Results of Archaeological Works at St Mary's Church, Caerhun

NGR SH 77669 70423

Report Number CR120-2017

C.R Archaeology
Prepared by C. Rees & M. Jones
On Behalf of St Mary's Church, Caerhun

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1.0 Introduction

C.R Archaeology were instructed by St Mary's Church, Caerhun to conduct archaeological works at the above site. Although the site is an active place of worship and was thus subject to Ecclesiastical Exemption it was considered good practice by the Bangor Diocese that the development be subject to an archaeological investigation. Development Control Archaeologist Jenny Emmett of Gwynedd Archaeological Planning Services conducted a site visit on August 5th 2016 to discuss an appropriate programme of works to be undertaken at the site and monitored the project.

St Mary's Church was installing a composting toilet within the footprint of an old hearse house on the church perimeter wall and a pathway to allow disabled access to the new facilities (see Appendix A for details of proposed works). It was agreed with the Bangor Diocese and GAPS that an archaeological watching brief would be conducted at the site and that the groundworks associated with the toilet installation be carried out by C.R Archaeology staff. The works were amended and the pathway construction methodology did not necessitate any excavation as plastic matting was utilised. All excavation will be by hand.

St Mary's Church is strikingly situated on a rise overlooking the river Conwy and occupies the north-eastern corner of the Roman fort of Canovium. It is accessed via a metalled lane running east from the B5106 Bettws-y-Coed to Conwy road (Figure 1). The church is a Grade I Listed Building (ID 3167) and the Roman Fort of Canovium is a Scheduled Ancient Monument (SAM) CN001. The fort has a vicus (civilian settlement) extending to the north and there are associated features including roads and burials recorded on the adjacent land.

The excavation covered the main pit for the composting toilet which measured 2.8m x 2m and was excavated to a maximum depth of 1.2m, a trench which led from this pit to a soak-away and the soak-away itself which measured 2m x 0.8 which was excavated to a maximum depth of 0.70m. The excavations revealed a large accumulation of nineteenth century material which overlay a clean, compact grey-yellow clay layer. This layer contained no artefactual material and is believed to represent an up-cast layer of redeposited natural which formed the bank of the Roman Fort of Canovium. No artefactual material was recovered from this deposit.

2.0 Project Aims

This scheme of works aimed to conduct groundworks at the site in order to assess the survival, character and date of any archaeological remains and to excavate/record any archaeological remains uncovered.

It aimed to fulfil the mitigation criteria for undertaking an Archaeological Watching Brief as specified in the CIfA Standard and Guidance document (2014).

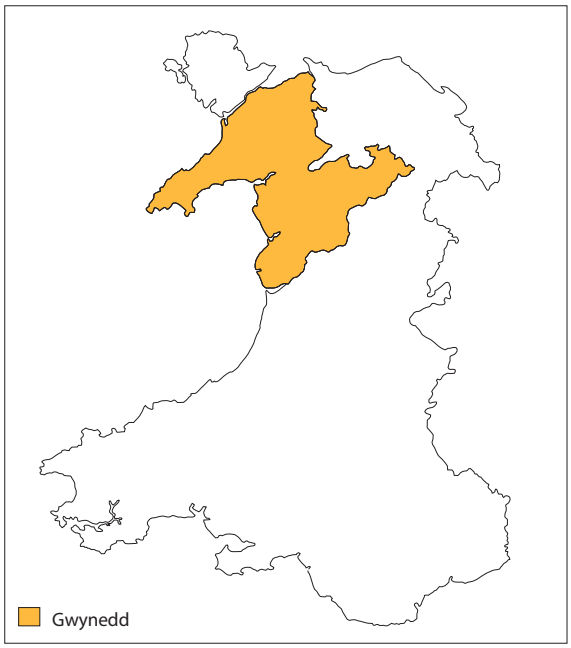
3.0 Scheme of Works – Methodology

The methodologies employed conformed to The Charted Institute for Archaeologists: *Standard and Guidance for Archaeological Watching Brief* (2014).

3.1 Desk Based Research

The history of the site is well documented and no previously undiscovered features were uncovered. There was however part of the Roman bank deposit surviving within the trenches and therefore, in addition to the Cadw Listed Building description for the church and the Scheduled Ancient Monument description for the Fort of Canovium, the excavation report published by P. K. Baillie Reyonds was consulted to provide context to the feature.

Works were carried out in accordance with the CIfA Standards and Guidance for Historic Environment Desk Based Assessment (CIfA 2014).



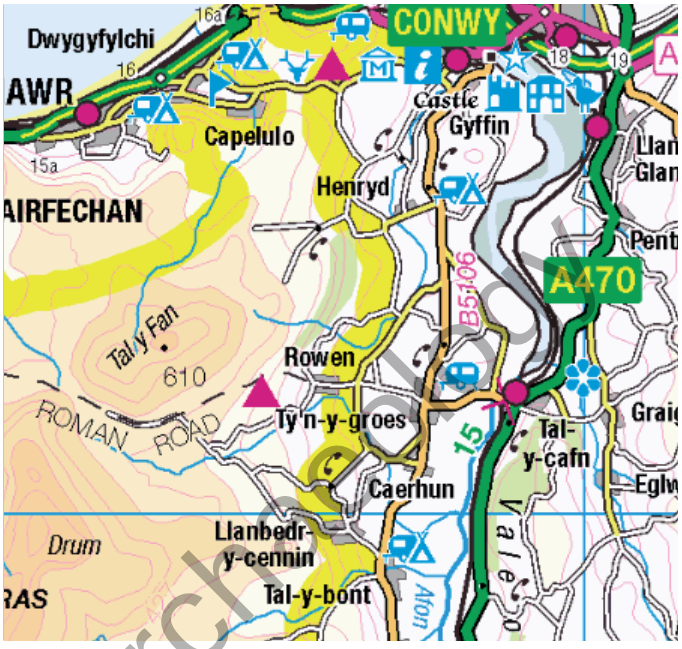


Figure 1. Site Location Map - Source: OS Open Data
(Contains Ordnance Survey data © Crown copyright and database right 2016)

3.2 Archaeological Watching Brief

This project specification was written to cover an archaeological watching brief but due to the restricted excavation area the entirety of the hand digging works at the site were undertaken by C.R Archaeology. The excavation covered the main pit for the composting toilet which measured 2.8m x 2m and was excavated to a maximum depth of 1.2m, a trench which led from this pit to a soak-away and the soak-away itself which measured 2m x 0.8 which was excavated to a maximum depth of 0.70m.

It was initially proposed that a pathway be cut through the graveyard which connected the composting toilet to the main church path, but this scheme was revised and plastic matting has been utilised so no excavation was necessary.

A C.R Archaeology staff member conducted all excavation associated with the groundworks. This work was undertaken by hand and the soak away is to be excavated by staff from C.R Archaeology.

C.R Archaeology notified GAPS as the date of the commencement of works and updated them on the works. A site visit was not deemed necessary given the limited results of the works.

No discrete features or features yielding suitable material for dating/environmental processing were encountered. Due to the likelihood of uncovering small human bones and stray Roman artefacts all soil removed during the excavation was coarse sieved on site and a metal detector used to check excavated material. It was not possible to sieve the underlying clay but it was scanned with a metal detector.

3.2.1 The Recovery and Recording of Human Remains

Given that the works were undertaken within a graveyard which had been in use for burial for more than 700 years it was considered very likely that human remains will be encountered. Different excavation methodologies were therefore devised which were dependant on the nature and position of the remains encountered. When the excavation was undertaken, due to the high level of nineteenth century disturbance, only disarticulated material was encountered.

3.2.1.1 Disarticulated Human Remains Recovered During Excavation

Where disarticulated human remains were encountered, they were collected and bagged. They were securely stored on site and were reburied on site on completion of the project. They were not subject to any analysis.

3.2.2 Recording

The record forms at C.R Archaeology are based on the Historic England system and full written, graphic and photographic records were made in accordance with the Historic England *Field Recording Manual*. Sample forms can be provided on request. The written record comprises completed *pro-forma* record sheets.

Plans, sections and elevations were produced on gridded, archive standard stable polyester film at scales of 1:10, 1:20 or 1:50, as appropriate. Representative measured sections were prepared as appropriate showing the sequence and depths of deposits. All drawings were numbered and listed in a drawing register, these drawing numbers being cross-referenced to written site records. A 'harris matrix' diagram was created.

A high-resolution 14.2mp Sony Alpha digital camera was used to create a photographic record of the site. This is comprised of photographs of general trench shots at each layer reached. Included in each photograph was an appropriate scale.

All photographic records were indexed and cross-referenced to written site records. Details concerning subject and direction of view are maintained in a photographic register, indexed by frame number. Images from photography will be stored in a loss-less digital format in this case '*.TIF'.

3.2.3 Additional Mitigation/Contingency Measures
No additional mitigation or contingency measures were necessary.

3.2.4 Recovery, Processing and Curation of Artefactual Material
All recovered artefactual material will be retained, cleaned, labelled and stored according to *Standard and Guidance for the collection, documentation, conservation and research of archaeological materials (IfA 2008) and First Aid for Finds (Watkinson & Neal* 2001). The aim will be to create a stable, ordered, well-documented, accessible material archive forming a resource for current and future research (IfA 2008).

A mixture of late nineteenth and twentieth century was uncovered within the mixed upper deposit. Nothing of note was recovered or retained.

The works will be carried out in accordance with The Chartered Institute for Archaeologists: *Standard and Guidance for Archaeological Watching Brief* (Revised 2008 & 2014).

3.2.5 Archive Compilation
All records created during the fieldwork will be checked for consistency and accuracy and will form part of the *Primary Site Archive (P1)* (EH 2006). The archive will contain all data collected, including records and other specialist materials. It will be ordered, indexed, adequately documented, internally consistent, secure, quantified, conforming to standards required by the archive repository and signposted appropriately to ensure future use in research, as detailed in the English Heritage *Management of Research Projects in the Historic Environment* (MoRPHE) methodology.

The archive will be assembled in accordance with the guidelines published in, *Standards in the museum care of archaeological collections* (Museums & Galleries Commission 1994), *Guidelines for the preparation of excavation archives for long-term storage* (United Kingdom Institute for Conservation, 1990) and *Archaeological Archives: A guide to best practice in creation, compilation, transfer and curation* (AAF 2007).

All materials contained within the *Primary Site Archive (P1)* that are subsequently identified by the *Assessment Report* (*P2)* as appropriate for analysis will be processed by suitable specialists and the resultant *Research Archive* (*P3)* will be checked and ordered according to *MoRPHE* criteria.

Archival material created during this archaeological project will be deposited at the RCAHMW as the artefactual assemblage is to be retained by the church. The exception to this would be if artefacts are to be deposited in a museum – and in this instance the paper archive will accompany the artefacts. Archive material will be deposited in accordance with the RCAHMW/museum's terms and conditions for archive deposition.

3.3 Timetable for Proposed Works
Initial groundworks commenced on the 19th December and took 2 days. Further works began on the 27th December and took a further 3 days. Additional time was allotted as necessary for archive research, report compilation and site archiving. Gwynedd Archaeological Planning Services were informed of the exact site days to allow monitoring of works.

3.4 Staffing
Fieldwork was conducted and managed by Matthew Jones and Catherine Rees of C.R Archaeology. A local A Level student hoping to study archaeology at university assisted as a volunteer on site. She was fully supervised at all times and training as to excavation techniques was given.

All projects are carried out in accordance with CIfA *Standard and Guidance* documents.

3.5 Monitoring
Although the site does have Ecclesiastical Exemption it was agreed that project would be subject to monitoring by Gwynedd Archaeological Planning Services. The monitor was given prior notice of the commencement of the fieldwork.

They were notified in writing (via email) of the commencement dates for archaeological site work and were updated with the results of the works conducted.

3.6 Health and Safety
A risk assessment was conducted prior to the commencement of works and site staff were familiarised with its contents. A first aid kit was located in the site vehicle.

All staff were issued with appropriate Personal Protective Equipment (PPE) for the site work. This consisted of:

- Safety Helmets (EN397)
- Hi-visibility vests (EN471)
- Safety footwear – steel toecap and mid-sole boots and Wellingtons (EN345-47)

All paid staff have passed at least a CITB health and safety test at operative level and carry a Construction Related Organisation (CRO) White Card for Archaeological Technician (Code 5363).

C.R Archaeology staff also comply with all Health and Safety Policy or specific on-site instructions provided by the client or their appointed Principal contractor or H&S coordinator.

3.7 The Report
The report clearly and accurately incorporates information gained from the programme of archaeological works. It presents the documentary evidence gathered in such a way as to create a clear and coherent record.

The report includes:

- A copy of the design brief and agreed specification
- A location plan
- All identified features and significant finds plotted on an appropriately scaled site plan
- Full dimensional and descriptive detail of all identified finds and features
- A full bibliography of sources consulted
- An archive compact disc

A copy of the report in Adobe PDF format will be sent to the appropriate monitoring archaeologist for approval before formal submission. A bound paper copy and PDF digital copy of the report will be submitted as part of the formal submission. A digital Adobe PDF version and a bound paper copy of the final report and will be lodged with the Gwynedd Historic Environment Record within six months of completion of the project.

3.7.1 Copyright
C.R Archaeology and sub-contractors shall retain full copyright of any commissioned reports, tender documents or other project documents, under the Copyright, Designs and Patents Act 1988 with all rights reserved; excepting that it hereby provides a licence to the client and the local authority for the use of the report by the client and the local authority in all matters directly relating to the project as described in the Project Specification.

4.0 Geographical and Geological Context
4.1 Topography
St Mary's Church is strikingly situated on a rise overlooking the river Conwy and occupies the north-eastern corner of the Roman fort of Canovium. It is a rural setting just off the B5106. The church is in use for active worship.

4.2 Geology
The bedrock is recorded as "*Denbigh Grits Formation - Mudstone, Siltstone And Sandstone. Sedimentary Bedrock formed approximately 423 to 428 million years ago in the Silurian Period. Local environment previously dominated by deep seas. These rocks were formed in deep seas from infrequent slurries of shallow water sediments which were then redeposited as graded beds*". The superficial geology is recorded as "*Till, Devensian - Diamicton. Superficial Deposits formed up to 2 million years ago in the Quaternary Period. Local environment previously dominated by ice age conditions. These rocks were formed in cold periods with Ice Age glaciers scouring the landscape and depositing moraines of till with outwash sand and gravel deposits from seasonal and post glacial meltwaters"* (www.mapapps.bgs.ac.uk/geologyofbritain/home.html).

5.0 Historical Background
The church is a Grade I Listed Building (ID 3167) and the following text is taken from the listing.

*"**Location***
Strikingly situated on a rise overlooking the river Conwy on the W bank, and occupying the NE corner of the former Roman fort of Canovium; accessed via a metalled lane running E from the B5106 Bettws-y-Coed to Conwy road.

History
The site originated in the second-half C1 AD as a Roman auxiliary camp, probably established by Agricola; archaeological evidence shows civilian occupation here continued into at least the 5th century. The present church is early Medieval with early C15 and C16 additions and alterations. The former consist of rebuilt E and W gable ends, a re-roofing of the continuous nave and chancel, and an added S porch. A south chapel was added apparently in 1591, by Captain Edward Williams (of Maes-y-Castell), and an ex situ dedication board bearing this date survives within; in addition, a (now very weathered) sandstone plaque above the chapel's S window is recorded as showing the arms of Edward Williams, together with the date as before. Despite this apparently unequivocal dating evidence, both the roof structure and the S and E windows of the chapel are of C15 character; the implication therefore is that either earlier elements have been re-used/re-set, or a pre-existing space has been remodelled, or that alternatively the style and construction is merely deeply antiquated.

