoid killing and injury of sand lizards, a strict mitigation programme is in place, before, during and after this contract.

1. The dune vegetation within the intervention area will be strimmed in mid- August 2022 to disperse the lizards (*Separate contract*).
2. The capture and translocation of any remaining lizards will take place in early September 2022 (*Separate contract*).
3. After the site has been declared lizard-free by the licensed ecologist, in mid-September 2022. The contractor (*this contract*) will immediately mechanically excavate the notch. This will be completed with supervision from the from the ecologist and SoLIFE Project Officer. The notch works must happen before vegetation regrowth occurs (e.g. over 50mm), otherwise additional strimming of the area will be required This is particularly relevant if works are delayed (e.g. by poor weather).

At the pre-commencement meeting, before start of all works, the contractor will receive a toolbox talk regarding sand lizards, the conditions of the EPS license from the ecologist and SoLIFE Project Officer.

The contractor will

1. Comply will ecological mitigation that is necessary at all times
2. Report any environmental incidents if they occur
3. Comply with strict biosecurity measures at all times

The contractor will also be briefed on other features of ecological and significance within the site and will be expected to avoid all practices which damage or have the potential to damage those features.

The contractor must plan the timing of works so the SoLIFE Project Officer/ecologist can be present to avoid downtime and work delays. SoLIFE require, at least **4-weeks' notice before the start date.**

Work shall be undertaken in compliance with relevant permit conditions and advice provided. Any queries regarding permits, consents/assents and other environmental factors should be directed to the SoLIFE Project Officer.

- **Other Protected species**

The works will be carried out after the bird breeding season has finished.

- **Archaeology**

Tywyn Aberffraw and SoLIFE work plans have been consulted by the Gwynedd Archaeological Trust, and there are no known archaeological features within the intervention area nor surrounding 0.4 miles of the work zone, so it is LOW risk site. However, should the contractor uncover any structures or unearth any unusual objects, work will stop. The Sands of LIFE will then commission the Gwynedd Archaeological Trust to carry out a full investigation and reporting on findings. The contractor will receive a toolbox regarding all archaeology features of Tywyn Aberffraw by Natural Resources Wales on the first day of works. The project officer will be a watch and brief for all days (7am-7pm) the contractors will be working to ensure best industry practice.

Standards, Qualifications, Skills and Experience

All work shall be delivered to a high, professional standard. The contractor shall demonstrate relevant qualifications and professional expertise, and experience of similar work. Contractors must ensure that all personnel operating machinery are competent, qualified, and insured to do so.

Copies of all relevant certificates shall be presented to the SoLIFE Officer prior to works starting.

Any damage to gates, fences, tracks or any other structures or fittings, must be made good to the satisfaction of the SoLIFE Project Officer.

Health and safety

All known site hazards are described on the Site-Specific Hazard List (attached). The contractor is required to prepare a full risk assessment, identifying potential hazards associated with the site, task, personnel, and equipment involved. This risk assessment shall include a safe system of work and shall be supplied with the tender.

H&S Regulations: The contractor is expected to work in line with all relevant Health and Safety legislation, in particular the Construction Design and Management Regulations 2015, PUWER and LOLER Regulations and relevant FISA guidance.

PPE and First Aid: The contractor is required to meet all Health and Safety requirements with regards to Personal Protective Equipment (PPE) and First Aid provision. The appropriate PPE for the operations being carried out must be worn at all times by the operating staff. The contractor must carry an appropriate First Aid kit (BS8599) while working on site at all times. First-aiders working on NRW managed land must hold a valid (in-date) certificate of competence with the Forestry element, that is, First Aid at Work Forestry (FAW+F), or Emergency First Aid at Work Forestry (EFAW+F). The minimum number of first aiders required on site will be two, although our preference wherever practical is that all personnel have some training in first aid.

Fuel and chemicals/COSHH: A COSHH assessment shall be provided to the SoLIFE Project Officer as part of the tender submission. All contractors should be aware of site procedures and store materials and chemicals safely and securely to prevent any spillage to land or to controlled waters. A pollution control kit must be available on site at all times. All spill/emergency incidents should be reported to SoLIFE staff immediately. The Pollution Prevention Method Statement should be adhered to and is shown in Appendix B.

Welfare Provision: NRW is committed to the Forest Industry Safety Accord (FISA) guidance on welfare, Safety Guide 806 (available via: <https://ukfisa.com/Safety/Safety-Guides/fisa-806>)

All contracts must follow NRW Welfare guidance policy. Adequate welfare facilities must be sufficient depending on the number of staff and number of days on site. **An assessment must be carried out by the contractor to be based on the FISA guidance on the type of welfare facilities required per job and provided with the tender.** This will be followed up with consultation with the SoLIFE Project Officer.

The legal duty is to do **all** that is reasonably practicable. If levels of provision required cannot be provided in some respect, then an alternative must be provided and the reasons why the alternative has been chosen **MUST** be justified and recorded in the outline risk assessment.

Covid-19: All Government advice regarding Covid-19 must be followed. The contractor's method statement and risk assessment must demonstrate that the works can proceed in line with the current legislation, and that social distancing can be maintained.

