



ULSTER
ARCHÆOLOGICAL
SOCIETY

Survey Report

Reference: Geophysical Survey No 8

Author: David Craig

Location:

Aerial and Earth Resistance Survey
Ringcreevy Plectrum-shaped enclosure
County Down

In association with:
HeritageNI



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CONTENTS

LIST OF FIGURES	4
1. Summary	5
1.1 Location	5
1.2 Aims	5
1.3 Summary of Results	5
2. Introduction	6
2.1 Description of site	6
2.2 Previous archaeological surveys	6
2.3 Archiving	6
2.4 Credits and Acknowledgements	6
2.5 Survey Methods	7
2.6 Date of Fieldwork	7
2.7 Aerial survey	7
2.8 Earth Resistance Survey	9
3. Discussion	13
4. Recommendations for further work	16
5. Bibliography	16

LIST OF FIGURES

Figure 1: Location maps for Ringcreevy	5
Figure 2 Position on the coastal plain	6
Figure 3 Google Earth 2017 image overlaid with identified changes in crop colour	7
Figure 4 Enhanced Google Earth (2017) image showing possible remnant of an outer enclosure	8
Figure 5 Additional features showing in enhanced drone photogrammetry	9
Figure 6: Location of Survey Grids	11
Figure 7: RAW Plot Data	11
Figure 8: Despiked and interpolated Plot Data	12
Figure 9: Psuedo-relief filter	12
Figure 10: Resistivity plot overlay on adjusted drone orthomosaic	13
Figure 11: Abstraction and Interpretation of Anomalies of archaeological potential	13
Figure 12: Possible harbour (from drone orthomosaic)	15
13 Comparrison of topography between the traditional Comber Eccesiastical site and Ringcreevy	16

1. Summary

1.1 Location

The site is located at 54.546824 latitude, -5.705611 longitude with an Irish Grid Reference of J 48499 68905. The location can be viewed in Google Maps from the PDF file of this report while connected to the internet by clicking this link,

<https://goo.gl/maps/rVCNf898ZHSgKKgG6>

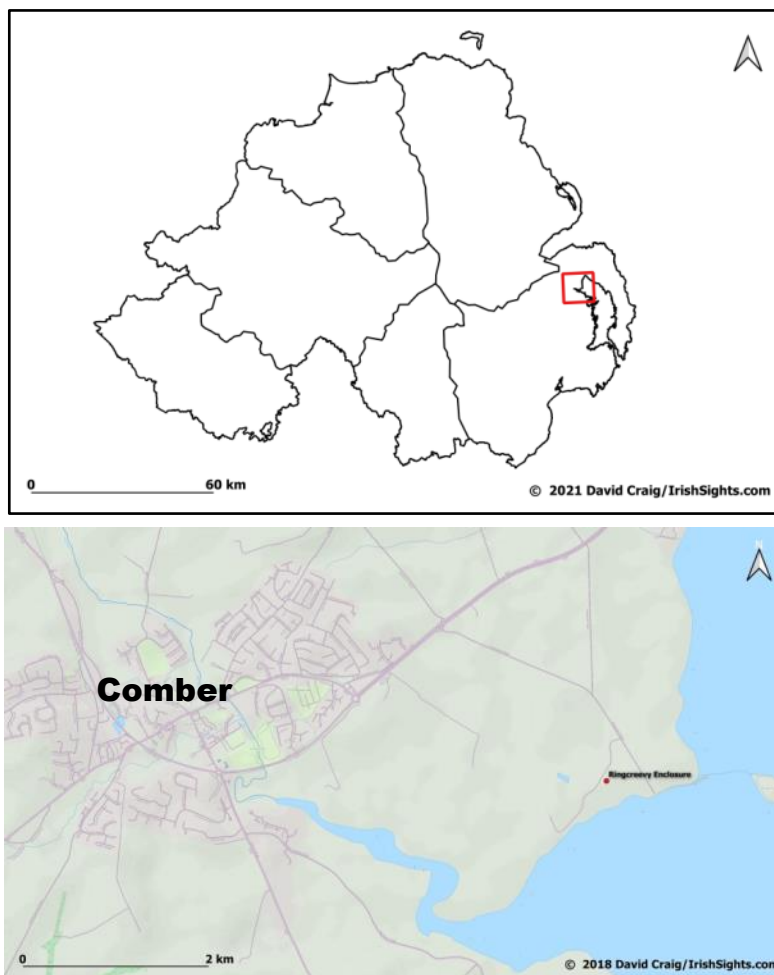


Figure 1: Location maps for Ringreevy

1.2 Aims

The Ulster Archaeological Society's survey team undertook a geophysical earth resistance and aerial survey in association with HeritageNI of an area of archaeological interest at Ringreevy, County Down near Island Hill. The site was identified by David Craig from Google Earth imagery from the 17th January 2017 dataset. The site is not recorded in the Historic Environment Record for Northern Ireland (HERoNI) as of the date of this report. The aims were to survey and try and ascertain the role of the enclosure and its approximate period of activity.

