Proposed Nuclear Power Station Wylfa, Ynys Môn

Archaeological Evaluation: Trial Trenching

Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

Proposed Nuclear Power Station Wylfa, Ynys Môn

Archaeological Evaluation: Trial Trenching

Project No. G2096

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Prepared for: Horizon Nuclear Power Ltd.

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PROPOSED NUCLEAR POWER STATION, WYLFA YNYS MÔN

ARCHAEOLOGICAL EVALUATION – TRIAL TRENCHING (G2096)

Prepared for *Horizon Nuclear Power*, February 2012

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Summary

*Gwynedd Archaeological Trust (GAT) has been commissioned by Horizon Nuclear Power to complete out a programme of archaeological evaluation (trial trenching) at the location of the proposed Nuclear Power Station, Wylfa, Ynys Môn. This current stage forms part of a staged programme of archaeological works and the trial trenches from the current stage have been located in response to the results of a targeted geophysical survey completed by GAT in September 2010 (GAT Report **987**). The geophysical survey was completed within five separate 1.0ha zones located across the southern end of the development area (cf. Figure 1).*

The geophysical survey identified anomalies of varied origin, including possible prehistoric burnt mounds in Zones 1 and 4, thought to be associated with probable burnt mounds identified during the preceding ground investigation watching brief, as well as a possible prehistoric enclosure in Zone 3 atop a small hill. The trial trenches confirmed that the possible burnt mounds identified during the GAT geophysical survey, were not of prehistoric origin but were caused by root clearance through burning (the probable burnt mounds identified during the ground investigation watching brief have yet to be investigated further). The possible prehistoric enclosure anomaly was confirmed to be a cut of modern origin, possibly caused by large machinery in transit that could be associated with the Wylfa A build.

Anomalies in Zone 2 (within Trenches 03 and 04) and Zone 5 (Trench 09) were all confirmed as geological in origin, whilst anomalies targeted in Zone 1 (Trench 01) and Zone 4 (Trench 08) were confirmed as post-medieval field boundaries (which were extant on the 25" First Edition Ordnance Survey map) and were interpreted as of 19th century origin.

A small pit was identified in Zone 5 (Trench 10); this was the only feature of note identified during this stage of archaeological evaluation. No associated features and no artefactual/ palaeoenvironmental information was recovered to suggest an origin for this feature.

The main conclusions reached at this stage were that probable burnt mound activity has been reduced to the area around the burnt mound identified in the GI watching brief (Zone 1). No specific prehistoric activity was identified elsewhere within the targeted zones, although the pit in Zone 5/Trench 10 could be of prehistoric origin but the area would require additional larger scale evaluation to investigate whether this feature formed part of a larger pit group or other activity.

As with the GI phase, the impact from the nineteenth century field management and the twentieth century Wylfa A build were clearly identified. No evidence for medieval field systems were identified.

1 INTRODUCTION

Gwynedd Archaeological Trust (GAT) was commissioned by *Horizon Nuclear Power* to complete out a programme of archaeological evaluation (trial trenching) at the location of the proposed Nuclear Power Station, Wylfa, Ynys Môn.

The site of the proposed Nuclear Power Station is located adjacent to the existing Wylfa A power station and currently encompasses a 166.1 hectare area of coastline and agricultural plots, buildings and residential areas, centred on NGR **SH35459328**.

NB. The current design discusses a programme of archaeological work that forms part of a staged programme of archaeological evaluation. Additional/further phases of archaeological work relating to the overall project are discussed in separate reports (cf. ***para. 2.0*** for a review of preceding works).

1.1 Mitigation/Standards

A brief was not prepared for this phase work by **Gwynedd Archaeological Planning Services** (GAPS), but they have been informed of the results of the assessment, geophysical survey and evaluation.

The evaluation programme conformed to the guidelines specified in the IFA Standard and Guidance for Archaeological Evaluation (*Institute for Archaeologists*, 1994, rev. 2001 & 2008); the watching brief programme (pipeline route) conformed to the guidelines specified in the IFA Standard and Guidance for Archaeological Watching Brief (*Institute for Archaeologists*, 1994, rev. 2001 & 2008).

2 PROJECT BACKGROUND

2.1 Assessment

GAT completed an archaeological baseline assessment of the proposed Nuclear Power Station development area in March 2010 (Davidson, A., GAT Report **842**).

The report summarised that there are no known buried archaeological features of prehistoric or Roman date within the study area. However, developments elsewhere on Ynys Môn (including the construction of the A55 dual carriageway) have revealed sites for which there was no previous evidence. There are a number of sites in the vicinity of the study area which indicate the presence of people in prehistoric and Roman times. There is, therefore, some potential for the discovery of archaeological sites within the study area.

2.2 *Horizon Nuclear Power* multiplatform survey/ground investigation programme

A geophysical survey of the current development zone was originally completed for *Horizon Nuclear Power* by *Fugro Aperio Ltd*. as part of an initial multiplatform survey/ground investigation programme of works (January 2011 to June 2011); GAT monitored all relevant intrusive investigation works (inc. test pitting and trenching), as well interpreted the results of a Vertical Magnetic Gradiometry (VMD) survey undertaken by *Fugro Aperio Ltd* as part of the multiplatform survey/ground investigation programme. The VMD survey was completed using a Caesium vapour magnetometer positioned at 1.0m traverses.

A total of 146 anomalies were identified by the VMD survey; which were subsequently interpreted by GAT (GAT Report **1019**; reproduced as Appendix II).

GAT identified two possible burnt mounds within separate *Fugro Aperio Ltd* test pits TP-62A and TP-76 B (NGRs SH34629263 & SH35179283 respectively), during

watching briefs completed at those locations. These test pit locations as well as specific VMD anomalies were subsequently targeted by GAT as part of a geophysical survey programme (September 2011; para. 2.3 below)

2.3 Gwynedd Archaeological Trust Targeted Geophysical Survey programme

In September 2011, GAT completed a targeted geophysical survey of five 1.0ha zones across the southern part of the proposed development zone (GAT Report **987** & **1019**). The survey zones were positioned to examine anomalies originally detected in the *Fugro Aperio Ltd* VMD survey. Several additional anomalies were also identified by GAT, including two potential burnt mound sites (GAT Features 1 and 24) and a curvilinear anomaly in zone 3 (GAT Feature 20), interpreted at the time as "a well-defined ditch typical of a prehistoric enclosure". These anomalies were subsequently targeted through trial trenching by GAT in December 2011 (current report): the two burnt mounds were dismissed as evidence of post-medieval root burning/field clearance; the enclosure was identified as modern disturbance.

Additional GAT targeted geophysical survey was completed in December 2011 and January 2012 (Hopewell, D. 2012. GAT **forthcoming**). These areas, at time of writing (February 2012) have not been subject to further investigation.

3 METHODOLOGY

3.1 Trial Trenching

The trial trenches were located within geophysical zones 1 to 5, completed by GAT in September 2011, targeting possible archaeological features specified in GAT Report **987** and proposed GAT geophysical zones 6 and 8 (cf. current report Figures 1 to 6). The targeted anomalies are described below:

- Zone 1 (centred on SH34629263): Two 20.0m (w) x 2.0m (w) trenches targeting GAT Report **987** Features 2 (suspected burnt mound) and 5 (probable field boundary).

- Zone 2 (centred on SH34559282): Three 20.0m (w) x 2.0m (w) trenches targeting GAT Report **987** Features 12 (underlying geology or the ploughed-down remains of lynchets from a prehistoric or medieval field system), 14 (underlying geology or the ploughed-down remains of lynchets from a prehistoric or medieval field system) and 15 (curvilinear feature that could be either a prehistoric enclosure or more recent disturbance)

- Zone 3 (centred on SH34739292): Two 20.0m (w) x 2.0m (w) trenches targeting GAT Report **987** Features 19 (possible former field boundary) and 20 (curvilinear anomaly possibly part of the enclosure of a prehistoric defended settlement/site)

- Zone 4 (centred on SH35179283): One 20.0m (w) x 2.0m (w) trench targeting GAT Report **987** Feature 24 (possible burnt mound).

- Zone 5 (centred on SH35579288): Two 30.0m (w) x 2.0m (w) trenches targeting GAT Report **987** Features 31 and 32 (Features 31 and 32 are possibly result of landscaping or other subsoil changes)

NB. Trenches 11 and 12 (Zones 6 and 8 respectively), were also to be targeted as part of this programme, but agreement was reached with Andrew Croft *Atkins* (*pers comm*) that the results from Zones 1 to 5 (para.4.0) concluded that there was limited potential for finding additional archaeology *using the current methodology* and these two trenches were subsequently not completed.

A written record of the trench content and all identified features were completed via GAT pro-formas.

All subsurface remains were recorded photographically, with detailed notations and a measured survey. The photographic record was completed using a digital SLR camera set to maximum resolution.

All trenches were opened with an excavator fitted with a toothless bucket (JCB 3CX)

4.0 RESULTS

Each trench is described separately. For specific information on each trench location, cf. para. 3.0. The location for each zone can be found in Figure 01; the individual trenches on Figures 02 to 06

Each context is described separately.

