

**Centre for Archaeological Fieldwork**  
School of Archaeology & Palaeoecology  
Queen's University  
Belfast

**Geophysical Survey Report: No. 001**

St Jarlath's Church  
Clonfeacle, Co. Tyrone





## 1. Summary

- 1.1 A combined geophysical and topographical survey was undertaken by the Centre for Archaeological Fieldwork, in the vicinity of St Jarlath's Roman Catholic Church in Clonfeacle, County Tyrone (Grid Reference H 8393 5211: Figure 1) from the 1<sup>st</sup> July to 7<sup>th</sup> July 2003. The cemetery situated to the south-west of the church requires extension and the parish authorities plan to extend the present graveyard to include an area of land, 0.5 hectares (5,000 square metres), to the immediate north-east of the existing cemetery. This area of land is currently partitioned from the church and graveyard by a modern wall running approximately from north-west to south-east.
- 1.2 It is probable that the current church occupies the location of an Early Christian monastery. Elements of two concentric enclosures can be traced in the modern landscape (Figure 2). These enclosures are presumably associated with the Early Christian phase of the site. The area proposed for the cemetery extension is located within this enclosure. The current survey was therefore commissioned by the Protecting Historic Monuments division of the Environment and Heritage Service: Built Heritage to identify sub-surface features that might be of an archaeological nature within the proposed area of the extension.
- 1.3 For best practice, the geophysical survey was integrated with a topographical and positional EDM survey, this methodology was advocated in a Centre for Archaeological Fieldwork position paper submitted to the Recording Built Heritage division of the Environment and Heritage Service: Built Heritage in January 2003
- 1.4 The results of the geophysical survey suggest that there are a number of anomalies of archaeological potential present within the area planned for the cemetery extension. There appear to be two di-polar readings within the survey area (Features B and C). The most likely interpretation for these anomalies is that they represent the remains of hearths and/or kilns. There also appears to be a large curving anomaly towards the western extremity of the site (Feature A). The most likely interpretation for this anomaly is that it represents a large artificial ditch. There are also several circular and horse-shoe shaped positive (cut-feature) anomalies (Feature Cluster D and Feature E), which may also be archaeological.
- 1.5 The results of the survey suggest that there are anomalies of archaeological interest located on the site. There appear to be two di-polar (a combination of positive and negative) readings within the survey area. The most likely interpretation for such an

anomaly would be areas of burning, for example, a hearth and/or a kiln. There also appears to be a large curving anomaly towards the western extremity of the site. In the British Isles, a pit or ditch containing enhanced deposits will produce an anomaly with a positive peak to the south and a corresponding negative to the north (Gaffney *et al*, 2002). Therefore the most likely interpretation for this anomaly would be a ditch. Combined with these features are several circular and horse-shoe shaped positive (cut-feature) anomalies. The interpretation of any possible purpose that these features would have served is difficult without excavation and ground truthing.

