

# Holyhead to Cwm Reservoir

## Archaeological Assessment



Ymddiriedolaeth Archaeolegol Gwynedd  
Gwynedd Archaeological Trust





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Prosiect Rhif / Project No. G2449

Adroddiad Rhif / Report No. 1303

Prepared for: Black & Veatch Ltd

Written by: Robert Evans & Stuart Reilly

Illustrations by: Robert Evans, Neil McGuinness and John Roberts

Cover Photo: View of Standing Stone in Field A-B 17 (G2449\_028)

Cyhoeddwyd gan Ymddiriedolaeth Archaeolegol Gwynedd  
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Published by Gwynedd Archaeological Trust  
Gwynedd Archaeological Trust  
Craig Beuno, Garth Road,  
Bangor, Gwynedd, LL57 2RT

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Mae Ymddiriedolaeth Archaeolegol Gwynedd yn Gwmni Cyfyngedig (Ref Cof. 1180515) ac yn Elusen (Rhif Cof. 508849)  
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Approvals Table				
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Originated by	Document Author	ROBERT EVANS		21/4/16
Reviewed by	Document Reviewer	<del>JOHN ROBERTS</del> JOHN ROBERTS		21/04/16
Approved by	Principal Archaeologist	JOHN ROBERTS		21/04/16

Revision History			
Rev No.	Summary of Changes	Ref Section	Purpose of Issue
1	Spelling Error 'Meliw'	Throughout	GAPS approval further to comments received.
2	Clarification	3.1.3	GAPS approval further to comments received.
3	Expansion of information	3.1.5	GAPS approval further to comments received.
4	Cross-referencing	3.2	GAPS approval further to comments received.
5	Deletion	3.2.4	GAPS approval further to comments received.
6	Minor additional detail	3.1.6	GAPS approval further to comments received.
7	Text amendment	3.1.7	GAPS approval further to comments received.
8	Re-working text	3.1.8	GAPS approval further to comments received.
9	Text amendment	3.1.9	GAPS approval further to comments received.
10	Insertion of additional information	4	GAPS approval further to comments received.
11	Insertion of additional information	5.1.1	GAPS approval further to comments received.
12	Re-working text	5.1.3	GAPS approval further to comments received.
13	Reorganisation of sub-sections	Throughout	GAPS approval further to comments received.





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## NON-TECHNICAL SUMMARY

*Gwynedd Archaeological Trust was commissioned by Black & Veatch to carry out an archaeological assessment in advance of a proposed water main renewal scheme west of Holyhead. The scheme will measure up to 3.7km in length and is located between an overflow reservoir (NGR SH21798221) and Porthdafarch Road (NGR SH24418209).*

*The study area must be seen in relation to the port of Holyhead, and the rich archaeological heritage of Holy Island. The location of Holy Island within the busy western seaways linking Brittany, Cornwall, Ireland, Wales, Northern England, Scotland and the Viking countries to the east provides an international setting until post-medieval times, when its use as an official port for Ireland became of dominant importance. The port of Holyhead provided easy access in most weather, and recognition from sea was aided by the dominant mass of Mynydd y Tŵr, or Holyhead Mountain.*

*The scheme incorporated three sections with archaeological potential, A to B, B to D and B to E. The majority of the fields accessed in Section A to B and B to D were enclosed by low dry stone walls that were poorly maintained and obscured by a combination of bracken and brambles. In certain locations along this section the dry stone walls were supplemented with post and wire fences. The walkover of Section B to E revealed an undulating landscape of fields of pasture.*

*The landscape around the proposed Holyhead pipeline route was noted to be rich in archaeological remains from the early prehistoric through to post-medieval times. Between 2006 and the 2008 Gwynedd Archaeological Trust completed a large-scale excavation project in advance of a development. The excavation 600m southeast of the current assessment area identified a multi-period archaeological landscape ranging from the Mesolithic to the 19th century.*

*Whilst the number of known archaeological sites identified within the site buffer zone recorded on the Gwynedd Historic Environment Record is limited, the wider area is noted to be extremely rich in remains from the prehistoric to post-medieval periods, and the paucity of known sites within the buffer zone cannot be taken to reflect the likely surviving archaeology in the area, which is probably greater than indicated. Two specific prehistoric (Features 01 to 02) and seven post-medieval sites (Features 03 to 09) were identified within the 50m buffer zone around the proposed pipeline. No further action is recommended for four of these sites,*

*and a basic recording during an archaeological watching brief for the four others. It is recommended that one site is fenced off during ground works.*

*For the scheme as a whole, in areas where pipe bursting or sliplining is the methodology to be employed (Sections A to B, B to D) it is proposed that an archaeological watching brief be carried out during the groundworks. Where open cut trenching is proposed to be carried out, in the eastern portion of the scheme (Section B to E), a programme of archaeological controlled stripping of the pipe trench and comprehensive watching brief of easement stripping, completed in advance of the pipe laying, is recommended.*

# 1 INTRODUCTION

Gwynedd Archaeological Trust (GAT) was commissioned by *Black & Veatch* to prepare a project design for an archaeological assessment in advance of a proposed water main renewal scheme west of Holyhead. The scheme will measure up to 3.7km in length and is located between an overflow reservoir (NGR SH21798221) and Porthdafarch Road (NGR SH24418209). The scheme route is defined on Dŵr Cymru drawings CAF411-5200-CD15360-N-D-T01 to CAF411-5204-CD15360-N-D-T01 (reproduced as Figures 01 to 05). It has not been confirmed which method will be used to replace the existing main. The scheme route incorporates four sections and one compound area, designated as follows:

1. Section A-B: length 2.4km, located between an overflow reservoir (NGR SH21798221) and Plas Road (NGR SH23838173). The existing 12" asbestos cement main, installed in 1966, will be replaced by a new main on the same alignment using pipebursting;
2. Section B-D: length 550m, located south of Plas Road and northwest of Tros y Garreg, between NGR SH23838173 and NGR SH23988180. The existing 12" asbestos cement main, installed in 1966, will be replaced by a new main on the same alignment using a combination of pipebursting and sliplining (a portion of the route will also be abandoned); and
3. Section B-E: length 0.75km, located between Plas Road (NGR SH23838173) and Porthdafarch Road (NGR SH24418209). This will be on a new alignment, with the existing main abandoned. The new alignment will be completed using an open cut for a 315mm HPPE pipe.
4. A compound will be located along the scheme to the south-east close to Porthdafarch road at Cae Gwyn, centred on NGR SH 24418131.

The scheme will mostly traverse semi-improved land, except for part of Section B-D that will run through an urbanised area.

The assessment was completed between December 2015 and February 2016.



The assessment has been completed in accordance with the guidelines specified in Welsh Office Circular 60/96 *Planning and the Historic Environment: Archaeology* and in the Chartered Institute for Archaeologists *Standard and Guidance for Historic Environment Desk-Based Assessment* (Chartered Institute for Archaeologists, 2014). The project has been archived in accordance with the Royal Commission on Ancient and Historic Monuments in Wales 2015 *Guidelines for Digital Archives*. Prior to completion of the assessment, Gwynedd Archaeological Trust prepared a project design that summarised the scope and methodology used for the assessment (December 2015; Appendix I).

The assessment is located with the Gwynedd Archaeological Planning Services. The content of this report must be approved by the Gwynedd Archaeological Planning Services Archaeologist (GAPS).

## **2 METHODOLOGY**

### **2.1 Assessment (Desktop Study)**

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

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

1. The regional Historic Environment Register (HER, Gwynedd Archaeological Trust, Craig Beuno, Garth Road, Bangor, Gwynedd LL57 2RT) was examined for information concerning the study area. This will include an examination of the core HER, the 1:2500 County Series Ordnance Survey maps and any secondary information held within the. A list of archaeological receptors was prepared for the report using information from the HER; this included information sourced from within a nominal 12m wide easement along the route, based on the expected direct impact from scheme works, as well as a wider 100m assessment buffer to examine any potential indirect impact. This information was used to prepare a gazetteer and included information from the walkover survey of the location of any previously unidentified receptors;
2. The National Monuments Record (NMR RCAHMW, National Monuments Record of Wales, Plas Crug, Aberystwyth SY23 1NJ) was checked for sites additional to the HER.
3. An On-line catalogue search of the National Library of Wales was carried out;
4. Archive data and historic maps, e.g. Penrhos Estate maps, were consulted in the regional archives at the Anglesey Archives (Industrial Estate Rd, Llangefni, Ynys Mon LL77 7JH) and at the Bangor University Department of Manuscripts; and
5. Aerial Photographs from the ADAS Aerial Photography Unit, Cambridge (Date: 17/06/1992; Film No. 555; Frame No. 252) and the National Monuments Record were examined.

## 2.2 Walk-Over Survey

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

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

The walkover survey was completed on 18/12/2015 and update on the 23/2/2016. A descriptive record was maintained on GAT *pro formas* along with a photographic record. A complete table of metadata with details of each image, including descriptions and directions of shot was produced using Microsoft Access; a total of 98 images were taken (archive ref. G2449\_001 to G2449\_098; cf. Appendix II).

## 3 RESULTS

### 3.1 Desk-Based Assessment

#### 3.1.1 *Prehistoric Archaeology*

The study area must be seen in relation to the port of Holyhead, and the rich archaeological heritage of Holy Island. The location of Holy Island within the busy western seaways linking Brittany, Cornwall, Ireland, Wales, Northern England, Scotland and the Viking countries to the east provides an international setting until post-medieval times, when its use as an official port for Ireland became of dominant importance. The port of Holyhead provided easy access in most weather, and recognition from sea was aided by the dominant mass of Mynydd y Tŵr, or Holyhead Mountain.

Evidence for activity from Neolithic times (*circa* 4000 BC to 2500 BC) to the present is abundant within the northern part of Holy Island. The two Neolithic tombs of Trefignath and Trearddur lie close to the study area. Four Neolithic polished stone axes have been found in the northern part of Holy Island (Lynch 1991), including two Graiglwyd axes found when excavating a hole for a turntable railway near Kingsland in 1926 (Primary Reference Number (PRN) 2507; SH 25048165), and one axe of unspecified stone found at Penllech Nest (PRN 2506, SH 25108160).

Two Bronze Age barrows were prominently situated on top of Holyhead Mountain (SH21908290), though little can be seen of them now, and three barrows lay close to the shore at Porth Dafarch (SH23408010), whilst others were situated at Garn (SH21108250) and Gorsedd Gwlwm (SH22708160). A barrow was recently discovered under the early Christian cemetery at Tŷ Mawr (SH25208135). The Tŷ Mawr standing stone is one of several such stones in this part of Holy Island; there is another to the south, next to Stanley Mill (SH 26647888), and a rare pairing of two stones just over 3m apart, to the west at Plas Meilw (SH 22708090) (Lynch 1991).

Between November 2006 and the end of June 2008 Gwynedd Archaeological Trust completed a large-scale excavation project funded by the Welsh Government in advance of a development. The excavation was centred on SH25508080, 600m southeast of the current assessment areas and identified a multi-period archaeological landscape ranging from the Mesolithic to the 19th century. The major sites included a rectangular early Neolithic building of national and international importance that seems to have been aligned on the Trefignath Chambered tomb (PRN 2500), 100m to the east. The building was interpreted as a single structure c.16m in length and up to 7m in width, aligned ENE-WSW. The ground plan



appeared to represent a tripartite building with two internal partitions, a design typical of the Early Neolithic. The gable ends were composed of post-holes joined by foundation trenches, and there were hints of a porch on the eastern end.

Trenches to hold plank walling were also typical of this class of monument, and the eastern third of the structure was defined by such a trench. The rest of the walls were less well preserved, but were marked by more or less continuous lines of post-holes. Inside the building were several fire pits, some of which seemed to post-date internal features of the building. Other pits cut through the eastern internal partition and it seemed possible that this building had a roofed and an unroofed phase of use.

The number of finds recovered both from a relict ground surface and from features in the building was particularly high for this type of site: pottery was mostly vesicular Irish Sea ware typical of the Early Neolithic in this region; the lithic assemblage was dominated by local black chert, with flint being relatively scarce; there were also several grinding stones and worked crystal quartz in some quantity.

About 7m to the north of the building was a pit containing several pottery sherds and a large unfinished jet bead. Jet beads are not known from the Early Neolithic, and are generally assumed to be Bronze Age at the earliest; however, this bead is unusually large and it is possible that it is late Neolithic in date.

The discovery of a Neolithic structure is of national significance, but the relationship in this case between the building and the tomb makes it particularly important. The chambered tomb was fully excavated in the 1970s (Smith 1987), but is poorly dated. However, it is associated with the same Early Neolithic pottery as the building and it is possible that the first phase of the tomb pre-dated the building, which was aligned on this monument. The subsequent development of the tomb reflected the alignment of the building as more chambers and a long cairn were added.

Nearly 500m north-west of the building lay evidence for less substantial settlement in the form of a scatter of Early Neolithic pottery and lithics. These were found in a hollow with stake-holes and fire sites. A microlith and some Bronze Age pottery suggested the use of the hollow both before and after the Early Neolithic but most of the activity seemed to have been from this period. Most of the finds came from a relict soil layer and seemed to be largely *in situ*, representing an undisturbed occupation surface. The settlement may have been seasonally or occasionally occupied. Similar casual occupation appears to have continued in the middle Neolithic on part of the site about 200m north of the Early Neolithic building. A variety of pits and post-holes were found, at present only dated to the middle Neolithic by a

fragment of Peterborough ware. Although most of the features were scattered, two lines of post-holes could imply a structure here as well.

What appears to have been a Bronze Age ritual complex was located at the northern end of the site on a low gravel platform. This complex consisted of a ring ditch, presumably indicating the presence of a barrow; a roughly figure-of-eight shaped ditched enclosure and the remains of a multiple cist barrow.

A nearly perfectly circular ditch, c 12m in external diameter, lay on the south-eastern edge of the plateau. The circularity of the ring ditch strongly suggested that it surrounded a Bronze Age barrow, though if this were the case the barrow material had been removed through erosion. There was a lack of dating evidence, but the proximity of other significant Bronze Age monuments makes this interpretation likely. No burial cists were found, but this could be due to the heavy truncation of the area or the former presence of cists only in the barrow mound, not dug into the ground below.

To the north of the ring ditch was a small enclosure defined by a deep ditch. The enclosure was shaped like a figure-of-eight measuring about 12m by 8m, with ditches up to 1m in depth. The steepness and lack of erosion on the sides suggest that the ditches had been backfilled soon after being dug. The monument had two phases and the figure-of-eight shape never existed as a functional form. The first phase was probably a small circular enclosure less than 6m in external diameter but with a ditch about 1m deep. Part of this ditch was infilled and the monument was extended to a D-shaped enclosure, with similarly substantial ditches. Several fragments of prehistoric pottery were recovered from the secondary ditch fill, which are provisionally dated to the Bronze Age period, but one has corded decoration and they may prove to be Neolithic. This monument is difficult to classify in terms of its function and purpose. With an absence of funerary material, it is best interpreted as a ceremonial monument associated with the other monuments on the plateau.

On the north-western edge of the plateau was a group of eight cists. Three were small, but the other five were fairly large, measuring up to 1.3m by 0.95m. The cists were built of schist slabs and had capstones but no basal slabs. All the large cists still had their capstones securely in place; in most cases these were massive single slabs. Few artefacts were found, but two cists each contained a single pot. No trace of burnt bone was found, so it is almost certain that these cists had contained crouched burials, the bones having since leached away.

Although they did not form a perfect circle all the graves seemed to have been laid out in respect of each other within a very limited area and were presumably constructed over a

fairly short period. Initial examination of the pots indicates that these cists were early Bronze Age and the cists fit well within that tradition. At this period there were flat cist cemeteries as well as cists under barrows. However, if this was a flat cemetery it does not explain why the graves are so densely packed. It is more probable that they were intended to be covered by a barrow and indeed could all be enclosed by a circle no more than 10m in diameter; a very reasonable size for a barrow. The layout also suggests that all the larger cists at least were in place before the barrow covered them. This interpretation would indicate an example of a multi-cist barrow. These have previously been unknown in North Wales, although a small number have been found in South Wales (Savory 1972), and therefore represents an entirely new site type for the region.

Bronze Age activity on the site was not restricted to the ritual complex. Elsewhere there existed groups of small bowl-shaped pits filled with midden material. All were Bronze Age, one produced a stone hammer or mace head and all contained fairly large sherds of pottery but no complete vessels.

One of these pit groups was close to a timber roundhouse situated near the shores of a small marsh. The roundhouse consisted of two concentric rings of post-holes, the outer ring measured over 11m in diameter, but was severely truncated. There was no dating evidence for the roundhouse and even charcoal was rare so it may be impossible to obtain a radiocarbon date. This is unfortunate as it would be very valuable to determine the chronological and spatial relationship of the pit groups to the focus of settlement. Elsewhere another group of charcoal-filled pits were found next to a small sub-circular structure, but radiocarbon dating will be necessary before these features can be allocated to a period.

There were also a small number of burnt mounds and potential troughs lacking a mound. One mound was very small, only 4.5m long, with a small, circular, probably clay-lined pit. Another was very much larger and had three pits, one probably an earth oven rather than a boiling trough. There was also a large, rather irregular pit 1.6m deep. This was irregular due to water erosion in its base and seemed to be a well dug to tap the groundwater. As usual there were few finds from the burnt mounds, but a leaf-shaped arrowhead was found beneath the smallest mound, perhaps hinting at a Neolithic rather than a Bronze Age date.

Despite the wealth of other features it was the Iron Age remains that absorbed most of the time and effort on the site. Positioned where a roundabout was planned, and where disturbance could not be avoided, was a roundhouse settlement (site 11a), consisting of four large stone-built roundhouses and numerous other structures. Although not projecting above ground, and previously unknown, this settlement was remarkably well preserved at foundation level. It was built on the edge of a marsh, which repeatedly flooded. To

counteract the flooding the houses were built on stone platforms and considerable areas were covered by deposits of stone to create dry courtyards. One of the earliest houses appears to have been constructed on a substantial stone platform on which a fire had been previously lit. This house was demolished to foundation level before two later houses were built but may have been in use contemporary with another house that continued in use into the later phase. As well as the four roundhouses there were subsidiary structures, one of stone and others of timber. One of the latter contained a series of hearths and a stone-lined trough, suggesting industrial activity. On the western limits of the settlement (site 11b) were a group of eight post structures, probably granaries, associated with another, slighter stone-built roundhouse. These overlay an extensive area of burnt stone associated with a large circular structure. This may have been another, earlier roundhouse but a 6m wide gap in the south-eastern arc of its wall and the quantity of internal features suggest a non-domestic function.

At its earliest phase the settlement had a stone wall along one side, which seems to have joined one of a series of stone banks which were designed to protect against flooding. There was also an impressive megalithic wall running through the middle of the settlement that was used and extended throughout the life of the site. There was a ditched entrance into a large courtyard area defined by the walls, but the settlement as a whole appears not to have been enclosed.

The houses were particularly large for stone-built roundhouses with internal diameters up to 10m. The walls were massive and in several cases had been successively widened. At least two of the houses had opposing entrances and all but one had an entrance on the north-west side, facing the prevailing winds. This, and features emphasising the entrances, suggest factors other than practical considerations influencing the layout of the houses. The earlier structure to the west also had a north-west entrance, as well as the large gap in the south-eastern wall.

The large size of the houses and the near complete absence of Roman artefacts suggest the settlement did not continue in use into the Romano-British period. The finds are not diagnostic. There is a fine collection of spindle whorls and other holed stones, along with other intriguing stone objects but nothing that can be closely dated. A comprehensive series of radiocarbon dates will be obtained, but present evidence would suggest the principal phase of use was within the Iron Age, with perhaps origins in the Late Bronze Age.

About 130m north-east of the main settlement, sheltered behind a hill, were two structures (site 12) interpreted as clay-walled roundhouses from the style of drains within them, although the walls were very poorly defined. Both had well-preserved stone-lined drains, but

one had a particularly complex system of drains associated with pits suggesting activities requiring the usage and drainage of considerable quantities of liquid out of the structure.

### *3.1.2 Late Prehistoric and Roman Archaeology*

Holy Island has several notable Iron Age and Roman period sites. Holyhead is dominated by its mountain, to the north-west of the town. The summit is enclosed by a stone rampart wall forming the hillfort of *Caer y Tŵr* (SH 219 829). A much smaller promontory fort, *Dinas* on the south coast of Holy Island (SH 223 794), is probably also Iron Age. This promontory is surrounded by high cliffs and a low bank runs along the edge of the chasm, which separates it from the mainland. These forts were probably defensive refuges, and the population lived in more hospitable areas. Towards the foot of the south-western slope of Holyhead Mountain are a group of huts near another *Tŷ Mawr* (SH 211 820) and a similar hut group overlies the Bronze Age barrows at *Porth Dafarch* (SH 234 801). Excavation at *Tŷ Mawr* demonstrated that the stone huts belonged to the 1<sup>st</sup> millennium BC, but with some activity in the 3<sup>rd</sup> century AD, as well as earlier prehistoric and post-Roman settlement evidence. The finds from *Porth Dafarch* dated the huts to the Roman period (Lynch 1991, RCAHMW 1937).

A Roman fort was constructed at Holyhead towards the end of the 3<sup>rd</sup> century or later, as a naval base against Irish raiders. A Roman coin hoard was found in the area in 1710. The coins were buried in a brass vessel, and all dated to the 4<sup>th</sup> century (PRN 2503, SH 2600 8100).

Evaluation trenches dug prior to the *Tŷ Mawr* excavation at *Parc Cybi* indicated a stone-built roundhouse settlement in a field to the north-east of *Lôn Trefignath* (PRN 14,599). It is probable that this is a continuation of the main prehistoric settlement, although finds of Roman pottery suggest a possible later phase of activity. Later settlement is also suggested by stone structures to the east, one at least having a straight rather than a curving wall. These were associated with rectangular timber structures, pits, hearths and probable yard boundaries. Part of this complex has been investigated, but no diagnostic finds were recovered.

