Archaeology Research Grant 2022

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1. Title:	Dr
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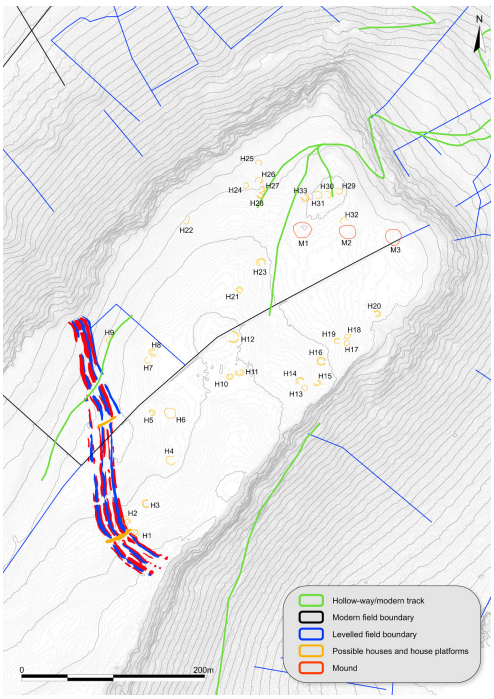
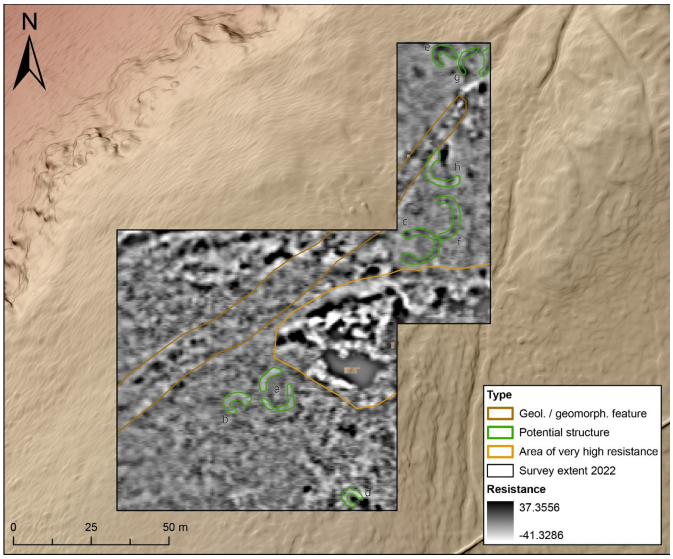
2.	
3. Grant programme	Archaeology Research Grant
4. Year awarded	2022
5. Title of project	Topographic and Geophysical Survey of Lurigethan Promontory Fort, County Antrim, Northern Ireland
6. Summary of report (Minimum allowed 100 words)	Between August and November 2022, a drone-based photogrammetry survey and a terrestrial soil resistivity survey were undertaken at Lurigethan inland promontory fort. While the photogrammetry survey covered the entire interior of the promontory fort and its immediate environs, adverse conditions meant that only a section of the northeastern part of the interior could be subjected to soil resistivity survey. The results from the photogrammetry survey allowed to establish the existence of two distinct building phases among the enclosing earthworks, as well as the existence of as many as 33 possible round houses and a number of other features in the interior. The soil resistivity survey provided for the identification of several further possible round houses that do not survive as surface features, demonstrating the potential of this technique for further exploration of the site.

7. Please provide two appropriate images:



Right:
Drone interpretation



Above: Geophysics interpretation

8. Please outline the objectives of the project

The aim of the project was to gain new insights into the nature and extent of prehistoric settlement activity on the inland promontory of Lurigethan, ultimately to facilitate a better understanding of its role within the Bronze Age settlement landscape of the Antrim Plateau and Glens. More specifically, the fieldwork conducted as part of this project aimed at gaining a better understanding of the nature and functional layout of the defensive earthworks separating the promontory from the Antrim plateau and at establishing the number of roundhouse footprints within the enclosed area. It was expected that the geophysical work would also provide new evidence regarding the number and distribution of hearths, pit features, and indicators for industrial activity.

9. Please describe the methodology used in conducting the research

The fieldwork conducted in the main comprised a photogrammetric low-altitude UAV (drone) survey of the entire promontory and its immediate surroundings as well as a soil resistivity survey of part of the interior. The photogrammetry survey covered just over 106 hectares in 727 overlapping georeferenced vertical aerial photographs, which were used to create a DSM with a resolution of 72.3 data points per square metre. In contrast, the geophysical survey covered an area of only 1.27 hectares, i.e. approximately 12 per cent of the enclosed area of the inland promontory fort (see attached figures for details of coverage).