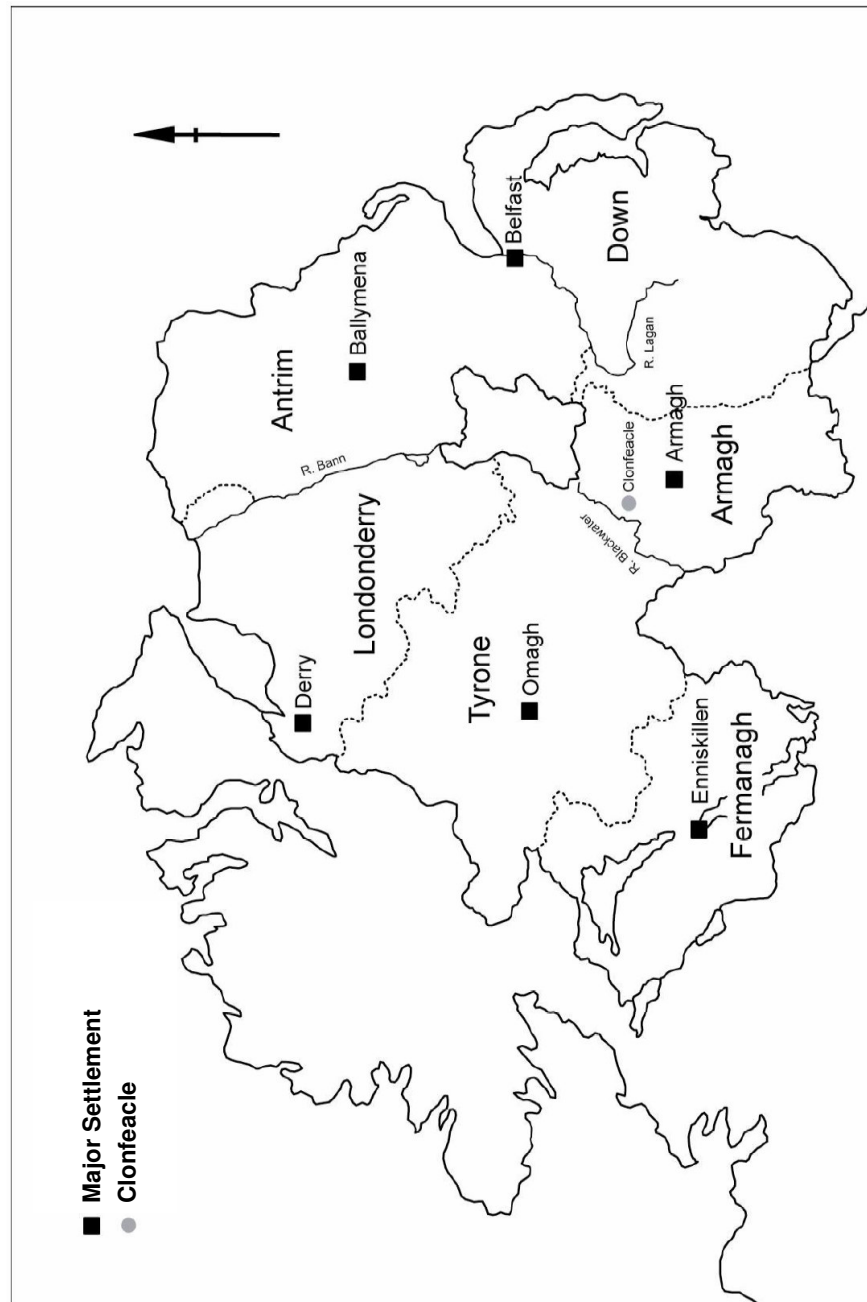


Figure 1 – General site location map.

## 2. Introduction

- 2.1 The church of St Jarlath in Clonfeacle was constructed in the 19<sup>th</sup> century (Rowan, 1979, 197). However, headstones dating to the 17<sup>th</sup> century are visible in an older churchyard to the south-west, with a more recent graveyard situated to the south-east (marked as I and II respectively in Figure 2). The church is situated on a plateau on the summit of a drumlin, with the surrounding landscape sloping gently away in all directions. The survey area is dog-leg in shape and located south-east of the current church (Figure 2). Much of the site appears to be delineated from the slightly lower surrounding landscape by a curvilinear revetment wall (Plate 1). This curvilinear wall also survives in places to the south-west of the church. It can be suggested that this wall follows the line of the Early Christian enclosure. There is a small but steep scarp at the north-east extremity of the area surveyed, which has been caused by modern dumping.
- 2.2 Much of the early history of the site is relatively obscure, although St Patrick was reported to have met St Olcan at Clonfeacle. The name of the site is meant to have originated from the presence of one of St Patrick's teeth that was held as a shrine in the church, (Hamlin, 1976, 786). Traces of a sub-circular enclosure can be traced from the boundaries that still surround the church (Figure 2), combined with the presence of the top fragment of a High Cross it is probable that the site has Early Christian origins. More secure references to the church come from the Medieval period with a patron of the church named as Jarlath and the death of a vice-abbot in 1053 (*ibid*). The majority of modern references to the site concentrate on the presence of the fragment of a High Cross (Plate 2: SMR No. TYR 62:03), now located at the entrance of the modern church. Oliver Davies stated that it was impossible to date a plain cross of this type, but argued that it was relatively late, "owing to the mathematical exactitude of its proportions and the degeneration of the ring to small angle-pieces" (Davies, 1938, 89). Hamlin stated that the cross was plain and carved from sandstone with no decoration evident, and viewed it as an "unpleasing" example (Hamlin, 1976, 787).
- 2.3 The survey was undertaken by Peter Moore and Nicholas Beer (Centre for Archaeological Fieldwork), on behalf of the Protecting Historic Monuments division of the Environment and Heritage Service: Built Heritage.
- 2.4 Assistance during the course of the survey and in preparation of this report was kindly provided by: Dr Colm Donnelly, Dr Philip Macdonald and Mr Keith Adams (CAF), and Mr Declan Hurl (EHS: Built Heritage).