Underground and overhead services: There are no underground or overhead services in the work area.

Livestock: There will be no livestock grazing in the vicinity of the work area.

Public Safety: The site is open access to the public and is regularly used by walkers,. Adequate care should be taken to prevent any hazard to passing users and it is vital that members of the public do not enter the work zone. The contractor must ensure appropriate demarcation of work zones. The contractor will provide and be responsible for erecting and removing the safety signs and warning tape put up on the approaches to the work area. It is the duty of the contractor to check the presence and condition of these signs/tape on a daily basis. Contractors must stop working immediately if visitors are within the risk zone.

Unexploded ordnance (UXO): Tywyn Aberffraw has been subject to a preliminary UXO Risk Assessment (to be supplied). The site has been assessed as being of **LOW RISK** for general access, non-intrusive processes, and ground penetrating processes.

However, it is impossible to eliminate all UXO risks, and there is a possibility that UXOs may be present on the site, either buried or partially exposed on the surface, or washed ashore, which could present a hazard. It is the contractor's responsibility to assess and manage the UXO risk and this should be included in the Risk Assessment and Safe System of Work, which the contractor is required to provide. It is also the contractor's responsibility to communicate relevant information to their personnel.

The contractor is required to refer to, and take account of, information provided in this specification and the following to be supplied: Detailed UXO Risk Assessment, Site Specific Hazard List, and Emergency Response Plan. In addition, SoLIFE's recommended practice for managing UXO risk on this site is also shown below in Annex A for information only.

The contractors are also advised to refer to, and work in line with the CIRIA guidance Unexploded ordnance (UXO) risk management guide for land-based projects (R. Bowman et al, 2019, CIRIA C785) and Unexploded Ordnance, A Guide for the Construction Industry (K. Stone et al, 2009 CIRIA C681).

The pre-commencement meeting shall take place on the first day of work to ensure that all information has been understood and risk assessments are being followed.

The contractor must contact the SoLIFE Project Officer if they have any concerns or queries about UXO risks before work starts.

Biosecurity

Disease and invasive alien species can be spread by animals, people, vehicles, and equipment. By using biosecurity measures, the risk of spreading alien species and/or disease can be reduced. The contractor shall be aware of and work in accordance with standard good practice.

The contractor shall include proposed biosecurity management measures (method statement) with the tender. This is particularly important for this contract due to the present of Sands Lizards.

The contractor must ensure that all equipment (vehicles, machinery and equipment and boots etc.) that come to site, arrive clean, and are cleaned again before leaving site. Contractors must **check** equipment, clothing and boots and remove any plant or animal 'hitchhikers'. **Clean** equipment, clothing, and boots thoroughly, remove all mud, leaves and plant debris. If it is not possible to clean before leaving site, securely bag items and clean at a suitable location where risk of transfer of diseases is minimised. **Wash** vehicle tyres and wheel arches if muddy, but only within the car park of Tywyn Aberffraw. **Dry** thoroughly any equipment or PPE that has been in freshwater or the marine environment; some IAS seeds can live on damp items for weeks.

Further information on biosecurity can be found in Biosecurity Awareness and Invasive Species Session Notes, North Wales Wildlife Trust (DINNS Project) on behalf of NRW (2018) (to be supplied via email).

Photo evidence will be collected before and after plant machinery leaves site by project officer.

Quoting and Pricing

The bidder is asked to provide a binding quote for the specified work, as shown below:

- Labour – number of days (at the rate specified in the framework agreement). Please note number and grade of personnel.
- Cost of plant/equipment (please specify and breakdown costings)
- Cost of welfare unit
- Total

Please note, we require a binding quotation for the whole contract as specified, not a flexible price based on day rates. Please also include your daily rate for information only.

Before tendering, contractors should undertake a site visit with the SoLIFE project officer to decide on the most suitable method of works and required machinery and satisfy themselves as to the full extent and character of the work and conditions affecting the contract.

Any subsequent queries prior to submitting a quotation for the work should be addressed to the SoLIFE Project Officer. All measurements in this specification are approximate. Contractors must take their own site measurements and report any discrepancy, as no claims for extra payments will be entertained for short measurements after the contract has been placed.

As part of the tender, the contractor shall specify in writing their methodology for carrying out the work safely and effectively. This shall include details of machinery to be used (including plant and vehicles), herbicide type and application method, and method for managing arisings.

The contractor must include the following reference on all paperwork relating to the contract including quotations: *Sands of LIFE: LIFE 17 NAT/UK/000023*

The contract shall be let in line with NRW Terms and Conditions.

If extra costs will be incurred beyond those quoted for, due to changed or unforeseen circumstances, the contractor should contact the Project Officer immediately, for permission to proceed. SoLIFE cannot entertain claims for extra costs retrospectively or if there is no legitimate material change in circumstances.

Ordering and invoicing arrangements

If NRW/SoLIFE wishes to make an order/contract with the supplier, they will be notified in writing and sent an official order number. The supplier must not start work before receipt of the order number.

Invoices can only be paid on full completion of works. SoLIFE will require evidence of completion of works in the form of an email from the contractor confirming completion with an attached electronic photograph of the completed works.