### 3.1.3 Prehistoric Sites

As we have seen, the wider area of the proposed pipeline route from Holyhead Sports Centre to Cwm covers a well-studied area of known prehistoric and Roman significance, and this indicates the presence of multi-period dispersed prehistoric and Roman activity across the local landscape. However an examination of the Gwynedd Historic Environment Record (HER) has confirmed that there are no known archaeological sites directly along the proposed scheme route. There are, however, a large number of sites in proximity to the scheme. These are shown on Figure 07, and listed in Appendix III. The sites include those listed below which are close to the proposed pipeline route, the term PRN referring to the Primary Reference Number by which the site is known on the HER:

1. PRN 1756 – Field system associated with AN 016 hut settlement, located from 130m west of the western end of Section A-B at NGR SH21488225
2. PRN 1758 – Bronze Hoard Findspot, located 220m northwest of the start of Section A-B at NGR SH21668227
3. PRN 3806 – Hut Circle Settlement, located 30m northeast of Section A-B at NGR SH22008200
4. PRN 5667 – Flint Axe Findspot, located 140m northwest of Section B-D at NGR SH24008200
5. PRN 3807 – Standing Stone, located 170m to the southwest of Section B-E at NGR SH24008100

Sites 3 to 5 noted above are given only four figure grid references so cannot therefore be considered precise locations, meaning that the distances from the proposed route must be considered approximate only.

The south eastern end of the scheme (Section B-E) is located in close proximity to a multi-period archaeological activity identified by GAT as part of a programme of archaeological assessment and evaluation for a proposed development scheme (GAT Project G2163, assessment report 968 and evaluation report 1050). The archaeological evaluation included a geophysical survey followed by 44 targeted trial trenches, which enabled a preliminary characterisation of the archaeology. The trenching confirmed that there was prehistoric activity in the development area: two burnt mounds of probable Bronze Age date were found in Cae Glas, 1.07km east of the Holyhead Sports Centre (PRN 34742 and 34743; NGR SH26408016 and SH26438031), as well as a possible prehistoric roundhouse and parts of a field system, 230m to the southwest of the Sports Centre (PRN 34737 & 34738; NGR SH24428061 & SH24398062).

Eight Scheduled Ancient Monuments (SAMs) have been identified within 2km of the proposed pipeline route, and these are noted in Section 3.1.7



### 3.1.4 *Medieval and Post Medieval Archaeology*

Holy Island was of considerable importance in the early Christian period, with the *clas* site of Caer Gybi large enough to attract the attention of the Vikings in 961 (Edwards 1986, 24). The foundation of this monastic community by St Cybi is traditionally dated to the mid-6<sup>th</sup> century AD. There is an unusual concentration of early Christian sites known, or suspected, on the island. These include a cemetery of long-cist graves, dating to approximately 6<sup>th</sup> to 8<sup>th</sup> century AD, discovered during the construction of the A55 dual carriageway, to the north-west of Tŷ Mawr Farm (PRN 11048; NGR SH 25078095). At this site the graves were located around, and cut into, the remains of a Bronze Age barrow. Another cemetery, of similar date, lies to the south-west of the study area, at Tywyn y Capel, the site of a medieval chapel on the shore of Trearddur Bay (Edwards 1986, 31). There were early Christian cist burials found at Porth Dafarch. Tŷ Mawr excavations by a small, but neatly laid out long cist cemetery on top of a low rounded hill. Twenty three long cist graves were laid out in 4 rows, the number of graves per row varied from 9 to 3. The western row with only 3 graves appeared unfinished. Most of the graves were aligned nearly east-west, although the northern most graves had a more north-easterly alignment. There was a rough symmetry across the cemetery around an east-west axis. The careful layout of the cemetery suggested deliberate planning of the grave locations. The length of the graves varied between 2.2m and 0.8m reflecting a complete population with all sexes and ages. Most of the cists had the sides and bases lined with local schist slabs, but others had indications of entirely or partly wooden cists. Four cists contained human remains. These were generally very fragmentary but one grave contained sufficient to define the usual extended inhumation with head to the west. One feature, the size and shape of a grave cut and located where the layout suggested a grave should be, proved to be full of charcoal and metal-working debris. Three other features, initially identified as corn driers, were also located on the hill, though it is possible that one or all of these were also used in association with metal-working.

The development of the parochial system in the 12<sup>th</sup> century saw Holyhead church change from a *clas*, or 'mother' church to a collegiate one. Responsibility remained, however, for a number of small chapels in the area, usually with associated wells, including Capel Ulo, and Capel Gorlas.

The official use of Holyhead as a port increased in the reign of Elizabeth I, when it became the departure point for the Royal Mail to Ireland. During Oliver Cromwell's Commonwealth

Holyhead was garrisoned and regular packet boats sailed to Ireland (Hughes and Williams 1981). The port subsequently grew until, by the early 19<sup>th</sup> century, it was the principal port for Ireland.

During the 17<sup>th</sup> century the road across Anglesey to Holyhead was probably just a rough track, but the forerunner to the present bridge at Four Mile Bridge already joined Holy Island to Anglesey by 1578 (Hughes and Williams 1981). One of the earliest maps of Anglesey, published by Speed in 1630, marks Pont-Rhydbont (the bridge at Four Mile Bridge), and just to the west of it is Llansanfraid (St Bride's or Trearddur Bay), the only place marked on Holy Island, other than Holyhead itself (Evans 1972).

In 1765 the road from the Menai ferries to Holyhead was turnpiked, and much improved (Ramage 1987). However, transport was still difficult until Telford built his new London to Holyhead road (the A5), which was opened in 1823 (the suspension bridge across the Menai Strait was opened in 1825). The Stanley Embankment (Grade II listed, ref: 20074) carried the road over Afon Lasinwen, the tidal strait between Holy Island and Anglesey, supplementing the bridge to south, and replacing a number of fords. The embankment was designed by Thomas Telford, started in 1822 and opened in 1823; its construction created the body of water now referred to as the Inland Sea. In 1846-8 the railway line was constructed along the southern side of the embankment (GAT 2004, 251). Major improvements were also made to the harbour throughout the 19<sup>th</sup> century, first by Rennie and Telford who improved the inner harbour, and later the outer harbour was created by constructing a new breakwater (Hughes and Williams 1981). This was a massive undertaking, designed by J M Rendal and completed by J Hawkshaw, it used some 7 million tons of stone and took nearly 30 years to construct, during which time the population of Holyhead rose from just over 2000 to nearly 9000.

The coming of Telford's road and the railway significantly changed the landscape of Holy Island, and this was, in part, accompanied by a change in field layout, when many small holdings and smaller fields were removed and new rectangular field systems laid out. Some common land was enclosed by Private Act (Carr 1982), such as the small areas of common land around Tŷ Mawr enclosed in 1861 (Anglesey Archives, WPE 68/128).

Much of the land around the town of Holyhead, and that surrounding the study area, were owned by the Penrhos estate. The owners took the surname Owen in the early 16<sup>th</sup> century (Richards 1940), but in 1763 Margaret Owen, the heiress to Hugh Owen, married John Stanley and the estate passed to the Stanley family of Alderley (Ramage 1972, 1987, Richards 1940).

### 3.1.5 Cartographic Evidence

Good cartographic evidence for the wider study area survives from the third quarter 18<sup>th</sup> century to the present day over much of the study area. During that period much of the surrounding land was the property of the Owens and then the Stanleys of Penrhos. Penrhos estate maps survive from 1769 (Bangor University Archives; Penrhos II 772), 1810 (*ibid.*; Penrhos III 209) and 1817 (*ibid.*; Penrhos II 803), although little additional information was obtained from them. The Lligwy Estate owned a portion of the land between sections A and B, and the field boundaries present are shown on an estate map of 1783 (Bangor University Archives, Lligwy MSS 1420; Figure 08). This map shows significant variation to what was shown on the later tithe map of 1845, and the cartographic stylised low hills shown within the fields suggests an undulating landscape with rock outcrops.

The Holyhead Tithe Map of 1845 (NLW) shows the route of the whole pipeline clearly, with the field boundaries present at that time (Figure 09), and provides a valuable indication of the historic landscape at that time. Six landowners were identified as holding land along the pipe line route, whose holdings are overlaid on Figure 09. Two major local landowners Lord Stanley of Alderley, one of whose estates was centred nearby at Penrhos, and Lord Boston of Plas Llanidan and Lligwy, owned most of the land. Eleanor Vickers owned the property of Mynydd Evan (this is noted as being 'Mr. Jones Land on Figure 08), except for a small parcel within it which was the property of Jesus College, Oxford, Rev. John Owen Jones held the land of New Haven at the north east end of the scheme, and Frank William Fisher held Gors to the north of the scheme. This mixture of large scale estate ownership and smaller parcels of land held by lesser landowners is typical of the area close to Holyhead.

The farm of Gors-y-Tŵr (NGR SH 22868223) is shown on the tithe map of 1845, but is then named Waen Gron (Feature 08). It was called Gros-y-Tŵr on the 1<sup>st</sup> edition Ordnance Survey Map of 1889 (Figure 10), before gaining its current name, which is shown on the 2<sup>nd</sup> edition map of 1900 (Figure 11). It is possible that the 'Gros' shown on the 1<sup>st</sup> edition OS map is in fact a typological error. The site lies within the buffer zone 15m north of the proposed easement.

Field names indicated on the tithe apportionment associated with the map also give some indication of land use. The use of the term *llain* is suggestive of the presence of former strip fields which may be medieval in origin, which is noted on field 872 *Cae llainau*. Field 502 *Bryn yr wyn* may formerly have been woodland. The names *Cae rhedyn* (Field 515) and *Cae Gwenyn* (Field 516) refer to grasshoppers and bees, giving an insight into the wildlife

present in the 19<sup>th</sup> century, and possibly beekeeping. Most of the named fields are however geographically descriptive, and many fields are not named at all in the apportionment.

Modern style mapping of the area commenced with the 1<sup>st</sup> edition 25 inch Ordnance Survey map of 1889, which also shows Holyhead expanding as a port (Figure 10). It also shows that the reservoir had been built by this time at the western end of the scheme, on Field 511 as shown on the tithe map.

This development of Holyhead continues at a significant rate through the 20<sup>th</sup> century, although the open field and landscape portions of the route undergo only a limited amount of development (Figures 11-12).

### *3.1.6 Location and Geological Summary*

Holy Island, or Ynys Gybi, is located off the western coast of Anglesey, to which it is joined by the Stanley Embankment, and also by the bridge at Four Mile Bridge (Pont Rhyd y Bont). Holyhead (Caer Gybi) is the principal town on Holy Island, and the proposed development site lies to the south of the town, on the west side of Kingsland Road, that links Trearddur Bay with Holyhead.

The landscape is generally rocky, and partly corrugated with north-west to south-east aligned ridges. In between the rock outcrops the land has been improved and drained, and much of this land is classified as Brown Earth. These are relatively fertile soils, capable of supporting arable crops, and were frequently chosen for settlement in the prehistoric period. The land lies between 20m and 30m OD.

A pollen study was carried out to the north-west of Trefignath burial chamber (Greig 1987), approximately 1.15km east of the study area. This suggested that the Boreal period (7000 to 6000 BC) vegetation was of a scrubby sub-arctic type. The woodland developed in the usual sequence, from open woodland with birch to denser, mixed oak forest, but with an unusual amount of willow. The climax forest contained oak and elm with hazel as an under-storey. A band of peat, with little pollen survival due to the drying out of the bog, was dated to the start of the Neolithic period (4000 to 2500 BC). The band contained charcoal and other evidence for burning, suggesting forest clearance in the immediate area. When the pollen record continued it showed that the forest had been replaced by grassland and arable fields. Additional pollen records obtained during the recent excavations at Tŷ Mawr to the east of the study area confirm this analysis.

### *3.1.7 Statutory and Non Statutory Designations*

The pipeline route is not located within a landscape of outstanding or special interest in Wales (Cadw/ICOMOS 1998). There are no registered Parks and Gardens along the scheme route (Cadw/ICOMOS 1998).

Eight Scheduled Ancient Monuments (SAMs) have been identified within 2km of the proposed pipeline route, and these are noted below.

1. AN011 – Trefignath Burial Chamber, located 1.15km east of the Holyhead Sports Centre at NGR SH26207980;
2. AN012 – Tŷ Mawr Standing Stone, located 610m east of the eastern end of the scheme at NGR SH 25398095
3. AN016 – Holyhead Mountain Hut Circles, located 570m west of the start of Section A-B at NGR SH 21278207
4. AN017 – Penrhos Feilw Standing Stones, located 1.23km south of Section A-B at NGR SH 22708094
5. AN019 – Caer y Tŵr prehistoric Hillfort, located 530m north of the start of Section A-B at NGR SH21908290;
6. AN033 – Plas Meilw Prehistoric Hut Circle, located 1.3km south of Section A-B at NGR SH21908290.
7. AN092 - Tre-Arddur Hut Group, located 1.74km southeast of the Holyhead Sports Centre at NGR SH26207980.
8. AN034 – Port Defach Hut Settlement, located 1.23km southwest of Section B to F at NGR 23408010

There are no listed buildings within the buffer zone of the pipeline route, the nearest being the well Fynnon y Wrach, located 180m north of Section A-B (Grade II Listed Ref: 20077; SH 22328226), and Tan y Cytiau (Grade II Listed Ref: 20081; SH 21338205) located about 520m west of Section A-B. There are further listed buildings within the town of Holyhead itself, but these are all at least 300m north and east of the pipeline route.

Sites noted on the Gwynedd HER within the buffer zone are shown on Figure 07 and listed in Appendices III.

### *3.1.8 Environmental Remains and Soil Morphology*

The potential for the survival of environmental remains on the site is considered to be moderate, as wetland areas do appear to have been encountered on the pipeline route. They are less likely to be encountered where the ground impact of the works is limited, due to the 'sliplining' technique employed during the construction works. The value of environmental remains in previously undisturbed ground that will be open cut is unknown, but if much in the way of peat deposits is encountered, a sampling strategy will be required to deal with this.

A palaeoenvironmental survey for peat deposits is often considered for open cut lengths of schemes such as Section B-E on this scheme. As the archaeological walk-over does indicate wet areas such a survey may be required if significant deposits are encountered.

This would usually include transectional coring of a targeted area, completed by a specialist, who would analyse the cores and complete an assessment report.

### *3.1.9 Artefactual Potential*

There is considered to be some potential for the survival of artefactual remains from the site from the prehistoric to post-medieval periods. Whilst early archaeology has not been located on the pipeline easement itself, within the immediate location of the water main renewal route and from the surrounding area a very significant amount of prehistoric and Roman archaeology has been encountered, so prehistoric and Roman artefacts may be recovered. Medieval settlement and ritual activity from the early medieval period is also known from the wider area around the route, therefore finding medieval and post medieval artefacts has to be considered moderately likely. However the limited amount of significant intrusive groundworks may reduce the likelihood of this in the sliplining and pipe bursting areas. Therefore it is on Section B-E that there is the greatest likelihood of artefact recovery, although it is possible in other areas.



### *3.1.10 Aerial Reconnaissance*

Two black and white vertical aerial photographs taken by the RAF on 13<sup>TH</sup> August 1945 (106G/UK 655 Frames 3348 and 3350) were examined in detail. These were sharp images and showed the pipeline route, along with the field systems, clearly. Whilst it showed a landscape without some of the westward and southward expansion of the town of Holyhead, and additional elements of the field systems, no additional archaeological features were observed. The presence of rock outcropping, between which archaeological features might be preserved, was particularly apparent, particularly just to the south of the scheme. A colour vertical image, taken on 17<sup>th</sup> June 1992 (ADAS, Film 555, Frame 252) shows modern development, both with the provision of new infrastructure and housing development, but again no additional archaeological information was identified.

LIDAR 2m DTM data from 2014 was examined for the scheme, although information was absent for the southern quarter of the scheme. No new archaeological information was recovered, although the topography of the area was clearly defined.

### 3.2 Site visit and walk over

The walkover survey was completed on 18/12/2015 for Sections A-B and B-D, while Section B-E was completed on 23/02/16 and walked along the proposed route. A descriptive record was maintained on GAT *pro formas* along with a photographic record. The route sections and field numbers are shown on Figure 01.

The walkover survey was divided into three sections, with a site compound location subsequently identified :

- A-B had a length of 2.4km, that extended from the overflow reservoir (NGR SH21798221) to Plas Road (NGR SH23838173);
- B-D had a length of 550m located south of Plas Road (NGR SH23838173) and northwest of Tros y Garreg (NGR SH23988180);
- B-E had a length of 0.7km, located between Plas Road (NGR SH23838173) and Holyhead Sports centre (NGR SH24008205). This will be on a new alignment, with the existing main abandoned; and
- A compound will be located along the scheme to the south-east close to Porthdafarch road at Cae Gwyn, centred on NGR SH 24418131.

### 3.2.1 Section A-B

Section A-B comprised 20 fields, seven of which were not assessed (Figure 01): Fields 1-3 as well as 10 and 11 were not accessed as permission had not been granted at the time of the walkover survey, while a further two fields (Fields 12 and 13) were inaccessible due to impenetrable hedgerows of thorn and gorse bushes (Plate 01). This section crosses one road, the South Stack Road and terminates at Plas Road. Field 3 contained Feature 2 (PRN 3806), the site of a hut group, but these were not seen as the field could not be accessed.

The majority of the fields comprised rough upland pastures that were boggy and wet with frequent, large outcrops of gorse covered bedrock (Plate 02). This was particularly the case with the land between Fields 12 and 13 and Plas Road. The land between the South Stack Road and Fields 12 and 13 was better maintained, in particular Fields 5 and 6 (Plate 03), with a large, water filled drainage channel/ditch (Plate 04) that separated Fields 6 and 7, with a northeast by southwest orientation. In contrast, Field 4 was badly overgrown with dense bracken (Plate 05) and appears not to have been maintained in recent years.

The majority of the fields accessed in Section A-B were enclosed by low dry stone walls that were poorly maintained and obscured by a combination of bracken and brambles (Plate 06). In certain locations along this section the dry stone walls were supplemented with post and wire fences (Plate 07).

Gors y Twr farm (Feature 08; PRN 61629) was located adjacent to Fields 11 and 12, however access was denied to this area and no detailed description of the farmstead is available. A new monument was identified, a standing stone (Feature 01, Section 4.6; PRN 61261) in Field 17 (Plate 08). A small rectangular corrugated metal roofed stable was noted adjacent to Field 18 close to Mynydd Celyn Bach (Feature 07; PRN 61527) but otherwise no additional upstanding archaeological remains were identified. A more in-depth description of the fields accessed for Section A-B is detailed in Table 1.

The field boundaries in this section have been characterised as Feature 04.

**Table 1: Field descriptions of Section A-B**

Section	Field No.	Description
A-B	1	Not accessed or viewed.
A-B	2	Not accessed or viewed.
A-B	3	Not accessed or viewed.
A-B	4	Roughly 'D' shaped field, very overgrown with bracken, gorse and thorns. Enclosed by a low, rough stone wall. Not accessible, viewed from roadside.
A-B	5	Large, triangular field of pasture on a SE facing slope - well maintained long grass. NNW boundary is a high stone and mortar wall, SSE boundary is a dilapidated, overgrown stone wall. Overhead cables in field.
A-B	6	Relatively even, square field of pasture. Wooden fence boundary at North, presumably overgrown stone wall for rest. Pipe cuts diagonally across field. Very wet ground in in NE corner. A large, water filled, open drainage ditch runs along Eastern boundary.
A-B	7	Uneven field of rough pasture on N facing slope. Boggy ground along NW edge with rocky outcrops along East and South. Pipe will cross badly overgrown, low stone wall between fields 7 and 8.
A-B	8	Roughly square field of rough pasture. Wet field with a lot of reeds and bull rushes along Northern boundary. West and East boundary defined by low stone walls.
A-B	9	Similar to field 8 but wetter and larger. Bounded to East and West by stone walls. Very overgrown low stone wall with wire fencing on along Eastern boundary.
A-B	10	Not accessed or viewed.
A-B	11	Not accessed or viewed.
A-B	12	Not accessed or viewed.
A-B	13	Inaccessible due to 2m high concentration of gorse and thorn bushes.

Section	Field No.	Description
A-B	14	Irregular shape, enclosed by low, drystone walls. Relatively flat field with occasional gorse and bedrock.
A-B	15	Irregular shape, enclosed by a low, drystone wall, parts of which have had barbed wire added to. Uneven field of bedrock outcrops, gorse and boggy, wet ground.
A-B	16	Irregular shaped field - very marginal, boggy ground around a large outcrop of bedrock, covered in gorse. Uneven and covered in thorns and gorse, especially southern edge. Enclosed by a low drystone wall covered with bracken.
A-B	17	Irregular shaped, rough pasture field at rear of farmhouse. Possible standing stone found. There is a wet patch in the centre of the field with rushes/reeds. Large outcrop of bedrock to west. Boundary is a dilapidated, drystone wall covered in bracken. Standing Stone PRN 61261 identified.
A-B	18	Irregular shaped field of rough pasture. Mixture of overgrown stone walls along east and north boundary, post and wire fence on southern side, and large ridge of bedrock and gorse along the northern boundary. Gradual incline to NW, otherwise quite flat. Adjacent to rear of farmhouse at western edge.
A-B	19	Very similar to field 18, but very wet at northern half with standing water. Outcrops of bedrock and gorse along western edge. Field boundary is mostly post and wire fencing, apart from the eastern boundary which are the remains of a stone wall.
A-B	20	Irregular shaped field of rough pasture, well grazed. Frequent outcrops of rock covered in gorse. At northern corner of field is a spring/pond. Field is enclosed mainly by a low stone wall apart from the western boundary which is a stone and earth bank.