TRENCH 01

- Location: Zone 1 (figures 01 & 02; plates 01, 05 to 07)
- Size: 18.0m x 2.10m x 0.50m Orientation N-S
- Description:
- Trench 02 was positioned across GAT geophysical survey Feature 5 (suspected field boundary).
- The topsoil was characterised by a dark grey-brown, friable and softly compacted sandy silt with occasional sub-angular stone (depth: 0.20m), followed by a mid brown-grey slightly clayey sandy silt subsoil with frequent sub-angular stone, firmly compacted (depth: 0.30m). Beneath the subsoil @0.50m below ground level (BGL), the glacial horizon was identified, characterised as a mid to light orangey grey clayey sand with frequent sub-angular stone.
- Two features were identified with the confines of the trench:

    1. A field boundary (GAT Report **987** Feature 5): characterised as a very shallow former field boundary with a N-S orientation across the trench. A small section on the northern side was excavated to test the profile. The fill was very similar to the subsoil above in composition, but had more root present as well as evidence of root burning. The width of the field boundary was 0.85m, with a depth of 0.08m, and probably dates to the 18thC or 19thC. *This is most likely a field boundary extant on the 25" First Edition Ordnance Survey map of the area* (Figure 7)

2. A large stone lined and capped field drain at eastern (lower) extent of evaluation trench, the drain extended past the northern and southern sides of the evaluation trench. The width was also not totally determined, but it does not seem to extend much further than the eastern extent of the trench. The length of the exposed drain within confines of Trench 1 was 2.10m (l) x 0.60m (w). The surface of the drain was cleaned but it was not excavated as it seemed to be still functional and part of the working environment and was interpreted as likely to be either 19th century or early 20th century in date. Another interpretation is that the drain could be a prehistoric capped drain associated with a roundhouse settlement: the drain was not identified via geophysical survey so other associated features could survive nearby. However, the shallow topsoil depth, coupled with the intact nature of the drain, suggests it is probably a post-medieval feature. *This feature was not identified by the GAT targeted geophysical survey.*

- Evidence for root burning was also identified within the trench at the subsoil horizon. This burning may have created a thermoremnance signal during the magnetometer geophysical survey

TRENCH 02

- Location: Zone 1 (figures 01 & 02; plates 01 to 04)

- Size: 19.40m x 2.20m x 0.55m Orientation E-W

- Description: Trench 01 was positioned across GAT geophysical survey Feature 2 (suspected burnt mound).

- The topsoil was characterised by a dark greyish brown sandy silt, friable and softly compacted containing occasional small sub-angular stone (depth: 0.15m), followed by a mid brownish grey silty sand (depth: 0.30m). Beneath the subsoil @0.45m below ground level (BGL), the glacial horizon was identified, characterised as a mid orangey brown with patches of grey silty clay, contains occasional small sub-rounded and sub-angular stones.

- A single feature was identified with the confines of the trench:

  1. A probable field boundary cut containing a fill of a light grey silty sand, slightly clayey and softly compacted alluvial deposit. The cut had a width of 1.35m and depth of 0.30m. The ditch was interpreted as post-medieval.

- No evidence for a burnt mound was identified. The localised root burning may have created the thermoremnance signal interpreted as a possible burnt mound.

TRENCH 03

- Location: Zone 2 (figures 01 & 03; plates 08 to 11)

- Size: 20.0m x 2.0m x 0.54m Orientation: NW-SE

- Description: Trench 03 was positioned across GAT geophysical survey Feature 14 (underlying geology or the ploughed-down remains of lynchets from a prehistoric or medieval field system)

- The topsoil was characterised as a dark brown silty clay, friable and containing occasional small sub-rounded and sub-angular stones (depth: 0.14m), followed by a mid brown silty clay subsoil, firmly compacted with occasional small sub-rounded stones (depth: 0.40m). Beneath the subsoil @0.54m below ground level (BGL), the glacial horizon was identified, characterised as a light orangey brown sandy silt-clay, firmly compacted and containing occasional small sub-rounded and sub-angular stones.

- No archaeological features were found in this trench, although near the south-east side of the trench there was quite a large band of natural fragmented limestone, which could have produced a geophysical anomaly, the targeted anomaly was not found. As a result GAT Report **987** Feature 14 was confirmed as "underlying geology".

TRENCH 04

- Location: Zone 2

- Size: 20.0m x 2.0m x 0.46m Orientation: NE-SW

- Description: Trench 04 was positioned across GAT geophysical survey Feature 12 (underlying geology or the ploughed-down remains of lynchets from a prehistoric or medieval field system)

- The topsoil was characterised as a dark brown silty clay, friable and containing occasional small sub-rounded and sub-angular stones (depth: 0.10m), followed by a mid brown silty clay subsoil containing occasional small sub-rounded stones (depth: 0.36m). Beneath the subsoil @0.46m below ground level (BGL), the glacial horizon was identified, characterised as a light orangey brown sandy silt-clay, firmly compacted and containing occasional small sub-rounded and sub-angular stones.

- No archaeological or geological strata changes were seen in this trench, although there could possibly be some natural outcrops below the level of the grey orange natural which could have been picked up by the geophysical survey as the field drops from NE to SW.

TRENCH 05

- Location: Zone 2 (figures 01 & 03; plates 08 to 11)

- Size: 20.0m x 2.0m x 0.90m Orientation: NE-SW

- Description: Trench 05 was positioned across GAT geophysical survey Feature 15 (curvilinear feature that could be either a prehistoric enclosure or more recent disturbance)

- The topsoil was characterised as a dark greyish brown sandy silt containing occasional sub-angular pebble sized stone, friable and softly compacted (depth: 0.15m), followed by a dark greyish brown subsoil, slightly clayey

sandy silt, firmly compacted and contained frequent sub-angular stones (depth: 0.75m). Beneath the subsoil @0.90m below ground level (BGL), the glacial horizon was identified, characterised as a mid to light orangey grey fine sand with a very slight clay content, which contained very occasional sub-angular stones, softly compacted.

- No archaeological features were found within this trench, although there was a mixed layer of manganese and light root burning at the north-eastern third of the trench which likely produced the geophysical anomaly

TRENCH 06

- Location: Zone 3 (figures 01 and 04; plate 12)

- Size: 20.0m x 2.20m x 0.35m Orientation: NW-SE

- Description: Trench 06 was positioned across GAT geophysical survey Feature 19 (possible former field boundary).

- The topsoil was characterised as a dark greyish brown sandy silt with a moderate amount of sub-angular stone up to pebble size, softly compacted (depth: 0.15m), followed by a mid brownish grey sandy silt subsoil with moderate to frequent sub-angular stone, friable and softly compacted (depth: 0.20m). Beneath the subsoil @0.35m below ground level (BGL), the glacial horizon was identified, characterised as a mid to light orangey grey fine sand with a orangey grey sandy clay with frequent sub-angular stone up to pebble size.

- No archaeological or geological features found within the confines of this trench, there were depressions in the topsoil which extended into the upper subsoil that matched the targeted geophysics, and were very modern in date and could have been produced by farm machinery. There is no field boundary located in this area on the 25" First Edition Ordnance Survey Map; the results confirmed that there is no potential for an earlier field boundary within the localised area.

TRENCH 07

- Location: Zone 3 (figures 01 and 04; plates 13 and 14)

- Size: 20.0m x 2.0m x 0.40m Orientation: NE-SW

- Description: Trench 07 was positioned across GAT geophysical survey Feature 20 (curvilinear anomaly possibly part of the enclosure of a prehistoric defended settlement/site).

- The topsoil was characterised as a dark greyish brown, softly compacted and friable sandy silt containing a moderate amount of sub-angular stone up to large pebble in size (depth: 0.15m), followed by a mid-brownish grey sandy silt subsoil with a moderate amount of sub-angular stone, soft and fairly friable (depth: 0.25m). Beneath the subsoil @0.40m below ground level (BGL), the glacial horizon was identified, characterised as a mid orangey grey clay with frequent sub-angular stone, pebble to small cobble in size.

- A modern ditch was found which matched the targeted part of the trench from the geophysical plan (GAT Report **987** Feature 20), this ditch was seen below topsoil level and clearly cut the subsoil in the trench and is likely modern in date. The feature was recorded as:

    1. Cut: A linear ditch with NW-SE orientation was found roughly mid-way along the trench, which tied in with the results of the geophysical survey. The ditch had a sharp break of slope at the top, concave sides with an angle of approximately 45deg to vertical and gradual break of slope at the bottom, the base was concave. The length of the observed ditch within the evaluation trench was 2.0m, with a width of c.1.25m and depth of 0.30m. The cut for the ditch was seen directly below the topsoil, and cut the subsoil and therefore seems to be post-medieval in date.
    2. Fill: Mid to dark brownish grey sandy silt, soft and fairly friable containing a moderate amount of sub-angular stone, no artefactual evidence. Depth of 0.25m.

TRENCH 08

- Location: Zone 4 (figures 01 & 05; plates 15 to 17)

- Size: 20.0m x 2.0m x 0.31m Orientation: NE-SW

- Description: Trench 08 was positioned across GAT geophysical survey Feature 24 (possible burnt mound).

- The topsoil was characterised as a mid to dark brown silty clay with very few natural inclusions (depth: 0.10m), followed by a light brownish grey silty clay subsoil, friable and containing occasional small sub-angular stones (depth: 0.19m). Beneath the subsoil @0.29m below ground level (BGL), the glacial horizon was identified, characterised as a light brownish grey silty clay, firmly compacted containing frequent small sub-angular stone.

- There were two parallel and modern ditches running in a NW-SE direction across this trench that were interpreted as a former hedge-bank and ditch that can be also be seen on the surface. The targeted feature (GAT Report **987** Feature 24) was a possible shallow tree bole, which contained some manganese and light root burning, irregular in shape and 0.10m deep, possibly associated with the former field boundary (the former field boundary can be seen on the 25” First Edition Ordnance Survey map of the area; cf. Figure 07).