Interior
Long, continuous nave and chancel. Simple arched-braced collar roof consisting of 31 clustered trusses, probably C14 or early C15; flagged floor. Late C19 figurative stained glass to western-most window of N wall; plain bowl font on column, presumably early Medieval. Round-arched niche to L of E window, a fragment of the pre-C15 E wall. c1830 Gothick furnishings with simple pews with moulded rails to flat bench ends. Sunk-panelled octagonal pulpit on moulded base; stall with open Decorated tracery. The S chapel opens out from the chancel, the supporting bressummer for its wide,

flat opening being carried on a figurative engaged capital set into the E wall; this is perhaps C13 and is re-set. 2-bay roof with arched-braced collar truss with plain struts; protruding dowels and chamfered decoration. Above the chapel's E window is a long oak board bearing the inscription in raised letters: 'EDWARDVS : WILL: IAMES: AR: ET: / GRACEA: UXOREI: Q HOC: OPVS: FIERI/ FECERVNT: ANNO: DOMINI: 1591.' This refers to Captain Edward Williams of Maes-y-Castell, High Sheriff of Caernarvonshire in 1570. W wall mural tablet with arms cartouche to Hugh Davis of Caerhun, d.1721; E wall monument to Catherine Hester Hemming and family, d.1829. 2-bay vestry (former S porch) with C15 collar-truss roof with windbraces.

Exterior

Simple church with long, continuous nave and chancel and S chapel addition flush with the E end. Of random rubble construction under a renewed slate roof; the walling includes a quantity of squared red sandstone blocks which are probably re-used Roman material from the site. Rough-kneelered and stone-coped W end gable parapets with large surmounting double-bellcote. This projects slightly beyond the line of the W wall and is carried downwards to rest on 4 rounded corbels; in the centre of this projection is a carved stone crucifix in a shallow cusped, arched niche of C15 type. Depressed-headed bell openings with triangular profiled rubble coping to flat top; central stone gablet. Deeply-recessed W door with gently-pointed arch; C18 studded plank door. 3 post-Reformation 3-light mullioned leaded windows to N side, those to the L and R of re-used sandstone and slate-stone respectively and that to the centre with C19 pale sandstone mullions. Wide, segmentally-arranged sandstone voussoirs appear between the first 2 windows from L, testifying to an earlier opening. Simple C15 3-light mullioned E window with arched sandstone heads. Adjoining to the S and flush with the E end, the S chapel. This has a 2-light mullioned window to its E side with wide, cusped, arched heads and a similar 3-light window to its gabled S face; original ferrementa. Above, an eroded sandstone plaque formerly bearing the initials EW and GW flanking the Williams arms, and with the date 1591. 2 further post-Reformation windows to the nave S wall, that towards the W of 3 lights with slate mullions and that towards the E a wooden 2-light window. Beyond, towards the W end, a C15 rubble S porch, largely rebuilt as a vestry in the C19, though retaining its W wall and roof structure. This now has a small, arched and cusped window to its S face, re-set and probably originally in the porch E wall.

Reason for Listing

Included at Grade I as a fine Medieval church of considerable architectural and historical significance" (www.britishlistedbuildings.co.uk).

The Roman Fort at Canovium is briefly described in Coflien as "*Canovium, a Roman military settlement set at a strategically important point on a ridge overlooking the Conwy river, is the last intermediate fort in a defensive chain that ran along the coastal road from Chester to Caernarfon. It was occupied, with some breaks, from the time of Agricola's campaign in AD 77/8 through to the the fourth century. The settlement centres on an auxiliary fort, a near square stone walled enclosure, 130-140m across. This was the scene of extensive excavations in 1926-9. At the foot of the river cliff traces of the bathhouse explored in the early nineteenth century can be seen. The settlement is known to have extended along the ridge to the north, extensive remains being glimpsed from the air and in geophysical survey. It was fringed by cemeteries and a possible circular shrine or tomb has been identified on the north. There is some, though not conclusive, evidence that the nearby dock is a Roman structure (NPRN 303122). Roads are known to have led from the settlement, including those to St Asaph (NPRN 303525) and Tomen-y-Mur (NPRN 303519)*" (www.coflein.gov.uk).

The summary for the SAM adds a little information and is included below:

"*A Roman military settlement set at a strategically important point on a ridge overlooking the Conwy river, is the last intermediate fort in a defensive chain that ran along the coastal road from Chester to Caernarfon. It was occupied, with some breaks, from the time of Agricola's campaign in AD 77/8 through to the fourth century. The settlement centres on an auxiliary fort, a near square stone walled enclosure, 130-140m across. This was the scene of extensive excavations in 1926-9. At the foot of the river cliff traces of the bathhouse explored in the early nineteenth century can be seen. The settlement is known to have extended along the ridge to the north, extensive remains being glimpsed from the air and in geophysical survey. It was fringed by cemeteries and a possible circular shrine or tomb has been identified on the north. There is some, though not conclusive, evidence that the nearby dock is a Roman structure. Roads are known to have led from the settlement, including those to St Asaph and Tomen-y-Mur. The monument is of national importance for its potential to enhance our knowledge of Roman settlement and defence. It retains significant archaeological potential, with a strong probability of the presence of associated archaeological features and deposits. The structures themselves may be expected to contain archaeological information concerning chronology and building techniques. The scheduled area comprises the remains described and areas around them within which related evidence may be expected to survive*" (www.cadwpublicapi.azureweb sites .net/reports/sam/FullReport?lang=en&id=3296).

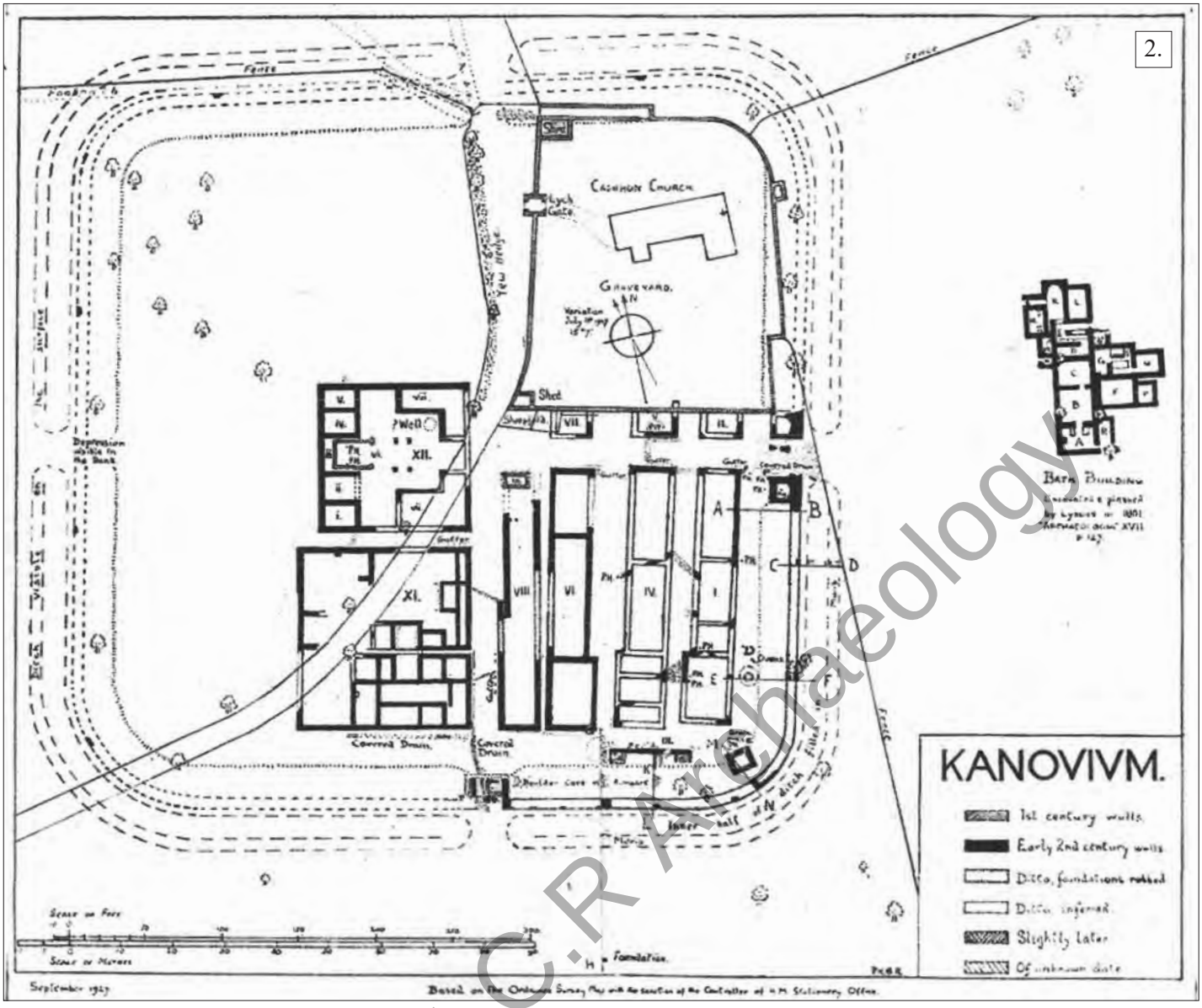
The excavation area lay in the north-western corner of the church yard, in an area on top of the enclosing bank of Canovium Fort. Baillie Reynolds dug two trenches through the southern and eastern ramparts and his descriptions and drawings are included below:

"***The Defences***
The Fort was defended by a clay rampart, which was subsequently strengthened by being faced with a stone wall, and by one ditch, which was divided into two by a midrib.

The Rampart
Complete sections were cut through the rampart on the south and east sides on the lines G-H and A-B on the plan.

South Side – In the section G-H the rampart was 24 ft. thick. At the bottom, resting on the disturbed surface, was a layer 3-4 inches deep of clay thrown up from the ditch. On this bedding, and forming a nucleus for the clay rampart, was a pile of boulders nearly 10ft. wide and about 1.8ft. high; they were covered by about a foot of clay from the ditch, in which was nearly a third of a Samian dish, Form 18, of early type, part of the rim of a frilled cup, and one or two other fragments. The pile of boulders was made first, since the interstices between them were not filled. Over all was a layer of firm blue clay, worked quite clean, which was probably brought up from the river. This was continued for some 10ft. south of the pile of boulders, and formed the outer face of the rampart. A single layer of boulders, 5ft. wide, set in a bedding of clay, formed a footing for the outer edge of the rampart. In this section the bank was standing to a maximum height of 5ft., but the crown had disappeared.

East Side – In the section A-B the rampart had no nucleus of boulders, but there was a very definite core composed of various layers of clay probably thrown up from the ditch. Covering this, and extending outside it for 10ft. as on the southern side, was the same layer of clean blue clay, with its outer edge resting in the same way on a boulder footings 5ft. wide. Over the core the rampart was standing 5ft. 6in. high, and this may very well have been its original height. The shape of the bank here is peculiar; the blue clay covering conformed to the slope of the inner core till half-way down, but was then continued outwards for 10ft. at much the same level, even rising slightly towards the outer edge. A small patch of ashes in this depression showed that its surface was exposed for a short time at least; it was then filled up with gravel, the surface of which was exposed for a considerable



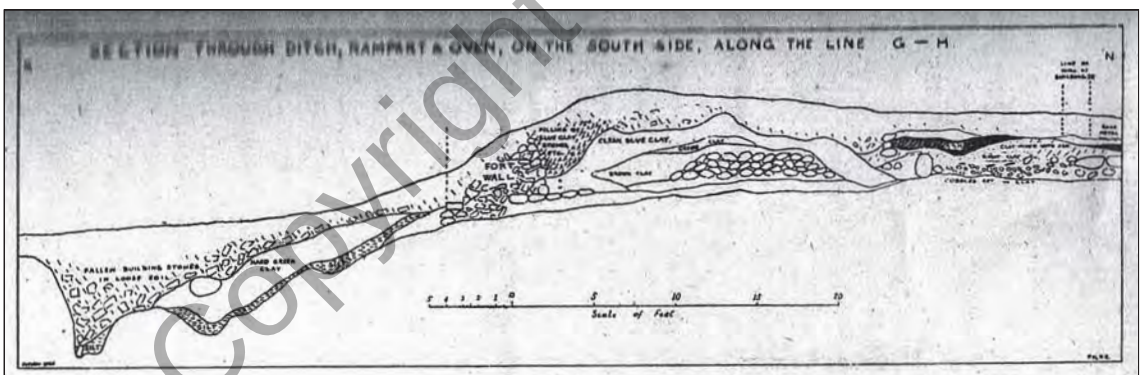


Fig. 1.

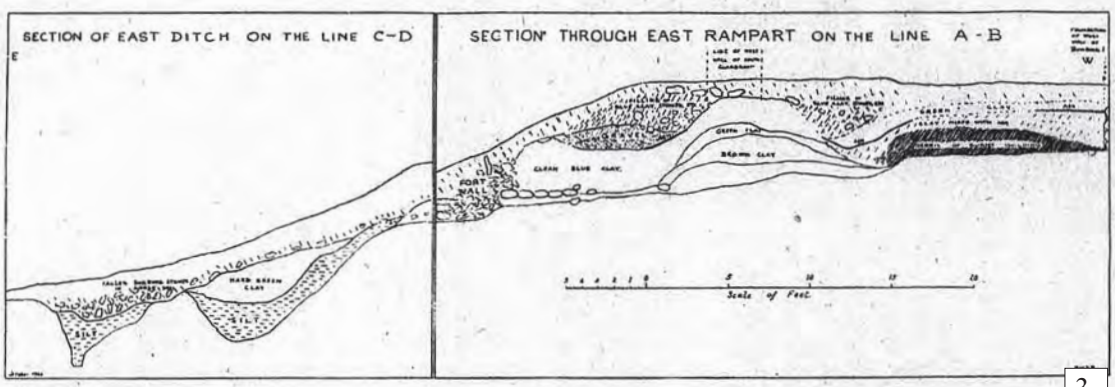


Fig. 2.

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Figure 2. Plan Of Canovium Fort Produced By Baillie Reynolds in 1926

Section Lines are Marked in Orange

Figure 3. Sections Through Fort Ramparts

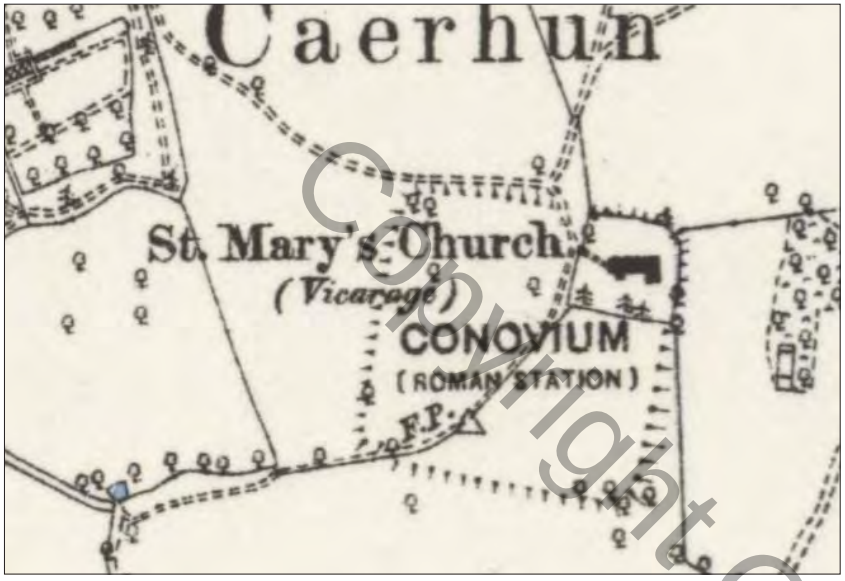

Figure 4. 1889 Ordnance Survey Map Showing Caerhun Church (Surveyed 1887)

