



## Data Structure Report No. 117

Excavations at Cornahove Td. Crossmaglen, Co. Armagh

*On behalf of*



**Ring of Gullion**  
Landscape Partnership



EXCAVATIONS AT CORNAHOVE  
CROSSMAGLEN  
CO. ARMAGH

H 8814 1475

AE/16/71E

*Brian Sloan*

*With a contribution by Dr. Siobhán McDermott*

<b>Contents</b>	<b>Page</b>
1. Summary	1
2. Introduction	5
3. Account of the excavations	12
4. Discussion	27
5. Recommendations for further work	29
6. Bibliography	30
7. Appendix 1: Context Register	31
8. Appendix 2: Harris Matrices	33
9. Appendix 3: Field Drawing Register	35
10. Appendix 4: Soil Sample Register	36
11. Appendix 5: Finds Register	37
12. Appendix 6: Photographic Register	39
13. Appendix 7: Results of the geophysical survey	46

<b>Figure</b>	<b>Detail</b>	<b>Page</b>
1:	Location of the excavation site	4
2:	1 <sup>st</sup> Edition OS map (1834)	6
3:	2 <sup>nd</sup> Edition OS map (1858)	6
4:	Northern Ireland Sites and Monuments Register	8
5:	Trench location	11
6:	Post-excavation plan and east facing section of Trench 1	15
7:	North-west facing section of Trench 2	21
8:	Post-excavation plan of Trench 2	22
9:	Geophysical survey grid	50
10:	Greyscale plot of processed magnetic gradiometer data	51
11:	Greyscale plot of processed electrical resistance data with 0.5m probe spacing	52
12:	Greyscale plot of processed electrical resistance data with 0.5m probe spacing	53

<b>Plate</b>	<b>Detail</b>	<b>Page</b>
1:	Trench 1 Context No. 105	13
2:	Post-excavation view of Trench 1	14
3:	Stony deposit (Context No. 203/204) in Trench 2	17
4:	Post-excavation view of Trench 2	18
5:	North-west facing section of the ditch in Trench 2	19
6:	Fragment of possible furnace lining	20
7:	Stratigraphic sequence encountered in Trench 3	23
8:	Post-excavation view of Trench 4	25
9:	Post-excavation view of Trench 5	26

# 1 Summary

## 1.1 *Introduction*

The Centre for Archaeological Fieldwork (CAF) carried out an investigation at a rath in Cornahove, Crossmaglen Co. Armagh, (NISMR 030:019) during May 2016 on behalf of the Ring of Gullion Landscape Partnership Scheme, who commissioned the work. The investigation took the form of a geophysical survey of the rath and its environs, and a subsequent reconnaissance excavation in both the interior and exterior of the monument. The investigation involved public participation with 330 Primary and Secondary level children taking part, as well as 80 adult volunteers and visitors to the excavation.

## 1.2 *Aims of the investigation*

1.2.1 The primary aim of the investigation was to assess the presence and survival of archaeological deposits and features associated with the use of the rath. It was envisaged that the location of trenches both inside and outside the rath would shed light on the archaeological remains and possibly put the location of the rath into a landscape context.

1.2.2 The rath is listed in the Northern Ireland Sites and Monuments Register (NISMR) as a 'platform rath' (ARM 030:019). It was hoped that the location of Trench 2 across the bank would enhance our understanding of the classification of the monument.

1.2.3 A particular aim was to provide access to the investigation for local people. To this end, school children from the local area, as well as adult volunteers were invited to participate in the excavation and were afforded the opportunity to learn about the processes of archaeological excavation and artefact identification. This component of the investigation was particularly successful, as was the associated media strategy, with the excavation featuring as a segment in BBCNI's rural magazine programme "Homeground", broadcast on 21<sup>st</sup> May 2016.

## 1.3 *Excavation*

1.3.1 A total five trenches were manually excavated: three in the interior (Trenches 1, 4 and 5), one investigating the bank of the rath (Trench 2) and one located approximately 30m north of the monument (Trench 3). A simple stratigraphic sequence was encountered in all the trenches with little of archaeological significance being noted, with the exception of Trench 2. The material culture recovered was largely Early

Modern in date and relates to episodes of spade cultivation of the interior of the rath and 'middening' of the exterior during the nineteenth and early twentieth centuries.

1.3.2 The excavation of Trench 2 provided valuable insights into the construction of the rath, and the later remodelling due to field boundaries. A shallow ditch or gully was encountered circumventing the exterior of the bank, the lower fill of which produced a single fragment of furnace lining. Not only does this indicate metalworking in the vicinity of the rath during the Early Medieval period, but also constitutes the only stratified artefact recovered during the excavation.

#### 1.4 *Discussion*

1.4.1 The excavation did not reveal a substantial amount of archaeological material, with a single stratified artefact being recovered from the lowermost fill of the ditch in Trench 2. The material culture recovered from the excavation of the other trenches is dominated by nineteenth and twentieth century ceramic sherds, probably associated with middening during the Early Modern period.

1.4.2 The excavation of Trench 2 revealed aspects of the construction of the monument, with a distinct scarp (Context No. 209) noted. This originally would have turned the summit of the drumlin on which the rath was constructed into a distinct circular platform (the development of field boundaries in this area during the nineteenth century has altered the shape of the ringfort). A small ditch circumventing the exterior of the rath provided the only stratified archaeological material encountered during the excavation. Both of these features (ditch and scarp) would have provided quarried material that was likely piled on the inner edge of the scarp to form a bank.

1.4.3 The excavation of Trench 1 in the interior of the rath revealed evidence of the later use of the rath for small-scale agricultural purposes, with the shallow linear features being interpreted as the remains of spade cultivation ridges. This is a relatively common occurrence in the Irish landscape in the Early Modern period when the interior of raths were re-used as gardens due to their siting on relatively high, well drained ground (Jupp & Neill 1994, 48).

1.4.4 It is unlikely that the Early Modern activity at Cornahove has obliterated features and deposits dating to the Early Medieval period, as the agricultural features encountered in Trench 1 appear to represent a single episode of use (three parallel furrows were encountered with no evidence of re-cutting or truncation). In any case, had substantial Early Medieval deposits ever existed in the interior of Cornahove, it would be expected that the material culture would have been recovered from the topsoil

deposits in the trenches (especially given the proportion of the interior that was subject to archaeological investigation). The furnace lining recovered from the base of the ditch in Trench 2 suggests that metal working (iron smelting) was undertaken in the vicinity of the rath, although the signature of such activity was not detected by the magnetic gradiometer survey (see Appendix 6). As such, it appears unlikely that the interior of the rath was ever subject to substantial activity during the Early Medieval period. Due to the position of Cornahove along a likely political boundary (River Fane), it can be suggested that the site might have been used as a defended enclosure for cattle.

## 1.5 *Recommendations*

- 1.5.1 No significant post-excavation work is required to bring this project to completion through publication. The artefact assemblage does not require further analysis, and the one stratified sample retained did not produce suitable dateable material. As such, it is recommended that the project should be progressed straight onto publication with an article prepared for inclusion in the *Ulster Journal of Archaeology*.
- 1.5.2 It is recommended that following publication of the results of the investigation, the artefacts are returned to the McShane family, the local landowners who so kindly facilitated the fieldwork on their land.

