Sir John de Graham's Castle and Kirk o'Muir Community Project, Carron Valley, Stirlingshire

Data Structure Report

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Connolly Heritage Consultancy

Buildings Archaeologist and Heritage Consultant

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Sir John de Graham's Castle & Kirk O' Muir Community Project

Data Structure Report

On behalf of:	Valley Renewables Group
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Abstract

Graham's Castle and Kirk o' Muir cemetery in Carron Valley, Stirlingshire, in September 2017. All the works were funded by the Heritage Lottery Fund as part of the Year of Heritage, History and Archaeology.

The project also involved production of an audio and soundscape diary for both sites. Correspondingly, school visits and participation from St Ninians, Fintry, Buchlyvie and Ballikinrain Primary Schools were also accommodated within the same project.

The metal detecting survey, for volunteer training purposes, took place over a period of two days in two separate areas at the site of Sir John de Graham's Castle (outwith the scheduled area). The finds, all of which were of recent provenance, were GPS located, examined and subsequently reburied.

The excavations at the site of Kirk o' Muir cemetery were undertaken over a period of four days. These consisted of hand-excavation of six trenches in total– five (Trenches 1, 2, 3, 5 & 6) within the graveyard boundary wall and one (Trench 4) immediately to the north of the cemetery.

Trench 1 was located in the southwest corner of the cemetery in order to confirm presence of a former nineteenth century school recorded on early maps in this area of the cemetery. This was confirmed by the presence of demolition rubble comprising slate, stone, brick, window glass and mortar, as well as in situ floor and wall remains. Trench 6 was opened immediately to the east of Trench 1, with only turf and the uppermost amount of topsoil removed, containing artefactual evidence of mostly 19th or early 20th century provenance, as also identified in Trench 1.

Trenches 2, 3 and 5 were opened in the north/northeast area of the current cemetery boundary, estimated to be the most promising areas for location of a former medieval chapel, based on historical and current ground evidence. No clear in situ remains were uncovered, due to the significant alteration of the graveyard ground sometime during the nineteenth century. Nonetheless, the deep made ground consisting of a large component of demolition deposits identified in all three trenches, point to a former presence of stone and slate structure in this or near location. Trench 3 in particular produced the best evidence for this in the form of a line of 'rejected stones' from demolished building–feasibly, the former chapel.

Trench 4 was opened to investigate a bank feature immediately to the north of the cemetery wall, in order to determine, whether it may represent remains of a former cemetery boundary. Although presence of dry stone bank and collapse was confirmed, this most likely represents remains of a dyke related to the farming settlement of Kirk o' Muir, which have stood nearby until at least 1860s.

Contents

1. INTRODUCTION

This report presents results of a community heritage project, undertaken over a period of 6 days in September 2017 (6/09/17-11/09/17), comprising metal detecting survey and excavations, at the sites of Sir John de Graham's Castle and Kirk o' Muir cemetery in Carron Valley, Stirlingshire. All the works were funded by the Heritage Lottery Fund as part of the Year of Heritage, History and Archaeology.

The prime objectives of the community project were to ensure suitable training and guidance to the volunteers supplied by the Valley Renewables Group – and ensuring individuals were included in the process of investigation and recording.

The excavations and metal detecting survey were directed by Connolly Heritage Consultancy (CHC) on behalf of Valley Renewables Group (VRG), with help from volunteers, including from a number of local societiesCarron Valley Heritage and Historical Society.

In addition, the project also encompassed SUA flights over both sites, carried out by Skyscape Survey; production of an audio and soundscape diary, by Christopher and Anne Kane of Bee Herd Media Ltd. and grave stone survey under the direction of Hanneke Booij, as well as visits and participation from children from St Ninians, Fintry, and Buchlyvie and Ballikinrain Primary Schools.

1.1. Location

Both sites investigated as part of the project are located in the Parish of St Ninians, Stirling Council, to the north of the Carron Valley Reservoir. The sites are some 3km apart, and are easily accessible from the B818 road. Sir John de Graham's Castle (NGR: NS 6814 85860) is located on a raised ground within the forestry land, and is accessible from a side road leading off the B818 and subsequently by a forestry track, which allows for access from the north. Kirk o' Muir (NGR NS 7007 8401) cemetery is located directly of B818 **(Figure 1)**.

Figure 1: Sites Location Map

1.2. Previous research

There were no previous invasive archaeological investigations conducted at either of the two sites, other than recent ongoing environmental coring of the two features, previously identified as possible fishponds, at Sir john de Graham's Castle by Dr Richard Tipping from late of Stirling University. The site was included within the Royal Commission for Ancient and Historic Monuments in Scotland's (RCAHMS) Marginal Land Survey (1950-1962), and visited by R. Feachem (1951-54). It is not clear if the plane-table survey plan of the site (dated 7th October 1952; RCAHMS **Catalogue Number**: DP 203933; DP 023970), later reproduced in the Stirlingshire Inventory (RCAHMS 1963: 175), was created during this visit or
at a later point. The most up-to date survey plan of the site was produced by Historic Environment Scotland (HES)ER in 2016 (April) using combination of Lidar data, GPS and existing plane-table survey (Canmore: SC 1563727;
https://canmore.org.uk/collection/1563727), which shows the suggested fishponds and two dams south and southwest of the site.

The burial ground of Kirk o' Muir have been previously inspected by the Royal CommissionRCAHMS (RCAHMS 1963: 160) and subject to the gravestone survey in June 1969 for Scottish Genealogical Society (Mitchell & Mitchell 1973).

1.3. Historical Background

Sir John de Graham's Castle

Sir John de Graham's Castle (Canmore ID 45283) is a Scheduled Monument (SM4278) and a good example of a relatively rare type of medieval earthwork– so-called square motte **(Plate 1)**. The builders of the site have utilised a natural knoll, rather than amassing an artificial mound, which was defended by a broad, flat-bottomed ditch, 11m across and 3m deep. The ditch is continuous all around the circumference of the knoll and therefore the access to the castle must have been facilitated by means of a timber bridge, which was probably located on the northeast side. The central platform of the motte is almost square, measuring 22.8m by 23.4m. To the northeast of the ditch are up-standing remains of a lime-mortared wall and portions of banks, which probably suggest the positions of ancillary buildings (Stevenson 1985: 85). Moreover, as the most recent combined Lidar and GPS survey plan suggests (Canmore: SC 1563727), there are number of features located outwith the Scheduled Area, towards the south and southwest, including two possible fishponds. An ongoing coring of these features by Dr R. Tipping and anticipated radiocarbon dates should provide some answers as to their origin and function.

Plate 1: SUA aerial image of Sir John de Graham's Castle, with now flooded Carron Valley in the background, view to the south.

According to the tradition, this motte was the residence of Sir John de Graham of Dundaff, who was an associate of Sir William Wallace and who was killed in 1298 at the Battle of Falkirk (New Statistical Account (NSA) 1845: 323). The exact date of the castle's construction is unclear but it reasonable to suggest it served as the principal stronghold of the barony of Dundaff, which was in the possession of Sir David de Graham, the founder of the house of Montrose, in 1237 (RCAHMS 1963: 186). This is certainly suggested from confirmation grant by King Alexander II to David de Graham, Lord of Lovat, in 1237 of the "waste of Dundaff and Strathcarron" (Wyeth 2017). In tThe New Statistical Account of ScotlandNSA, the castle is reportedreported that the castle was as being burnt down after the Battle of Falkirk (NSA 1845: 42).

Plate 2: SUA aerial image of the Kirk o' Muir graveyard, with now flooded Carron Valley in the background, view to the southeast.

Kirk o' Muir Cemetery

Kirk o' Muir (Canmore ID 45979) comprises a small burial ground enclosed in a stone boundary wall **(Plate 2)**. A chapel, dedicated to St Mary, allegedly founded around the middle of the 15th century, is reported to have stood somewhere within the bounds of the graveyard for about two hundred years. This end date appears to coincide with the earliest dated grave stones identified within the graveyard to date. The RCAHMS' inspection of the site identified the earliest decipherable stone as 1695 (RCAHMS 1963: 160), while the subsequent survey (June 1969) of the site, found two earlier stones of pre-1700 dates, including one dated 1678 (No. 29) and one partial dated 167… (No. 19) (Mitchell & Mitchell 1973: 190-92). These dates were surpassed by the most recent survey **(Plate 3)**, which found the eldest gravestone identified so far, dated 1651 (Booij forthcoming; see also below). Correspondingly, based on the 1969 survey, the latest recorded date for the burial at Kirk o' Muir (excluding recent scatterings of ashes) is that of Jane Adam in December 1876 (Mitchell & Mitchell 1973: 192).

Plate 3: Grave slabs identified at Kirk o' Muir during the most recent survey of the site– the one dated 1651 (left) is the eldest grave marker identified at Kirk o' Muir to date; 1682 (right).

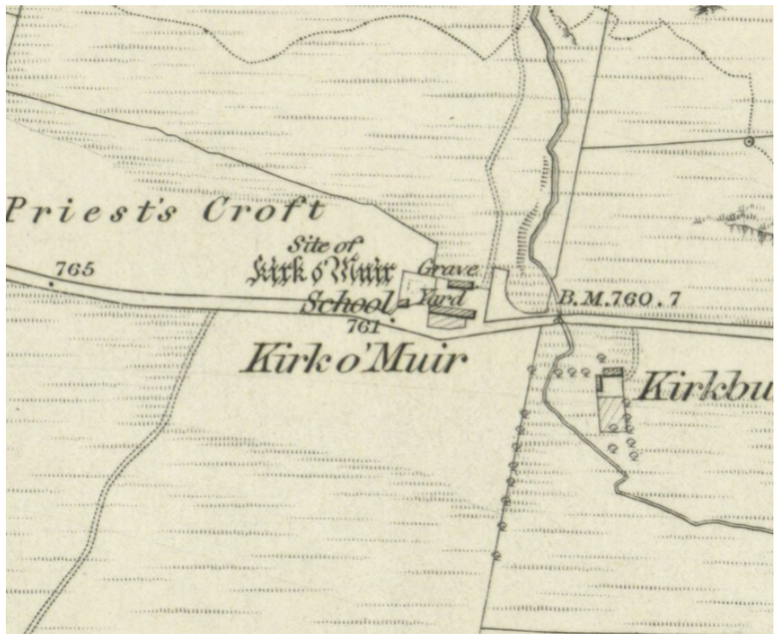
Furthermore, the NSA suggests that the chapel structure was entirely gone by the time of the account's creation (1841), while the graveyard was still serving as burial ground (NSA 1845: 323). The same is implied in the ordnance survey Name Books for Stirlingshire (1858-61; based on valuation rolls for St Ninians Parish 1855-1856), which speak of local tradition regarding the central location of the former chapel within the burial ground, which was still in use at this time, but the chapel has disappeared by then and with it the knowledge of its origins or its builders (OS Name Books 1858-61: vol. 27; OS1/32/27/156). Taken together, the above accounts clearly suggest the chapel was entirely removed (or disappeared below later ground alterations within the graveyard) by c. early 19th century.