1.3 Summary of Results

The geophysical survey undertaken located a number of high/low resistance anomalies that may relate to structural remains of an early ecclesiastical site which is known to have existed but is currently unlocated. Other possible interpretations are also discussed in the section titled [Discussion](#). A low resistance anomaly which shows as a darker area has been interpreted as

being an area that retains moisture and likely a pit or ditch while high resistance represents a dryer area consistent with being a wall, a solid feature or a well-drained feature.

2. Introduction

2.1 Description of site

The survey area consists of an area of 1ha in a 4.3ha field consisting of flat well drained arable farmland at an elevation of approximately 9m. The site sits on the sea seaward edge of a flat coastal plain of over 590 ha extending from Comber eastward where the variation in level is only around 3m apart from the narrow band where it drops to the sea and Islandhill. This plain is a possible reference of the “Plain of Elom” (see [Discussion](#))

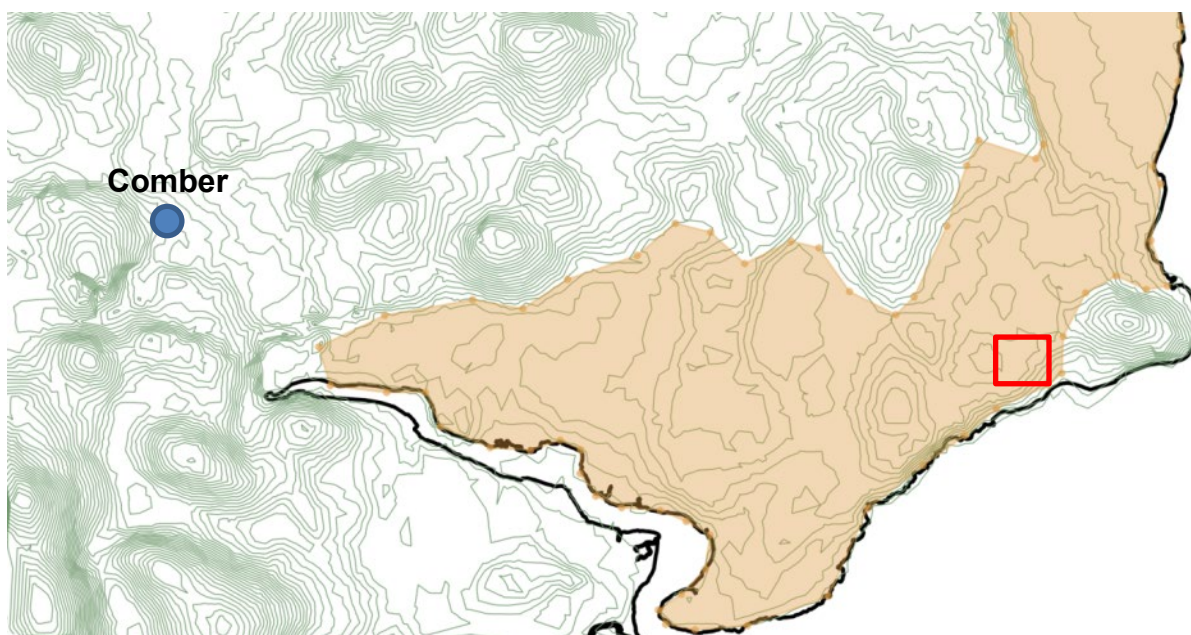


Figure 2 Position on the coastal plain

2.2 Previous archaeological surveys

No other archaeological investigation has been previously carried out as far as is known. There was a monitoring survey carried out nearby by the Centre for Archaeological Fieldwork, School of Archaeology and Palaeoecology, Queen’s University Belfast (Moore, Peter, c2003) as part of the Islandhill Car Park project.

2.3 Archiving

Copies of this report have been deposited with the Historic Environment Division of the Department for Communities and the Ulster Archaeological Society. All site records have been archived by the Ulster Archaeological Society.

2.4 Credits and Acknowledgements

The geophysics survey was led by David Craig and included UAS Survey Team members David Irvine, Lee Gordon, Ian Gillespie, Anne McDermott, Chris Stevenson, George Rutherford and Randal Scott. The Ulster Archaeological Society is particularly grateful to Harry Hamilton, the landowner for allow access to the survey site. Many thanks to Cormac Bourke and Harry Welsh for their valued input.