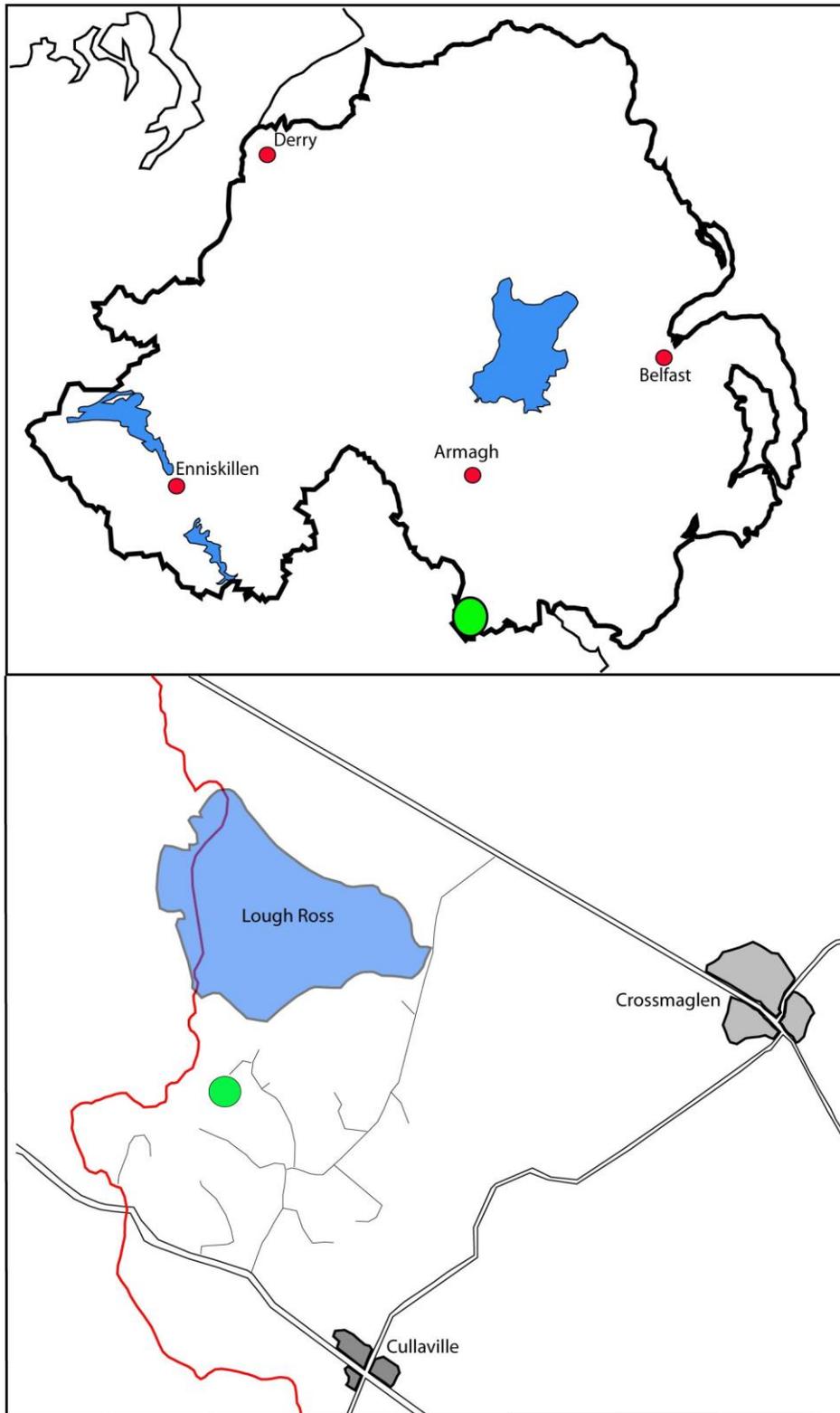


Figure 1: Location of the excavation site (marked by a green dot). The red line in the lower image tracks the course of the River Fane and is also the present border between Northern Ireland and the Republic of Ireland.

## **Introduction**

### *2.1 General*

2.1.1 The Centre for Archaeological Fieldwork (CAF), Queen's University Belfast was requested by the Ring of Gullion Landscape Partnership Scheme to carry out a community-led archaeological investigation at the site of a rath at Cornahove Td, Crossmaglen, Co. Armagh (H 8814 1475; ARM 030:019) in May 2016. The project involved the participation of local school groups (aged P4-Y10) and adult volunteers. This document details the results of this investigation and recommendations to bring the project to a successful conclusion.

2.1.2 The excavation was directed by Brian Sloan (CAF) under Licence AE/16/71E.

### *2.2 Geological Background*

2.2.1 Cornahove lies within the drumlin belt, which extends from the uplands of south and east Armagh to the south of Lough Neagh. Underlying the glacial till of the drumlin landscape, the geology of the area consists of the Carboniferous Limestones of the late Viséan Armagh Group which are made up, almost exclusively, of marine shallow water limestones with palaeokarst surfaces (Mitchell 2004, 90). The development of these rocks was affected by oscillating sea levels, exposure and pedogenesis, which resulted in the formation of solution features, such as swallow holes and dolines, which were filled by reddish brown clay palaeosoils (Mitchell 2004, 114).

### *2.3 Cartographic and historical background*

2.3.1 The rath is first mapped in the 1830s as part of the 1<sup>st</sup> Edition Ordnance Survey. The monument is depicted as a circular ring representing the bank (Figure 2). To the immediate north of the rath are farm buildings associated with the Fanning family from whence the rath gets its localised name of "Fanning's Fort".



**"Fanning's Fort"  
ARM 030:019**

Figure 2: 1<sup>st</sup> Edition OS map (1834) showing the two raths in Cornahove.

2.3.2 Fanning's Fort is depicted as a full ring with a curious feature in the north-eastern side of its circuit (Figure 2). This feature roughly coincides with the location of the present entrance into the monument, suggesting that this access point has been extant since at least the early nineteenth century. To the south-east of Fanning's Fort, a smaller enclosure can be seen on the 1<sup>st</sup> edition map (Figure 2). This monument (ARM 030:020) was another rath, although no visible traces remain present on the modern landscape.



**Remnants of rath bank  
ARM 030:019**

Figure 3: 2<sup>nd</sup> Edition OS map (1858) illustrating the development of field boundaries around 'Fanning's Fort' as well as the removal of ARM 030:020.

2.3.3 The area underwent a revision to the maps in 1858 (Figure 3). This map shows the division of the land and the development of the field systems. What is also noticeable

is that the rath is no longer depicted nor annotated; the only hint of it being there is a curvilinear field boundary. The second rath, located to the south-east (ARM 030:020) has disappeared completely, testifying to the level of agricultural improvement that was undertaken in the area in the nineteenth century.

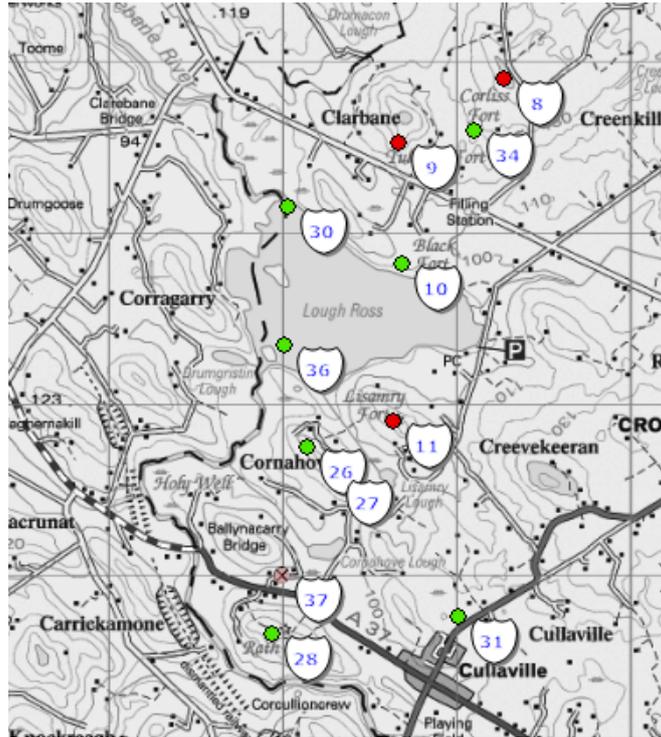
#### 2.4 *Brief historical background (provided by Cormac McSparron, CAF)*

2.4.1 Fanning's Fort (NISMR ARM 030:019), is a rath located at the end of a drumlin ridge overlooking the valley of the River Fane which forms the boundary between Co. Armagh and Co. Monaghan (Figure 1 and 2). It is likely that this county boundary may reflect a more ancient Early Medieval boundary between two branches of the Airgíalla. The steep scarp at the north face of Fanning's Fort has been taken as an indication that this is a platform rath, a late variant of rath which becomes common with economic change in the ninth century (McCormick 2008). It may be the case, however, that this scarp is simply a reflection of the surface of the drumlin upon which the rath has been constructed.

2.4.2 During its use this rath lay in the territory of the Airthir, who occupied most of the modern County in the Early Medieval Period (Byrne 1973, 115). The Airthir, were part of a group of peoples in central Ulster called the Airgíalla which, amongst others, included the Uí Cremthainn and the Uí Tuitre. Their affiliation in the early part of the Early Medieval period may have looked east to the Ulaid, as reflected in a self-consciously archaic way, in the twelfth century Book of Rights (*ibid*, 107), but during the period after AD800 the Cenél nEógain increased their influence across the whole of the north of Ireland, pushing some of the Airgíalla, like the Uí Tuirte and Fir Lí eastwards beyond the Bann. Others, like the Airthir, became clients of the Cenél nEógain. In turn the Cenél nEógain supported their candidates for the Abbacy of Armagh over their rivals, another Airgíalla group, the Uí Cremthainn who controlled modern Co. Monaghan (Byrne 1973, 125).

#### 2.4 *Surrounding archaeological landscape*

2.4.1 Cornahove is located in an archaeologically rich landscape with a wide variety of monuments in the general vicinity (Figure 4). On the whole these monuments date to the Early Medieval period and comprise raths, souterrains and crannogs.



Mapviewer #	SMR #	Type	General Period	Current Status
8	ARM 030:001	Rath and Souterrain	Early Medieval	Scheduled
9	ARM 030:002	Rath	Early Medieval	Scheduled
10	ARM 030:003	Rath and Souterrain	Early Medieval	N/A
11	ARM 030:004	Rath and Souterrain	Early Medieval	Scheduled
26	ARM 030:019	Rath	Early Medieval	N/A
27	ARM 030:020	Enclosure	Undated	N/A
28	ARM 030:021	Rath	Early Medieval	N/A
30	ARM 030:023	Crannog	Early Medieval	N/A
31	ARM 030:024	Enclosure	Undated	N/A
34	ARM 030:027	Cashel	Early Medieval	N/A
36	ARM 030:030	Crannog	Early Medieval	N/A
37	ARM 030:031	Enclosure	Undated	N/A

Figure 4: Northern Ireland Sites and Monuments Register showing a cluster of sites dating to the Early Medieval period in the immediate vicinity of Lough Ross; the rath that is the subject of this report is shown as No. 26 in this image (image obtained from <http://maps.ehsni.gov.uk/MapView/#>).

2.4.2 About 400m northeast of the site is Lisamry Fort (NISMR ARM 030:004), a counterscarp rath with a souterrain. Another monument is located about 200m southeast of the site. This site is now destroyed, but is recorded as a probable rath on the 1st edition Ordnance Survey six-inch map (NISMR ARM 030:020). The lough, Lough Ross, approximately 500m to the north, has the remains of one definite (NISMR ARM 030:023) and one probable (NISMR ARM 030:030) crannog.

