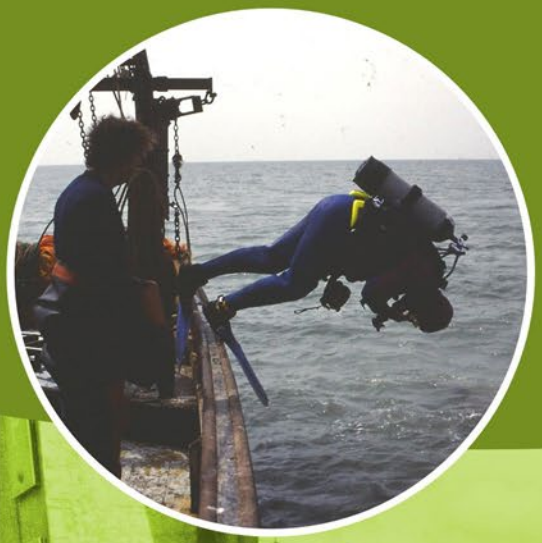
# BRITISH TELECOMMUNICATIONS PLC

## Scotland - Northern Ireland (Scot-NI) 3 and 4 Replacement Cables

**Technical Appendix G2a - Archaeological Review of Landfall Geophysical Survey Data Scot NI 3**

P2302_Rev0 | December 2020



Coracle Archaeology

# BT Scotland-Northern Ireland: Scot-NI 3

***Archaeological review of marine and landfall geophysical survey data***

for

Intertek

CA ref: 190203

November 2020

# BT Scotland-Northern Ireland: SCOT-NI 3

*Archaeological review of marine geophysical survey data*
*and*
*the results of archaeological surveys at the two landfall locations*

Coracle project no.: 190203

Coracle report no.: 190203.2

| | |
|---|---|
| prepared by | Dr Michael Grant, Senior Geophysicist<br><br>Coastal and Offshore Archaeological Research Services,<br>University of Southampton<br><br>with contributions by<br><br>Sam Harrison, Senior Geophysicist<br>Headland Archaeology, and<br><br>Rory Joyce, Trainee Archaeologist |
| date | October 2020 |
| checked by | Dr Darren Glazier, Senior Archaeologist |
| date | November 2020 |
| approved by | Dr Michael Walsh, Lead Marine Consultant |
| date | November 2020 |
| issue | 1.1 |

## Summary

**Project name: BT Scotland-Northern Ireland: SCOT-NI 3**

Coracle Archaeology was commissioned by Intertek Energy & Water Consultancy Services on behalf of British Telecommunications to undertake marine archaeological assessments, including this archaeological review of marine geophysical survey data and archaeological assessments at the two proposed landfall locations, for the BT Scotland-Northern Ireland telecommunications cables project. This is a proposed submarine telecommunications cable system between Scotland and Northern Ireland, comprising two individual, discrete cables:

- SCOT-NI 3, with landfall at Portpatrick, Scotland and Donaghadee, Northern Ireland; and
- SCOT-NI 4, with landfall at Girvan, Scotland, and Larne, Northern Ireland.

This report focuses solely on the route of SCOT-NI 3 (Portpatrick to Donaghadee). A separate report has been prepared for SCOT-NI 4.

The marine geophysical survey was conducted along the proposed route by Fugro Germany Marine GmbH, including the collection of multibeam echosounder, sidescan sonar, magnetometer and sub-bottom profile data. The archaeological assessment of the supplied data has identified 23 geophysical anomalies with archaeological potential along the proposed route. Of these, two are considered to be of high archaeological potential (including at least one previously uncharted wreck site), nine of medium, and 12 of low, archaeological potential. Archaeological exclusion zones have been proposed for all anomalies considered to be of high or medium archaeological potential. Assessment of the sub-bottom profile and geotechnical datasets did not highlight any features of palaeo-environmental potential within the CSC.

The non-intrusive surveys at the proposed landfall locations comprised walkover, hand-held metal detector and geophysical surveys. These surveys successfully evaluated the landfall locations, including known historic assets within the study areas. Five linear anomalies were identified in the geophysical survey data, including three at Portpatrick and two at Donaghadee. All five have been identified as buried service pipes or in-service cables; they are not therefore considered to be of archaeological interest. Walkover surveys documented one previously unrecorded feature at Portpatrick.

## Table of contents

## LIST OF TABLES



## LIST OF ILLUSTRATIONS

## LIST OF ACRONYMS USED IN THE TEXT

| | |
|---|---|
| **AEZ** | Archaeological exclusion zones |
| **CA** | Coracle Archaeology |
| **COARS** | Coastal and Offshore Archaeological Research Services |
| **CPT** | Cone penetrometer test |
| **CSC** | Cable survey corridor |
| **FGMG** | Fugro Germany Marine GmbH |
| **GC** | Gravity core |
| **GIS** | Geographic Information System |
| **GNSS** | Global Navigation Satellite System |
| **GPS** | Global Positioning System |
| **GS** | Grab samples |
| **HERoNI** | Historic Environment Record of Northern Ireland |
| **LAT** | Lowest Astronomical Tide |
| **MBES** | Multibeam echosounder |
| **MHWS** | Mean high water springs |
| **nm** | Nautical miles |
| **SSS** | Sidescan sonar |
| **SBP** | Sub-bottom profiler |
| **UKHO** | United Kingdom Hydrographic Office |
| **UTM** | Universal Transverse Mercator |
| **VORF** | Vertical Offshore Reference Frames |
| **WGS** | World Geodetic System |

## 1. INTRODUCTION

### *Outline*

1.1. Coracle Archaeology was commissioned by Intertek Energy & Water Consultancy Services on behalf of British Telecommunications (BT) to undertake marine archaeological assessments, including landfall surveys and a review of marine geophysical data, for the BT Scotland-Northern Ireland telecommunications cables project. This is a proposed submarine telecommunications cable system between Scotland and Northern Ireland, comprising two individual, discrete cables (Figure 1):

- **SCOT-NI 3**, which will run between Portpatrick, Scotland and Donaghadee, Northern Ireland; and
- **SCOT-NI 4**, which will run between Girvan, Scotland, and Larne, Northern Ireland.

1.2. This report focuses solely on the proposed route of SCOT-NI 3. A separate report, comprising an archaeological review of marine geophysical survey data and the results of landfall surveys has been prepared for SCOT-NI 4 (Coracle Archaeology 2020a).

1.3. The proposed route for SCOT-NI 3 will run for 43km between Portpatrick, Scotland and Donaghadee, Northern Ireland, including 21.2km in Scottish waters and 20.8km in Northern Irish waters (Figure 2).

1.4. The marine geophysical survey data, collected by Fugro Germany Marine GmbH (FGMG), was assessed for Coracle Archaeology by our colleagues at the Coastal and Offshore Archaeological Research Services (COARS), University of Southampton. The archaeological assessment of marine geophysical survey data assessed a cable survey corridor (CSC) of 500m (250m either side of the proposed cable route); this was also utilised for the desk-based assessment (DBA) of known cultural heritage assets (Coracle Archaeology 2020b).

1.5. Landfall geophysical survey data were collected by Coracle Archaeology, which was assessed by our colleagues at Headland Archaeology. The landfall surveys assessed an area of up to 200m wide (100m either side of the proposed cable route), from low water to mean high water springs (MHWS).



## Legend

- SCOT-NI 3 proposed cable route
- SCOT-NI 4 proposed cable route
- Cable survey corridor 4

0 5 10
Kilometres

Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

N

Coracle Archaeology

PROJECT TITLE: **BT Scotland-Northern Ireland**

FIGURE TITLE: **BT SCOT-NI 3 & 4**

FIGURE NO. **1**

DRAWN BY: DG CHECKED BY: MW APPROVED BY: MW



## Legend

- SCOT-NI 3 proposed cable route
- Cable survey corridor 4

0 2.5 5 Kilometres

Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

N

Coracle Archaeology

PROJECT TITLE: **BT Scotland-Northern Ireland 3**

FIGURE TITLE: **Route of BT SCOT-NI 3**

FIGURE NO. **2**

DRAWN BY: DG CHECKED BY: MW APPROVED BY: MW

## 2. AIMS AND OBJECTIVES

2.1. The aims of these assessments are:

- to identify anomalies of archaeological potential along the CSC and at the landfall locations; and
- to assess the archaeological and palaeo-environmental potential of the sub-surface sediments.

2.2. These aims will be achieved through the following objectives:

- identification of anomalies through the examination of multibeam echosounder (MBES), sidescan sonar (SSS) and magnetometer data to identify, locate and characterise features with possible archaeological potential along the CSC;
- identification of sites and features of archaeological potential at the landfall locations through walkover survey and the assessment of electro-magnetic conductivity and metal detector survey data; and
- assessment of sub-bottom profiler (SBP), MBES and geo-technical survey data to establish the archaeological and/ or palaeo-environmental potential of the sub-surface sediments.

## 3. GEOPHYSICAL SURVEY SPECIFICATION AND DATA ACQUSITION

***Landfall***

3.1. The landfall surveys were conducted in August 2020 at the two proposed landfall locations at Portpatrick, Scotland, and at Donaghadee, Northern Ireland. The surveys were conducted on the foreshore and in the intertidal zone, from MHWS down to low water on the most favourable spring tides, to overlap with the marine surveys.

3.2. A survey grid, up to 200m wide (100m either side of the proposed cable centreline), was set out at the landfall locations and subdivided into 5m transects, using a Global Positioning System (GPS) system with an accuracy of 0.5m or better. The surveys, comprising geophysical (electro-magnetic conductivity), hand-held metal detector and walkover surveys, were then conducted along these transects, parallel to the waterline.

3.3. The geophysical survey was undertaken using a Geophex GEM-2 multi-frequency broadband electro-magnetic (EM) instrument (Figure 3) to perform a terrain electrical conductivity survey. The GEM-2 instrument is a non-intrusive frequency-domain electrical conductivity measuring device that records the spatial variations of apparent ground conductivity of the earth in units of milliSiemens / metre (mS/m). The 'siemen' is the international unit of measurement for volume electrical conductance and is the equivalent to an ampere / volt.

**Figure 3 Geophysics and metal-detecting surveys in progress**

3.4. A Minelab X-Terra 705 instrument was used to conduct the metal detector surveys (Figure 3). The metal detector was set to detect all metal, but the sensitivity was adjusted to compensate for the high salt content of the beach sand. All find locations were

recorded using a hand-held GPS device, while features of archaeological potential were recorded with digital photography, using a Nikon Coolpix B500 digital camera.

***Marine***

3.5. The marine geophysical survey was undertaken by FGMG using the survey vessels *MV Fugro Discovery*, Fugro *Seeker and Valkyrie*. Marine surveys took place between April and July 2020.

3.6. The CSC for the main shallow water survey was c. 500m wide (250m either side of the proposed cable route), with an overlap with the inshore survey of at least 500m. Five lines of survey data were collected along the route with a 100m line separation; the route centreline was surveyed with two wing lines offset at 100m and 200m intervals. In the nearshore areas line spacing was adjusted to 50m or 25m depending on water depth.