2.5 Survey Methods

Earth Resistivity and drone photogrammetry mapping were the methods employed for this project. More information regarding this technique is included in the Methodology section below.

2.6 Date of Fieldwork

The earth resistance survey was carried out over 3 days from 2nd to the 4th of September 2019 when the weather was dry for the duration with a little rain overnight on 3rd. The aerial drone mapping survey was carried on 3rd August 2019.

2.7 Aerial survey

The Aerial and Google dataset analysis is purely based on crop marks as no elevation features showed in the Digital Elevation Model (DEM)

2.7.1 Methodology

An aerial survey was carried out by David Craig of HeritageNI to assess the local landscape context of the target. The equipment used was a DJI Inspire 1 with a 12Mp camera. Multiple overlapping images were acquired using automated capture software and flown autonomously. 93 photographs were taken nadir to create the georeferenced photogrammetry dataset that is 15,544 x 13,072 pixels. The ground sample distance (GSD) is 5.26 pixels/cm. The images were processed through photogrammetry software Agisoft Metashape Pro. The resulting geoTIFF image was further processed through the Camera Raw plugin in Adobe Photoshop and the colours adjusted using a custom filter to create the enhanced black and white image. The Digital Elevation Model file was also processed through the DEM enhancing software Relief Visualization Toolkit. Quantum Graphical Information System (QGIS) was used to correlate the various acquired datasets.



Figure 3 Google Earth 2017 image overlaid with identified changes in crop colour

2.7.2 Google Earth Feature Set

Figure 2 base imagery taken in July 2017 showed crop marks particularly well. An entrance to the main enclosure can be clearly seen along with a trackway leading towards a particularly wet spot in the field to the east which could be the site of a well. Several other

linear features can also be identified.

The main plectrum shaped enclosure is 42m by 40m on its inside not including the ditch which is 2.5m wide at its widest.

To the south of the main enclosure there are several circular features ranging from 7.9m to 3.7m. The larger feature has a central darker green spot. It is suggested that these feature are ring barrows with a funerary centre. The main enclosure contains several other features which was hoped would be shown with more clarity in the earth resistance survey results. The thicker green lines are removed field boundaries visible in the 3rd Series 6" maps of around 1900.



Figure 4 Enhanced Google Earth (2017) image showing possible remnant of an outer enclosure