### 3.2.2 *Section B-D*

Section B-D comprised three fields along the southern edge of the Plas Road and then further east along the Plas Road (Plate 09) until Plas Hyfryd Terrace (Figure 01). Fields 1 and 2 are rough fields of pasture with sporadic outcrops of gorse covered bedrock (Plate 10) that are enclosed by low dry stone walls that have been supplemented with post and wire fencing (Plate 11). Field 3 is currently in use as allotments (Plate 12). No upstanding archaeological remains were identified along this section of the route. A more in-depth description of the fields accessed for Section B-D is detailed in Table 2.

At the north east end of this section of the route was Feature 03, Plas Hyfryd Terrace (PRN 61523).

The field boundaries in this section have been characterised as Feature 05.

**Table 2: Field descriptions of Section B-D**

Section	Field no.	Description
B-D	1	Long, narrow field of pasture, adjacent to Plas road. Pasture field with sporadic outcrops of gorse covered bedrock. Drystone wall along Plas road which runs between field 1 and 2, supplemented by a post and wire fence.
B-D	2	Square pasture field, otherwise near identical to field 1.
B-D	3	Field in use as allotments. Dry stone wall boundary between Field 2, and along Plas road.

### 3.2.3 Section B-E

Section B-E comprised five fields located between the Plas Road and the Porthdafarch Road (Figure 01). Fields 1 and 2 to the immediate south and south east of the Plas Road are rough fields of pasture with sporadic outcrops of gorse covered bedrock that are predominantly enclosed by mature hedgerows supplemented by post and wire fencing (Plate 13). The one noted exception was the field boundary between Fields 2 and 3, which consists of the dilapidated remnants of a well-built dry stone wall (Plate 14) that has been supplemented by a post and wire fence and is partially overgrown. The fields are currently used to graze horses.

In Field 1 there is a small, rectangular in plan, flat corrugated metal roofed building that has been converted into stables. The building is predominantly made of red brick, of an English bond (Plate 15), with the exception of the western elevation, which is concrete block and included the stable doors. The building appears to have been built on a concrete base. The north western corner of Field 1, which includes the stables, is divided up into three small paddocks that are defined by wooden fences (Plate 16). To the immediate south of the paddocks and stables there is a sub-circular pond (Plate 17), which retains water and is partially silted up.

Fields 3, 4 and 5 are associated with the farm Ysgubor Leinw, off the Porthdafarch Road and are fields of pasture, predominantly for grazing sheep. The fields were enclosed by post and wire fencing (Plate 18), with the exception of the boundary between Fields 2 and 3 which consisted of the remnants of a dry stone wall and a stone wall along the Porthdafarch Road (Plate 19).

Field 3 is of rough pasture, dominated by a large ridge of high ground (Plate 20) along its southern edge. The majority of the field is low lying, located in a natural hollow, with wet ground denoted by frequent rushes and interspersed by the occasional outcrop of gorse covered bedrock (Plate 21). Located close to the northern edge of the field, there is an irregular shaped, water filled, weed covered pond (Plate 22), from which emanates a water channel on a north – south axis, before it feeds into a ditch which demarcates the boundary between Fields 2 and 3. The channel is step-sided with an average width of 1.80m and given its regular, even shape it is highly likely that it was machine cut (Plate 23). To the south of the pond there is a fenced off issue or drain (Plate 24) which may be the source of water for the pond and channel beyond. The issue/drain, pond and water channel are all man-made.



Fields 4 and 5 have a relatively even gradient, that gradually increase in height, on an east facing slope. There are irregular patches of wet ground associated with occasional rushes that are concentrated along the eastern half of Field 4 (Plate 25). At the mid-point of Field 4, there is a causeway on a largely northeast – southwest axis which gradually turns to the north (Plate 26) before terminating close to the boundary with Field 3. The causeway is approximately 4m wide and would provide dry access to the fields to the immediate north of the Treseifon Estate (Feature 9; PRN 61630).

During the walkover of Fields 3 and 4 at least three backfilled geological trial pits were identified, positioned along the proposed route of the open cut trench. The pits were located just north of the causeway in Field 4, at the boundary between Fields 4 and 3 (Plate 27) and on top of the ridge in Field 3 (Plate 28). A more in-depth description of the fields accessed for Section B-E is detailed in Table 3.

The walkover of Section B-E revealed an undulating landscape of fields of pasture. Agricultural features in the form of the pond, water channel and issue/drain in Field 3 and the causeway in Field 4 were identified during the survey. The proposed route of the open cut trench will cross the causeway and may negatively impact on the water source of the pond and water channel in Field 3. In addition to these agricultural features, there is potential for subsurface archaeology at locations adjacent to wet ground, for example, the southern edge of Field 2 and in proximity of the causeway in Field 4, where archaeological sites, in particular, burnt mound spreads could be located.

The field boundaries in this section have been characterised as Feature 06.

**Table 3: Field descriptions of Section B-E**

Section	Field no.	Description
B-E	1	Undulating pasture field, located off the Plas Road, with regular outcrops of gorse covered bedrock. The field is currently in use to graze horses. Adjacent to the Plas Road there is a rectangular in plan, red brick building set on a concrete base that is now used as stables, with concrete block partitions and concrete block wall along the western elevation. Adjacent to the stables there are 3 small paddocks and to the immediate south there is a roughly circular in plan, water filled pond. Field enclosed by mature hedgerows, some of which are supplemented by post and wire fences.
B-E	2	Undulating pasture field with regular outcrops of gorse covered bedrock. The field is currently in use to graze horses. Predominantly enclosed by mature hedgerows except for the eastern boundary where there is the remnants of a dilapidated dry stone wall, with a stream or ditch parallel with the wall.
B-E	3	Field of rough pasture dominated by a large ridge of high ground along the southern edge. The remainder of the field is low lying and wet with frequent rushes interspersed by the occasional gorse covered outcrop of bedrock. In the wet area, at the northern edge of the field, there is a fenced off issue/drain that feeds an irregular shaped pond and north-south orientated water channel. Enclosed by post and wire fencing.
B-E	4	Well maintained pasture field used for grazing sheep and enclosed by post and wire fencing. The field is on east facing slope, with a causeway located at the mid-point of the field and wet ground associated with occasional rushes that are concentrated along the eastern half. The causeway is on a largely northeast – southwest axis which gradually turns to the north before terminating close to the boundary with Field 3. The causeway is approximately 4m wide and would provide dry access to the fields to the immediate north of the Treseifon Estate.
B-E	5	Well maintained pasture field used for grazing sheep and enclosed by post and wire fencing, with a public right of way.

## 4 GAZETTEER OF FEATURES

The nine features listed below (located on Figure 07) were identified during the analysis of the cartographic evidence at the proposed water main west of Holyhead, with recommendations for further assessment and mitigatory measures, where appropriate. They are located within the 50m buffer zone either side of the proposed water main renewal route. Definitions of the categories used and impact assessments are given in Appendix IV.

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

## FEATURE 01 (PRN 61261)

**Site Name:** Standing Stone

**Grid Reference:** SH 23338205

**Period:** Possibly Prehistoric

**Category:** B

**Impact:** None – it is intended that this section of the water mains will be pipe burst.

**Description:** The standing stone is located in **Section A-B, Field 17**. It is adjacent to and partially hidden from view by a 2m high stone wall that is covered in bracken. To the immediate west of the standing stone and stone wall there is a large outcrop of bedrock. The standing stone is earthfast, and covered in moss and lichen. It appears squat, somewhat rounded and with a relatively wide base in relation to its height (Plate 08). It has a height of 1.20m, maximum width of 0.70m at the base and minimum width of 0.25m at the top, with a depth of 0.30m.

As the stone is close to an outcrop and at the edge of a field it is probably as a result of field clearance but it is not possible to be certain (George Smith *pers. comm.*).

It is located about 20m north-east of the pipeline within the 50m buffer zone.

**Recommendations for further assessment:** None

**Recommendations for mitigatory measures:** Fenced off prior to groundworks to ensure Avoidance

## **FEATURE 02 (PRN 3806)**

**Site Name:** Site of Hut Group and Finds, Tŵr

**Grid Reference:** SH 22008200

**Period:** Prehistoric

**Category:** B

**Impact:** None – it is intended that this section of the water mains will be pipe burst.

**Description:** The feature is located 26m north-east of the pipeline route in **Section A-B, Field 03**. The foundations of huts, ‘some square, others round’ were found in removing a heap of stones and earth at Tŵr, about 0.25 miles east from Pen y Bonc, on the side of a bog, but slightly above it. A stone seat and a V shaped stone channel were reached. A stone mortar and the bow of a Roman fibula brooch were found in one of the huts (Waddington 2013). There is now no known trace of the structures visible on the ground, however the site was not visited as part of the walk-over survey as access was denied.

**Recommendations for further assessment:** None

**Recommendations for mitigatory measures:** Based on current information this is not within the ground works area, and no further mitigatory measures are recommended

## **FEATURE 03 (PRN 61523; NPRN 416161)**

**Site Name:** Plas Hyfryd Terrace, Holyhead

**Grid Reference:** SH 24418206

**Period:** Post-medieval

**Category:** C

**Impact:** None – it is intended that this section of the water mains will be pipe burst and sliplining.

**Description:** The feature is located 16m south-east of the pipeline route in **Section B-D**. A 19<sup>th</sup> century terrace of houses, which is shown on the 1<sup>st</sup> edition Ordnance Survey map of 1889, where it appears to consist of at least 12 houses orientated north northwest south southeast and set back from the road.

**Recommendations for further assessment:** None

**Recommendations for mitigatory measures:** None

## **FEATURE 04 (PRN 61524)**

**Site Name:** Field Boundaries in Section A-B

**Grid References:** SH 221868214- SH 23838173

**Period:** Post-medieval

**Category:** C

**Impact:** Unlikely – it is intended that this section of the water mains will be pipe burst and sliplining.

**Description:** The majority of the fields accessed in Section A-B were enclosed by low dry stone walls that were poorly maintained and obscured by a combination of bracken and brambles (Plate 06). In certain locations along this section the dry stone walls were supplemented with post and wire fences (Plate 07).

**Recommendations for further assessment:** None

**Recommendations for mitigatory measures:** Basic Recording during Watching Brief if Field Boundaries are disturbed

## **FEATURE 05 (PRN 61525)**

**Site Name:** Field Boundaries in Section B-D

**Grid References:** SH 24038184- SH 24418209

**Period:** Post-medieval

**Category:** C

**Impact:** Unlikely – it is intended that this section of the water mains will be pipe burst and sliplining.

**Description:** Fields 1 and 2 are rough fields of pasture with sporadic outcrops of gorse covered bedrock (Plate 10) that are enclosed by low dry stone walls that have been supplemented with post and wire fencing (Plate 11). Field 3 is currently in use as allotments (Plate 12)

**Recommendations for further assessment:** None

**Recommendations for mitigatory measures:** Basic Recording during Watching Brief if Field Boundaries are disturbed.



## **FEATURE 06 (PRN 61526)**

**Site Name:** Field Boundaries in Section B-E

**Grid References:** SH 221868214- SH 23838173

**Period:** Post-medieval

**Category:** C

**Impact:** Slight – as this length of the route is due to be dug out by open cut excavation, it is likely that field boundaries will be breached

**Description:** Fields 1 and 2 to the immediate south and south east of the Plas Road are rough fields of pasture with sporadic outcrops of gorse covered bedrock that are predominantly enclosed by mature hedgerows supplemented by post and wire fencing (Plate 13). The one noted exception was the field boundary between Fields 2 and 3, which consists of the dilapidated remnants of a well-built dry stone wall (Plate 14) that has been supplemented by a post and wire fence and is partially overgrown.

**Recommendations for further assessment:** None

**Recommendations for mitigatory measures:** Basic Recording of Field Boundary Breaches during Watching Brief. This should involve a photographic and descriptive record in advance of any breaches, and a photographic record post-breach. In the event of any unusual features being observed, a section drawing through the bank should be made.

## **FEATURE 07 (PRN 61527)**

**Site Name:** Small Rectangular Corrugated Metal Roofed Stable Building close to Mynydd Celyn Bach

**Grid References:** SH 23838172

**Period:** Post-medieval

**Category:** D

**Impact:** Unlikely – however the open cut trench will go very close to this building

**Description:** The feature is located about 16m north of the pipeline route in **Section B-E** In Field 1 there is a small, rectangular in plan, flat corrugated metal roofed building that has been converted into stables. The building is predominantly made of red brick, of an English bond (Plate 15), with the exception of the western elevation, which is concrete block and included the stable doors. The building appears to have been built on a concrete base. It appears to be 20<sup>th</sup> century in date.

**Recommendations for further assessment:** None

**Recommendations for mitigatory measures:** Based on current information this is not within the ground works area, and no further mitigatory measures are recommended

## **FEATURE 08 (PRN 61629)**

**Site Name:** Farmstead of Gors y Tŵr with associated outbuildings

**Grid References:** SH 22868223

**Period:** Post-medieval

**Category:** E

**Impact:** Unlikely – however the pipe bursting will take place close to the site of this building

**Description:** A farmstead noted on the Holyhead tithe map of 1845 (Figure 09) and all subsequent mapping. It was originally known as Waen Gron, as shown on the tithe map, but had become Gors y Tŵr by 1900 (Figure 11). It was located on **Section A-B** between the boundaries of Fields 10-11. It was not possible to visit the farmstead as access had not been granted at the time of the walk over survey; as such no further information is available about this site.

**Recommendations for further assessment:** None

**Recommendations for mitigatory measures:** Based on current information this is not within the ground works area, and no further mitigatory measures are recommended

## **FEATURE 09 (PRN 61630)**

**Site Name:** Causeway connecting to Ysgubor Leinw from the east

**Grid References:** SH 24238141 (at the point it crosses the pipe line easement)

**Period:** Post-medieval

**Category:** C

**Impact:** Slight- The pipeline easement will cut across the causeway in an open cut section of the work.

**Description:** A causeway running east-west to Ysgubor Leinw from the east. It is located in **Section B-E, Field 4**. Currently this causeway runs from an area of modern development to the east, but it is shown on the tithe map of 1845 (Figure 09) and 1<sup>st</sup> edition OS Map of 1889 (Figure 10) where it is shown heading from the road at Tresiefon to the east. It is shown on all subsequent mapping, and appears to be a track linking the farm of Ysgubor Leinw to the north-south road to the east. The causeway is approximately 4m wide and would provide dry access to the fields to the immediate north of the Treseifon Estate.

It is possible that a number of causeway surfaces may have built up over time as the route is of some antiquity. It is important that these are recorded in plan and section across the site easement and in plan over the buffer zone

**Recommendations for further assessment:** None

**Recommendations for mitigatory measures:** Record in plan and section, through the production of a plan and section drawing, during trench digging for the pipeline easement.

## 5 CONCLUSIONS AND RECOMMENDATIONS

### 5.1 Introduction

The wider landscape around the proposed Holyhead pipeline route was noted to be rich in archaeological remains from the early prehistoric through to post-medieval times. Whilst the number of archaeological sites known and identified within the site buffer zone is limited, the wider area is noted to be extremely rich in remains, and the paucity of known sites within the buffer zone cannot be taken to reflect the likely surviving archaeology in the study area. Two possible prehistoric (Features 01-02) and seven post-medieval sites (Features 03-09) were identified within the 50m buffer zone and these are listed in the gazetteer below. No further action is recommended for four of these sites, a basic recording during an archaeological watching brief for three and a drawn plan and section for the final site.

The following recommendations are given for general archaeological mitigation along the proposed scheme route. The recommendations are broken down by sections and discussed in turn.

#### 5.1.1 Section A-B

Section A-B is 2.4km, located between the overflow reservoir (NGR SH21798221) and Plas Road (NGR SH23838173). The existing 12" asbestos cement main, installed in 1966, will be replaced by a new main on the same alignment using pipe bursting. Whilst there is known significant archaeology in close proximity to the start of the route, the use of the existing alignment and pipe bursting should present no key risks to known or expected archaeological activity; however, an archaeological watching brief is recommended during groundworks, to monitor any reception pits or other excavations completed by the contractor. There is a prehistoric site listed as being 26m northeast of the route (Feature 02, NGR SH22008200), but the precise location is unknown. There is some concern about the proximity of this feature to the route, so it is necessary that the contractor should stick precisely to the route when accessing and egressing the scheme. It would be recommended that this feature be fenced off prior to the commencement of the ground works however the lack of a precise location might make this impractical. A new monument was identified, a standing stone (Feature 01, Section 4.6; PRN 61261) in Field 17 (Plate 08), which should be fenced off prior to the commencement of the ground works.

### 5.1.2 Section B-D

Section B-D: length 550m, located south of Plas Road and northwest of Tros y Garreg, between NGR SH23838173 and NGR SH23988180. The existing 12" asbestos cement main, installed in 1966, will be replaced by a new main on the same alignment using a combination of pipe bursting and sliplining (a portion of the route will also be abandoned). There are no significant archaeological sites in immediate proximity to this section; therefore, based on the assumption of limited intrusive groundworks, any such ground works should be monitored by an archaeological watching brief.

### 5.1.3 Section B-E

Section B-E: length 0.75km, located between Plas Road (NGR SH23838173) and Porthdafarch Road (NGR SH24418209). This will be on a new alignment, with the existing main abandoned. This section will be completed via open cut so there **will** be key risks and more substantial mitigation. There is a likelihood of identifying archaeological activity for any open excavation in this general area and all recent evaluation projects completed nearby by GAT have identified archaeology. It is assumed that it will include a fenced easement, topsoil stripping along the route to full easement width or part therein, and excavation of the pipe trench.

- a comprehensive (full-time) watching brief during the topsoil stripping of the easement, with one archaeologist per machine; then
- an archaeological controlled strip of the pipe trench, completed well in advance of the pipe laying; this would require two archaeologists per machine, with the machine fitted with a toothless bucket and the archaeologists will direct the machine operator. The depth of excavation will be to the level of archaeological deposits or the glacial horizon, whichever is identified first. Confirmed archaeological features/deposits will be investigated by the archaeologists once the area of the controlled strip has been stripped. The archaeologists will inform the GAT Project Manager who will make GAPS and the client aware of the discovery. The archaeology will be investigated and recorded to a level outlined in the archaeological project design. Work associated with the pipeline will not commence until the archaeology has been resolved in a suitable manner and it has been signed off by GAPS;
- the section will also cross field boundaries (Feature 6); and a causeway (Feature 9). If and when these are to be breached by the easement then

these will need to be archaeologically recorded pre-breach and after the breach so information can be gained on construction and any phasing.

**Table 4: Table of Sites and Recommendations**

<b>No.</b>	<b>PRN</b>	<b>Name</b>	<b>Impact</b>	<b>Recommendations for Further Assessment</b>	<b>Recommendations for Mitigatory Measures</b>
1	61261	Standing Stone	None	None	Fence off feature in advance of works
2	3806	Site of Hut Group and Finds, Tŵr	None	None	None
3	61523	Plas Hyfryd Terrace, Holyhead	None	None	None
4	61524	Field Boundaries in Section A-B	Unlikely	None	Basic Recording
5	61525	Field Boundaries in Section B-D	Unlikely	None	Basic Recording
6	61526	Field Boundaries in Section B-E	Slight	None	Basic Recording in advance of breaches, and subsequent to breaches
7	61527	Small Rectangular Corrugated Metal Roofed Stable Building close to Mynydd Celyn Bach	Unlikely	None	None



8	61629	Farmstead of Gors y Tŵr	Unlikely	None	None
9	61630	Causeway connecting to Ysgubor Leinw from the east	Slight	None	Record in plan in advance of breach, and in section post breach, through the production of a plan and section drawing, during trench digging for the pipeline easement.

## **6 ACKNOWLEDGEMENTS**

The authors would like to thank Black & Veatch for commissioning the work and the assistance of the GAPS is also acknowledged. The walkover survey was carried out by Stuart Reilly, Spencer Smith and Ewan Kennaway of GAT.