2.4.3 In Co. Monaghan about 1.5km southwest of the site there are two raths in Knockreagh townland (ROISMR MO 025:030 and ROISMR MO 025:028) and another rath about 2km northwest in Drumlandrick (ROISMR MO 025:014) townland. There is also a very interesting fragment of linear earthwork (ROI SMR MO 025:046) on the west side of the River Fane about 400m west the site. Although this linear earthwork is undated its location as a county, and possibly an Early Medieval boundary, is interesting and may suggest that it marked the frontier between the Airthir on the east, and Uí Cremthainn to the west.

## 2.6 *Archiving*

2.6.1 Copies of this report have been deposited with the Historic Environment Division of the Department For Communities. All site records and finds are temporarily archived with the Centre for Archaeological Fieldwork, School of Natural and Built Environment, Queen's University Belfast.

## 2.7 *Credits and acknowledgements*

2.7.1 The investigation was directed by Brian Sloan (CAF). The director is particularly thankful to the CAF excavation crew that consisted of Sarah Gormley, Ruth Logue, Grace McAlister and Ruairi O'Baoill. The geophysical survey was carried out by Dr. Siobhan McDermott (CAF).

2.7.2 The author is also grateful to the following for their help and support during the excavation and the production of this report: Jackie McDowell and Ken Neill (DFC: HED), Dr. Colm Donnelly and Cormac McSparron (CAF), as well as Darren Rice and all the staff at the Ring of Gullion Landscape Partnership Scheme in Crossmaglen.

2.7.3 Special thanks are also due to the McShane family for facilitating the excavation and for their unwavering support and interest throughout this investigation.

2.7.4 The school groups that took part in the excavation were: Meigh Primary School, Clonalig Primary School, Mullaghbane Primary School, Loughbrickland Primary

School, St Oliver Plunkett Forkhill Primary School, Cloughoge Primary School, St Patrick's Cullyhanna Primary School, St. Joseph's High School, Anamar Primary School, St. Patrick's Crossmaglen Primary School and Scoil Eoin Baiste Primary. The author is indebted to the pupils and teachers who visited the site for their hard work and enthusiasm.



Figure 5: Location of the trenches excavated at Cornahove. The image on the left shows the trenches overlaid on an aerial image of the rath, with the image on the right shows the trenches overlaid on a geo-rectified version of the 2<sup>nd</sup> edition OS map (1858). *Image provided by Dr. Siobhan McDermott (CAF).*

### **3. Account of the excavation**

#### *3.1 Introduction*

3.1.1 A total of five trenches were manually excavated during the excavation. The geological subsoil was encountered at various depths in the trenches, with the trenches excavated in the interior of the rath exhibiting a shallow stratigraphic sequence. Trench Three, located outside and downslope to the rath exhibited a deeper sequence of deposits, primarily due to hill wash and the presence of a plough soil.

#### *3.2 Methodology*

3.2.1 The archaeological features were recorded using the standard recording system. The list of contexts is reproduced as Appendix One, and the field drawing register that was generated during the excavation is reproduced as Appendix Three. The remainder of the site records are reproduced as the Soil Sample Register (Appendix Four) and the Finds Register (Appendix Five).

3.2.2 It is suggested that the Harris matrices for each trench (Appendix Two) should be referred to when reading the stratigraphic sequences.

#### *3.3 Trench One*

3.3.1 Trench One was located in the western portion of the interior of the rath. The trench initially measured 5m (north/south) by 1m (east/west) although this was extended to 10m (north/south) during the course of the excavation. The trench was aligned north/south and was manually excavated to the surface of the natural geological subsoil. Apart from evidence of post-medieval agricultural activity, little of archaeological significance was encountered during the excavation of this trench.

3.3.2 The sod (Context No. 101) consisted of active roots within a light brown sandy loam matrix. The layer was relatively universal across the entirety of the trench and averaged 0.1m thick. The sod layer (Context No. 101) directly overlay a compact sandy loam topsoil (Context No. 102). The topsoil (Context No. 102) contained frequent inclusions of small to medium angular stones, as well as the occasional fleck of charcoal and varied in thickness from 0.1-0.25m (the deposit was thickest in the middle of the trench and thinned to the north and south reflecting the 'domed' summit of the drumlin). Artefacts

from the topsoil layer (Context No. 102) consisted of a number of post-medieval ceramics and a hone-stone. Removal of the topsoil (Context No. 102) revealed three roughly east/west aligned linear features (Context Nos. 105, 107 and 109) cutting the natural subsoil (Context No. 103) (Figure 6).



Plate 1: Context No. 105 following removal of western portion of Context No. 104, looking east. Removal of Context No. 104 revealed the shallow and ephemeral nature of the cut. Scale = 0.5m.

3.3.3 The northernmost of these linear features consisted of a shallow east/west aligned cut (Context No. 105). This feature (Context No. 105) measured 0.48m in width (north/south) and was a maximum of 0.1m deep. The cut had gentle sloping sides with a relatively flattish base, and was filled by a single deposit of greyish brown silty clay loam (Context No. 104). The clay loam fill (Context No. 104) exhibited occasional small angular stone inclusions as well as infrequent charcoal flecking. Sherds of post-medieval ceramics were recovered from this deposit (Context No. 104) and the feature is interpreted as being the remains of a spade cultivation furrow.

3.3.4 Approximately 1.3m to the south of the spade cultivation furrow (Context No. 105) another linear cut was encountered (Context No. 107). Again this feature (Context No. 107) was aligned roughly east-west and was 0.46m wide (north/south). The sides of this second furrow (Context No. 107) was a maximum of 0.11m deep, had gently sloping and a roughly flattish base, and was filled by a single deposit (Context No. 106). The fill (Context No. 106) consisted of a friable mid grey clay loam with occasional small stone inclusions. Although no material culture was recovered from the fill (Context No. 106), the

size and orientation of the cut (Context No. 107) suggests contemporaneity with the spade cultivation furrow to the north (Context No. 105).

3.3.5 To the south of this cut (Context No. 107), at a distance of 2.85m, a further east/west aligned linear feature was encountered. The cut of this feature (Context No. 109) measured 0.36m in width (north/south) and was a maximum of 0.12m deep. The sides sloped gently to a relatively flat base and it was filled by a single deposit of greyish brown clay loam (Context No. 108). The fill (Context No. 108) exhibited frequent small angular stones as well as the occasional fleck of charcoal and clinker. No material culture was recovered from this feature but it is probable that is a further spade cultivation furrow.

3.3.6 The natural geological subsoil (Context No. 103) was encountered at an average depth of 0.25m from the modern ground surface. The natural (Context No. 103) consisted of a reddish orange sandy boulder clay with protrusions of angular rock along the length of the trench. Apart from the evidence for post-medieval spade cultivation (Context Nos. 105, 107 and 109), nothing of archaeological significance was encountered during the excavation of this trench.

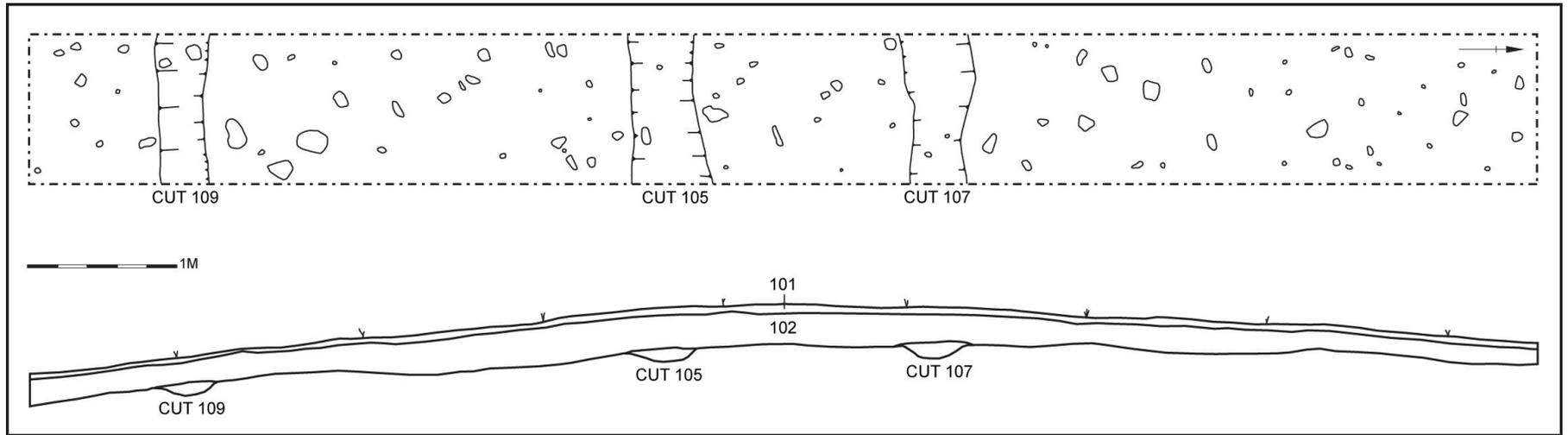


Figure 6: Post-excavation plan (upper image) and east-facing section (lower image) of Trench 1.



Plate 2: Trench One following excavation to the surface of the subsoil (Context No. 103), looking north.

### 3.4 *Trench Two*

3.4.1 Trench Two was positioned across the bank of the rath, along its north-eastern edge. The trench measured 5m in length by 1m in width and was aligned roughly north-west/south-east. The trench afforded the opportunity to investigate how the rath was constructed, with an enclosing ditch and evidence of the scarping of the natural subsoil to create a

bank. The trench also produced the only stratified artefact of the excavation with a fragment of probable furnace lining recovered from the basal deposit of the ditch.

- 3.4.2 The sod of Trench Two was a mix of solid sods, bare earth and mulch originating from fallen foliage of the hedgerow that has been planted along the top of the bank. The sod layer was removed as a single stratigraphic unit (Context No. 201) that was on average 0.03m thick and was removed to reveal a friable light to mid-brown sandy clay loam topsoil (Context No. 202). This deposit (Context No. 202) was relatively sterile except for increased root disturbance, as well as frequent inclusions of small to medium angular and sub-angular stones (average size 0.05 – 0.1m in length). The topsoil (Context No. 202) ranged in thickness from 0.04m – 0.1m and was removed to reveal a deposit of small to large stones (Context Nos. 203 and 204 respectively).



Plate 3: Stoney deposit (Context No. 203/204), looking south-west.

- 3.4.3 The stony deposit (Context Nos. 203 and 204) was concentrated at the south-western end of the trench and spread for 1.8m to the north-east. The stones ranged in length from 0.02m – 0.28m and was a maximum thickness of 0.24m. The smaller stones (Context No. 203) did not appear to be sorted and exhibited evidence of heavy root disturbance. Fragments of bottle glass and post-medieval ceramics were recovered from among the small angular stones (Context No. 203) which appeared to overlay a group of larger stones (Context No. 204; Plate 3). These stones (Context No. 204) were in excess of 0.3m in length and appeared to have been conscientiously set into position (see Plate 3). Initially the stone deposit (Context No. 203/204) was interpreted as representing the

revetment of the exterior surface of the bank. However, the artefacts recovered from the deposit, and its stratigraphic relationship with the underlying deposit suggests that this feature dates to the Early Modern period and most likely represents a formalisation of a field boundary formed using the bank of the rath (see figures 2 and 3 for a depiction of the layout and organisation of field boundaries at Cornahove in the Ordnance Survey six-inch map sheets).



Plate 4: Trench Two following excavation to the surface of the subsoil (Context No. 210), looking south-west.

3.4.4 The stony deposit (Context No. 203/204) was removed to reveal a relatively thick reddish brown sandy clay (Context No. 205) that extended the length of the trench and was on average 0.2m – 0.3m thick. The excavation of this deposit revealed it to be void of artefactual material with the only inclusions being frequent small angular stones and the occasional fleck of charcoal. It is possible that the presence of this deposit in the trench represents the slumped bank of the rath, with the sterile deposit (Context No. 205) having originally been quarried subsoil from the external ditch (Context No. 207). Removal of the sandy clay (Context No. 205) revealed the subsoil (Context No. 210) as well as evidence for a slight scarp (Context No. 209) and external ditch (Context No. 207). The scarp (Context No.209) was characterised by a distinct, albeit shallow, depression in the subsoil at the south-western end of the trench and measured 1.6m in length (north-east/south-

west) and was a maximum of 0.1m deep. The side of the scarp (Context No. 209) was gentle along its north-eastern edge where it met a slightly concave base. The slope of the south-western edge rose quite dramatically meaning that the level of the subsoil at this point of the trench was approximately 0.9m higher than that to the exterior of the scarp (Context No. 209). It is likely that this height difference is a reflection of the underlying natural geology (reflected as well by the topography inside the rath) and that the scarp (Context No. 209) was an effort to exploit the shape of the hill and produce a platform on which to construct the rath. No distinction between the fill of the scarp (Context No. 209) and the overlying sandy clay (Context No. 205) could be ascertained.



Plate 5: North-west facing section of the ditch (Context No. 207).

3.4.5 Approximately 1m to the north-east of the scarp (Context No. 209) a cut (Context No. 207) was observed in the subsoil (Context No. 210). This cut (Context No. 207) was roughly aligned east/west and varied in width between 1.3m – 1.55m. The cut (Context No. 207) had relatively gentle sloping sides with a concave base and was a maximum of 0.62m deep. The cut (Context No. 207) is interpreted as being an external ditch circumventing the rath and was filled by two deposits (Context Nos. 206 and 208).

3.4.6 The uppermost fill of the ditch (Context No.207) consisted of a soft, reddish brown gritty clay loam (Context No. 206). This deposit was a maximum of 0.4m thick and exhibited occasional charcoal flecking and small angular stones. The clay loam was similar in

appearance to the overlying deposit (Context No. 205) although was noted to be softer in texture and consistency. It is possible that the clay loam (Context No. 206) is a product of the bank of the rath slumping into the open ditch. Immediately beneath the clay loam (Context No. 206) was a tenacious grey clay (Context No. 208) which constituted the basal fill of the ditch (Context No. 207).

- 3.4.7 The tenacious grey clay (Context No. 208) had an average thickness of 0.28m. The deposit exhibited occasional charcoal flecking as well as numerous medium to large angular stones. A sample taken of the basal ditch deposit (Context No. 208) has been processed and unfortunately did not produce suitable organic dating material, suggesting that the basal deposit is relatively sterile and accumulated quickly (rather than being allowed to gradually silt up). A single artefact was recovered from this deposit (Context No. 208) – a small fragment of possible furnace lining (Plate 6).

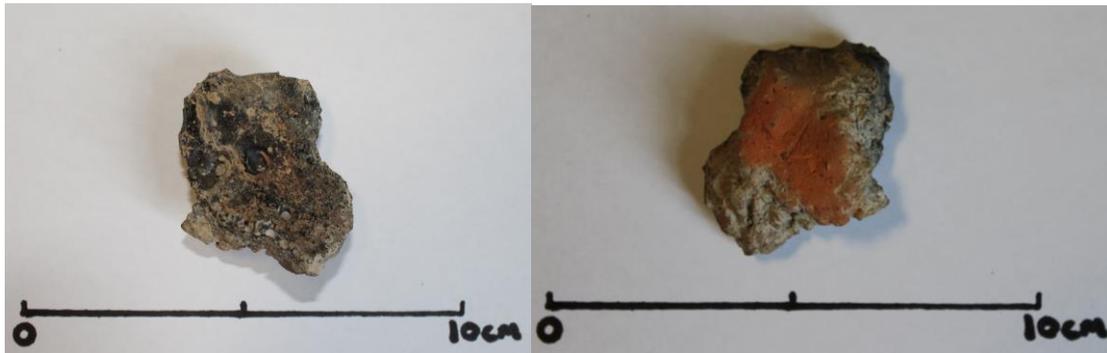


Plate 6: Fragment of possible furnace lining recovered from Context No. 208. The left image shows slag produced through smelting adhering to the heavily heated clay furnace lining.

- 3.4.8 The subsoil in Trench Two consisted of a reddish orange sandy boulder clay. Frequent inclusions of angular rock were noted protruding from its surface. Following the recording of the archaeological features, the trench was manually backfilled and the area reinstated.

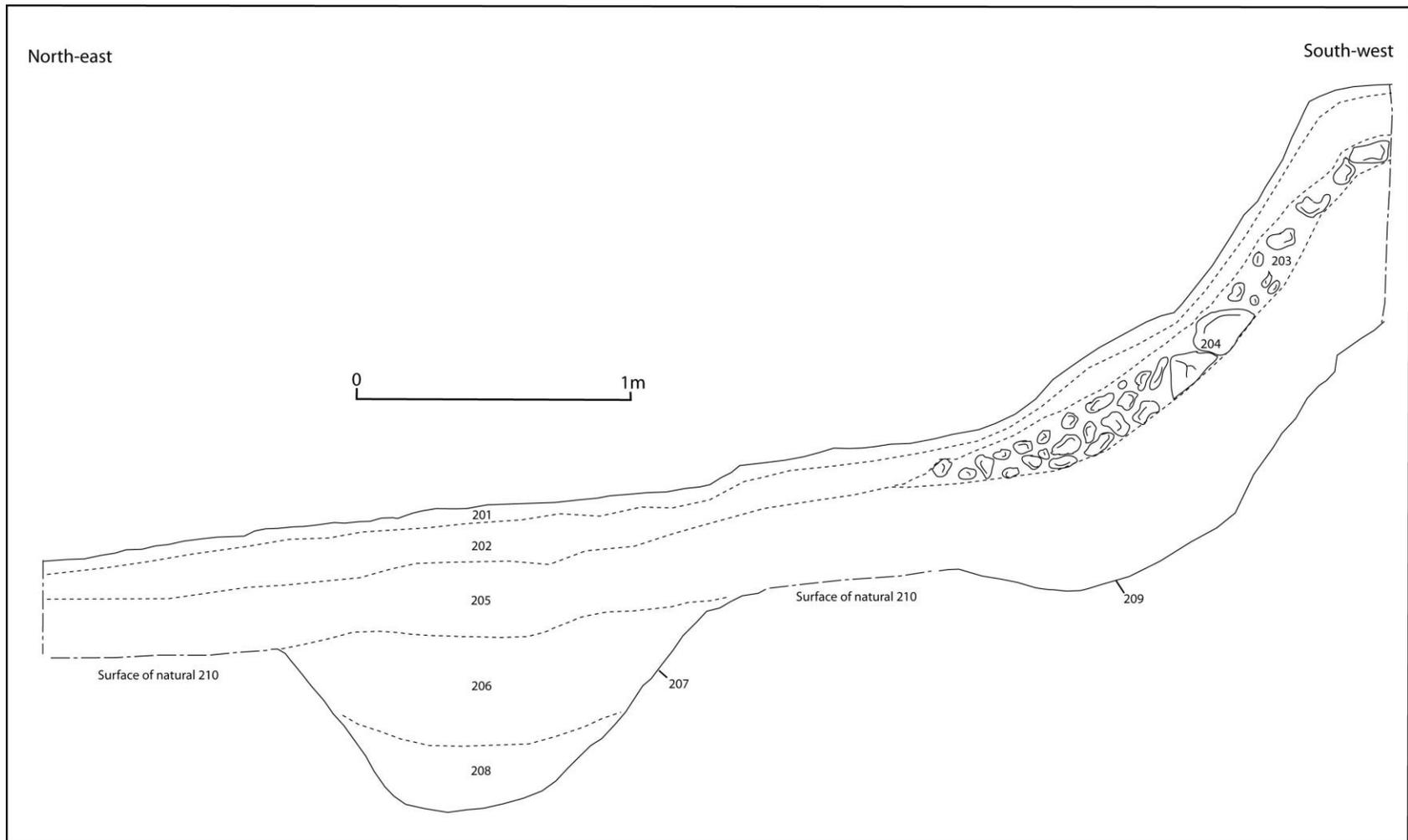


Figure 7: North-west facing section of Trench 2.

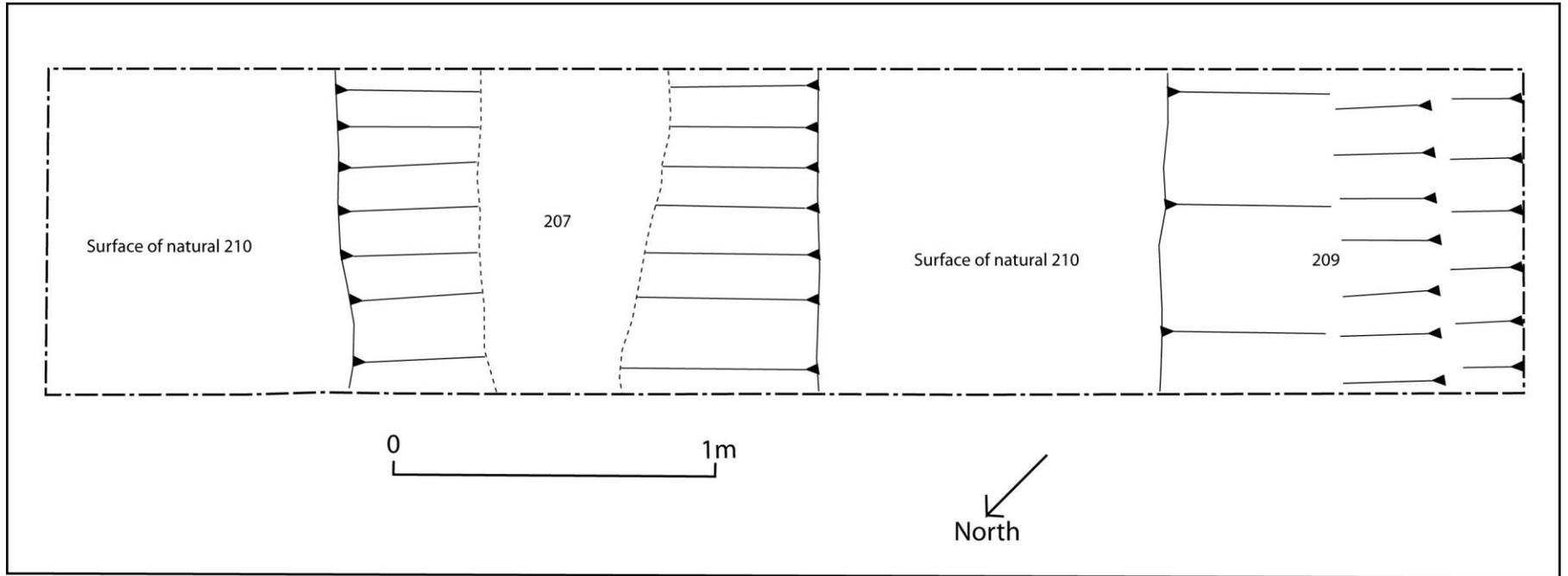


Figure 8: Post-excavation plan of Trench 2.

### 3.5 Trench Three

3.5.1 Trench Three was located to the north of the rath, at a distance of approximately 20m from the outer edge of the bank. The trench measured 10m in length by 1m in width and was aligned roughly east/west, perpendicular to the slope of the hill. This trench was excavated with the assistance of the visiting school groups, and a simple stratigraphic sequence was encountered that proved to have little of archaeological significance.

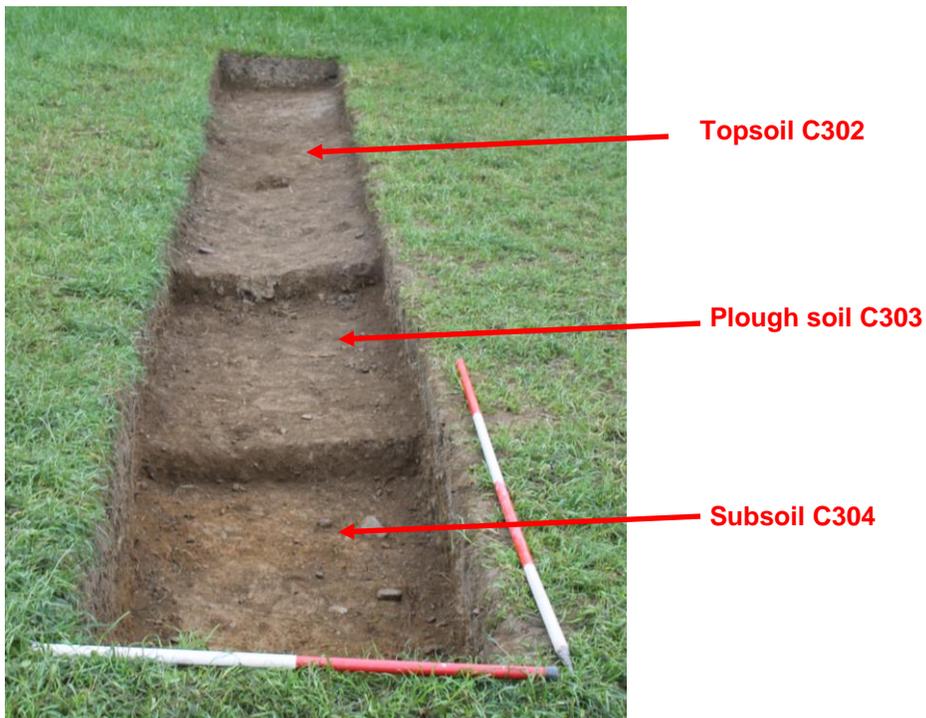


Plate 7: Stratigraphic sequence encountered during the excavation of Trench Three

3.5.2 The sod layer in this trench consisted of active plant roots within a light to mid brown silty clay (Context No. 301) and averaged 0.09m thick. Removal of the sod (Context No. 301) revealed a relatively firm greyish brown topsoil (Context No. 302). This layer (Context No. 302) had frequent inclusions of small to medium angular stones, particularly towards the base of the deposit. The topsoil (Context No. 302) varied in thickness from 0.1m – 0.15m and directly overlay a reddish brown plough soil (Context No. 303).

3.5.3 The plough soil (Context No. 303) consisted of a firm stony silty clay which was on average 0.25m thick. Frequent inclusions of small to medium angular stones were noted as well as the occasional charcoal flecking and fragments of coal/clinker. The plough soil (Context No. 303) directly overlay the natural subsoil (Context No. 304) which consisted of a reddish orange sandy boulder clay and which was encountered at an average depth of 0.5m from the modern ground surface.

3.5.4 Despite no archaeological features or significant deposits being encountered during the excavation of this trench, a varied artefact assemblage was recovered. This was dominated by ceramic sherds and fragments of clay pipe which are likely to be the result of 'middening' in the Early Modern period. A single rounded quartzite prehistoric pebble hammer-stone was recovered and, although unstratified, testifies to the attractiveness of the landscape for habitation for millennia.

### 3.6 *Trench Four*

3.6.1 Trench Four was located in the interior of the fort and measured 5m x 2m. The trench was aligned east/west and was excavated to the surface of the subsoil which was encountered at an average depth of 0.35m from the modern ground surface. A simple stratigraphic sequence was encountered with nothing of archaeological significance noted.

3.6.2 The sod layer in this trench consisted of active plant roots within a greyish brown silty clay (Context No. 401). The sod layer (Context No. 401) varied in thickness between 0.1m – 0.18m and directly overlay a light to mid brown topsoil (Context No. 402). The topsoil (Context No. 402) consisted of a compact clay loam with frequent inclusions of small to medium angular and sub-rounded stones. The topsoil deposit (Context No. 402) was a maximum of 0.22m thick and directly overlay the natural subsoil (Context No 403) which consisted of a compact reddish orange sandy boulder clay. No features or deposits of archaeological significance were encountered during the excavation of this trench with the artefactual assemblage small in size and exclusively Early Modern in date.



Plate 8: Trench Four following excavation to the surface of the natural subsoil (Context No. 403), looking west.

### 3.7 *Trench Five*

3.7.1 Trench Five was located in the interior of the fort, and was positioned to investigate a roughly circular area of bulrushes. The trench measured 3m (east/west) by 1m (north/south) and was excavated to the surface of the subsoil which was encountered at an average depth of 0.3m below the modern ground surface. Nothing of archaeological significance was encountered during the excavation of this trench.

3.7.2 The sod layer in this trench consisted of active plant roots within a greyish brown silty clay (Context No. 501). The sod layer (Context No. 501) had a maximum thickness of 0.2m and directly overlay a light to mid brown topsoil (Context No. 502). The topsoil (Context No. 502) consisted of a compact clay loam with frequent inclusions of small to medium angular and sub-rounded stones. The topsoil deposit (Context No. 502) was a maximum of 0.22m thick and directly overlay the subsoil (Context No 503) which consisted of a compact reddish orange sandy boulder clay. No features or deposits of archaeological significance were encountered during the excavation of this trench.



Plate 9: Post-excavation view of Trench 5, looking south-east.

## 4. Discussion

### 4.1 *Introduction*

4.1.1 The investigation at Cornahove was highly successful as a community-led enterprise, with over 300 local school children being given the opportunity to partake in the excavation. The excavation of the trenches revealed scant evidence for the Early Medieval use of the site (save for a single stratified artefact from the basal fill of the ditch), but evidence of Early Modern agriculture was evident in the interior of the rath, dating to the nineteenth and early twentieth centuries). It is not envisaged that a comprehensive post-excavation programme of works will be necessary to bring this project to completion through publication (see Section 5 of this report).

### 4.2 *Early Medieval activity*

4.2.1 The excavation of Trench 2 revealed aspects of the construction of the monument. A distinct scarp (Context No. 209) was noted. This originally would have turned the summit of the drumlin into a distinct circular platform. The development of field boundaries in this area during the nineteenth century has altered the shape of the rath. A small ditch (Context No. 207) circumventing the exterior of the rath provided the only stratified Early Medieval material encountered during the excavation in the form of a small fragment of furnace lining (see Plate 6). The ditch and scarp would have provided quarried material that was likely piled on the inner edge of the scarp to form the enclosing bank of the ringfort.

4.2.2 The fragment of furnace lining recovered from the ditch is of interest as it suggests that metal working had been undertaken in the vicinity of the ringfort.

### 4.3 *Early Modern activity*

4.3.1 The excavation revealed no evidence of Early Medieval activity in the interior of the fort. The only archaeological features encountered relate to the relatively modern use of the rath for small scale agriculture and took the form of the remains of spade cultivation ridges that were encountered in Trench 1. The ceramics recovered from the fills of the spade cultivation ridges suggest that this activity dates to the nineteenth and early twentieth centuries.

- 4.3.2 The material culture recovered from the excavation of the trenches is dominated by nineteenth and early twentieth century ceramic sherds, probably associated with middening during the Early Modern period. Trench 1 revealed evidence of small scale agriculture, with the shallow linear features being interpreted as the remains of spade cultivation ridges. Such later re-use of the interior of a rath is not uncommon. Similar sites have been noted in the Irish landscape, where the interior of raths have been re-used, due to their siting on relatively high and well drained ground (Jupp & Neill 1994, 48) and the later re-use of raths as small orchards and kitchen gardens has been addressed before (Jupp & Neill, 1994).
- 4.3.3 While later activity was uncovered at Cornahove, it is unlikely that this activity is responsible for the lack of Early Medieval features or material culture. The Early Modern agricultural features encountered in Trench 1 appear to represent a single episode of use, with no evidence of re-cutting or truncation. However, even if this one episode of activity had completely obliterated all Early Medieval deposits, then material culture would still have been expected to be recovered from the topsoil deposits in the trenches. This proved not to be the case.
- 4.3.4 As such, it appears unlikely that the interior of the rath was ever subject to substantial activity during the Early Medieval period. The furnace lining recovered from the base of the ditch in Trench 2 suggests that metal working (iron smelting) was undertaken in the vicinity of the rath, although the signature of such activity was not detected by the magnetic gradiometer survey (see Appendix 6). It appears far more likely Cornahove functioned as a defended enclosure for cattle, considering its position along the River Fane which was probably a significant political boundary when the site was in use.

## **5. Recommendations for further work**

### *5.1 Introduction*

5.1.1 The excavation did not produce an extensive archaeological archive. As such, little post-excavation work is required to bring the project to completion through publication. The artefact assemblage, although varied, is largely dated to the Early Modern period (nineteenth and twentieth centuries). Further work on this assemblage will not further our understanding of the monument and, as such, it is not recommended that additional analysis be carried out. It is however, recommended that the artefacts are returned to the McShane family following the submission of this report.

### *5.2 Publication*

5.2.1 It is recommended that an article on the results of the investigation at Cornahove is prepared for inclusion in the *Ulster Journal for Archaeology*.

## 6. Bibliography

Jupp, B, & Neill, M. 1994. 'Recycling Rathes!'. *Ulster Local Studies*, Vol. 16 No. 1, (1994), 43-53.

Lynn, C. J, & McDowell, J. A.,. 2011. *Deer Park Farms: The Excavation of a Raised Rath in the Glenarm Valley, Co. Antrim*. Northern Ireland Environment Agency.

Mitchell, W.I. 2004. Carboniferous, in W.I.Mitchell (ed.), *The geology of Northern Ireland. Our natural foundation*, (second edition) Geological Survey of Northern Ireland, Belfast. 79-116.

Neill, K. 2009. *An Archaeological Survey of County Armagh*. Northern Ireland Environment Agency.

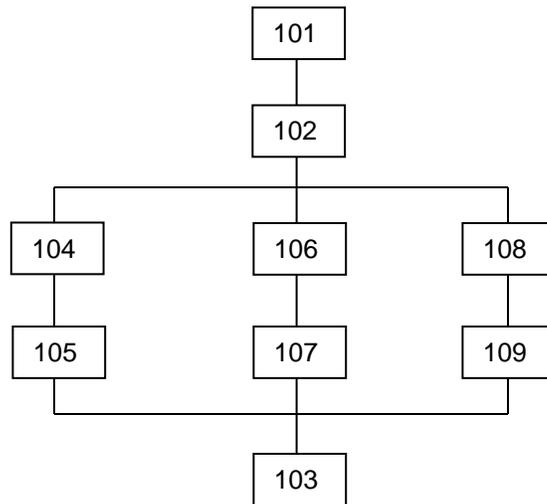
## Appendix One: Context Register

<b>Trench</b>	<b>Context</b>	<b>Description</b>
1	101	Sod Layer
	102	Topsoil
	103	Subsoil
	104	Fill
	105	Cut
	106	Fill
	107	Cut
	108	Fill
	109	Cut
2	201	Sod Layer
	202	Topsoil
	203	Stony Deposit
	204	Stony Deposit
	205	Layer
	206	Upper fill of ditch
	207	Cut of ditch
	208	Lower fill of ditch
	209	Scarp
	210	Subsoil
3	301	Sod layer
	302	Topsoil
	303	Ploughsoil
	304	Subsoil
4	401	Sod Layer
	402	Topsoil
	403	Subsoil

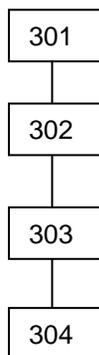
5	501	Sod Layer
	502	Topsoil
	503	Subsoil

## Appendix Two: Harris Matrices

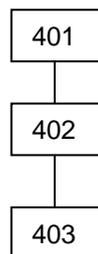
### *Trench One*



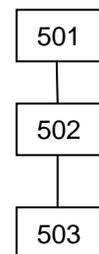
### *Trench Three*



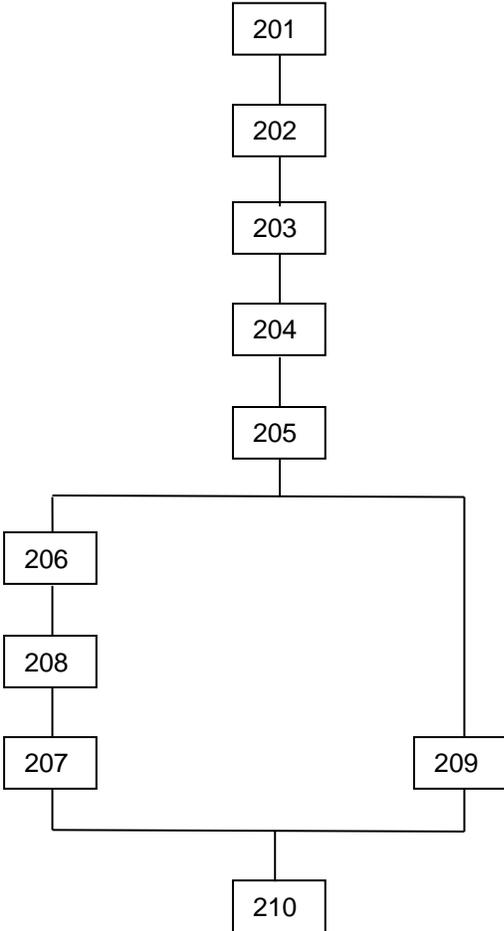
### *Trench Four*



### *Trench Five*



Trench Two



### Appendix Three: Field drawing Register

Figure #	Trench	Type	Scale	Desc.	Initials/date
1	1	Plan	1:20	Post-excavation plan	GMcA 17/5/16
2	1	Section	1:20	West facing section	GMcA 17/5/16
3	2	Plan	1:20	Plan of possible revetment	SG 18/5/16
4	2	Section	1:20	North-west facing section	SG 18/5/16
5	5	Section	1:10	East facing section	ROB 18/5/16
6	4	Section	1:20	South facing section	ROB 26/5/16
7	4	Section	1:20	West facing section	ROB 26/5/16
8	2	Section	1:20	West facing section	SG 27/5/16
9	2	Plan	1:20	Post-excavation plan	SG 27/5/16
10	3	Section	1:10	West facing section	RL 26/5/16

#### Appendix Four: Sample Register

Sample #	Context	Quantity	Purpose
1	208	X1 bag approx. 2.5 litres	Extraction of micro/macro fossils as well as suitable dating material