The existence of the former chapel at the Kirk o' Muir burial ground is also supported by cartographic evidence– the map regression research **(Figure 2)** clearly suggesting that the chapel was in existence as an upstanding building into the later 18th century, albeit as a ruin from the 17th century onwards. 'K. of Moore' is shown on Pont's map of the late 16th century (c. 1583-1596), but Edgar's map, surveyed in 1745, marks it as 'Ruins' (Edgar 1777). Roy's Lowland Survey map (1752-55) has the outline of the boundary at 'Kirk of Muir' but no obvious structures within. In contrast, John Grassom's map of Stirling (1817) notes three structures on the site but none as ruins, although it is not clear what these structures are and whether they

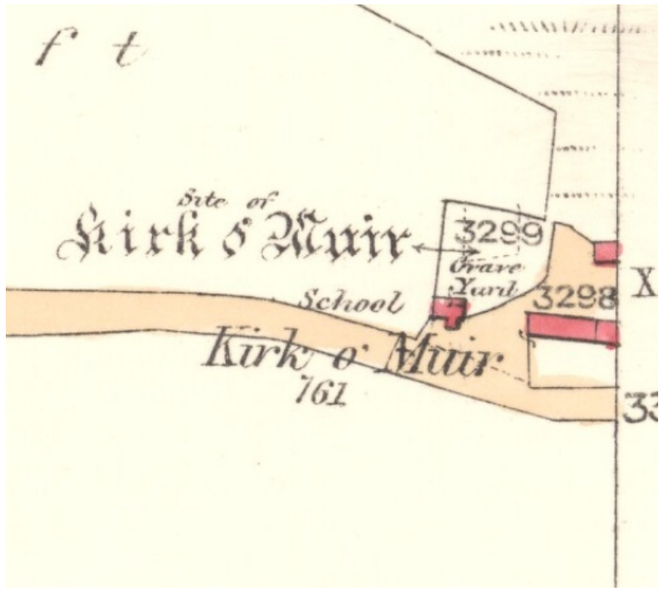
[The East Central Lowlands (Stirling, Falkirk & Kilsyth)]- Pont 32 [ca. 1583-96]

A map of Stirlingshire from a Survey by William Edgar in 1745
© 2002 Edinburgh University Library

William Roy. Military Survey of Scotland, 1747-55



Ordnance Survey,Stirlingshire, Sheet XXII
(includes: Campsie; Fintry; Kilsyth; St Ninians)
Survey date: 1859-61 Publication date: 1864



Ordnance Survey, Stirling Sheet XXII.11 (St. Ninians)
Survey date: 1859 Publication date: 1864

Ordnance Survey, Stirling Sheet 22.11 (St. Ninians)
Survey date: 1896 Publication date: 1897

Figure 2: Kirk o' Muir map regression

may relate to the School or the graveyard and the farm of Kirk o' Muir. Given that William Edgar's 1745 map marks the chapel as a ruin as does Ainslie's map (1821; 'Muirkirk Ruins') and that both NSA and OS Name Books suggest it is gone by 1840s/1850s, this implies that the ruined structure was entirely removed between 1822 and 1841.

Moreover, both the NSA account and cartographic evidence shows that a school was constructed in the southwest corner of the Kirk o' Muir graveyard, probably sometime during the first half of the 19th century. The NSA account describes a structure, located at the gate into the cemetery, which probably served the school, but which was already in ruins by the time of the report when the school was still in use (i.e. 1841; NSA 1845: 323). Correspondingly, the OS Name Books for Stirlingshire (1858-61) record a recently built small single story school house, with slated roof, located in the corner of the burying ground at Kirk o' Muir, with average attendance of 30 pupils (OS Name Books 1858-61: vol. 27; OS1/32/27/156). These reports suggest that the school structure was constructed in the first half of the 19th century and was still used in early 1860s.

The map regression research **(Figure 2)** points to the same conclusions. The school structure appears on the first edition OS six-inch map for Stirlingshire (surveyed 1859-61; published 1864) in the southwest corner of the graveyard, marked as 'school'. The school is not depicted on the subsequent maps– i.e. OS 25inch (revised 1896; published 1897) or the second edition OS six-inch map (revised 1896; published 1899), and was presumably removed by the 1890s.

Furthermore, the field to the west of the graveyard, called Priest's croft, which is described in the NSA account of the Kirk o' Muir (NSA 1845: 323), as well as the OS Name books (1858-1861: vol. 27; OS1/32/27/156) and cartographic sources for Stirlingshire **(Figure 2)**, has the potential, of relating to pre-reformation land ownership, and therefore connected to the chapel, as suggested from the Catholic terminology used (i.e. '*Priest'*).

In addition, the adjacent farmstead of Kirk o' Muir, which stood to the east of the Kirk o' Muir burial ground, now entirely demolished, is described as a group of buildings consisting of 'farmsteading, dwellinghouse and out offices', all single story, thatched and in 'bad state of repair' in the OS Name books for Stirlingshire (1858-61: vol. 27. OS1/32/27/156). The OS 25-inch map of Stirlingshire (1896; 022.11; **Figure 2**) clearly shows an enclosed area to the north of the graveyard, which may represent agricultural stock enclosures related to the farm.

Finally, a local tradition links the site to late 17th century conventicles (Dr Cook *pers comm*). A note of local covenanting tradition is certainly made in the Statistical accounts (NSA 1845: 320), but no exact location for these meetings is given. The conventicle tradition has been upheld by the more recent annual service of Covenanters remembrance, which takes place each year at the Kirk o' Muir graveyard at noon on the first August Sunday, as it has done for at least a century (Rev McIntyre 2014).

2. PROJECT AIMS AND OBJECTIVES

The primary aims of the Sir John de Graham's Castle and Kirk o' Muir Community Project were:

1. to provide suitable training and guidance in archaeological and metal detecting survey techniques for the volunteers supplied by the Valley Renewables Group; and to ensure individuals were included in the all aspects of investigation during the duration of the project

2. to contribute new evidence for the interpretation of both sites, based on metal detecting survey and excavations, as well as providing clues regarding the form, function and dates of the archaeological features uncovered

3. to compile an audio and soundscape diary as part of the project, which can be utilised to enhance the experience by the volunteers and participants, as well as adding to the potential future heritage experience and interpretation for the sites

3. METHODOLOGY

3.1. Desk Based Assessment

The Stirling Council's Historic Environment Record (HER); the RCAHMS Canmore database and other appropriate and readily accessible historical and bibliographic resources were consulted prior to the project's inception. This also included locating both sites on a current map of the area. Further research was conducted as part of the report writing phase and included historical map regression research, using chiefly NLS (National Libraries of Scotland Online Maps Archives), The Old and New Statistical Accounts (OSA 1779 and NSA 1845); Ordnance Survey Name Books (OSNB) and other resources.

3.2. Fieldwork: Metal Detecting Survey and training (Site 1: Sir John de Graham's Castle)

A metal detecting survey took place on the 6th and 7th September, outwith the Scheduled Area of Sir John de Graham's Castle, with a marked 10m buffer zone in place to ensure safe operating procedures. The survey mainly focused on the area to the south/southeast of the castle, including around the newly identified waterlogged features (possible fishponds) and to the east of the castle site on the upper plateau.

The metal detecting survey was supervised by two archaeologists and an experienced metal detectorist, Todd Irvine. The programme involved training volunteers in metal detecting techniques, as well as the appropriate application of this method of survey. The survey utilised a range of metal detectors, all supplied by Todd Irvine. The training was focused on organised and ethical recording and survey of sites using metal detectors, as well as correct use of the machinery and methods of detecting.

All volunteers/participants were first instructed in correct use of the machinery by Todd Irvine and health and safety site rules by the two archaeologists. The survey areas were divided into sectors each day, with volunteers allocated accordingly.

All finds were pin flagged, numbered and distinguished by type of material; with all targets 3D mapped using a DGPS system with reference to NGR coordinates. All finds were excavated for training and identification purposes and subsequently reburied as appropriate- none being earlier than the late 20th century in date and consisting mainly of wire mesh, tent pegs and beer cans.

School visits lasting between 1-2 hours took place on both days and children were given opportunity to participate in all aspects of the metal detecting survey in addition to interactive tours of the castle site organised and led by David Smith from The Stirling Smith Art Gallery and Museum.

3.3. Excavations and training (Site 2: Kirk o' Muir)

All excavation works took place between the 8th and 11th September, with backfilling on the final day, and were supervised by two experienced archaeologists. All equipment was provided by the CHC, and recording (photographic, drawn, written and survey) was conducted with collaboration from the volunteer participants, in order to give them a comprehensive understanding of the procedures and requirements of archaeological excavations. Participants were instructed in site health and safety and safe handling of all tools and equipment.

Archaeology Skills Passports were provided to those volunteers who wished to record their skills over time, while more experienced volunteers, were given opportunity to advance their existing skillsets.

All excavations were carried out by hand in a stratigraphic manner and a complete written, drawn and photographic record was maintained for all uncovered deposits. All excavation aspects were conducted as per standard **Connolly Heritage Consultancy** procedures– principally by hand-excavation, drawing, photography and by completing standard **Connolly Heritage Consultancy** record forms.

Prior to excavation the proposed trench locations were photographed to account for the reinstatement plan. All trenches were de-turfed and excavated using hand-tools, with the turfs placed on a separate pile from the soil. The turf was carefully removed in reasonably sized portions and placed to form a small bank to insure its survival for the reinstatement. All spoil and turfs were placed at least c.1.0m from the trench edges on a plastic canvas (i.e. tarpaulin). The upper portions of the topsoil in all trenches were then carefully removed in spits, using shovels, hand-shovels and spades. All subsequent excavations were conducted by hand, using trowels and hand-shovels and all spoil was placed into the buckets or trugs and sieved to recover any artefacts or other material. The spoil heaps were also metal detected for presence of any metal artefacts.

All identified finds and artefacts were collected and either retained or reburied after examination by experienced CHC archaeologist and recording of their presence. This applied in particular to certain classes of material, i.e. 19th or 20th century pottery sherds and building material, of which a representative sample was kept. Correspondingly, any uncovered charnel or material associated with burials was recorded and reburied.

All finds and samples were treated in a proper manner and finds were exposed, lifted, cleaned, conserved, marked, bagged and boxed in accordance with the guidelines set out in United Kingdom Institute for Conservation's Conservation Guidelines No. 2 (UKIC, 1983).

All finds and artefacts collected during the metal detecting phase of works were reburied; finds and artefacts from the Kirk o' Muir excavations were examined and due to the assemblage being of little further value, consisting mainly of 19th century pottery, slates and other fragments of structural material were handed to the Council Archaeologist for disposal to the local schools.

Following the completion of the excavation, the base of all trenches was lined with Terram (a semi-permeable membrane, which allows moisture to move up and down the soil profile) in order to allow potential future researchers to determine the extent of the previous excavations.

All spoil was then shovelled by hand into the trench in spits of 0.05m, before being trampled flat. Upon completion of the backfilling with soil, the turfs were placed by hand and a set of photographs taken, to provide a record of the site after the project's completion.

3.4. SUA flight and imaging survey

SUA flights over both sites were carried out by Skyscape Survey, as both a demonstration of modern technologies and to produce aerial image of the site (Site 2: Kirk o' Muir) and a full 3D model and contour plan (Site 1: Sir John de Graham's Castle) to aid the site's management and interpretation. All flights were carried out by a fully qualified and CAA certified SUA pilot;

David Connolly and supervised by flight safety officer Hana Kdolska[1]. The resulting aerial images will be made available for any further interpretation and publications.

4. RESULTS

4.1. Introduction

Weather conditions: The weather conditions during the duration of the project were not ideal, with rain on most days but including some sunny spells and reasonably dry conditions, with generally good site and feature visibility.

The following text should be read in conjunction with the data presented in Appendices 1-5.

4.2. Metal Detecting Survey and training: Site 1: Sir John de Graham's Castle

The metal detecting survey **(Plate 4)** was focused on the area southeast and east of Sir John de Graham's Castle remains, outwith the scheduled area. The area covered by the survey was approximately 10,000 square metres **(Figure 3)** and divided into separate sectors to be investigated by a number of volunteers each day. Some areas had to be avoided, either due to waterlogging, such as the 'fishpond' features (currently being investigated by environmental coring) or due to dense vegetation cover.