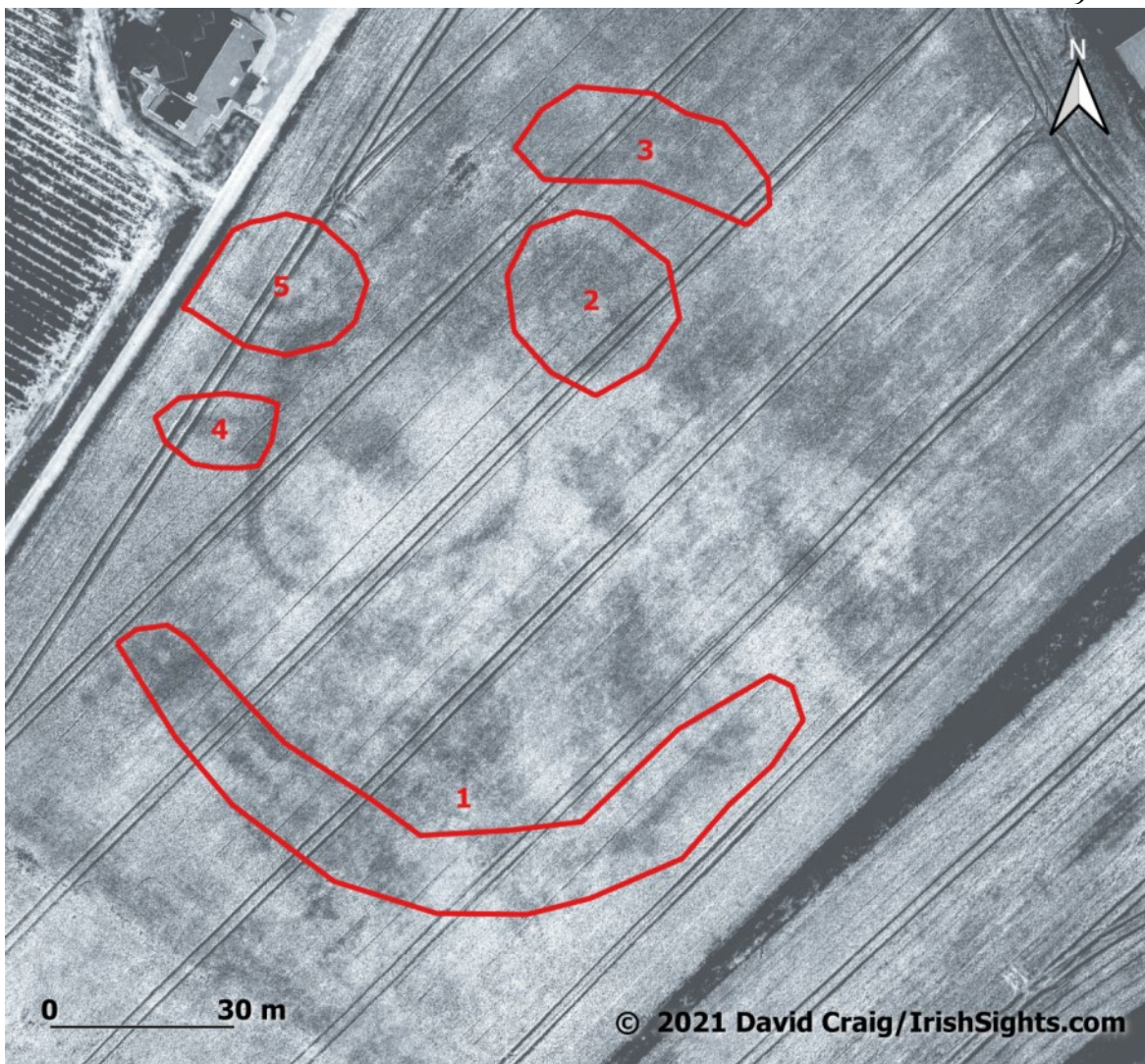


Figure 5 Additional features showing in enhanced drone photogrammetry

2.7.3 Drone Feature set

Figure 4 shows several additional features in the crop marks identified in the drone photogrammetry dataset taken in August 2019 compared to the Google Earth imagery of 2017 (Figure 2 and 3.) The possible outer ditch shown in figure 3 can be seen extending to the east at 1 and again a remnant to the north east of the main enclosure at 3. The distance between these two remnants is 124m

An oval shaped feature can be seen at 2 measuring 19.4m at its widest to 14.8m at its narrowest. Area is 253m². This feature overlaps onto the entrance trackway so would appear to be of an earlier period. There is also a possible internal feature.

To the west of the main enclosure at 5 is a curvilinear comprising of 2 parallel features, one of reduced crop growth and the other of enhanced crop growth. Possibly part of a trackway to a second entrance.

Between 4 and 5 there are several small linear features possibly representing small field enclosures

2.8 Earth Resistance Survey

This method relies on the relative inability of soils (and objects within the soil) to conduct an electrical current which is passed through them. As resistivity is linked to moisture content,

and therefore porosity, hard dense features such as rock will give a relatively high resistivity response (light coloured in the Resistivity plot), while features such as a ditch which retains moisture give a relatively low response (dark coloured in the resistivity plot.)

The resistance meter used was an TAR-3 manufactured by RM Frobisher incorporating a Twin Probe Array. The Twin Probes are separated by 0.5m and the associated remote probes were positioned approximately 15m outside the grid. The instrument uses an automatic data logger which permits the data to be recorded as the survey progresses for later downloading to a computer for processing and presentation.

Though the values being logged are actually resistances in ohms they are directly proportional to resistivity (ohm-metres) as the same probe configuration was used throughout.

2.8.1 Grid Locations

The location of the survey grids has been plotted in Figure 6 together with the referencing information. Grids were set out using 50m and 10m measuring tapes and referenced to the corner of the nearby house.

2.8.2 Sampling Interval

Readings were taken at 1.0m centres along traverses 1.0m apart. This equates to 400 sampling points in a full 20m x 20 grid. All traverses were surveyed in a “zigzag” mode.

2.8.3 Depth of Scan and Resolution

The 0.5m probe spacing of a twin probe array has a typical depth of penetration of 0.5m to 1.0m. The collection of data at 1m centres with 0.5m probe spacing provides an optimum resolution for the task.

2.8.4 Data Capture

The readings are logged consecutively into the TAR-3 on an SD card. The data is transferred to the office for processing and presentation.

2.8.5 Processing

The processing was carried out using specialist software known as Snuffler and involved the 'despiking' of high contact resistance readings and the passing of the data through a 'Remove Geology' filter. This has the effect of removing the larger variations in the data often associated with geological features. Data was further enhanced by interpolating the data points and the application of a sharpening filter. The net effect is aimed at enhancing the archaeological or man-made anomalies contained in the data.

2.8.6 Presentation of Results and Interpretation

The presentation of the data for the site involves a print-out of the raw data as a grey scale plot together with Figures for various filters and routines applied. Anomalies have been identified and plotted onto the 'Abstraction and Interpretation of Anomalies' drawing (Figure 11).