3.7. A dedicated unexploded ordnance (UXO) survey was also undertaken to establish the presence and locations of items of ordnance close to the proposed cable route. Following the main survey, additional magnetometer lines were run along an In-Field Selected Route (IFSR) covering a 50m survey swath with a maximum magnetometer separation of 5m.

3.8. MBES data were acquired using a Kongsberg EM122. Full bathymetric coverage across the whole survey corridor was undertaken in accordance with IHO Standards for Hydrographic Survey, S44 5th Edition, Feb 2008 (see Fink 2019), with sound velocity (SV) probes used to perform regular sound velocity casts. SSS survey was undertaken using an Edgetech 4200 dual frequency (300/600 kHz) fish, with a range of 120m on the *Fugro Discovery*, and 25m-50m on the *Fugro Seeker and Valkyrie*, thus ensuring 200 percent coverage of the corridor. The Geometrics G882 caesium vapour magnetometer was piggy-backed behind the SSS on the *Fugro Discovery*, and independently towed on the *Fugro Seeker and Valkyrie* to detect cables and pipelines. Sub-bottom surveys were undertaken using a Knudsen sub-bottom profiler. In-service cables were detected by MBES, SSS, SBP and/or magnetometer.

3.9. For the geotechnical investigations, cone penetrometer test (CPT) measurements were planned at 5km intervals along the survey route, with gravity core (GC) sampling planned at 10km intervals. Owing to security issues, the geotechnical survey only retrieved grab samples (GS) from the inshore stations; elsewhere CPTs were substituted for grab samples.

***Geodetic and projection parameters and vertical datum***

3.10. Survey positions were recorded in the geodetic datum World Geodetic System (WGS) 1984, with projection in the universal transverse mercator (UTM) Zone 30 North. The vertical reference level is lowest astronomical tide (LAT), with MBES elevation corrected using the vertical offshore reference frames (VORF) and predicted tides based on Global Navigation Satellite System (GNSS) heights.

## 4. METHODOLOGY

***Landfall survey method***

*Geophysics*

4.1. Electrical conductivity surveys were undertaken with a GEM-2 instrument. The GEM-2 detects differences in deposits, principally variations in thickness between deposits with different conductivities, which can produce spatial variations in conductivity readings. The system provides two measurements:

- Quadrature (apparent conductivity); and
- In-phase data (metallic response).

4.2. The GEM-2 can acquire data over multiple frequencies, which is equivalent to measuring the earth response from multiple depths (depending on the earth medium targeted). Five frequencies (475 Hertz (Hz), 1525Hz, 5325Hz, 18325Hz, and 63025Hz) were utilised and subsequently analysed at both landfall locations.

4.3. The primary focus of the survey was to identify buried metal objects on the beach that might relate to heritage assets. In addition, some success was obtained at mapping variations in silting patterns within the foreshore area. Variations in response might occur where timber structures have influenced the deposition of sediments and could therefore

be used to identify the presence of wood, which may be indicative of wreck material or other wooden structures buried in the sand. Similarly, as ground conductivity is influenced by soil moisture content, an electromagnetic conductivity survey may be used to differentiate between areas of solid sub-strata and sand. This enables some analysis of the former physical topography of the survey area, by identifying former channels or basins in the sub-strata. Identification of these features would help to define areas of archaeological potential within the survey area.

4.4. The data were digitally recorded and periodically downloaded to a field computer for quality assurance and preliminary interpretation. At the conclusion of the survey the Geophex GEM-2 data were interpreted and mapped using Terrasurveyor V3.0.32.4 software (DWConsulting), a surface mapping software that allows topographic data to be contoured and presented in a manner that enables the interpretation of sub-surface features.

4.5. The illustrations of the landfall geophysical survey data in this report have been produced following analysis of the data in 'raw' and processed formats and over a range of different frequencies. All graphics are displayed using the 475Hz, 5325Hz and 63025Hz frequencies, which have been assessed to most suitably display and interpret the data based on the experience and knowledge of the assessors. The landfall geophysical survey and report were completed in accordance with relevant best practice guidance documents (Gaffney *et al*. 2002; David *et al*. 2008; Bonsall *et al*. 2014; Schmidt *et al*. 2015).

*Metal detector and walkover surveys*

4.6. All identified features and detected finds spots were recorded photographically with a brief description, if deemed necessary. Locations were recorded using a hand-held Garmin GPS and plotted into an AutoCAD base plan. As the surveys were non-intrusive, no finds spots were excavated.

4.7. The numeric values displayed on the detector were recorded as, potentially, they can assist in the identification of the type of metal detected, with higher values more likely to be indicative of non-ferrous metals (Minelab 2017: 11).

4.8. The purpose of these archaeological assessments is to identify known and potential sites and features of archaeological interest at the two potential landfall locations that might be impacted by the project. Any impacts will then be limited through the adoption of appropriate mitigation measures. Archaeological potential is evaluated through the assessment of the nature and density of known sites in the vicinity of the proposed development.

***Marine geophysical assessment method***

4.9. Geophysical assessment was undertaken utilising the programs Coda Octopus Survey Engine 4.3 and ArcGIS 10.7.1. SSS and SBP data were analysed using the former, with the positions of surface and sub-surface anomalies exported in shapefiles and uploaded into ArcGIS alongside processed magnetometer data provided by Fugro, following the guidelines of Plets *et al*. (2013). MBES data were provided at a gridded resolution of 1.0m and imported into ArcGIS.

4.10. The assessed data comprised two overlapping surveys – one for the standard 500m wide CSC, and a second UXO survey with closer line spacing over the proposed cable route. This has resulted in data coverage far exceeding standard recommendations (see Plets *et al*. 2013), with SSS meeting the 200 percent coverage across the entire survey corridor, and significantly exceeding this when overlapped with the UXO survey. This overlap is also seen in the magnetometer survey, resulting in the successful identification of a number of small linear anomalies including charted and uncharted cable routes. The bathymetry survey exceeded IHO Order 1 specifications.

4.11. The geophysical datasets were assessed for anomalies with archaeological potential, with selection based on the presence of multiple lines of evidence (confirming datasets). Anomalies were defined based on their potential to be of archaeological interest, and have been classified using the following criteria:

- **High potential** - typically identified by multiple geophysical datasets and can be positively identified as being an archaeological site (e.g. wreck) or of archaeological interest;

- **Medium potential** - typically identified by multiple geophysical datasets, and strongly suggestive of the presence of anthropogenic feature(s) which may be of archaeological interest, but cannot be classified or identified visually (e.g. cannot be positively identified as a wreck);
- **Low potential** - usually identified by a single geophysical dataset (typically magnetics and/or SSS) that suggest a possible anthropogenic feature that may have archaeological significance and that differs in character from those identified as having no potential; or
- **No potential** - geological features such as boulders or known (and often mapped) anthropogenic features such as cables, anchorages etc.

4.12. Any known and located historic assets and geophysical anomalies identified as being of high or medium archaeological potential will be protected through the imposition of an archaeological exclusion zone (AEZ) around each asset that may be impacted by the proposed development.

4.13. The suggested extent of each AEZ is the radius of a circle centred on the given location and based on the available geophysical data for each anomaly, including the lateral distribution of visible features, extent and direction of scour, and likelihood for debris spread away from the site. They have been designed to encompass all debris / structure visible on the seabed, with an added dimension to adequately protect both potentially buried remains and the potential for mobile debris associated with the direction (and extent) of the scour.

4.14. AEZs have been defined following professional recommendations (Dix 2008) and converted into circular AEZs with a defined centre point to encapsulate the required exclusion zone. The extent of the suggested circular AEZ is therefore sufficiently large to encompass the area that would be defined by a polygon, following the procedures outlined in Dix (2008).

4.15. The use of a centre point and set radius has been deemed the most robust method when attempting to incorporate AEZs into different vessel navigation systems. This reduces the risk of accidental incursions into AEZs, and possible impacts during site works on

the potential asset within. In accordance with clauses 4.1.1 and 4.2.1 of the Model Clauses (which advocates preservation in situ with the aid of AEZs; The Crown Estate & Wessex Archaeology 2010), the extent of the AEZ is based not only on the perceived archaeological potential of the asset, but also on its extent, if known.

## 5. RESULTS

### *Landfall*

*Portpatrick*

5.1. The Portpatrick landfall comprises two small inlets at the bottom of a deep gully, separated by a narrow headland. The beaches are accessed via private land and comprise silty-sand with bands of shingle and large rocks, with large boulders on the periphery. Both beaches are surrounded by a rocky shoreline (Figure 4-5).

*Geophysics*

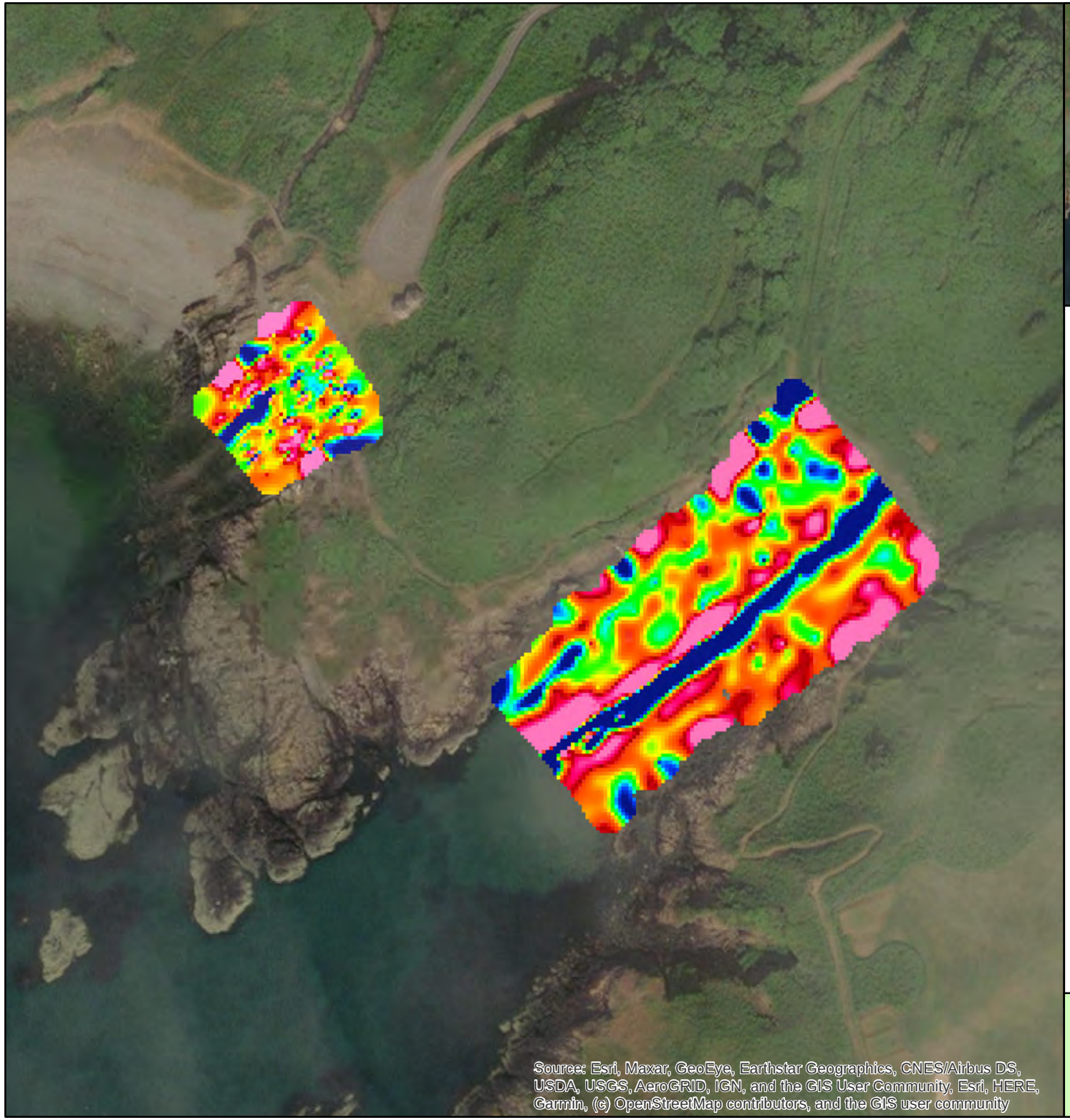
5.2. Complimentary in-phase (magnetic susceptibility) and quadrature (conductivity) datasets have been collected at Portpatrick with both recording clear contrast between high conductivity / high magnetic susceptibility within the marine bay (Figure 6-11). The high readings in both datasets correspond to marine beach deposits, with lower, more sporadic readings below these deposits, caused by the underlying wacke geology. Three linear anomalies aligned north-east / south-west have been recorded in the data. These are thought to be existing cables / services.

