



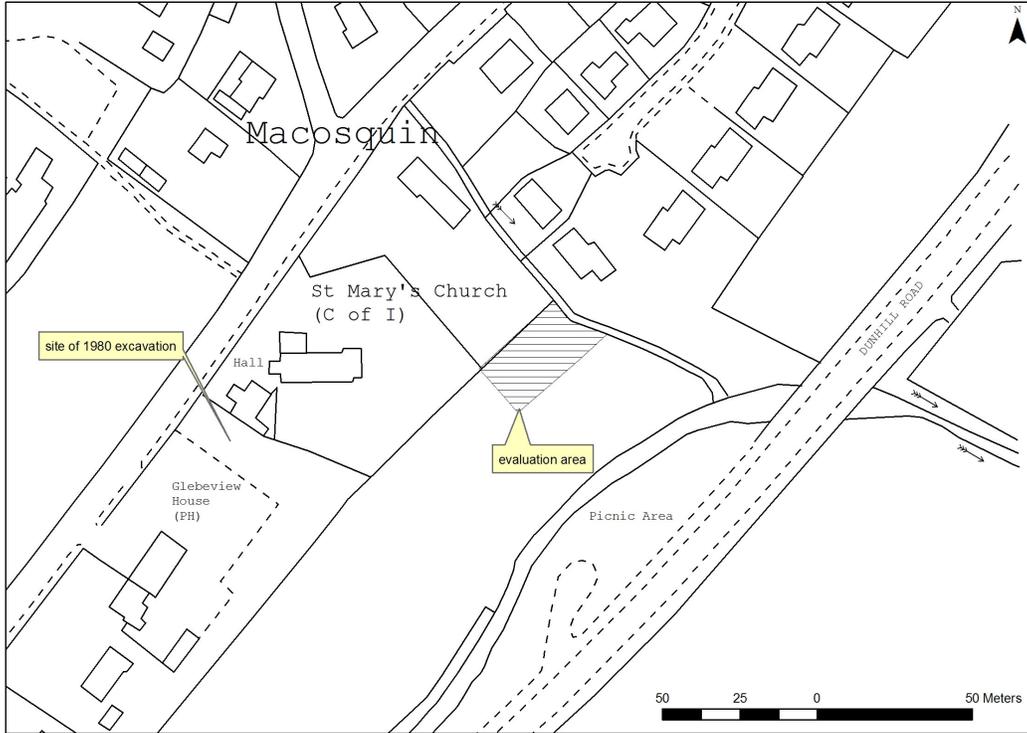
## **Geophysical Survey Report No. 5**

**St Mary's Church  
Macosquin  
Co. Londonderry**

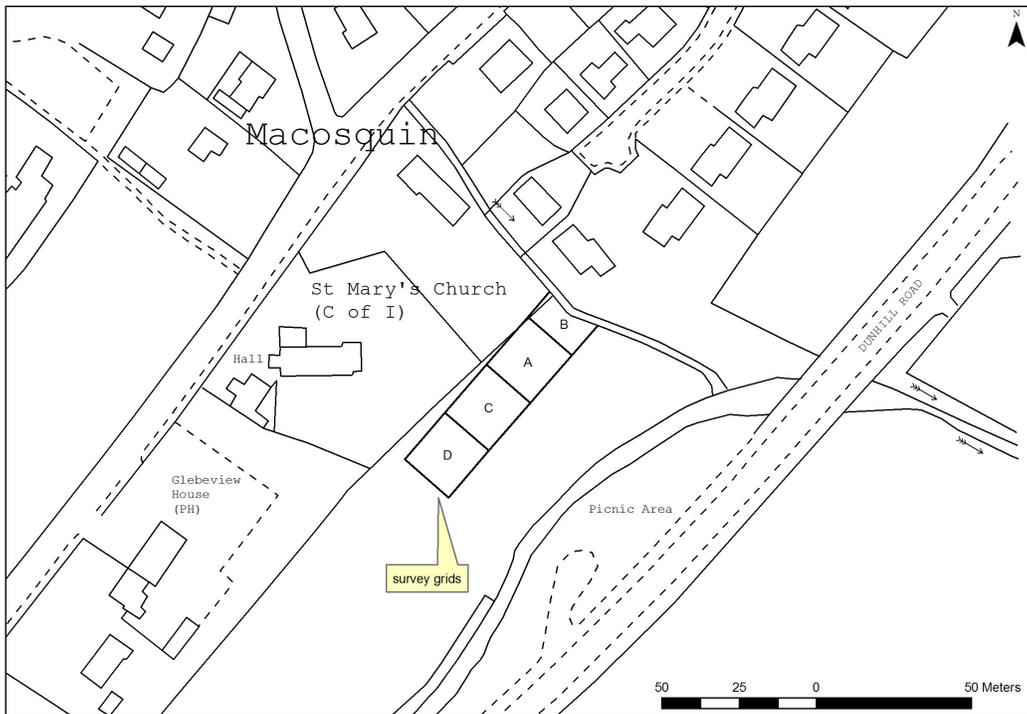
Dr Steven Trick

## 1. Introduction

- 1.1 This document discusses the results of an evaluative survey carried out on scheduled land adjacent to Macosquin parish church, County Londonderry, following an application from the Church of Ireland to extend the graveyard into newly acquired land. The Environment and Heritage Service: Built Heritage requested a geophysical survey be carried out on a 20m x 31m portion of the newly acquired land, adjacent to the present graveyard (see Figure 1).
- 1.2 Macosquin is an archaeologically and historically important settlement, since it was the site of a Cistercian Monastery in the 12<sup>th</sup> century, and a plantation town in the 17<sup>th</sup> century. Little is known about the monastery since there is little documentation and surviving remains are sparse (Stalley 1987, 247). In 1615 the Merchant Taylors company established a town here as part of the plantation of Londonderry (SMR LDY007:057; Curl 1986). A Raven map from the 17<sup>th</sup> century depicts a church, castle and several houses. The locations of the church and castle (now the site of the rectory) are known but positions of the house plots are presently poorly understood (Brannon 1983, 94). An excavation in the car park of the Glebeview public house in 1980 (see Figure 1) did not find any remains contemporary with the plantation town, although two medieval ditches were uncovered (Brannon 1983, 93).
- 1.3 In light of the town's rich history and archaeological potential, in December 2005, EHS: Built Heritage requested an evaluation of the area to be incorporated into the new graveyard, on the understanding that it may preserve archaeological strata relating to the Cistercian abbey complex or plantation town.
- 1.4 Geologically Macosquin lies on the Upper Basalt Formation of northern County Londonderry, which is an olivine-rich basalt. This is a relatively recent Palaeogene formation overlying chalk. The drift geology is basalt till, which is often overlain by surface water gley soils of poor drainage.
- 1.5 The geophysical survey proposed to use both earth resistance and magnetometry techniques over the evaluation area. However in practice the local basalt geology was found to be magnetically too strong for the gradiometer instrument and so the survey concentrated on resistance techniques.



**Figure 1.** Location of evaluation area in Macosquin town. Location of 1980 excavations also indicated. Based on modern OS plan.



**Figure 2.** The location of the survey grids.

- 1.6 The survey took place in the large, rectangular-shaped field bordering the river southeast of the church. A baseline was run alongside the graveyard fence, and from this a series of 20m x 20m grids were set out (see Figure 2). Only two grids (A and B) were necessary to cover the evaluation area. Grid B was by necessity a 'partial grid' since it carried into the hedge and stream at the east edge of the field. Time permitted the survey of two additional grids, C and D. The evidence from these should aid in the interpretation of the relatively small evaluation zone.
- 1.7 A total station was used to record the position of the geophysical grids in relation to local landscape features such as the church and field corners, so that the grids could be recreated at a future point if need be, and the results could be overlaid on the local map. These revealed small inaccuracies in the OS map since the grids appear to overlie the field boundaries in places.

## **2 Methodology**

- 2.1 As stated above, the local geology precluded the use of magnetometry techniques and so the evaluation focused on the use of resistivity. The premise of the evaluation is that any archaeology present may include remnants of the Cistercian monastery complex, such as buried walls or enclosing ditches. Resistivity has a proven record in detecting these features (Clark 1990; Gaffney and Gater 2003) and so was suitable for the current project. The equipment consisted of a Geoscan RM15 resistivity meter. The survey grids were 20m x 20m in dimension, with a traverse interval of 1m and a sampling interval of 0.5m, resulting in 800 readings per grid. The grids were surveyed in a zig-zag pattern.
- 2.2 The data were downloaded and processed using Geoplot 3.0p program by Geoscan Research. The data were clipped to -1.5 and +1.5 standard deviations either side of the mean to provide better contrast. They were then interpolated to provide a smoother plot. Figure 3 shows both the raw and processed survey data. Figure 4 shows the survey overlaid on the location map.

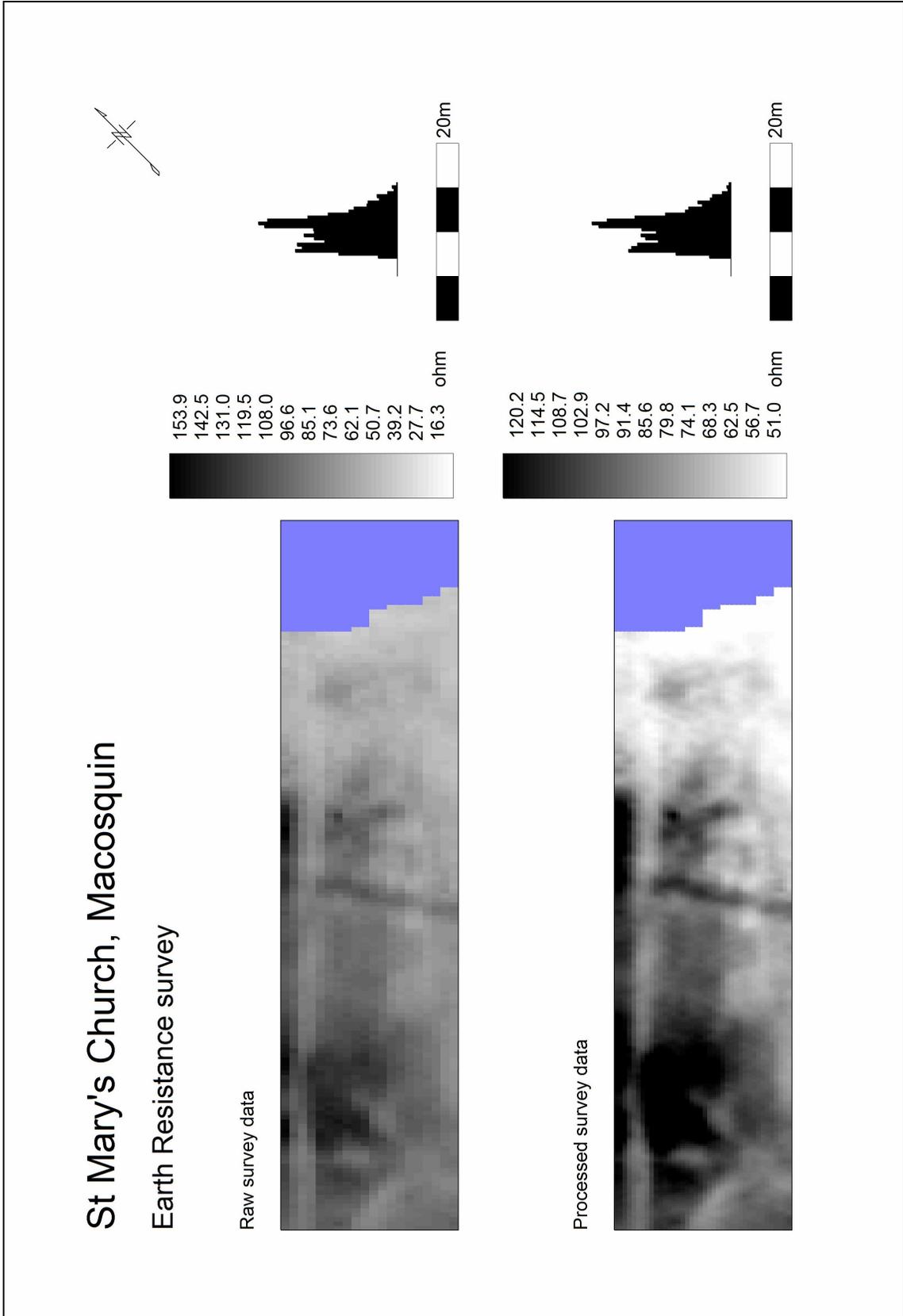


Figure 3. Raw and processed survey data, showing colour scale and data histogram.

### 3 Results

- 3.1 A number of anomalies are visible in the geophysical plot. These appear against a cloudy pattern of high and low-resistance areas which are the response of the background geology. The Reverend Cunningham of the parish church informed us that locally the bedrock rises up in places to just below the surface, as witnessed during grave-digging. Figure 5 shows a graphical summary of the geophysical anomalies discussed in the following text.
- 3.2 The pattern at 1 is a low-resistance linear anomaly, 2-3m in width, which runs the length of the survey area. It runs roughly parallel to the present field boundary. It may represent a negative cut feature such as a ditch which has silted up over time. It cuts through patches of very high resistance in the plot, possibly bedrock, which may suggest it is a rock-cut feature. This may have been dug to emphasis the church boundary or alternatively it may represent part of a local drainage system, since this area is subject to regular flooding. Since it mirrors the current field boundary it may be associated with the act of dividing the field up in this manner. On the first edition OS map of 1830s there is no boundary in this position, suggesting it dates to between 1830 and the present. Alternatively, since it follows the same alignment as the main street through the town, it is an earlier, 17<sup>th</sup> century earthwork, contemporary with the plantation period, that later boundaries have mirrored.
- 3.3 Running almost perpendicular is the anomaly at 2, which is a high-resistance anomaly 1-2m in diameter. This may represent a buried wall or low bank. This anomaly is on the same alignment as the stone wall which marks the northeast edge of the graveyard, suggesting that at some time the wall continued south towards the river. There is no boundary here on the OS map of 1904 (revised 1972), or the first edition map. It may relate to an earlier division of the land, possibly contemporary with the monastery. Examination of the geophysical plot in Figure 3 suggests that this anomaly is cut by anomaly 1 (see above), which would make the former of more antiquity. However, this cannot be confirmed without excavation.
- 3.4 The pattern at 3 is an intersection of low-resistance linear anomalies. These may be a series of linear ditches, or alternatively robbed-out wall foundations that have silted up. Their high-contrast in the plot with surrounding high-resistance zones again suggests they may be rock-cut. These are on the same E-W, N-S alignment as the parish church, with an additional 'spoke' bearing at 45 degrees. The shared alignment with the church may suggest that they are part of the monastery complex that once extended into the field at this point.

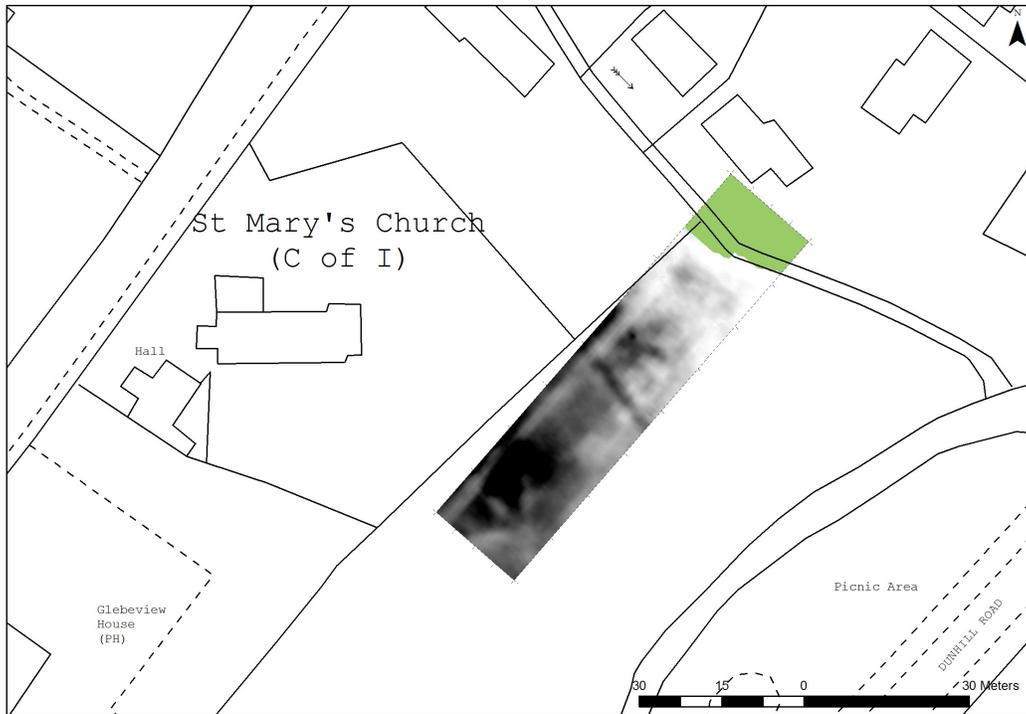


Figure 4. The resistance plot overlaid on the location plan.