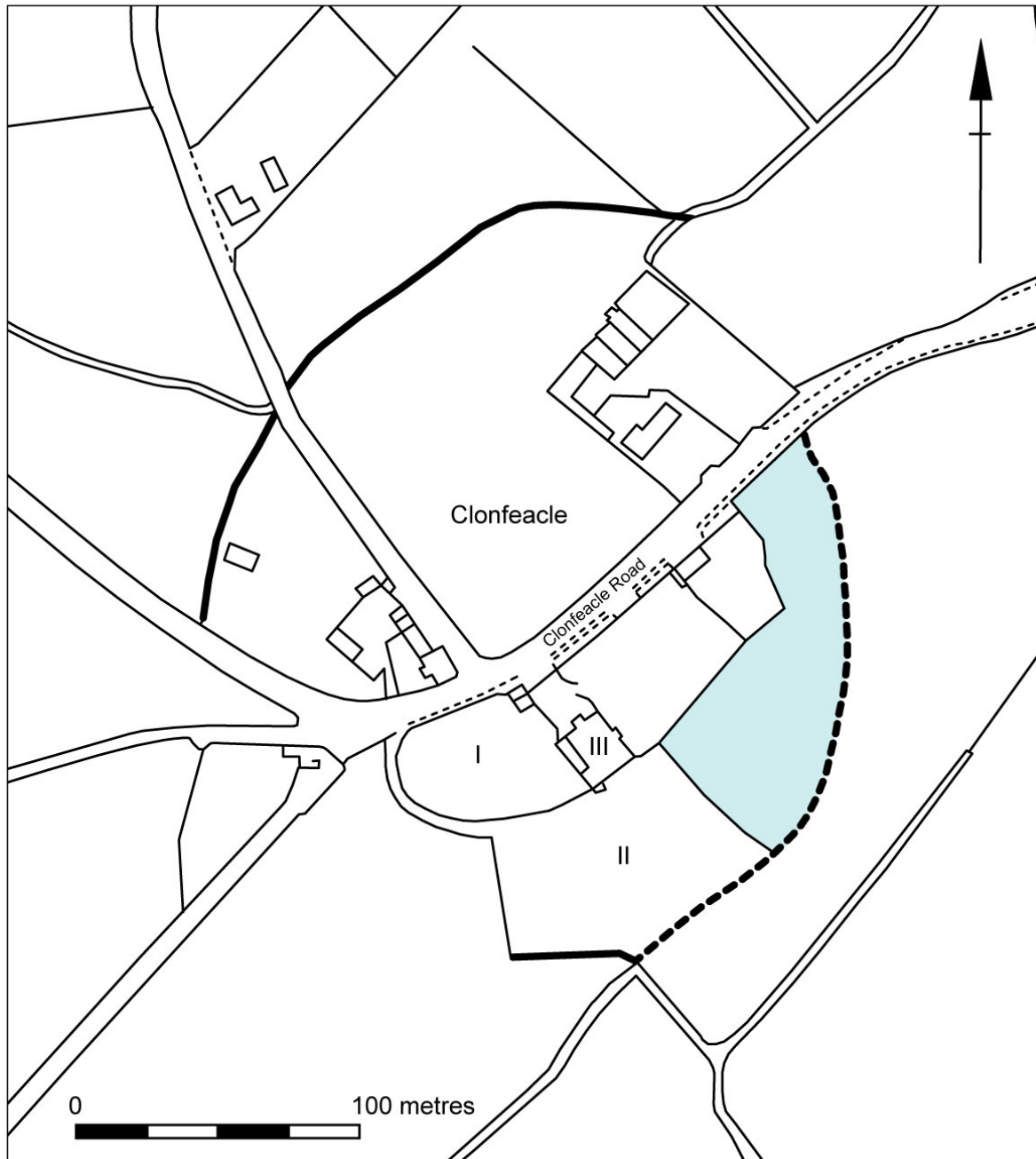




Figure 2: Location map showing survey area and field boundaries associated with the site.

- |                            |   |
|----------------------------|---|
| I - Old graveyard          |  - Proposed graveyard extension                              |
| II - Modern graveyard      |  - Probable line of Early Christian ecclesiastical enclosure |
| III - St. Jarlath's church |  - Revetment wall on line of probable enclosure              |