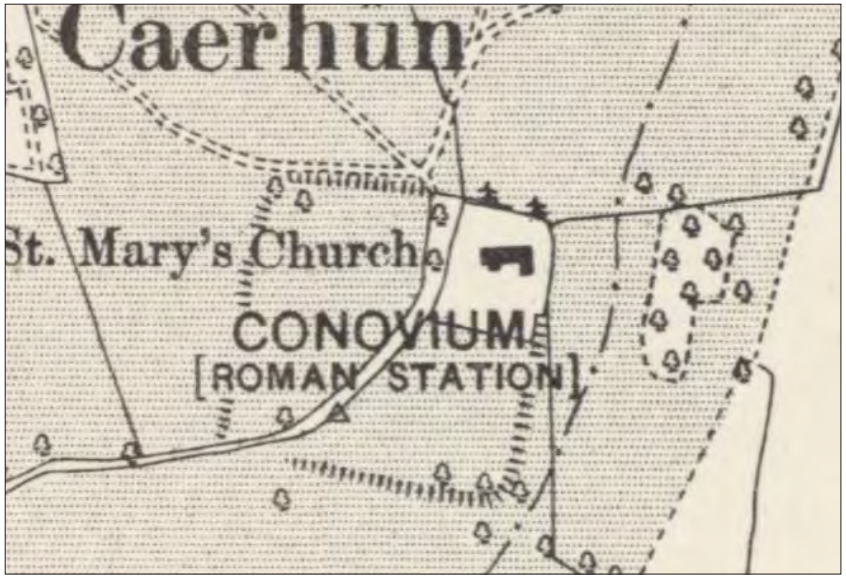

Figure 5. 1901 Ordnance Survey Map Showing Caerhun Church (Revised 1899)

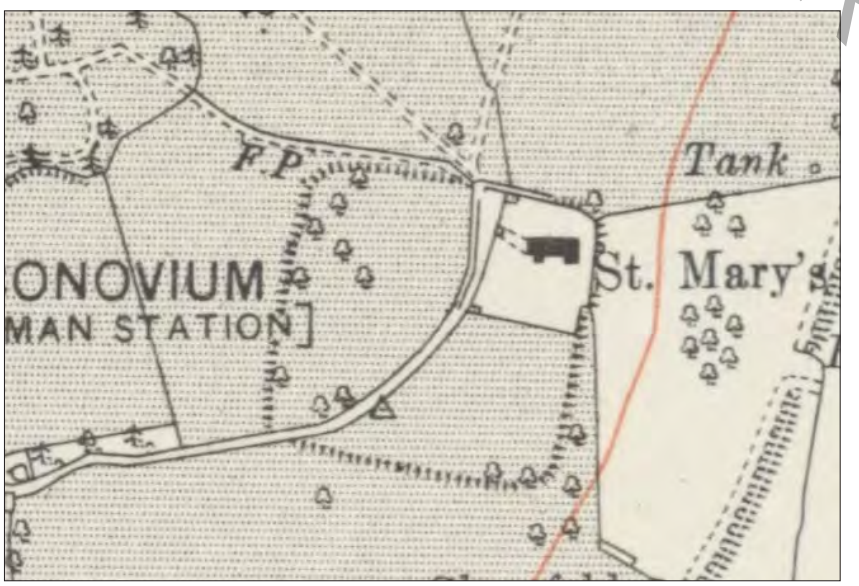

Figure 6. 1919 Ordnance Survey Map Showing Caerhun Church (Revised 1911 - 1912)

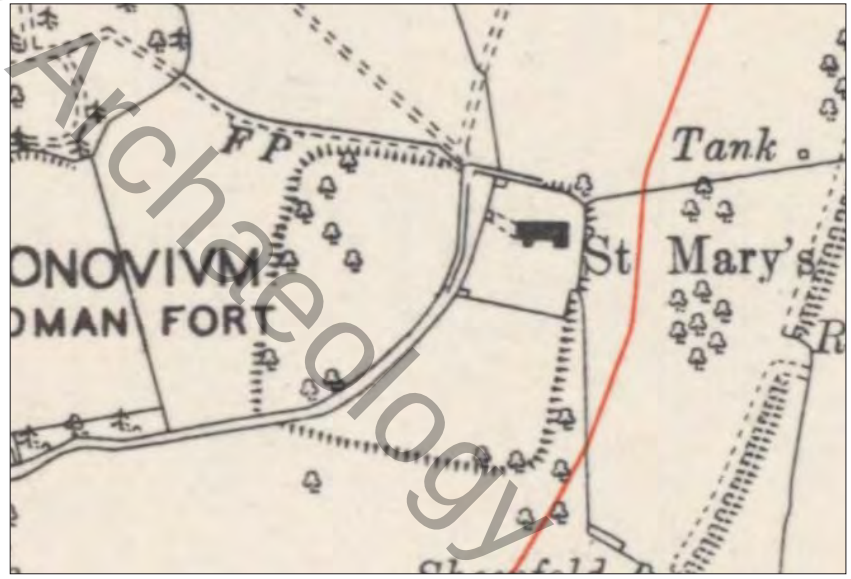

Figure 7. 1953 Ordnance Survey Map Showing Caerhun Church (Revised 1948)

time. Nothing was found in the rampart in this cutting" (Baillie Reynolds 1926:283-286). The plans and sections produced by Baillie Reynolds are included as figures 2 and 3.

An extensive programme of geophysical survey was carried out by Gwynedd Archaeological Trust in 2005. They surveyed large areas to the north and south of the fort uncovering an extensive vicus immediately to the north (Burnham & Davies 2010: 219).

The area where the composting toilet is to be located housed a wooden shed which was removed prior to the commencement of works. This was positioned within the now roofless stone structure which is referred to locally as a coffin house. This structure was of a relatively modern date and is not shown on the first two editions of the Ordnance Survey Mapping (dated 1887 and 1899, figures 4 & 5). The structure, and the pathway upon which the soak-away was positioned, first appear on the 1919 Edition which was surveyed in 1911-1912 (figure 6) and are also shown on the 1953 Edition (revised 1948, figure 7).

6.0 Results of Archaeological Works

Excavation works were carried out in two stages. The first areas which were excavated were the soak-away, which lay just outside the churchyard wall, and the linking trench which ran beneath the wall into the area previously occupied by shed. The second phase was the excavation of the composting chamber for the toilet.

Soak-away and Connecting Trench (Figure 8, Plates 3 & 4)

The rectangular soak-away trench was positioned immediately outside the churchyard wall and was within the area of an external path. The path was created between 1899 and 1911 and led along the outer edge of the northern churchyard wall and led to a private family graveyard plot.

The excavated area measured 2m x 0.80m and was excavated to a maximum depth of 0.70m. The path was constructed using hardcore layers (context 101) which were made up of gravel and crushed slate and survived to a depth 0.10m. This overlaid a mixed demolition layer composed of slate, mortar, and rare irregular medium-sized stone inclusions within a mixed black organic soil matrix (context 102). This deposit had a maximum depth of 0.40m. The lowest deposit reached was a grey-yellow clay layer (context 103) which was excavated to a maximum depth of 0.35m and the base of the deposit was not reached. The clay deposit itself is believed to be part of the rampart of the Roman Fort, possibly the core of the bank created from the up-cast of the material removed from the creation of the enclosing ditch.

A linking trench 0.3m in depth was excavated beneath the churchyard wall. This excavation uncovered mixed 19th Century deposits against either side of the boundary wall. A stone from the wall foundation was removed and it appears that the churchyard wall was constructed on-top of clay deposit (103).

Two postholes c.0.40m in diameter were excavated to allow for the repositioning of a fence in the churchyard (see figure 8 and plates 1 – 2). They were approximately 0.40m in depth and did not extend beyond a nineteenth century disturbance layer.

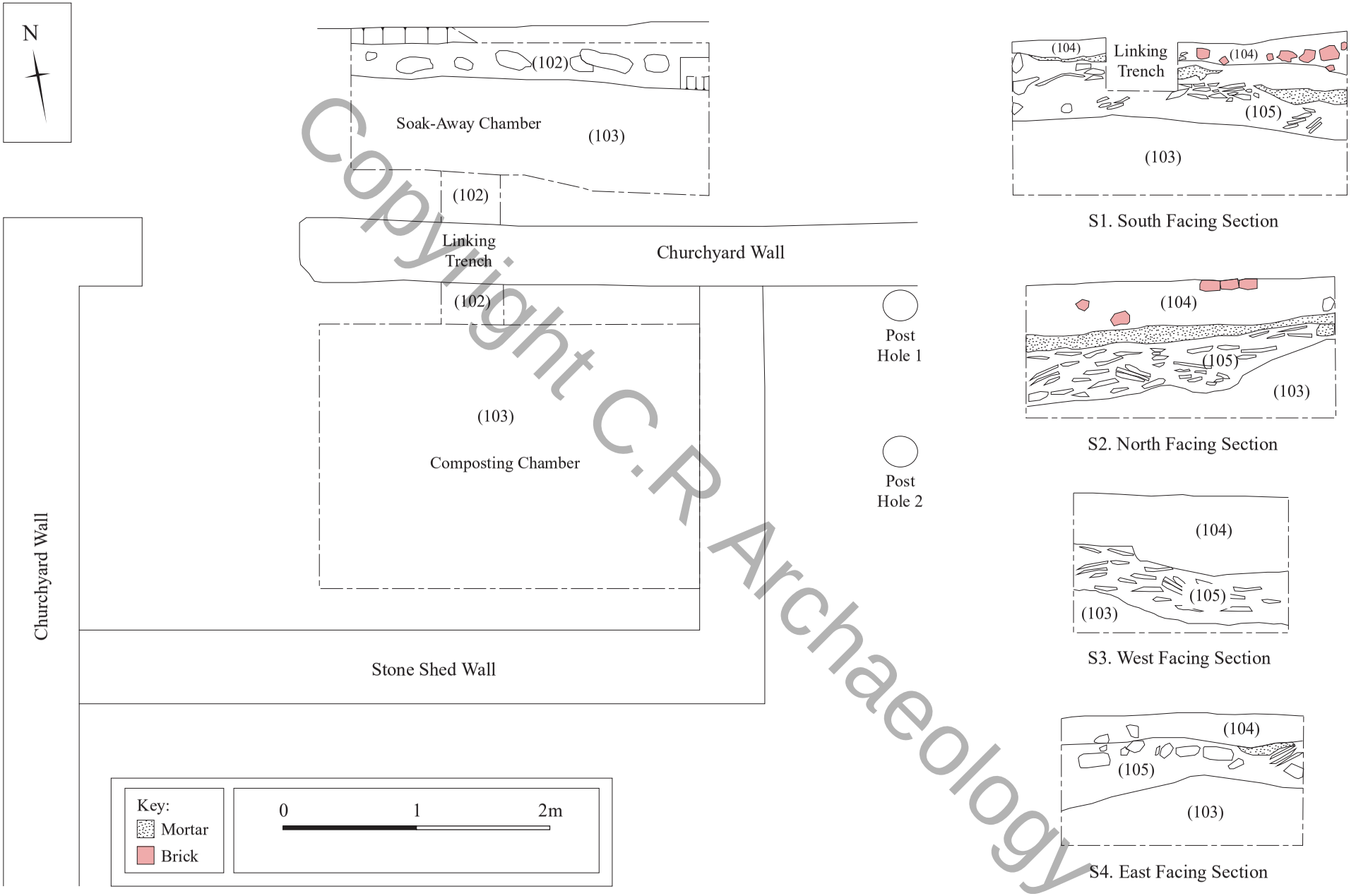

Figure 8. Plans and Sections of Excavated Area

Plate 1. Posthole 1

Plate 2. Posthole 2

Plate 3. Post-excavation Shot of Soak-away Area

Plate 4. Post-excavation Shot of Soak-away Area

Plate 5. Post-excavation Shot of Composting Chamber Trench (East Facing)

Plate 6. Post-excavation Shot of Composting Chamber Trench (South Facing Section Showing Linking Trench)

Plate 7. Post-excavation Shot of Composting Chamber Trench (East Facing Section)

Plate 8. Post-excavation Shot of Composting Chamber Trench (West Facing Section)

Composting Chamber (Figure 8, Plates 5 – 8)
A roughly rectangular trench was excavated within the boundaries of an earlier stone outbuilding. It measured approximately 2.8m x 2m and was excavated to a maximum depth of 1.2m.

The upper deposit (104) was a mixed black organic layer with lenses of mortar, loose brick and fragment of slate. The deposit was a maximum of 0.60m in depth. This layer was associated with the partial demolition of the stone shed and the levelling for the wooden structure. Modern plastic rubbish was encountered within the deposit.

Below this was a compact layer of layered slate waste within a black organic soil matrix (105). The slate was a mixture of cut slate slabs, loose crushed slate and rectangular slate roof tiles. The deposit was between 0.12m and 0.40m in depth. The interface between layers (104) and (105) was very uneven as both contained a high rubble content. Context (105) may be a levelling layer associated with the construction of the stone outbuilding.

Disarticulated and fragmentary human remains were encountered in deposits (104) and (105). These were collected by hand and returned to the church for reburial. Animal bone (predominantly sheep) was also collected from both contexts.

Deposit (105) sealed a compact grey-yellow clay layer (103) which was also encountered in the soak-away trench. The base of this deposit was not reached and it was excavated to the depth of between 0.60m to 0.06m in order to reach the required development depth.

7.0 Conclusion
The works at Caerhun Church primarily uncovered nineteenth and twentieth century deposits associated with the building, partial demolition and subsequent levelling of a small stone outbuilding in the north-western corner of the churchyard.

The lowest deposit encountered (context 103) was of interest as it was an undisturbed clay layer believed to be of Roman origin. Although not the blue river clay described by Baillie Reynolds it does correspond with the description of the lower rampart core of up-cast material from a surrounding ditch. A large river cobble was found within the deposit but the desired development depth and the safe working limit had been reached at this point and excavation was ceased. The undisturbed nature of the deposit does demonstrate that there is potential for intact Roman deposits within the churchyard and surrounding area. They are however likely to be more disturbed as one moves further into the graveyard area. Despite the close proximity to a large yew tree the roots do not appear to have penetrated the lower deposits.

The profile of the rampart may have been preserved in the east facing section but due to the level of nineteenth century remodelling the evidence is not conclusive.

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Appendix A.

Specification for Archaeological Works

Specification for Archaeological Works at St Mary's Church, Caerhun

NGR SH 77669 70423

Report Number CR120-2016

C.R Archaeology
Prepared by C. Rees
on Behalf of St Mary's Church, Caerhun

Specification for Archaeological Works at
St Mary's Church, Caerhun

Planning Reference Number:	N/A
National Grid Reference:	SH 77669 70423
Client:	St Mary's Church, Caerhun
Report Authors:	Catherine Rees
Report Number:	CR120-2016
Date:	11/08/2016

Contents

1.0 Introduction

C.R Archaeology have been instructed by St Mary's Church, Caerhun to conduct archaeological works at the above site. Although the site is an active place of worship and is thus subject to Ecclesiastical Exemption it is considered good practice by the Bangor Diocese that the development be subject to archaeological investigation. Development Control Archaeologist Jenny Emmett of Gwynedd Archaeological Planning Services conducted a site visit on August 5th 2016 to discuss an appropriate programme of works to be undertaken at the site.

St Mary's Church is installing a composting toilet within the footprint of an old hearse house on the church perimeter wall along with a pathway to allow disabled access to the new facilities (see Appendix A for details of proposed works). It was agreed with the Bangor Diocese and GAPS that an archaeological watching brief be conducted at the site and that the groundworks associated with the toilet installation be carried out by C.R Archaeology staff. The pathway excavation will also be carried out by C.R Archaeology although they may be assisted by the groundworks contractor. All excavation will be by hand.

St Mary's Church is strikingly situated on a rise overlooking the river Conwy and occupies the north-eastern corner of the Roman fort of Canovium. It is accessed via a metalled lane running east from the B5106 Bettws-y-Coed to Conwy road (Figure 1). The church is a Grade I Listed Building (ID 3167) and the Roman Fort of Canovium is a Scheduled Ancient Monument (SAM) CN001. The fort has a vicus (civilian settlement) extending to the north and there are associated features including roads and burials recorded on the adjacent land.

This document details the methodology for an archaeological watching brief which is to be conducted on all groundworks associated with the proposed project.

2.0 Project Aims

This scheme of works aims to monitor groundworks at the site in order to assess the survival, character and date of any archaeological remains and to excavate/record any archaeological remains uncovered.