TRENCH 09

- Location: Zone 5 (figures 01 & 06; plate 18)

- Size: 29.20m x 2.25m x 0.70m Orientation: NW-SE

- Description: Trench 09 was positioned across GAT geophysical survey Features 31 and 32 (possibly result of landscaping or other subsoil changes)

- The topsoil was characterised as a dark greyish brown sandy silt with frequent small stone (depth: 0.25m), followed by a mid brownish grey, slightly clayey sandy silt subsoil, with very frequent stone. (depth: 0.15m). Beneath

the subsoil @0.44m below ground level (BGL), the glacial horizon was identified, characterised as both a fragmented and very hard limestone (fragments up to 60mm in size and sub-angular) within a grey matrix of a clayey sand. The central part of the trench had a natural hollow area (shallow) which contained a mid orangey clay sand

- The geophysical anomalies within this trench were layers of fragmented limestone within a matrix of a clayey sand; non archaeological

TRENCH 10

- Location: Zone 5 (figures 01, 06 & 08; plates 19 to 24)

- Size: 31.0m x 2.20m x 0.60m Orientation: NNE-SSW

- Description: Trench 10 was positioned across GAT geophysical survey Features 33 (linear anomaly possibly former boundary or drainage)

- The topsoil was characterised as a dark greyish brown sandy silt containing a moderate amount of small sub-angular stone (depth: 0.15m), followed by a mid brownish grey sandy silt with a clay content that contained frequent sub-angular stone up to pebble and small cobble size (depth: 0.20m). Beneath the subsoil @0.35m below ground level (BGL), the glacial horizon was identified, characterised as both a fragmentary and shaley limestone (the southern c.8m of the trench) and a mid orangey grey medium course sand (northern half of trench; at 7.0m from the northern end of the trench a spread of fragmented limestone was identified.

- As with Trench 09, the targeted geophysical anomalies were identified as geological in origin (fragmented limestone). However, an archaeological feature was identified within the centre of the trench: a small sub-oval pit of 2.40m in length and containing a large amount of mainly sub-rounded cobble sized stone. No dateable artefacts or palaeoenvironmental deposits were recovered; the feature was not identified by the targeted geophysics. The feature was characterised by:

    1. Pit cut (Context 10004): small sub-oval shaped, below the subsoil horizon which had a NNW-SSE orientation. The pit had a sharp break of slope at the top, near vertical sides and a sharp break of slope at the bottom with a fairly flat base. Dimensions of 2.40m in length, width of 1.10m and depth of 0.56m (Figure 08).

    2. Pit fill (Context 10005): The fill of the pit was a dark brown silty clay with occasional flecks of charcoal and contained very large amounts of medium to large sub-rounded stones, some of which had been placed on their sides and others laid flat (Figure 08). No artefactual evidence for the dating or use of the pit was found, it could possibly be the remains of a grave or a backfilled storage pit.

5 CONCLUSIONS

The evaluation trenches were designed to target a series of geophysical anomalies that were either of suspected prehistoric date (burnt mound anomalies Zones 1 and 4; possible enclosure in Zone 3) or of post-medieval date and/or geology. The suspected burnt mounds

were confirmed not to be of prehistoric origin but were probably anomalies caused from root burning. The possible prehistoric enclosure in Zone 3 was identified as a modern cut feature.

The burnt mounds previously identified in Zones 1 and 4 during the ground investigation (GI) programme watching brief (Davidson, J. 2011: GAT Report **994**) were not investigated during the current evaluation stage. However, based on the results from the current stage, it is now thought possible that the burnt mound identified during the GI programme in Zone 4 (designated as GAT Report **994** Feature 17; NGR SH34629263) may not be a burnt mound but could also be evidence for root clearance and this Zone may not include evidence for any prehistoric activity associated with burnt mounds.

However, the burnt mound identified during the GI programme in Zone 1 (designated as GAT Report **994** Feature 16; NGR SH35179283) is still considered to be a burnt mound, based on the observations made during the watching brief and the close proximity of a partially improved wetland area. The negative evidence from Trench 1, located *c.*40.0m to the southwest of GAT Report **994** Feature 16, suggests that if there is a burnt mound cluster in this area that it may not continue in this particular direction.

The geological origin of the anomalies Zone 2: Trenches 03 and 04 and Zone 5, Trench 09, were confirmed.

The small pit in Zone 5 Trench 10 was the only feature of note identified during this evaluation stage. No associated features and no artefactual/palaeoenvironmental information was recovered. The feature was identified on a very gradual north-south slope, with no distinctive topographical features or watercourses within the local area. This feature was not distinctly visible on the targeted geophysical survey and no evidence for associated features were identified in the geophysical survey or within the confines of the trench. Therefore, the origin and date of this feature could not be confirmed at this stage and the area would require additional larger scale evaluation to investigate whether this feature formed part of a larger pit group or other activity.

6 SOURCES CONSULTED

Davidson, A., 2010. Gwynedd Archaeological Trust Report **842** PROPOSED NUCLEAR POWER STATION, WYLFA YNYS MÔN ARCHAEOLOGICAL ASSESSMENT

Davidson, J., 2011. Gwynedd Archaeological Trust Report **994** PROPOSED NUCLEAR POWER STATION, WYLFA YNYS MÔN ARCHAEOLOGICAL WATCHING BRIEF: Ground Investigation Programme

Client drawings TQHOWA/001 & TQHOWA/003

Fugro Aperio Ltd drawing 3652-11B

Hopewell, D. 2011. GAT Report **987**: PROPOSED NUCLEAR POWER STATION, WYLFA YNYS MÔN ARCHAEOLOGICAL EVALUATION: Targeted Geophysics

Hopewell, D. 2011. GAT Report **1019**: PROPOSED NUCLEAR POWER STATION, WYLFA YNYS MÔN ARCHAEOLOGICAL EVALUATION: Geophysical Survey

Wylfa New Build: Intermediate Ground Investigation Scope data

Appendix I

Reproduction of GAT Project Design (Specification), December 2011

PROPOSED NUCLEAR POWER STATION,
WYLFA YNYS MÔN

PROJECT DESIGN FOR ARCHAEOLOGICAL EVALUATION (G2096): Trial Trenching

Prepared for

Horizon Nuclear Power

December 2011

Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

PROPOSED NUCLEAR POWER STATION, WYLFA YNYS MÔN

PROJECT DESIGN FOR ARCHAEOLOGICAL EVALUATION – TRIAL TRENCHING (G2096)

1.0 INTRODUCTION

Gwynedd Archaeological Trust (GAT) has been asked by *Horizon Nuclear Power* to provide a project design with costs for carrying out a programme of archaeological evaluation (trial trenching) at the location of the at the location of the proposed Nuclear Power Station, Wylfa, Ynys Môn.

The site of the proposed Nuclear Power Station is located adjacent to the existing Wylfa A power station and currently encompasses a 166.1 hectare area of coastline and agricultural plots, buildings and residential areas, centred on SH35459328.

NB. The current design discusses a programme of archaeological work that forms part of a staged programme of archaeological evaluation. Additional/further phases of archaeological work relating to the overall project will be recommended and discussed in further designs.

1.1 Requirements

A detailed brief has not been prepared for this stage by Gwynedd Archaeological Planning Service (GAPS; Ref.: D1315). However, GAPS has requested that "an extensive programme of evaluation will be required **prior to** determining the appropriateness of the (planning) proposals and before a suitable mitigation strategy can be devised" (GAPS ref.: 0805ab01/D1315). The current archaeological evaluation programme will form part of the "extensive programme of evaluation".

The current design conforms to the guidelines specified in the IFA Standard and Guidance for Archaeological Evaluation (Institute of Field Archaeologists, 1994, rev. 2001 & 2008)

2.0 BACKGROUND

2.1 Assessment

GAT completed an archaeological baseline assessment of the proposed Nuclear Power Station development area in March 2010 (Davidson, A., GAT Report **842**).

The report summarised that there are no known buried archaeological features of prehistoric or Roman date within the study area. However, developments elsewhere on Ynys Môn (including the construction of the A55 dual carriageway) have revealed sites for which there was no previous evidence. There are a number of sites in the vicinity of the study area which indicate the presence of people in prehistoric and Roman times. There is, therefore, reasonable potential for the discovery of archaeological sites within the study area.

2.2 *Horizon Nuclear Power* a multiplatform survey/ground investigation programme

A geophysical survey of the current development zone has already been completed for *Horizon Nuclear Power* by *Fugro Aperio Ltd*. This was completed as part of an initial multiplatform survey/ground investigation programme of works; GAT monitored all relevant intrusive investigation works (inc. test pitting and trenching), as well interpreted the results of a Vertical Magnetic Gradiometry (VMD) survey undertaken by *Fugro Aperio Ltd* as part of the multiplatform survey/ground investigation programme. The VMD survey was completed using a Caesium vapour magnetometer positioned at 1.0m traverses.

A total of 146 anomalies were identified by the VMD survey; which were subsequently interpreted by GAT (GAT Report **987**; reproduced as Appendix I).

2.2 Gwynedd Archaeological Trust Targeted Geophysical Survey programme

GAT completed a targeted geophysical survey of five 1.0ha zones across the southern part of the proposed development zone in September 2011 (GAT Report **987**). The results from the five 1 ha sample areas allowed the features detected in the *Fugro Aperio Ltd* VMD survey to be assessed in greater detail. Several additional features were also discovered giving a more detailed understanding of the archaeological resource in certain locations.