*Walkover and metal detector survey*

5.3. The remains of the five reported inshore maritime losses at Portpatrick (*Elizabeth*, **CA3_6**; *Ossier*, **CA3_7**; or the three unknown vessels, **CA3_1**; **CA3_11-12**) were not visible at low water, nor was St Kain's Well (see Coracle Archaeology 2020b). A number of sites recorded above MHWS were, however, visited and recorded, including the Glen Cottage standing stone (**CA3_45**; Figure 12), Ouchtriemakain cave (**CA3_46**; Figure 13) and the Port Kale cable house (**CA3_47**; Figure 14; see Coracle Archaeology 2020b). The severed remains of redundant cables were clearly visible protruding from the section at the head of the beach, just below the cable house (Figure 15).

**Figure 4 Portpatrick landfall**

**Figure 5 Portpatrick landfall**





## Legend

+1 std dev

-1 std dev

0 0.0375 0.075 Kilometres

Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

N

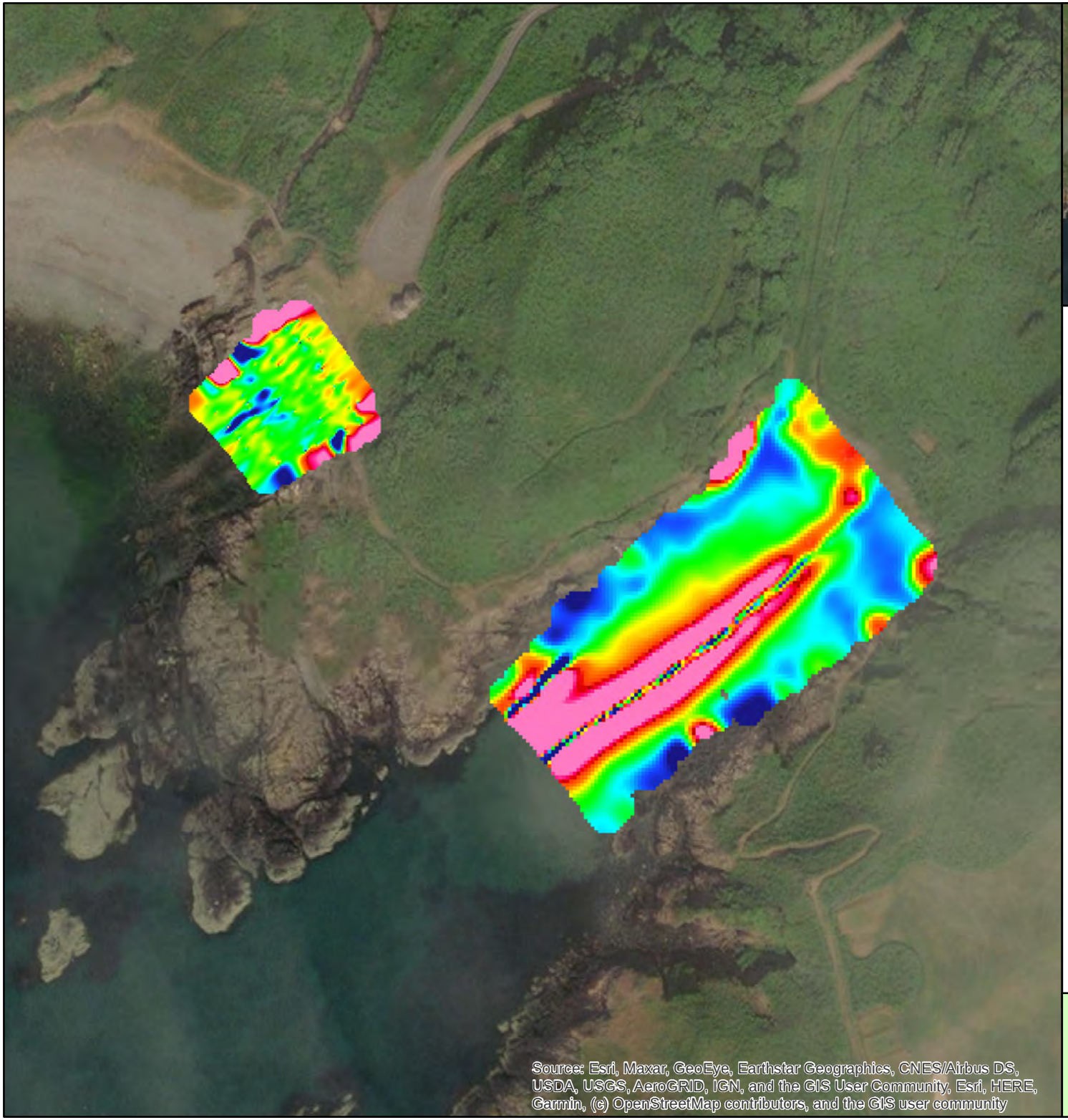
Coracle Archaeology

PROJECT TITLE: **Scot-NI 3**

FIGURE TITLE: **Portpatrick - Inphase at 425Hz**

FIGURE NO. **6**

DRAWN BY: RM CHECKED BY: SH APPROVED BY: SH





## Legend

+1 std dev

-1 std dev

0 0.0375 0.075 Kilometres

Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

N

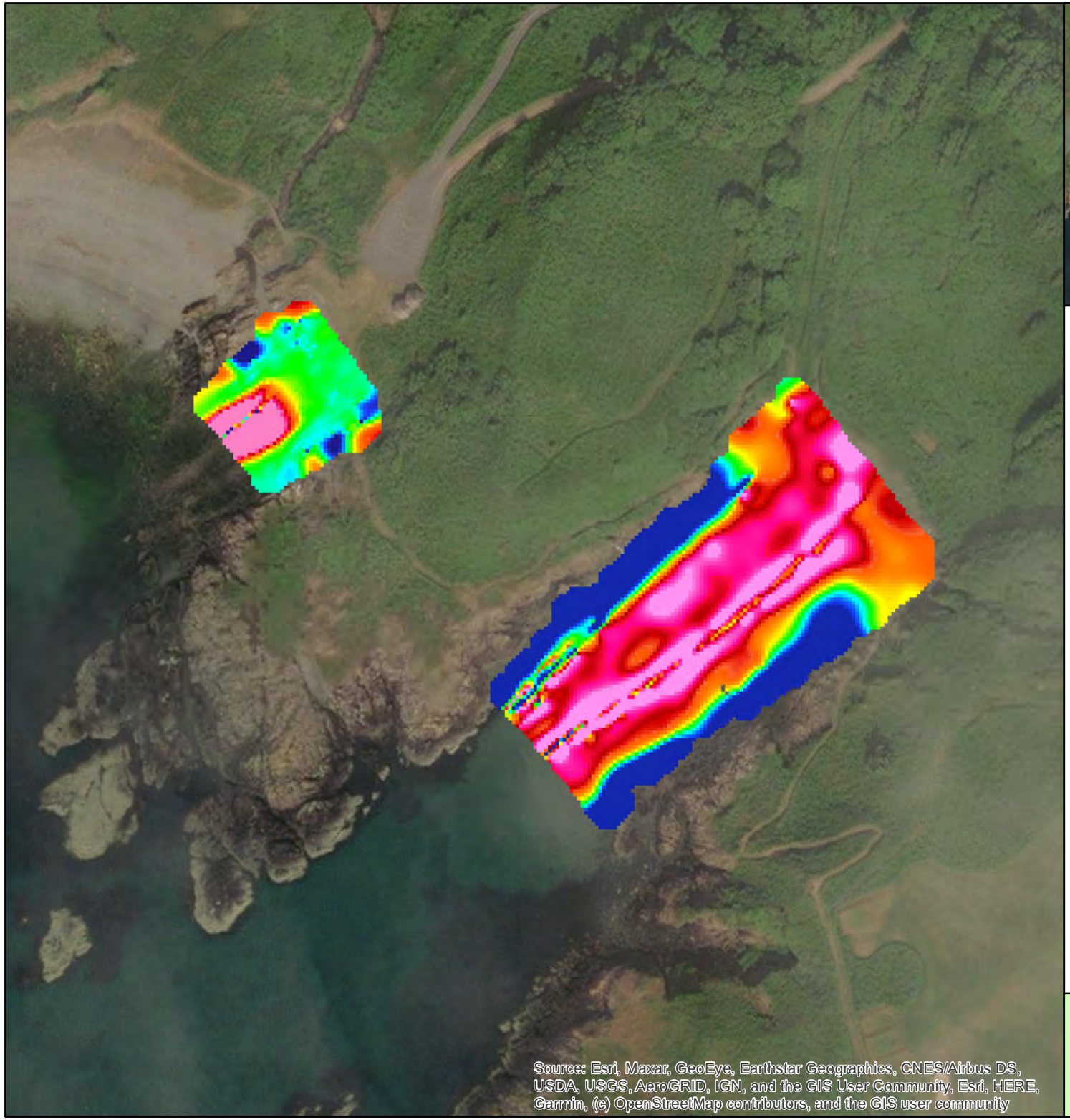
Coracle Archaeology

PROJECT TITLE: **Scot-NI 3**

FIGURE TITLE: **Portpatrick - Inphase at 5325Hz**

FIGURE NO. **7**

DRAWN BY: RM CHECKED BY: SH APPROVED BY: SH





## Legend

+1 std dev

-1 std dev