[1] For full flight safety procedures, see Skyscape Survey Ops Manual and Risk Assessment (available on request)

Plate 4: Todd Irvine giving talk on the use of metal detectors to volunteers and visitors.

The survey detected 67 finds in total **(Appendix 5; Figure 3)**, all of recent provenance, mostly beer cans, tent pegs, or wire mesh. These were georeferenced and are plotted on Figure 3, but none were retained

The metal detecting survey uncovered no finds associated with the medieval use of Sir John de Graham's Castle. Although there were areas with promising signal, such as the edge of the forestry, this proved to be remains of the forestry fence, buried deep beneath humic forest material. The more recent humic peaty topsoil in the surveyed areas effectively prevented the machines from reaching a depth where medieval material might be recovered, as even the more recent material was located at a considerable depth.

Having said that, the character of the finds assemblage, provided unequivocal evidence for the site's more recent use as a camping site. By GPS plotting of the finds, certain areas of particular activities could be discerned, such as position of tents or camp fires (with many a localised drinking sessions detected). Therefore, this exercise clearly demonstrated the advantage of using metal detecting technology, under controlled conditions and combined with GPS, as part of the modern archaeological research toolkit.

Moreover, the study was also successful, as it provided an excellent opportunity to demonstrate to the volunteers and wider public, the appropriate and legitimate use of this technology, as well as its constraints and advantages.

4.3. SUA flight and imaging survey

In addition, an aerial survey of the site resulted in a production of a 3D terrain model and derived contour plan **(Figure 3)**, which may be utilised in conjunction with the existing HES LiDAR survey (Canmore: SC 1563727) for the site interpretation and management.

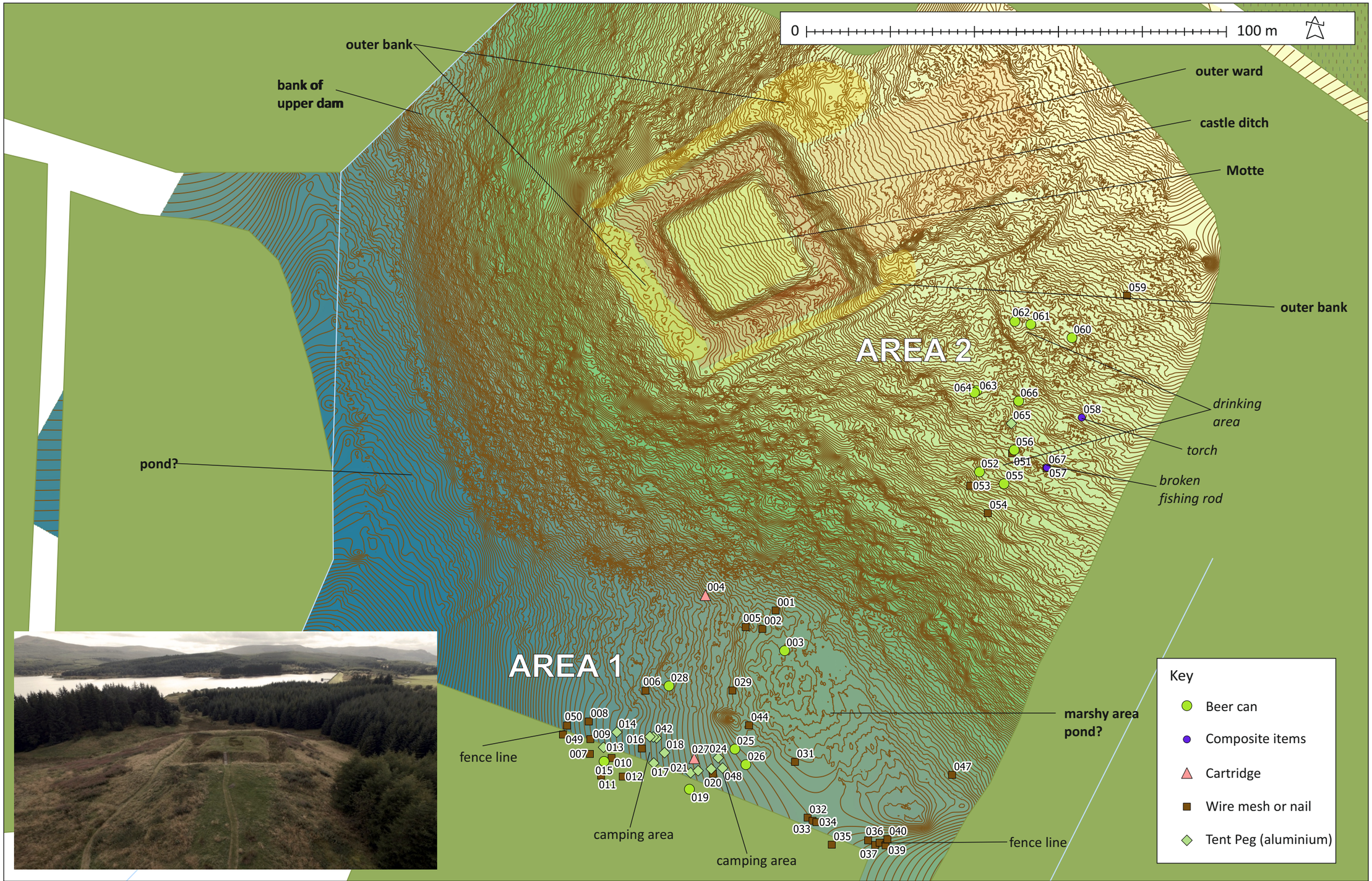


Figure 3: Sir John De Graham's Castle, contour plan and finds distribution.

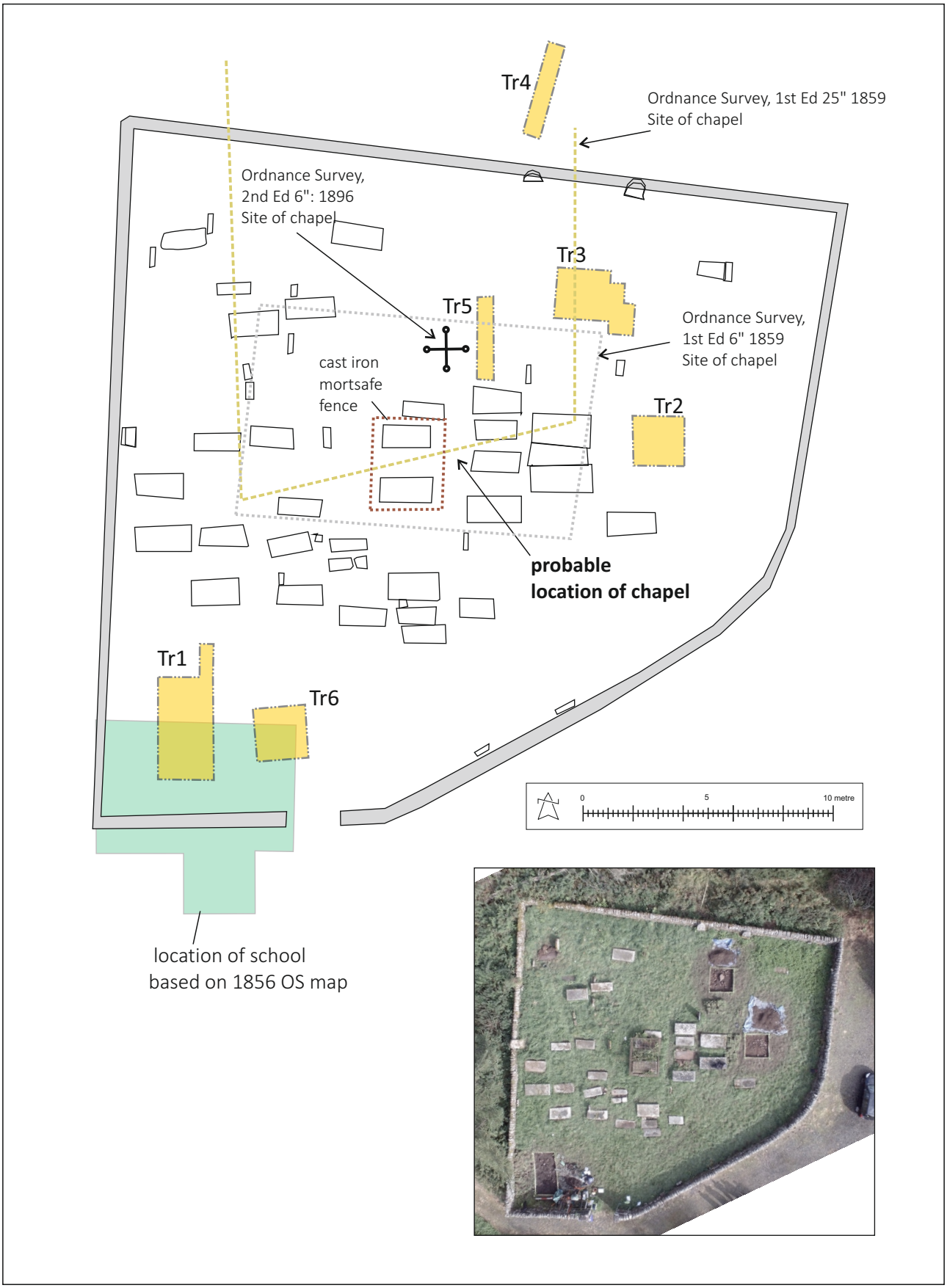


Figure 4: Kirk o' Muir site plan, location of the trenches and postulated footprints of former school and chapel see Figure 2 for OS chapel location).

4.4. Excavation and training: Site 2: Kirk o' Muir

Six Trenches were opened at the site of Kirk o' Muir – Trenches 1, 2, 3, 5 & 6, were located within the current cemetery boundary wall and Trench 4 immediately to the north of the wall.

Trench 1

Trench 1 was located in the southwest corner of the cemetery to confirm or refute the presence of a former nineteenth century school recorded on early maps and OS Name Books account in this area of the cemetery. The trench was orientated north-south and originally measured 4.0m (north-south) by 2.0m (east-west), with small narrow extension later added to the northeast corner of the Trench, measuring 1.20m (north-south) by 0.50m (east-west). The trench was excavated to a maximum depth of c. 0.52m.

The excavations in Trench 1 uncovered a topsoil [101] of dark brown/black rich organic character and which contained material of both 19th and 20th century provenance, including a large number of ceramic sherds, bottle and window glass sherds, two bottle stoppers, assemblage of corroded iron objects and animal bone (some butchered), as well as building material, roof slate fragments (some with corroded nails attached) brick and tile fragments, relating to demolition.

Plate 5: Deposit of slates forming a distinct layer [102] beneath the topsoil [101] at the north end of Trench 1.

At the north end of the original trench extent, the topsoil [101] overlay a layer of blue roof slates [102], many of with nail holes **(Plate 5)**. This appeared to represent a discreet deposit, probably representing the collapsed slates from the roof of the school. The deposit [102] (in the north end) overlay a layer of stone rubble, mixed with occasional roof slate fragments [103], which spread from the south and most likely represents tumble from the demolished north school wall [106], a south face [107] of which was partially uncovered (see below). The rubble/tumble deposit [103] overlay more demolition material [104] **(Plate 6)** comprising degraded mortar and wall plaster, mixed with soil and containing large amount of material clearly derived from some former structure, including brick fragments, corroded metal objects (some from interior furnishings and door fixtures), partial timber boards and planks (which

may have derived from former joist floor) and some burnt material with coal fragments. The finds consisted of ceramic sherds, animal bone, bottle and window glass sherds. All artefacts were of 19th century character.

Plate 6. Solid mortar surface [105] with remains of wooden joist floor, part of demolition deposit [104], above.

In the small sondage in the southwest corner of the trench the demolition deposit [104] overlay an in situ solid mortar surface of light beige/orange colour [105] **(Plate 6)**, which would have likely formed a surface for former building over which the sprung wooden floor was constructed. Another sondage in the northeast corner of the trench confirmed presence of a retaining bank/ wall [106] **(Plate 7)**, made of medium to large sub-angular/angular stones, which would have served to prevent the graveyard soil from slumping/eroding towards the building to the south and at the same time forming the rear north wall of the school. The south face of the wall was plastered on the hard with light cream/beige plaster [107]. The wall [106] was set within made ground soil of the graveyard [109], consisting of medium light reddish brown clayey silt with significant gravel component.

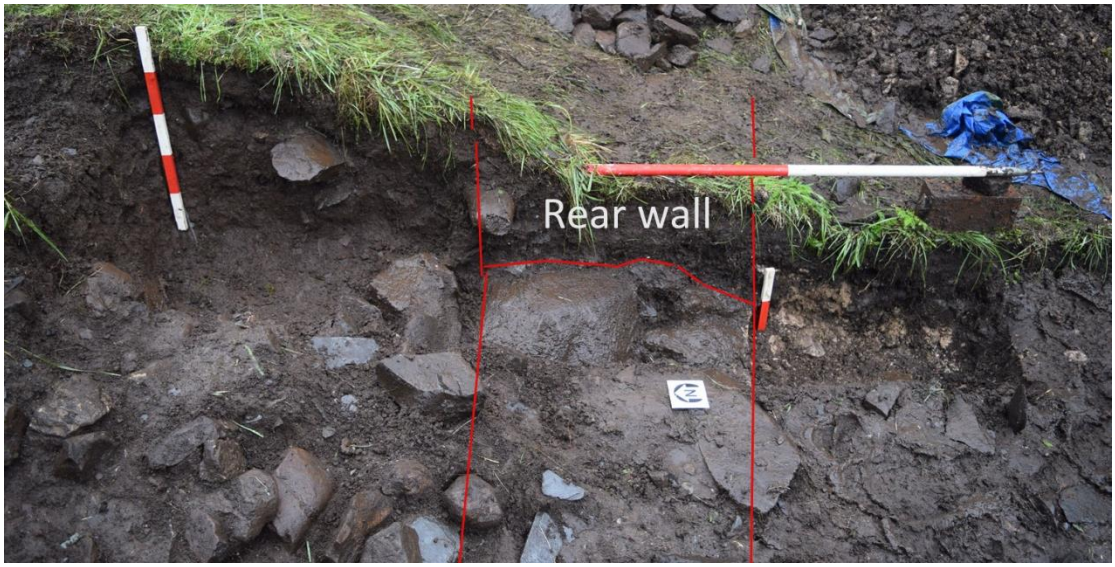


Plate 7: Partial west facing section of Trench 1 showing rear school wall/ retaining wall [106], with plaster on the interior wall face [107] and rough revetment behind (note slates from demolition layer [104]).

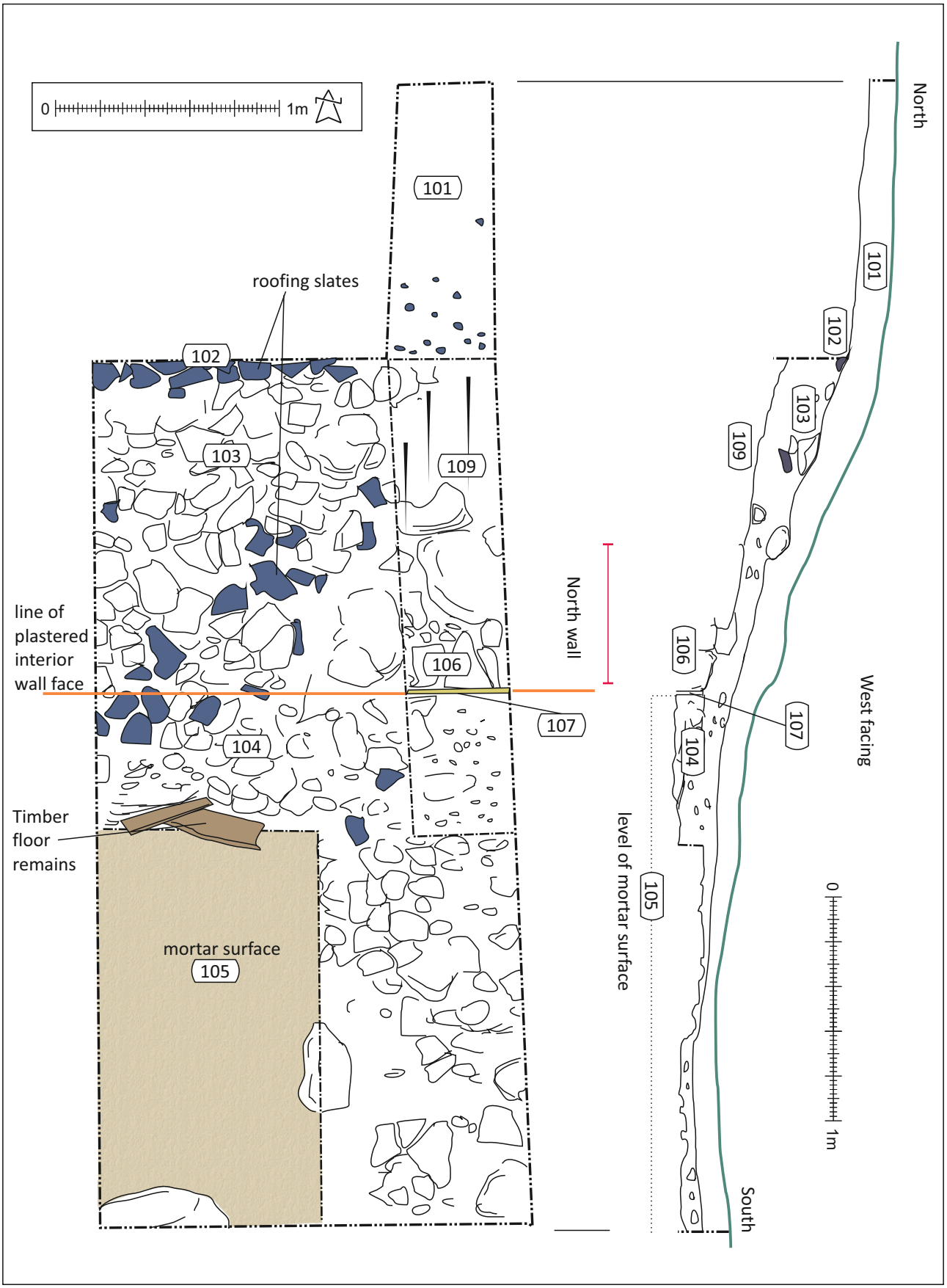


Figure 5: Kirk o' Muir; plan and section of Trench 1

In addition, a dump of modern disturbance material [108] was identified in the south half of the trench, above [104] and below [101] and consisted of modern fabric, modern brick and rusty pieces of metal. This clearly represents a very recent event, unrelated to the archaeological deposits uncovered in other areas of the trench.

The remains identified within Trench 1, i.e. the presence of demolition rubble comprising slate, stone, brick, window glass and plaster, mortar, as well as in situ floor remains [105] and wall/ retaining bank [106] clearly point to the presence of the former building on site, which must have been the school identified from historical records. The map overlay **(Figure 5)** proves that the school building would have originally extended beyond the current boundary wall towards the south, confirming the current wall to the west of the entrance as a later rebuild. The school must have been removed by or at the time the new wall was added.

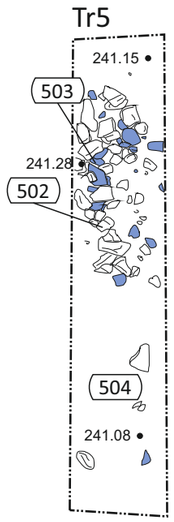
Trenches 2, 3 and 5

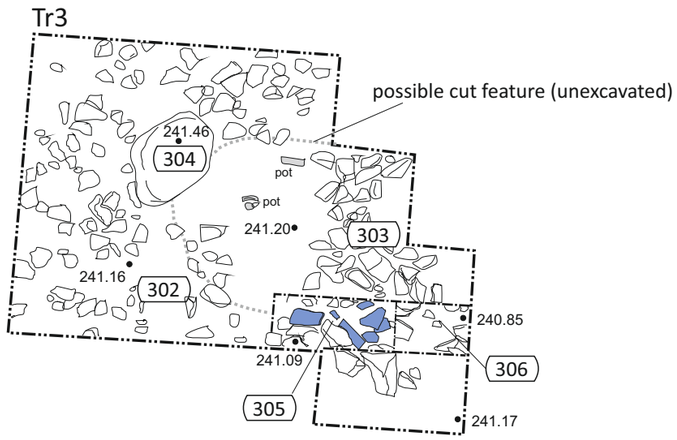
Trenches 2, 3 and 5 were opened in the north/northeast area of the cemetery, considered to be an area with less likelihood of disturbing any graves, but with potential to locate evidence of the former medieval chapel, based on cartographic (**Figure 2**) and documentary evidence.

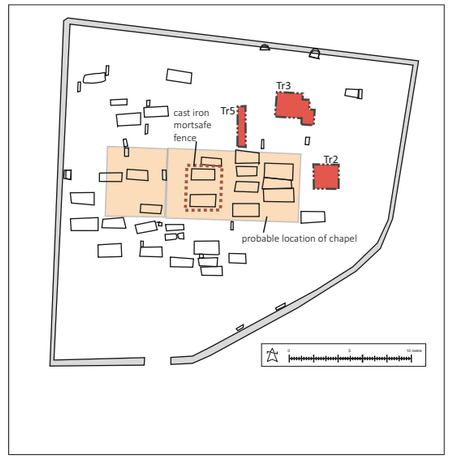
Trench 2 **(Plate 8)** measured 2.0m by 2.0m and was excavated to a maximum depth of c. 0.65m (in a sondage). The excavations revealed a topsoil [201] of dark brown/black rich organic clayey silt, which included finds of largely 19th century provenance (with some early 20th century), including a large number of ceramic sherds, one clay pipe stem fragment, bottle glass sherds, roof slate assemblage, as well as some metal finds, including one lead object and some heavily corroded nails amongst others.

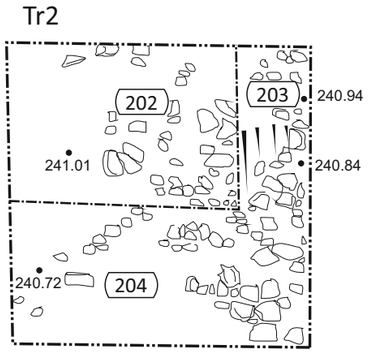
Additionally, some charnel was also recovered from the topsoil [201] of Trench 2, consisting of several teeth (possibly from juveniles) and fragments of a long-bone. These were subsequently reburied within the trench.

Immediately below the topsoil [201] lay a deposit of lighter reddish brown sandy/silty clay (c.40%), with a large number of gravel and angular to sub-angular stones (c. 60%), many shattered **(Plate 8)**. This was investigated further in a sondage in the southwest corner of the trench to the depth of c. 0.65m, where it became waterlogged. The deposit is similar to deposit [109] identified in Trench 1 and interpreted as made ground, corresponding to the later 19th century burial activities and ground adjustments. The deposit included ceramic sherds assemblage of 19th century provenance, a single clay pipe stem fragment and a sheep tooth. The slate assemblage, with two different slate types identified, suggests that some of the thicker dark purple grey slate variety may be of medieval date (as opposed to the thinner lighter blue slate) and therefore feasibly from the former chapel.