PLEASE SEND ALL INVOICES TO:

Kate Linck, Sands of LIFE Finance and Administration Officer

kate.a.linck@cyfoethnaturiolcymru.gov.uk

Not to the NRW central payment team.

Invoices can only be paid if they contain the SoLIFE reference (shown below) and the purchase order number:

***Work carried out on behalf of the Sands of LIFE (SoLIFE) project:
LIFE 17 NAT/UK/000023***

Key Performance Indicators

The key performance indicators for the contract are as follows:

- 1) Deliver work on time as per the timetable described in this specification.
- 2) Deliver all requirements to the quality standards described in this specification.
- 3) Health and safety – full compliance with relevant legislation and standards laid out in this specification (risk assessments; site safety rules; lone working arrangements; PPE, welfare, first aid requirements etc.)
- 4) Environmental - full compliance with relevant legislation and standards laid out in this specification.

Supporting Information

Annexes

Annex A: SSSI Assent Conditions

Annex B: EPS License

Annex C: Sands of LIFE UXO Information

Annex D: Pollution Prevention Method Statement for Machinery and Plant

PDF Email Attachments

- First Aid Standards (NRW Managed Estate)
- SoLIFE Site Specific Hazard List
- Emergency Response Plan
- Preliminary UXO Risk Assessment
- FISA 806 Welfare Guide
- FISA Safety Bulletin - Welfare and Covid 19
- Welfare Standards for those working on the WGWE
- (Blank) NRW Contract Specific Welfare Assessment
- Biosecurity Awareness and Invasive Species Session Notes
- Introducing Sustainable Management of Natural Resources
- Sustainable Management of Natural Resources Guide
- Tywyn Aberffraw Dune Notch - Sand Lizard Method Statement

Checklist of documents to be provided by contractor

- Construction Phase Plan including a detailed contract method statement
- Up-to-date personnel certificates etc.
- Competency certificates for all personnel involved of contract
- Insurance certificates
- Risk Assessment(s)
- NRW Contract Welfare Assessment

Annex A: SSSI Assent Conditions

Assent ref no: A001459/1

ASSENT UNDER SECTION 28H OF THE WILDLIFE AND COUNTRYSIDE ACT 1981

Site(s) of Special Scientific Interest:
Tywyn Aberffraw

Having considered the likely impact of the operation(s) described in your notice dated 13/05/2021 on the special features of the site(s) listed above; insofar as it is required in the exercise of your functions as a Section 28G Authority:

Natural Resources Wales hereby assents that,

NATURAL RESOURCES BODY FOR WALES
TY CAMBRIA
29 NEWPORT ROAD
CARDIFF
CF24 0TP

May carry out the operation(s) specified below in the manner prescribed:

Creation of a notch in the frontal dunes for conservation purposes. Sands of LIFE project.

This assent is subject to the following conditions:

Condition	Condition Reason
Method statement and specifications are to be closely adhered to.	To avoid breaching relevant legislation.

Annex B: EPS License



Jake Burton
Natural Resources Wales
Maes y Ffynnon
Penrhosgarnedd
Bangor
Gwynedd
LL57 2DW

Licence No: S089862/3

Valid From: 8th January 2022

End of
Licensable
Works: 31st December 2022

Expiry: 31st December 2023

WILDLIFE AND COUNTRYSIDE ACT 1981 (AMENDED BY THE ENVIRONMENTAL PROTECTION ACT 1990) AND THE CONSERVATION OF HABITATS AND SPECIES REGULATIONS 2017

Licence to disturb, take and temporarily possess wild animals and damage or destroy a breeding site or resting place for the conservation purposes.

This licence, granted under Section 16(3) (c) of the Wildlife and Countryside Act 1981 (amended by the Environmental Protection Act 1990) and under Regulation 55(2) (c) of the Conservation of Habitats and Species Regulations 2017, by the Natural Resource Body for Wales otherwise known as Natural Resources Wales, hereby authorises the person named above, hereinafter referred to as the "licensee" and their duly accredited agents Chris Gleed Owen and Steven Heathcote, and their assistants to:

1. to take by hand or by the use of artificial refugia and noose to move to a safe receptor are prior to and during habitat restoration works;
2. disturb resting places, breeding sites or places used for shelter or protection prior to and during habitat restoration works;
3. damage or destroy small areas of habitat prior to and during habitat restoration works;
4. possess for no more than 72 hours;

Sand Lizard (*Lacerta agilis*) as part of the Sand of Life project at Tywyn Aberffraw SSSI. Grid Reference: SH35768 67688.

When undertaking any activity under this licence the most up to date guidance provided by the Welsh Government in relation to Covid-19 must be adhered to.

This licence is valid for the period as stated above and is granted subject to compliance with the conditions as specified. Anything done otherwise than in accordance with the terms of the licence may constitute an offence.