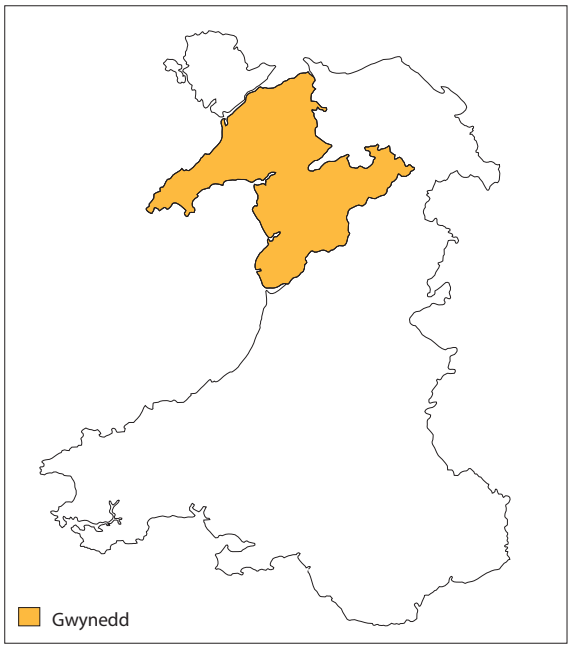
It aims to fulfil the mitigation criteria for undertaking an Archaeological Watching Brief as specified in the CIfA Standard and Guidance document (2014).

3.0 Historical Background

The church is a Grade I Listed Building (ID 3167) and the following text is taken from the listing.

*"**Location***
Strikingly situated on a rise overlooking the river Conwy on the W bank, and occupying the NE corner of the former Roman fort of Canovium; accessed via a metalled lane running E from the B5106 Bettws-y-Coed to Conwy road.

History
The site originated in the second-half C1 AD as a Roman auxiliary camp, probably established by Agricola; archaeological evidence shows civilian occupation here continued into at least the 5th century. The present church is early Medieval with early C15 and C16 additions and alterations. The former consist of rebuilt E and W gable ends, a re-roofing of the continuous nave and chancel, and an added S porch. A south chapel was added apparently in 1591, by Captain Edward Williams (of Maes-y-Castell), and an ex situ dedication board bearing this date survives within; in addition, a (now very weathered) sandstone plaque above the chapel's S window is recorded as showing the arms of Edward Williams, together with the date as before. Despite this apparently unequivocal dating evidence, both the roof structure and the S and E windows of the chapel are of C15



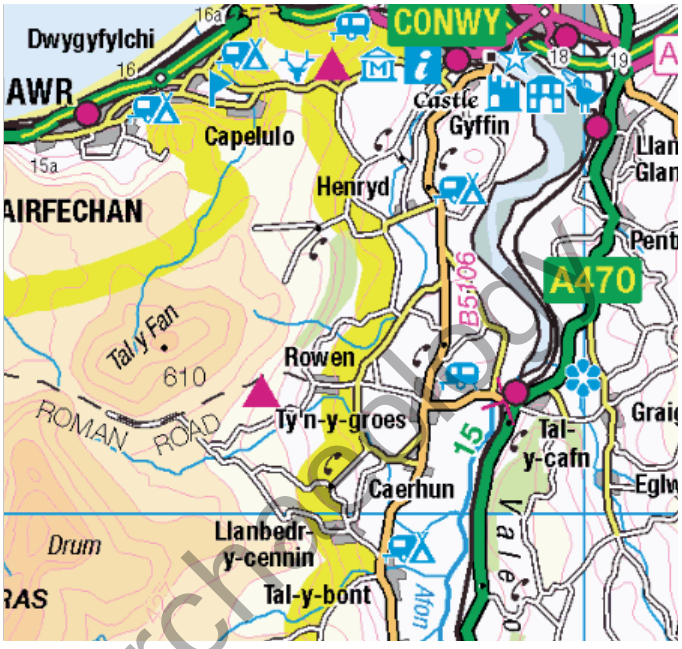


Figure 1. Site Location Map - Source: OS Open Data
(Contains Ordnance Survey data © Crown copyright and database right 2016)

character; the implication therefore is that either earlier elements have been re-used/re-set, or a pre-existing space has been remodelled, or that alternatively the style and construction is merely deeply antiquated.

Interior

Long, continuous nave and chancel. Simple arched-braced collar roof consisting of 31 clustered trusses, probably C14 or early C15; flagged floor. Late C19 figurative stained glass to western-most window of N wall; plain bowl font on column, presumably early Medieval. Round-arched niche to L of E window, a fragment of the pre-C15 E wall. c1830 Gothick furnishings with simple pews with moulded rails to flat bench ends. Sunk-panelled octagonal pulpit on moulded base; stall with open Decorated tracery. The S chapel opens out from the chancel, the supporting bressummer for its wide, flat opening being carried on a figurative engaged capital set into the E wall; this is perhaps C13 and is re-set. 2-bay roof with arched-braced collar truss with plain struts; protruding dowels and chamfered decoration. Above the chapel's E window is a long oak board bearing the inscription in raised letters: 'EDWARDVS : WILL: IAMES: AR: ET: / GRACEA: UXOREI: Q HOC: OPVS: FIERI/ FECERVNT: ANNO: DOMINI: 1591.' This refers to Captain Edward Williams of Maes-y-Castell, High Sheriff of Caernarvonshire in 1570. W wall mural tablet with arms cartouche to Hugh Davis of Caerhun, d.1721; E wall monument to Catherine Hester Hemming and family, d.1829. 2-bay vestry (former S porch) with C15 collar-truss roof with windbraces.

Exterior

Simple church with long, continuous nave and chancel and S chapel addition flush with the E end. Of random rubble construction under a renewed slate roof; the walling includes a quantity of squared red sandstone blocks which are probably re-used Roman material from the site. Rough-kneelered and stone-coped W end gable parapets with large surmounting double-bellcote. This projects slightly beyond the line of the W wall and is carried downwards to rest on 4 rounded corbels; in the centre of this projection is a carved stone crucifix in a shallow cusped, arched niche of C15 type. Depressed-headed bell openings with triangular profiled rubble coping to flat top; central stone gablet. Deeply-recessed W door with gently-pointed arch; C18 studded plank door. 3 post-Reformation 3-light mullioned leaded windows to N side, those to the L and R of re-used sandstone and slate-stone respectively and that to the centre with C19 pale sandstone mullions. Wide, segmentally-arranged sandstone voussoirs appear between the first 2 windows from L, testifying to an earlier opening. Simple C15 3-light mullioned E window with arched sandstone heads. Adjoining to the S and flush with the E end, the S chapel. This has a 2-light mullioned window to its E side with wide, cusped, arched heads and a similar 3-light window to its gabled S face; original ferrementa. Above, an eroded sandstone plaque formerly bearing the initials EW and GW flanking the Williams arms, and with the date 1591. 2 further post-Reformation windows to the nave S wall, that towards the W of 3 lights with slate mullions and that towards the E a wooden 2-light window. Beyond, towards the W end, a C15 rubble S porch, largely rebuilt as a vestry in the C19, though retaining its W wall and roof structure. This now has a small, arched and cusped window to its S face, re-set and probably originally in the porch E wall.

Reason for Listing

Included at Grade I as a fine Medieval church of considerable architectural and historical significance" (www.britishlistedbuildings.co.uk).

The Roman Fort at Canovium is briefly described in Coflien as "*Canovium, a Roman military settlement set at a strategically important point on a ridge overlooking the Conwy river, is the last intermediate fort in a defensive chain that ran along the coastal road from Chester to Caernarfon. It was occupied, with some breaks, from the time of Agricola's campaign in AD 77/8 through to the the fourth century. The settlement centres on an auxiliary fort, a near square stone walled enclosure, 130-140m across. This was the scene of extensive excavations in 1926-9. At the foot of*

the river cliff traces of the bathhouse explored in the early nineteenth century can be seen. The settlement is known to have extended along the ridge to the north, extensive remains being glimpsed from the air and in geophysical survey. It was fringed by cemeteries and a possible circular shrine or tomb has been identified on the north. There is some, though not conclusive, evidence that the nearby dock is a Roman structure (NPRN 303122). Roads are known to have led from the settlement, including those to St Asaph (NPRN 303525) and Tomen-y-Mur (NPRN 303519)" (www.coflein.gov.uk).

The summary for the SAM adds a little information and is included below:

"*A Roman military settlement set at a strategically important point on a ridge overlooking the Conwy river, is the last intermediate fort in a defensive chain that ran along the coastal road from Chester to Caernarfon. It was occupied, with some breaks, from the time of Agricola's campaign in AD 77/8 through to the fourth century. The settlement centres on an auxiliary fort, a near square stone walled enclosure, 130-140m across. This was the scene of extensive excavations in 1926-9. At the foot of the river cliff traces of the bathhouse explored in the early nineteenth century can be seen. The settlement is known to have extended along the ridge to the north, extensive remains being glimpsed from the air and in geophysical survey. It was fringed by cemeteries and a possible circular shrine or tomb has been identified on the north. There is some, though not conclusive, evidence that the nearby dock is a Roman structure. Roads are known to have led from the settlement, including those to St Asaph and Tomen-y-Mur. The monument is of national importance for its potential to enhance our knowledge of Roman settlement and defence. It retains significant archaeological potential, with a strong probability of the presence of associated archaeological features and deposits. The structures themselves may be expected to contain archaeological information concerning chronology and building techniques. The scheduled area comprises the remains described and areas around them within which related evidence may be expected to survive*" (www.cadwpublic-api.azurewebsites.net/reports/sam/FullReport?lang=en&id=3296).

3.1 Topography

St Mary's Church is strikingly situated on a rise overlooking the river Conwy and occupies the north-eastern corner of the Roman fort of Canovium. It is a rural setting just off the B5106. The church is in use for active worship.

3.2 Geology

The bedrock is recorded as "*Denbigh Grits Formation - Mudstone, Siltstone And Sandstone. Sedimentary Bedrock formed approximately 423 to 428 million years ago in the Silurian Period. Local environment previously dominated by deep seas. These rocks were formed in deep seas from infrequent slurries of shallow water sediments which were then redeposited as graded beds*". The superficial geology is recorded as "*Till, Devensian - Diamicton. Superficial Deposits formed up to 2 million years ago in the Quaternary Period. Local environment previously dominated by ice age conditions. These rocks were formed in cold periods with Ice Age glaciers scouring the landscape and depositing moraines of till with outwash sand and gravel deposits from seasonal and post glacial meltwaters*" (www.mapapps.bgs.ac.uk/geologyofbritain/home.html).

4.0 Scheme of Works – Methodology

The methodologies employed will conform to The Charted Institute for Archaeologists: *Standard and Guidance for Archaeological Watching Brief* (2014).

4.1 Desk Based Research

It is considered that the history of the site is well documented and no further research will be undertaken other than to place any new discoveries in context.

These works will be carried out in accordance with the CIfA Standards and Guidance for Historic Environment Desk Based Assessment (CIfA 2014).

The current historical background material will be replicated for the historical background of the full archaeological report. The report will also include the results of the Archaeological Watching Brief.

4.2 Archaeological Watching Brief

This watching brief will monitor all groundworks undertaken on the site. This will include the excavation of a soak away for the toilet (approximate measurements are 1.90m x 2.4m and a depth of 0.75 – 0.85m). The final route and dimensions of the proposed pathway has yet to be finalised but the excavation associated with the pathway is unlikely to be undertaken to a depth of more than 0.30m. The approximate route of the pathway is included in Appendix A.

A C.R Archaeology staff member will be present during all excavation associated with the groundworks. This work will be undertaken by hand and the soak away is to be excavated by staff from C.R Archaeology. If archaeological remains are encountered then excavation will cease at this level until it is clear in plan that the full extent of any features have been uncovered within the development area. If the features extend beyond the limits of the development then they will not be chased beyond the trench limits. If this does not prove sufficient it may then be necessary to follow the procedures for Additional Mitigation/Contingency Measures.

C.R Archaeology will notify GAPS as the date of the commencement of works and if any significant archaeological features are uncovered. A site visit will be arranged to allow for the inspection of works.

Any archaeological features, structures or remains will be trowel cleaned by hand. Investigation of such features, structures or deposits will be sufficient to determine their character, date, significance and quality. If features yield suitable material for dating/environmental processing then samples will be taken for processing off site. The size of these samples will depend on the size of the feature but for smaller features a sample of up to 95% will be taken. For larger features a sample of up to 40 litres will be taken.

Due to the likelihood of uncovering small human bones and stray Roman artefacts all soil removed during the excavation will be coarse sieved on site and a metal detector used to check excavated material.

In the event of a significant discovery GAPS will be informed of the discovery and a mitigation strategy agreed before works will progress. This would include the discovery of intact Roman remains and it is favoured that if possible the soak away will be relocated slightly to avoid the destruction of any structural remains.

4.2.1 The Recovery and Recording of Human Remains

Given that the works are to be undertaken within a graveyard which has been in use for burial for in excess of 700 years it is considered very likely that human remains will be encountered. Different methodologies have therefore been devised depending on the nature and position of the remains encountered.

As stated in the English Heritage Recording Manual (2010: Module 10) "*For each grave forethought is needed so that procedures can be completed before the end of the working day*". Therefore graves which are encountered towards the end of the day will be left in situ for the following day and excavation will not be undertaken unless it can be completed before the end of work. Skeletal remains will not be left exposed overnight.

4.2.1.1 Disarticulated Human Remains Recovered During Excavation

Where disarticulated human remains are encountered they are to be collected, bagged and a note will be made of the location of bone concentrations and larger bone fragments. They are then to be securely stored on site and will be reburied on site on completion of the project. They will not be subject to any analysis.

The possible exception to this would be if remains are encountered at depth with no apparent contemporary articulated remains or if they are recovered from within other feature e.g. cut feature under wall. This will be examined on an individual basis and GAPS will be consulted before reburial.

4.2.1.2 Articulated Remains Uncovered During Excavation

Where possible the extent of the grave cut within the development area will be defined in plan and the skeleton exposed, recorded and planned at a scale of 1:10. Human remains which lie within the development area will be lifted and securely stored on site and will be reburied on completion of the project. A drawn and photographic record of any associated grave items will be made. Should items warrant further study then specialist analysis will be undertaken. Where items are identified as having an association with a specific grave then the items will be kept with these remains and if they are to be reburied will be placed with the deceased.

Given the shallow development depth of the pathway there will be a preference for articulated remains to be recorded, protected and then left insitu. If possible the pathway is to be built up over the top of the remains. They are only to be lifted if this is not possible.

This is in line with the English Heritage Annex E5 Point 183 in "*Guidance for Best Practice for Treatment of Human Remains Excavated from Christian Burial Grounds in England*" (the recommendations of which also apply to Christian burials in Wales). The section entitled "*Excavation of Skeletons Lying Partly Under Baulks*" specifies that when a skeleton lies partly beyond the excavation trench limits only that part of the skeleton which lies within the trench area is to be lifted, with the remainder left insitu.

The exception will be should any Medieval or earlier burials be encountered as these would be considered to be a significant discovery. Where possible it is proposed that these graves be excavated in their entirety. This is once more in line with the English Heritage Guidance (ibid Point 187) which recommends remains considered to be osteologically or archaeologically important should be lifted in their entirety provided that it does not cause disturbance to other burials.

Where human remains are undated or are of Post-Medieval date the bones within the development area will be assigned a Skeleton Number and a written record compiled on pro-forma sheets. The exposed skeleton will be photographed vertically with an appropriate scale. Additional close-up shots and photographs from a variety of different angles will also be taken. The skeleton will be drawn at a scale of 1:10. If necessary this will be supplemented by the redrawing of certain areas at a larger scale to record the details of grave goods, coffin fittings etc. The remains lying within the development area will be bagged and labelled as belonging to a single individual and will be kept together for reburial on site. They will not be subject to any further analysis.

Where the remains of infants and babies are encountered special care will be taken to ensure that the remains are kept together and that all bones are collected. This may involve block lifting, and when infant burials are encountered the surrounding soil will be hand sieved with a fine mesh on site.

Where human remains are clearly of Medieval or earlier date (for example as signified by the presence of a cist grave or distinctive grave goods such as ring brooch shroud pins) then following recording they will be lifted and retained for further study. This will include examination by oesteoarchaeologist Stephanie Vincent, radiocarbon dating and isotopic analysis. This is detailed below (section 4.2.1.3).

Following analysis discussions will be held between C.R Archaeology, The Church in Wales and Dr Mark Redknap of the National Museum of Wales as to the most appropriate long term future of the remains. This will either be reburial on site or deposition within the research collection at National Museum Cardiff.