Four potential burnt mound sites were detected (GAT Features 1, 2, 23, and 24). Features 1 and 2 were located in on the edge of an area of wetland; features 23 and 24 were in located in a sloping field away from water and alternative interpretations of these may be valid.

The curvilinear anomaly in zone 3 (20) was shown to be a well-defined ditch typical of a prehistoric enclosure. In contrast the curvilinear anomaly in zone 5 (31) was shown to have a very different character and was most likely to be modern disturbance.

The *Fugro Aperio Ltd* survey revealed a series of somewhat disconnected linear features across the three fields containing Zones 1, 2 and 3. The clearer results from the targeted survey show that these were part of an extensive system of small fields dating from the 18th century or before that were superseded by the current larger fields that are a typical product of 18th and 19th century agricultural improvements, usually by large estates.

3.0 METHOD STATEMENT

3.1 Trial Trenching

The trial trenches are mainly located within geophysical zones 1 to 5, completed by GAT in September 2011, targeting possible archaeological features specified in GAT Report **987** and proposed GAT geophysical zones 6 and 8:

- Zone 1 (centred on SH34629263): Two 20.0m (w) x 2.0m (w) trenches targeting GAT Report **987** Features 2 (suspected burnt mound) and 5 (probable field boundary).

- Zone 2 (centred on SH34559282): Three 20.0m (w) x 2.0m (w) trenches targeting GAT Report **987** Features 12 (underlying geology or the ploughed-

down remains of lynchets from a prehistoric or medieval field system), 14 (underlying geology or the ploughed-down remains of lynchets from a prehistoric or medieval field system) and 15 (curvilinear feature that could be either a prehistoric enclosure or more recent disturbance)

- Zone 3 (centred on SH34739292): Two 20.0m (w) x 2.0m (w) trenches targeting GAT Report **987** Features 19 (possible former field boundary) and 20 (curvilinear anomaly possibly part of the enclosure of a prehistoric defended settlement/site)

- Zone 4 (centred on SH35179283): One 20.0m (w) x 2.0m (w) trench targeting GAT Report **987** Feature 24 (possible burnt mound).

- Zone 5 (centred on SH35579288): Two 30.0m (w) x 2.0m (w) trenches targeting GAT Report **987** Features 31 and 32 (Features 31 and 32 are possibly result of landscaping or other subsoil changes)

- Zone 6 (centred on SH35709328): One 20.0m (w) x 2.0m (w) trench targeting *Fugro Aperio Ltd* anomaly A21 (Atkins Area C/Horizon field F25), a long curvilinear feature and a mound ("natural feature") visible on a 1948 aerial photograph. This will be preceded by a geophysical survey of the zone by GAT.

- Zone 8 (SH35709334): One 20.0m (w) x 2.0m (w) trench targeting *Fugro Aperio Ltd* anomaly A17. This anomaly has been interpreted by GAT as a series of faint curvilinear features with some additional associated noise that are either natural subsoil variation or agricultural / modern disturbance; an alternative interpretation is that they are slight remains of prehistoric settlement, pits and enclosures. This will be preceded by a geophysical survey of the zone by GAT.

3.1.1 Specific Methodology

- If significant archaeological deposits are identified they will be manually cleaned, excavated and recorded to determine extent, function, date and relationship to adjacent features.

- The site will be planned to scale and trenches located via digital survey.

- A written record of the trench content and all identified features will be completed via GAT pro-formas

- Any subsurface remains will be recorded photographically, with detailed notations and a measured survey. The photographic record will be maintained, using a digital SLR camera set to maximum resolution. Photographic identification boards should also be used.

- All trenches will be opened with an excavator fitted with a toothless bucket

- Any identified features will be temporarily cordoned with road pins/orange mesh fencing, for protection and to allow opportunity for Client/GAPS to attend/inspect.

- If any trenches are to remain open overnight and/or weekends; provision for fencing off using road pins/orange mesh will be sought

3.1.2 Evaluation Aims

The evaluation will aim to address the following:

- Verify the efficacy of the geophysical survey for identifying archaeological remains within the site
- Establish the extent to which archaeological remains survive at the site
- Establish the date and nature of archaeological remains at the site and assess their implications for understanding the historical development of the area
- Establish the depth of archaeological remains and the quality, value and level of preservation of any deposits
- Assess the level of risk any surviving remains may pose to development.

NB. No specific reinstatement instructions have been supplied by client.

NB. If significant archaeological activity is identified within any trench (e.g. extensive and/or complex features/artefacts/deposits), cf. para. 4.0.

3.2 Report

Following completion of the stages outlined above, a report will be produced that will include:

1. Introduction
2. Project Design
3. Methods and techniques
4. Archaeological Background
5. Results
6. Proposals for further mitigation
7. Summary and conclusions
8. List of sources consulted.

The report will include the following:

a) a copy of the agreed specification
b) a site location plan based on current OS mapping
c) a trench location plan indicating trench positions relative to the development site and fixed manmade or topographic features
d) all identified features plotted on an appropriately scaled plan of the development site
e) appropriately scaled trench plans and sections showing identified features and significant finds
f) full dimensional and descriptive detail of all identified features

Provision should also be made for all archaeological work on site, including the post-excavation analysis, conservation of artefacts, any supplementary scientific analysis and for the subsequent publication of results in an appropriate journal.

3.3 Archive

A full archive including plans, photographs, written material and any other material resulting from the project will be prepared. All plans, photographs and descriptions will be labelled and cross-referenced, and lodged in an appropriate place (to be decided in consultation with the regional Historic Environment Record) within six months of the completion of the project.

4.0 FURTHER ARCHAEOLOGICAL WORKS

- **The identification of significant archaeological features during the evaluation stage may necessitate further archaeological works. This will require the submission of a separate project design, to be agreed by all parties prior to implementation.**
- **This design does not include a methodology for examination of, conservation of, or archiving of finds discovered during the evaluation, nor of any radiocarbon dates required, nor of examination of palaeoenvironmental samples associated with any peat deposits. The need for these will be identified in the post-fieldwork programme (if required), to be agreed by all parties prior to implementation.**

5.0 ENVIRONMENTAL SAMPLES

If necessary, relevant archaeological deposits will be sampled by taking bulk samples (a minimum of 10.0 litres and maximum of 30.0 litres) for flotation of charred plant remains. Bulk samples will be taken from waterlogged deposits for macroscopic plant remains. Other bulk samples, for example from middens, may be taken for small animal bones and small artefacts.

6.0 HUMAN REMAINS

Any finds of human remains will be left in-situ, covered and protected, and both the coroner and the GAPS Archaeologist informed. If removal is necessary it will take place under appropriate regulations and with due regard for health and safety issues. In order to excavate human remains, a 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. This will be applied for should human remains need to be investigated or moved.

7.0 SMALL FINDS

The vast majority of finds recovered from archaeological excavations comprise pottery fragments, bone, environmental and charcoal samples, and non-valuable metal items such as nails. Often many of these finds become unstable (i.e. they

begin to disintegrate) when removed from the ground. All finds are the property of the landowner, however, it is Trust policy to recommend that all finds are donated to an appropriate museum 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. All finds would be treated according to advice provided within First Aid for Finds (Rescue 1999). 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, ARCUS at Sheffield and BAE at Birmingham.

Unexpected Discoveries: Treasure Trove

Treasure Trove law has been amended by the Treasure Act 1996. The following are Treasure under the Act:

- Objects other than coins any object other than a coin provided that it contains at least 10% gold or silver and is at least 300 years old when found.
- Coins all coins from the same find provided they are at least 300 years old when found (if the coins contain less than 10% gold or silver there must be at least 10. Any object or coin is part of the same find as another object or coin, if it is found in the same place as, or had previously been left together with, the other object. Finds may have become scattered since they were originally deposited in the ground. Single coin finds of gold or silver are not classed as treasure under the 1996 Treasure Act.
- Associated objects any object whatever it is made of, that is found in the same place as, or that had previously been together with, another object that is treasure.
- Objects that would have been treasure trove any object that would previously have been treasure trove, but does not fall within the specific categories given above. These objects have to be made substantially of gold or silver, they have to be buried with the intention of recovery and their owner or his heirs cannot be traced.

The following types of finds are not treasure:

- Objects whose owners can be traced.
- Unworked natural objects, including human and animal remains, even if they are found in association with treasure.
- Objects from the foreshore which are not wreck.

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 National Museums and Galleries of Wales acts as advisor on technical matters, and may be the recipient body for the objects.

The National Museums and Galleries of Wales 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.

8.0 STAFF & TIMETABLE

8.1 Staff

The project will be supervised by John Roberts, Acting Head of GAT: Contracts. The work will be carried out by fully trained Project Archaeologists who are experienced in conducting project work and working with contractors and earth moving machinery. (Full CV's are available upon request).

8.2 Timetable

It is expected that the trial trenching will be undertaken in December 2011/January 2012.

9.0 HEALTH AND SAFETY

The Trust subscribes to the SCAUM (Standing Conference of Archaeological Unit Managers) Health and Safety Policy as defined in **Health and Safety in Field Archaeology** (1999).