**Plate 1** – The revetment wall.

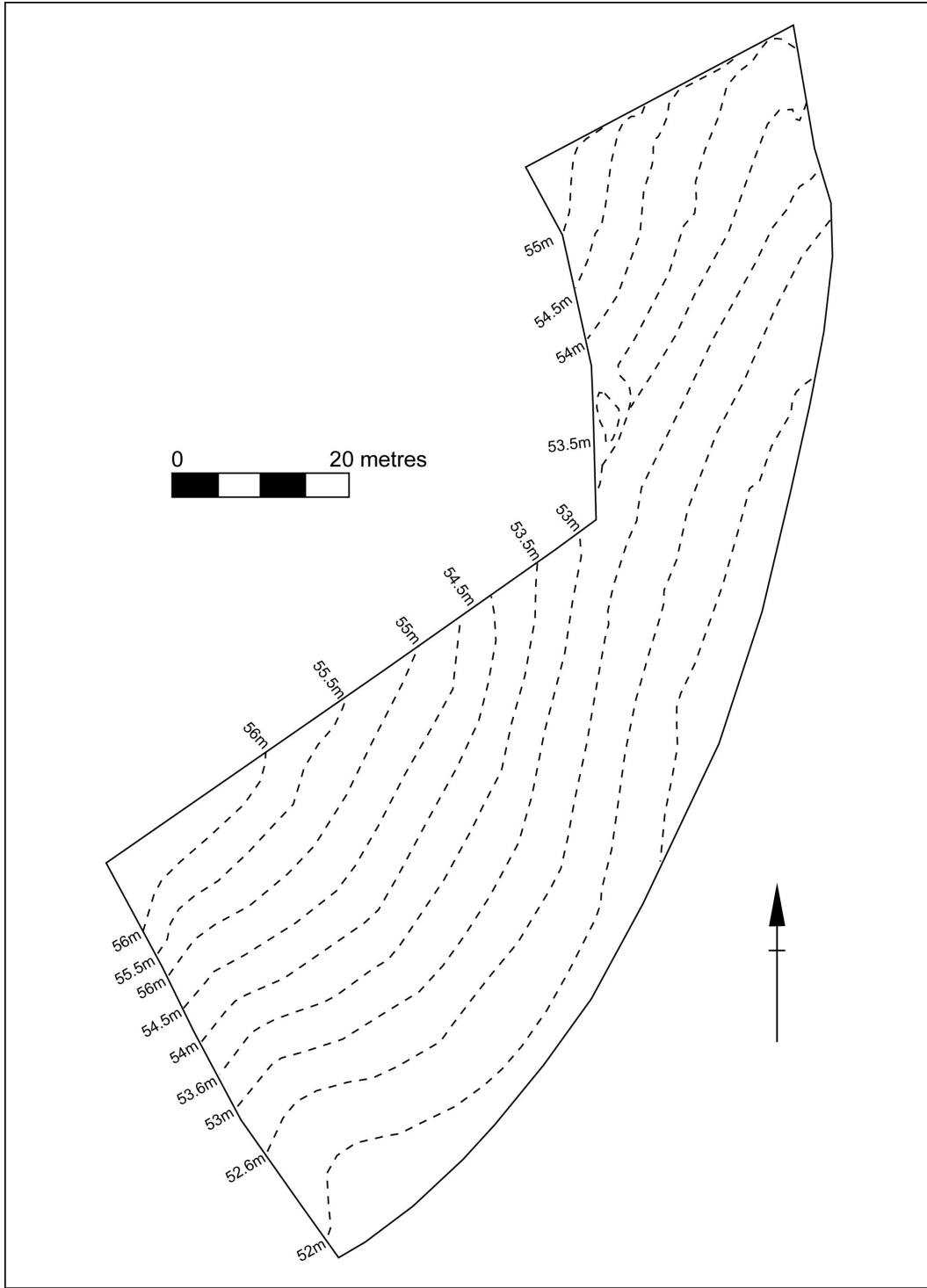


**Plate 2** – High Cross fragment.

### 3. Topographical Survey and Other Remains

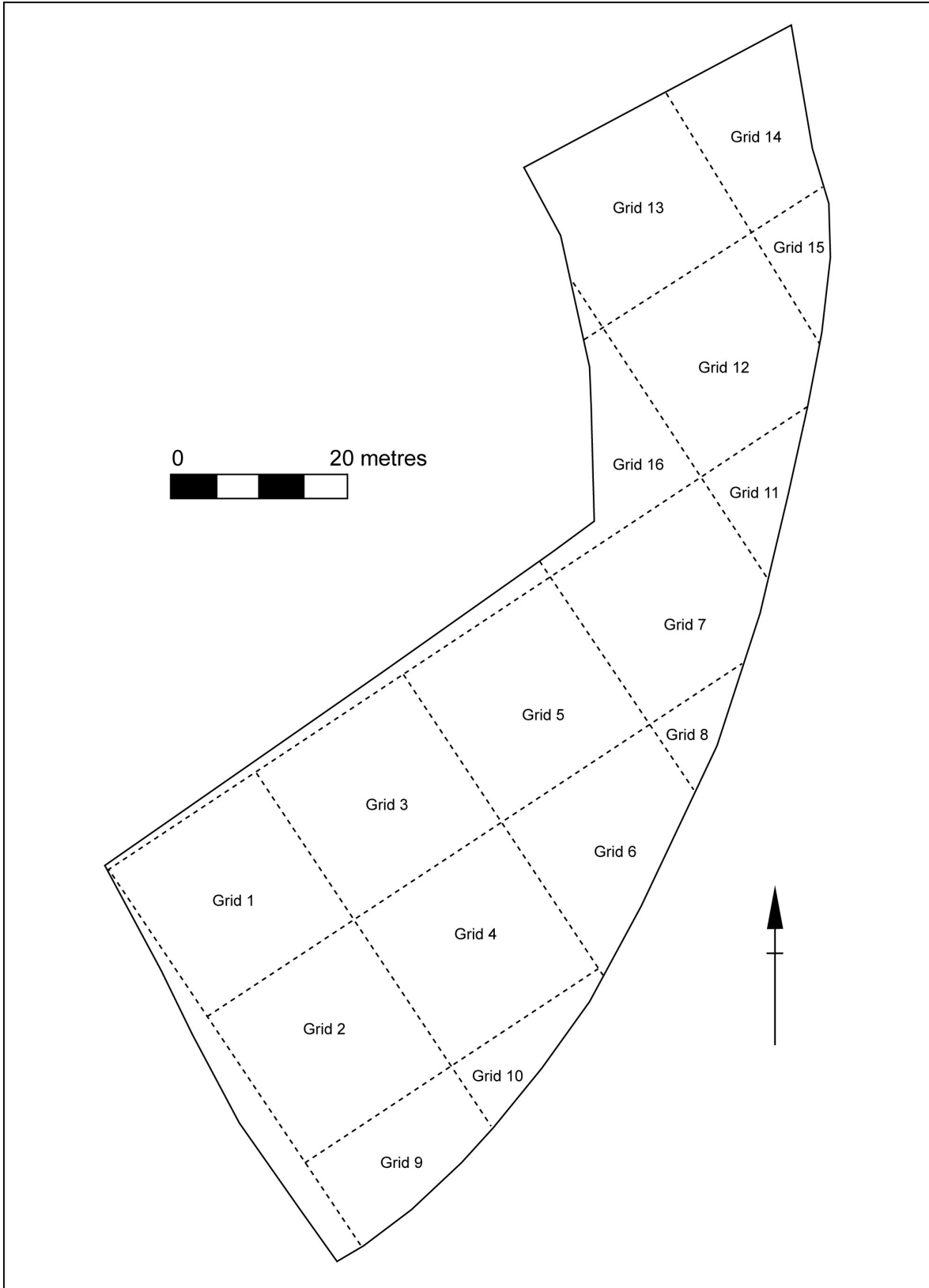
- 3.1 The topographical survey was undertaken using a *Leica T-705 Total Station*. The field boundary and extent of the site were surveyed first, with readings taken at approximately 4 metre intervals. The site has a relatively unremarkable topographical make-up, with the ground gently sloping towards the east and south-east (Figure 3).
- 3.2 As can be seen in Figure 2, it would seem that the outline of the possible enclosure for the Early Christian establishment at Clonfeacle can be traced on the modern landscape. Several of the remaining field boundaries roughly conform to a circular shape, with the revetment wall surviving along the curving southern field boundaries. However, much of the summit has been buried beneath a modern car-park, and it is reasonable to assume that the modern church situated at the summit of the enclosed drumlin has been built on top of the site of any earlier church structures. The insertion of graves within the modern graveyard has disturbed much of the western portion of the enclosed area, and the road from Blackwatertown has cut through its northern section. The eastern sector of the enclosed area – where the cemetery extension is planned – remains untouched by such development. Given this, archaeological deposits and features within this area may have survived.
- 3.3 Within the survey area the revetment wall also delineates a height difference between the surrounding landscape and the area contained within the proposed Early Christian enclosure. Also situated within the survey area is an upstanding fragment of wall, situated towards the western corner as the site curves towards the north. The wall appears to have mortar between the stonework. However, the date for the wall is unknown and it is possible that it could be relatively modern.
- 3.4 There are several artificial topographical features including a steep scarp towards the north-west (entrance) to the site. However, this appears to have been formed as a result of dumped material, associated with the modern church and graveyard. Towards the northern extremity of the site there is a ridge parallel with the fence line; the most likely explanation for this is an underground cable associated with the telegraph pole in this area.
- 3.5 The topographical survey, however, also enabled the accurate establishment and recording of the sixteen 20 metre grids that were used for the subsequent gradiometer survey (Figure 4). With an error margin of +/- 1 cm, the EDM enables a significant reduction in error to be made when compared to that which could be expected using

traditional topographical surveying methods, such as triangulation. In short, the combination of an EDM general topographical survey with a geophysical survey enables a much more detailed understanding of the physical nature of a survey area to be achieved.



**Figure 3** – Contour map of the survey area.

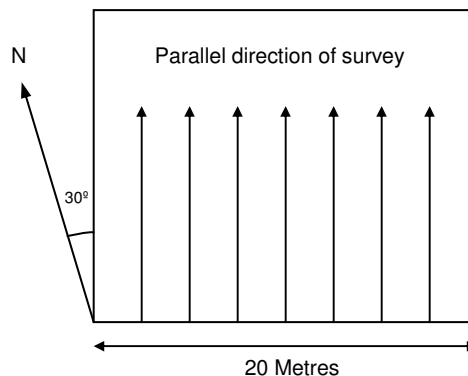




**Figure 4** – EDM map of the geophysical survey grids.

#### 4. Results of Gradiometer Survey

4.1 The geophysical survey was undertaken using a *Geoscan FM36 Fluxgate Gradiometer*. The entire survey area of 0.5 ha (5000 square metres) was divided into a series of sixteen 20 metre grids. As a consequence of the irregular dimensions of the area investigated, however, several of these grids were not uniform in shape. The grids were laid out at 30° east of magnetic north (Figure 3), with each grid measured using an EDM for greater accuracy, and each corner plotted on to the overall EDM positional plan of the site. The instrumentation was set up to take a reading at 1 metre traverse intervals with a resolution of 0.1 nanoTesla (nT). This is a sub-division of the unit used to measure the magnetic flux, where 1 nT = 10<sup>-9</sup> tesla. The parameters set for the processing of the data were -20nT to +15nt (inclusive). Data outside these parameters were interpreted as either natural background readings or artificial interference such as metal objects or underground cables. The recorded data was periodically downloaded in the field on one of the School of Archaeology and Palaeoecology's *Toshiba* laptops; the results are illustrated in this report using graphical representations constructed using a *Surfer 8* computer programme.



**Figure 3** – Direction of survey in relation to magnetic north.

4.2 While the majority of the area surveyed was suitable for the method of geophysical survey employed, there were a few artificial factors that influenced some sectors of the data in localized areas. A cattle crush and a diesel tank were situated on site, while a barbed wire fence was set in what appears to be a silted-up ditch to the inside of the revetment wall. Perhaps the most significant obstacle, however, was a telegraph pole, anchor cable and underground wiring situated against the boundary in the northern extremity of the survey area. These anomalies clearly show up as readings that are above the average background 'noise' and, unavoidably, taint the data captured within a 1.0–1.5 metre radius of each feature.

- 4.3 For ease of interpretation the results were split into two groups. Grids 1 – 11 (inclusive) comprised the south and south-west sectors of the area under investigation, and represented the largest area of open ground. Grids 12 – 16 (inclusive) comprised the north and north-west sectors. The edges of the plan have been trimmed to exclude the area that was beyond the fence ('dummy logged' data).

**Grids 1 – 11**

- 4.4 Figure 4 is a representation of the data gathered from Grids 1 – 11. Anomalies have not been highlighted on this image. Figure 5, however, is a representation of the data gathered from Grids 1 – 11 with anomalies of probable archaeological significance highlighted and labeled. There are several features of note. There is a large, curving positive anomaly, possibly a cut feature, approximately 40 metres in diameter (Feature A). However, only a portion of this feature appears to remain *in situ*, and the majority would now seem to lie under the neighbouring private residential dwelling and garden. Two di-polar anomalies are situated approximately 25 metres on the x-axis and 35 metres on the y-axis (Features B and C). Such anomalies can be interpreted as either hearths or kilns. A series of possible negative features (pits or post-holes) are associated with Feature B.
- 4.5 Other possible features of archaeological interest are a number of sub-circular and horse-shoe shaped positive anomalies (Feature Cluster D). The maximum size for one of these anomalies is approximately 5 metres in diameter. However, they average between 2.5 – 3.5 metres in diameter. The positive readings associated with them suggest that they could be cut features. There are a series of small linear features that are likely to be modern and agricultural in nature, these have not been highlighted.



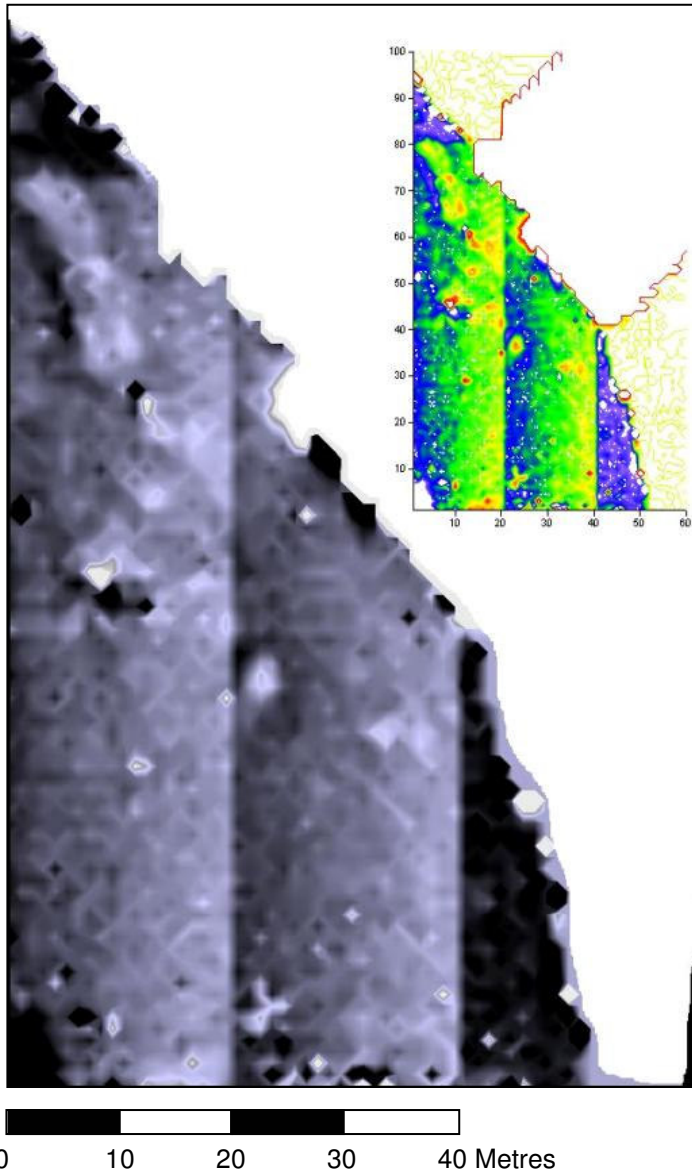


Figure 4 – Results from Grids 1 – 11.

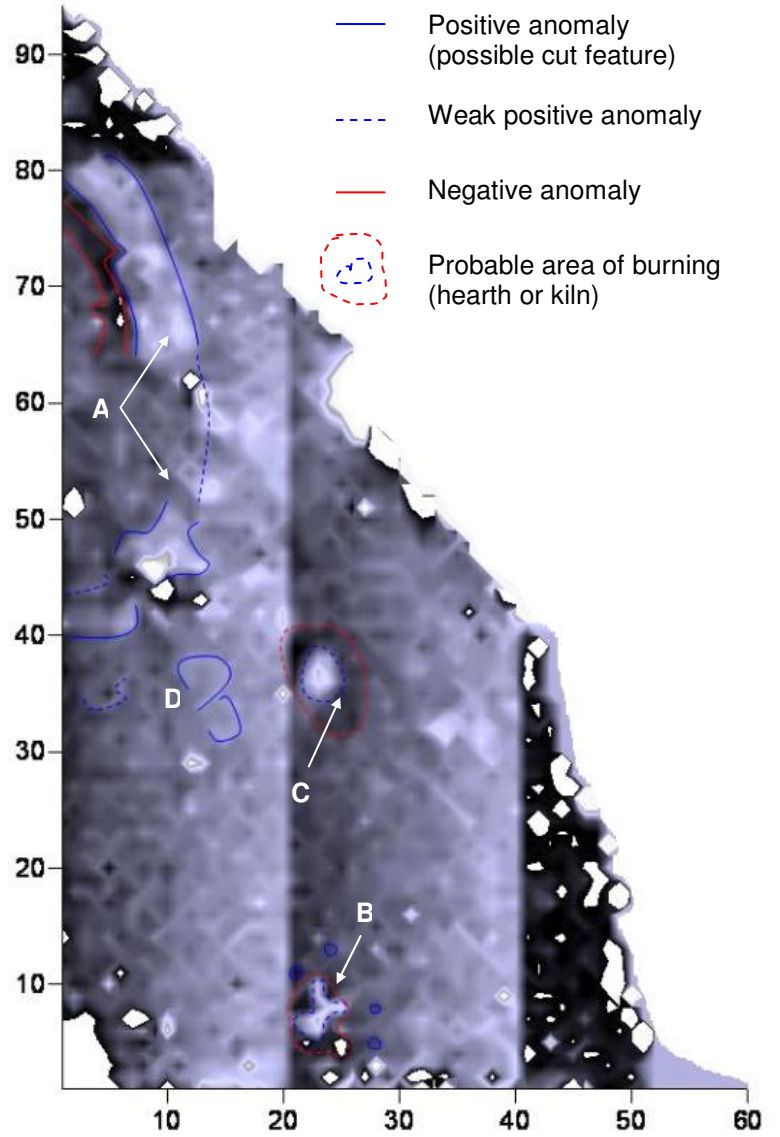
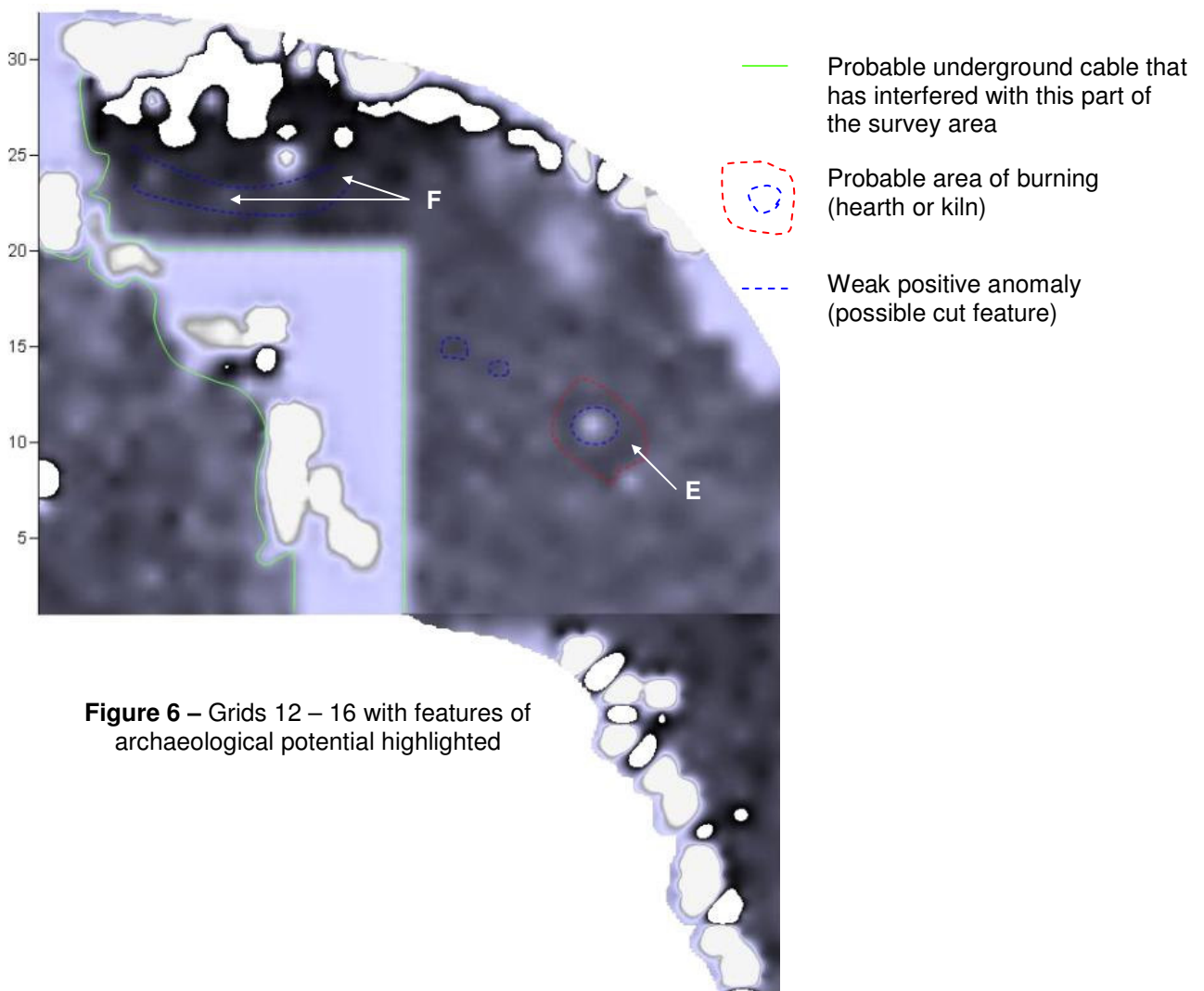


Figure 5 – Results from Grids 1 – 11 with features of archaeological potential highlighted.

### Grids 12 – 16

4.6 The results obtained from Grids 12 – 16 were affected by recent human activity, and there were a number of objects (see Section 4.2) that interfered with the collection of data. As such, the data gathered from these areas of the site are polluted by this interference. Figure 6 is a representation of the data obtained from Grids 12 – 16. While this area of the field does not contain as many features of a probable archaeological nature as those present in Grids 1 – 11, there were several anomalies of archaeological potential (Figure 6).

4.7 A single di-polar reading was obtained (Feature E) that is an area of probable burning. There were also several single anomalies that could represent pits or post-holes (highlighted in blue). And a possible curvilinear arrangement of post-holes located close to the site boundary (Feature F).



**Figure 6** – Grids 12 – 16 with features of archaeological potential highlighted

## 5. Conclusion

- 5.1 The site lent itself to the method of geophysical survey employed. Several features, of an archaeological potential have been established through the gradiometer survey at Clonfeacle. Primarily a large, probably cut feature, approximately 40 metres in diameter (Feature A), was identified running towards the western boundary fence. Unfortunately this feature appears to have been truncated by the residential dwelling and associated garden. However, one can speculate that approximately half the feature survives intact and *in situ*. Further sub-circular or horse-shoe shaped positive anomalies were identified (Feature Cluster D). The largest of these had a diameter of approximately 5 metres. However, they averaged a diameter of 2.5 – 3.5 metres. Two anomalies consistent with hearths and/or kilns were also identified (Features B and C).
- 5.2 Due to high levels of interference caused by recent human activity in the area covered by Grids 12 – 16, the results gathered from this part of the site were disappointing. However, even given this, it would appear that the majority of features of archaeological potential were situated in the area covered by Grids 1 – 11, with the northern extremity of the site relatively barren.



## 6. Bibliography

Davies, O., 1938: Clonfeacle Cross. *Ulster Journal Of Archaeology*. Third Series, Volume 1 p86. Belfast.

Gaffney, C., Gater, J. and Ovenden, S., 2002: *The Use of Geophysical Techniques in Archaeological Evaluations: IFA Paper No. 6*. Institute of Field Archaeologists. University of Reading.

Hamlin, A. E., 1976: *The Archaeology of Early Christianity in the North of Ireland*. Unpublished PhD Thesis. Queen's University. Belfast.

O'Donovan, J., 1856: *Annala Rioghacta Eireann – Annals of the Kingdom of Ireland: from the earliest period to the year 1616* (2<sup>nd</sup> Ed). Hodges & Smith. Dublin.

Rowan, A., 1979: *The Buildings of Ireland: North West Ulster*. Butler & Tanner Ltd. London.

Williams, and Norgate., 1933: *The Annals of Inisfallen*. Hodges, Figgis and Company. London.