4.2.1.3 Excavation Methodology for Medieval and Earlier Burials

The excavation strategy of cist burials will be in part determined by their position within the excavation area and should they appear fully or partially in the trench edges then prior to excavation a meeting will be held between C.R Archaeology, GAPS, St Mary's Church & the Bangor Diocese to determine whether it would be best to relocate the trench and leave the cist intact or to partially or fully expose and excavate the structure.

Should cist structures be uncovered they will be trowel cleaned and fully exposed in plan before being photographed and drawn at a scale of 1:20. A written record will also be made. The top slabs will then be numbered and removed and the grave fill excavated to expose the skeleton. Once the grave fill has been removed any side and base slabs forming the cist will be photographed, drawn and recorded before being lifted and retained for possible future use in an exhibition. Each slab will be numbered for ease of reconstruction.

All Medieval and earlier remains will be assigned a Skeleton Number and a written record compiled on pro-forma sheets. The exposed the skeleton will be photographed vertically with an appropriate scale. Additional close-up shots and photographs from a variety of different angles will also be taken. The skeleton will be drawn at a scale of 1:10. If necessary this will be supplemented by the redrawing of certain areas at a larger scale to record the details of grave goods, coffin fittings etc.

For all Medieval and earlier remains all grave fill will be coarse sieved on site to recover all surviving human remains and any small artefacts such as shroud pins etc associated with the grave. A separate context number will be assigned to the material above and below the body and a written context record will be compiled for each deposit.

Once the recording of the bones is complete they will be lifted and bagged as follows: skull, torso, left arm, right arm, left leg, right leg. Four separate bags will also be used for the right and left hands and feet. Any disarticulated bones in the grave fill will be bagged separately. The various bags will all be stored together in a larger storage container prior to removal from site for analysis.

Following the lifting of the bones any soil remaining on the grave floor will be recovered as four separate bulk samples: one from the head, one from the torso, one from the stomach area and one from the leg/foot area. If an area has to split due to excavation phases then a sample will be taken from both sides. The samples will be wet sieved and sorted to recover small grave goods/bones.

Remains are to be sent to oesteoarchaeologist Stefanie Vincent (MA) for initial analysis and following this discussions will be held between C.R Archaeology, GAPS, St. Mary's Church and the Bangor Diocese as to the best programme of post-excavation works. Radiocarbon dating at Beta Analytic (UK) and isotopic analysis will be considered.

4.2.2 Recording

The record forms at C.R Archaeology are based on the English Heritage system and full written, graphic and photographic records will be made in accordance with the English Heritage *Field Recording Manual*. Sample forms can be provided on request. The written record shall comprise completed *pro-forma* record sheets.

Plans, sections and elevations will be produced on gridded, archive standard stable polyester film at scales of 1:10, 1:20 or 1:50, as appropriate. Representative measured sections will be prepared as appropriate showing the sequence and depths of deposits. A temporary benchmark (TBM) will be established on the site and plans, elevations and sections will contain grid and level information which where possible will be calculated relative to OS data. All drawings will be numbered and listed in a drawing register, these drawing numbers being cross-referenced to written site records. A 'harris matrix' diagram will be created.

A high-resolution 14.2mp Sony Alpha digital camera will be used to create a photographic record of the site. This will be comprised of photographs of archaeological features and appropriate groups of features and structures. Included in each photograph will be an appropriate scale and north arrow. General photographs will also be taken in the event of a negative result.

All photographic records will be indexed and cross-referenced to written site records. Details concerning subject and direction of view will be maintained in a photographic register, indexed by frame number. Images from photography will be stored in a loss-less digital format in this case '*.TIF'.

4.2.3 Additional Mitigation/Contingency Measures

In the event of a significant archaeological discovery being made during the excavation C.R Archaeology will immediately inform both the client, Sue Booth and the development control archaeologist. Consultation will take place between C.R Archaeology, GAPS, Sue Booth and the client with regards to the most suitable course of action. This will include the discovery of undisturbed Roman remains.

Any artefacts recovered that fall within the scope of the Treasure Act 1996 will be reported to the landowner, GAPS and to HM Coroner.

4.2.4 Recovery, Processing and Curation of Artefactual Material
All recovered artefactual material will be retained, cleaned, labelled and stored according to *Standard and Guidance for the collection, documentation, conservation and research of archaeological materials (IfA 2008) and First Aid for Finds (Watkinson & Neal* 2001). The aim will be to create a stable, ordered, well-documented, accessible material archive forming a resource for current and future research (IfA 2008).

All artefactual material will be bagged and labelled with the site code and context number prior to their removal from site. The archive reference number will be clearly marked on all finds.

Each assemblage will be examined according to typological or chronological criteria and conservation needs identified. An assessment report of post-medieval and Roman material will be produced by Matthew Jones and further specialists will be appointed as required. A list of specialists will be prepared prior to the post-excavation phase of works.

Any specialist conservation necessary will be undertaken by Cardiff Conservation Services, Cardiff University. This will be conducted in accordance with guidelines issued by the Institute for Conservation.

Following analysis all archaeological material recovered will be returned to St Mary's Church following analysis. Should items of exceptional value or archaeological significance be uncovered advice will be sought as to how best to care for the items and an alternative institution may be sought for deposition (likely to be Llandudno or Cardiff Museum). Processed assemblages will be boxed according to issued guidelines and a register of contents compiled prior to deposition.

The works will be carried out in accordance with The Chartered Institute for Archaeologists: *Standard and Guidance for Archaeological Watching Brief* (Revised 2008 & 2014).

4.2.5 Archive Compilation
All records created during the fieldwork will be checked for consistency and accuracy and will form part of the *Primary Site Archive (P1)* (EH 2006). The archive will contain all data collected, including records and other specialist materials. It will be ordered, indexed, adequately documented, internally consistent, secure, quantified, conforming to standards required by the archive repository and signposted appropriately to ensure future use in research, as detailed in the English Heritage *Management of Research Projects in the Historic Environment* (MoRPHE) methodology.

The archive will be assembled in accordance with the guidelines published in, *Standards in the museum care of archaeological collections* (Museums & Galleries Commission 1994), *Guidelines for the preparation of excavation archives for long-term storage* (United Kingdom Institute for Conservation, 1990) and *Archaeological Archives: A guide to best practice in creation, compilation, transfer and curation* (AAF 2007).

All materials contained within the *Primary Site Archive (P1)* that are subsequently identified by the *Assessment Report* (*P2)* as appropriate for analysis will be processed by suitable specialists and the resultant *Research Archive* (*P3)* will be checked and ordered according to *MoRPHE* criteria.

Archival material created during this archaeological project will be deposited at the RCAHMW as the artefactual assembledge is to be retained by the church. The exception to this would be if artefacts are to be deposited in a museum – and in this instance the paper archive will accompany the artefacts. Archive material will be deposited in accordance with the RCAHMW/museum's terms and conditions for archive deposition.

4.3 Timetable for Proposed Works
It is envisaged that groundworks will commence in approximately 2-3 weeks time and will be carried out on a day rate basis (it is estimated that the works will take 3-5 days). Additional time will be allotted as necessary for archive research, report compilation and site archiving. Gwynedd Archaeological Planning Services will be informed of the exact site days to allow monitoring of works.

4.4 Staffing
Fieldwork is to be conducted and managed by Matthew Jones and Catherine Rees of C.R Archaeology. It is also planned that a local A Level student hoping to study archaeology at university will assist as a volunteer on site. She will be fully supervised at all times and will be undertaking the coarse sieving of spoil on site. Training as to excavation techniques will also be given. All projects are carried out in accordance with CIfA *Standard and Guidance* documents.

4.5 Monitoring
Although the site does have Ecclesiastical Exemption it has been agreed that project will be subject to monitoring by Gwynedd Archaeological Planning Services. The monitor will be given prior notice of the commencement of the fieldwork. A projected time-scale and copy of the risk assessment can be provided on request to the monitoring body prior to the commencement of works.

They will be notified in writing (via email) of the commencement dates for archaeological site work and will be updated with the results of all works conducted as watching brief elements. This will be initially as an telephone call & email with attached JPEG photographs and if/when required further interim reports will be compiled.

4.6 Health and Safety
A risk assessment will be conducted prior to the commencement of works and site staff will be familiarised with its contents. A first aid kit will be located in the site vehicle.

All staff will be issued with appropriate Personal Protective Equipment (PPE) for the site work. Initially this is anticipated to consist of:

- Safety Helmets (EN397)
- Hi-visibility vests (EN471)
- Safety footwear – steel toecap and mid-sole boots and Wellingtons (EN345-47)

Any further PPE required will be provided by C.R Archaeology

All staff will have passed at least a CITB health and safety test at least operative level and will carry a Construction Related Organisation (CRO) White Card for Archaeological Technician (Code 5363) or a Site Visitor card.

C.R Archaeology staff will also comply with any Health and Safety Policy or specific on-site instructions provided by the client or their appointed Principal contractor or H&S coordinator.

4.7 The Report
The report will clearly and accurately incorporate information gained from the programme of archaeological works. It will present the documentary evidence gathered in such a way as to create a clear and coherent record. The report will contain a site plan showing the locations of photographs taken.

As a minimum the report will include:

- A copy of the design brief and agreed specification
- A location plan
- All identified features and significant finds plotted on an appropriately scaled site plan
- Full dimensional and descriptive detail of all identified finds and features
- A full bibliography of sources consulted
- An archive compact disc

A copy of the report in Adobe PDF format will be sent to the appropriate monitoring archaeologist for approval before formal submission. A bound paper copy and PDF digital copy of the report will be submitted as part of the formal submission. A digital Adobe PDF version and a bound paper copy of the final report and will be lodged with the Gwynedd Historic Environment Record within six months of completion of the project.

In the event of a positive result of site works a short article will be submitted to the Archaeology in Wales Journal and the site archive including copies of all photographs in Tiff format will be deposited the local museum.

4.7.1 Copyright

C.R Archaeology and sub-contractors shall retain full copyright of any commissioned reports, tender documents or other project documents, under the Copyright, Designs and Patents Act 1988 with all rights reserved; excepting that it hereby provides a licence to the client and the local authority for the use of the report by the client and the local authority in all matters directly relating to the project as described in the Project Specification.

5.0 Bibliography

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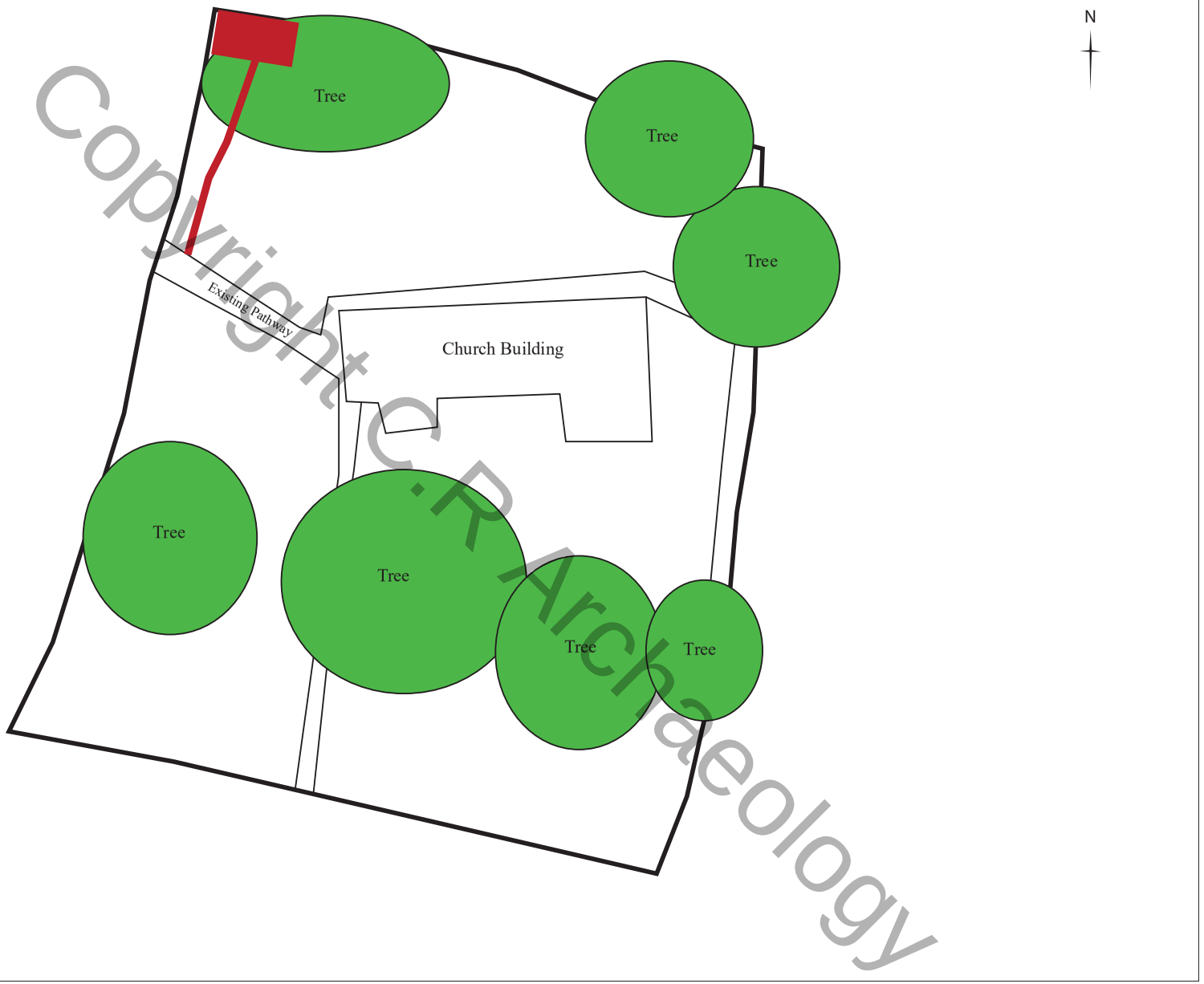
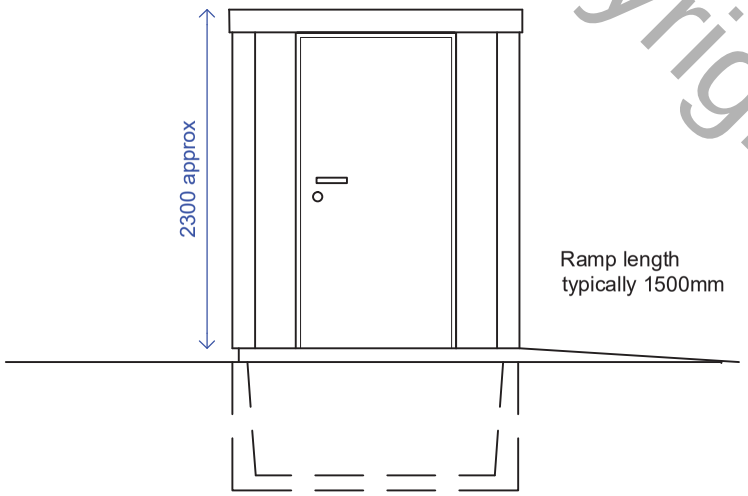
www.britishlistedbuildings.co.uk/wa-3167-parish-church-of-st-mary-caerhun#.Vvl51-IrLIU
http://www.coflein.gov.uk/en/site/95640/details/+CANOVIUM%3BKANOVIUM+ROMAN+MILITARY+SETTLEMENT%2C+CAERHUN/
www.mapapps.bgs.ac.uk/geologyofbritain/home.html

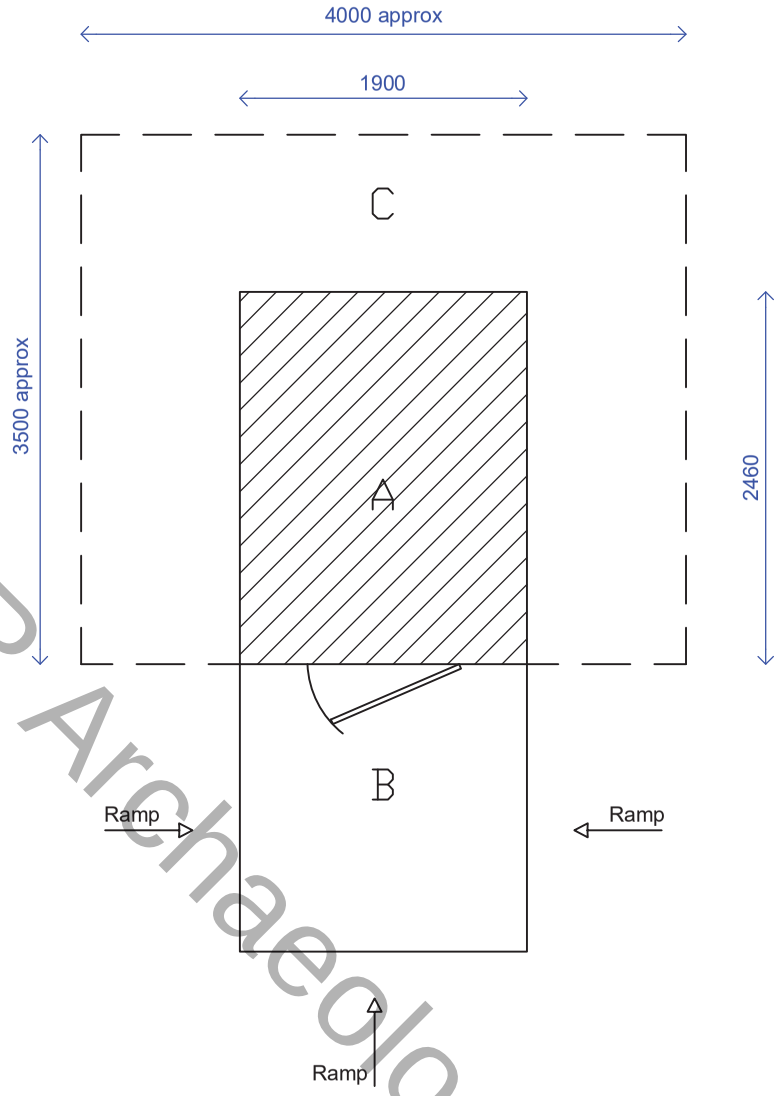
Appendix A.