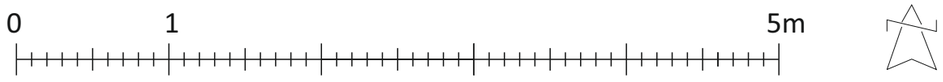


Figure 6: Kirk o' Muir ; plans of Trenches 2, 3 & 5

Plate 8: Trench 2 to the east, with the extent of the stony deposit [202] and [203] exposed.

The deposit [202] also contained some charnel, consisting of several teeth and fragments of a long-bone, all of which were subsequently reburied in the trench.

Situated below the topsoil [201] largely in the east and southeast area of the trench was a stony deposit spread [203], comprising some 85% angular to sub-angular stones and mixed with reddish brown sandy/clayey silt **(Plate 9)**. This probably represents a dump of stones/or levelling episode associated with the ground adjustments (and therefore part of the same provenance as deposit [202]) rather than a fill of a discreet cut feature, although it was initially interpreted as possibly part of a grave cut. A careful sondage through this deposit [203] of the possible cut feature in the southeast of the trench did uncover more stony deposit [204] of similar character to [203], but which contained larger amount of coal inclusions and some charnel (teeth and long-bone fragments), as well as metal parts of coffin furniture, which were reburied. Although no unequivocal evidence of a grave-cut or other cut feature was uncovered, there still appears a possibility that the putative cut in the northeast corner of the trench may represent a grave-cut. Given this latter possibility and the waterlogging, the deposit [204] was not investigated further. On balance of evidence, the spread of stones [203] and [204] is probably result of ground levelling/adjustment works associated with burial ground use in the later 19th century.

Plate 9: North facing section of Trench 2– showing the layer of angular to sub-angular stone [203] sloping to east; and a sondage to right.

Trench 3 **(Plate 10 & 11)** was situated to the northwest of Trench 2, near the north boundary wall. It was originally 2.0m by 2.0m and was later extended to the east and southeast by about 0.95m (east-west; south end)/0.55m (east-west; north end) and c. 1.95m (north-south). The trench was excavated to the depth of some 0.20m, though in a small sondage (in the southeast corner, the depth reached was 0.59m. As in Trenches 1 and 2, the topsoil [301] comprised dark brown/black organic rich clayey silt and included ceramic sherds of largely 19th century provenance, slate assemblage and bottle glass (some of 20th century). Other inclusions consisted of brick fragments, slag, cinder and coal, as well as some corroded iron nails. One sherd (rim) of post-medieval oxidised/reduced ware [SF 19] was also uncovered, suggesting earlier activity on the site (c. 16th /17th century?), perhaps associated with the former chapel.

Plate 10: Trench 3; view to west– showing deposit [302] in the background and linear stone rubble spread [303] in the foreground; also note an area largely devoid of stone (possible cut feature) centrally and large boulder [304] in background.

Immediately bellow the topsoil [301] lay deposit [302] comprising medium light pinkie/reddish brown sandy clay (similar to deposit [202] in Trench 2), with large number of angular to sub-angular (some sub-round) stones, gravel and shattered stones. The finds consisted of slate, red-ware and other 19th century ceramic sherds. Other finds included coffin furniture fragments and nails, which were reburied. Two sherds of post-medieval oxidised/reduced ware were also uncovered [SF 26] and [SF 32], suggesting earlier activity on the site (c. 16th /17th century?), perhaps associated with the former chapel. This deposit was again interpreted as levelling/made ground deposit, as identified in Trench 2, devoid of any mortar.

A north-south aligned linear feature [303] **(Plate 10 & 11)**, originally interpreted as possible remains of a wall footings was uncovered below the topsoil [301] in the east extension of the trench. The width was approximately 0.85m and the feature continued beyond the limits of the excavation towards north and south. The feature was made up of sub-angular to angular stones of mostly large to medium size. Further investigation (a small slot, 0.40m wide by 1.25m long) **(Plate 10)** through the feature in the southeast corner, failed to produce any unequivocal in situ evidence of former chapel. This feature may simply be rejected stones from the former structure (chapel?), given that some of the stones appear to have been accidentally broken in half as they were thrown on the pile, which may imply nearby demolition activity.

Correspondingly, the section through the feature [303] and partially deposit [302] uncovered evidence of slate deposit [305] (below [303]) consisting of a large number of slate fragments,

of a thicker dark purple grey character, which may be medieval. The deposit may represent collapsed material reused from the final demolition of the ruined chapel.

The deposit of slates [305] overlay a mixed deposit of medium brown gritty clayey and sandy soil [306], which contained assemblage of 19th century sherds, as well as possibly medieval or post-medieval decorated body sherd [SF 29], the latter attesting to the medieval/post-medieval activities on site. This deposit was not fully excavated but its presence below feature [303] suggests that the stone feature [303] is of 19th century origin (though the stones may have still originally derived from earlier structure).

Plate 11: Trench 3; view to west–showing the slot through the spread of rubble [303]; deposit [302] and boulder [304] in the background.

In addition, a large sub-round boulder [304] **(Plate 10 & 11)**, which had projected above the turf prior to excavations, was exposed in the middle of the trench (original extent). It measured 0.66m by 0.51m by c. 0.50m and was initially interpreted as possible grave marker. The boulder was associated with possible cut feature extending from it towards south and east, measuring c. 1.10m (north-south), filled with darker material and marked by absence of stones compared to the surrounding deposit [302]. Red-ware sherds were visible within the fill. Given the prospect of a burial identified by grave marker, the feature was not excavated, although the possibility remains that the boulder [304] may be simply accidental or related to later ground-altering works.

Even though undisputable evidence of the former chapel could not be identified in Trench 3, the stone arrangement [303] and deposit of slate [305] may feasibly represent material from the building demolition. The possibility that the feature [303] may be a result of a robber

trench and therefore marking the site of one of the walls of the former chapel, which was originally considered, was entirely rejected, as nineteenth century material lay stratigraphically beneath. As in Trench 2, the absence of any mortar from any of the deposits uncovered in Trench 3 is difficult to interpret and may merit further research.

Trench 5 **(Plate 12)** was excavated to the west of Trench 3 and measured 3.0m (north-south) by 0.55m (east-west), reaching depth of c. 0.14m. The uppermost deposit of topsoil [501] comprised dark brown/black humic clayey silt, which included some small sherds of white glaze pottery (19th /20th century), as well as large number of charnel and coffin furniture, including coffin handle and nails, all of which were subsequently reburied in the trench.

Plate 12: Trench 5, showing linear spread of rubble [502] and slate [503].

Underneath the topsoil [501] **(Plate 12)**, in the northeast half of the trench, was a discreet accumulation of mostly medium to small sized angular to sub-angular stones [502]. This may represent either a dump of material associated with later graveyard ground adjustments or, given presence of charnel and pieces of coffin furniture, feasibly, disturbed material from 19th century grave. It is of course possible that some of the stones may represent material remains from the chapel demolition prior to raising of the ground.

The stony deposit [502] overlay a discreet deposit of slate and other roofing material [503], largely visible in the west section of the trench, showing a deliberate deposition. Most slates were of light blue thin variety, with few darker purple and thicker. As before, this deposit feasibly represents a dump of roofing material (some of which may have originally come from the chapel's roof), probably associated with later graveyard groundworks.

The underlying deposit [504] at the base of the trench (as excavated) comprised medium light reddish brown sandy clay, with significant gravelly component, similar in character to deposits [202] and [302] in Trench 2 and 3.

Although no clear in situ structural remains were uncovered in Trench 2, 3 or 5, the quantity of demolition deposits, identified in all three trenches, suggests former presence of a stone building at this location. Trench deposits [202]; [203] and [204] identified in Trench 2, [302] in

Trench 3 and [504] in Trench 5 are feasibly derived from the same episode(s) of raising the ground surface (sometimes during the second half of 19th century). The graveyard ground level is noticeably higher in this area than the surface immediately outside the boundary wall, suggesting a significant increase in soil depth within the enclosed area. The ground alterations are also attested by some of the gravestones being obviously moved from their original location/position or replaced the wrong way up, as also identified by the 1969 survey (Mitchell & Mitchell 1973: 190; note on gravestone No. 19). This deep accumulation of later deposits of nineteenth century provenance may feasibly mask earlier graves within the cemetery grounds and also any structural remains relating to the former chapel.

Trench 4

Trench 4 **(Plate 13)** was opened to characterise an upstanding bank feature running approximately east/northeast-west/southwest, immediately to the north of the cemetery wall and to determine, whether the bank may represent remains of a former cemetery boundary. Trench 4 measured 3.60m (north-south) by 0.65m (east-west) and was excavated to the maximum depth of 0.40m.

The uppermost deposit [401] consisted of dark brown/black humic/peaty clayey silt (similar to rich organic forest soils) and included a large number of smaller roots. The finds consisted of several sherds of 19th century ceramics, fragments of ceramic drain, modern bottle glass and some slate fragments of the thinner variety. The topsoil overlay drystone bank [402] and bank tumble/levelling deposit [403] to the south of the bank **(Plate 13 & 14)**.

Plate 13: East facing section of Trench 4– showing wall/bank [402], and stone collapse [403] to the south.

Plate 14: Trench 4, view to south– showing wall/bank [402] with preserved north face (foreground), and stone collapse [403] in the background.

The drystone bank was exposed across the width of the trench, with well-preserved exterior (north) face **(Plate 14)**; the southern extent was badly disturbed and consequently the original width of the bank difficult to estimate; nevertheless, it was probably c. 1.20m wide. The bank/wall base was not exposed. The bank was of dry-stone character and largely composed of medium sized sub-angular to sub-round stones.

Spreading from the bank [402] towards south was a stony deposit [403], mostly consisting of medium sized sub-angular to sub-round stones, but including some larger sized ones, mixed with medium dark brown silty clay and heavily bioturbated by roots from the shrubs. The deposit was interpreted as deriving partially from the natural erosion of the bank and deliberate levelling episode aimed at making the ground outside the current cemetery wall more regular. A single fragment of roofing slate was recovered from the deposit.

Figure 7: Kirk o' Muir; plan and section of Trench 4
(note North is down the page to match with photograph)

Below the topsoil [401] immediately to the north of the bank [402], marking a slight depression was a deposit (fill?) comprising dark humic wet silty clay. Although this was not excavated further, the deposit may represent upper fill of a ditch, which may have been associated with the bank.

Although presence of dry stone bank was confirmed by the excavations, this could not be directly related to the graveyard, nor to the modern forestry. The bank may represent an agricultural dyke associated with the farming settlement of Kirk o' Muir, which stood nearby until at least 1861, and which is described in the OS Name books for Stirlingshire (1858-61; vol. 27. OS1/32/27/156). As seen earlier, possible agricultural stock enclosures to the north of the graveyard are depicted on the OS 25-inch map of Stirlingshire **(Figure 2)** and probably relate to the farm of Kirk o' Muir to the east.

Trench 6

Trench 6 was opened on the last day of excavations, immediately to the east of Trench 1, and measured 2.0m (north-south) by 1.0m (east-west). Only turf and small part of the uppermost portion of topsoil [601] were removed and sieved, providing artefactual evidence of mostly 19th and some 20th century provenance, as identified in Trench 1. These consisted of glass bottle sherds, window glass sherds, ceramic sherds assemblage and some slate fragments. The structural material testifies to the former presence of the 19th century structure/ school identified in Trench 1.

4.5. Graveyard survey

Additionally, although not part of the excavation per se, a careful exposure and cleaning of some grave slabs associated with gravestones survey were also undertaken during the duration of the project, under the direction of Hanneke Booij **(Plate 15)**. Two eldest grave slabs identified during this exercise were of 1651 and 1682 date respectively (Booij forthcoming)– the former (1651) being the earliest dated gravestone so far identified at Kirk o' Muir. Previously, Royal Commission noted the earliest decipherable stone as 1695 (RCAHMS 1963: 160), which was not seen by the subsequent survey (June 1969) of the site, which found two earlier stones of pre-1700 inscriptions, including one of 1678 (No. 29) and one partial of 167… (No. 19) (Mitchell & Mitchell 1973: 190-92).

Plate 15: Graveyard survey and gravestone cleaning under the direction of Hanneke Booij.

5. INTERPRETATION AND DISCUSSION

5.1. Sir John de Graham's Castle metal detecting training survey

Although the metal detecting survey did not uncover any finds associated with the medieval use of Sir John de Graham's Castle, it provided great opportunity to demonstrate, to the volunteers and public alike, the appropriate and legitimate application of this technology, in addition to its constraints and advantages.

The survey further established that given the great depth of vegetation and accumulation of peaty material, the archaeological surface in the surveyed areas lies at a greater depth than previously anticipated, while the recent contamination on site also formed a considerable obstacle. As such, other than the more advanced machines, the use of metal detecting technology at this site maybe futile, as the vegetation growth effectively prevented the machines from reaching a suitable depth. Although initially there were some areas with promising signal, such as the edge of the forestry, on inspection these proved to have been remains of recent forestry fence, buried at a depth, which could, on less overgrown sites, have feasibly contained archaeological artefacts.

Nevertheless, even though all 67 finds were of recent provenance, the essential premise of the exercise was achieved. The GPS location plot of the finds **(Figure 3)** allowed for patterns to be discerned, and interpretations formed as to the site's past uses and activities. Therefore, this survey clearly demonstrated the advantage of using metal detecting technology, under controlled conditions and combined with GPS, as part of the modern archaeological research toolkit.

No finds were retained as the assemblage was of late 20th - early 21st century in date, and consisted of material such as wire mesh, tent pegs and beer cans.

5.2. Excavations at Kirk o' Muir

The 2017 community excavation at the site of Kirk o' Muir **(Plate 16)** was successful on several levels, from training of volunteers in archaeological excavation and recording techniques, to confirming historical, and uncovering new, evidence for the site's use.

Plate 16: Aerial view of the Kirk o' Muir showing Trenches 1, 2, 3 and 4 under excavations.

Southwest area

The excavations in the southwest corner of the cemetery (Trenches 1 and 6) confirmed the former presence of a school building in this area, as recorded in historical sources, with some considerable in situ structural preservation, as well as uncovering large artefactual evidence associated with the structure and some later dumping. The excavations here therefore certainly achieved its purpose.

The results have shown that the rear wall of the school was terraced into an already raised graveyard **(Plate 17)**, and the interior wall face, which also served as a retaining wall, was plastered on the hard, as evidenced from frequent large sections of mortared plaster recovered from the demolition layers, as well as surviving plaster on the wall itself. Moreover, the hard mortared surface at the base level of the excavation, with large timber elements overlying it, suggest the floor originally comprised a sprung timber over a hard standing. In addition, the later deposits of modern material, mixed in the topsoil or just below, show that the area had been used for a certain amount of localised dumping in the 20th century.

Plate 17: View to southwest corner of graveyard, showing the drop in level from the exterior surface to the interior.

Furthermore, relating Trench 1 to the OS plan of the school and graveyard (OS 1859; 25-inch; **Figure 5**) has allowed for reasonably accurate measurements of the school building, whose original extent would comprise some 7.70m east-west by 5.60m north-south, with a porch extending to the south. Based on the account mentioning 30 pupils attending the school, coupled with its single-story character (OS Name Book 1858-1861; *Stirlingshire*, vol. 27. OS1/32/27/156), this would have been a tight squeeze for the pupils and the schoolmaster.

The school is mentioned again, and probably for the final time, in 1866 during the nationwide reporting on the state of education in Scotland: "*The people have established a sort of school at Kirk o' Muir, in St. Ninians parish. It is a wretched building, very low in the roof, looking out on a burying-ground, which stands on a level with the windows. Some thirty children meet here, and are taught by a schoolmaster, who picks up a precarious living by the fees of those children, and is boarded and lodged by the shepherds in the neighbourhood. A good district school for these four parishes would be of great value.*" (Sellar & Maxwell 1866: 18). This report confirms the description within the OS Name Book and does reconcile with the archaeological evidence of a building being cut into an existing raised graveyard.

Correspondingly, as the map overlay shows **(Figure 5)**, the portion of the cemetery wall to the south of Trench 1, must have been replaced after the removal of the school. Therefore, the current entrance into the cemetery is probably not contemporary with the dated stone inserted into the its eastern pier **(Plate 18)**. The insertion of the late 18th century inscribed stone into the current gateway of the wall - provided it has not been introduced from a more distant location - suggests that the cemetery wall has likely undergone more than one episode of repair.

Plate 18: Inscription on the stone inserted into the eastern gate pier; "This dyke and gate was repaired 1798".

Northeast area

The excavations within the northeast area of the cemetery were aimed at recovering irrefutable evidence for the location of the former medieval chapel, which stood somewhere within the cemetery's grounds for at least 200 years. The investigations were less successful in achieving this goal, failing to recover any undisputable in situ remains for the chapel.

However, the lack of in situ remains for the structure may be explained by a more complex site taphonomy for the graveyard's development, as also found on another 'lost medieval chapel' site at Old Pentland, Midlothian (Connolly 2009ab; 2010). The excavations in Trenches 2, 3 and 5 certainly provide plentiful evidence for demolition material from a slate roofed stone built structure of unknown provenance and deep dump deposits (made ground) related to raising and levelling of the graveyard surface **(Figure 6)**. It is clear that at least 0.70m of material was in some places brought and incorporated into the site, with frequent inclusions of 19th century pottery sherds attesting to its later origin. It is obvious that many of the grave stones were partly buried and/or disturbed from their original place as a result of these ground alterations, sometime during the 19th century. For example, in one instance a grave slab of a miller in the northwest corner of the cemetery was found to be rotated 180 degrees, suggesting it had been moved and replaced the wrong way round (Hanneke Booij forthcoming). As noted earlier, similar instances of grave slab disturbances were also recorded in the 1969 survey (Mitchell & Mitchell 1973: 190; grave 19).

Moreover, the discovery of early grave slabs (dating from 1651 to 1695) that are clearly lying on a level related to 19th century groundworks also confirm the suspicion that the present location of many of these funerary monuments are not original **(Plate 19)**. The evidence of later groundworks, identified in all three trenches, associated with further burials, suggest that the ground within the graveyard was significantly raised in the 19th century, probably to allow for insertion of further burials and therefore the possibility of surviving in situ remains

below the limit of present excavation should not be entirely disregarded. This is a crucial argument for the likelihood that the original chapel remains now lie buried beneath a thick layer of imported material, which feasibly masks both the foundations of the chapel and the earlier burials found within and around the structure (see **Figure 4** for postulated location for the chapel related to the trench locations and the OS map locations). Based on the excavations and grave stones evidence, this seems at present the most likely interpretations for the lack of any identified in situ medieval remains.

Plate 19: Top–View of the graveyard, looking northwest, with table stones lying within the nineteenth century ground; Bottom–the earliest grave slabs dated 1651 (left) and 1682 (right) respectively.

Furthermore, although no in situ remains, such as foundations or surfaces were uncovered in any of the trenches located in the northeast part of the cemetery, Trench 3, in particular, supplied the best evidence for a former structure in the form of a possible dump of material derived from demolition, including 'rejected stones' and deposit of roofing slate **(Plate 10 & 11)**. The presence of roofing slates, implies the structure likely stood in the immediate vicinity of the site/trench. The absence of any mortar material, associated with the demolition material in either of the three trenches remains to be explained. This may suggest the building was in such disrepair by the mid 19th century, when the ground alterations likely took place, that all mortar had long leached out or, alternatively, the intriguing but unlikely possibility that the chapel was of drystone construction.

The most likely location would be in the centre of the current cemetery lying beneath a number of later graves, given the evidence from the OS maps (**Figure 2**) and the possible dumps

of material that could realistically be described as demolition debris thrown outside a structure. Given the slope to the south and the boundary to the north, the only reasonable location would be in this central point, with the cast iron grave fence perhaps marking the central location of the lost Kirk o' Muir.

Correspondingly, given the obvious paucity of grave stones/slabs visible on the surface within this northeast area of the cemetery **(Plate 20)**, which was more or less confirmed by the excavations, this may be indicative of avoidance of this area, during the initial 19th century 'reuse' of the graveyard, due to physical restrictions such as the dumping of stony material in this area. Although charnel and coffin furniture fragments were uncovered in all three trenches, and possible grave cuts identified in Trench 2 and 3, these represent the later burials after the chapel had long fallen into disrepair, been demolished and buried.

Plate 20: Post-excavation shot of the northeast area of the cemetery, showing the space devoid of any obvious grave stones.

Area to the north of the cemetery

Trench 4 opened to investigate bank feature situated north of the cemetery wall confirmed presence of dry stone wall, with subsequent disturbance episode(s) of probably early 20th century. The stone dyke could not be directly related to the graveyard (or its former wall), nor to the modern forestry and most likely represents an agricultural dyke associated with the farming settlement of Kirk o' Muir, which stood nearby until at least 1861 (OS 1858-61; vol. 27. OS1/32/27/156; **Figure 2**).

6. FURTHER WORK

6.1. Dissemination

The précis of the works, as reported in this DSR, will be submitted to DES and OASiS. In addition, there is an understanding (Dr Murray Cook *pers comm*) that material from this document may be used within a further publication at no further cost to CHC. All images and a short aerial video of Sir John de Graham's Castle will be provided on USB, along with all the records, text and accompanying digital survey and GIS material.

The material assemblage recovered from the Kirk o' Muir excavation was regarded as being of no significance by the authors and at the instruction of the Stirling County Archaeologist, the material has been passed to them for disposal.

6.2. Fieldwork

Although the metal detecting survey conducted at Sir John de Graham's Castle, as part of this project has been unsuccessful in uncovering any material evidence for medieval activity, due to the depth of recent material and soils, further works may be more successful.

While the excavations within the Kirk o' Muir burial ground were limited in scope, further works may achieve more direct evidence of the former chapel, although any future works may be seriously restricted by the presence of multiple burials. Nevertheless, the Trenches 2 and 3, in particular, could be reopened and deeper excavations conducted, if possible, to the original medieval ground surface.

Further gravestones survey and identification of new/lost graves, as well as their careful location by GPS would be also beneficial, potentially supplying new evidence for the site's longevity, as well as more information on individuals and families buried at this site. This would no doubt increase the benefit to the local communities with interest in the local history.

6.3. Historical and Archival Research

It is perceived that further research into both sites may be of benefit to the Carron Valley community. The present report raises some important questions regarding the character of the Kirk o' Muir chapel, which may be addressed by further investigation. While the present report includes brief summary of the history of both sites, more material could be found in further examination of appropriate archives and by engaging local community. This research could feasibly involve guided participation from local schools.

7. CONCLUSION

The survey and excavation works undertaken at the sites of Sir John de Graham's Castle and Kirk o' Muir over a period of six days in September 2017 has shown the value of community involvement in archaeological research projects, with mutual benefits. On one hand, the project has provided great opportunity to add to the current knowledge for the sites' uses and history by generating new evidence or confirming/refuting existing theories; on another it enabled local communities to participate in this process and to learn important skills, which would benefit the research of the local area and its community in the future.