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ADAS Film No. 555 Frame 252, taken on 17<sup>th</sup> June 1992

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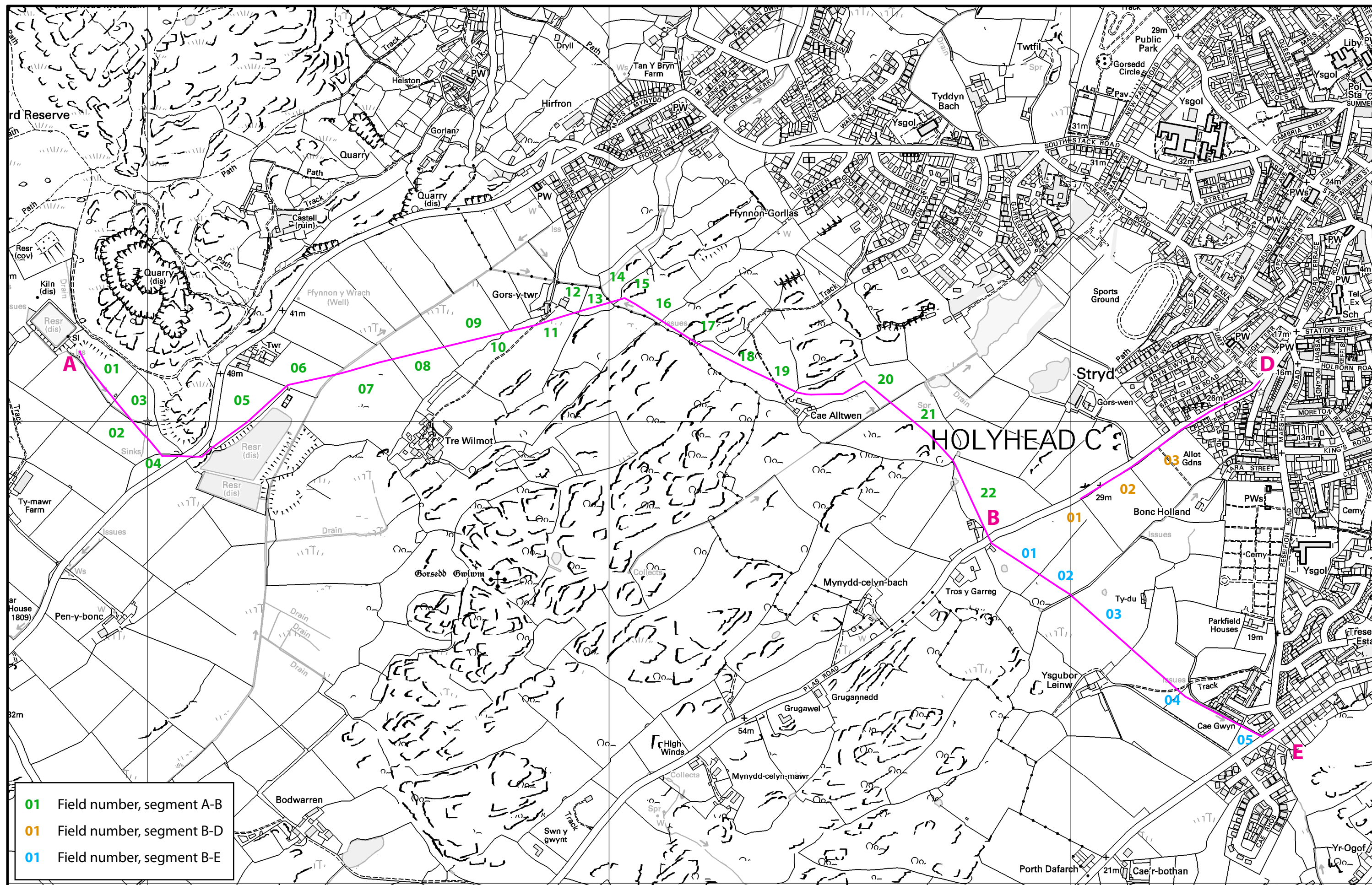


Figure 01: Location Map denoting scheme route along with route sub-divisions A-B, B-D, B-E and field numbers. Based on Ordnance Survey 1:10000 Series County Series Map Sheets SH28SE & SH28SW. Scale: 1 to 7500@A3. Crown Copyright. All Rights Reserved. Licence number AL100020895.





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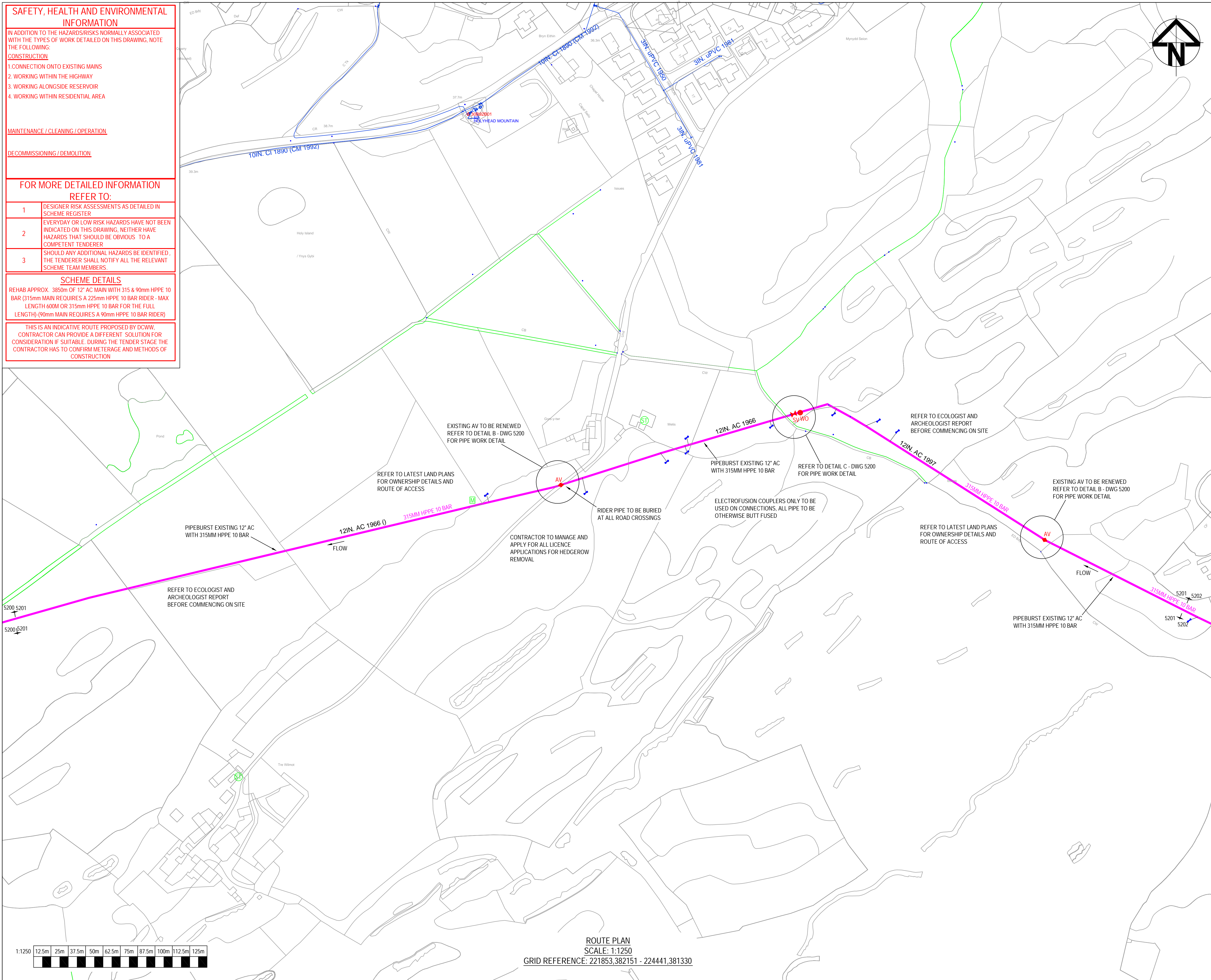
1. CONNECTION ONTO EXISTING MAINS
2. WORKING WITHIN THE HIGHWAY
3. WORKING ALONGSIDE RESERVOIR
4. WORKING WITHIN RESIDENTIAL AREA

## DECOMMISSIONING / DEMOLITION
















1	DESIGNER RISK ASSESSMENTS AS DETAILED IN SCHEME REGISTER
2	EVERYDAY OR LOW RISK HAZARDS HAVE NOT BEEN INDICATED ON THIS DRAWING. NEITHER HAVE HAZARDS THAT SHOULD BE OBVIOUS TO A COMPETENT TENDERER
3	SHOULD ANY ADDITIONAL HAZARDS BE IDENTIFIED THE TENDERER SHALL NOTIFY ALL THE RELEVANT SCHEME TEAM MEMBERS.

REHAB APPROX. 3850m OF 12" AC MAIN WITH 315 & 90mm HPPE 10 BAR (315mm MAIN REQUIRES A 225mm HPPE 10 BAR RIDER - MAXIMUM LENGTH 600M OR 315mm HPPE 10 BAR FOR THE FULL LENGTH)-(90mm MAIN REQUIRES A 90mm HPPE 10 BAR RIDER)

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CONSIDERATION IF SUITABLE. DURING THE TENDER STAGE THE  
CONTRACTOR HAS TO CONFIRM METERAGE AND METHODS OF  
CONSTRUCTION



- NOTES:**
1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE FOLLOWING DCWW SPECIFICATIONS:
  - a. THE CIVIL ENGINEERING SPECIFICATION FOR THE WATER INDUSTRY REVISION 6 (CESWI 7)
  2. ALL FLANGES TO BE NP 16 RATED
  3. ALL PROPOSE PIPE AND FITTING TO BE SDR 11 - BAR RATED
  4. ALL MDPE PIPES AND FITTINGS TO BE 12.5 BAR RATED
  5. REFER TO DRAWING T102 FOR THE FOLLOWING DETAILS:  
FIRE HYDRANT, AIR VALVE, SLUICE VALVE C-CLOSING AND PRV CHAMBER DETAILS
  6. TIMBER POST STOCK PROOF FENCE DETAIL  
INDICATOR AND MARKER POST DETAIL  
TYPICAL TRUST BLOCK DETAILS
  7. TRENCH DETAILS / REINSTATEMENT TO BE AS DRAWING T102 FOR WORK IN GRASSLAND, UNMADE TRACK, ROAD VERGE AND HIGHWAY
  8. NO HEDGEROWS ARE TO BE REMOVED ON THIS PROJECT. IF HEDGEROW REMOVAL IS FOUND TO BE UNAVOIDABLE, THE CONTRACTOR IS TO CONTACT THE DESIGNER IN ADVANCE FOR FURTHER GUIDANCE. ALSO, DISTURBANCE TO HEDGEROWS IS TO BE AVOIDED DURING THE BIRD NESTING SEASON OF MARCH TO JULY
  9. THE DEPTH AND LINE OF THE NEW MAIN IS TO BE SUPPLIED BY THE CONTRACTOR AT 50M INTERVALS FOR ALL DIRECTIONAL DRILLING WORK. ALL NEW DIRECTIONAL DRILL MAINS TO BE INSTALLED A MINIMUM DISTANCE OF 5 METRES FROM THE EXISTING WATER MAINS
  10. SERVICE TRANSFERS: THE CONTRACTOR IS TO ALLOW FOR THE TRANSFER OF ALL SERVICE CONNECTIONS FROM THE EXISTING MAINS TO THE PROPOSED MAIN. NEW PIPES TO BE 25mm MDPE, 100mm OR 150mm HDPE OR 150mm OR 200mm SLIP LINING AS APPROPRIATE. ESTIMATED NUMBER OF RESIDENTIAL TRANSFERS - 30 (PLUS FIELD CONNECTIONS) LOCATION OF CONNECTIONS TO BE DETERMINED BY THE CONTRACTOR ON SITE
  11. CAUTION - CABLES, OVERHEAD CABLES ARE PRESENT WITHIN THE WORKING AREA. CONTRACTOR TO REFER TO HSE GUIDANCE NOTE GS6 "AVOIDANCE OF DANGER FROM OVERHEAD LINES". UNDERGROUND CABLES ARE ALSO PRESENT ON SITE. CONTRACTOR TO CONSULT UTILITY DRAWINGS AND IDENTIFY ALL UNDERGROUND SERVICES PRIOR TO COMMENCEMENT OF WORK
  12. WORKING PRESSURE ON THIS PROJECT IS 3.5 BAR. TEST PRESSURE IS 6 BAR AT THE LOWEST POINT
  13. CAUTION! - NO CHLORINATED / CONTAMINATED WATER OR DRILLING FLUIDS ARE ALLOWED TO ENTER ANY WATER COURSE OR STORM DRAIN. CONTRACTOR TO REFER TO GUIDELINES ON POLLUTION PREVENTION AND INSTRUCTIONS IN CASE OF EMERGENCY
  14. THIS DRAWING NEEDS TO BE READ IN CONJUNCTION WITH THE UTILITY INFORMATION PROVIDED SEPARATELY BY THE INDIVIDUAL UNDERTAKERS
  15. TRIAL HOLES MAY BE REQUIRED TO ESTABLISH EXACT LOCATION OF UTILITIES
  16. DETAILS ARE GUIDES ONLY. ALL PIPES, FITTINGS AND ASSOCIATED MATERIALS TO COMPLETE THE JOB ARE TO BE PROVIDED BY CONTRACTOR
  17. CONTRACTOR TO BE AWARE THAT WATER MAINS MATERIALS MAY NOT BE MARKED OR MARKED INCORRECTLY TO WHAT IS INDICATED. IT IS THEREFORE ADVISABLE THAT THE POSSIBLE PRESENCE OF ASBESTOS (AC) OR PITCH FIBRE (PF) BE ANTICIPATED AND INCLUDED IN RAMPS.

- |   |                                   |
|---|-----------------------------------|
|  | EXISTING WATER MAIN               |
|  | ABANDONED WATER MAIN              |
|  | WATER MAIN TO BE ABANDONED        |
|  | PROPOSED WATER MAIN - OPENCUT     |
|  | PROPOSED WATER MAIN - DIRECTIONAL |
|  | PROPOSED WATER MAIN - PIPEBURST   |
|  | PROPOSED WATER MAIN - SLIPLINE    |
|  | PROPOSED COMMUNICATION PIPE       |
|  | TRIAL HOLE POSITION               |
|  | SSSI, SCHEDULED ANCIENT MONUMENT  |
|  | CONTAMINATED LAND                 |
|  | GREAT CRESTED NEWT RESTRICTIONS   |
|  | ARCHAEOLOGICAL RESTRICTIONS       |
|  | BADGER SETTS                      |
|  | MINE SHAFTS                       |

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P01	21.01.16	JP	APPROVAL ISSUE	GP	JH	MK	21.01.16
Rev.	Date.	Drn.	Description.	Rvd.	Chkd.	Appd.	Date.



Project Name.	HOLYHEAD SPORTS CENTRE TO CWM 1
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Drawing Title.	ROUTE PLAN AND PIPE WORK DETAILS
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Drawing Status.	FOR APPROVAL
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Checked, J HOUSTON	Approved, M KENNEDY	Date, JAN'16
Scale, AS SHOWN	Designer, J PROUT	Rev., T01

Drawing Number: CAF411-5201-CD15360-N-D

Figure 03: Reproduction of Dwr Cymru Drawing CAF411-5201-CD15360-N-D-T01, detailing Section A to B, which will be completed using pipebursting


















Drawing Number. CAF411-5202-CD15360-N-D

Figure 04: Reproduction of Dwr Cymru Drawing CAF411-5202-CD15360-N-D-T01, detailing Section A to B that will include pipe burst (purple line) and open cut (red dash)

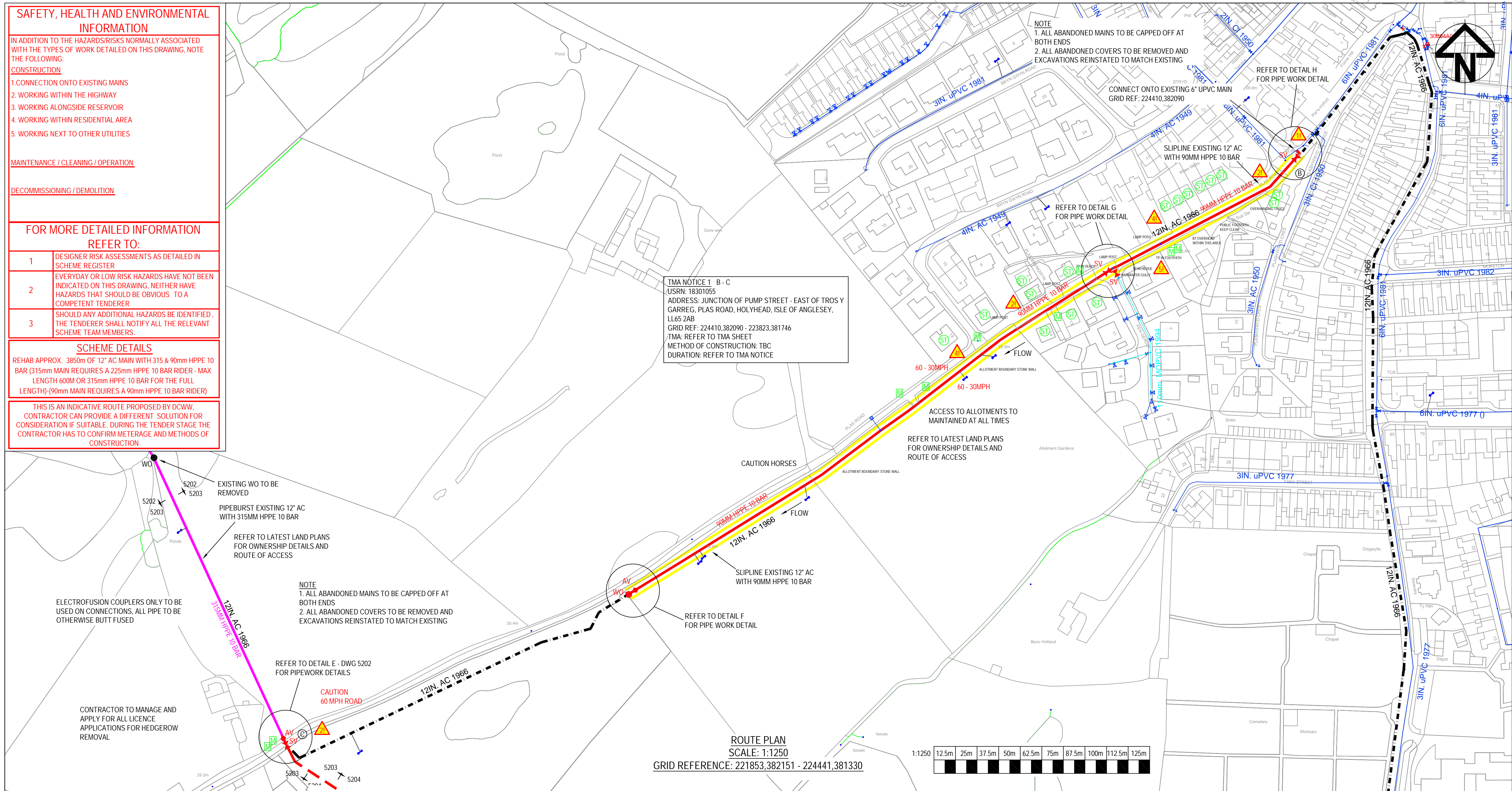


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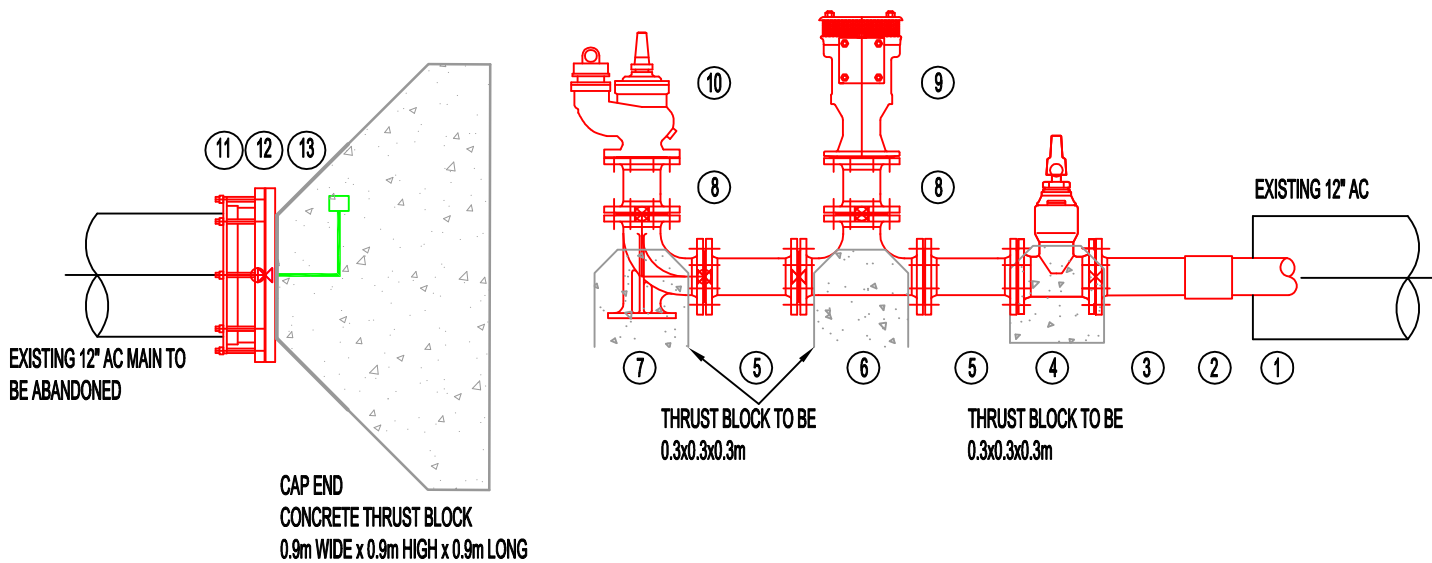
1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE FOLLOWING DCWW SPECIFICATIONS:
- a. THE CIVIL ENGINEERING SPECIFICATION FOR THE WATER INDUSTRY REVISION 6 (CESWI 7)
2. ALL FLANGES TO BE NP16 RATED
3. ALL PROPOSE PIPE AND FITTINGS TO BE SDR 11 - BAR RATED
4. ALL MDPE PIPES AND FITTINGS TO BE 12.5 BAR RATED.
5. REFER TO DRAWING T10101 FOR THE FOLLOWING DETAILS:
  - FIRE HYDRANT, AIR VALVE, SLUICE VALVE C-CLOSING AND PRV CHAMBER DETAILS
  - TIMBER POST ROCK PROOF FENCE DETAIL
  - INDICATOR AND MARKER POST DETAIL
  - TYPICAL THRUST BLOCK DETAILS
6. TRENCH DETAILS / REINSTATEMENT TO BE AS DRAWING T102 FOR WORK IN GRASSLAND, UNMADE TRACK, ROAD VERGE AND HIGHWAY
7. NO HEDGEROWS ARE TO BE REMOVED ON THIS PROJECT. IF HEDGEROW REMOVAL IS FOUND TO BE UNAVOIDABLE, THE CONTRACTOR IS TO CONTACT THE DESIGNER IN ADVANCE FOR FURTHER GUIDANCE. ALSO, DISTURBANCE TO HEDGEROWS IS TO BE AVOIDED DURING THE BIRD NESTING SEASON OF MARCH TO JULY
8. THE DEPTH AND LINE OF THE NEW MAIN IS TO BE SUPPLIED BY THE CONTRACTOR AT 50M INTERVALS FOR ALL DIRECTIONAL DRILLING WORK. ALL NEW FUNCTIONAL DRILL MAINS TO BE INSTALLED A MINIMUM DISTANCE OF 5 METRES FROM THE EXISTING WATER MAINS
9. SERVICE TRANSFERS: THE CONTRACTOR IS TO ALLOW FOR THE TRANSFER OF ALL SERVICE CONNECTIONS FROM THE EXISTING MAINS TO THE PROPOSED MAIN. NEW PIPES TO BE 25mm MDPE, TO BE INSTALLED BY OPEN CUT, MOUND OR SLIP Lining AS APPROPRIATE. ESTIMATED NUMBER OF RESIDENTIAL TRANSFERS ~30 **(PLUS FIELD CONNECTIONS)** LOCATION OF CONNECTIONS TO BE DETERMINED BY THE CONTRACTOR ON SITE
10. CAUTION - CABLES: OVERHEAD CABLES ARE PRESENT WITHIN THE WORKING AREA. CONTRACTOR TO REFER TO HSE GUIDANCE NOTE GS6 - 'AVOIDANCE OF DANGER FROM OVERHEAD LINES'. UNDERGROUND CABLES ARE ALSO PRESENT ON SITE. CONTRACTOR TO CONSULT UTILITY PROVIDERS AND IDENTIFY ALL UNDERGROUND SERVICES PRIOR TO COMMENCEMENT OF WORK
11. WORKING PRESSURE ON THIS PROJECT IS **3.5 BAR**. TEST PRESSURE IS **4 BAR** AT THE LOWEST POINT
12. CAUTION - NO CHLORINATED / CONTAMINATED WATER OR DRILLING FLUIDS ARE ALLOWED TO ENTER ANY WATER COURSE OR STORM DRAIN. CONTRACTOR TO REFER TO GUIDELINES ON POLLUTION PREVENTION AND INSTRUCTIONS IN CASE OF EMERGENCY
13. THIS DRAWING NEEDS TO BE READ IN CONJUNCTION WITH THE UTILITY INFORMATION PROVIDED SEPARATELY BY THE INDIVIDUAL UNDERTAKERS
14. TRIAL HOLES MAY BE REQUIRED TO ESTABLISH EXACT LOCATION OF UTILITIES
15. DETAILS ARE GUIDES ONLY, ALL PIPES, FITTINGS AND ASSOCIATED MATERIALS TO COMPLETE THE JOB ARE TO BE PROVIDED BY CONTRACTOR
16. CONTRACTOR TO BE AWARE THAT WATER MAINS MATERIALS MAY NOT BE MARKED OR MARKED INCORRECTLY TO WHAT IS INDICATED. IT IS THEREFORE ADVISABLE THAT THE POSSIBLE PRESENCE OF ASBESTOS (AC) OR PITCH FIBRE (PF) BE ANTICIPATED AND INCLUDED IN REMOVALS.