10.0 INSURANCE

Liability Insurance - Aviva Policy 24765101CHC/00045

- Employers' Liability: Limit of Indemnity £10m in any one occurrence
- Public Liability: Limit of Indemnity £5m in any one occurrence
- Hire-in Plant Insurance: £50,000.00 any one item;
  £250,000.00 any one claim

The current period expires 21/06/12

Professional Indemnity Insurance – RSA Insurance Plc P8531NAECE/1028

- Limit of Indemnity £5,000,000 any one claim

The current period expires 22/07/12

11.0 BIBLIOGRAPHY

Davidson, A., 2010. Gwynedd Archaeological Trust Report 842 PROPOSED NUCLEAR POWER STATION, WYLFA YNYS MÔN ARCHAEOLOGICAL ASSESSMENT

Client drawings TQHOWA/001 & TQHOWA/003

Fugro Aperio Ltd drawing 3652-11B

Hopewell, D. 2011GAT Report 987: PROPOSED NUCLEAR POWER STATION, WYLFA YNYS MÔN ARCHAEOLOGICAL EVALUATION: Targeted Geophysics

Wylfa New Build: Intermediate Ground Investigation Scope data

APPENDIX II

Table 1 – Interpretation of magnetic gradient anomalies (reproduced from GAT Report 1019 – Appendix I)

The Vertical Magnetic Gradiometry (VMD) survey undertaken by *Fugro Aperio Ltd* has been interpreted by GAT and presented as a table summarising the results and includes information from the current report and targeted geophysics GAT Report 987.

Anomaly Number	Interpretation	Confidence	Alternative Interpretation	Confidence	x-ref to GAT Features (Report 987)
A-01	Former field boundary, unclear as aligned with geophys traverse direction	M	Modern disturbance, possibly a track or even a data gathering artefact	M	
A-02	Modern disturbance associated with pipeline	M	Former field boundary or enclosure bank.	L	
A-03	Minor feature, probably agriculture or fragments of former field boundaries shown on 1889/1924 OS County Series maps	M			
A-04	Minor features, probably agriculture or fragments of former field boundaries shown on 1889/1924 OS County Series maps	M			
A-05	Roughly concentric circular anomalies. Modem disturbance associated with Wylfa A construction	H			80

A-06	Modern surface track	H			61
A-07	Minor feature, probably agricultural	M			
A-08	Narrow trench, probably modern carrying a pipe or cable	H			
A-09	Narrow trench, probably modern carrying a pipe or cable	H	Possibly a narrow ditch forming an enclosure with A-13	L	62
A10	Double parallel anomaly, probably former field boundary shown on 1889/1924 OS County Series maps	H	Narrow double feature, probably modern trench carrying a pipe or cable.	L	
A-11	Meandering feature, probably agricultural or pipe trench	M	Possibly a narrow ditch, former boundary or enclosure	L	
A-12	Meandering feature, probably agricultural or pipe trench, continuation of A-11	M	Possibly a narrow ditch, former boundary or enclosure	L	
A-13	Narrow curvilinear trench, possibly modern carrying a pipe or cable	H	Possibly a narrow ditch forming an enclosure with A-09	L	59
A14	Faint curvilinear features with some additional associated noise. Natural subsoil/bedrock variation	H			60
A-15	Small discrete circular anomaly, either natural or a processing artefact	M	Small round barrow, prehistoric or Roman. Possible but unlikely	L	
A-16	Parallel anomalies, modern ploughing as	H	The central (NW – SE) wider anomaly could be a former field boundary shown	M	

	opposed to medieval ridge and furrow		on 1889/1924 OS County Series maps		
A-17	Modern surface track, continuation of A-06	H			56
A-18	Former field boundary shown on 1889 OS map	H			
A-19	Long curvilinear feature, possibly a former trackway	M	Modern disturbance	M	45
A-20	Mound visible on 1948 aerial photograph, natural feature	M			40
A-21	Mound visible on 1948 aerial photograph, natural feature	M			41
A-22	Widely spaced parallel linear anomalies, poss. former field boundary	M	Agriculture or modern disturbance	M	
A-23	Parallel linear anomalies, former field boundary	M	Agriculture or modern disturbance	M	
A-24	Faint linear anomaly, drainage or former boundary	M			71
A-25	Strong roughly circular anomaly 20m diam, central feature. Thermoremnant feature possible kiln	M	Geology or modern disturbance	M	69
A-26	Faint linear anomaly, drainage or former boundary	M			72
A-27	Two linear anomalies with right angle turn. Enclosure or boundary ditches	M	Agriculture or modern disturbance	L	46
A-28	Linear anomaly.	M			

	Agriculture or modern disturbance				
A-29	Linear anomaly. Agriculture or modern disturbance	M			
A-30	Former boundary and footpath shown on 1889 OS map	H			
A-31	Former track from Tyddyn Du	H			
A-32	Former boundary and drain shown on 1889 OS map	H			82
A-33	Geology	H			86
A-34	Narrow linear anomaly, probably a 18th or 19th century boundary	H			83
A-35	Narrow linear anomaly, possibly a drain or early boundary	M	Agriculture or modern disturbance	M	84
A-36	Oval anomaly, recent disturbance	M	Unknown archaeological feature	L	
A-37	Linear anomaly possibly former boundary	M	Modern disturbance	M	
A-38	Geology or modern disturbance	H			31
A-39	Linear anomaly, possibly former boundary or drainage	M	Modern feature	L	
A-40	Large oval anomaly, quarry pit	M	Modern disturbance	M	
A-41	Modern disturbance poss. former access track	M	Curvilinear anomaly possibly part of former boundary or enclosure	L	
A-42	Modern disturbance	M	Curvilinear anomaly possibly part of former boundary or enclosure	M	
A-43	Modern disturbance poss.	M			

	former access track				
A-44	Linear anomaly, possibly former boundary or drainage	M			
A-45	Former boundary shown on 1889 and 1924 Ordnance Survey County Series maps	H			
A-46	Two linear anomalies, probably modern drainage or agriculture	H			
A-47	Linear anomaly, crosses modern boundaries, post-medieval field boundary	M	Drain	M	
A-48	Former field boundary shown on 1889 and 1924 Ordnance Survey County Series maps	H			
A-49	Former field boundary shown on 1889 and 1924 Ordnance Survey County Series maps	H			
A-50	Former field boundary possible continuation of A-49	H			
A-51	Weak linear anomaly, possible former field boundary	M			
A-52	Double parallel linear anomaly, former trackway	M	Linear anomaly, possibly former double ditched boundary	M	
A-53	Linear anomaly crosses current field system possibly former early boundary	M			

A-54	Ferrous and linear anomaly modern services	H			
A-55	Former field boundary shown on 1889 and 1924 Ordnance Survey County Series maps	H			
A-56	Former field boundary shown on 1889 and 1924 Ordnance Survey County Series maps	H			
A-57	Linear anomaly possibly former boundary or drain	M			
A-58	Former field boundary shown on 1889 and 1924 Ordnance Survey County Series maps	H			
A-59	Curvilinear anomaly, drainage channel	M			
A-60	Curvilinear anomaly, drainage channel, continuation of A-59	M			
A-61	Linear anomaly, former boundary or drain	M			
A-62	Plough scarring, prob. modern	H			
A-63	Field drains	H			
A-64	Field drains	H			
A-65	Linear anomaly, former boundary or drain	M			
A-66	Linear anomaly, former boundary	M			
A-67	Circular anomaly, 40m diameter. Prehistoric enclosure or settlement	M	Modern disturbance	L	
A-68	Area of noise, possible activity	M	Modern disturbance or landscaping	L	

	associated with A-67				
A-69	Linear anomaly, former boundary or enclosure, poss. associated with A-67	M	Modern disturbance or landscaping	L	
A-70	Modern dumping	H			
A-71	Weak circular anomaly, 40m diameter. Prehistoric enclosure or settlement	M	Modern disturbance	M	
A-72	Linear anomaly, former trackway from Wylfa house	M	Linear anomaly, former boundary	M	
A-73	Parallel anomalies, modern drainage or ploughing	H			
A-74	Parallel anomalies, modern drainage or ploughing	H			
A-75	Linear anomaly, former boundary, part of current field system	M			
A-76	Group of linear anomalies and increased noise. Early boundaries and poss. trackway (see A-72)	M	Modern disturbance	L	
A-77	Linear anomaly, former boundary	M			
A-78	Circular anomaly, modern disturbance	M	Circular anomaly, 40m diameter. Prehistoric enclosure or settlement	L	
A-79	Broken and forking linear, former trackway, from Wylfa (house) shown on 1889 and 1924 Ordnance Survey County Series maps	H	Modern disturbance	L	
A-80	A series of linear	M	Modern drainage	L	

	anomalies at approx right-angles. Medieval or post-medieval field system				
A-81	Faint linear anomalies, probably ploughing or drainage	L			
A-82	Data artefact?	M	Modern services / drain	L	
A-83	Fragmentary double linear anomaly, former trackway	M	Modern erosion	L	
A-84	Former field boundary shown on 1889 and 1924 Ordnance Survey County Series maps	H			
A-85	Two curvilinear anomalies, former boundaries, poss. prehistoric or medieval	M	Modern disturbance	L	
A-86	Linear and right-angled anomalies. Medieval or post-medieval settlement/buildings	M	Geology or modern disturbance	L	
A-87	Curvilinear anomaly, modern disturbance	M	Curvilinear anomaly, prehistoric or medieval enclosure or settlement	L	
A-88	Linear anomaly, part of a field system shown on 1780 Carreglwyd estate map	M			
A-89	Footpath shown on 1889 and 1924 Ordnance Survey County Series maps	H			
A-90	Linear anomaly, part of a field system shown on	H			17