Signed for and on behalf of
Natural Resources Wales

Ffôn/Tel: 03000 654974 / 03000 654921

E-bost/Email: trwyddedrhywogaeth@cyfoethnaturiolcymru.gov.uk or specieslicence@naturalresourceswales.gov.uk
www.cyfoethnaturiolcymru.gov.uk www.naturalresourceswales.gov.uk

Cyfoeth Naturiol Cymru / Natural Resources Wales, Maes y Ffynnon, Penrhos Garnedd, Bangor, Gwynedd, LL57 2DW

Croesewir gohebiaeth yn y Gymraeg a'r Saesneg Correspondence welcomed in Welsh and English

Annex C: Sands of LIFE UXO safe system of work for low-risk sites

The following is provided to the contractor for information only. The contractor is required to prepare their own risk assessment and safe system of work.

Unexploded Ordnance Safe System of Work for SoLIFE staff – Low UXO risk sites

- a) Refer to the following site information which will be provided:
 - UXO Activity Appraisal for the activity you will be carrying out
 - UXO Preliminary Risk Assessment or Detailed Risk Assessment
 - Standard H&S risk assessment for the site, which includes UXO RA summary
 - Emergency response plan for the site
 - 'Dealing with UXO incidents' sheet (see below)
- b) Make yourself and your team/colleagues fully aware of the UXO risks and any precautionary measures required. Take account of the above information when carrying out any additional risk assessments and work planning.

When carrying out practical work, follow the work specification provided and avoid any additional or unnecessary excavation or ground penetrating actions on site which are not in the specification. Do not light fires.

- c) Do a visual search for visible UXO or other metal or dangerous obstructions on the work site before starting work. It is recommended that you use a metal detector to support your visual check if you are doing shallow excavations, however, this is not compulsory. Mark any obstructions and avoid during work. Do **not** attempt to excavate any object identified below ground. Choose a different nearby location for signs, posts etc.
- d) Ensure a banksman oversees any excavation and keeps watch for any unidentified suspicious objects. When fencing treat any underground obstruction with caution (move the post location if necessary).
- e) If you find an item of UXO (or suspected UXO) follow the instructions in below.
- f) Contact your team leader if you have any concerns about UXO risks before work starts.

If a UXO is identified or unearthed as part of Sands of LIFE practical work

If you discover an **unidentified suspicious object** on the work site, then:

- Stop work.
- Do not move, handle, or disturb the object.
- Warn others and tell them to move away.
- Inform the site supervisor, and UXO specialist on site (if present).
- Move to a safe area/assembly area at least 100m away, ideally out of line of sight, behind sand dunes or trees. Follow a safe route and do not walk past the object unless absolutely necessary.
- Assume that the object is UXO until advised otherwise. Even if the site is deemed low risk or has a clearance certificate, UXOs may still be present.
- Be aware that the UXO could detonate even if it is old and damaged (as they can become more unstable with age and degradation). Always assume the object is dangerous.

Site supervisors or SoLIFE Project Officer (if no UXO specialist on site), in addition should:

- Ensure team and members of public are moved to safe place/assembly area, as described above.
- Without moving it, try to identify if the object is a UXO. Photograph the object if possible.
- If it appears to be a UXO, or you are uncertain then place a marker near the object in a position that can be seen from a safe distance. Use a piece of equipment, or clothing (do not drive in a stake or pole) and note the location either on GPS equipment, map or using a detailed grid reference.
- If the object is in the bucket of an excavator etc do not tip it out. Lower the bucket to the ground unless the object is in danger of falling out. Switch off the engine
- Retreat to the safe area.
- Call the UXO specialist, RPS. Be aware that they might not be able to come out immediately.
- Report the incident to the Site Manager, and Sands of LIFE Project Officer by the quickest means possible – see Emergency Plan.
- Report the incident to the Police on 101 or 999 but inform them that a UXO specialist has been called. Call the coastguard rather than the police, if the UXO is on the beach.
- Erect a cordon around the UXO to prevent any unauthorised access. This cordon should be manned to prevent unauthorised access to the location.
- Wait for further instructions from Police/Coastguard or UXO specialist.

- If possible, meet the Police/Coastguard/UXO specialist at the car park/access point and show them the location of the object.
- Should the Police/Coastguard/UXO specialist decide that the object is a UXO that could be a potential threat to the public and/or they believe it requires handling by the military, they will take control of the situation.

Annex D: Pollution Prevention Method Statement for Machinery and Plant

The contractor will be required to follow the following Pollution Prevention Method Statement.

Prior to Start of Works

- All equipment, materials, machinery, and PPE used will be in a clean condition prior to their arrival on site, and upon removal from site, to minimise risk of introducing pollution and non-native species into the environment.
- Access routes will be walked beforehand with the Key Site Officer to ensure the most suitable route is used.
Note: Access will be via the dunes from the access gate at SS 412 996. No access will be made via the beach.
- A designated re-fuelling area will be chosen on an area of hardstanding.

During Works

- Use of low ground pressure machinery to reduce ground damage.
- Trained and certified operators will use the machines in a safe and efficient manner reducing emissions and to minimise accidents.
- All operators must check the machines daily. They must also visually check the machines at regular intervals during the working day, in particular looking out for oil leaks.
- Correct and secure storage facilities (including bunding) will be present on/by every machine to contain and prevent the release of fuel, oils, and chemicals into the sensitive environment, associated with the plant, refuelling and construction equipment.
- Each vehicle should carry a pollution spill kit at all times and operators must be familiar with its use. This includes welfare units.
- Care should be taken when refuelling to avoid spillage of fuel or oil into drains and water courses.
- Use of plant nappies when plant is not in use.
- When not in use, plant should be stored off the dunes/ on hard standing, where possible.
- Oil drums, grease containers and chemical containers must not be left on site whether full or empty.