*\*This sample was processed in its entirety at Queen's University Belfast on 31/05/2016 by the author. The sample, initially weighing 4.8kg, was washed through a 500µm sieve to remove silt and allowed to dry. The sample was then submerged in water and again passed through a 500µm sieve to separate the 'floated' organic material from the heavier residue. Unfortunately, this did not produce material suitable for scientific dating purposes with less than 0.1g of charred organic remains being extracted.*

## Appendix Five: Finds Register

Trench	Context	Material	Quantity
1	102	Glass	1
1	102	Pottery sherds	10
1	102	Clay pipe bowl	1
1	102	Hone stone	1
1	102	Quartz	1
1	104	Pottery sherds	2
2	202	Flint	1
2	203	Quartz	4
2	203	Glass	1
2	203	Pottery sherds	1
2	204	Pottery sherds	1
2	208	Possible tuyere / furnace lining	1
3	302	Corroded iron	5
3	302	Pottery sherds	34
3	302	Clay pigeon	1
3	302	Quartz	20
3	302	Clay pipe stem	5
3	302	Slate	4
3	302	Misc. stone	5

3	302	Quartzite hammer stone	1
3	302	Glass	1
4	401	Pottery sherds	1
4	402	Clay pipe stem	1
4	402	Pottery sherds	21
4	402	Quartz	5
5	502	Corroded iron	2
5	502	Pottery sherds	3

## Appendix Six: Photographic Register

DSCN #	Trench	Detail	Date
3729	1	Pre-ex of trench looking south	10/05/16
3730	1	Pre-ex of trench looking north	10/05/16
3731	3	Pre-ex of trench looking west	10/05/16
3732	3	Pre-ex of trench looking west	10/05/16
3733	3	Pre-ex of trench looking East	10/05/16
3734	3	Rath in background looking south-east	10/05/16
3735	1	Trench following removal of c.101 looking south	10/05/16
3736	1	Trench following removal of c.101 looking south	10/05/16
3738	1	Trench following removal of c.101 looking north	10/05/16
3739	1	Trench following removal of c.101 looking south	10/05/16
3740	1	Trench following removal of c.101 looking north	10/05/16
3741	3	Surface of c.302 looking east	11/05/16
3742	3	Surface of c.302 looking east	11/05/16
3743	2	Pre-ex of trench looking south-west	11/05/16
3744	2	Pre-ex of trench looking south-west	11/05/16
3745	2	Trench following removal of sod looking south-west	11/05/16
3746	1	Subsoil (c.103) looking north	11/05/16
3747	1	Subsoil (c.103) looking south	11/05/16
3748	1	Detail of feature looking east	11/05/16
3749	1	c.103 looking north	11/05/16
3750	1	Detail of feature looking east	11/05/16
3751	1	Section through cut 105	11/05/16
3752	1	Section through cut 105	11/05/16
3753	2	Surface of c.203 looking south-west	12/05/16
3754	2	Surface of c.203 looking south-west	12/05/16

3755	2	Surface of c.203 looking south-west	12/05/16
3756	2	Surface of c.203 looking north-east	12/05/16
3757	2	Surface of c.203 looking north-east	12/05/16
3758	2	General working shot	12/05/16
3759	2	General working shot	12/05/16
3760	2	General working shot	12/05/16
3761	2	General working shot	12/05/16
3762	2	General working shot	12/05/16
3763	2	c.204 looking south-west	13/05/16
3764	2	c.204 looking south-west	13/05/16
3765	2	Trench showing c.205 looking south-west	13/05/16
3766	2	Trench showing c.205 looking south-west	13/05/16
3767	1	Post-ex of trench 1 looking south	13/05/16
3768	1	Post-ex of trench 1 looking south	13/05/16
3769	1	Post-ex of trench 1 looking north	13/05/16
3770	1	Post-ex of trench 1 looking north	13/05/16
3771	2	Pre-ex of 1m trench extension over rath bank looking south-west	13/05/16
3772	n/a	Open day	14/05/16
3773	n/a	Open day	14/05/16
3774	n/a	Open day	14/05/16
3775	n/a	Open day	14/05/16
3776	n/a	Open day	14/05/16
3777	n/a	Open day	14/05/16
3778	n/a	Open day	14/05/16
3779	n/a	Open day	14/05/16
3780	n/a	VOID	16/05/16
3781	n/a	General shots (Meigh Primary School)	16/05/16
3782	n/a	General shots (Meigh Primary School)	16/05/16

3783	2	Surface of c.204 in trench extension	16/05/16
3784	2	Surface of c.204 in trench extension	16/05/16
3785	2	Surface of c.204 in trench extension with possible revetment	16/05/16
3786	2	Surface of c.204 in trench extension with possible revetment	16/05/16
3787	5	Surface of topsoil	16/05/16
3788	5	Surface of topsoil	16/05/16
3789	5	Surface of topsoil with volunteers	16/05/16
3790	n/a	General shots (St. Mary's Primary School, Mallaghbawn)	17/05/16
3791	n/a	General shots (St. Mary's Primary School, Mallaghbawn)	17/05/16
3792	n/a	General shots (St. Mary's Primary School, Mallaghbawn)	17/05/16
3793	n/a	General shots (St. Mary's Primary School, Mallaghbawn)	17/05/16
3794	n/a	General shots (St. Francis's Primary School, Aghaderg)	17/05/16
3795	n/a	General shots (St. Francis's Primary School, Aghaderg)	17/05/16
3796	n/a	Corlis Rath	17/05/16
3797	n/a	Corlis Rath	17/05/16
3798	n/a	Corlis Rath	17/05/16
3799	n/a	Corlis Rath	17/05/16
3800	n/a	Corlis Rath	17/05/16
3801	n/a	Post-ex of trench looking east	18/05/16
3802	n/a	Post-ex of trench looking east	18/05/16
3803	n/a	Post-ex of trench looking west	18/05/16
3804	n/a	Post-ex of trench looking west	18/05/16
3805	n/a	General shots of trenches opened within the rath	18/05/16
3806	n/a	General shots of trenches opened within the rath	18/05/16
3807	n/a	General shots of trenches opened within the rath	18/05/16
3808	n/a	General shots of trenches opened within the rath	18/05/16
3809	n/a	General shots of trenches opened within the rath	18/05/16
3810	n/a	General shots of trenches opened within the rath	18/05/16

3811	n/a	General shots of trenches opened within the rath	18/05/16
3812	n/a	General shots of trenches opened within the rath	18/05/16
3813	n/a	General shots of trenches opened within the rath	18/05/16
3814	n/a	General shots of trenches opened within the rath	18/05/16
3815	n/a	General shots of trenches opened within the rath	18/05/16
3816	n/a	St. Mary's PS, Mullaghbawn and BBC NI Home Ground filming	18/05/16
3817	n/a	St. Mary's PS, Mullaghbawn and BBC NI Home Ground filming	18/05/16
3818	n/a	St. Mary's PS, Mullaghbawn and BBC NI Home Ground filming	18/05/16
3819	n/a	St. Mary's PS, Mullaghbawn and BBC NI Home Ground filming	18/05/16
3820	n/a	St. Mary's PS, Mullaghbawn and BBC NI Home Ground filming	18/05/16
3821	n/a	St. Mary's PS, Mullaghbawn and BBC NI Home Ground filming	18/05/16
3822	n/a	St. Mary's PS, Mullaghbawn and BBC NI Home Ground filming	18/05/16
3823	n/a	St. Mary's PS, Mullaghbawn and BBC NI Home Ground filming	18/05/16
3824	n/a	St. Mary's PS, Mullaghbawn and BBC NI Home Ground filming	18/05/16
3825	n/a	St. Mary's PS, Mullaghbawn and BBC NI Home Ground filming	18/05/16
3826	n/a	St. Mary's PS, Mullaghbawn and BBC NI Home Ground filming	18/05/16
3827	n/a	St. Mary's PS, Mullaghbawn and BBC NI Home Ground filming	18/05/16
3828	5	Subsoil in box trench	18/05/16
3829	5	Subsoil in box trench	18/05/16
3830	n/a	Cloughoge PS and Cullyhanna PS	19/05/16
3831	n/a	Cloughoge PS and Cullyhanna PS	19/05/16
3832	n/a	Cloughoge PS and Cullyhanna PS	19/05/16
3833	n/a	Cloughoge PS and Cullyhanna PS	19/05/16
3834	n/a	Cloughoge PS and Cullyhanna PS	19/05/16
3835	n/a	Cloughoge PS and Cullyhanna PS	19/05/16
3836	n/a	Cloughoge PS and Cullyhanna PS	19/05/16
3837	n/a	Cloughoge PS and Cullyhanna PS	19/05/16
3838	n/a	St. Joseph's High School, Crossmaglen	20/05/16