	1780 Carreglwyd estate map				
A-91	Curvilinear anomaly, modern disturbance	H			20
A-92	Linear anomaly, part of a field system predating current 18th/19th century system	M	Modern agricultural features or disturbance	L	
A-93	Linear anomaly, probably geological	H			
A-94	Possible terracing, medieval or prehistoric field system	M	Modern drainage or agricultural features	M	
A-95	Former field boundary shown on 1889 and 1924 Ordnance Survey County Series maps	H			
A-96	Former field boundary shown on 1889 and 1924 Ordnance Survey County Series maps	H			25
A-97	Linear anomaly, part of a field system predating current 18th/19th century system	M	Modern agricultural features or disturbance	L	
A-98	Linear anomaly, part of a field system predating current 18th/19th century system	M	Modern agricultural features or disturbance	L	
A-99	Rectangular and ferrous or thermo-remnant anomaly, Enclosure and building unknown date	L	Geology	M	
A-100	Area of increased noise, post medieval or modern landscaping	M	Geology	L	

A-101	Double linear anomaly, probably vehicle erosion	M			
A-102	Linear anomaly, part of a field system possibly medieval	M	Modern agricultural features or disturbance	L	11
A-103	Geology	H			13
A-104	Linear anomaly, part of a field system, possibly as shown on 1780 Carreglwyd estate map	M			7
A-105	Linear anomaly, part of a field system, possibly as shown on 1780 Carreglwyd estate map	M			
A-106	Linear anomaly, part of a field system, possibly as shown on 1780 Carreglwyd estate map	M			8
A-107	Geology	H			12
A-108	Geology	H			14
A-109	Geology	H			
A-110	Linear anomaly, part of a field system predating the map evidence	M	Modern agricultural features or disturbance	L	
A-111	Linear anomaly, part of a field system possibly shown on 1780 Carreglwyd estate map	M	Modern agricultural features or disturbance	L	
A-112	Linear anomaly, part of a field system predating current 18th/19th century system	M	Modern agricultural features or disturbance	L	
A-113	Linear anomaly, part of a field system predating current 18th/19th century system	M	Modern agricultural features or disturbance	L	
A-114	Modern drainage	M	Barn shown on 1780 estate map	L	

A-115	Two linear anomalies, part of a field system predating the map evidence	M	Modern agricultural features or disturbance	L	
A-116	Modern disturbance or land drains down W side of fields	M			
A-117	Linear anomaly, part of a field system predating the map evidence	M	Modern agricultural features or disturbance	L	
A-118	Linear anomaly, part of a field system predating the map evidence	M	Modern agricultural features or disturbance	L	
A-119	Palaeochannel or other natural sub-soil feature	M			
A-120	Linear anomaly, part of a field system possibly shown on 1780 Carreglwyd estate map	M	Modern agricultural features or disturbance	L	6
A-121	Former field boundary shown on 1889 and 1924 Ordnance Survey County Series maps	H			5
A-122	Linear anomaly, part of a field system predating the map evidence	M	Modern agricultural features or disturbance	L	
A-123	Linear anomaly, part of a field system predating the map evidence	M	Modern agricultural features or disturbance	L	
A-124	Linear anomaly, part of a field system shown on 1780 Carreglwyd estate map	M			
A-125	Area of increased noise, former pond or marsh	H			4
A-126	Linear anomaly, possibly part of a field system shown on 1780	M	Modern agricultural features or disturbance	L	

	Carreglwyd estate map				
A-127	Linear anomaly, part of a field system predating current 18th/19th century system	M	Modern agricultural features or disturbance	L	
A-128	Linear anomaly, former field boundary	M			
A-129	Parallel anomalies, modern drainage or ploughing	H			
A-130	Linear anomaly, probably geological	H			100
A-131	Linear anomaly, probably geological	H			101
A-132	Irregular anomaly, probably geological	H			132
A-133	Trackway or modern erosion	H			
A-134	Linear anomaly and parallel anomalies, probably a field boundary and ploughing. It appears to predate the1780 Carreglwyd estate map. Possibly a medieval field system including strip fields or ridge and furrow	H			90
A-135	Trackway or modern erosion	H			100
A-136	A series of linear anomalies, probably field drains post-dating removal of boundary A-95	H			
A-137	Curvilinear anomaly, perhaps part of a	M			

	ditched enclosure, date unknown				
A-138	A Former field boundary shown on 1889 and 1924 Ordnance Survey County Series maps	H			
A-139	Former field /rectangular enclosure shown on 1889 and 1924 Ordnance Survey County Series maps	H			
A-140	Narrow linear anomalies, probably drainage	M			
A-141	Linear anomaly, former ditch or trench for services	M			
A-142	Narrow linear anomalies, probably drains	M			
A-143	Former field boundary	M			
A-144	Parallel anomalies, modern drainage or ploughing	H			
A-145	Parallel anomalies, modern drainage or ploughing	H			
A-146	Parallel anomalies, modern drainage or ploughing	H			

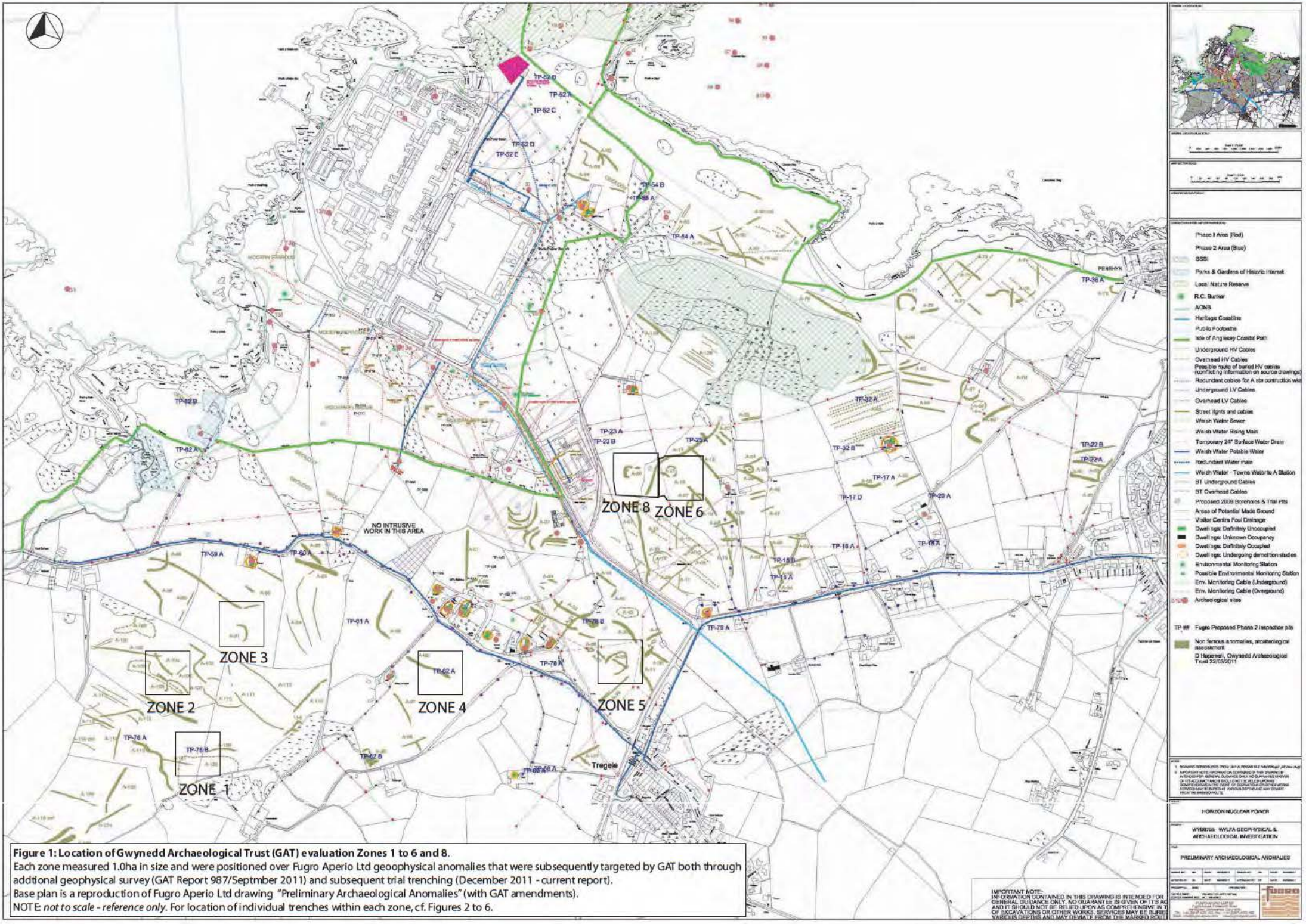

Figure 1: Location of Gwynedd Archaeological Trust (GAT) evaluation Zones 1 to 6 and 8.
Each zone measured 1.0ha in size and were positioned over Fugro Aperio Ltd geoophysical anomalies that were subsequently targeted by GAT both through addtional geophysical survey (GAT Report 987/Septmber 2011) and subsequent trial trenching (December 2011 - current report).
Base plan is a reproduction of Fugro Aperio Ltd drawing "Preliminary Archaeological Anomalies" (with GAT amendments).
NOTE *not to scale - reference only*. For location of individual trenches within each zone, cf. Figures 2 to 6.

Figure 2 - Zone 1: Location of Gwynedd Archaeological Trust (GAT) Trenches 1 and 2.
Note: feature numbers refer to anomalies identifed during the GAT targeted magnemtometer survey completed in September 2011 (GAT Report 987).
For the general location of Zone 1, cf. Figure 1.