Proposed Development Plans



Schematic Plan of Caerhun Church Showing Development Area (Marked in Red) and Proposed Route of New Access Pathway





KEY

Hatched area 'A' is building footprint and excavation area. Excavations approx 2m x 2.5m. Depth as agreed for each site with Natsol in advance but usually between 750mm and 850mm.

'B' is level area in front door about 150mm above surrounding ground level and a minimum 2200mm front to back.

'C' is clear space of approximately 1m wide all round for erection and maintenance

NOTES
1. Door opens out.
2.Ramp from any direction at maximum of 1:12

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THE COMPOST TOILET SPECIALISTS

Natsol Ltd
Tel: 01686 412653
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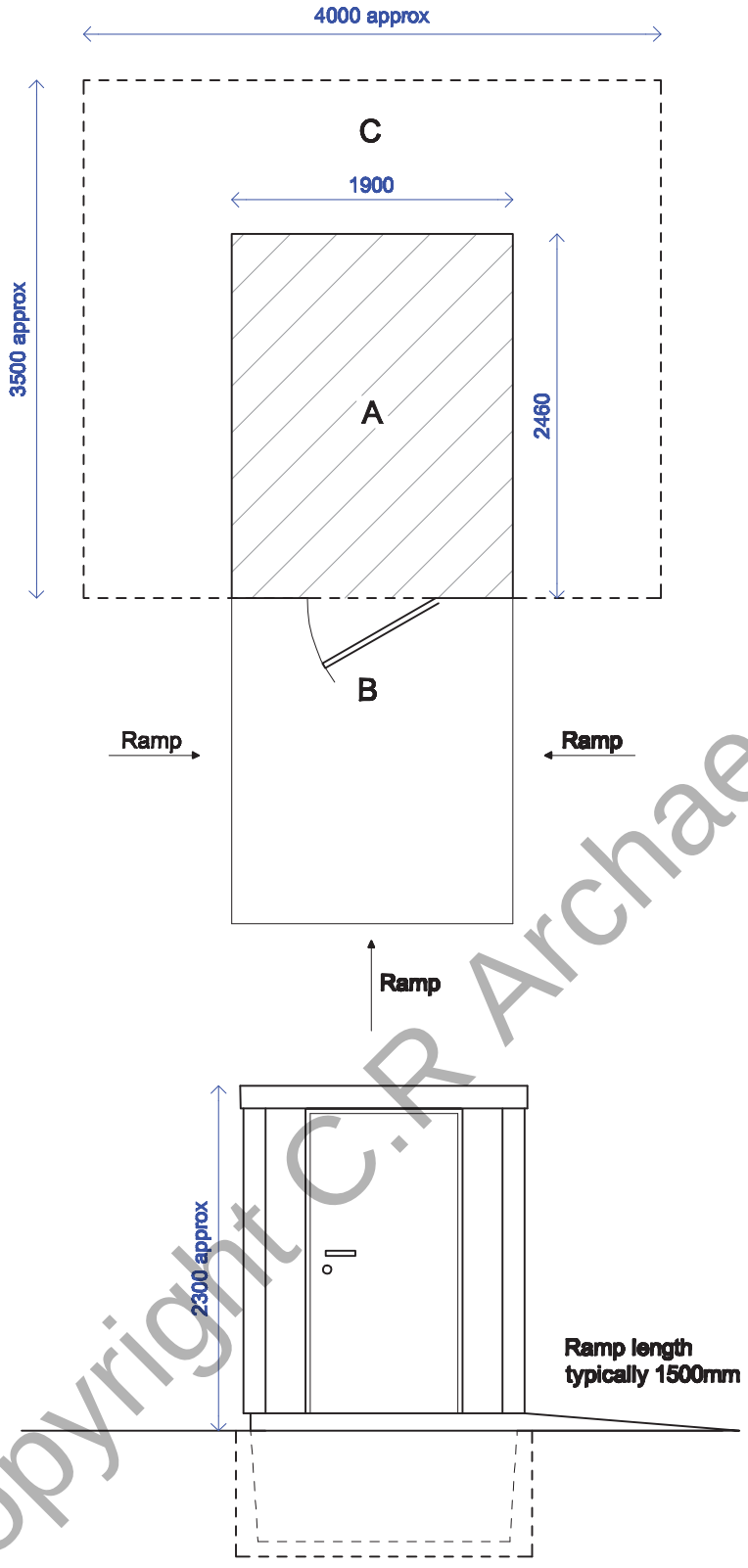
Compus Twin - Full Access	
Site dimensions	
Date 15.9.14	Scale 1:50
Drg. No. 002	
Drn.M.Waterfield	



KEY
Hatched area 'A' is building footprint and excavation area. Excavations approx 2m x 2.5m. Depth as agreed for each site with Natsol in advance but usually between 750mm and 850mm.

'B' is level area in front of door about 150mm above surrounding ground level and a minimum 2200mm front to back.

'C' is clear space of approximately 1m wide all round for erection and maintenance.

NOTES
1. Door opens out.
2. Ramp from any direction at maximum slope of 1:12

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Compus Twin full access	
Site Dimensions	
Date 21.03.11	Scale 1:50
Drg. No.	
Drn. B.Wade	

NATSOL SITE LAYOUT, EXCAVATIONS AND URINE AND RAINWATER SOAKAWAYS – see site layout and excavation drwgs

The drawings and instructions included with this guide show:-

1. The **Site Layout for the COMPUS TWIN** toilet
2. The required **Excavations for Urine and Rainwater Soakaways**
3. The method of installing or constructing these.

As levels of use, site conditions and local regulations will vary considerably, **NatSol** is unable to provide site-specific advice on disposal of urine from the toilet or rain from the roof. These notes are provided as an illustration of typical requirements to allow the planning of an installation but do not guarantee compliance or adequate performance for a given site. Whilst the volumes discharged are generally too small to cause concern, Building Control and the Environment Agency should have been consulted prior to installation.

Although volumes of urine or roof run-off are small under-sized soakaways in heavy soil, or where there is a high water table, will fail. This could result in surface water backing up and flowing into the compost chamber via the urine outlet. **It is essential that this toilet is not installed on sites which may become waterlogged or flooded at any time during the year without first consulting NatSol to discuss possible solutions. If clay is discovered unexpectedly during installation then please consult with us. Sites which have traditionally been fairly dry may become waterlogged or flooded under the currently worsening climatic conditions.**

Roof-water

This must be directed away from the building foundations. We recommend that it is kept out of the urine soakaway and directed to a separate soakaway, although an option to send it to the urine soakaway does exist and may be acceptable for some installations. .Please read the **Checklist** below to help decide. We supply a rain diverter for connecting the downpipe to a water butt but you must not rely on this alone to deal with rain. A few days of heavy rain will quickly fill a butt

A soakaway for rain could be a pit 600mm square by about 600mm deep filled with broken bricks, or similar, to a depth of 600mm. This should suffice unless the ground is waterlogged. See fig 1. A layer of geo-textile excludes soil and the pipe enters just beneath this. You may need to buy additional 110mm fittings over and above those we supply.

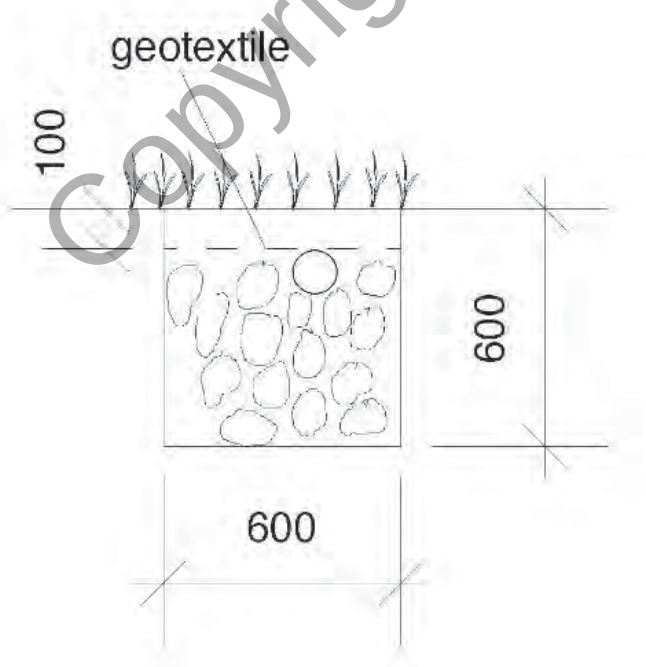


Figure 1. Rainwater soakaway.

Urine

For most toilets we now supply this ready made GRC soakaway for urine.

Please examine photographs (above R and below) and excavation drawings before installing.

Without rain water

With rainwater – **use separate pipe**

Rainwater may enter the GRC soakaway **only** if the ground is free draining or the soakaway is downhill from the toilet. **See checklist below.**

Excavate an area of ground measuring 1.3 m by 1.3m and **380mm** deep. It should be no closer than **1m** from the side of the vaults and in a position that the urine exit pipe (on the RHS of the

vaults looking from the front) can be connected easily to the soakaway unit. If there is no room on the RHS then find an alternative position but make sure this is not uphill from the vaults. To have sufficient gradient on the pipe the soakaway should be no further than **3m** away on a flat site.

You will have to judge the precise excavation depth so that when you eventually backfill with soil the **finished ground level is level with the aluminium cover on the gully**. The soakaway unit is intentionally shallow so that the urine goes into the biologically active topsoil. The pipe from the vaults should fall at not less than 1:60 and will only be a few inches beneath the ground.

Position the unit in the centre of the hole so that a 110mm underground pipe from the vaults can connect to the brown 110mm pipe stub projecting through the near end of the unit shown above. Place hardcore or left over aggregate to each side of the unit where the slots occur. Cover the whole unit and the hardcore or aggregate with the geo-textile provided and cover with earth.

As mentioned above it may be acceptable in some cases for the rainwater to go to this soakaway as well. In which case this must be arranged before backfilling – see below.

CHECKLIST - to decide on whether rainwater can go to the GRC soakaway too.

1. This is only possible when the urine pipe from the vaults exits wholly above ground level (cubicle floor 250mm above ground) **OR** if the urine soakaway is downhill from the toilet.
2. Only rainwater from the roof of a NatSol Full Access toilet building could possibly go to the soakaway. Rainwater from other buildings **cannot** go to this soakaway.
3. The subsoil must be free draining e.g. sand, chalk, loosely compacted stone, no clay.

If these conditions are satisfied then use a layout like one of those shown on the attached **Excavations** drawing and connect the rain pipe into the spare hole. **The rain pipe must NOT join the urine pipe en-route but enter the soakaway separately.** Joining en-route will risk compromising the ventilation system if the rain gully dries out.

If the conditions are **not** satisfied then blank off the spare hole in the end of the soakaway with the blanking plug provided, held in place with SIKAFlex. Then construct a separate soakaway for rainwater as shown above.

Site constructed urine soakaway – if for some reason you don't have a GRC one.

On some sites a urine soakaway constructed on site purely from hardcore may be more appropriate – figure 2. **This will have been agreed before supply of goods.** If constructed it should be shallow to allow dispersal and treatment in the biologically active topsoil. Length in the region of 1.5m on permeable sites.

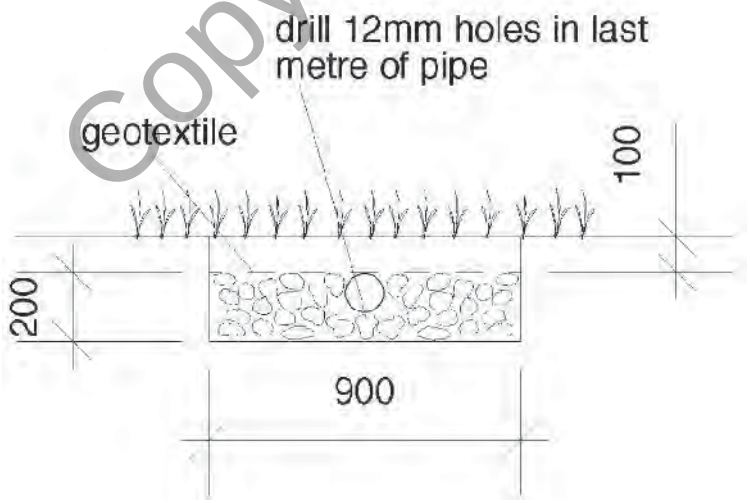
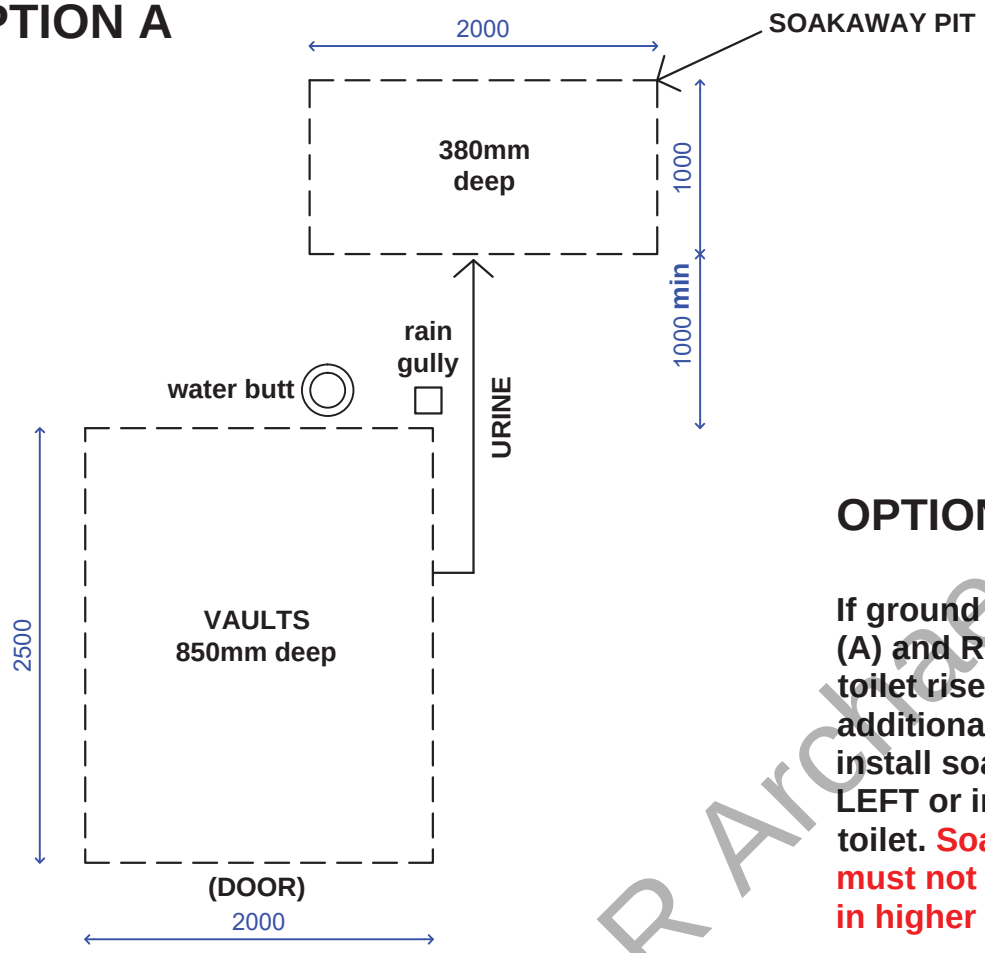