- All incidents must be reported to the SoLIFE Project Officer in the first instance, as soon as practicable.

Completion of Works

- All equipment, temporary structures, access tracks, waste and/or debris associated with the works will be removed on completion of the works.

APPENDIX II

Gwynedd Archaeological Trust Watching Brief pro-forma

YMDDIRIEDOLAETH ARCHAEOLEGOL GWYNEDD ARCHAEOLOGICAL TRUST		
WATCHING BRIEF DAY RECORD		Date
Project name	Project number	Compiler
Location		
Description		
Times of travelling and on-site		
Drawn record details		
Photographic record details		

APPENDIX III

Gwynedd Archaeological Trust Photographic metadata pro-forma

Digital Photographic Record

Include main context numbers for each shot, drawing numbers for sections and any other relevant numbers for cross referencing. Delete any unwanted photos **immediately** from the camera. Regularly upload photographs to computer.

[illegible]

APPENDIX IV

Gwynedd Archaeological Trust Selection Strategy pro-forma

G2742_SoLIFE_Tywyn_Aberffraw

30/08/2022 v1.0

Selection Strategy

Project Information

Project Management

Project Manager	John Roberts john.roberts@heneb.co.uk	
Archaeological Archive Manager	John Roberts john.roberts@heneb.co.uk	
Organisation	Gwynedd Archaeological Trust	
Stakeholders		Date Contacted
Collecting Institution(s)	GAT Historic Environment Record	30/08/2022
	RCAHMW	On completion of Project Archive
	Oriel Ynys Môn, Rhosmeirch Llangefni LL77 7TQ	If applicable, post-fieldwork based on artefact recovery
Project Lead / Project Assurance	Andrew Davidson, Chief Archaeologist	26/08/2022
Landowner / Developer	NRW	n/a

Resources

Resources required

Describe the resources required to implement this Selection Strategy, particularly if unusual resources are required.

No unusual resources required outside of GAT normal operating equipment and personnel.

Context

Describe below the context of this Selection Strategy. You should refer to:

- The aims and objectives of the project;

- Local Authority guidance (including the brief);
- Research Frameworks;
- The repository collection development policy and/or deposition policy;
- Material-specific guidance documents.

Note: This section may be copied from your Project Design/WSI to ensure all Stakeholders receive this context information.

The full aims and objectives of this project are detailed in the project specific WSI.

Gwynedd Archaeological Trust has been commissioned by Natural Resources Wales (NRW) to undertake an archaeological watching brief during works for the Sands of LIFE (SoLIFE) (LIFE17 NAT/UK/000023) conservation project at Tywyn Aberffraw, Ynys Môn (NGR SH35766765; postcode LL63 5EX; cf. WSI Figure 01). The Sands of LIFE project is being led by NRW and supported by the EU LIFE fund and the Welsh Government, with the aim to restore threatened sand dune sites across Wales. As detailed in NRW document Twyni Byw - Sands of LIFE (SoLIFE) Contract Specification (dated 01/02/2022; cf. WSI Appendix I), the aim for this part of the project will be to create one notch in the frontal dune ridge at Tywyn Aberffraw, by excavating an area of 0.28ha in the fore dunes to lower the profile of the dune by a depth of 2.5m on average, to create an irregularly shaped trapezoidal notch. Tywyn Aberffraw is a large dune system designated as a Special Area of Conservation because of its international importance for wildlife. However, most of the dunes have become excessively stabilised and vegetated over time and conservation management is required to improve the condition of the dune habitats. The creation of a notch in the frontal dune ridge will encourage the wind to move sand inland, creating areas of pioneer habitat, and increasing dune mobility. It will also increase calcareous 'sand rain' to habitat further inland, which helps to maintain a high pH which is important for plant diversity. The rejuvenation work will connect the beach front with the interior of the dunes and improve the condition of the designated sand dune habitats: shifting dunes, dunes with *Salix repens*, humid dune slacks and fixed dune grassland. The notch will be positioned to take account of pathways to the beach, to take advantage of trampling by the public to help keep the notch open. The notch will enable easier access for the public between the dunes and the beach. The existing grassy dune vegetation will be cut as part of a separate contract before excavation begins. The notch will be created with the following measurements:

Gwynedd Archaeological Trust. 2022. Tywyn Aberffraw, Ynys Môn: Written Scheme of Investigation for Archaeological Watching Brief. Project (G2742).

1 – Digital Data

Stakeholders

Name the individual(s) responsible for the Digital Data Selection decisions (i.e. Archaeological Archive Manager, Project Manager, Collections Curator).

John Roberts (GAT Principal Archaeologist)

Selection

Location of Data Management Plan (DMP)

Selection of digital data elements should be considered in your project's DMP. For the purpose of the Selection Strategy, you can either copy the selection section of your DMP below, or attach it as an appendix to this document. Please indicate here if the DMP is attached.

All digital data will be collected, stored and selected in lines with the Gwynedd Archaeological Trust (GAT) Data Management Plan located on GAT's servers (available on request).

The selection strategy in your DMP should:

- 1.1 Define what digital data will be selected for inclusion in the archaeological archive, how this will be done, and why. Do not forget to consider that specialists may have digital data that should be included in the archaeological archive.
- 1.2 Identify the selection review points during the project (i.e. project planning, data gathering, analysis and reporting and archive compilation).
- 1.3 Reference all relevant standards, policies or guidelines (e.g. digital repository deposition requirements) and specialist advice sought.
- 1.4 Identify any selection decisions that differ from standard guidelines and explain why.

Following the completion of the fieldwork, a working project archive will be created based on following task list;

1. Pro-formas: all cross referenced and complete;
2. Photographic Metadata: completed in *Microsoft Access* and cross-referenced with all pro-formas;
3. Survey data: downloaded using a Computer Aided Design package;
4. Sections (if relevant): all cross referenced and complete;
5. Plans (if relevant): all cross referenced and complete;
6. Artefacts (if relevant): quantified and identified; register completed;
7. Ecofacts (if relevant): quantified and register completed;
8. Context register (if relevant): quantified and register completed.

All relevant site archive data will be added to a digital project register specific to this project, which will be prepared in *Microsoft Excel*.

This data will then be used as the basis for the physical and digital dataset archives. Information from these will be used to compile the project report. The physical archive will be stored in a designated project folder and the location confirmed in the Trust project database; the digital dataset will be stored on a dedicated Trust server, with the location confirmed in the Trust project database via a specific hyperlink. External datasets for the HER and RCAHMW are as defined in the dissemination strategy below. De-selected digital data will be confirmed in an updated digital management plan appended to the final report

De-Selected Digital Data

The procedure for dealing with De-selected digital data and what specialist advice informed this process should be recorded in your DMP. Please copy this information here or attach your DMP as an appendix to this document.

It is envisaged that the de-selected material will be retained on the GAT servers for 2 years following the completion of the project at which point they will be reviewed and deleted as necessary in line with the GAT DMP.

Amendments

Detail any amendments to the above selection strategy here.

Date	Amendment	Rationale	Stakeholders

2 – Documents

Stakeholders

Name the individual(s) responsible for the Documents Selection decisions (i.e. Archaeological Archive Manager, Project Manager, Repository Representative).

John Roberts – Principal Archaeologist, Gwynedd Archaeological Trust;
Sean Derby – Historic Environment Record, Gwynedd Archaeological Trust;
Gareth Edwards, *Head of Knowledge and Understanding, RCAHMW*

Selection

Describe your Selection Strategy for the Documents elements of the archaeological archive. To do this you must:

- 2.1 Define which documents will be selected for inclusion in the archaeological archive, how this will be done, and why. Do not forget to consider that specialists may have documents that should be included in the archaeological archive.
- 2.2 Identify the selection review points during the project (e.g. project planning, data gathering, analysis and reporting and archive compilation).
- 2.3 Reference all relevant standards, policies or guidelines (e.g. digital repository deposition requirements) and specialist advice sought.
- 2.4 Identify any selection decisions that differ from standard guidelines and explain why.

- A digital report will be provided to the regional Historic Environment Record; this will be submitted within six months of project completion (final report only), along with a digital dataset comprising an Event PRN summary. The report and dataset will be submitted in accordance with the required standards set out in *Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs)* (Version 1.1); and
- A digital report and digital archive dataset will be provided to Royal Commission on Ancient and Historic Monuments, Wales (final report only), in accordance with the *RCAHMW Guidelines for Digital Archives Version 1*. The dataset will be prepared in the format required by RCAHMW and will include:
 - Photographic metadata (Microsoft Access);
 - Photographic archive (TIFF format);
 - Project Information form (Excel);
 - File Information form (Excel) – Microsoft Word report text final;
 - File Information form (Excel) – Photographic metadata (general);
 - File Information form (Excel) – Adobe PDF report final; and
 - File Information form (Excel) - Photographic metadata (detail).

De-Selected Documents

Describe the procedure for dealing with De-selected material and what specialist advice has informed this procedure.

It is envisaged that the material de-selected from inclusion in the preserved archive will be duplicates or reproductions created during the analysis phase of the project. De-selected material will therefore either be retained to supplement GAT's research files or recycled.

Amendments

Detail any amendments to the above selection strategy here.

Date	Amendment	Rationale	Stakeholders

3 – Materials

Note: This step should be completed for each material component of the archaeological archive. Copy this table for the various materials as required, providing the 'Material Type' and a section identifier (eg. '3.1') for each.

Material type	Bulk Finds	Section 3.	
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Stakeholders

Name the individual(s) responsible for the Materials Selection decisions (i.e. Archaeological Archive Manager, Project Manager, Repository Representative).

John Roberts – Principal Archaeologist, Gwynedd Archaeological Trust;
Andrew Davidson, Chief Archaeologist, Gwynedd Archaeological Trust;TBC, *Curatorial Officer at ORIEL YNYS MÔN*

There are known findspots within the local and any diagnostic artefacts recovered during the watching brief will be retained for further examination and identification. Pottery sherds of 19th and 20th century date will be examined on-site and the context from which they were retrieved noted but the sherds will not be retained. The artefacts will be treated according to guidelines issued by the UK Institute of Conservation, in particular the advice provided within *First Aid for Finds* (Watkinson and Neal 2001).