- |   |                                   |
|---|-----------------------------------|
|  | EXISTING WATER MAIN               |
|  | ABANDONED WATER MAIN              |
|  | WATER MAIN TO BE ABANDONED        |
|  | PROPOSED WATER MAIN - OPENCUT     |
|  | PROPOSED WATER MAIN - DIRECTIONAL |
|  | PROPOSED WATER MAIN - PIPEBURST   |
|  | PROPOSED WATER MAIN - SLIPLINE    |
|  | PROPOSED COMMUNICATION PIPE       |
|  | TRIAL HOLE POSITION               |
|  | SSSI, SCHEDULED ANCIENT MONUMENT  |
|  | CONTAMINATED LAND                 |
|  | GREAT CRESTED NEWT RESTRICTIONS   |
|  | ARCHAEOLOGICAL RESTRICTIONS       |
|  | BADGER SETTS                      |
|  | MINE SHAFTS                       |

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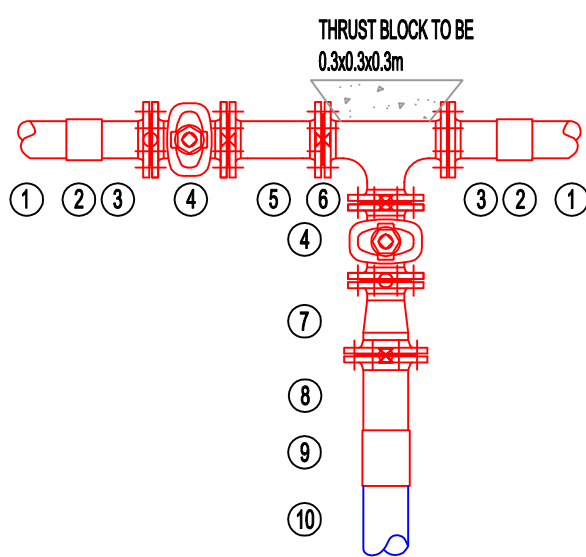


1.	90mm o.d. 10 BAR HPPE PIPE	-
2.	90mm o.d. ELECTRO FUSION COUPLING	1
3.	90mm o.d. PUPPED FLANGE	1
4.	80mm DIA SLUICE VALVE C-CLOSING	1
5.	80mm DIA AF DISTANCE PIECE 250mm LONG	2
6.	80mm DIA ALL FLANGE TEE	1
7.	80mm DIA DUCKFOOT BEND	1
8.	80mm DIA AF DISTANCE PIECE 150mm LONG	2
9.	1" INDUSTRIAL AIR VALVE	1
10.	80mm WASH OUT HYDRANT	1
11.	VJFA TO SUIT EXISTING 12" AC PIPE	1
12.	300mm n.s. DIA DUCTILE IRON BLANK PLATE (D&T)	1
13.	1" AIR VALVE INSTALLED ON 32mm MDPE PIPE	1



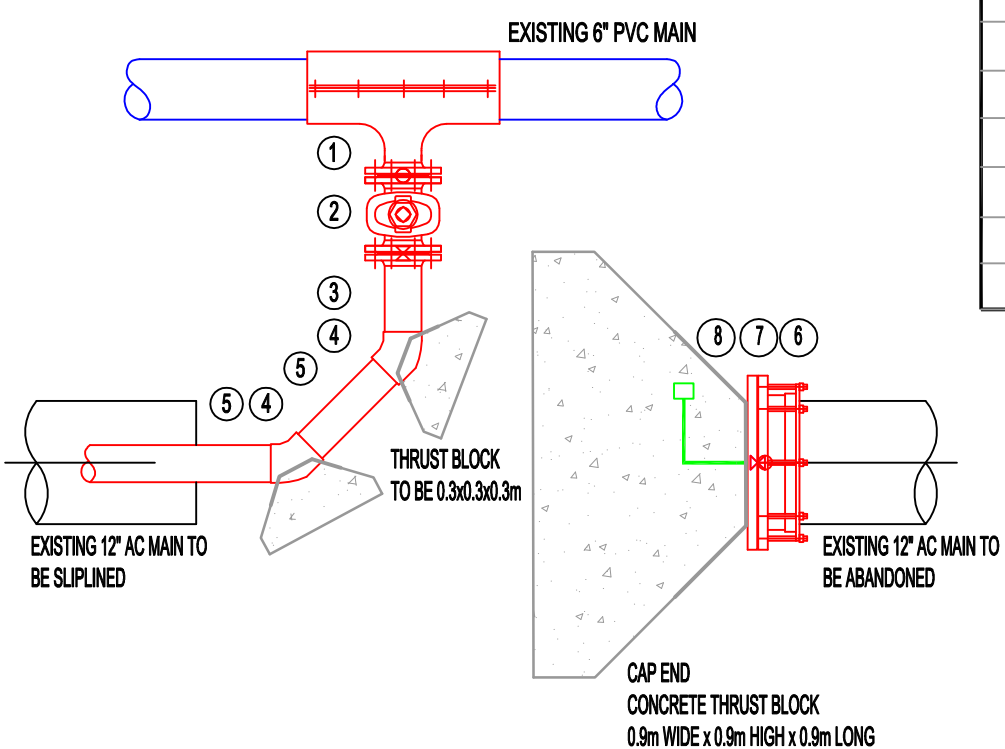
## DETAIL G

1.	90mm od 10 BAR PROFUSE PIPE	-
2.	90mm od ELECTROFUSION COUPLER	2
3.	90mm od PUPPED FLANGE	2
4.	80mm DIA SLUICE VALVE C-CLOSING	2
5.	80mm DIA DISTANCE PIECE 250mm LONG	1
6.	80mm DIA A.F TEE	1
7.	100 - 80mm DIA FLANGE TAPER	1
8.	110mm od PUPPED FLANGE	1
9.	110mm od ELECTROFUSION COUPLER	1
10.	EXISTING 110mm od 10 BAR PROFUSE PIPE	-



## DETAIL H

1.	UNDER PRESSURE TEE FOR 8" PVC MAIN	-
2.	80mm DIA SLUICE VALVE C-CLOSING	1
3.	90mm od PUPPED FLANGE	1
4.	90mm od 45° ELECTOFUSION ELEBOW	2
5.	90mm od 10 BAR PROFUSE PIPE	-
6.	VJFA TO SUIT EXISTING 12" AC PIPE	-
7.	300mm n.b. DIA DUCTILE IRON BLANK PLATE (D&T)	1
8.	1" AIR VALVE INSTALLED ON 32mm MDPE PIPE	1





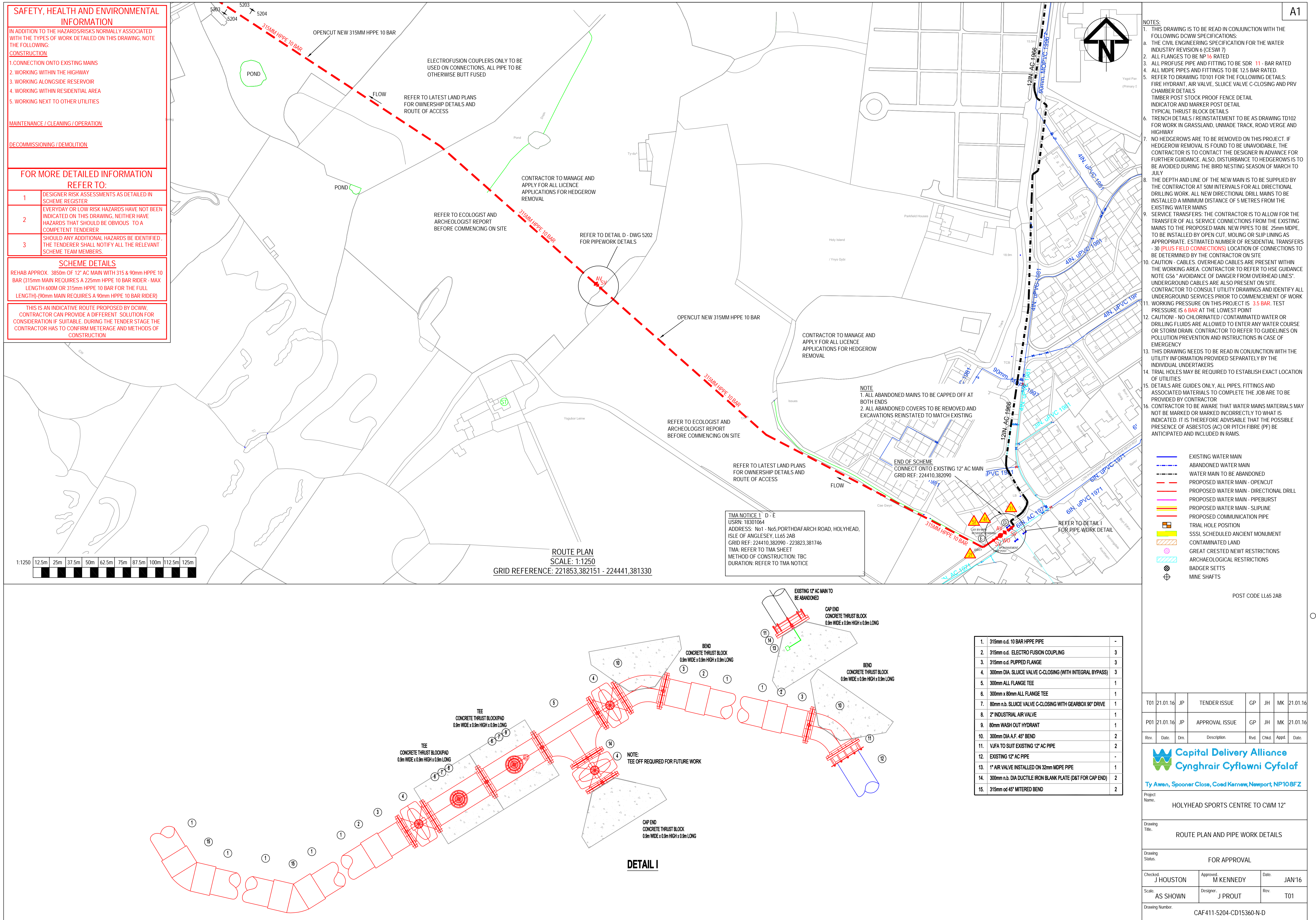










Figure 08: Reproduction of a 1783 map denoting lands belonging to the Lligwy Estate in the Parish of Holyhead (Bangor University Archives MSS 1420). The proposed route is superimposed as a pink line, with the 100m assessment buffer outlined in blue. Scale: 1 to 7500@A3.



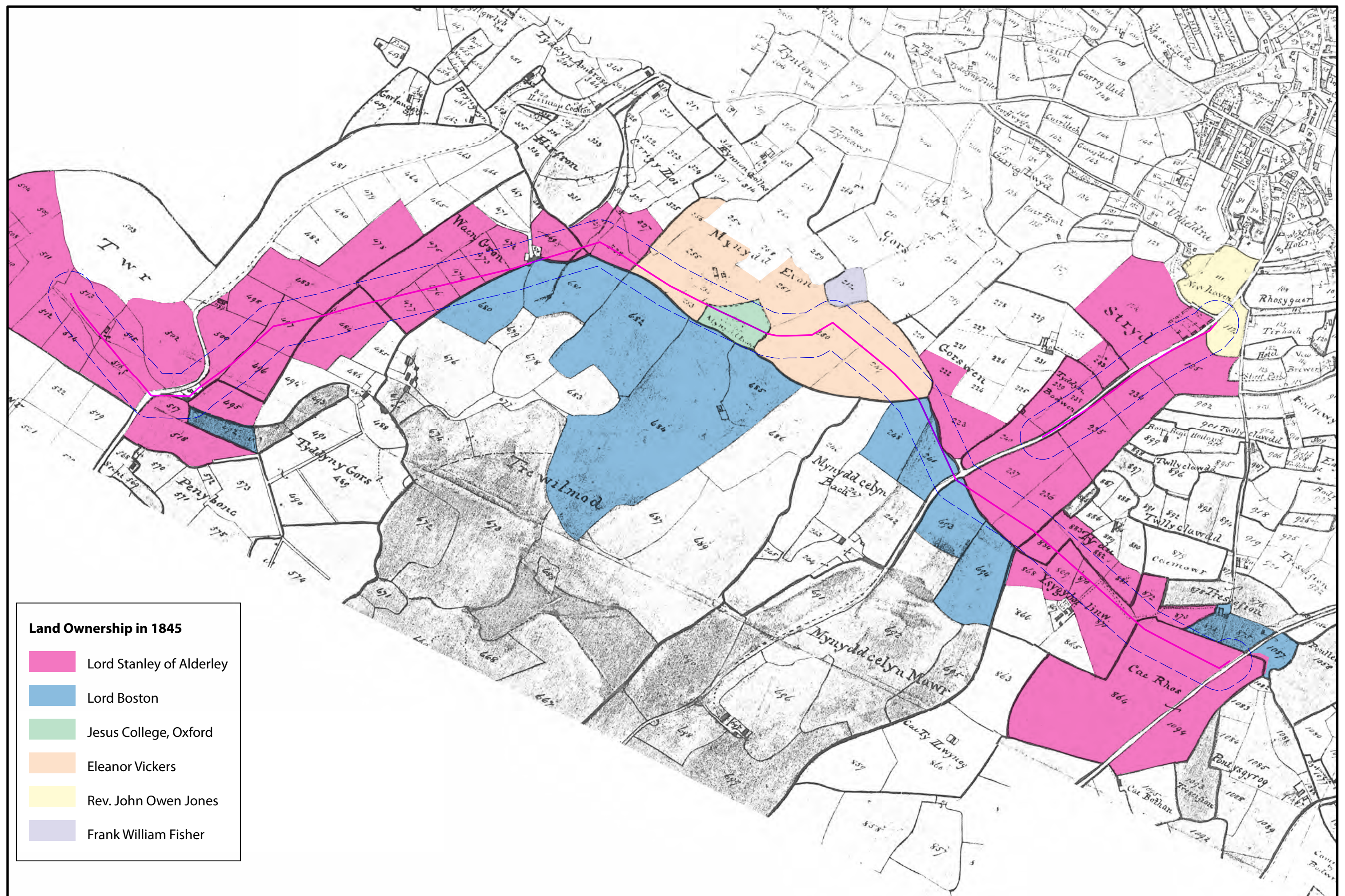


Figure 09: Reproduction of the Holyhead Tithe Map of 1845 showing landowners along the route of the scheme. The proposed route is superimposed as a pink line, 100m assessment buffer outlined in blue. Scale: 1 to 7500@A3.



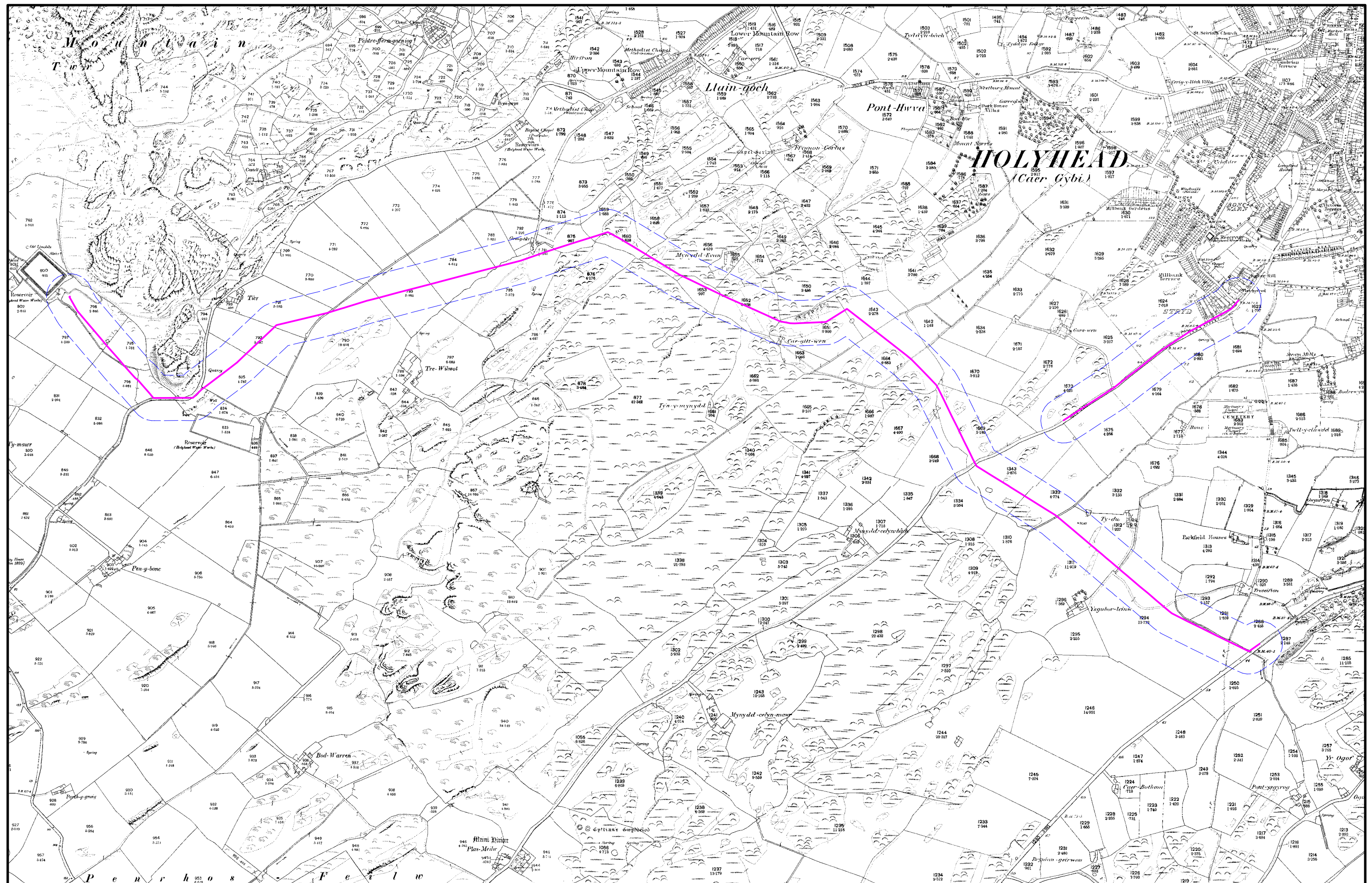


Figure 10: Reproduction of the Ordnance Survey 25" County Series Anglesey Map Sheets XI.1, XI.2, XI.5 and XI.6 (1889 & 1890). The proposed route is superimposed as a pink line, with the 100m assessment buffer outlined in blue. Scale: 1 to 7500@A3.



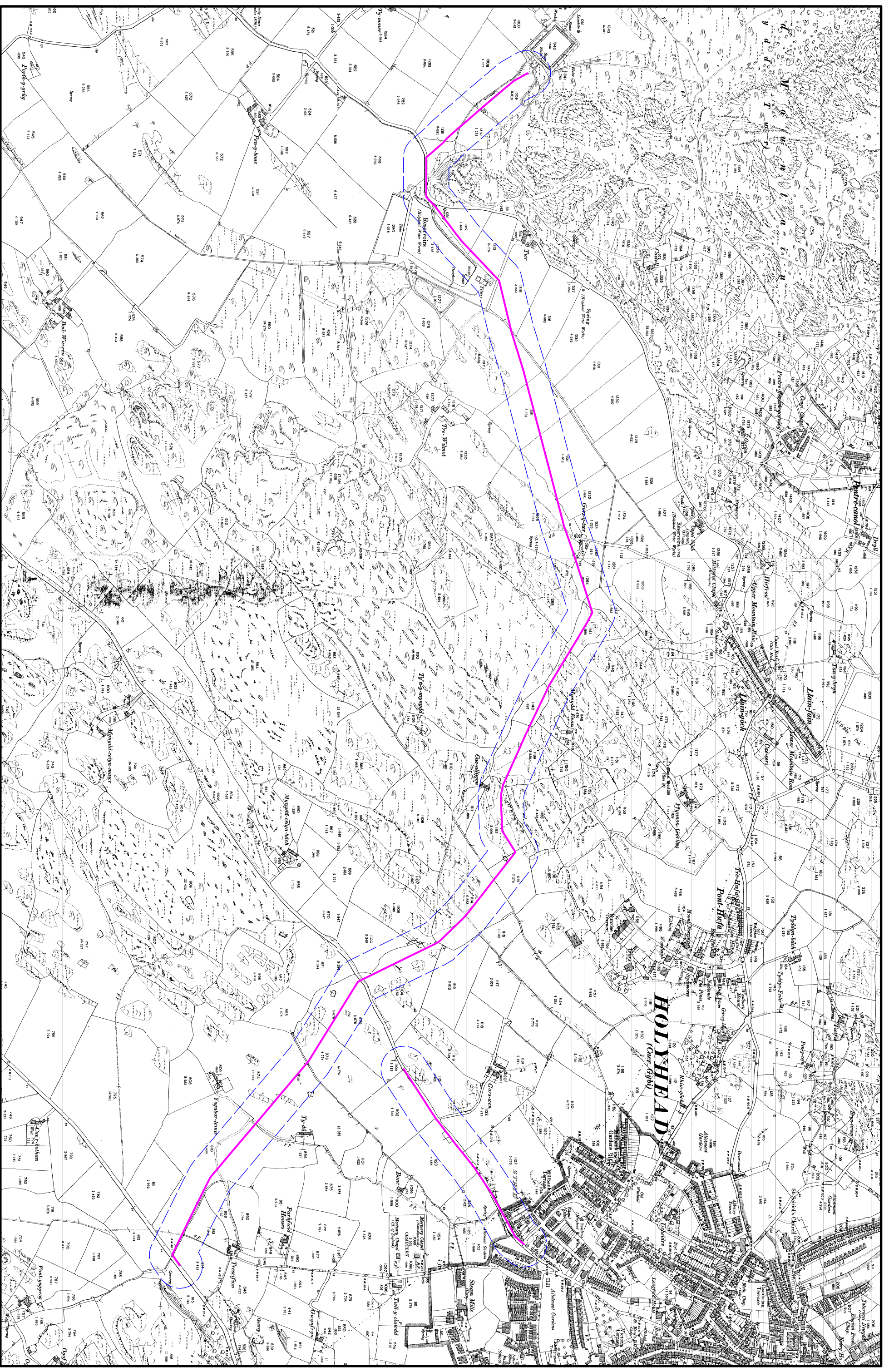


Figure 11: Reproduction of the Second Edition Ordnance Survey 25" County Series Anglesey Map Sheets XI.1, XI.2, XI.5 and XI.6 (1900). The proposed route is superimposed as a pink line, with the 100m assessment buffer outlined in blue. Scale: 1 to 7500@A3.



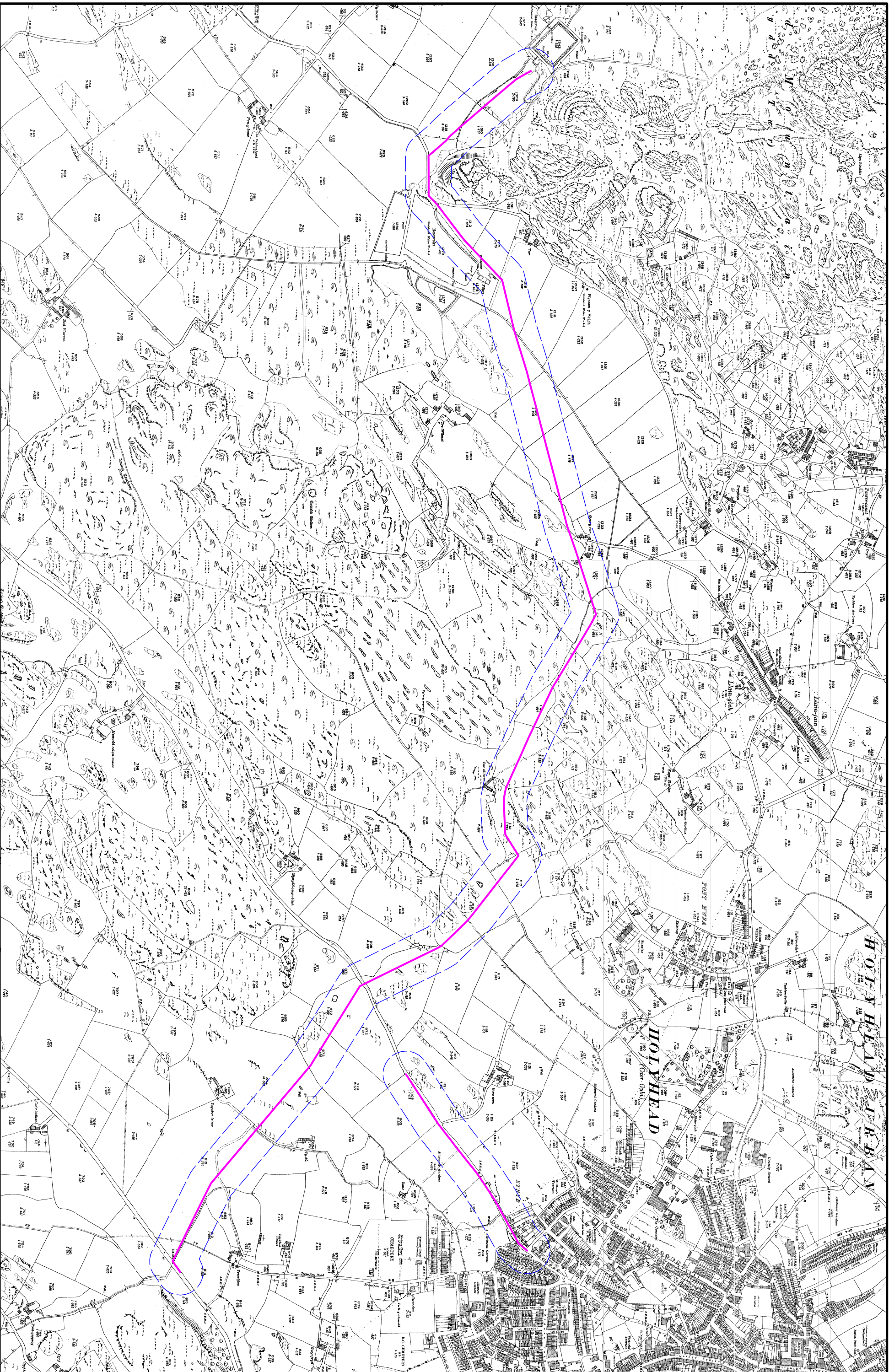


Figure 12: Reproduction of the Third Edition Ordnance Survey 25" County Series Anglesey Map Sheets XI.1, XI.2, XI.5 and XI.6 (1924). The proposed route is superimposed as a pink line, with the 100m assessment buffer outlined in blue. Scale: 1 to 7500@A3.





Plate 01: Section A to B - view from the southwest of bracken and thorn preventing access to Field 14 (Scale: 1 x 1.0m; archive image: G2449\_037).



Plate 02: Section A to B - view northwest across Field 16 Scale: 1 x 1.0m; archive image: G2449\_034).





Plate 03: Section A to B - view northeast across Field 5 (Scale: 1 x 1.0m; archive image: G2449\_005).



Plate 04: Section A to B - view north of drainage ditch running along the eastern boundary of Field 6 (Scale: 1 x 1.0m; archive image: G2449\_008).





Plate 05: Section A to B - view southwest of bracken within Field 4; the field was inaccessible and the walkover was not completed (Scale 1 x 1.0m; archive image: G2449\_001).



Plate 06: Section A to B - view northwest of drystone wall between Fields 16 and 17 (Scale: 1x1.0m: archive image: G2449\_032).





Plate 07: Section A to B - view northwest of drystone wall and wire fence separating Fields 15 and 16 (Scale 1 x 1.0m; archive image: G2449\_035).



Plate 08: Section A to B - view southeast of possible standing stone (Primary Reference Number 61261; NGR SH23338205) located in Field 17 (Scale: 1x1.0m; archive image: G2449\_027).





Plate 09: Section B to D - view northeast along Plas Road (Scale: 1 x 1.0m; archive image: G2449\_072).



Plate 10: Section B to D - view southwest along Field 2 (Scale: 1 x 1m; archive image: G2449\_069).





Plate 11: Section B to D - view northeast of drystone wall boundary separating Fields 2 and 3 (Scale 1 x 1.0m: archive image: G2449\_070).



Plate 12: Section B to D - view northeast of Field 3, in use as an allotment (archive image: G2449\_071).





Plate 13: Section B to E - Field 1, view southwest of boundary off the Plas Road (Scale 1 x 1.0m: archive image: G2449\_073).



Plate 14: Section B to E - Field 1, view southeast stone wall field boundary between Fields 2 and 3 (Scale 1 x 1.0m: archive image: G2449\_080).





Plate 15: Section B to E - Field 1, view west of stables (Scale 1 x 1.0m: archive image: G2449\_074).



Plate 16: Section B to E - Field 1, view northwest of stables and proposed location of opencut (Scale 1 x 1.0m: archive image: G2449\_075).





Plate 17: Section B to E - Field 1, view southwest of pond (Scale 1 x 1.0m: archive image: G2449\_076).



Plate 18: Section B to E - Field 5, view northwest of proposed route (Scale 1 x 1.0m: archive image: G2449\_082).





Plate 19: Section B to E - Field 5, view northwest of proposed exit point for pipe at boundary of field five (Scale 1 x 1.0m; archive image: G2449\_081).



Plate 20: Section B to D - view southeast of Field 3 of proposed opencut route from road (Scale 1 x 1.0m; archive image: G2449\_071).





Plate 21: Section B to E - Field 3, view northwest along of proposed opencut route from Plas Road (archive image: G2449\_088).



Plate 22: Section B to E - Field 3, view north of terminus for the water channel (archive image: G2449\_090).





Plate 23: Section B to E - Field 3, view south along water channel (archive image: G2449\_089).



Plate 24: Section B to E - Field 3, view south of drain/issue associated with open water channel (Scale 1 x 1.0m: archive image: G2449\_091)





Plate 25 Section B to E - view southwest of Field 4, view southwest along proposed route of opencut.  
(Scale 1 x 1.0m: archive image: G2449\_083).



Plate 26: Section B to E - view southwest of Field 4, detailing possible causeway (Scale 2 x 1.0m: archive image: G2449\_084).





Plate 27: Section B to E - field boundary between fields four and three with geological trial pit.  
(Scale 1 x 1.0m: archive image: G2449\_085).



Plate 28: Section B to E - view northeast of Field 3, geological trial pit on top of ridge.  
(Scale 1 x 1.0m: archive image: G2449\_086).





Plate 29: View from AN017 to the north-east and direction of open-cut trench (archive image: G2449\_093).



Plate 30: View from Plas Road, adjacent to AN033 to the north-east and direction of open-cut trench (archive image: G2449\_094).





Plate 31: View from Plas Road, adjacent to AN033 to the north-east and direction of opencut trench (archive image: G2449\_095).



Plate 32: View from AN011 looking west-southeast (archive image: G2449\_096).



Plate 33: View from AN011 looking southwest (archive image: G2449\_097).



Plate 34: View from AN011 looking northwest (archive image: G2449\_098).

## **APPENDIX I**

**Reproduction of Gwynedd Archaeological Project Design for an archaeological assessment (December 2015)**

# HOLYHEAD SPORTS CENTRE TO CWM 12" SCHEME (G2449)

## PROJECT DESIGN FOR ARCHAEOLOGICAL ASSESSMENT

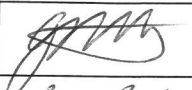
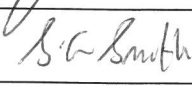
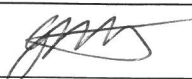
*Prepared for*

*Black & Veatch*

***December 2015***

Ymddiriedolaeth Archaeolegol Gwynedd  
Gwynedd Archaeological Trust



Approvals Table				
	Role	Printed Name	Signature	Date
Originated by	Document Author	JOHN ROBERTS		18/12/15
Reviewed by	Document Reviewer	SPENCER SMITH		18/12/15
Approved by	Principal Archaeologist	JOHN ROBERTS		18/12/15

Revision History			
Rev No.	Summary of Changes	Ref Section	Purpose of Issue
1	Inclusion of project timescale	1.0 & 3.1	GAPS approval further to comments received.

# **HOLYHEAD SPORTS CENTRE TO CWM 12" SCHEME (G2449)**

## **PROJECT DESIGN FOR ARCHAEOLOGICAL ASSESSMENT**

Prepared for *Black & Veatch*, November 2015

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# 1 INTRODUCTION

Gwynedd Archaeological Trust (GAT) has been asked by *Black & Veatch* to prepare a project design for an archaeological assessment in advance of a proposed water main renewal scheme west of Holyhead. The scheme measures up to 4.75km in length and is located between an overflow reservoir (NGR SH21798221) and Holyhead Sports centre (NGR SH24008205). The scheme route is defined on Dŵr Cymru drawings CAF411 - 001 to CAF411 - 004 (reproduced as Figures 01 to 04). It has not been confirmed which method will be used to replace the existing main. The scheme route incorporates four sections (cf. Dŵr Cymru drawing CAF411 – 001; Figure 01), designated as follows:

1. Section A to B: length 2.4km, located between an overflow reservoir (NGR SH21798221) and Plas Road (NGR SH23838173). The existing 12" asbestos cement main, installed in 1966, will be replaced by a new main on the same or similar alignment;
2. Section B to D: length 550m, located south of Plas Road and northwest of Tros y Garreg, between NGR SH23838173 and NGR SH23988180. The existing 12" asbestos cement main, installed in 1966, will be replaced by a new main on the same or similar alignment, with a portion of the route (designated by a black line on the Dŵr Cymru drawings) abandoned completely;
3. Section B to E: length 1.7km, located between Plas Road (NGR SH23838173) and Holyhead Sports centre (NGR SH24008205). This will be on a new alignment, with the existing main abandoned; and
4. Section F: length 100m, located south of Mill Lane, between NGR SH24468086 and SH24528094. This will be on a new alignment, with the existing main abandoned.

The scheme will mostly traverse semi-improved land, except for part of Section B to D that will run through an urbanised area.

The assessment will be completed in early January 2016.

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



design corresponds to the requirements of section 2.3 of MoRPHE (English Heritage 2015) and to MAP2 (English Heritage, 1991, *Management of Archaeological Projects*).

The assessment will be monitored by the Gwynedd Archaeological Planning Services (GAPS); the content of this design and all subsequent reporting by GAT must be approved by GAPS prior to final issue.

## 2 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

A brief examination of the regional Historic Environment Record has confirmed that there are no known archaeological receptors along the proposed scheme route. There are, however, a large number of receptors in proximity to the scheme that include:

1. Primary Reference Number (PRN) 1758 – Bronze Hoard Findspot, located 220m northwest of the start of Section A to B at NGR SH21668227;
2. PRN 3806 – Hut Circle Settlement, located 30m northeast of Section A to B at NGR SH22008200
3. PRN 5667 – Flint Axe Findspot, located 140m northwest of Section B to D at NGR SH24008200
4. PRN 3807 – Standing Stone, located 170m to the southwest of Section B to E at NGR SH24008100

The south eastern end of the scheme (Section B to E) is located in close proximity to a multi-period archaeological activity identified by GAT as part of a programme of archaeological assessment and evaluation for a proposed development scheme (GAT Project G2163, assessment report 968 and evaluation report 1050). The archaeological evaluation included a geophysical survey followed by 44 targeted trial trenches, which enabled a preliminary characterisation of the archaeology. The trenching confirmed that there was prehistoric activity in the development area: two burnt mounds of probable Bronze Age date were found in Cae Glas, 1.07km east of the Holyhead Sports Centre (PRN 34742 & 34743; NGR SH26408016 & SH26438031), as well as a possible prehistoric roundhouse and parts of a field system, 230m to the southwest of the Sports Centre (PRN 34737 & 34738; NGR SH24428061 & SH24398062).

Within the larger area, Scheduled Ancient Monuments include:

1. Scheduled Ancient Monument Number (SAM) AN011 – Trefignath Burial Chamber, located 1.15km east of the Holyhead Sports Centre at NGR SH26207980;
2. AN019 – Prehistoric Hillfort, located 530m north of the start of Section A to B at NGR SH21908290;
3. SAM AN033 – Prehistoric Hut Circle, located 1.3km south of Section A to B at NGR SH21908290; and

4. SAM AN092 - Tre-Arddur Hut Group, located 1.74km southeast of the Holyhead Sports Centre at NGR SH26207980.

These initial results indicate the presence of multi-period dispersed prehistoric activity across the local landscape. The assessment will review the location and distribution of all known and suspected archaeological activity within proximity to the scheme.



### **3 METHODOLOGY**

#### **3.1 Assessment (Desktop Study)**

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

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

1. The regional Historic Environment Register (HER, Gwynedd Archaeological Trust, Craig Beuno, Garth Road, Bangor, Gwynedd LL57 2RT) will be examined for information concerning the study area. This will include an examination of the core HER, the 1:2500 County Series Ordnance Survey maps and any secondary information held within the. A list of archaeological receptors will be prepared for the report using information from the HER; this will include information sourced from within a nominal 12m wide easement along the route, based on the expected direct impact from scheme works, as well as a wider 100m assessment buffer to examine any potential indirect impact. This information will be used to prepare a gazetteer and will include information from the walkover survey if any previously unidentified receptors are also located;
2. The National Monuments Record (NMR RCAHMW, National Monuments Record of Wales, Plas Crug, Aberystwyth SY23 1NJ) will be checked for sites additional to the HER, and if required additional supporting information will be examined at the NMR.
3. On-line catalogue search of the National Library of Wales; and
4. Archive data and historic maps, e.g. Penrhos Estate maps, will be consulted in the regional archives at the Anglesey Archives (Industrial Estate Rd, Llangefni, Ynys Mon LL77 7JH) and at the Bangor University Department of Manuscripts.

Part of the assessment will involve a walkover of the study; the aim of this stage of the work is to:

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

The walkover survey will follow the route of the water main renewal and will visit the four sections identified in para. 1.0. Any inaccessible areas will be noted during the walkover and in the assessment report. A photographic record will be maintained in RAW format using a digital SLR set to maximum resolution (Nikon D3000; resolution: 3,872 × 2,592 [10.2 effective megapixels]) and photographic metadata table will be completed and included in the report. Photographic images will be archived in TIFF format. The walkover survey will be completed in late December 2015.

A gazetteer will be compiled for any identified sites within and within proximity to the specified route based on information sourced from the regional HER and the walkover survey; the gazetteer will include:

1. Feature Number
2. Site name
3. PRN number
4. Grid reference
5. Period
6. Site type
7. Assessment category
8. Description
9. Impact
10. Recommendation for further assessment/evaluation
11. Recommendation for mitigatory measures

### **3.2 Data processing and report compilation**

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

1. A non-technical summary
2. The results of the desk top analysis
3. Copies of historic maps where copyright restrictions allow
4. Results of the walk over survey
5. A map locating all recorded features and the extent of the walk over survey
6. An assessment of the impact of the development on the known or potential archaeological resource
7. Recommendations for further assessment/evaluation and/or mitigation measures
8. Conclusions
9. Sources
10. A gazetteer of all sites and features
11. Approved Project Design (Appendix I)
12. Photographic index (Appendix II)

Illustrations will include plans of the location of the study area and archaeological sites. Historical maps, when appropriate and if copyright permissions allow, will be included.