Fig 2. Site urine soakaway

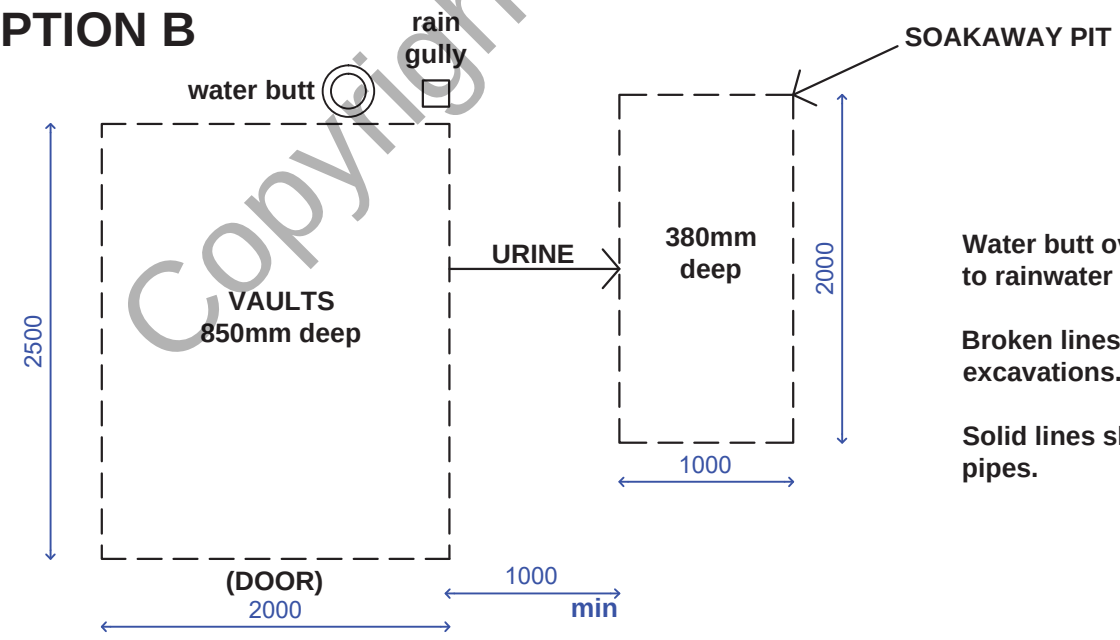
OPTION A



OPTION C

If ground to REAR (A) and RIGHT (B) of toilet rises then use additional pipe and install soakaway to LEFT or in FRONT of toilet. Soakaway must not be installed in higher ground!

OPTION B



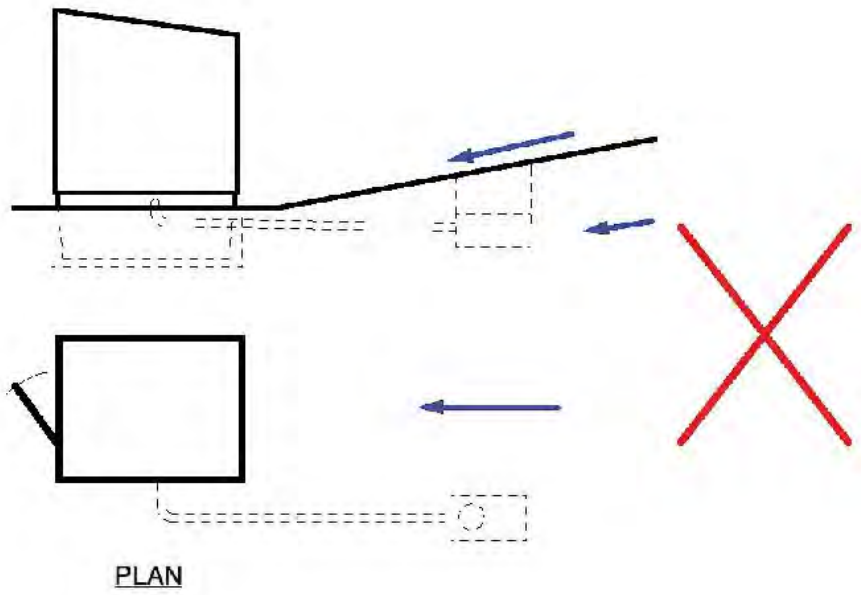
Water butt overflows to rainwater gully

Broken lines show excavations.

Solid lines show u/g pipes.

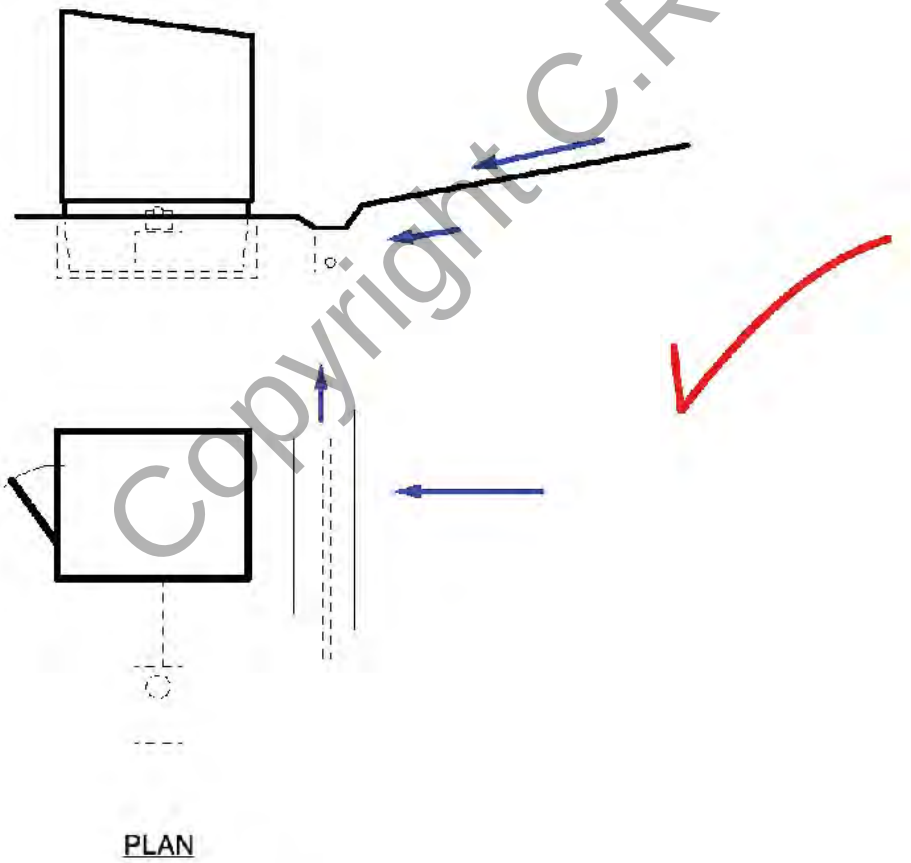
NatSol THE COMPOST TOILET SPECIALISTS	Compus Twin full access
	Excavations
	Date 20.12.12 / Scaled to fit
Natsol Ltd Tel: 01686 412653 www.natsol.co.uk	Drg. No.
	Drn. B.Wade

SOAKAWAYS AND FLOODING RISK – SLOPING SITES



PLAN

Ground water around the soakaway could cause vaults to flood!!



PLAN

Install a land-drain to prevent flooding of soakaway area.

NatSol the compost toilet specialists

Notes for clients constructing their own building for an in-ground COMPUS TWIN FULL ACCESS toilet

There are broadly speaking two types of building a client may construct:

A. A simple building similar to a NatSol building in that its function is simply that of a toilet cubicle without additional facilities. See attached **DIY footprint**. Such a building will usually stand on the flange of the toilet vaults unless constructed from masonry.

If it is to be a masonry building then separate foundations will be needed. It will also be necessary to construct timber stud walls around the pedestal positions on the inside to match the positions that the wall surfaces would be in as shown on the **DIY footprint**. This is to ensure that the grab rails are in the correct position in relation to the pedestal, the positions of which are fixed. Please discuss this with us if in doubt.

The vent pipe will be supplied by us direct or through a local builders merchant. It is 160mm grey plastic and should go straight through the roof from the floor socket which is in the RH rear corner of the cubicle. The roof flashing will vary depending on the type of roof constructed. We may be able to advise on this.

B. A larger building with other functions. If this is to be a heated, airtight building you must discuss this with us and we will send you a document called **'Installing Compost Toilets in Heated Buildings'.**

If unheated, then some of the content of the **DIY footprint** drawing is still relevant. The main difference is that you should not use the vault flange to support any part of the building weight and you will need to construct timber stud walls which extend over the vault flange for the reasons described above in **A.**

One issue to consider with a larger building is that the toilet cubicle floor is the lid of the vaults as supplied by NatSol, complete with access hatches. However, the building will have other floor surfaces which meet the cubicle floor surface by the cubicle door. There could be an issue if the foundations for the vault, and the foundations for the floor outside the cubicle, move relative to one another due, for instance, to having a different depth.

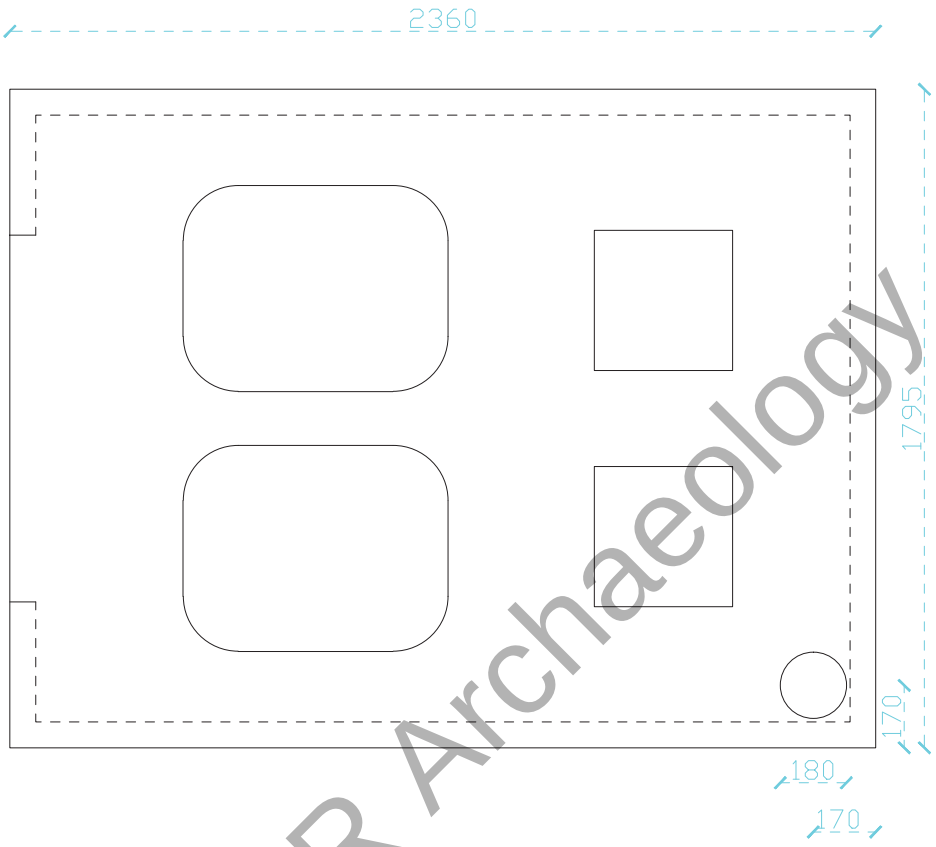
We can supply the vent pipe if we know the length required.

Ventilation issues

In all unheated, non-airtight buildings we use passive ventilation through a 160mm pipe which MUST run directly up through the roof from the floor socket and be terminated by the cowl we supply. Any variation from this will normally require the installation of a fan unit drawing about 1 Watt and the pipe can then be reduced to 110mm and can take a more circuitous route. We would need to discuss this with you and advise you. We can then supply the fan unit and power supply.

Tel: 01686 412653 Email: tech@natsol.co.uk

PLAN



Structural opening for door to be 1m wide if wheel access is required. Door outward opening

Notes

- Building footprint for COMPUS TWIN FULL ACCESS VAULTS
- Building sole and internal lining boards together must extend between 60 and 75 mm over the edge of vault lid as shown. Less than this and the weight of the building may break off the flange. More than this result in too small a cubicle.
- Max building weight 750kg evenly distributed. Avoid pressure points. Use continuous sole on which posts rest.
- Drill vault flange using universal drill bit supplied - DO NOT USE HAMMER SETTING. Drive turbo coach screws with washers (supplied) up through holes into building sole.
- Approach path and landing area outside should NOT cause rainwater to flow into the cubical as this will enter through the floor hatches.
- The building should have a ventilation slot somewhere since the toilet is passively vented. It is a good idea if this slot occurs at the top of a window pane or around a skylight. Any flies which enter the building will be attracted to light and if a gap of about 15mm is provided e.g. between the top of the glazing material and the window frame, then this can act as an escape route. Do not make gaps larger than about 15mm as small birds may enter the toilet cubical and start nesting in spring.

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Compact Twin Full Access	
footprint for DIY builders	
Date 10.1.13	not to scale
Drg. No.	
Drn. M.Waterfield	

EXTRACTS FROM PART M OF THE BUILDING REGULATIONS

SECTION M1/M2

ACCESS TO BUILDINGS OTHER THAN DWELLINGS

Ramped access

Design considerations

1.19 If site constraints necessitate an approach of 1:20 or steeper, an approach incorporating ramped access should be provided. Ramps are beneficial for wheelchair users and people pushing prams, pushchairs and bicycles.
1.20 Gradients should be as shallow as practical, as steep gradients create difficulties for some wheelchair users who lack the strength to propel themselves up a slope or having difficulty in slowing down or stopping when descending.

Limits for ramp gradients:

Going of a flight	Maximum gradient	Maximum rise
10m	1:20	500mm
5m	1:15	333mm
2m	1:12	166mm

Note:- For goings between 2 and 10m it is acceptable to interpolate between the maximum gradients.

Provisions

1.26 A ramped access will satisfy Requirement M1 or M2 if:

c. no flight has a going greater than 10m, or a rise of more than 500mm;
e. it has a surface width between walls, upstands or kerbs of at least 1.5m;
h. there is a landing at the foot and head of the ramp at least 1.2m long and **clear of any door swings** and other obstructions;
k. all landings are level, subject to a maximum gradient of 1:60 along their length and a maximum cross fall gradient of 1:40;
m. there is a kerb on the open side of any ramp or landing at least 100mm high, which contrasts visually with the ramp or landing in addition to any guarding required under Part K.