0 0.0375 0.075

Kilometres

Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

N

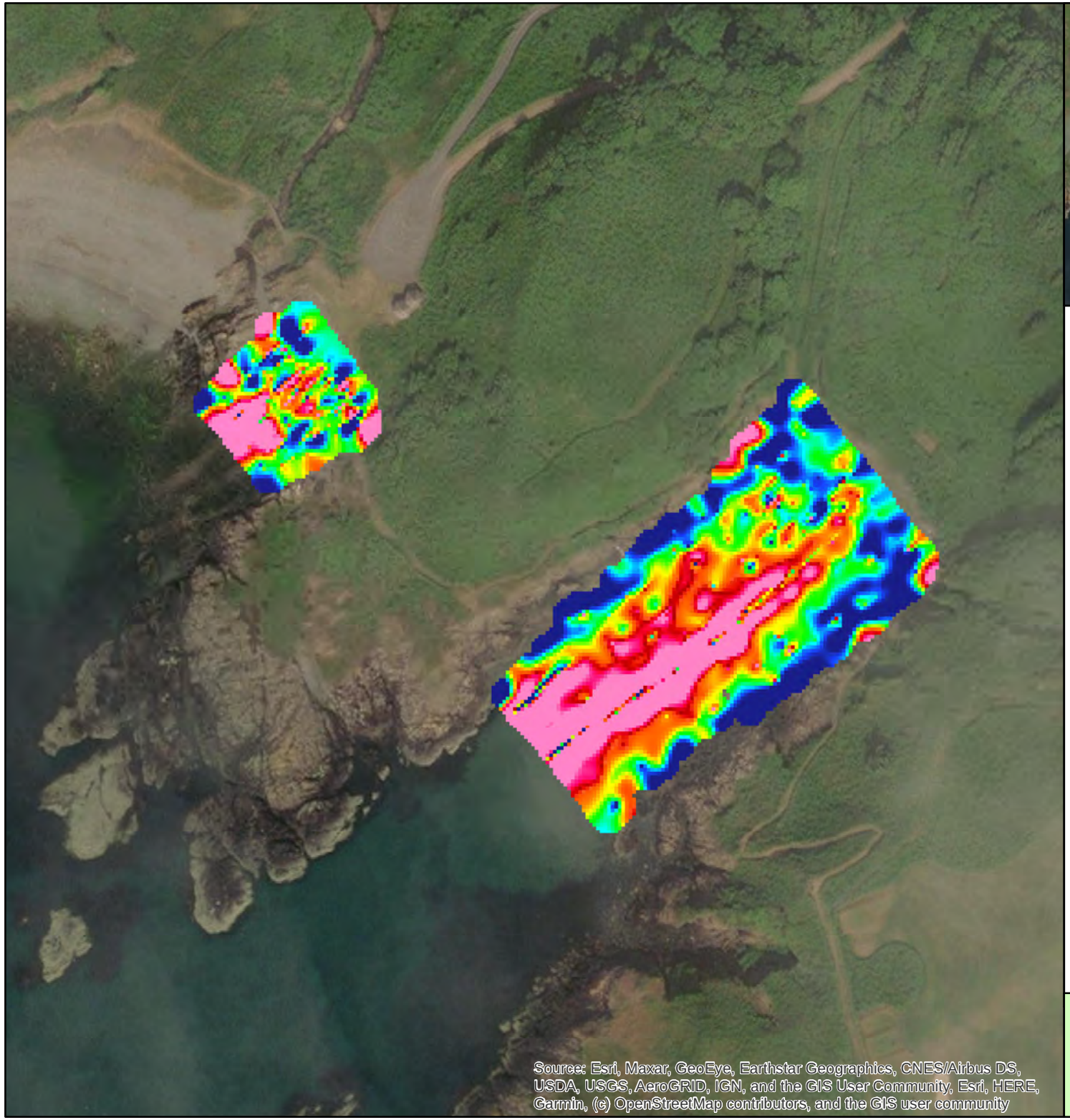
Coracle Archaeology

PROJECT TITLE: **Scot-NI 3**

FIGURE TITLE: **Portpatrick - Inphase at 63025Hz**

FIGURE NO. **8**

DRAWN BY: RM CHECKED BY: SH APPROVED BY: SH





## Legend

+1 std dev

-1 std dev

0 0.0375 0.075

Kilometres

Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

N

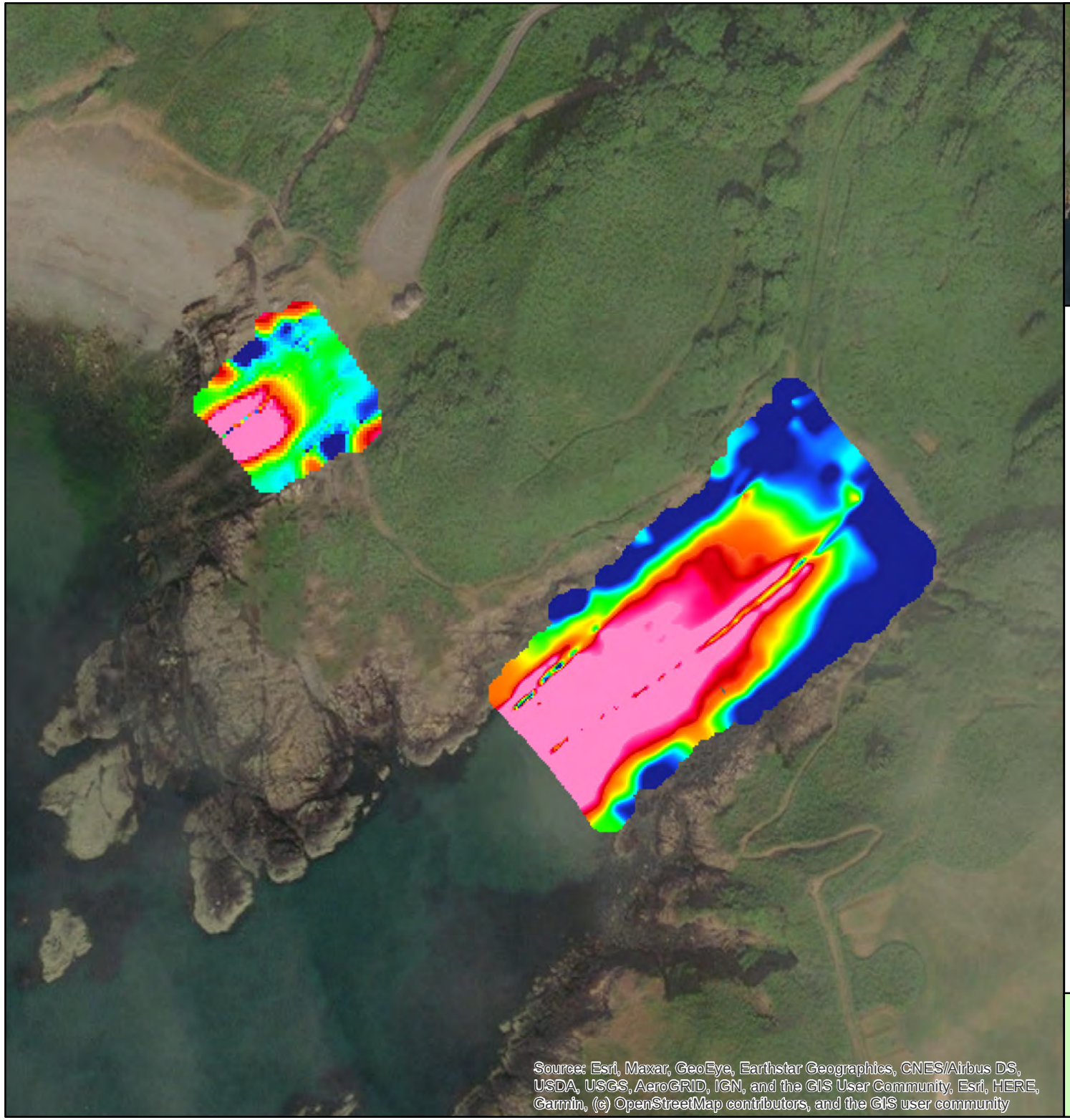
Coracle Archaeology

PROJECT TITLE: **Scot-NI 3**

FIGURE TITLE: **Portpatrick - Quadrature at 425Hz**

FIGURE NO. **9**

DRAWN BY: RM CHECKED BY: SH APPROVED BY: SH





## Legend

+1 std dev

-1 std dev

0 0.0375 0.075

Kilometres

Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

N

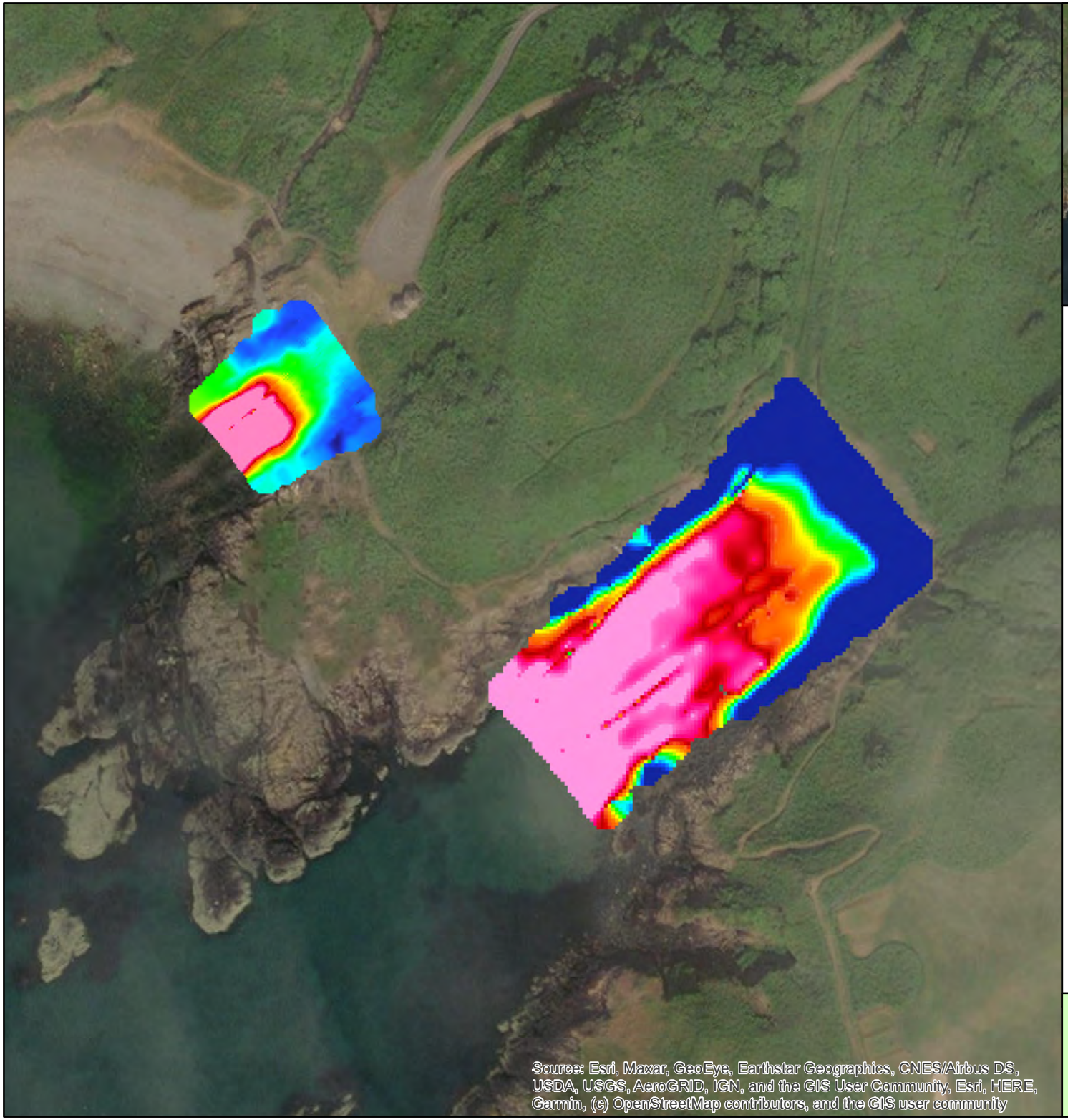
Coracle Archaeology

PROJECT TITLE: **Scot-NI 3**

FIGURE TITLE: **Portpatrick - Quadrature at 5325Hz**

FIGURE NO. **10**

DRAWN BY: RM CHECKED BY: SH APPROVED BY: SH





## Legend

+1 std dev

-1 std dev

0 0.0375 0.075 Kilometres

Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

N

Coracle Archaeology

PROJECT TITLE: **Scot-NI 3**

FIGURE TITLE: **Portpatrick - Quadrature at 63025Hz**

FIGURE NO. **11**

DRAWN BY: RM CHECKED BY: SH APPROVED BY: SH

**Figure 12 Glen Cottage standing stone**

**Figure 13 Ouchtriemakain cave**

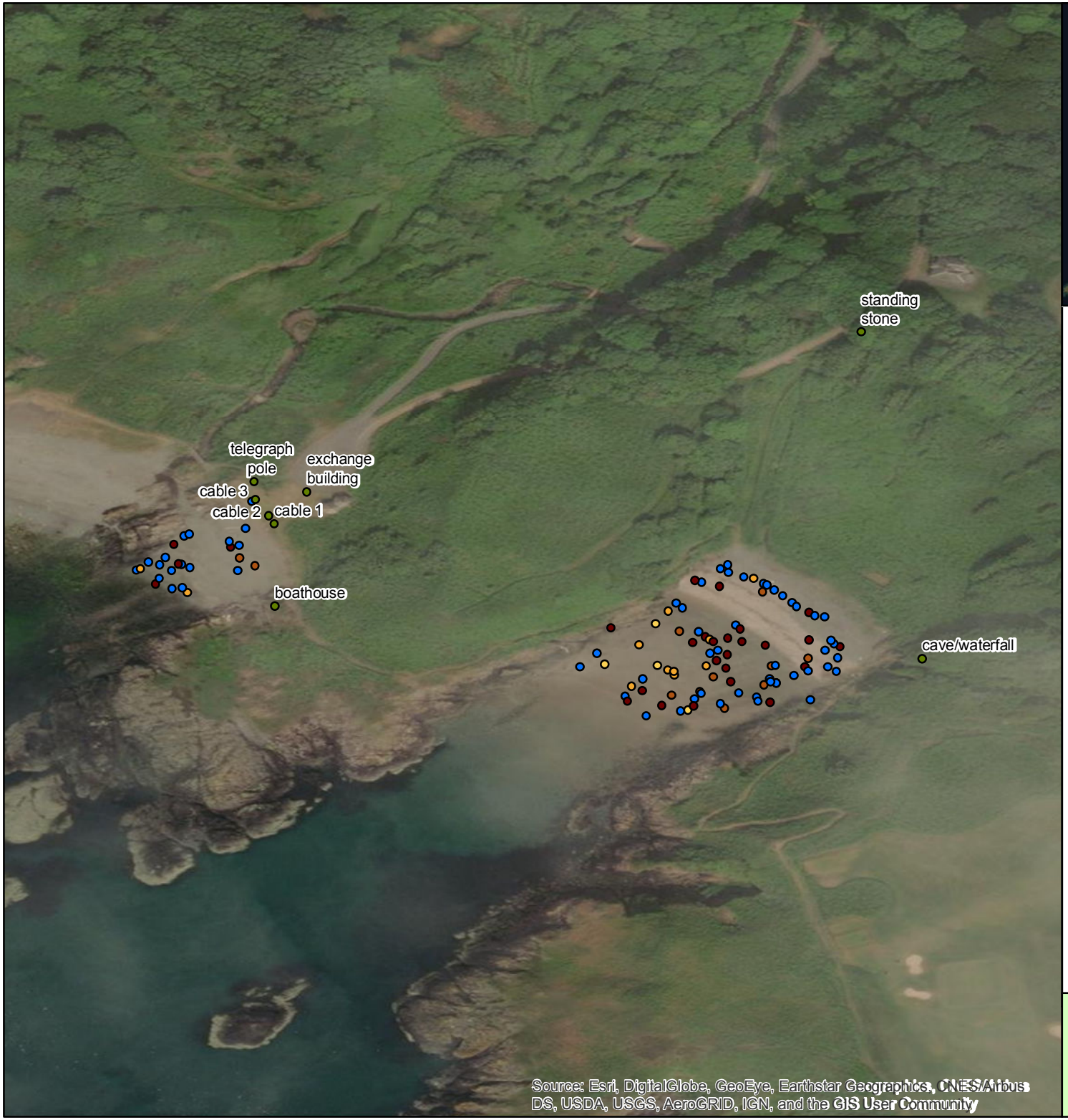

**Figure 14 Port Kale cable house**

**Figure 15 Redundant cables on the beach at Portpatrick**

5.4. A potential new site was also recorded on the beach at Portpatrick; it appears to be a stone-built beach shelter or boat house, measuring c. 4.5m x 2m with a height of c. 1.8m (though these dimensions are somewhat narrow for a boat house). Two constructed walls are clearly visible; the end wall retains the shape of the gable-end of a pitched roof. A third rough-hewn wall appears to have been hacked out of the in-situ rock (Figure 16).

**Figure 16 Possible beach-shelter or boat house**

5.5. There is no obvious patterning in the distribution of metal-detections at Portpatrick (Figure 17), though the line of detections along the high water mark may be indicative of casual losses driven ashore by the tides. The perpendicular line of higher value detections along the centre of the beach may also mark the location of the buried cable detected in the geophysical survey.





## Legend

### Metal detector value

- -8 - 1
- 2 - 15
- 16 - 30
- 31 - 40
- 41 - 48

0 65 130 Meters

Coordinate System: GCS WGS 1984
Datum: WGS 1984
Units: Degree

N

PROJECT TITLE: **SCOT-NI 3**

FIGURE TITLE: **Metal detector survey at Portpatrick**

FIGURE NO. **17**

DRAWN BY: MJ CHECKED BY: MW APPROVED BY: MW

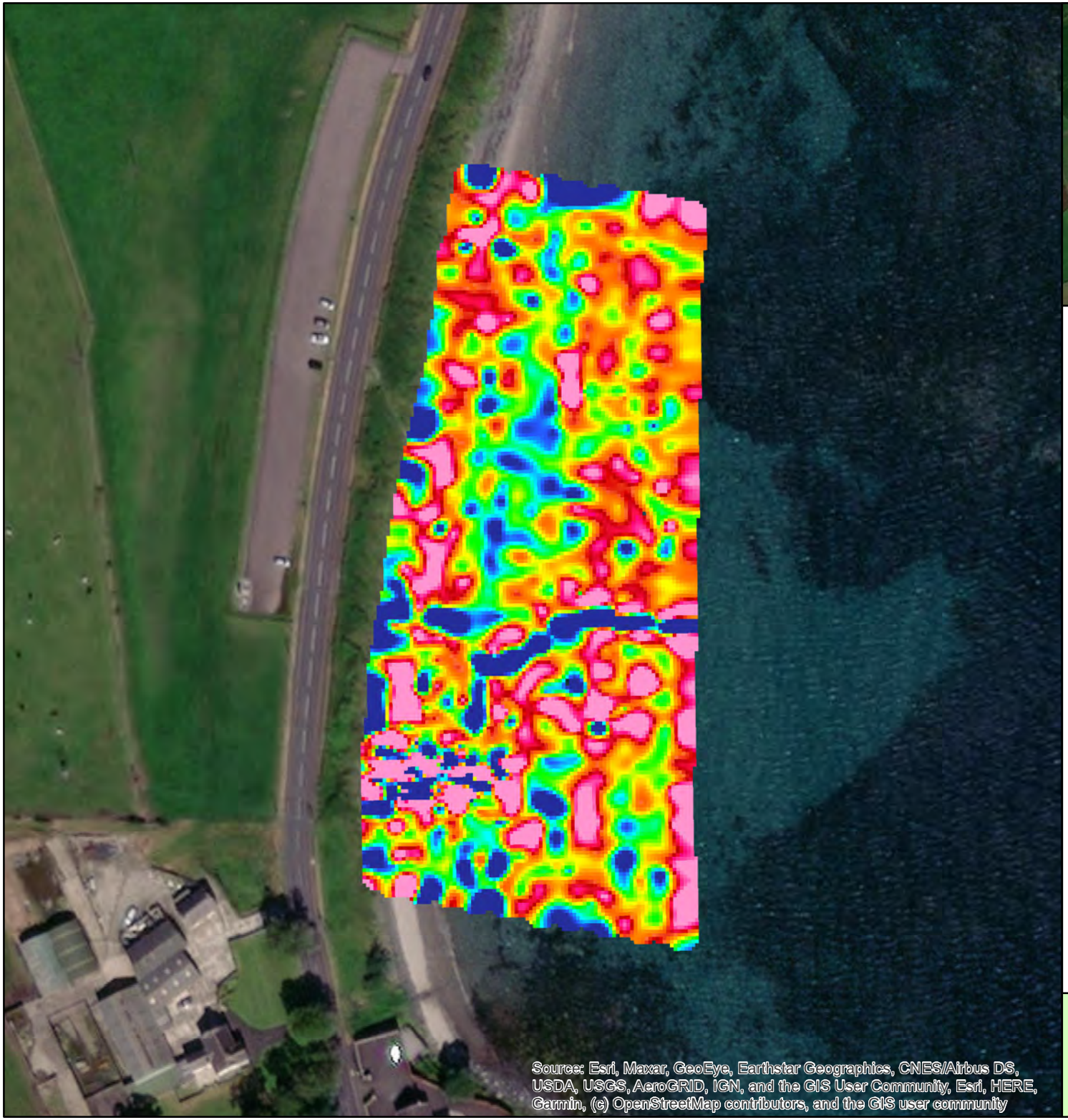
*Donaghadee*

5.6. The beach at Donaghadee is a long, open, sandy strand, strewn with areas of pebbles, seaweed-covered boulders and rocky outcrops, making survey difficult in some areas. A short headland is also present at the southern end of the beach (Figure 18).

**Figure 18 The beach and headland at Donaghadee**

*Geophysics*

5.7. The geophysical survey datasets in this area have identified two small sinuous linear anomalies in the southern half of the survey area, within an area of high conductivity and magnetic susceptibility (Figure 19-24). These are interpreted as cables or services. It is likely that the high readings are caused by deeper marine deposits or natural silting patterns, rather than bedrock geology in these locations. The lower conductivity and magnetic readings away from the beach are indicative of the bedrock geology closer to the surface.





## Legend

+1 std dev

-1 std dev

0 0.0375 0.075

Kilometres

Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

N

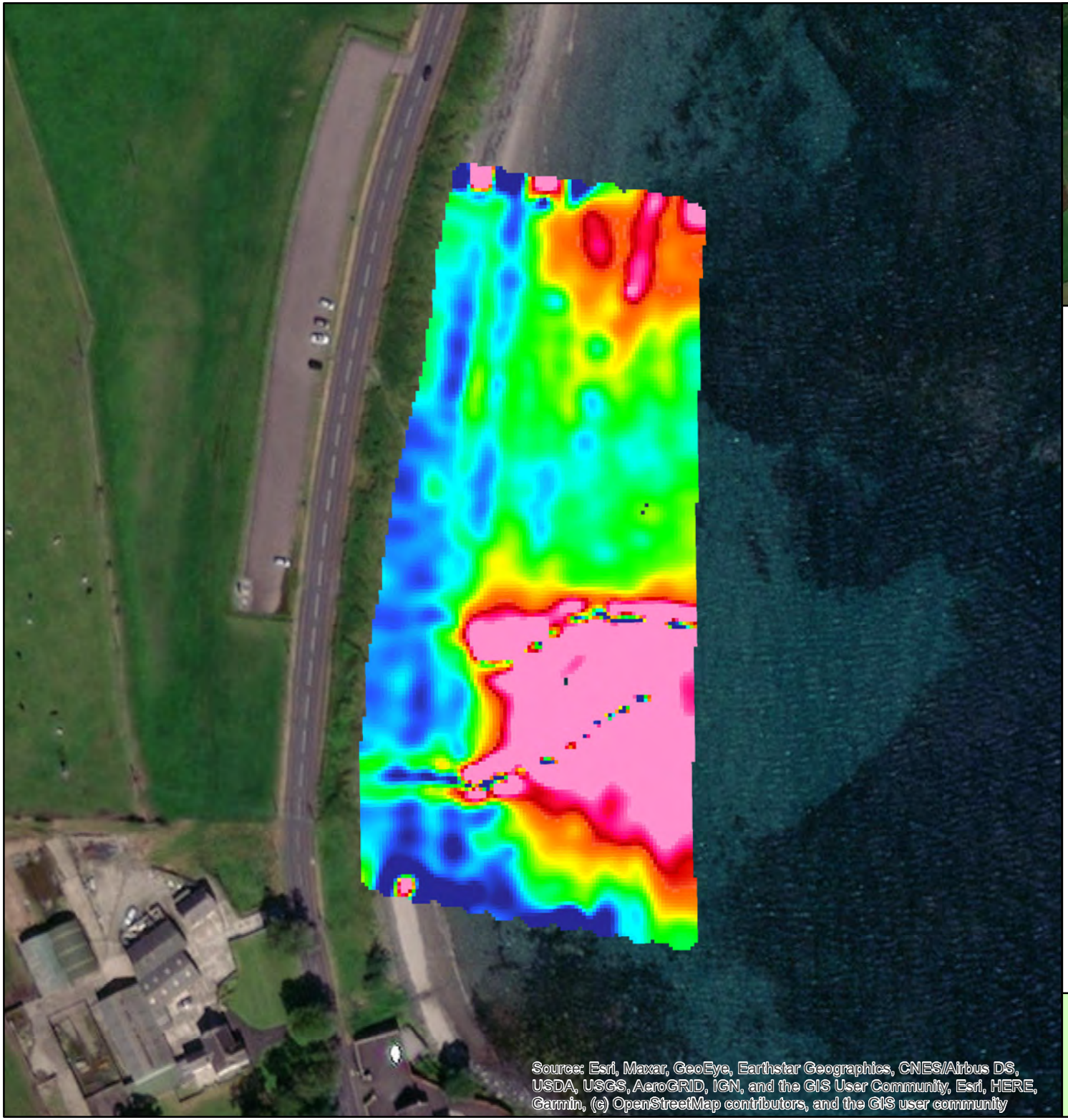
Coracle Archaeology

PROJECT TITLE: **Scot-NI 3**

FIGURE TITLE: **Donaghadee - Inphase at 425Hz**

FIGURE NO. **19**

DRAWN BY: RM CHECKED BY: SH APPROVED BY: SH





## Legend

+1 std dev

-1 std dev

0 0.0375 0.075

Kilometres

Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

N

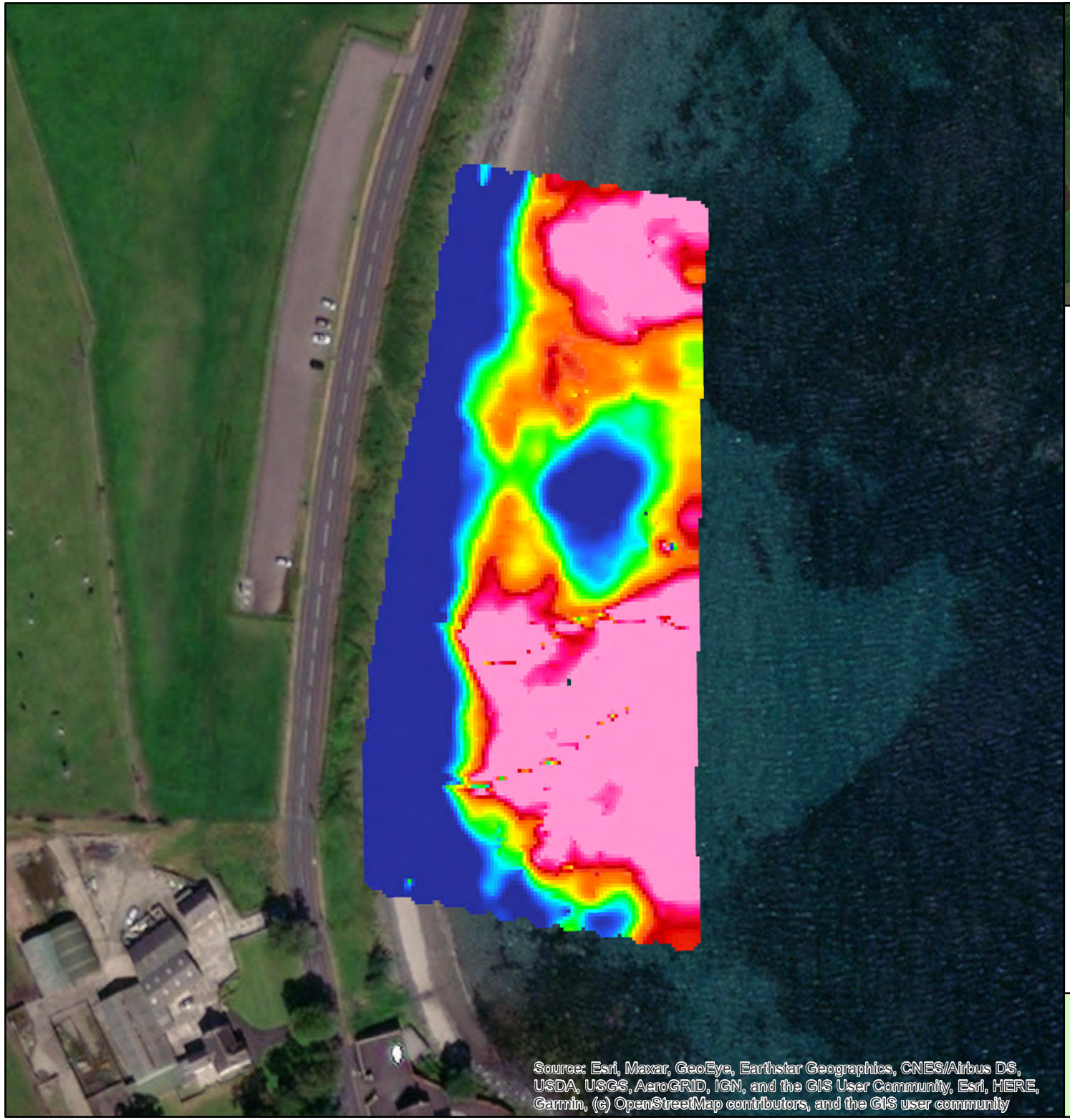
Coracle Archaeology

PROJECT TITLE: **Scot-NI 3**

FIGURE TITLE: **Donaghadee - Inphase at 5325Hz**

FIGURE NO. **20**

DRAWN BY: RM CHECKED BY: SH APPROVED BY: SH





## Legend

+1 std dev

-1 std dev

0 0.0375 0.075

Kilometres

Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

N

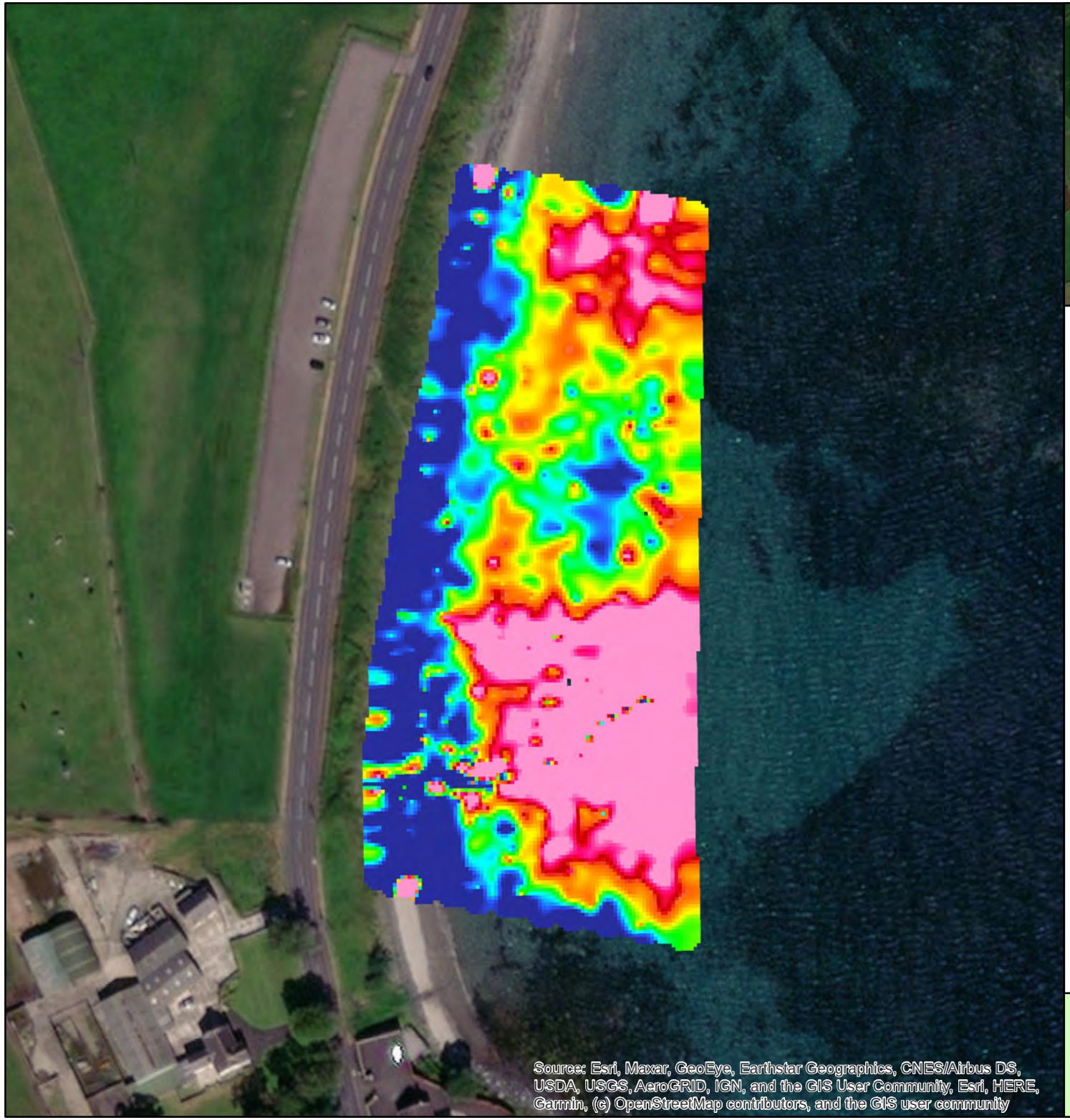
Coracle Archaeology

PROJECT TITLE: **Scot-NI 3**