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



## **4 PERSONNEL**

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

## **5 HEALTH AND SAFETY**

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

## **6 INSURANCE**

### **Public Liability**

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

INSURER Aviva Insurance Limited

POLICY TYPE Public Liability

POLICY NUMBER 24765101CHC/000405

EXPIRY DATE 22/06/2016

### **Employers Liability**

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

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

INSURER Aviva Insurance Limited

POLICY TYPE Employers Liability

POLICY NUMBER 24765101CHC/000405

EXPIRY DATE 22/06/2016

### **Professional Indemnity**

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

INSURER Hiscox Insurance Company Limited

POLICY TYPE Professional Indemnity

POLICY NUMBER

HU PI 9129989/1208

EXPIRY DATE 23/07/2016



## 7 SOURCES CONSULTED

Dŵr Cymru drawings CAF411- 001 to CAF411- 004

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

English Heritage, 1991, *Management of Archaeological Projects*

Evans, R. 2011. *Penrhos Leisure Village, Holyhead, Anglesey: Archaeological Assessment*, unpublished GAT Report 968

Kenney, J. 2012. *Penrhos Leisure Village, Holyhead, Anglesey: Report on Archaeological*

*Evaluation Trenches*, unpublished GAT Report 1050

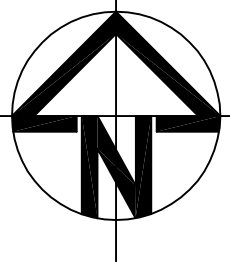
Royal Commission on Ancient and Historic Monuments of Wales 2015 *Guidelines for digital archives*

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

## **FIGURE 01**

**Reproduction of Dŵr Cymru drawings CAF411 - 001**



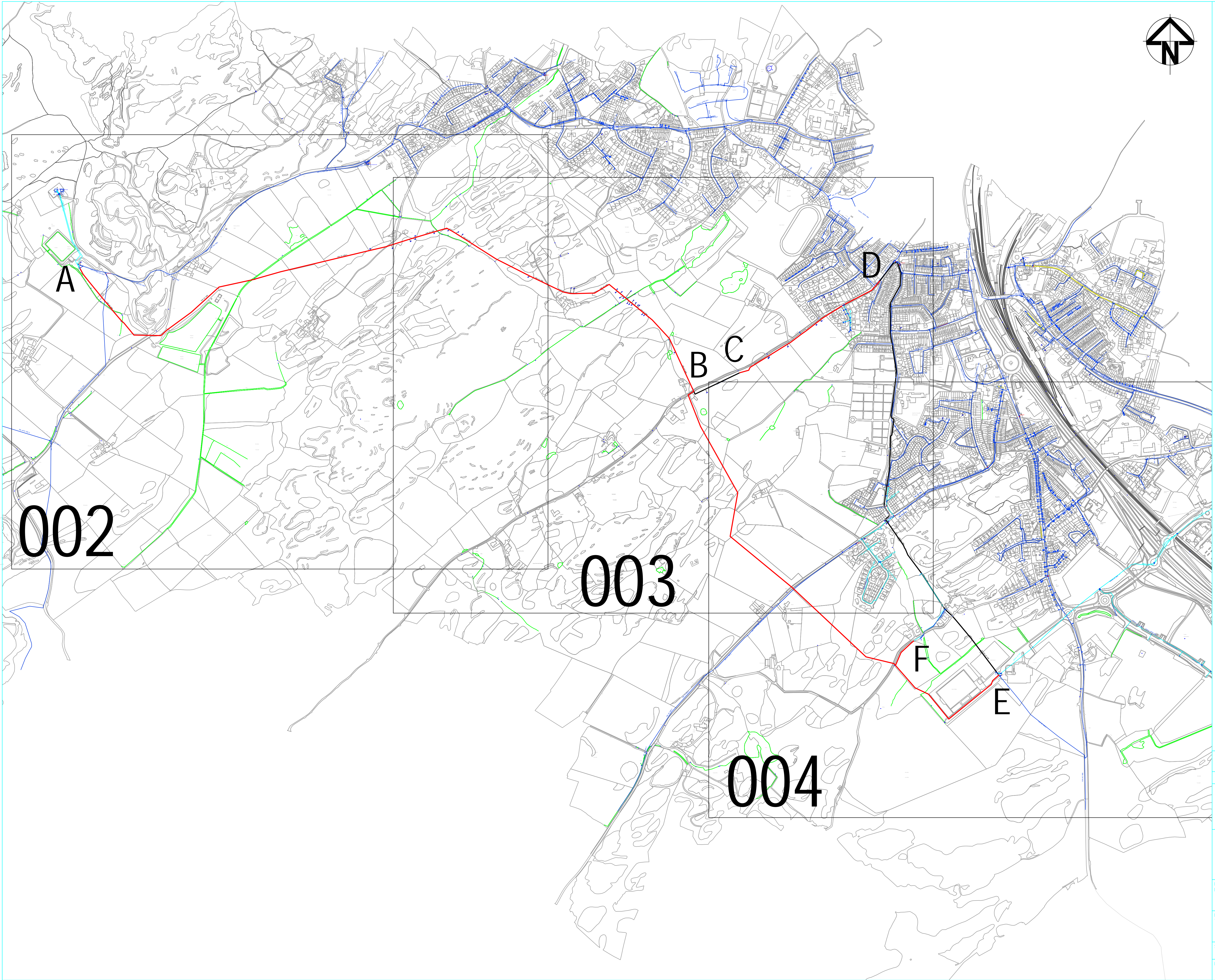


DRAWING DETAIL IS INDICATIVE AND ISSUED FOR DISCUSSION PURPOSES ONLY.

ALL MEASUREMENTS ARE APPROXIMATE.

NOTES:

- 1. ALL LEVELS ARE IN mAOD
- 2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.



KEY:  
RED - PROPOSED  
BLACK - TO BE ABANDONED

Rev.	Date.	Drawn.	Description.
P01	13.11.15	JP	PRELIMINARY ISSUE

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Ty Awen, Spooner Close, Coed Kernew, Newport, NP108FZ

Project Name: HOLYHEAD SPORTS CENTRE TO CWM 12"

Drawing Title: ROUTE PLAN

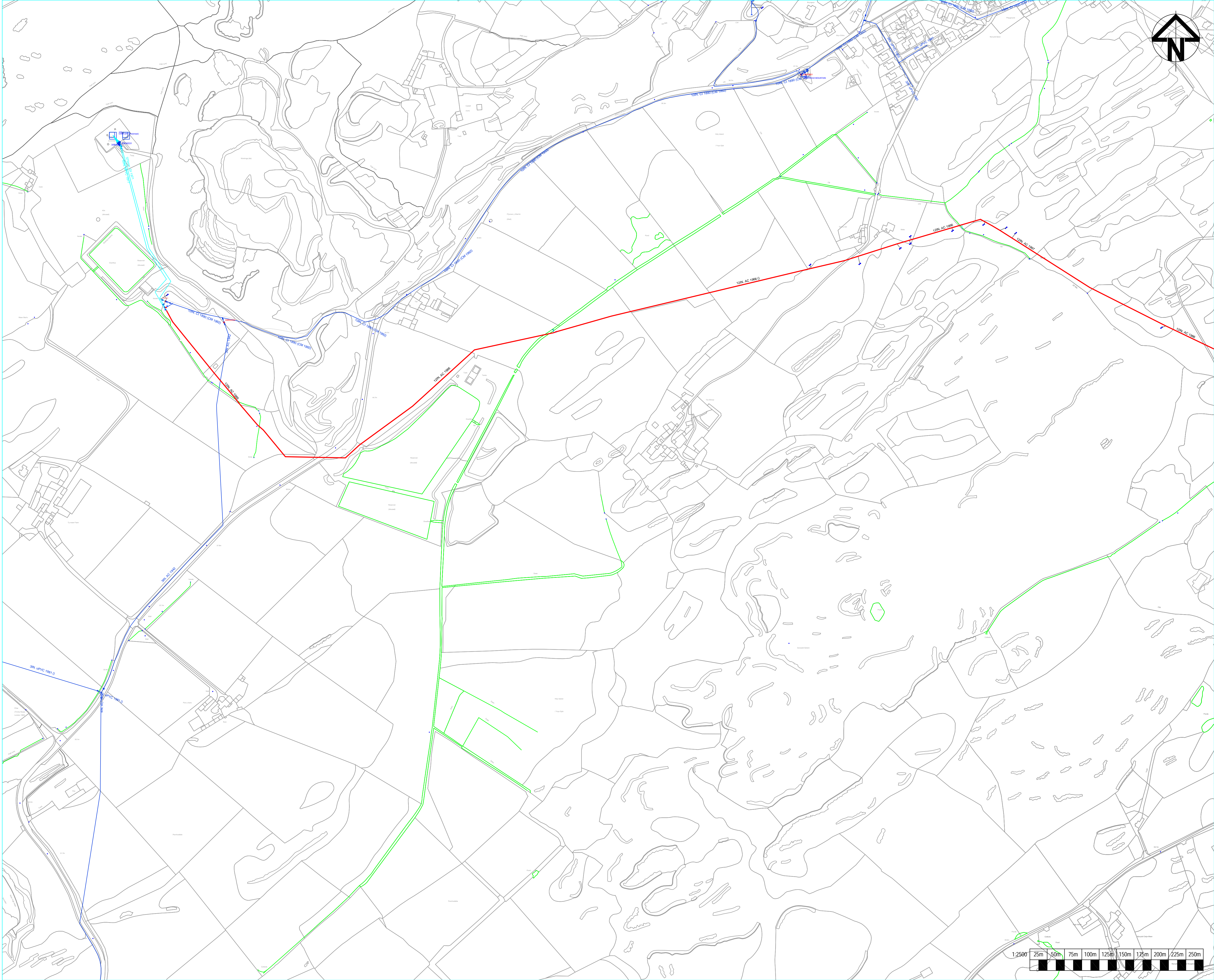
Scale: NTS	Designer: J PROUT	Date: NOV '15
Drawing Number: CAF411-001	Rev: P01	



## **FIGURE 02**

**Reproduction of Dŵr Cymru drawings CAF411- 002**





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  2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.

KEY:  
RED - PROPOSED  
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Rev.	Date.	Drawn	Description.

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Ty Awen, Spooner Close, Coed Kernew, Newport, NP108FZ

Project Name: HOLYHEAD SPORTS CENTRE TO CWM 12"

Drawing Title: ROUTE PLAN

Scale: 1:2500	Designer: J PROUT	Date: NOV '15
Drawing Number: CAF411- 002	Rev: P01	



## **FIGURE 03**

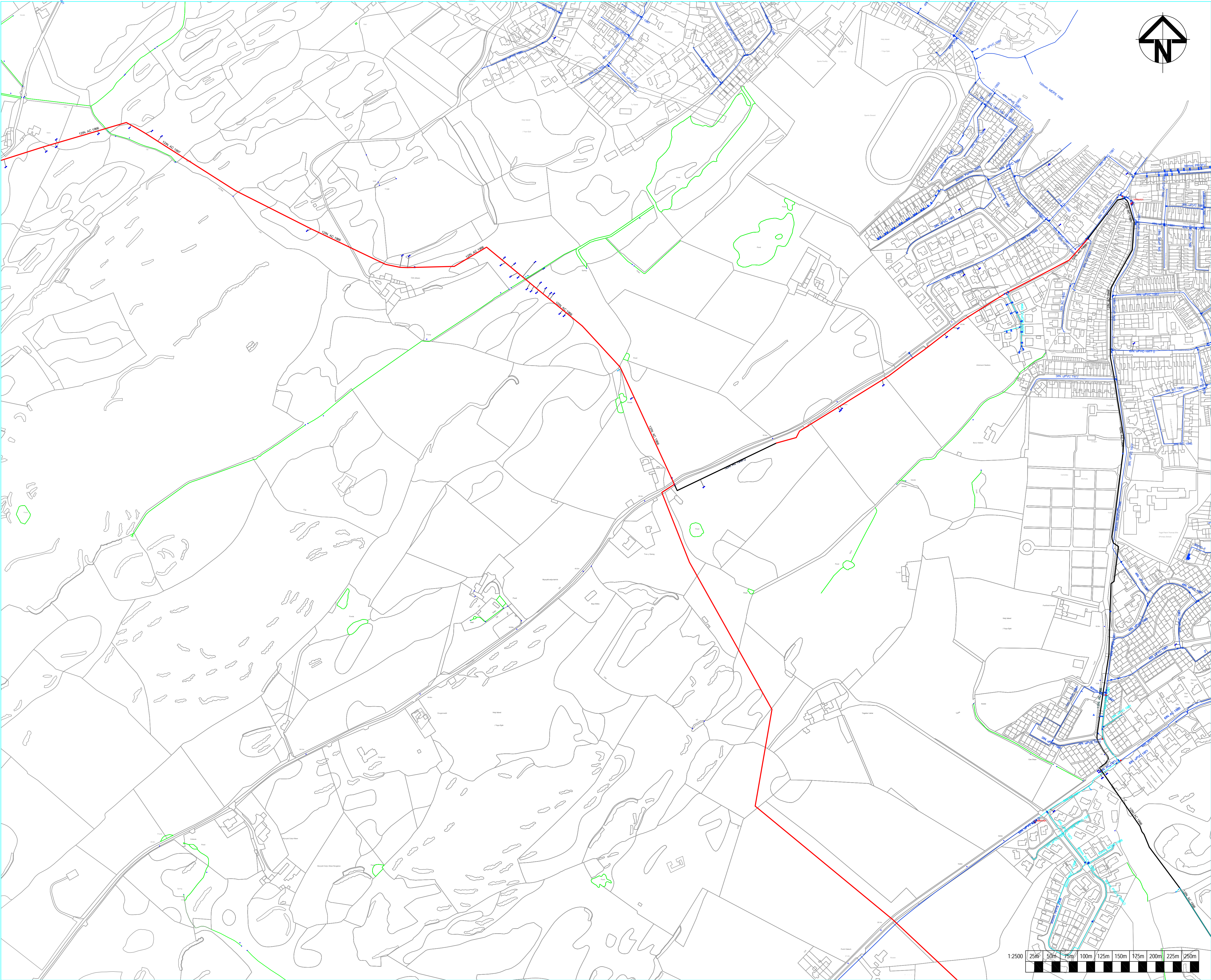
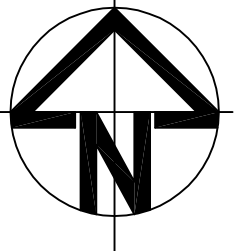
**Reproduction of Dŵr Cymru drawings CAF411- 003**



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ALL MEASUREMENTS ARE APPROXIMATE.

- NOTES:
- 1. ALL LEVELS ARE IN mAOD
  - 2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.



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BLACK - TO BE ABANDONED

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Ty Awen, Spooner Close, Coed Kernew, Newport, NP108FZ

Project Name: HOLYHEAD SPORTS CENTRE TO CWM 12"

Drawing Title: ROUTE PLAN

Scale: 1:2500	Designer: J PROUT	Date: NOV '15
Drawing Number: CAF411- 003	Rev: P01	

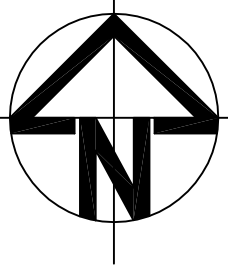




## **FIGURE 04**

**Reproduction of Dŵr Cymru drawings CAF411- 004**





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ALL MEASUREMENTS ARE APPROXIMATE.

NOTES:

1. ALL LEVELS ARE IN mAOD
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.

KEY:

- RED - PROPOSED  
BLACK - TO BE ABANDONED

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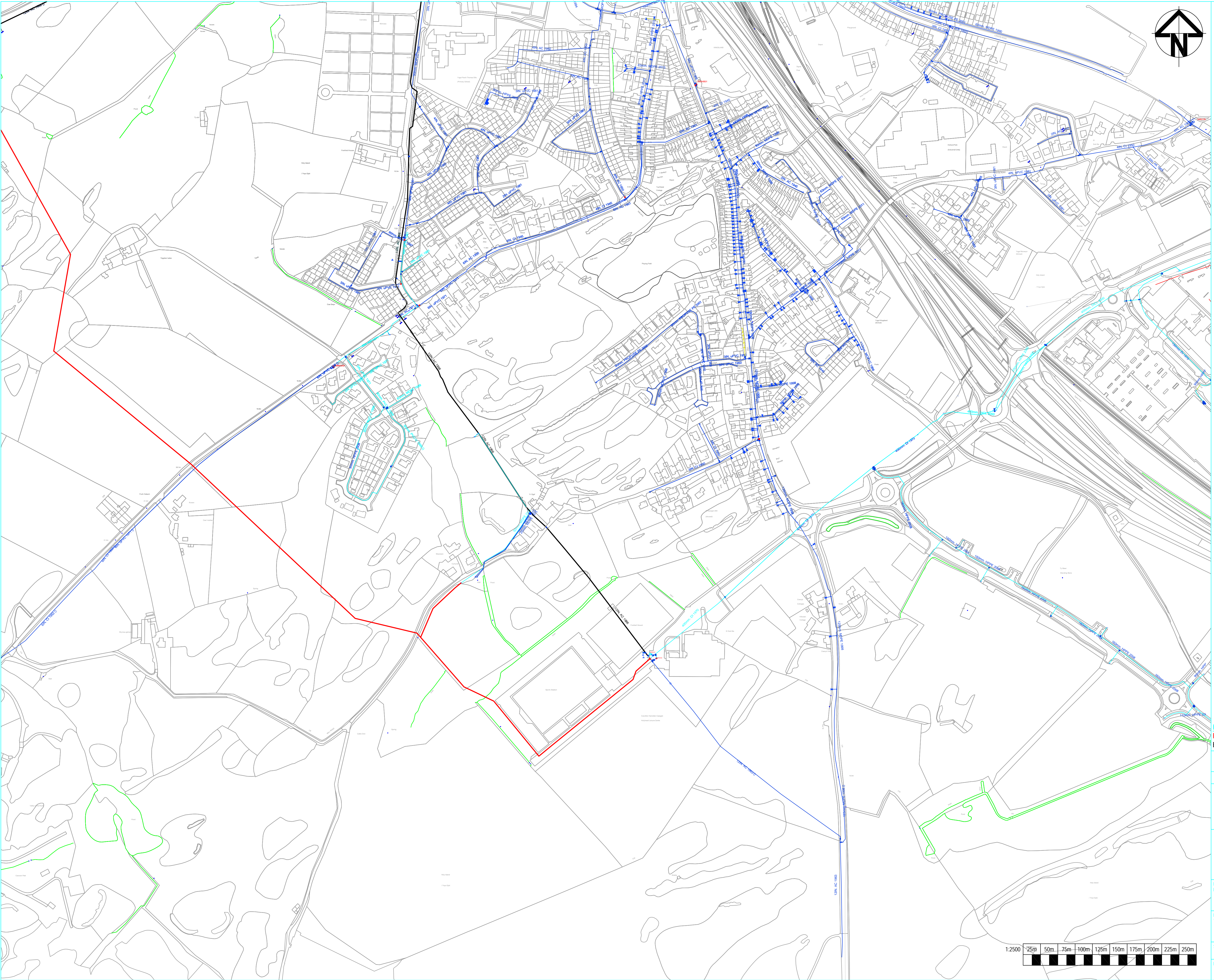


Ty Awen, Spooner Close, Coed Kernew, Newport, NP108FZ

Project Name: HOLYHEAD SPORTS CENTRE TO CWM 12"

Drawing Title: ROUTE PLAN

Scale: 1:2500	Designer: J PROUT	Date: NOV '15
Drawing Number: CAF411- 004	Rev: P01	







## **APPENDIX II**

### **Photographic Metadata**

<b>File reference</b>	<b>Project name</b>	<b>Project Phase</b>	<b>Description</b>	<b>View from</b>	<b>Scale</b>	<b>Type</b>	<b>Date</b>	<b>Originating person</b>	<b>Plates</b>
G2449_001	Holyhead Sports Centre to Cwm	Archaeological Assessment	View of bracken covered field 4, route A-B	NE	1x1m	Photograph	17/12/2015	SR, EK	Plate 05
G2449_002	Holyhead Sports Centre to Cwm	Archaeological Assessment	Crossing point of fields 4 and 5, South Stack road	SW	1x1m	Photograph	17/12/2015	SR, EK	
G2449_003	Holyhead Sports Centre to Cwm	Archaeological Assessment	Entrance to field 5 and ruined stone structure (former gatepost?)	NW	1x1m	Photograph	17/12/2015	SR, EK	
G2449_004	Holyhead Sports Centre to Cwm	Archaeological Assessment	Pathway into field 5	SW	1x1m	Photograph	17/12/2015	SR, EK	
G2449_005	Holyhead Sports Centre to Cwm	Archaeological Assessment	View across field 5	SW	1x1m	Photograph	17/12/2015	SR, EK	Plate 03
G2449_006	Holyhead Sports Centre to Cwm	Archaeological Assessment	View across field 5	NE	1x1m	Photograph	17/12/2015	SR, EK	
G2449_007	Holyhead Sports Centre to Cwm	Archaeological Assessment	View across field 6	SW	1x1m	Photograph	17/12/2015	SR, EK	
G2449_008	Holyhead Sports Centre to Cwm	Archaeological Assessment	View of drainage ditch running along eastern boundary of field 6	S	1x1m	Photograph	17/12/2015	SR, EK	Plate 04
G2449_009	Holyhead Sports Centre to Cwm	Archaeological Assessment	View across field 7	NE	1x1m	Photograph	17/12/2015	SR, EK	
G2449_010	Holyhead Sports Centre to Cwm	Archaeological Assessment	View of field boundary, route crossing field 7 to 8	SW	1x1m	Photograph	17/12/2015	SR, EK	
G2449_011	Holyhead Sports Centre to Cwm	Archaeological Assessment	View across field 8	E	1x1m	Photograph	17/12/2015	SR, EK	
G2449_012	Holyhead Sports Centre to Cwm	Archaeological Assessment	View of bracken covered, low stone wall boundary of fields 8 and 9	W	1x1m	Photograph	17/12/2015	SR, EK	
G2449_013	Holyhead Sports Centre to Cwm	Archaeological Assessment	View across field 9 (route A-B)	E	1x1m	Photograph	17/12/2015	SR, EK	
G2449_014	Holyhead Sports Centre to Cwm	Archaeological Assessment	View of stone wall and bush boundary of field 9 and 10 (no permission to access field 10)	W	1x1m	Photograph	17/12/2015	SR, EK	