Moreover, the training in metal detecting, if lacking in genuine historical finds, was a great success in engaging local volunteers and schoolchildren alike. Similarly, the Kirk o' Muir excavation, helped to bring history to life for dozens of schoolchildren, and allowed volunteers to be further trained in the skills required for excavations. The excavations in all three areas, although unsuccessful in discovering any in situ evidence of the church, have provided vital clues to the evolution of the site, and evidence for the actual location and minimum depth at which the original chapel likely lies.

8. ACKNOWLEDGMENTS

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Plate 21: Just a few of the glorious volunteers who assisted in this adventure (authors kneeling).

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APPENDIX 1: KOM CONTEXT REGISTER

Context	Trench	Type	Description
101	TR1	**Deposit**	Topsoil and turf- rich organic, dark brown/black clayey silt; medium compact; inclusions of roots, roof slate fragments (including with drilled holes, tile fragments, brick fragments, c. 19th/early 20th century pottery sherds, animal bone, window and bottle glass sherds, bottle stoppers/marbles, coal pieces. Thickness: 0.10-0.25m
102	TR1	**Deposit**	Deposit of roof slates and slate fragments, light grey to medium light grey colour, many with drilled holes for attachment. Located in the N end of the trench, below [101], above [103]. Thickness: 0.05-0.07m
103	TR1	**Deposit**	Deposit of rubble/or tumble from the retaining wall [106] of the graveyard; consists of mostly medium or larger sub-angular to sub-round stones, some small, mixed with slate fragments and topsoil. Located below [102] and above [104] and [106]. Thickness: 0.20m
104	TR1	**Deposit**	Demolition deposit consisting of degraded mortar and wall plaster, inclusions of timber planks fragments (from flooring?), corroded iron objects, brick fragments, pockets of burnt material, coal pieces, animal bone, bottle and window glass sherds, c. 19th century ceramic sherds. Medium compact. Located below [103] and above [105]. Thickness: c. 0.15-0.20m
105	TR1	**Structure**	Solid mortar surface comprising light beige/orange sandy mortar; probably floor of the former house/school? At the depth of c. 0.35m below current ground surface (south end of the trench). Not excavated. Below [104].
106	TR1	**Structure**	Revetment/retaining wall for the made ground of the graveyard (keeping soil from eroding towards former building) and rear wall of school building. Dry stone structure constructed of medium to large sub-angular to angular stones, c. 0.25m x 0.15m x 0.20m; c. 0.10m x 0.12m x 0.13m. surviving Height (above the mortared surface [105]): c. 0.23; Below [103]. Only south face partially exposed, plastered with [107]. Below [103].
107	TR1	**Structure**	Plaster on the hard on the south face of the revetment wall [106]; medium light beige/cream colour.
108	TR1	**Deposit**	Dump of modern/recent material in the S half of the trench. Comprising material ranging from fabric cloth (for cleaning), modern brick, rusty metal mixed with topsoil [101]. Above [104]; below [101]. Thickness: c. 0.10m.
109	TR1	**Deposit**	Graveyard soli/made ground comprising clayey silt with significant gravel component. Medium light reddish brown. Not dug. Below [103].
201	TR2	**Deposit**	Topsoil and turf- dark brown/black organic clayey silt; medium compact and damp; inclusions of roots, roof slate fragments, brick fragments, c. 19th/early 20th century ceramic sherds, and charnel consisting of several fragments of a long-bone and teeth (juvenile?). Thickness: 0.15-0.28m; above [202] and [203].

Context	Trench	Type	Description
202	TR2	**Deposit**	Made ground/levelling deposit comprising lighter reddish brown clayey silt with sandy and gravel inclusions (c. 40%), medium compact, and significant number of sub-angular to angular stones (c. 60%), including shattered ones, some coal inclusions at lower level. Stone sizes: 0.10m x 0.12m x 0.05m; 0.12m x 0.13m x 0.03m; 0.15m x 0.12m x 0.13m. Finds included roof slates in various degree of fragmentation, two types detected- thicker purple possibly medieval and thinner grey (majority); other finds consisted of c.19th century ceramic sherds, bottle glass sherds, Fe nails, Pb object. Also included charnel consisting of several fragments of a long-bone and teeth (juvenile?). Below [201]; above [203]. Not bottomed/ Thickness: c. 0.45m.
203	TR2	**Deposit**	Levelling deposit/ dump of stones mixed with soil. The soil component (c. 15%) comprised reddish brown sandy clayey silt (similar to [202]). The stone component (c. 85%), which appeared to form a discreet spread of stones, particularly in the E and SE part of the Trench, comprised sub-angular to angular stones, some sub-round, of varied sizes from 0.05m x 0.12m x 0.05m; 0.14m x 0.13m x 0.10m; 0.15m x 0.20m x 0.13m. Below [201]; above [204]; Thickness: c. 0.20-0.25m. Probably resulted from same activities as [202]/same as [202]?
204	TR2	**Deposit**	Stony deposit mixed with reddish brown clayey silty soil, inclusions of coal pieces. Maybe part of [203]. Exposed in a small sondage in the NE/E end of the Trench, where a possible cut may have denoted a cut feature/possibly grave. Finds included charnel comprising long-bone fragments and teeth as well as coffin furniture pieces. Not bottomed. Below [203].
301	TR3	**Deposit**	Topsoil and turf- dark brown/black organic clayey silt; compact to medium compact; inclusions of roots, roof slate fragments, brick fragments, c. 19th century ceramic sherds, slag, cinder, coal, bottle glass sherds, Fe obj., and 1x sherd of post-medieval oxidised or reduced ware. Thickness: 0.16-0.21m; above [302], [303] and [304].
302	TR3	**Deposit**	Levelling deposit/made ground, comprising medium light reddish/pinkie brown clay silt, medium compact, includes shattered stone, sand and gravel; and sub-angular to angular stones, some sub-round of medium to small sizes: c. 0.12m x 0.10m x 0.08m, 0.13m x 0.15m x 0.12m. Finds included roof late fragments, coffin furniture (nail), red-ware ceramic sherds, 2x sherds of post-medieval oxidised or reduced ware; slag. Not bottomed. Below [301].

Context	Trench	Type	Description
303	TR3	**Deposit**	Stone dump/arrangement comprising alignment (NE-SW) of sub-angular to sub-round stones, some flattish. Stone sizes: most larger or medium, 0.40m x 0.36m x 0.15m (broken in half); 0.20m x 0.20m x 0.10m; 0.14m x 0.06m x 0.08m. Continues beyond the limits of excavation. This feature maybe a robber trench, although no cut was detected; or simply a dump of rejected stone from previous structure on site (chapel?) or accidental dump of stones as a result of reconfiguration of the graveyard ground in 19th century and therefore similar to TR2 deposits [202-203]. Approximate width: 0.85m. Thickness: c. 0.30m. Above [205].
304	TR3	**Structure?**	A large sub-round boulder (0.66m x 0.51m x 0.50m) situated approximately in the middle of the original extent of the trench; maybe grave marker as associated with possible cut feature extending towards east beyond the trench and with red ware visible in the 'fill'. Unexcavated. Or it may simply be accidental dump from subsequent ground works. The stone projected above the turf line prior to the excavations.
305	TR3	**Deposit**	Deposit of a large number of roof slates or slate fragments. Uncovered in a small sondage in the SE corner of the trench. Below [303]. Included thicker purple pieces of slate, which maybe earlier (medieval?). Above [306]. Thickness: c. 0.12m
306	TR3	**Deposit**	Deposit of medium dark brown gritty clayey sand. Not bottomed. Finds included 1x decorated body sherd of possibly medieval date [SF 29]; 19th century ceramic sherds. Below [305]. Thickness: 0.27m (as excavated)
401	TR4	**Deposit**	Topsoil and turf- dark brown/black organic, peaty clayey silt; medium compact. Finds included 19th/20th century ceramic sherds; ceramic drain fragments, modern bottle glass sherds, slate fragments. Thickness: c. 0.40m (north end of the trench) to 0.10m (above bank/wall [402]). Above [402], [403] and [404].
402	TR4	**Structure**	Wall/bank- drystone dyke, composed of mostly medium sized sub-angular to sub-round stones. Stone sizes: c. 0.37m x 0.25m x 0.15m; 0.14m x 0.12m x 0.11m; 0.10m x 0.06m x 0.07m. Possible north face exposed, but badly damaged to south; the wall width could have been c. 1.20m or 1.80m. The wall base was not exposed. On the surface, the wall extends beyond the exterior north wall face forming a sloping bank made of topsoil material. Towards south, the wall is degraded by roots and probably deliberate levelling. Below [401].
403	TR4	**Deposit**	Wall tumble/levelling deposit, comprising stony deposit mixed with medium dark brown silty clay, heavily bioturbated by shrub roots. The deposit spreads from the south 'face' of the wall [402] towards south and beyond the edges of excavations, although petering out at the end. Sub-angular to angular, some sub-round stones, sizes: c. 0.30m x 0.12m x 0.12m; c. 0.20m x 0.08m x 0.04m; c. 0.03m x 0.02m x 0.04m. Below [401]. Not bottomed. The deposit probably represents a mix of wall decay and deliberate levelling episode to make the ground outside the current graveyard boundary more even.

Context	Trench	Type	Description
404	TR4	**Deposit**	Dark humic and damp clay/silty clay, located below the topsoil at the edge of the trench, outside the bank [402]. Slight depression on the surface visible prior to excavations and the deposit maybe a ditch fill? Not excavated. Below [401].
501	TR5	**Deposit**	Topsoil and turf- dark brown/black organic, clayey silt; medium compact. Finds included charnel (teeth) and coffin furniture, such as coffin handle and nails; white glaze ceramic sherds (19th/early 20th) century. Thickness: 0.05-0.14m. Above [502].
502	TR5	**Deposit**	Stony deposit-levelling episode or dump from demolition. Comprising of mostly medium or small sub-angular to angular stones, with few large ones; sizes: 0.20m x 0.12m x 0.10m; 0.15m x 0.15m x 0.08m; 0.06m x 0.04m x 0.03m. Occasional roof slate fragment. Form discreet accumulation in one part of the trench. Maybe dump of stones from demolition or given the charnel in the topsoil, result of later grave digging in the vicinity. Below [501]. Above [503] and [504].
503	TR5	**Deposit**	Deposit of roof slate and fragments which is discreet from the deposit of stone [502] above. Most are of light grey/blue thinner variety, some thicker purple. Deposit identified particularly in the W section of the trench in small area. Maybe dump of roof slates; or placed on top of grave? Above [504]. Thickness: c. 0.04m.
504	TR5	**Deposit**	Medium light reddish brown sandy clay with gravelly component. Similar to [202] and [302]. Below [503] and [502]. Component of made ground?
601	TR6	**Deposit**	Topsoil and turf– rich organic, dark brown/black clayey silt; medium compact; inclusions of roots, roof thinner blue slate fragments (including with drilled holes), brick fragments, c. 19th/early 20th century pottery sherds, animal bone, window and bottle glass sherds. Not bottomed. Thickness: 0.13m (as excavated)