This much lower coverage was mainly due to two distinct factors: The unusually dry summer of 2022 left the shallow soil cover overlying the bedrock across most of the hillfort interior lacking sufficient moisture content to provide meaningful soil resistivity readings well into September, leading to repeated delays in the start of the geophysical survey work. This was compounded by the added difficulty that the very rough surface in the hillfort interior rendered deployment of a cart-based resistivity meter impractical, so that the resistivity survey had to be conducted using a hand-held PA20 dual twin (5 probe) array (4 × 0.5 m), which was considerably more time consuming than the originally planned cart-based data collection. Data acquisition resolution with the hand-held array was 0.5 traverse, 1 m sampling.

The magnetometric survey of the interior of the promontory fort that was initially envisaged to be conducted in parallel with the soil resistivity survey ultimately proved infeasible, as the soil cover turned out to be too shallow to shield sufficiently against very high magnetic background readings from the underlying basalt bedrock, which in turn rendered the recognition of magnetic anomalies caused by archaeological structures impossible.

10. Please outline the findings of your research and/or milestones achieved

The results from the photogrammetry survey provide us with a much better understanding of the nature and sequence of hillfort defences. There are six upstanding banks identified in various states of decay. These bank, together with up to four ditches, form at least two phases of hillfort construction. These features can be grouped into three systems of bank-ditch-couterscarp.

The innermost enclosing element comprises a shallow ditch, visible only in the northern half of the enclosing works. Abutting this internal ditch is the first set of enclosing works. These survive best at the southeast, where the inner bank measures 6m wide and up to 0.55m high. This system survives well along its entire perimeter.

The second system of enclosure again comprises a bank-ditch-couterscarp arrangement. It survives best at the southeast, where the outer counterscarp is truncated by the outer enclosure system, indicating that the latter constitutes a second phase of hillfort construction/remodelling.

Near the centre of the perimeter, the outer works extend beyond the edge of the middle system, before abutting these system again further to the north and then dissipating before reaching the natural cliff edge. This lends additional support to the interpretation that this outer bank-ditch-couterscarp system was built at a different, probably later, period that the inner two systems.

This interpretation is further strengthened by the presence of a centrally positioned break in the inner and middle system which seems to represent an original entrance. A corresponding break in the outer system is not wholly apparent here, though the visibility of the outer system at this point is limited, which makes it difficult to confirm its presence or absence with absolute certainty. An entrance at the southern end of the enclosing elements, comprising a slightly sunken hollow running through the enclosing elements is likely another original entrance.

The curious shape and orientation of the enclosing elements, which run north/south across the northeast-projecting promontory, before turning sharply at the south, where an entrance is located, so that the enclosing elements meet the natural cliff edge at a right angle, might be explained as the builders following the line of a natural burn that runs down the side of the western slopes of the hill. As such, the builders were enhancing and continuing a topographical feature that was naturally present.

Within the area enclosed by elements B1–B6, the photogrammetry survey identified 33 potential roundhouse footprints (H1–33) The photogrammetry survey also highlighted the potential existence of an alignment of three mounds towards the eastern tip of the promontory (M1–3), whose function, however, remains unclear.

The soil resistance survey in the area it covered identified a total of eight anomalies that indicate the presence of potential roundhouse footprints with a discernible interior, five of which had not been picked up in the photogrammetry survey. The anomalies were either of higher or lower resistance than the surrounding sediments. In seven of the structures, breaks in the outer perimeter indicate potential entrances. A consistent directionality was not discernible.

11. a) Please provide details of the dissemination of the outcomes from this project (inc. publications, presentations, outreach, media etc.) including details of any social media/web platforms used to publicise this project

The social media outlet used for publicising the survey work was the Facebook channel of QUB Archaeology & Palaeoecology: https://www.facebook.com/archaeologyatqueensbelfast/

e) How will you continue to communicate the results of your project and what are your publication plans?

An article detailing and discussing the results from this survey is currently being written for the next issue of Emania.

How did the award enhance your professional development (e.g. in terms of specific opportunities, opportunities for enhancing skills, collaborations with others etc.)?

The award opened up a new and very productive collaboration with a colleague from the University of Aberdeen (James O'Driscoll) with whom the grantee had no previous collaboration.

What plans (if any) do you have to further your proposal/project?

It is envisaged to return to the site in the new year in order to extend the area covered by the geophysical survey.