File reference	Project name	Project Phase	Description	View from	Scale	Type	Date	Originating person	Plates
G2449_015	Holyhead Sports Centre to Cwm	Archaeological Assessment	View into field 21 from access point	SSE	1x1m	Photograph	17/12/2015	SR, EK	
G2449_016	Holyhead Sports Centre to Cwm	Archaeological Assessment	View across field 21 (route A-B)	N	1x1m	Photograph	17/12/2015	SR, EK	
G2449_017	Holyhead Sports Centre to Cwm	Archaeological Assessment	View of small pond in field 21, by western boundary	S	1x1m	Photograph	17/12/2015	SR, EK	
G2449_018	Holyhead Sports Centre to Cwm	Archaeological Assessment	View of boundary of fields 21 and 20, entry point to point 21, very wet ground	NW	1x1m	Photograph	17/12/2015	SR, EK	
G2449_019	Holyhead Sports Centre to Cwm	Archaeological Assessment	View across field 20 (route A-B)	SE	1x1m	Photograph	17/12/2015	SR, EK	
G2449_020	Holyhead Sports Centre to Cwm	Archaeological Assessment	View across field 20	NNW	1x1m	Photograph	17/12/2015	SR, EK	
G2449_021	Holyhead Sports Centre to Cwm	Archaeological Assessment	Boundary of fields 20 and 19	SE	1x1m	Photograph	17/12/2015	SR, EK	
G2449_022	Holyhead Sports Centre to Cwm	Archaeological Assessment	View across field 19 (route A-B)	NW	1x1m	Photograph	17/12/2015	SR, EK	
G2449_023	Holyhead Sports Centre to Cwm	Archaeological Assessment	View across field 19	NE	1x1m	Photograph	17/12/2015	SR, EK	
G2449_024	Holyhead Sports Centre to Cwm	Archaeological Assessment	View downhill in field 19	W	1x1m	Photograph	17/12/2015	SR, EK	
G2449_025	Holyhead Sports Centre to Cwm	Archaeological Assessment	View uphill in field 19	E	1x1m	Photograph	17/12/2015	SR, EK	
G2449_026	Holyhead Sports Centre to Cwm	Archaeological Assessment	View of entry from field 29 to field 18, cattle feeding area, very boggy	E	1x1m	Photograph	17/12/2015	SR, EK	
G2449_027	Holyhead Sports Centre to Cwm	Archaeological Assessment	Shot of potential standing stone or glacial erratic, in field 18	NW	1x1m	Photograph	17/12/2015	SR, EK	Plate 08
G2449_028	Holyhead Sports Centre to Cwm	Archaeological Assessment	Location shot for the stone	NW	1x1m	Photograph	17/12/2015	SR, EK	

<b>File reference</b>	<b>Project name</b>	<b>Project Phase</b>	<b>Description</b>	<b>View from</b>	<b>Scale</b>	<b>Type</b>	<b>Date</b>	<b>Originating person</b>	<b>Plates</b>
G2449_029	Holyhead Sports Centre to Cwm	Archaeological Assessment	View across field 18 (route A-B)	NW	1x1m	Photograph	17/12/2015	SR, EK	
G2449_030	Holyhead Sports Centre to Cwm	Archaeological Assessment	View into field 17, very marginal land	SE	1x1m	Photograph	17/12/2015	SR, EK	
G2449_031	Holyhead Sports Centre to Cwm	Archaeological Assessment	View across field 17 (route A-B)	NW	1x1m	Photograph	17/12/2015	SR, EK	
G2449_032	Holyhead Sports Centre to Cwm	Archaeological Assessment	View of drystone wall, boundary of fields 17 and 16	SSE	1x1m	Photograph	17/12/2015	SR, EK	Plate 06
G2449_033	Holyhead Sports Centre to Cwm	Archaeological Assessment	View across field 16 (route A-B)	NW	1x1m	Photograph	17/12/2015	SR, EK	
G2449_034	Holyhead Sports Centre to Cwm	Archaeological Assessment	View across field 16	SE	1x1m	Photograph	17/12/2015	SR, EK	Plate 02
G2449_035	Holyhead Sports Centre to Cwm	Archaeological Assessment	View of crossing into field 15	SE	1x1m	Photograph	17/12/2015	SR, EK	Plate 07
G2449_036	Holyhead Sports Centre to Cwm	Archaeological Assessment	View of corner of field 15 (route A-B)	NNW	1x1m	Photograph	17/12/2015	SR, EK	
G2449_037	Holyhead Sports Centre to Cwm	Archaeological Assessment	View of bracken and thorn preventing access to field 14 (route A-B)	NE	1x1m	Photograph	17/12/2015	SR, EK	Plate 01
G2449_038	Holyhead Sports Centre to Cwm	Archaeological Assessment	View of Plas road where pipe crosses, start of route B-E	W	1x1m	Photograph	17/12/2015	SR, EK	
G2449_039	Holyhead Sports Centre to Cwm	Archaeological Assessment	View along field 1 (route B-E)	NW	1x1m	Photograph	17/12/2015	SR, EK	
G2449_040	Holyhead Sports Centre to Cwm	Archaeological Assessment	View of hedgeline boundary of fields 1 and 2 (route B-E)	NW	1x1m	Photograph	17/12/2015	SR, EK	
G2449_041	Holyhead Sports Centre to Cwm	Archaeological Assessment	View across field 1 (route B-E)	SE	1x1m	Photograph	17/12/2015	SR, EK	
G2449_042	Holyhead Sports Centre to Cwm	Archaeological Assessment	View across field 2 (route B-E)	NW	1x1m	Photograph	17/12/2015	SR, EK	

<b>File reference</b>	<b>Project name</b>	<b>Project Phase</b>	<b>Description</b>	<b>View from</b>	<b>Scale</b>	<b>Type</b>	<b>Date</b>	<b>Originating person</b>	<b>Plates</b>
G2449_043	Holyhead Sports Centre to Cwm	Archaeological Assessment	View across field 2 (route B-E)	SE	1x1m	Photograph	17/12/2015	SR, EK	
G2449_044	Holyhead Sports Centre to Cwm	Archaeological Assessment	Boundary of fields 2 and 3 (route B-E)	NW	1x1m	Photograph	17/12/2015	SR, EK	
G2449_045	Holyhead Sports Centre to Cwm	Archaeological Assessment	View across field 3 (route B-E)	NW	1x1m	Photograph	17/12/2015	SR, EK	
G2449_046	Holyhead Sports Centre to Cwm	Archaeological Assessment	View across field 4 (route B-E)	N	1x1m	Photograph	17/12/2015	SR, EK	
G2449_047	Holyhead Sports Centre to Cwm	Archaeological Assessment	View of boundary of fields 4 and 5 (route B-E)	S	1x1m	Photograph	17/12/2015	SR, EK	
G2449_048	Holyhead Sports Centre to Cwm	Archaeological Assessment	View across field 5 (route B-E)	N	1x1m	Photograph	17/12/2015	SR, EK	
G2449_049	Holyhead Sports Centre to Cwm	Archaeological Assessment	View of boundary of fields 5 and 6 (route B-E)	NNW	1x1m	Photograph	17/12/2015	SR, EK	
G2449_050	Holyhead Sports Centre to Cwm	Archaeological Assessment	View across field 6 (route B-E)	W	1x1m	Photograph	18/12/2015	SR, EK	
G2449_051	Holyhead Sports Centre to Cwm	Archaeological Assessment	View across field 6 (route B-E)	SE	1X1m	Photograph	18/12/2015	SR, EK	
G2449_052	Holyhead Sports Centre to Cwm	Archaeological Assessment	View of stone wall boundary of field 6, between Porthdafarch road and field 7 (route B-E)	NW	1X1m	Photograph	18/12/2015	SR, EK	
G2449_053	Holyhead Sports Centre to Cwm	Archaeological Assessment	Boundary of field 7 (route B-E)	NW	1X1m	Photograph	18/12/2015	SR, EK	
G2449_054	Holyhead Sports Centre to Cwm	Archaeological Assessment	View across field 7 (route B-E)	S	1X1m	Photograph	18/12/2015	SR, EK	
G2449_055	Holyhead Sports Centre to Cwm	Archaeological Assessment	View across field 8 (route B-E)	SE	1X1m	Photograph	18/12/2015	SR, EK	
G2449_056	Holyhead Sports Centre to Cwm	Archaeological Assessment	View across field 9 (route B-E)	NW	1X1m	Photograph	18/12/2015	SR, EK	



<b>File reference</b>	<b>Project name</b>	<b>Project Phase</b>	<b>Description</b>	<b>View from</b>	<b>Scale</b>	<b>Type</b>	<b>Date</b>	<b>Originating person</b>	<b>Plates</b>
G2449_057	Holyhead Sports Centre to Cwm	Archaeological Assessment	View along road/football stadium car park	SW	1X1m	Photograph	18/12/2015	SR, EK	
G2449_058	Holyhead Sports Centre to Cwm	Archaeological Assessment	View across field 13, opposite football ground (route B-E)	SE	1X1m	Photograph	18/12/2015	SR, EK	
G2449_059	Holyhead Sports Centre to Cwm	Archaeological Assessment	View of field 12, inaccessible (route B-E)	SE	-	Photograph	18/12/2015	SR, EK	
G2449_060	Holyhead Sports Centre to Cwm	Archaeological Assessment	View from Mill road of field 12 boundary (route B-E)	NW	1X1m	Photograph	18/12/2015	SR, EK	
G2449_061	Holyhead Sports Centre to Cwm	Archaeological Assessment	View along Mill road (route F)	SSW	1X1m	Photograph	18/12/2015	SR, EK	
G2449_062	Holyhead Sports Centre to Cwm	Archaeological Assessment	View along Mill road (route F)	SSW	1X1m	Photograph	18/12/2015	SR, EK	
G2449_063	Holyhead Sports Centre to Cwm	Archaeological Assessment	View across field 12 from entrance road (route B-E)	NE	1X1m	Photograph	18/12/2015	SR, EK	
G2449_064	Holyhead Sports Centre to Cwm	Archaeological Assessment	View along field 11 (route B-E)	W	1X1m	Photograph	18/12/2015	SR, EK	
G2449_065	Holyhead Sports Centre to Cwm	Archaeological Assessment	View along field 11 (route B-E)	W	1X1m	Photograph	18/12/2015	SR, EK	
G2449_066	Holyhead Sports Centre to Cwm	Archaeological Assessment	View of boundary of fields 9 and 10 (route B-E)	SE	1X1m	Photograph	18/12/2015	SR, EK	
G2449_067	Holyhead Sports Centre to Cwm	Archaeological Assessment	View across field 1 (route C-D)	NE	1X1m	Photograph	18/12/2015	SR, EK	
G2449_068	Holyhead Sports Centre to Cwm	Archaeological Assessment	View of boundary of fields 1 and 2 (route C-D)	SW	1X1m	Photograph	18/12/2015	SR, EK	
G2449_069	Holyhead Sports Centre to Cwm	Archaeological Assessment	View along field 2 (route C-D)	NE	1X1m	Photograph	18/12/2015	SR, EK	Plate 10
G2449_070	Holyhead Sports Centre to Cwm	Archaeological Assessment	View of boundary of fields 2 and allotment/field 3 (route C-D)	SW	1X1m	Photograph	18/12/2015	SR, EK	Plate 11

<b>File reference</b>	<b>Project name</b>	<b>Project Phase</b>	<b>Description</b>	<b>View from</b>	<b>Scale</b>	<b>Type</b>	<b>Date</b>	<b>Originating person</b>	<b>Plates</b>
G2449_071	Holyhead Sports Centre to Cwm	Archaeological Assessment	View across allotment/field 3 (route C-D)	SW	-	Photograph	18/12/2015	SR, EK	Plate 12
G2449_072	Holyhead Sports Centre to Cwm	Archaeological Assessment	View along Plas road, near end of route C-D	SW	1X1m	Photograph	18/12/2015	SR, EK	Plate 09
G2449_073	Holyhead Sports Centre to Cwm	Archaeological Assessment	Section B-E field one boundary off the Plas Road.	NE	1m	Photograph	23/02/2016	SR	Plate 13
G2449_074	Holyhead Sports Centre to Cwm	Archaeological Assessment	Section B-E field one, view of stables.	E	1m	Photograph	23/02/2016	SR	Plate 15
G2449_075	Holyhead Sports Centre to Cwm	Archaeological Assessment	Section B-E field one, side of stables and proposed location of opencut.	SE	1m	Photograph	23/02/2016	SR	Plate 16
G2449_076	Holyhead Sports Centre to Cwm	Archaeological Assessment	Section B-E field one, shot of the pond.	NE	1m	Photograph	23/02/2016	SR	Plate 17
G2449_077	Holyhead Sports Centre to Cwm	Archaeological Assessment	Section B-E field one, along route of proposed opencut.	SE	1m	Photograph	23/02/2016	SR	
G2449_078	Holyhead Sports Centre to Cwm	Archaeological Assessment	Section B-E field two, shot of the field and proposed route of opencut.	NW	-	Photograph	23/02/2016	SR	
G2449_079	Holyhead Sports Centre to Cwm	Archaeological Assessment	Section B-E field two, shot of field and proposed route of opencut.	E	1m	Photograph	23/02/2016	SR	
G2449_080	Holyhead Sports Centre to Cwm	Archaeological Assessment	Section B-E stone wall field boundary between fields two and three.	NW	1m	Photograph	23/02/2016	SR	Plate 14
G2449_081	Holyhead Sports Centre to Cwm	Archaeological Assessment	Section B-E Proposed exit point for pipe at boundary of field five.	SE	1m	Photograph	23/02/2016	SR	Plate 19
G2449_082	Holyhead Sports Centre to Cwm	Archaeological Assessment	Section B-E shot of field five from the roadside.	SE	1m	Photograph	23/02/2016	SR	Plate 18
G2449_083	Holyhead Sports Centre to Cwm	Archaeological Assessment	Section B-E field four, shot along length of it and proposed route of opencut.	NW	1x1m	Photograph	23/02/2016	SR	Plate 25
G2449_084	Holyhead Sports Centre to Cwm	Archaeological Assessment	Section B-E field four, shot of probable causeway.	NNE	1x1m	Photograph	23/02/2016	SR	Plate 26

<b>File reference</b>	<b>Project name</b>	<b>Project Phase</b>	<b>Description</b>	<b>View from</b>	<b>Scale</b>	<b>Type</b>	<b>Date</b>	<b>Originating person</b>	<b>Plates</b>
G2449_085	Holyhead Sports Centre to Cwm	Archaeological Assessment	Section B-E field boundary between fields four and three with geological trial pit.	E	1m	Photograph	23/02/2016	SR	Plate 27
G2449_086	Holyhead Sports Centre to Cwm	Archaeological Assessment	Section B-E field three, geological trial pit on top of ridge.	NNW	1m	Photograph	23/02/2016	SR	Plate 28
G2449_087	Holyhead Sports Centre to Cwm	Archaeological Assessment	Section B-E field three, view of proposed opencut route from road.	NNW	1x1m	Photograph	23/02/2016	SR	Plate 20
G2449_088	Holyhead Sports Centre to Cwm	Archaeological Assessment	Section B-E field three, view of proposed opencut route from Plas Road.	SSE	1m	Photograph	23/02/2016	SR	Plate 21
G2449_089	Holyhead Sports Centre to Cwm	Archaeological Assessment	Section B-E field three, view of water channel.	N	1x1m	Photograph	23/02/2016	SR	Plate 23
G2449_090	Holyhead Sports Centre to Cwm	Archaeological Assessment	Section B-E field three, terminal of water channel.	S	1x1m	Photograph	23/02/2016	SR	Plate 22
G2449_091	Holyhead Sports Centre to Cwm	Archaeological Assessment	Section B-E field three, drain/issue associated with open water channel.	N	1m	Photograph	23/02/2016	SR	Plate 24
G2449_092	Holyhead Sports Centre to Cwm	Archaeological Assessment	Section B-E field three, close-up of drain/issue.	N	1m	Photograph	23/02/2016	SR	
G2449_093	Holyhead Sports Centre to Cwm	Archaeological Assessment	Shot of AN017.	S	-	Photograph	23/02/2016	SR	
G2449_094	Holyhead Sports Centre to Cwm	Archaeological Assessment	View from AN017 to the north-east and direction of opencut trench work.	SW	-	Photograph	23/02/2016	SR	
G2449_095	Holyhead Sports Centre to Cwm	Archaeological Assessment	View from Plas Road, adjacent to AN033 to the north-east and direction of opencut trench.	SW	-	Photograph	23/02/2016	SR	
G2449_096	Holyhead Sports Centre to Cwm	Archaeological Assessment	View from AN011 looking WSW	ESE	1m	Photograph	29/02/2016	SGS	
G2449_097	Holyhead Sports Centre to Cwm	Archaeological Assessment	View from AN011 looking SW	NE	1m	Photograph	29/02/2016	SGS	
G2449_098	Holyhead Sports Centre to Cwm	Archaeological Assessment	View from AN011 looking NW	SE	1m	Photograph	29/02/2016	SGS	





## **APPENDIX III**

### **Sites Listed on the Gwynedd HER**

Designation	Site name	Grid ref.	Period
PRN 3806	Hut Group and Finds, Site of, Twr	SH22008200	Prehistoric
NPRN 416161	Plas Hyfryd Terrace, Holyhead	SH24418206	19th Century



## **APPENDIX IV**

### **Definition of Terms**

## Categories of importance

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

### *Category A - Sites of National Importance.*

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

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

### *Category B - Sites of regional or county importance.*

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

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

### *Category C - Sites of district or local importance.*

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

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

### *Category D - Minor and damaged sites.*

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

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

### *Category E - Sites needing further investigation.*

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

## Definition of Impact

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

### *None:*

There is no construction impact on this particular site.

### *Slight:*

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

*Unlikely:*

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

*Likely:*

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

*Significant:*

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

*Considerable:*

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

*Unknown:*

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

## **Definition of field evaluation techniques**

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

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

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

## **Definition of Mitigatory Recommendations**

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

*None:*

No impact so no requirement for mitigatory measures.

*Detailed recording:*



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

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

*Basic recording:*

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

*Strip, Map and Sample:*

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

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

*Watching brief:*

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

*Avoidance:*

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

*Reinstatement:*

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



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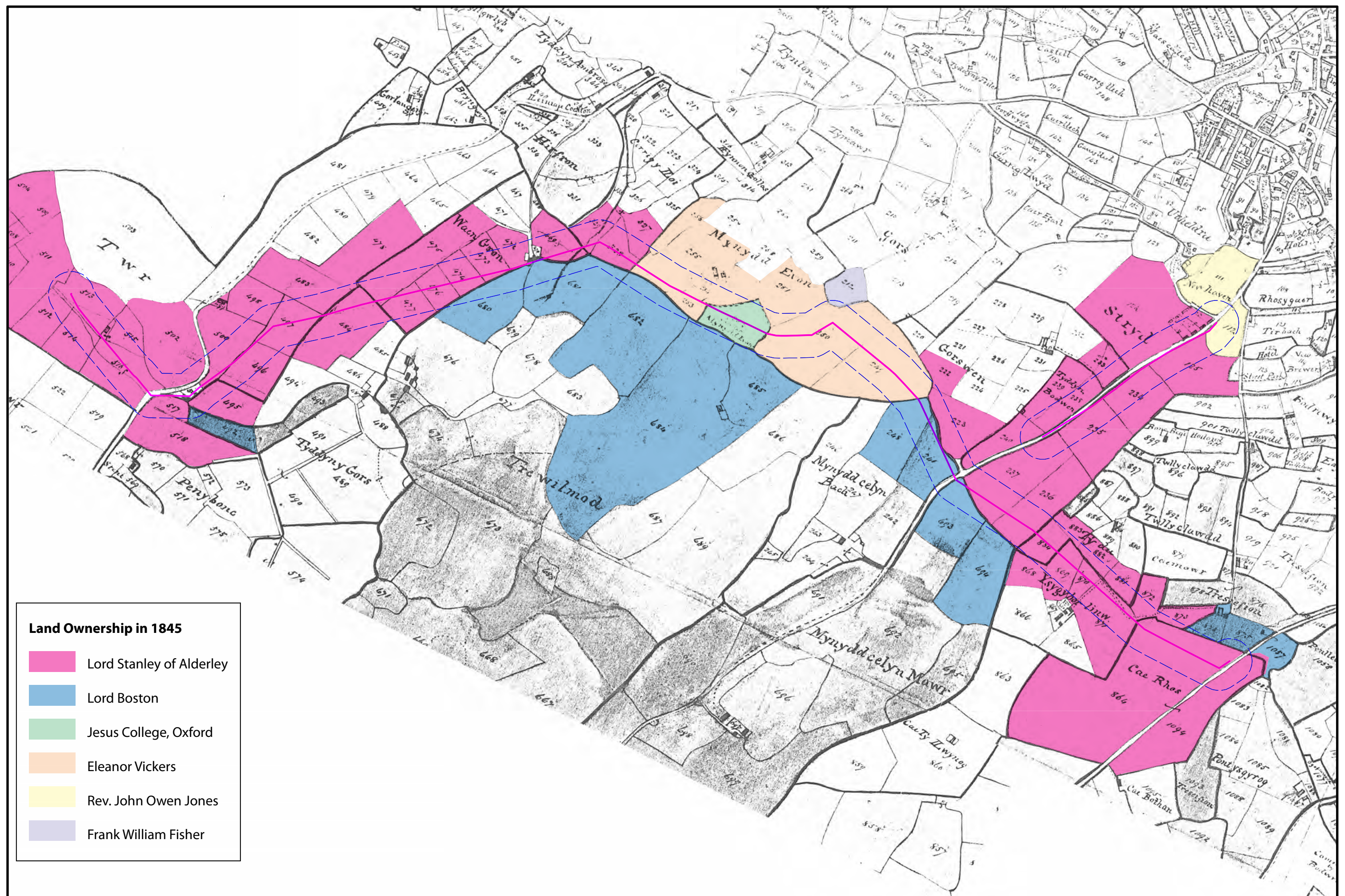


Figure 09: Reproduction of the Holyhead Tithe Map of 1845 showing landowners along the route of the scheme. The proposed route is superimposed as a pink line, 100m assessment buffer outlined in blue. Scale: 1 to 7500@A3.