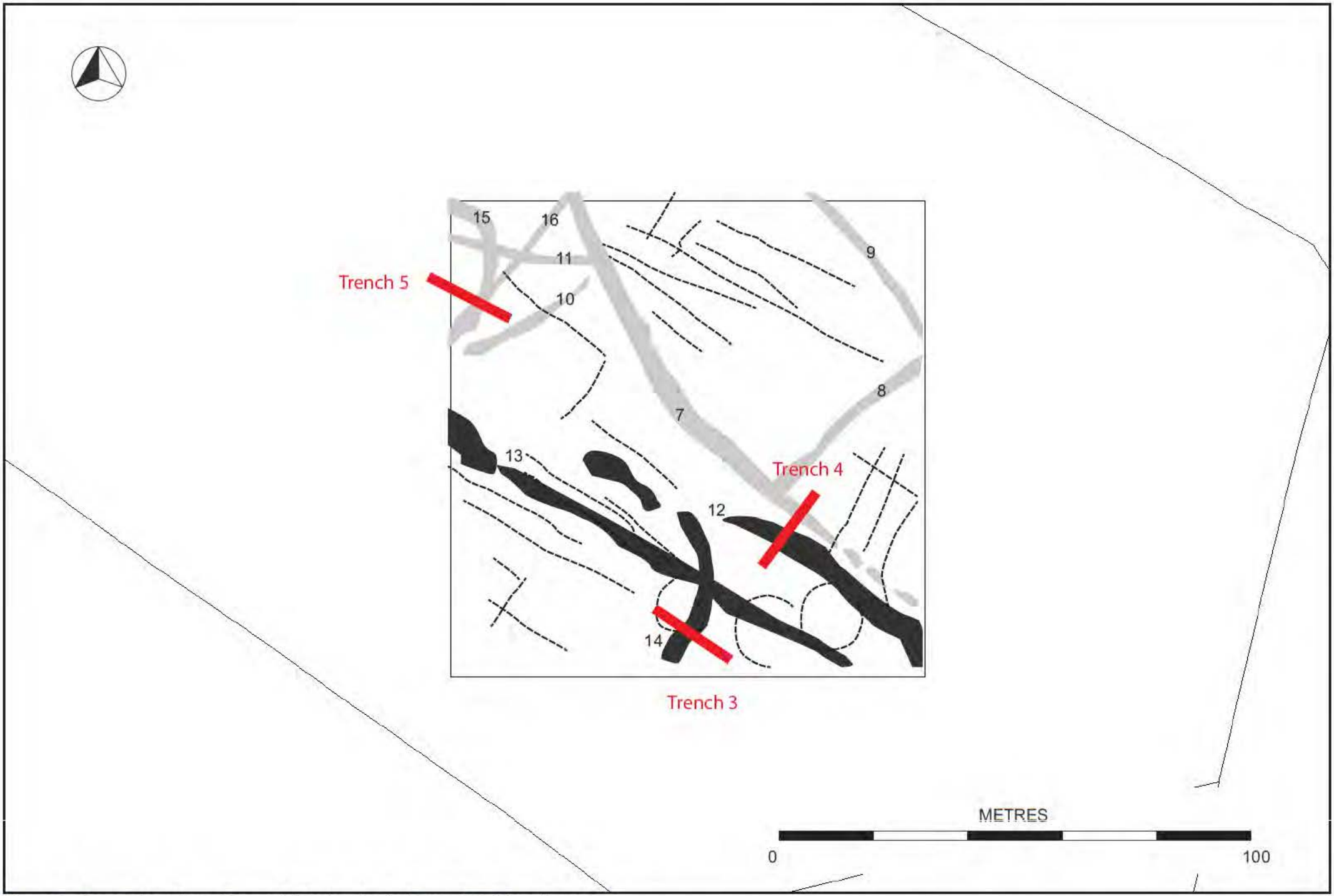

Figure 3 - Zone 2: Location of Gwynedd Archaeological Trust (GAT) Trenches 3 to 5.
Note: feature numbers refer to anomalies identifed during the GAT targeted magnemtometer survey completed in September 2011 (GAT Report 987).
For the general location of Zone 2, cf. Figure 1.

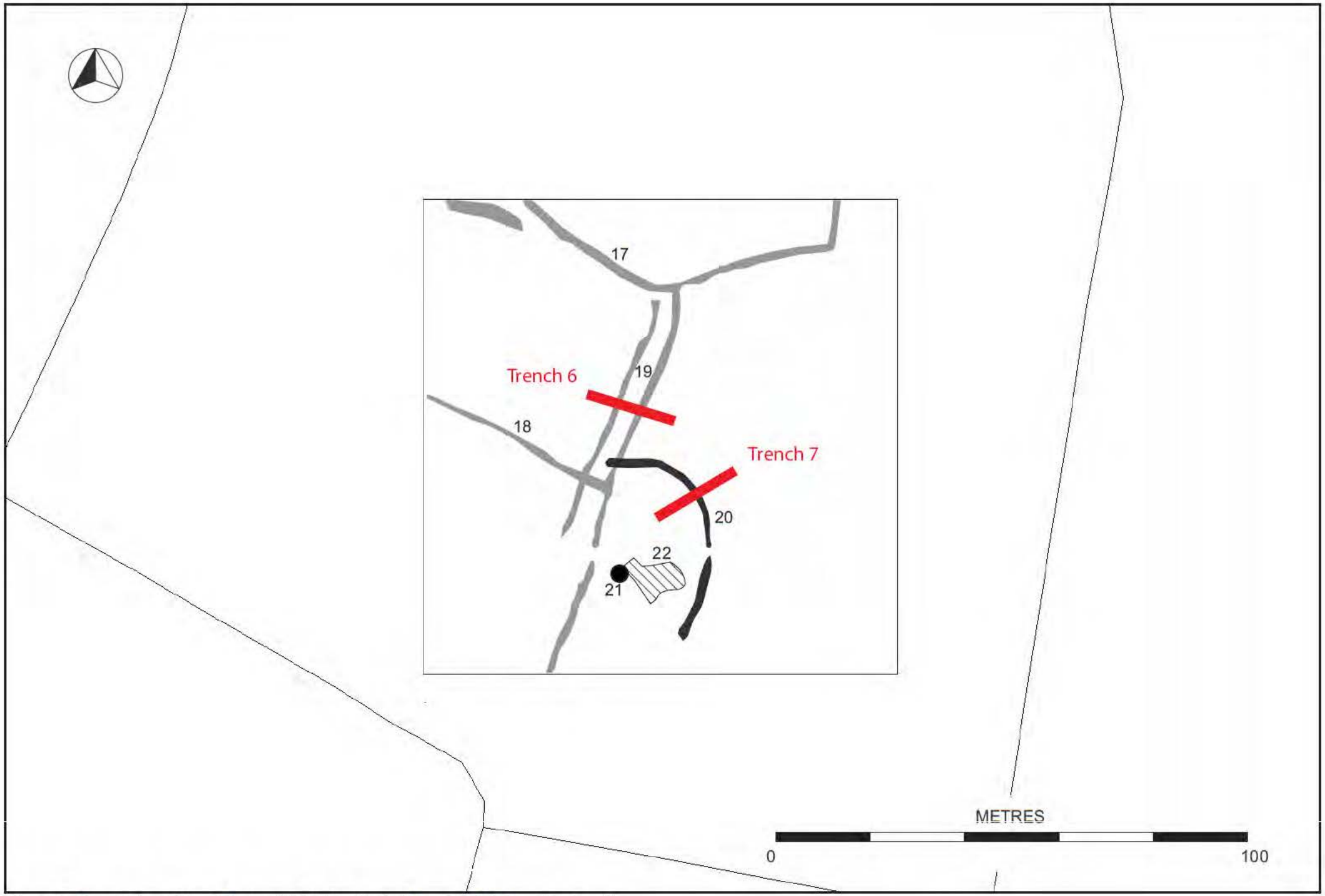

Figure 4 - Zone 3: Location of Gwynedd Archaeological Trust (GAT) Trenches 6 and 7.
Note: feature numbers refer to anomalies identifed during the GAT targeted magnemtometer survey completed in September 2011 (GAT Report 987).
For the general location of Zone 3, cf. Figure 1.