Any waterlogged artefacts (e.g. wood or leather) that are to be recovered for post-excavation assessment and analysis will be processed in accordance with *Environmental Archaeology: a guide to the theory and practice of methods, from sampling and recovery to post-excavation* (English Heritage, 2011) and specifically in accordance with Brunning and Watson (2010) for waterlogged wood and Historic England (2012) for waterlogged leather. In such cases an external specialist will be contacted to agree an appropriate sampling and recovery strategy via Lucy Whittingham Project Manager (post-excavation), AOC Archaeology, telephone: 0208 843 7380. All finds are the property of the landowner; however, it is Trust policy to recommend that all finds are donated to an appropriate museum (in this case Oriel Ynys Môn, Rhosmeirch Llangefni LL77 7TQ), where they can receive specialist treatment and study. Access to finds must be granted to the Trust for a reasonable period to allow for analysis and for study and publication as necessary. Trust staff will undertake initial identification, but any additional advice would be sought from a wide range of consultants used by the Trust, including National Museums and Galleries of Wales at Cardiff. All finds of treasure must be reported to the coroner for the district within fourteen days of discovery or identification of the items. Items declared Treasure Trove become the property of the Crown, on whose behalf the Portable Antiquities Scheme acts as advisor on technical matters, and may be the recipient body for the objects.

The Treasure Valuation Committee, based at the British Museum, and informed by the Portable Antiquities Scheme, will decide whether they or any other museum may wish to acquire the object. If no museum wishes to acquire the object, then the Secretary of State will be able to disclaim it. When this happens, the coroner will notify the occupier and landowner that he intends to return the object to the finder after 28 days unless he receives no objection. If the coroner receives an objection, the find will be retained until the dispute has been settled.

GAT will contact the landowner (via *Tudur and Ffion Parry*) for agreement regarding the transfer of artefacts, initially to GAT and subsequently to the relevant museum (Oriol Ynys Môn, Rhosmeirch Llangefni LL77 7TQ). A GAT produced pro-forma will be issued to the landowner where they are given the option to donate the finds or to record that they want them returning to them once analysis and assessment has been completed. Artefacts to be donated will then be transferred to Oriol Ynys Môn.

Selection

Describe your Selection Strategy for each material type and or object type. To do this you must:

- 3.1 State the Selection Strategy you are applying to each category of material, how this will be done, and why.
- 3.2 Identify the selection review points during the project (e.g. project planning, data gathering, analysis and reporting and archive compilation).
- 3.3 Reference all relevant standards, policies or guidelines (e.g. thematic, period, and regional, Research Frameworks, repository deposition policies) and specialist advice sought.
- 3.4 Identify any selection decisions that differ from standard guidelines and explain why.

The [Materials Selection Template](#) may be useful in structuring this section.

The full material archive returned to the GAT offices will be reviewed following analysis: Stakeholders (see above) will make selection decisions based on specialists reports and selection recommendations and SDMS collecting policy. The selection will take place during archive completion.

Uncollected Material

If you are practising selection in the field, describe the process that will be applied. To do this you must:

- Detail how you will characterise, quantify and record all uncollected material on site.
- Explain how you will dispose of, or re-distribute, uncollected material.

Any uncollected material will be left on-site to be incorporated into backfill.

De-Selected Material

Describe what you will do with the de-selected material. All processed material should have been adequately recorded before de-selection.

All bulk finds will be assessed and recorded to appropriate standards. De-selected material will be returned to the landowner as agreed by the landowner and curatorial archaeologist.

Amendments

Detail any amendments to the above selection strategy here.

Date	Amendment	Rationale	Stakeholders

Materials Selection Template

This table may be inserted into Section 3 of the main [Selection Strategy Template](#) to help present differing selection strategies for different material types

Find Type	Selection Strategy	Stakeholders	Review Points

APPENDIX II

Gwynedd Archaeological Trust Selection Strategy final

G2742_SoLIFE_Tywyn_Aberffraw

20/10/2022 v2.0

Selection Strategy

Project Information

Project Management

Project Manager	John Roberts john.roberts@heneb.co.uk
Archaeological Archive Manager	John Roberts john.roberts@heneb.co.uk
Organisation	Gwynedd Archaeological Trust

Stakeholders

		Date Contacted
Collecting Institution(s)	GAT Historic Environment Record	30/08/2022
	RCAHMW	On completion of Project Archive
	Oriel Ynys Môn, Rhosmeirch Llangefni LL77 7TQ	If applicable, post-fieldwork based on artefact recovery
Project Lead / Project Assurance	Andrew Davidson, Chief Archaeologist	26/08/2022
Landowner / Developer	NRW	n/a

Resources

Resources required Describe the resources required to implement this Selection Strategy, particularly if unusual resources are required.	No unusual resources required outside of GAT normal operating equipment and personnel.
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Context

The full aims and objectives of this project are detailed in the project specific WSI.