APPENDIX 2: KIRK O' MUIR PHOTOGRAPHIC RECORD

Shot No	Camera No (DSCF)	Direction	Description
1	1548	N	TR1 - trench shot after the turf removal
2-6	1549-52	N-E	General site shots; starting from N to S
7	1554	N	TR4 pre-ex shot
8	1555	E	TR2 pre-ex shot
9	1556	S	TR3 pre-ex shot
10-13	1557-60	N/A	Site working shots
14-19	1561-65	N/A	Site working shots
20-25	1566-71	N/A	Detail of the gatepost inscription
26	1572	N/A	TR1 - general shot
27	1573	N	TR2 - post-ex shot showing stone spread [203] and pinkie soil [202]
28-41	1574-87	N/A	Detail shots of Miller's grave inscription
42	1588	N	TR3 (original extent)- post-ex shot showing deposit [302]; stony feature [303] and boulder [304]
43	1589	N	TR1 - post-ex shot of the west side of the trench showing slate deposit [102] and demolition deposit [104]
44	1590	N	TR1 - post-ex shot showing deposit [104] and mortar surface [105]
45	1591	N	TR1 - E sondage showing revetment wall [106] and wall plaster [107], with graveyard soil [109] behind
46	1592	E	TR1 - W-facing section with contexts [104], [106] and [107] to right and [109] to left
47-65	1593-1611	N/A	3D imaging for TR 1
66-76	1612-23	N/A	TR 1 - 3D imaging for the west facing section
77	1624	E	TR2 – post-ex shot with stony deposit [204]
78	1625	S	TR2 – post-ex shot with stony deposit [204]
79	1626	W	TR3 – post-ex shot showing linear stone feature [303] and extension to the E and SE
80	1627	NE	TR3 – post-ex shot showing linear stone feature [303] and extension to the E and SE
81	1628	SE	TR3 – post-ex shot showing linear stone feature [303] and extension to the E and SE
82	1629	SW	TR3 - post-ex shot showing linear stone feature [303] and extension to the E and SE
83-85	1630-32	N-S	TR4 - post-ex shots with wall/bank [402] and demolition rubble/tumble [403]; from N to S
86	1633	S	TR 4- post-ex shot with detail of the N face of wall [402]

Shot No	Camera No (DSCF)	Direction	Description
87	1634	S	TR 4- post-ex shot with detail of the N face of wall [402] (at lower level)
88	1635	N	TR4 - post-ex shots with wall/bank [402] and demolition rubble/tumble [403]
89	1636	SW	TR3 - sondage through feature [303]; working shot of slate deposit beneath stone [303]
90	1637	N	TR5 - post-ex shot with stony and slate deposit [502]
91	1638	W	TR5 - detail of stony and slate rubble deposit [502]
92	1639	W	TR2 - E-facing section of sondage in the SW corner of the trench
93	1640	S	TR2 - N-facing section
94	1641	W	TR3 - post-ex shots of the sondage in the SE corner, with deposits [305] and [306]
95-97	1642-44	N/A	TR3 - post-ex shots of the E end of the trench for photogrammetry

APPENDIX 3: DRAWING RECORD

Drawing No	Trench	Scale	Type	Description
1	TR2	1:20	P	TR2- post-ex plan with small sondage showing deposits [202] and [203]
2	TR3	1:20	P	TR3 - post-ex plan including extension to E & S, showing contexts [302], [303] and [304] and possible cut oval feature
3	TR3	1:20	P	TR3 - post-ex plan of sondage in the SE extension of the trench, with contexts [303], [305] and [306]
4	TR2	1:20	P	TR2 - post-ex plan, including sondage, with deposits [202], [203] and [204]
5	TR4	1:20	P	TR4 - post-ex plan with wall/bank [402] and rubble/tumble [403]
6	TR1	1:20	P	TR1 - post-ex plan with wall [106]; demolition material [102], [103]and [104]; mortar surface [105]
7	TR1	1:20	S	TR1 – West-facing section

APPENDIX 4: KIRK O' MUIR FINDS REGISTER

Find No	Context	Material	Description
1	101	Slate/Fe	Assemblage or roof slates fragments, including some with drilled holes and 1x with nail attached
2	101	Glass	Assemblage of glass sherds from bottles
3	101	Glass	Window glass sherds assemblage
4	101	CBM	Assemblage of brick/tile fragments
5	101	Fe	Assemblage of iron objects and fragments
6	101	Bone	Animal bone assemblage
7	101	Coal	Coal pieces
8	101	CE	Assemblage of ceramic sherds
9	101	CE	2x bottle stoppers/marbles; one fragmented
10	201	CE	Assemblage of ceramic sherds
11	201	Fe	Iron nails
12	201	Slag	Slag lump
13	201	Glass	Glass sherds assemblage
14	201	Pb	Lead object
15	201	Slate	Assemblage of roof slates and fragments
16	201	CBM	Roof tile? fragment
17	201	Coal	Coal lump
18	301	CE	Assemblage of ceramic sherds
19	301	CE	Post-medieval oxidised or reduced ware-rim
20	301	Slate	Assemblage of roof slates fragments
21	301	Fe	Fe nails
22	301	Glass	Bottle glass sherds
23	301	CBM	Brick fragments
24	301	Slag	Slag fragments
25	301	Coal	Coal pieces
26	302	CE	Post-medieval oxidised or reduced ware sherd
27	302	Fe	Fe nail
28	302	CE	Ceramic sherds assemblage
29	306	CE	Decorated body sherd, medieval?
30	306	CE	Ceramic sherd
31	302	CE	Ceramic sherds assemblage
32	302	CE	Post-medieval oxidised or reduced ware sherd
33	202	CE	Ceramic sherds assemblage
34	202	CE	Clay pipe stem fragment
35	202	Bone	Sheep? tooth
36	401	CE	Ceramic sherds assemblage
37	403	Slate	Assemblage of roof slates fragments
38	104	Plaster	Wall plaster fragments assemblage
39	104	Glass	Bottle glass sherds assemblage

Find No	Context	Material	Description
40	104	Glass	Window glass sherds assemblage
41	104	CE	Ceramic sherds assemblage
42	104	Bo	Animal bone assemblage
43	601	Glass	Bottle glass sherds assemblage
44	601	Glass	Window glass sherds assemblage
45	601	CE	Ceramic sherd
46	102	Slate	Assemblage or roof slates fragments, including some with drilled holes
47	101	Slate/Fe	Slate roof tile with nail
48	101	Fe	Burnt stone fragment with fused Fe object attached
49	201	CE	Clay pipe stem fragment

APPENDIX 5: SIR JOHN DE GRAHAM'S CASTLE FINDS REGISTER

Find No	Area	Material	Description
1	1	Fe	Iron object
2	1	Fe	Iron object
3	1	Al	Aluminium can
4	1	Cu Al	Cartridge case
5	1	Fe	Iron object-chain
6	1	Fe	Nail
7	1	Fe	Fencing- wire mesh
8	1	Fe	Fencing- wire mesh
9	1	Fe	Fencing- wire mesh
10	1	Fe	Fencing- wire mesh
11	1	Fe	Fencing- wire mesh
12	1	Fe	Fencing- wire mesh
13	1	Al	Tent peg
14	1	Al	Tent peg
15	1	Al	Aluminium can
16	1	Fe	Nail
17	1	Al	Tent peg
18	1	Al	Tent peg
19	1	Al	Bottle top
20	1	Fe	Nail
21	1	Al	Tent peg
22	1	Al	Tent peg
23	1	Al	Tent peg
24	1	Al	Tent peg
25	1	Al	Aluminium can
26	1	Al	Aluminium can
27	1	Cu Al	Cartridge case

Find No	Area	Material	Description
28	1	Al	Aluminium can
29	1	Cu Al	Cartridge case
30	1	Fe	Fencing- wire mesh
31	1	Fe	Air gun pellets tin
32	1	Fe	Fencing- wire mesh
33	1	Fe	Fencing- wire mesh
34	1	Fe	Fencing- wire mesh
35	1	Fe	Fencing- wire mesh
36	1	Fe	Fencing- wire mesh
37	1	Fe	Fencing- wire mesh
38	1	Fe	Fencing- wire mesh
39	1	Fe	Fencing- wire mesh
40	1	Fe	Fencing- wire mesh
41	1	Al	Tent peg
42	1	Al	Tent peg
43	1	Al	Tent peg
44	1	Fe	Nail
45	1	Fe	Fencing- wire mesh
46	1	Fe	Nail
47	1	Fe	Fencing- wire mesh
48	1	Fe	Fencing- wire mesh
49	1	Fe	Nail
50	1	Fe	Fencing- wire mesh
51	2	Fe	Nail
52	2	Al	Aluminium can
53	2	St	Iron-rich rock
54	2	Al	Aluminium can
55	2	Fe	Fencing- wire mesh
56	2	Al	Aluminium can
57	2	Fe	Stainless steel knife
58	2	Composite	Torch
59	2	Fe	Fencing- wire mesh
60	2	Al	Aluminium can
61	2	Al	Aluminium can
62	2	Al	Aluminium can
63	2	Al	Aluminium can
64	2	Al	Aluminium can
65	2	Fe	Tent peg
66	2	Al	Aluminium can
67	2	Composite	Broken fishing rod

APPENDIX 6: DES Entry

LOCAL AUTHORITY:	Stirling
PROJECT TITLE/SITE NAME	Sir John de Graham's Castle and Kirk o' Muir Community Project
PROJECT CODE:	JDG & KOM 2017
PARISH:	Parish of St Ninians
NAME OF CONTRIBUTOR:	Hana Kdolska & David Connolly
NAME OF ORGANISATION:	CHC Heritage
TYPE(S) OF PROJECT:	Community research project
NMRS NO(S)	NS68NE 1; NS78SW 1
SITE/MONUMENT TYPE(S):	Motte & Bailey, Fishponds (possible); Cemetery, School, Chapel
NGR (2 letters, 6 figures)	NS 68146 85860; NS 7007 8401
START DATE (this season)	6th September 2017
END DATE (this season)	11th September 2017
PREVIOUS WORK (incl. DES ref.)	N/A
MAIN (NARRATIVE) DESCRIPTION: (May include information from other fields)	A community project, involving volunteers and pupils from local Primary Schools, was carried out at the sites of Sir John de Graham's Castle and Kirk o' Muir cemetery. All the works were funded by the Heritage Lottery Fund as part of the Year of Heritage, History and Archaeology. Metal detecting training at Sir John de Graham's Castle focused on areas to the east and southeast of the site, outwith the scheduled area. All finds were GPS located, excavated, recorded and subsequently reburied, as all were recent. Additionally, the site was flown using SUA and 3D terrain model and contour plan of the site produced to be used in conjunction with existing HES plan to further enhance the interpretation of the site. Six trenches were excavated at the site of Kirk o' Muir cemetery in order to investigate remains of former nineteenth century school building and medieval chapel, both recorded on historical maps and sources. Excavations in Trench 1, located in the southwest corner of the cemetery, confirmed the presence of the school structure, and uncovered significant accumulation of demolition Excavations in Trenches 2-5 failed to uncover any indisputable evidence for in situ remains of the medieval chapel. Nevertheless, the presence of demolition material, attest to its likely former presence in immediate vicinity. The excavations also uncovered evidence for substantial raising of the ground level in 19th century, which suggests that further, earlier remains, including the foundations of the chapel may lie buried at a considerable depth beneath this made ground.

	Investigations outwith the cemetery wall to the north (Trench 4) focused on apparent banked feature, which was found to be a dry-stone dyke, most likely associated with now vanished farmstead of Kirk o' Muir, also recorded in earlier sources. In addition, graveyard survey and careful cleaning of some of the gravestones was also undertaken as part of the project, resulting in uncovering the earliest dated grave slab (1651) identified in the cemetery to date. Finally, the project also involved production of an audio and soundscape diary for both sites to be used for further interpretation and to enhance the project's outcome.
PROPOSED FUTURE WORK:	Further fieldwork and research
CAPTION(S) FOR ILLUSTRS:	--
FUNDING BODY:	Valley Renewables Group / HLF
ADDRESS OF MAIN CONTRIBUTOR:	Thornton Mill Cottage, near Innerwick, Dunbar, East Lothian, EH42 1QT
EMAIL ADDRESS:	info@bajr.org
ARCHIVE LOCATION	Archive to be deposited in NMRS

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