3839	n/a	St. Joseph's High School, Crossmaglen	20/05/16
3840	n/a	St. Joseph's High School, Crossmaglen	20/05/16
3841	n/a	St. Joseph's High School, Crossmaglen	20/05/16
3842	n/a	St. Joseph's High School, Crossmaglen	20/05/16
3842	n/a	St. Joseph's High School, Crossmaglen	20/05/16
3843	n/a	St. Joseph's High School, Crossmaglen	20/05/16
3844	n/a	St. Joseph's High School, Crossmaglen	20/05/16
3845	n/a	St. Joseph's High School, Crossmaglen	20/05/16
3846	n/a	General shots of volunteers	23/05/16
3847	n/a	General shots of volunteers	23/05/16
3848	n/a	General shots of volunteers	23/05/16
3849	n/a	General shots of volunteers	23/05/16
3850	n/a	General shots of volunteers	23/05/16
3851	n/a	General shots of volunteers	23/05/16
3852	n/a	General shots of volunteers	23/05/16
3853	n/a	General shots of volunteers	23/05/16
3854	n/a	General shots of volunteers	23/05/16
3855	n/a	General shots of volunteers	23/05/16
3856	n/a	General shots of volunteers	23/05/16
3857	n/a	General shots of volunteers	23/05/16
3858	n/a	General shots of volunteers	23/05/16
3859	n/a	General shots of volunteers	23/05/16
3860	n/a	General shots of volunteers	23/05/16
3861	n/a	General shots of volunteers	23/05/16
3862	n/a	General shots of volunteers	23/05/16
3863	n/a	General shots of volunteers	23/05/16
3864	2	Ditch (cut c.207, fill c.206) looking south-west	25/05/16
3865	2	Ditch (cut c.207, fill c.206) looking south-west	25/05/16

3866	2	Ditch (cut c.207, fill c.206) looking south-west	25/05/16
3867	2	Ditch (cut c.207, fill c.206) looking east	25/05/16
3868	2	WNW facing section of c.207 (c.206 removed showing c.208)	25/05/16
3869	2	Cut 207, showing surface of c.208 looking south-west	25/05/16
3870	2	Cut 207, showing surface of c.208 looking east	25/05/16
3871	2	Cut 207, showing surface of c.208 looking east	25/05/16
3872	2	Cut 207, showing surface of c.208 looking east	25/05/16
3873	4	Post-ex of trench looking east	25/05/16
3874	4	Post-ex of trench looking east	25/05/16
3875	4	Post-ex of trench looking west	25/05/16
3876	4	Post-ex of trench looking west	25/05/16
3877	4	Post-ex of trench looking north-west	25/05/16
3878	4	Post-ex of trench looking north-west	25/05/16
3879	3	Post-ex of trench looking west	25/05/16
3880	3	Post-ex of trench looking west	25/05/16
3881	3	Subsoil in trench looking west	25/05/16
3882	3	North-facing section	25/05/16
3883	3	Post-ex looking south-east towards fort	25/05/16
3884	3	West-facing section with context lines	25/05/16
3885	3	West-facing section without context lines	25/05/16
3886	2	WNW-facing section of ditch c.207	26/05/16
3887	2	WNW-facing section of ditch c.207	26/05/16
3888	2	WNW-facing section of ditch c.207	26/05/16
3889	2	WNW-facing section of ditch c.207	26/05/16
3890	2	Ditch c.207 looking south-east	26/05/16
3891	2	Ditch c.207 looking south-east	26/05/16
3892	2	ESE-facing section of ditch c.207	26/05/16
3893	2	ESE-facing section of ditch c.207	26/05/16

3894	2	Post-ex of trench looking south	27/05/16
3895	2	Post-ex of trench looking south	27/05/16
3896	2	South end of trench looking south	27/05/16
3897	2	South end of trench looking south	27/05/16
3898	2	Post-ex of trench looking north, taken from top of bank	27/05/16
3899	2	Post-ex of trench looking north, taken from top of bank	27/05/16
3900	2	Post-ex of trench looking north, taken from top of bank	27/05/16
3901	2	South end of trench looking south	27/05/16
3902	2	General shots	27/05/16
3903	n/a	General shots	27/05/16
3904	n/a	General shots	27/05/16
3905	n/a	General shots	27/05/16
3906	n/a	General shots	27/05/16
3907	n/a	General shots	27/05/16
3908	n/a	General shots	27/05/16
3909	n/a	General shots	27/05/16
3910	n/a	General shots	27/05/16
3911	n/a	General shots	27/05/16
3912	n/a	General shots	27/05/16
3913	n/a	General shots	27/05/16

## **Appendix 7: Geophysical survey results – Dr Siobhan McDermott**

### **Summary of results**

Evaluation resolution magnetic gradiometry and electrical resistance surveys were carried out over an area of 0.3 ha to the north and east of a rath called Fanning's Fort, Cornahove, Co. Armagh. The two survey methods were applied together to try and identify the presence of any external enclosing features or related structures. There were little correlation between the electrical resistance and magnetometry datasets which suggested there was nothing of archaeological significance.

The electrical resistance survey in general returned little of interest with no evidence for stone-built features. Data was gathered with a probe configuration (1m + 0.5m x2) that allowed two depths of data to be gathered in order to generate pseudo sections. The data gathered with the 1m traverse probe spacing penetrated deeper than the 0.5m array. A linear feature, comprised of parallel high and low resistance bands running north to south, marks the location of a former field boundary. The responses indicate a bank of stony material with a water-logged ditch to the east. The magnetic gradiometry survey mapped a number of dipolar anomalies some of which correspond with the relict field boundary thus suggesting it incorporated barbed wire fencing at some stage. .

### **Site Specific Information**

*Site Name:* Fanning's Fort

*Townland:* Cornahove

*Civil Parish:* Creggan

*SMR No:* ARM 030:019

*Grid Ref:* H 88151 14756

*County:* Armagh

*Dates of Survey:* 3<sup>rd</sup> – 5<sup>th</sup> May 2016

*Surveyors Present:* Siobhán McDermott, Grace McAlister & Brian Sloan

*Size of area surveyed:* 0.3 ha

*Weather conditions:* Sunny & bright

*Solid Geology:* Sandstone

*Drift Geology:* Diamicton Till

*Current Land Use:* Pastoral agriculture

*Intended Land Use:* No change intended.

## **Survey methodology overview**

### ***Magnetic gradiometry survey***

#### *Instrumentation:*

Bartington Grad601-2 magnetic gradiometer

#### *Probe spacing:*

1m

#### *Grid size:*

30m x 30m

#### *Traverse interval:*

1m

#### *Sample Interval:*

0.125m

#### *Traverse Pattern:*

Zig-zag

### ***Electrical resistance survey***

#### *Instrumentation:*

Geoscan RM85 resistance meter

#### *Probe spacing:*

Multiple three probe array on 1m beam (1m + 0.5m x2)

#### *Grid size:*

30m x 30m

#### *Traverse interval:*

Multiple parallel readings will be recorded at 1m and 0.5m traverse intervals

#### *Sample Interval:*

1m

#### *Traverse Pattern:*

Zig-zag

### ***Georeferencing***

#### *Equipment*

Lecia CS15 GNSS rover with RTK stream

#### *Survey Accuracy:*

Survey grade accuracy (<3cm)

#### *Georeferencing:*

The GNSS data was used to georeference the geophysical survey datasets exported from Geoplot v.4 in ArcMap 10.3.

*Data processing:*

The geophysical data was processed in Geoplot v.4 software. The primary processes applied to the magnetic gradiometry data were low-pass filtering (LPF) and interpolated. Because the gradiometry data was collected with a 1L8 ratio of x:y both these processes were applied with an emphasis on the x axis. The processes applied to the electrical resistance data high pass filtering (HPF) which removes geological 'background' noise and LPF which helps to eradicate minor spikes in the data. The resulting data was also interpolated.

*Visualisations:*

The datasets were visualised in Geoplot v.4 using shade, trace, dot density and relief plots. Processed datasets were exported from Geoplot v.4 and imported into ArcGIS 10.2. Once georeferenced the rasters were statistically analysed in ArcMap 10.2 and they were interpreted in relation to the First, Third and Fifth Edition Ordnance Survey maps of the area, the 2006 orthorectified aerial photographs and relevant georeference bitmap imports. Further visualisation and interpretation was carried out in ArcScene 10.2.

*Digital archive:*

The geophysical datasets were collected, processed and archived in accordance with Archaeological Data Services best practice.<sup>1</sup>

---

<sup>1</sup> Schmidt, A. & E. Ernenwein, 2011, Guide to good practice: Geophysical data in Archaeology [Online] [http://guides.archaeologydataservice.ac.uk/g2gp/Geophysics\\_Toc](http://guides.archaeologydataservice.ac.uk/g2gp/Geophysics_Toc)

### Georeferenced geophysical survey grid



ID	POINT_X	POINT_Y	POINT_Z
STN_1	288147.41	314768.21	117.1
STN_2	288167.59	314812.56	105.49
STN_3	288205.78	314801.82	105.44
STN_4	288217.07	314785.92	106.04
STN_5	288186.84	314740.68	117.25

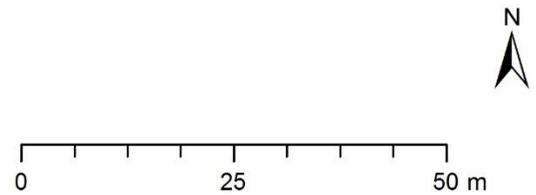


Figure 9: Location and coordinates of local geophysical survey grid.

## Processed data plots



Figure 10: Greyscale plot of processed magnetic gradiometer data with clip, ZMT, LPF Gaussian weighting applied x1 on the y-axis, and  $\sin(x)/x$  interpolation along the y-axis.

Statistics:

Mean: 0.1 nT

Std Dev.: 1.5



Figure 11: Greyscale plot of processed electrical resistance data with 0.5m probe spacing. Data was clipped +/- 3 standard deviations, HPF (Uniform weighting applied on the x- and y-axis) and interpolated.

Statistics:

Mean: -0.37 Ohm

Std Dev.: 20.44



Figure 12: Greyscale plot of processed electrical resistance data with 1m probe spacing. Data was clipped +/- 3 standard deviations, HPF (Uniform weighting applied on the x- and y-axis) and interpolated.

Statistics:

Mean: -0.78 Ohm

Std Dev.: 10.34