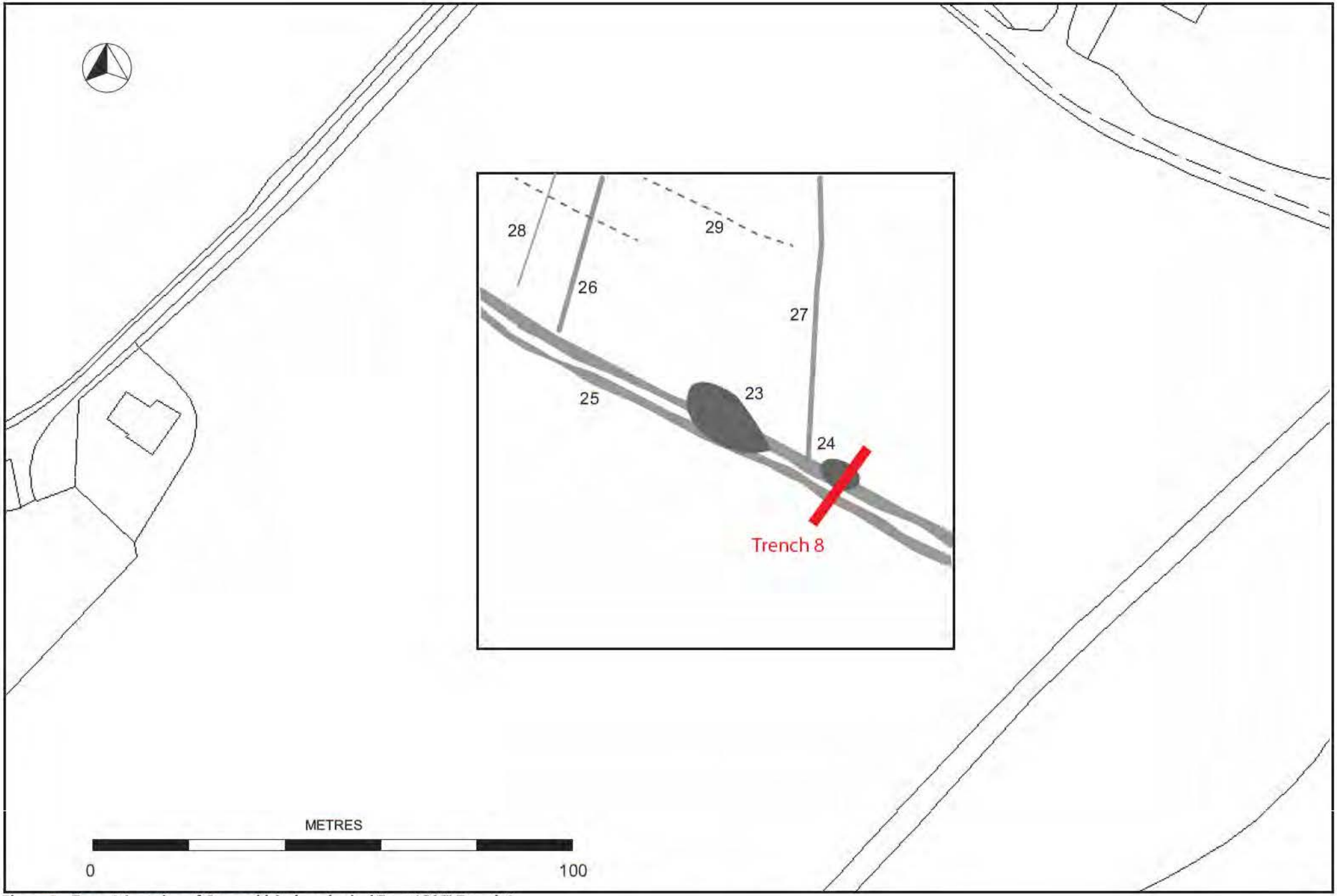

Figure 5 - Zone 4: Location of Gwynedd Archaeological Trust (GAT) Trench 8.
Note: feature numbers refer to anomalies identifed during the GAT targeted magnemtometer survey completed in September 2011 (GAT Report 987).
For the general location of Zone 4, cf. Figure 1.

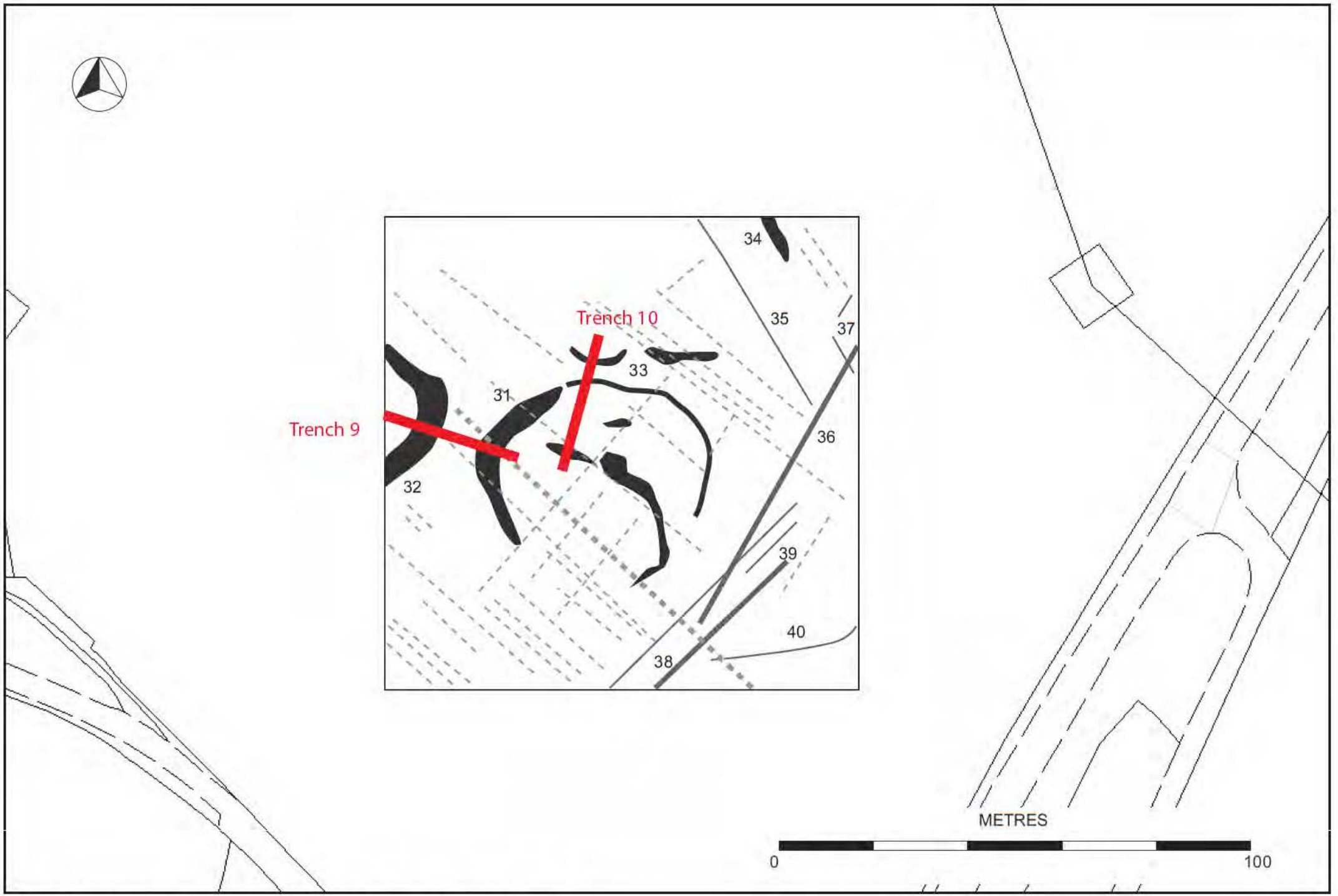

Figure 6 - Zone 5: Location of Gwynedd Archaeological Trust (GAT) Trenches 9 and 10.
Note: feature numbers refer to anomalies identifed during the GAT targeted magnemtometer survey completed in September 2011 (GAT Report 987).
For the general location of Zone 5, cf. Figure 1.

Plate 01: General shot of Zone 01 and the location for Trenches 1 and 2

Plate 02: Large field drain/culvert in Trench 1, viewed from the west

Plate 03: Possible field boundary in Trench 1, with evidence of root burning in feature

Plate 04: Post exavation view of Trench 1, with field drain in foreground and boundary scales

Plate 05: Post-excavtion shot of Trench 2, viewed from the southwest with the field boundary at the location of the scales (cf. Plate 06 for a close up shot of the field boundary).

Plate 06: East-facing section of the shallow field boundary in Trench 2 (cf. Plate 05 for general view of the feature within the trench)

Plate 07: South-facing view of field boundary in Trench 02, sectioned on the left side

Plate 08: General shot of the trenching in Zone 02: Trench 4 is located in the foreground, with Trench 3 in the background (the JCB is positioned within Trench 3)

Plate 09: Post-excavation shot of Trench 3 from the north-west

Plate 10: Post-excavation shot of Trench 4 from the north-east in Zone 02

Plate 11: Post-excavation shot of Trench 5 in Zone 03; no archaeological features found

Plate 12: Post-excavation shot of Trench 6 in Zone 03; no archaeological features found

Plate 13: Post-excavation shot of Trench 7; the field boundary ditch identified was located towards the western end of the trench (cf. Plate 14 for a detailed shot of the feature).

Plate 14: Trench 7 - southeast facing section of the shallow field boundary

Plate 15: Pre-excavation location shot for Trench 8 within Zone 04

Plate 16: Trench 8 - Detail of irregular shaped hollow containing burnt root and manganese. This feature was interpreted in the GAT geophysical survey of Zone 04 as a possible burnt mound (GAT Report 987: Feature 24). The results from the trenching confirmed that it was in fact evidence for root clearance

Plate 17: Pre-excavation shot of Trench 8 from the southwest, area of root burning/manganese clearly visible towards the southern end of the trench (cf. Plate 16 for a detailed image). This feature was initially thought to be a possible burnt mound, based on a geophysical anomaly (GAT Report 987/Feature 24). Trench 8 confirmed the feature was not of prehistoric origin

Plate 18: Post-excavation shot of Trench 9 in Zone 05. Shallow bedrock (shale) was extant in the western end of the trench (foreground of image).

Plate 19: General pre-excavation shot of Zone 05, and location for Trench10

Plate 20: Post-excavation shot of Trench 10 from the northeast

Plate 21: Pre-excavation shot of pit [Context10004] in Trench 10; viewed from the east.

Plate 22: View of pit [Context10004] in Trench10 from the southeast during excavation

Plate 23: View of pit [Context10004] in Trench10 from the southeast during excavation and partial removal of stone fill (Context 10005).

Plate 24: View of pit [Context10004] in Trench10 during the excavation and removal of stone fill (Context 10005) from the southeastern portion of the pit.

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