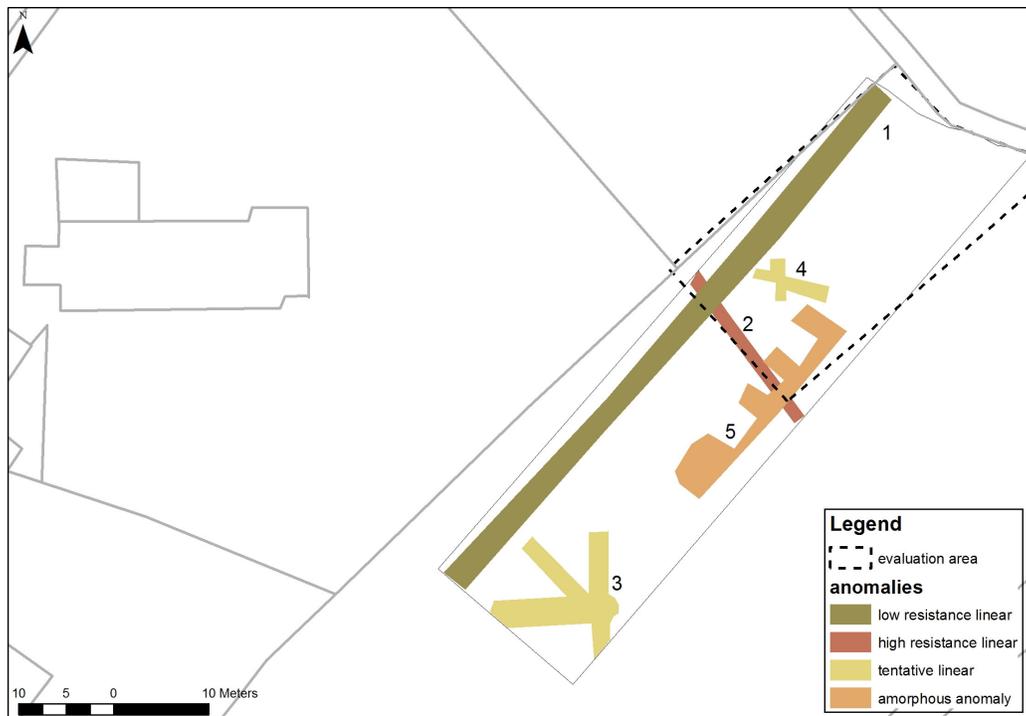


Figure 5. Interpretation: summary of anomalies.

- 3.5 The pattern at 4 appears to be a high-resistance linear anomaly, with a smaller 'cross-bar'. This is tentatively interpreted as an intersection of features such as stone wall foundations or banks. However since it is small and of amorphous shape it may be bedrock near the surface.
- 3.6 Just south of this is anomaly 5 which is an incoherent series of low-resistance blocks connected by linear strips. These are weak features of uncertain interpretation, but are included since they appear to share a similar alignment with anomaly 1, and are possibly related in some way.

#### **4 Conclusions and future work**

- 4.1 The geophysical survey identified a number of anomalies which may relate to the ecclesiastical or plantation history of Macosquin. This is potentially valuable since little is known about the extent and nature of the Cistercian Monastery, and to date, little archaeological information has been positively linked to the plantation town. The excavations in the Glebeview public house car park in 1980 suggested that structures related to the Cistercian abbey did not extend west of the parish church graveyard, and that plantation-period structures are harder than expected to locate.
- 4.2 The most notable anomalies present in the area designated for graveyard expansion are a substantial low-resistance linear anomaly, and a high-resistance linear anomaly (anomalies 1 and 2 respectively in Figure 5). Anomaly 1 may represent a substantial earthwork, 2-3m across, which is presently undated. Anomaly 2 potentially represents the continuation of the graveyard wall. Confirmation of the latter may inform our understanding of the how the church boundaries have changed through time and may indicate that the monastic complex was more to the south than the west of the present church.
- 4.3 It is proposed that before this area is developed the intersection of anomalies 1 and 2 should be investigated with excavation, to further inform on their physical nature, their date, and their temporal phasing. It is also recommended that a trench be opened to investigate further the nature of anomalies 4 and 5. A single trench can encompass part of both anomalies and further elucidate on their physical form to determine whether they represent anthropogenic features. Although it lies outside the area to be developed for the graveyard, consideration should be given to an investigative trench at anomaly 3. The morphology of this anomaly suggests that ecclesiastical buildings extended south of the parish church in the past, possibly related to the Cistercian Abbey. Regardless of the outcome, a rigorous investigation of this interpretation will

serve as useful guidance to archaeologists conducting fieldwork in Macosquin in the future.

## **5 Acknowledgements**

- 5.1 The following people are thanked for their help in the organisation and implementation of the survey, and the writing of this report. Mr Alfie Hunter, Reverend James Cunningham, Mr Hamilton, Lauren Mansell, Alison Kyle, Naomi Carver, Philip Macdonald, Colm Donnelly, Maybelline Gormley, Thom Kerr.

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