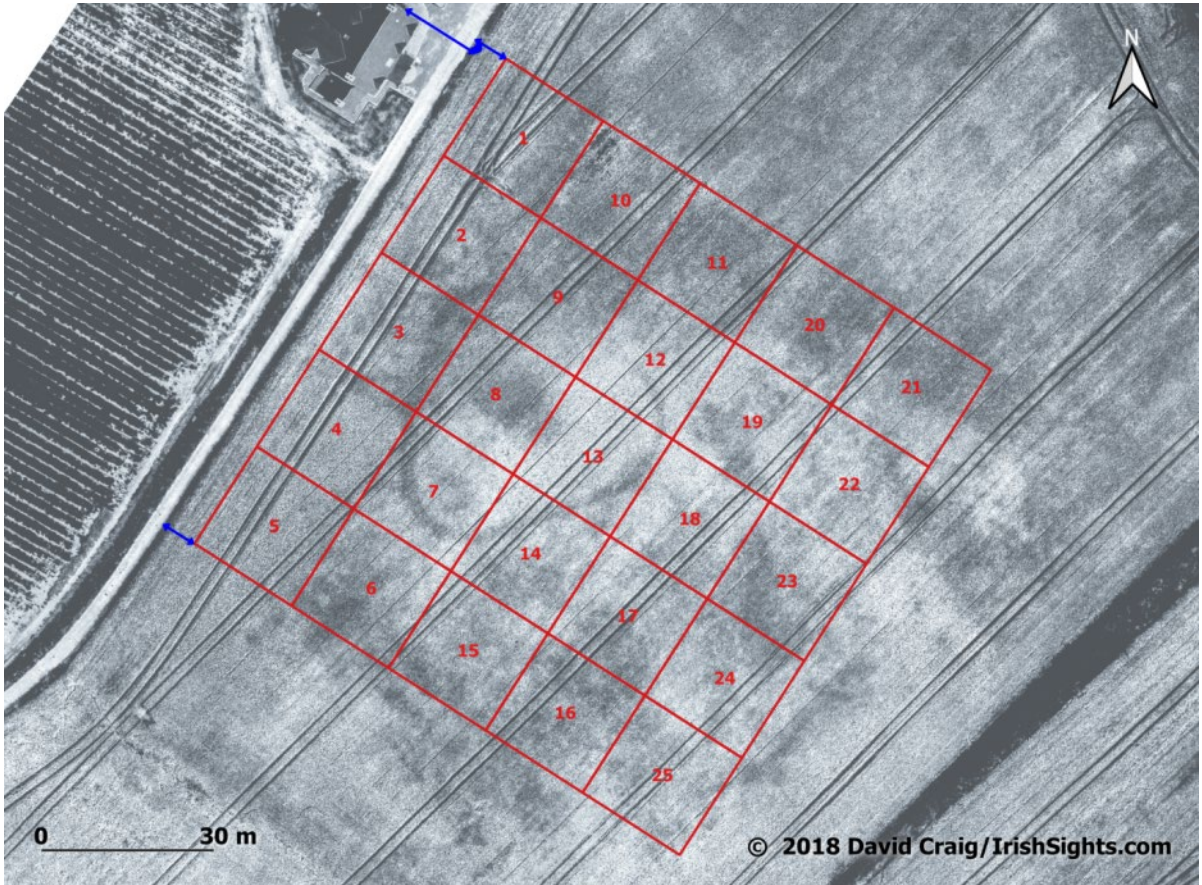
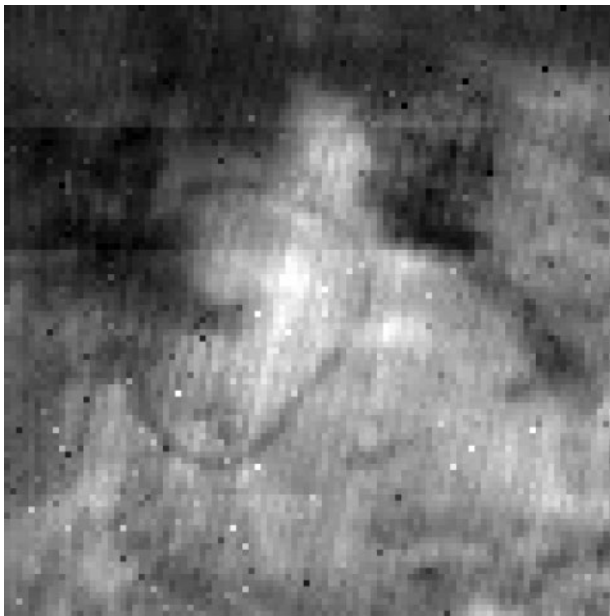


Figure 6: Location of Survey Grids



Document: RAW
Grid Width: 100 (100 m)
Grid Height: 100 (100 m)
Sample Size: 1.00 x 1.00m

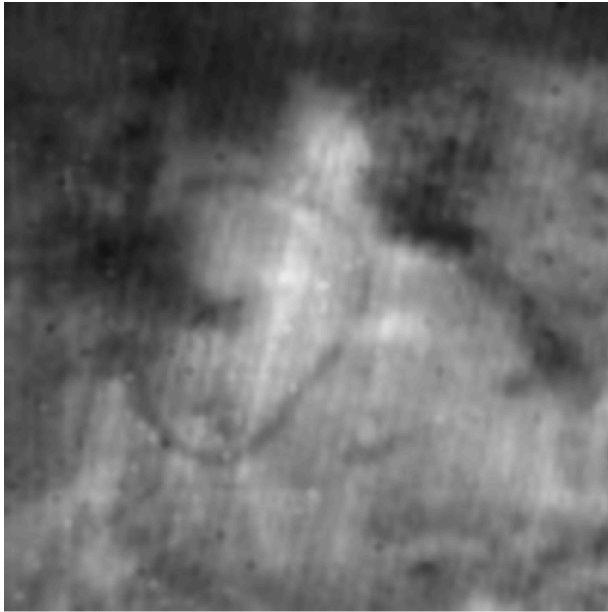


95.80

186.70

20.00m

Figure 7: RAW Plot Data



Document: Interpolated
Grid Width: 400 (100 m)
Grid Height: 400 (100 m)
Orig. Sample Size: 1.00 x 1.00m
New Sample Size: 0.25 x 0.25m

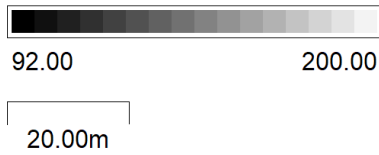
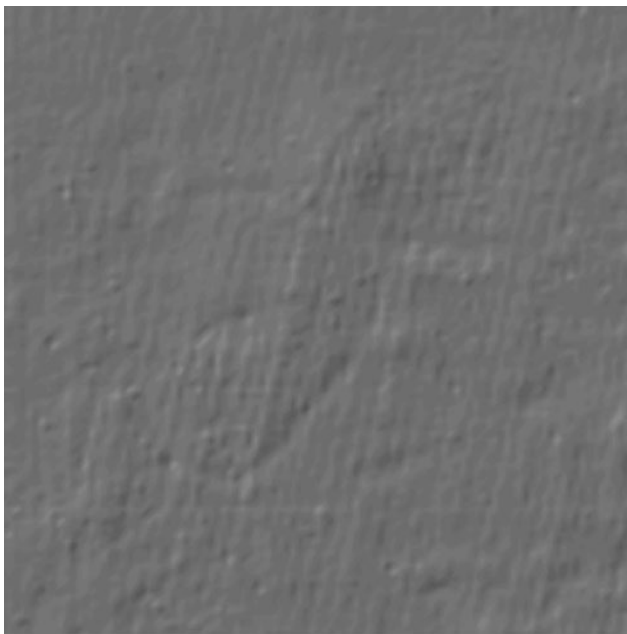


Figure 8: Despiked and interpolated Plot Data



Document: Relief
Grid Width: 400 (100 m)
Grid Height: 400 (100 m)
Orig. Sample Size: 1.00 x 1.00m
New Sample Size: 0.25 x 0.25m

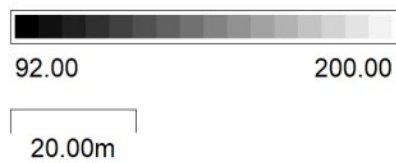


Figure 9: Psuedo-relief filter



Figure 10: Resistivity plot overlay on adjusted drone orthomosaic

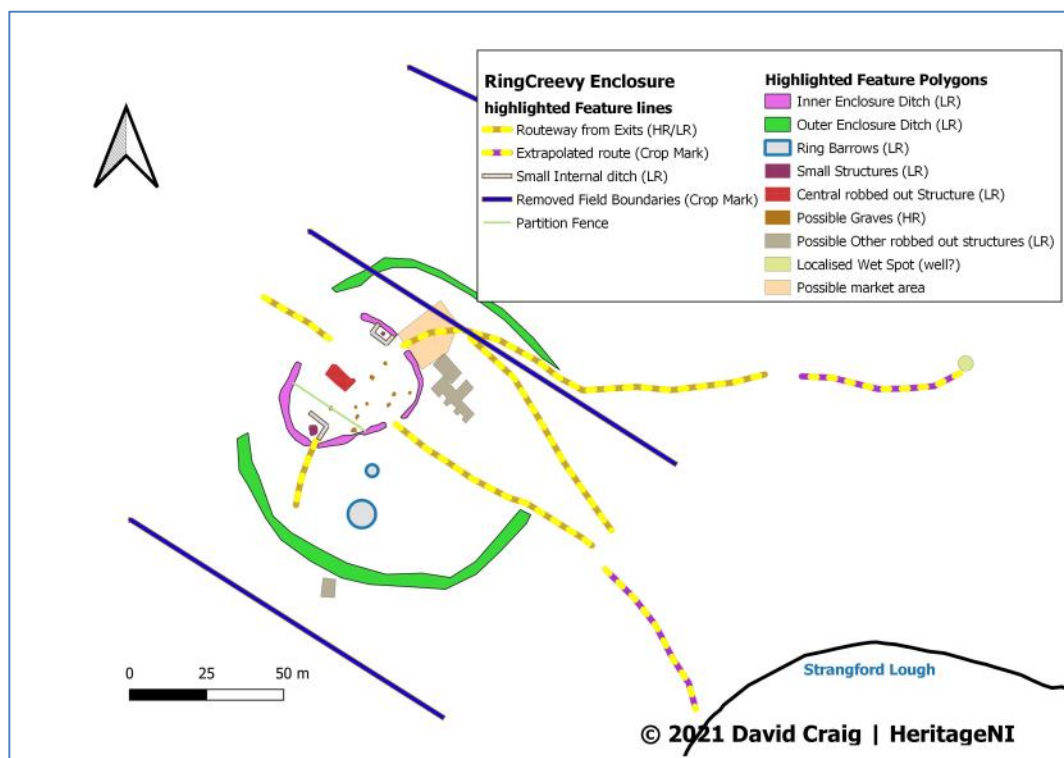


Figure 11: Abstraction and Interpretation of Anomalies of archaeological potential

3. Discussion

Investigation of this site was greatly aided by having data from 3 different imaging sources, Google Earth Pro, Drone photogrammetry and the earth resistance survey. The basis for this discussion is mainly based on information from these data sources. The 2 aerial datasets were both taken when there was a good responsive crop of wheat which produced good

contrasting crop marks. It is noted that the resistivity results largely match that of the aerial imagery. Both sets did however show some unique feature in each.

One of the post survey aims was to try and ascertain the role of the enclosure and its approximate period.

A Rath?

The topographical location of the enclosure does not fit the usual hilltop nature of raths. The main feature in the middle of the enclosure is rectilinear whereas circular features would have been expected if it was an early Christian period site. Raths usually have one entrance while this feature has at least 4 generally oriented at the 4 points of the compass. The main internal feature is at least 5m wide and circa 14m in length orientated North West to South East.

A Late Medieval enclosure?

Another contender is that it could be a late medieval enclosure. The small short slightly curving lower resistance anomaly in the centre of the main feature within the enclosure could possibly represent a collapsed souterrain. Multiple entrances with associated trackways would not be consistent with such a feature. A similar shaped enclosure was excavated in Newtown, County Limerick in 2001 by Frank Coyne. It was dated to 700–1015 AD

An Ecclesiastical site?

The setting of the inner enclosure within, an albeit faint outer enclosure is possibly indicative of an early ecclesiastical site. The size, multiple entrances and orientation of the internal feature would also support this option. While the main internal feature is not aligned exactly East-West it is within the range of orientations of many known churches. There are also at least 9 high resistance ‘spots’ within the inner enclosure to the south of this feature which may be indicative of burials. 2 ring barrows exist within the outer enclosure, which would likely date to the Bronze Age. This would suggest that the builders of the surveyed feature were respecting and being inclusive as place where the dead had been buried in the distant past. The only other prehistoric monument mentioned in the area comes from *The Ordnance Survey Memoirs of Ireland for the Parishes County Down II* (p35) where it mentions a stone circle may have existed in the south-east corner of the parish.

Where the longer trackway touches the shore there is a possible harbour and a moisture retaining area in the crop which could indicate a structure related to a harbour.

Swan (Swan, D. L., 1985) suggested a range of criteria which could be used to identify a site as being Ecclesiastical. This was further built into a list in Clare Crowley’s doctrinal thesis (Crowley, Clare, 2009, p41)

1. Evidence of enclosure.	✓
2. Burial area.	✓?
3. Place-name with ecclesiastical element.	
4. Structure, or structural remains, such as the church and round tower.	
5. Holy well.	✓?
6. Bullaun stone.	
7. Carved, shaped, inscribed, or decorated stone cross or slab.	
8. Line of townland boundary forming part of the enclosure.	
9. Souterrain.	✓?
10. Pillar stone.	
11. Founder's tomb.	
12. Associated traditional ritual or folk custom.	
13. Radiating road network.	✓
14. Triangular market area, commonly but not always on the east.	

While there is a lack of some of the feature from the list, it does give a edge on siding that this may be an eccesiastical site.



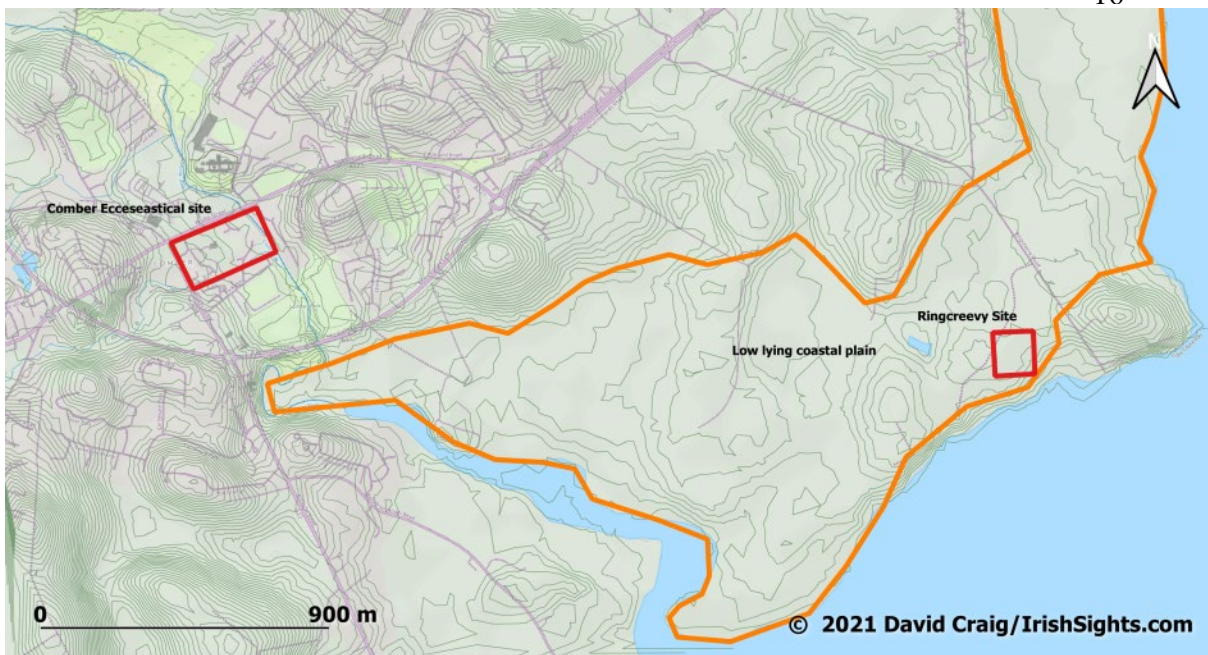
Figure 12: Possible harbour (from drone orthomosaic)

PlacenamesNI.org search result for Comber returns mention of an early monastery “*There was also an early Irish monastery established at Comber. According to the Tripartite Life this was built by Conla, one of two local brothers whom St. Patrick encountered (Trip. Life i 164; O'Lavery ii 139). Jocelin states that Conla offered a remarkable field called Elom and that the monastery was built here (Jocelin's Patrick 186). However, the exact site is not known,*”

In addition an article entitled *Christianity in Comber* - by Desmond Rainey on the Comber Historical Society website (<http://www.comberhistory.com/chs%20churches.htm>) states “*If we can give any credence to the ancient traditions, Patrick is said to have come to the Comber area. Unfortunately he did not receive a hearty Comber welcome. Rather, he was “sorely abused” by Saran, a son of the local chieftain. Saran’s brother Conla, however, was more sympathetic. He apologised for Saran’s behaviour and is said to have offered Patrick a “remarkable field” called the “Plain of Elom” on which to build a church. Patrick blessed Conla, and Comber got its first monastery.*

Where exactly was the Plain of Elom? The short answer to this is that we don’t know.”

Certainly the site at Ringreevy is more compatible to the above description than the topography of the traditionally assumed Comber ecclesiastical site at the confluence of the Edler and Comber rivers 2.5km to the West which has drumlins immediately to the west, east and south. See map below.



13 Comparison of topography between the traditional Comber Ecclesiastical site and Ringcreevy

4. Recommendations for further work

Inserting test trenching at various positions is recommended with the aim of acquiring dateable material. The site may also be a potential area for scheduling by HMC.

5. Bibliography

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