Gwynedd Archaeological Trust has been commissioned by Natural Resources Wales (NRW) to undertake an archaeological watching brief during works for the Sands of LIFE (SoLIFE) (LIFE17 NAT/UK/000023) conservation project at Tywyn Aberffraw, Ynys Môn (NGR SH35766765; postcode LL63 5EX; cf. WSI Figure 01). The Sands of LIFE project is being led by NRW and supported by the EU LIFE fund and the Welsh Government, with the aim to restore threatened sand dune sites across Wales. As detailed in NRW document Twyni Byw - Sands of LIFE (SoLIFE) Contract Specification (dated 01/02/2022; cf. WSI Appendix I), the aim for this part of the project has been to create one notch in the frontal dune ridge at Tywyn Aberffraw, by excavating an area of 0.28ha in the fore dunes to lower the profile of the dune by a depth of 2.5m on average, to create an irregularly shaped trapezoidal notch. Tywyn Aberffraw is a large dune system designated as a Special Area of Conservation because of its international importance for wildlife. However, most of the dunes have become excessively stabilised and vegetated over time and conservation management is required to improve the condition of the dune habitats. The creation of a notch in the frontal dune ridge will encourage the wind to move sand inland, creating areas of pioneer habitat, and increasing dune mobility. It will also increase calcareous 'sand rain' to habitat further inland, which helps to maintain a high pH which is important for plant diversity. The rejuvenation work will connect the beach front with the interior of the dunes and improve the condition of the designated sand dune habitats: shifting dunes, dunes with *Salix repens*, humid dune slacks and fixed dune grassland. The notch has been positioned to take account of pathways to the beach, to take advantage of trampling by the public to help keep the notch open. The notch will enable easier access for the public between the dunes and the beach. The existing grassy dune vegetation has been cut as part of a separate contract before excavation begins. The notch has been created with the following measurements:

Gwynedd Archaeological Trust. 2022. Tywyn Aberffraw, Ynys Môn: Written Scheme of Investigation for Archaeological Watching Brief. Project (G2742).

1 – Digital Data

Stakeholders

John Roberts (GAT Principal Archaeologist)

Selection

All digital data has been collected, stored and selected in lines with the Gwynedd Archaeological Trust (GAT) Data Management Plan located on GAT's servers (available on request).

Following the completion of the fieldwork, a working project archive has been created based on following task list;

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7. Ecofacts (if relevant): quantified and register completed;
8. Context register (if relevant): quantified and register completed.

All relevant site archive data has been added to a digital project register specific to this project, which has been prepared in *Microsoft Excel*.

This data has been used as the basis for the physical and digital dataset archives. Information from these has been used to compile the project report. The physical archive has been stored in a designated project folder and the location confirmed in the Trust project database; the digital dataset has been stored on a dedicated Trust server, with the location confirmed in the Trust project database via a specific hyperlink. External datasets for the HER and RCAHMW are as defined in the dissemination strategy below. De-selected digital data has been confirmed in an updated digital management plan appended to the final report

De-Selected Digital Data

The procedure for dealing with De-selected digital data and what specialist advice informed this process should be recorded in your DMP. Please copy this information here or attach your DMP as an appendix to this document.

It is envisaged that the de-selected material has been retained on the GAT servers for 2 years following the completion of the project at which point they has been reviewed and deleted as necessary in line with the GAT DMP.

Amendments

None

2 – Documents

Stakeholders

Name the individual(s) responsible for the Documents Selection decisions (i.e. Archaeological Archive Manager, Project Manager, Repository Representative).

John Roberts – Principal Archaeologist, Gwynedd Archaeological Trust;
Sean Derby – Historic Environment Record, Gwynedd Archaeological Trust;
Gareth Edwards, *Head of Knowledge and Understanding, RCAHMW*

Selection

- A digital report has been provided to the regional Historic Environment Record; this has been submitted within six months of project completion (final report only), along with a digital dataset comprising an Event PRN summary. The report and dataset has been submitted in accordance with the required standards set out in *Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs)* (Version 1.1); and
- A digital report and digital archive dataset has been provided to Royal Commission on Ancient and Historic Monuments, Wales (final report only), in accordance with the *RCAHMW Guidelines for Digital Archives Version 1*. The dataset has been prepared in the format required by RCAHMW and will include:
 - Photographic metadata (Microsoft Access);
 - Photographic archive (TIFF format);
 - Project Information form (Excel);
 - File Information form (Excel) – Microsoft Word report text final;
 - File Information form (Excel) – Photographic metadata (general);
 - File Information form (Excel) – Adobe PDF report final; and
 - File Information form (Excel) - Photographic metadata (detail).

De-Selected Documents

It is envisaged that the material de-selected from inclusion in the preserved archive has been duplicates or reproductions created during the analysis phase of the project. De-selected material will therefore either be retained to supplement GAT's research files or recycled.

Amendments

None



Gwynedd Archaeological Trust
Ymddiriedolaeth Archaeolegol Gwynedd

Craig Beuno, Ffordd y Garth, Bangor, Gwynedd. LL57 2RT
Ffon: 01248 352535. Ffacs: 01248 370925. email: gat@heneb.co.uk