Note from NatSol:

The full regulations can be downloaded at:

http://www.planningportal.gov.uk/uploads/br/BR_PDF_ADM_2004.pdf

Highlighted sections above relate to those requirements which, in our experience, are often neglected in the installation of toilets on remote sites.

We stress that the inclusion of the above extracts is merely a way to assist you but that we do not accept any liability for the work you do in providing access into a toilet we provide and that if in doubt you should consult with the local Building Control Officer or an Access Consultant.

NATSOL INT. FITTINGS FOR CLIENT CONSTRUCTED FULL ACCESS BUILDINGS

What you need:-

1. **Components supplied by NATSOL:**
    a. toilet pedestal with urine separating plate
    b. white seat adapted for pedestal
    c. 2 hand disinfectant dispensers and 2 gel packs – load one in dispenser by pedestal, keep the other as spare
    d. 2 toilet roll holders
    e. ceramic urinal with trap, mounting brackets and pipe assembly – all stored inside the soak box.
    f. 40mm solvent weld pipe [long piece over rake handle],
    g. soak bin containing some wood shavings
    h. coat hook
    i. various screws
    j. metal rake
    k. emptying spade – store this somewhere else, you won't need it for years.
2. **Tools & equipment required:**
    a. saw for pipe cutting,
    b. cordless drill & bits
    c. flat bit screwdriver
    d. **PAINT FOR INTERIOR - OPTIONAL**
3. **Personnel & skills required:**
    a. 1 person is sufficient, 2 is handy

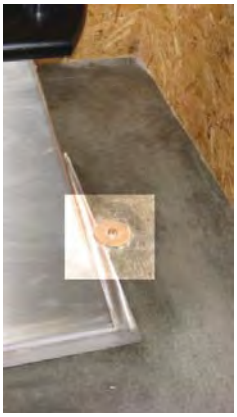
Method – see accompanying drawings and/or photos:-

1. NB. You may wish to pant the cubicle. We normally supply white grab rails. These should not be set on a white background. We would suggest a colour such as OSMO Light Ochre or other shades of similar colour density. This will create an attractive cubicle with grab rails which can easily be seen by visually impaired users. If you decide to paint we suggest fitting the grab rails and other equipment and then removing them again. The screw holes will make it clear where to refit them after painting.
2. Fit urinal in front RH corner of cubicle (splashback not usually supplied without a building). Fit brackets for urinal to achieve height shown on Internal Layout Drawing.. Hang urinal and fit pre-assembled threaded adaptor and bends.
3. Connect up urinal pipe work ensuring suitable fall in pipe, clip to wall. The pipe through the floor should be pushed into the hole up to the felt tip line. Any more than this and it may block the gutter.

4. Fit the grab rails in the positions shown on the walls or use the **Grab Rail Layout Drawing.** One grab rail is for the back of the door.
5. The wall mounted "soak" box is best fitted before fitting the pedestal. Fix the mounting brackets to the wall in both pedestal positions. The screw positions should be marked. If you can't see them then the top of the box should be 1100mm off the floor and you should leave a 25mm gap between the side of the box and the circular fixing plates of

the rear vertical grab rails. Hang the box behind whichever pedestal position you intend to use first. If you don't want it to be easily removed put in a screw through the central hole in the back of the box.

6. Position the pedestal in the rear hatch which had the timber safety board. The front of the pedestal should be inserted first so that the urine plate extends under the floor and reaches to the gutter. Use pack B4 to fix down the back of the pedestal. The small washer goes beneath the large SS one. If you are puzzled about how the urine separator directs urine to the gutter the answer is that the urine sticks to the underside of the last section of the stainless steel plate by surface tension.

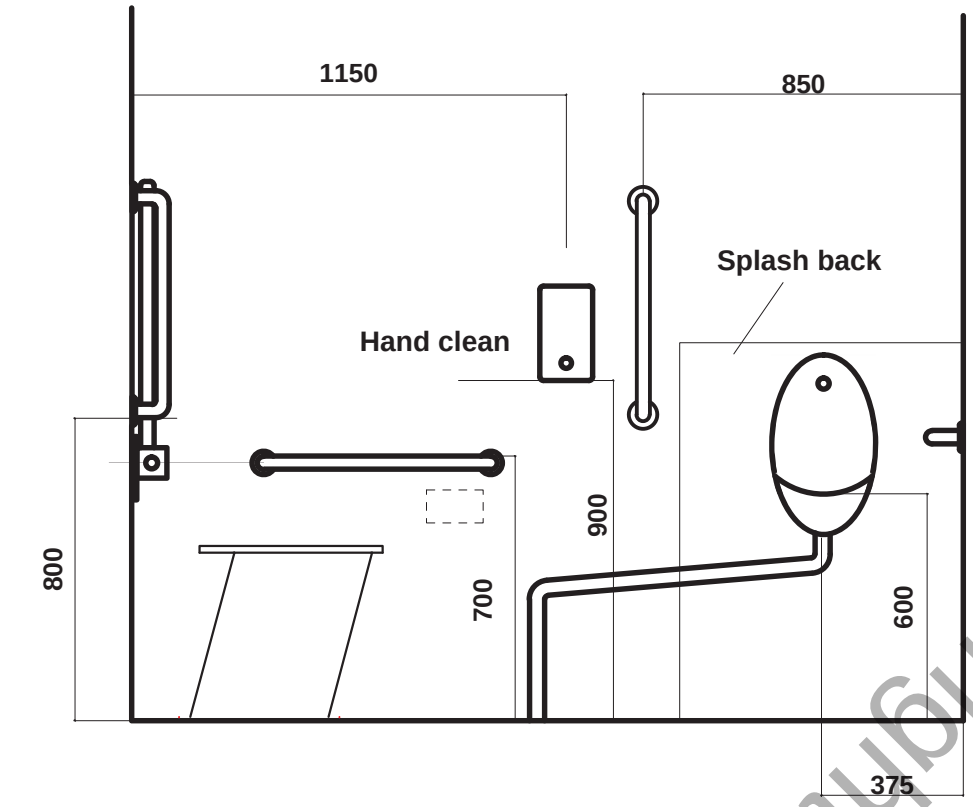


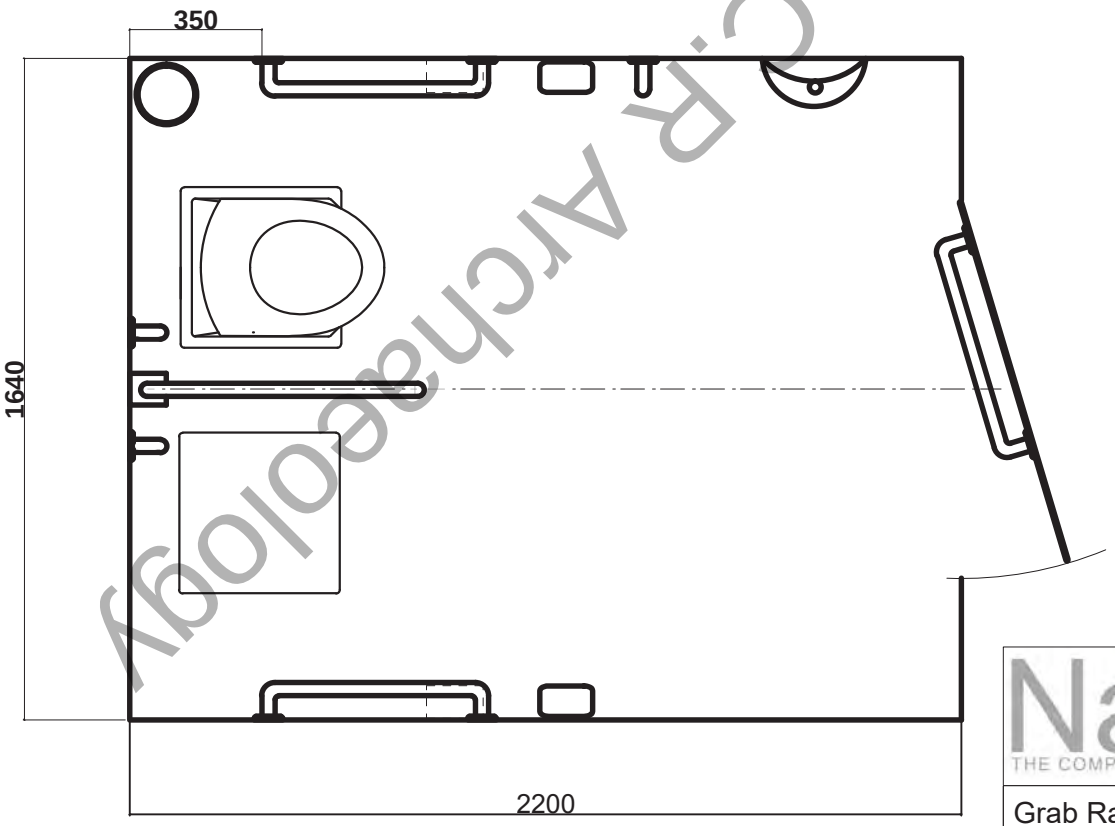
Pedestal fix down (pack B4) at rear

7. Fit toilet seat **following instructions on box**.
8. Fit the dispensers which open by pushing up the recessed button underneath at rear.
9. Fit toilet roll holders, one each side, in position accessible from pedestal.
10. Fit coat hook on back of door or opposite urinal.
11. If not already done open front hatches using lifting handles in the instructions folder and spread a 2" to 3" layer of Hemcore evenly over the base of both vaults. If you have some left you could use it to top up the soak bin although woodshavings will be better at covering over solids in the toilet.
12. Place the rake in the active vault so that handle is accessible from the emptying hatch in front of the pedestal – it stays in there until vault changeover and is then moved to the new active vault.
13. If you want to seal the floor then wait till everything else is done. Clean carefully, allow to dry and use a sealant such as OSMO Floor Wax (High Polyx).

FINISHING OFF OUTSIDE - We don't supply anything for this and it will depend very much on the site.

1. A **ramp** or **slope** and **landing area** should be constructed to comply with building regs. Maximum gradient for a **ramp** of 2m length is 1 in 12; width 1200mm. A **slope** of maximum gradient 1:21 is preferred for wheelchair access. The level **landing area** in front of the door should be approx 2200mm deep to provide 1200mm clear when the door is open. Make sure the landing area is slightly below the floor level so that rain doesn't run inside. The **maximum permissible step** here is 15mm. **We strongly advise you to contact a COUNCIL ACCESS OFFICER or private sector ACCESS CONSULTANT when designing your approach to the toilet.**
2. We strongly advise you to fit a post preventing the door from opening further than 90 degrees. From 1st Feb 2010 all our doors will be fitted with restrainers but these could be damaged in high winds. The post should not obstruct disabled access.
3. Don't forget to fit a **rainbutt** to make use of rainwater and to reduce the amount of water going to the soakaway. Rainwater is fine for floor cleaning, urinal rinsing etc.





NB: There are some other internal fittings which for simplicity are not shown on this drawing. If you are constructing your own building it is important to line the cubicle with a good quality board not less than 12mm thick in order to fix these without difficulty.

NatSol
THE COMPOST TOILET SPECIALISTS

Grab Rail Wooden Building

Drg. No. FA 011 mw 1

Date: 5.12.11 Scale: 1:20

Drawn: NJG altered mw

NatSol Ltd
Tel: 01686 412653
www.natsol.co.uk

NatSol the compost toilet specialists

COMPUS FULL ACCESS TOILET AND SITE CONDITIONS

Contract no: **Please complete and return**

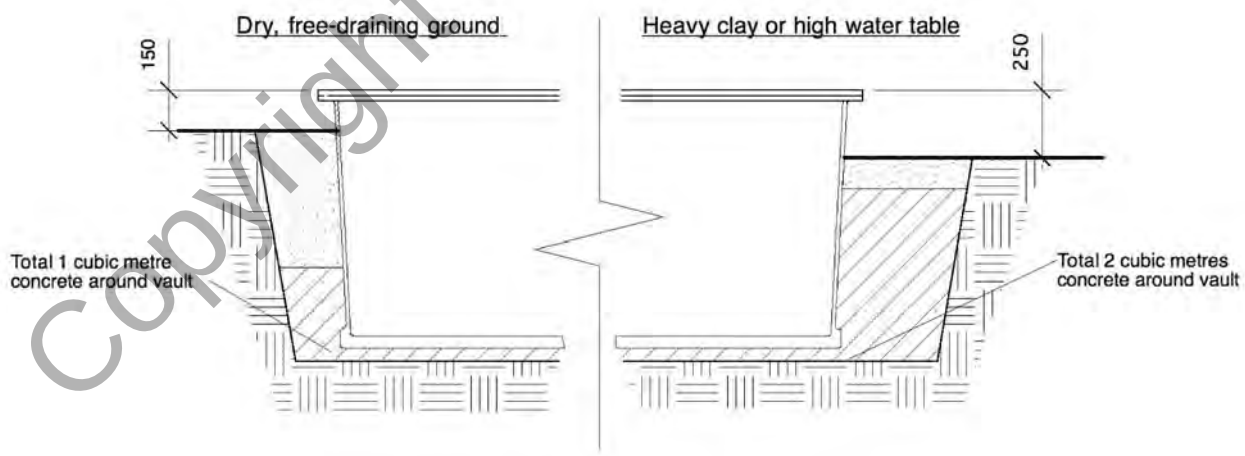
It is essential that the ground conditions are investigated by a competent person prior to installation to ensure that the site is suitable.

The Natsol COMPUS Full Access toilet is designed to work on most sites with a wide range of ground conditions. However sites with poor drainage or a seasonally high water table present particular problems for any compost toilet or septic tank.

The first concern is infiltration of ground water. The Natsol Compost toilet is designed to discharge urine close to ground level so that it can be dispersed in a shallow soakaway. This arrangement is suitable for most situations except where groundwater is close to the surface of the soil in heavy clay. Whilst the volume of urine may be small, a soakaway in clay soil can act as a drain collecting surface water which could back-up into the compost chamber. For this reason the soakaway should never be installed in ground up-hill of the toilet.

The second concern is flotation. This can be caused by high groundwater or simply by water trapped between the compost chamber and surrounding clay soil. Where possible any surface or groundwater should be drained away from the area around the vaults by a gravity drain discharging to a lower point. This is possible on sloping sites or where a deep ditch is available. On flatter sites it is necessary to surround the vault with sufficient concrete to prevent flotation as shown in figure 2.

Figure 2



If you are in any doubt please contact Natsol to discuss your site and installation requirements.

P.T.O.

Unit 5 Maesyllan Enterprise Park, Llanidloes Powys SY18 6BS T 01686 412653 F 0870 6221384
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Questions:-

For several reasons it is important that you assess ground conditions on the site where you wish to install a NatSol COMPUS Full Access toilet. We would like to receive your answers to the questions below which may affect how, where and whether or not a COMPUS Full Access toilet can be installed.

In assessing the site get the opinion of somebody with a good knowledge of the subsoil and the site including conditions during the winter. Ask the following questions and return a copy to us:-

1. Is the site known to become waterlogged at any time of the year or to flood?
   Answer:

2. Is the subsoil heavy clay? If so, then at what depth does this start?
   Answer:

3. Does the site slope and if so what, roughly, is the gradient?
   Answer:

4. If 'Yes' to 3, where do you want the toilet to go on the slope? At the top, bottom or middle?
   Answer:

5. If 'Yes' to 3, and if you have heavy clay is it possible to run a drainage pipe from around the toilet vaults towards lower ground?
   Answer:

6. Is the site closer than 10m to a watercourse e.g. a stream or drainage ditch? How high above this is the proposed toilet site and how far from it?
   Answer:

7. Is the site closer than 50m to a borehole or well?
   Answer:

In response to your answers we will provide an opinion as to whether there may be a fundamental difficulty in installing a COMPUS Full Access on this site. We will also provide a drawing showing options on how to set the vaults in the ground for different site conditions.

We need to stress, however, that you and your contractor are responsible for assessing the site conditions and ensuring that the depth of excavation and quantity of concrete used are appropriate. In rare cases it may be necessary for you to employ the services of a hydro-geologist with knowledge of the site in question.

Name of person supplying information:

Contact telephone no:

FOR NATSOL USE:- Depth:	Concrete:	Comments: