Twmbarlwm
Geophysical Investigations 2019
Summary of Phase 1 Results

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Produced on behalf of
Clwyd Powys Archaeological Trust

www.archaeologicalsurveywest.co.uk

Table of Contents

List of Figures

Introduction

This document is a preliminary interpretation for the results of a magnetic Survey covering 1.7 hectares within the enclosure of Twmbarlwm. A full report detailing the analysis of individual features will be produced on completion of phase 2 of the magnetic and resistance surveys.

The work was carried out as part of investigations by the Twmbarlwm Society into the scheduled site of Twmbarlwm near Risca in South Wales. The survey was requested by Clwyd Powys Archaeological Trust and Archaeological Survey West were commissioned to carry out the fieldwork. The purpose was to determine the presence and extent of archaeological features that would help to inform further archaeological investigation.

The survey was carried out in accordance with national standards, as laid out by English Heritage guidelines 'Geophysical survey in archaeological field evaluation'(2008) and and the Chartered Institute for Archaeology (CifA) Standard and guidance for archaeological geophysical survey (2014).

Methodology

The purpose of geophysical survey is to identify the archaeological potential of an area of land in a non-intrusive, quick and relatively inexpensive way. To achieve all three and still produce the highest standard of data possible that also identifies the widest range of past human activity, the primary survey method of magnetometry was chosen.

All fieldwork and the resulting reports follow the recommendations set out in both the Historic England (2008) and Chartered Institute for Archaeologists (2014) guidelines for geophysical survey in archaeology.

The equipment used for the survey was a dual sensor Bartington Instruments Grad 601-2 fluxgate gradiometer. This instrument consists of two sets of sensors, each mounted with a vertical separation of 1m, one set at each end of a 1m long horizontal bar. This provides two sets of parallel readings and, under normal operating conditions, is capable of surveying to a depth of between 0.5m to 1m.

To set out the survey grids, a Trimble R4 GPS run with a VRS correction was used, with an accuracy of 0.014m. The survey area was plotted with a temporary grid of 10m x10m using coordinates set out in QGIS. Each

10m x10m grid was then walked using a zig-zag traverse with a sample interval of 0.25m (4 points per meter) and traverse interval of 0.5m.

Processing

Data collected in the field was download and processed using TerraSurveyor software version 3.0.32.4. This allows the survey data to be collated and manipulated to enhance the visibility of anomalies. The standardised processing steps taken are as follows:

Standard TerraSurveyor processing steps

De-stripe: median, all Sensors
De-stagger: all grids, both by: -1 intervals (if required)
De-Spike: Threshold 1, Window size 3x3
Interpolate: Y Doubled
Clip: from -1.80 to 2.20 nT

A range of clip values were used during the interrogation of the data and it was found that those detailed above provided the greatest clarity while retaining the most readings.

Summary of Results

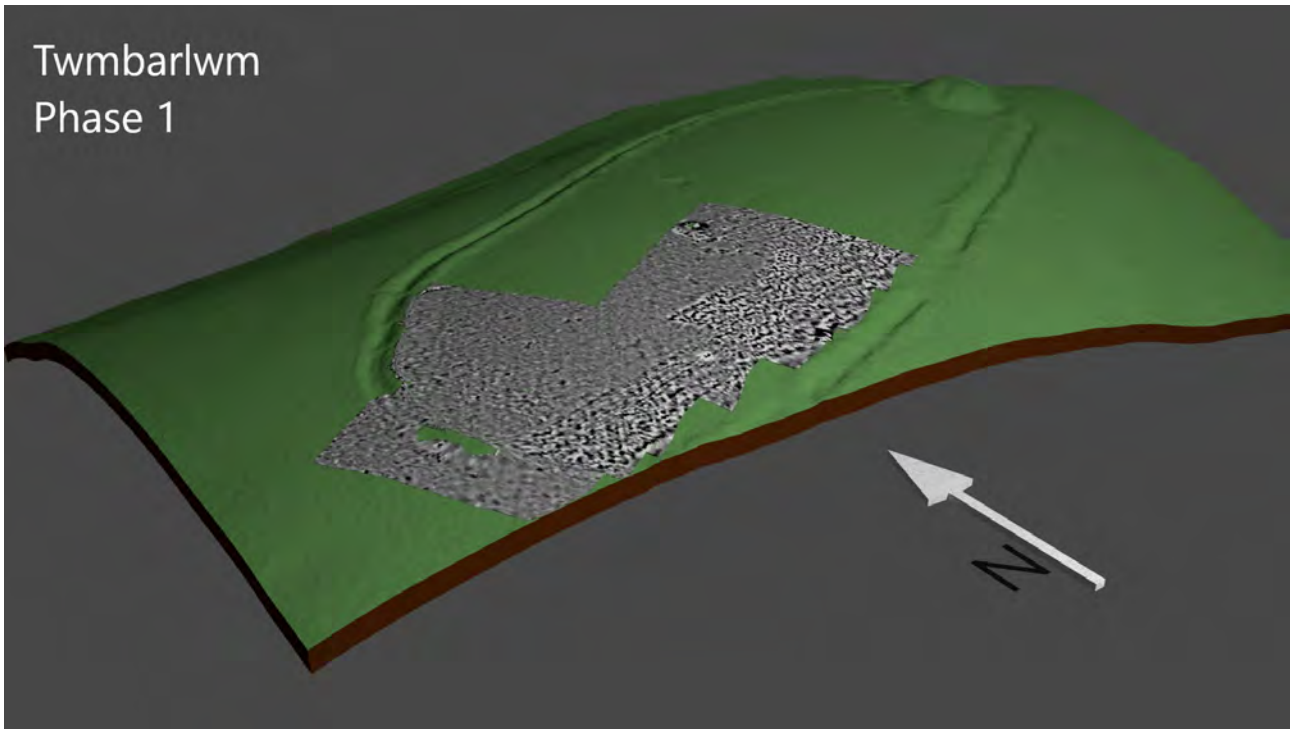

Figure 1: 3D map of grey-scale data plot

The results of phase one (figures 3 and 4) have shown the background data appears to be relatively quiet, with some possible circular structural anomalies visible near the North eastern boundary, but at present it is not clear whether these are archaeological or geological in origin. The most prominent features

within the survey data are sharply defined cultivation marks along the southern half of the internal enclosure, which are likely to be 20th century in date. The majority of these appear to be set within an area of increased magnetic noise with weaker cultivation marks continuing in the same orientation towards the western extent of the enclosure. It is possible that the more prominent and sharply defined readings are the result of surface burning, however, they are largely located outside the recent areas affected by fire and could therefore indicate an earlier event. Alternatively, the increased magnetic readings defining these cultivation marks could be the results of truncated features predating the cultivation. These marks also appear in the eastern extent of the survey which is within the area recently affected by burning. There is also an increased magnetic background noise in this area, however, full coverage is needed before further discussion is possible.

Weak traces of the Twmbarlwm enclosures earthworks are visible in the data in areas where the magnetic survey has overlapped the ramparts to the south, as well as, in the south eastern corner where the survey extends into the area immediately outside the enclosure. These present as a linear absence of readings and faint linear feature forming the ditch.

Adjacent to the trigonometry point at the centre of the enclosure, is a collection of large metallic noise which appear to be partly structured, with spikes at four corner points forming a rectangle which could indicate the footings for a structure such as a mast.