FIGURE TITLE: **Donaghadee - Inphase at 63025Hz**

FIGURE NO. **21**

DRAWN BY: RM CHECKED BY: SH APPROVED BY: SH





## Legend

+1 std dev

-1 std dev

0 0.0375 0.075 Kilometres

Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

N

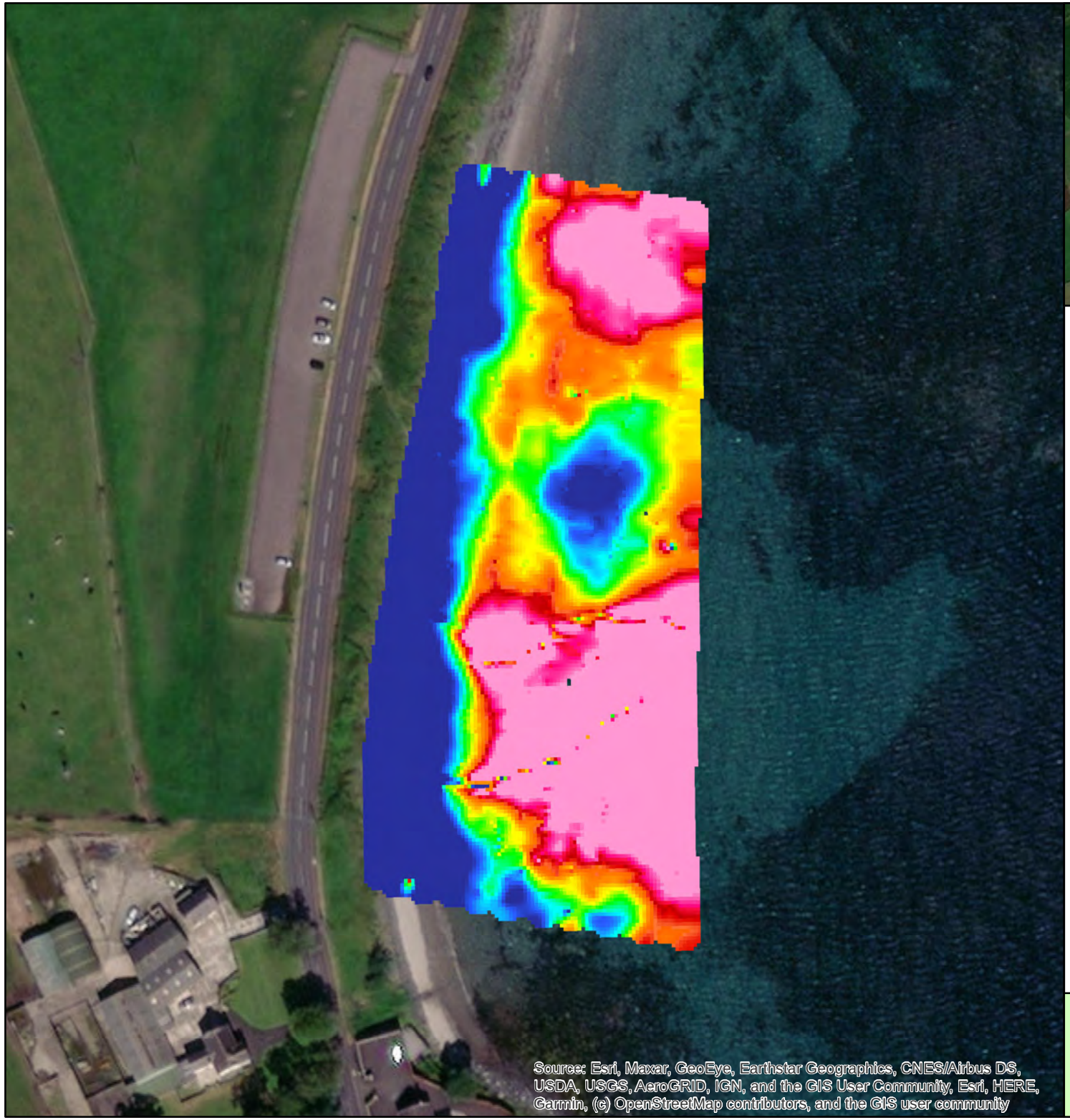
Coracle Archaeology

PROJECT TITLE: **Scot-NI 3**

FIGURE TITLE: **Donaghadee - Quadrature at 425Hz**

FIGURE NO. **22**

DRAWN BY: RM CHECKED BY: SH APPROVED BY: SH




## Legend

+1 std dev

-1 std dev

0 0.0375 0.075 Kilometres

Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

N

Coracle Archaeology

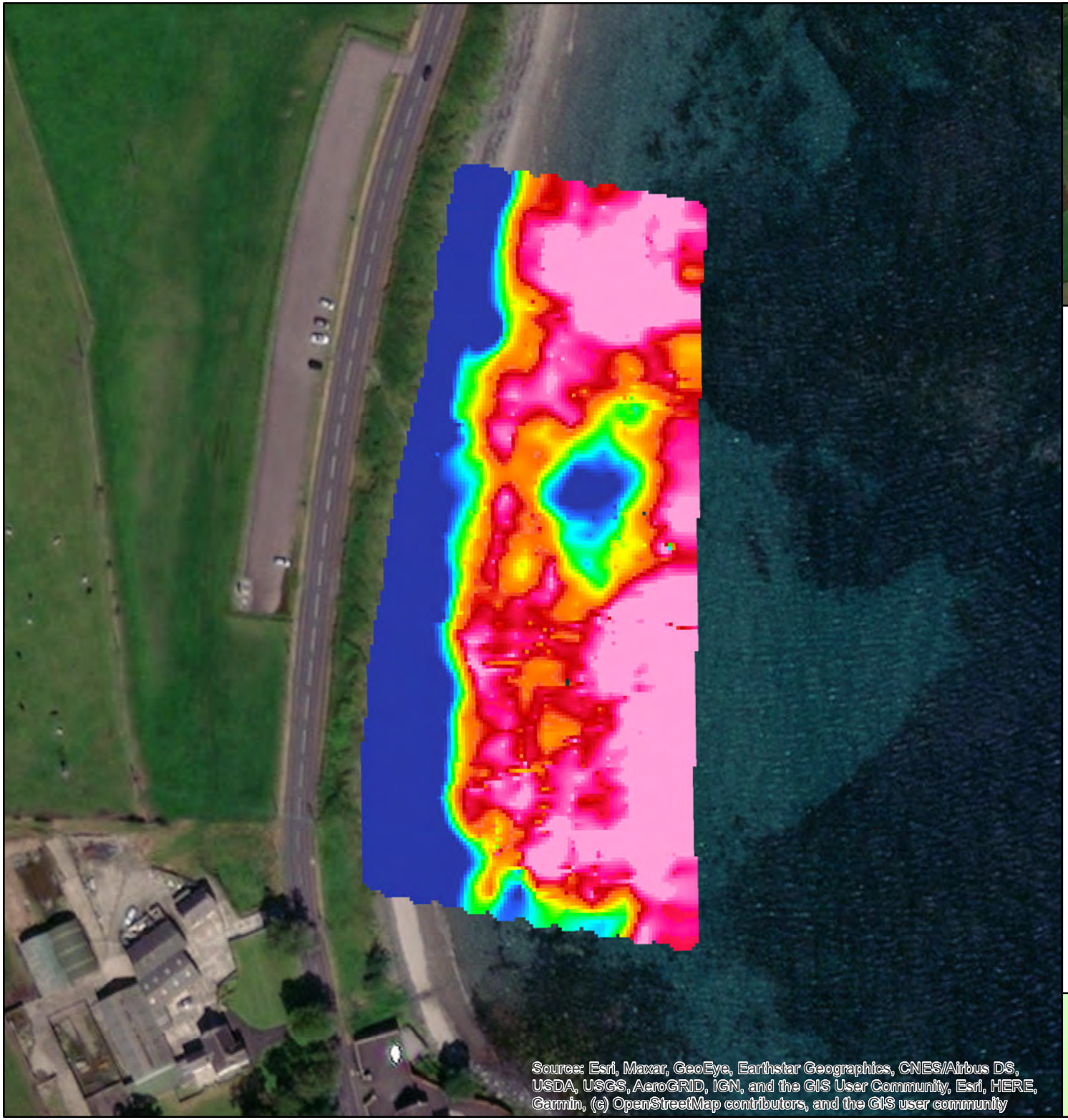


PROJECT TITLE: **Scot-NI 3**

FIGURE TITLE: **Donaghadee - Quadrature at 5325Hz**

FIGURE NO. **23**

DRAWN BY: RM CHECKED BY: SH APPROVED BY: SH





## Legend

+1 std dev

-1 std dev

0 0.0375 0.075

Kilometres

Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

N

Coracle Archaeology

PROJECT TITLE: **Scot-NI 3**

FIGURE TITLE: **Donaghadee - Quadrature at 63025Hz**

FIGURE NO. **24**

DRAWN BY: RM CHECKED BY: SH APPROVED BY: SH

*Walkover and metal detector surveys*

5.8. No known historic assets were recorded in the Historic Environment Record of Northern Ireland (HERoNI) for the study area, and no features of archaeological potential were observed. Both ceramic building material (CBM) and scrap-metal were scattered across the survey area. The CBM appeared to be largely modern, and its well-rounded nature attests to the dynamic environment of the foreshore (Figure 25).