Bibliography

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Gafney C. Gater J. 2003. Revealing the Buried Past: Geophysics for Archaeologists. Stroud: Tempus

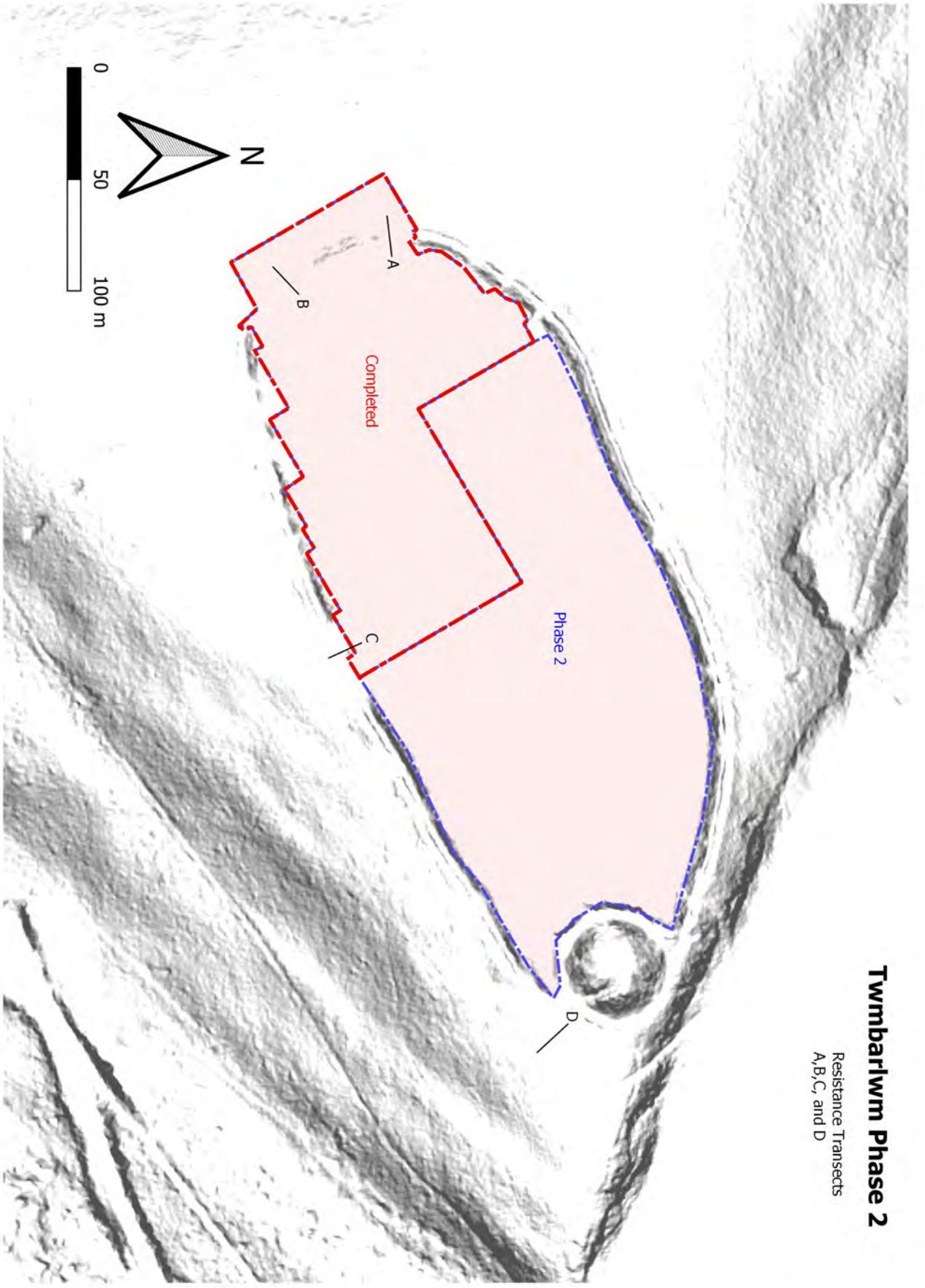

Figure 2: Map of survey area showing phase 1 and 2

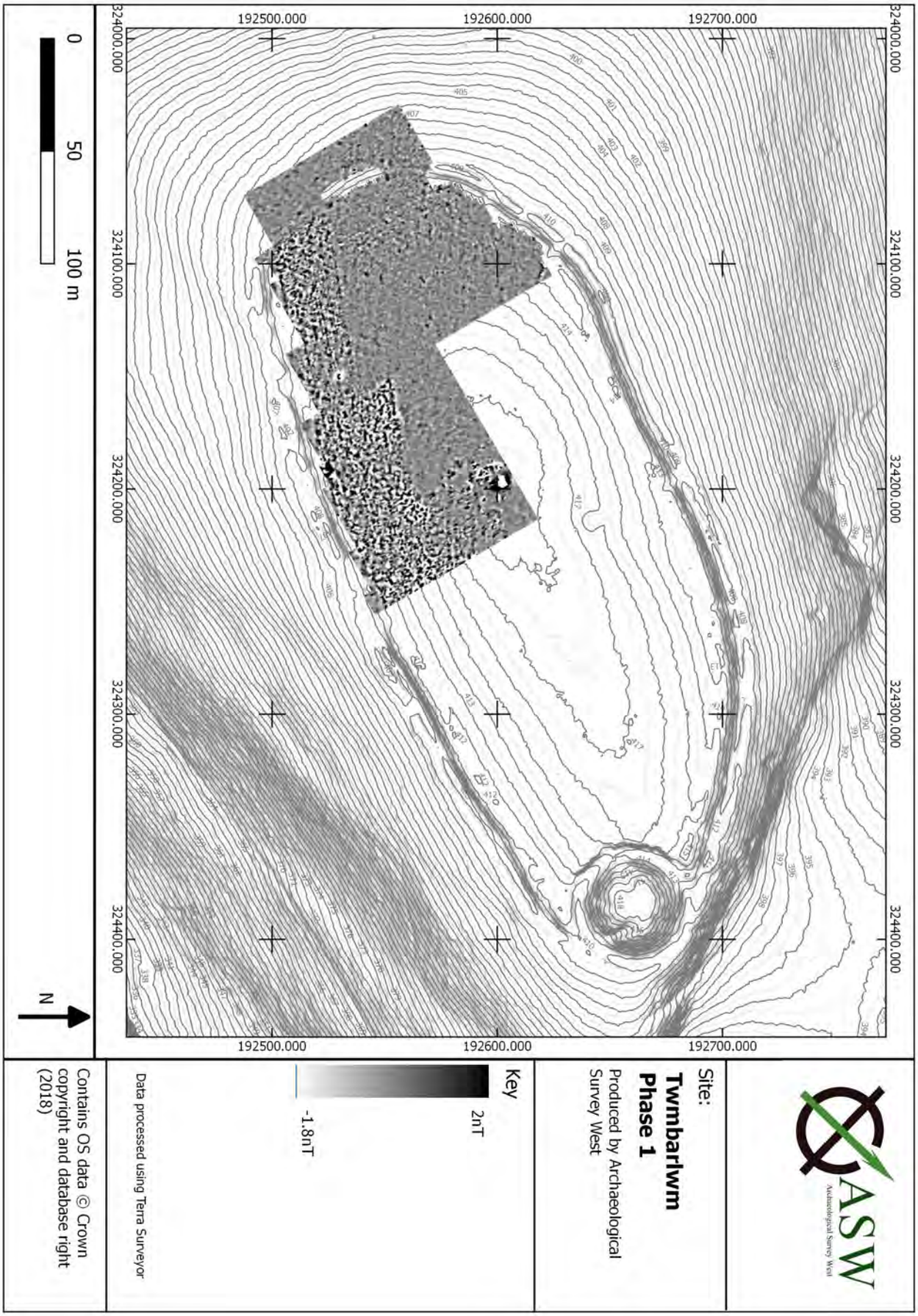

Figure 3: Grey-Scale plot of magnetic survey data (phase 1)

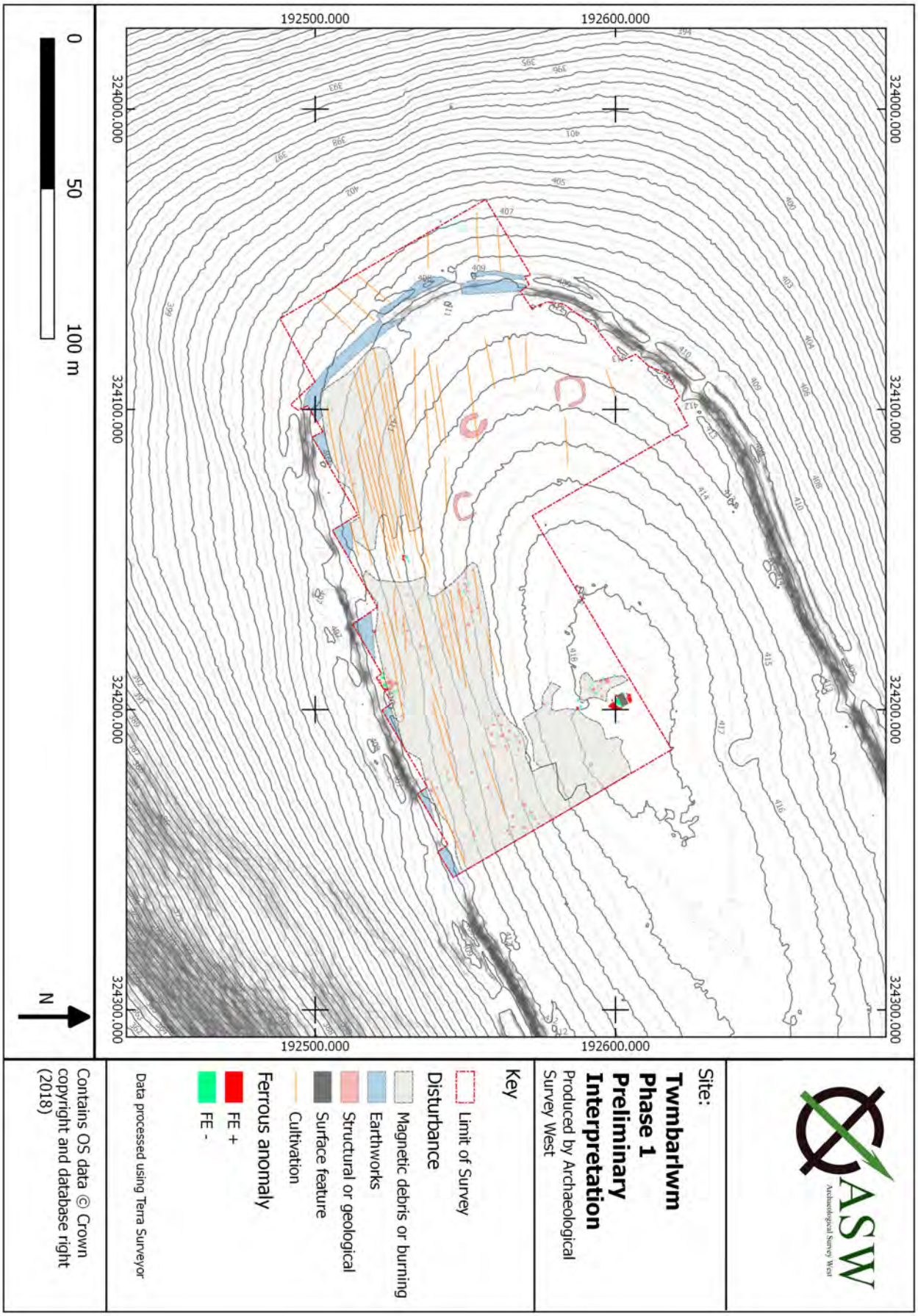

Figure 4: Feature plot for phase 1 magnetic survey

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