**Figure 25 Well-rounded CBM from Donaghadee beach**

**Figure 26 Large monolith on headland south of beach**

5.9. A large monolith standing c. 3.6m high is located on the headland to the south of the beach. It appears to be a modern memorial stone (Figure 26) with a damaged inscription reading [R]ICHA[D GUS]TAV[US] HEY[N 18]89 – 1937 (Figure 27). Major Heyn was the last owner of the famous Ulster Steamship Company (geograph.ie/photo/662747 (October 2020)). Further afield, there is a World War II pill-box, located on a hill behind the beach (Figure 28).


**Figure 27 Remaining details of damaged inscription on memorial stone**

**Figure 28 WW2 pill-box on hill behind beach. The memorial stone is in the foreground**

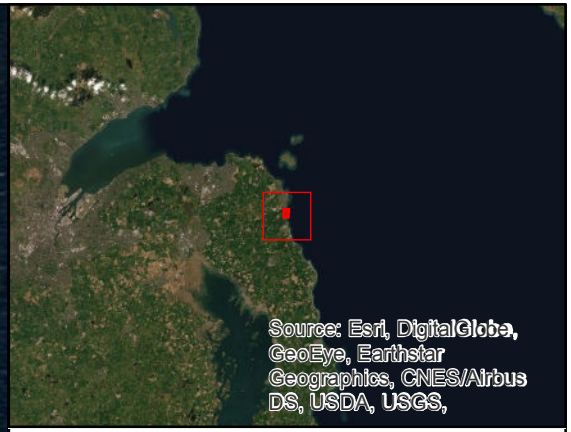
5.10. There is no apparent patterning in the distribution of metal-detections on Donaghadee beach (Figure 29). Detections are numerous, and a significant quantity have high values, indicating non-ferrous metals. This may be indicative of the scrap-metal observed on the surface of the beach.

***Marine***

5.11. Twenty-three geophysical anomalies with archaeological potential were identified (Table 1; Figure 30-51). Of these, two are classified as being of high, and nine of medium archaeological potential (see Figure 52-61). AEZs have been defined for each anomaly considered to be of high or medium archaeological potential, ranging in radius from 10-35m.

5.12. Other geophysical anomalies identified in the survey data consisted of boulders, sometimes with associated scour, in areas where bedrock was not exposed on the surface. These anomalies did not have an associated magnetic signature. They are therefore likely to be natural in origin and have no archaeological potential.

5.13. A number of in-operation cables were also identified crossing the CSC. Anomalies associated with these cables are not considered further in this archaeological assessment (for more information see Global Marine 2020).


## Legend

**Metal detector value**

- -2 - 1
- 2 - 15
- 16 - 30
- 31 - 40
- 41 - 48

Scot-NI 3 cable route

0 105 210 Meters

Coordinate System: GCS WGS 1984
Datum: WGS 1984
Units: Degree

N

| | |
|---|---|
| PROJECT TITLE: | **SCOT-NI 3** |
| FIGURE TITLE: | **Metal detector survey - Donaghadee** |
| FIGURE NO. | **29** |
| DRAWN BY: MJ | CHECKED BY: MW APPROVED BY: MW |

**Table 1 Geophysical anomalies within the CSC**

| CA no. | Easting UTM 30N | Northing UTM 30N | Description | Archaeological Potential | Proposed AEZ Radius |
|---|---|---|---|---|---|
| CA_3001 | 363093 | 6080042 | SSS anomaly SN3-P-SC0783 (3.2 x 1m) associated with bathymetry depression 5.6 x 2.7x 0.15m | Medium | 10m |
| CA_3002 | 363003 | 6079953 | Collection of SSS anomalies on the seabed (SN3-P-SC1049-54 and SN3-P-USC0272), each 4-11m in length. Suggest a wide debris spread, with the northernmost SSS anomaly (SN3-P-USC0272) associated with a series of magnetic anomalies up to 227nT (SN3-P-UMC064). Bathymmetry shows two depressions, the southwestern most (centred on SN3-P-SC1051) measures 22 x 33 x 0.2 m, while the northwestern most (centred on SN3-P-USC0272) measures 11 x 13 x 0.4m. Some of these anomalies could relate to the Donaghadee-Portpatrick No6/No7. | High | 25m |
| CA_3003 | 362974 | 6079939 | Visible shipwreck outline (SSS Anomaly SN3-P-USC0274) measuring 18 x 2.8 x 0.3m, orientated NE-SW, with bow at the NE end. Associated with magnetic anomalies SN3-P-UMC058 (251nT) and SN3-P-MC024 (734nT) | High | 18m |
| CA_3004 | 362602 | 6080033 | SSS Anomaly SN3-P-SC0994 (7 x 4m) associated with bathymetric feature 7 x 5 x 1.2m. Possible rock or archaeological material | Low | N/A |
| CA_3005 | 361790 | 6076493 | Magnetic Anomaly SN3-D-UMC0456 (92nT) | Low | N/A |
| CA_3006 | 361798 | 6076399 | Collection of three magnetic anomalies: SN3-D-UMC0356 (125nT), SN3-D-UMC0358 (127nT) and SN3-D-MC0036 (72nT) | Medium | 20m |
| CA_3007 | 359439 | 6066163 | Cluster of magnetic anomalies SN3-D-UMC0425-31 (10-38nT. No anomalies visible in SSS or bathymetry | Low | N/A |
| CA_3008 | 357593 | 6063621 | Magnetic anomalies SN3-D-MC0089 (176nT) and SN3-D-MC0141 (257nT) | Low | N/A |
| CA_3009 | 352367 | 6059105 | SSS Anomaly SN3-D-SC0403 (3x2m) associated with Magnetic Anomaly SN3-D-MC0011 (27nT) | Medium | 25m |
| CA_3010 | 352270 | 6059275 | Magnetic anomalies SN3-D-UMC0144-49 (31-55nT). Single clearly defined SSS anomaly 3 x 2m. No associated bathymetry anomaly | Medium | 20m |
| CA_3011 | 352686 | 6059505 | Pair of oval depressions, 10 x 7m, visible in SSS and bathymetry. No associated magnetic anomalies | Low | N/A |
| CA_3012 | 352159 | 6059209 | SSS anomaly 3 x 1m. No magnetic or bathymetry anomaly | Low | N/A |
| CA_3013 | 351415 | 6058815 | SSS anomaly 3 x 1m. No magnetic or bathymetry anomaly | Low | N/A |
| CA_3014 | 350161 | 6059103 | Cluster of small (<1m) angular dark SSS reflectors, possibly indicating debris | Low | N/A |
| CA_3015 | 347470 | 6058576 | Magnetic anomaly SN3-D-UMC0091 (96nT) associated with a series of linear SSS anomalies, possibly fishing gear, covering an area c. 7x10m. | Medium | 20m |
| CA_3016 | 346801 | 6058348 | Magnetic anomalies SN3-D-UMC0062 (4nT) and SN3-D-UMC0066 (50nT) | Low | N/A |

| CA no. | Easting UTM 30N | Northing UTM 30N | Description | Archaeological Potential | Proposed AEZ Radius |
|---|---|---|---|---|---|
| CA_3017 | 345808 | 6058151 | Magnetic anomalies SN3-D-MC0018 (7nT), SN3-D-UMC0053 (8nT) and SN3-D-UMC0054 (19nT) | Low | N/A |
| CA_3018 | 345047 | 6058014 | Magnetic anomaly SN3-D-MC0023 (14nT) associated with SSS anomaly SN3-D-SC0885 (3.4 x 3.3 x 2.9m) | Medium | 15m |
| CA_3019 | 344566 | 6057880 | SSS anomalies SN3-D-SC0878 and SN3-D-SC0879, both linear angular dark reflectors up to 6m in length | Low | N/A |
| CA_3020 | 344398 | 6057662 | Magnetic anomaly SN3-D-UMC0042 (146nT) | Low | N/A |
| CA_3021 | 344196 | 6057551 | Cluster of magnetic anomalies SN3-D-UMC0030-39 (6-60nT) | Medium | 35m |
| CA_3022 | 343003 | 6056531 | Magnetic anomaly SN3-D-MC0009 (738nT) associated with bathymetry anomaly measuring 22 x 14 x 2m. Also visible in SSS. | Medium | 35m |
| CA_3023 | 337556 | 6055591 | Magnetic anomaly SN3-T-UMC074 (166nT) associated with area of rough seabed, possibly associated with debris. | Medium | 20m |

5.14. The marine archaeological DBA for SCOT-NI 3 recorded 17 sites of cultural heritage interest within the CSC, including 16 wrecking incidents (Table 2). The majority of these appear to be reports of losses rather than the exact location of known wreck sites (see Coracle Archaeology 2020b); no corresponding anomalies were visible in the marine geophysics survey data at, or in the vicinity of, the reported locations.

5.15. A series of linear anomalies are visible on the seabed surface in the MBES data (**CA_3002**; Figure 53), indicative of scour around an upstanding feature; some are also associated with magnetic anomalies. The origin of these features is unclear, but is likely to represent a scatter of debris on the seabed. It is possible that this is an exposed section of the Donaghadee - Portpatrick Nos 6 and 7 telecommunications cable, though the area over which these features are visible would suggest that it is not the exposure of a single cable. It may represent the exposure of earlier Donaghadee-Portpatrick Anglo-Irish cables: the original cable was laid in 1870 (No. 1), with further cables laid in 1893 (No. 2), 1922 (No. 3), 1937 (No. 4 and 5) and 1950 (6 and 7). The possibility that these linear anomalies are indicative of a previously uncharted wreck-site cannot, however, be discounted.

**Table 2 Known historic assets within the CSC**

| CA no. | Name | Type | Date | Status | UTM 30N Easting | UTM 30N Northing |
|---|---|---|---|---|---|---|
| **CA3_1** | Unknown | Wreck | 1775 | Unknown | 363093 | 6080110 |
| | | | | | 362309 | 6078900 |
| **CA3_2** | *Goodintent* | Wreck | 1799 | Unknown | 363093 | 6080110 |
| **CA3_3** | *Deveonshire* | Wreck | 1810 | Unknown | 361808 | 6078990 |
| **CA3_4** | *James* | Wreck | 1811 | Unknown | 361807 | 6078990 |
| **CA3_5** | *Mary* | Wreck | 1820 | Unknown | 363089 | 6080310 |
| **CA3_6** | *Elizabeth* | Wreck | 1858 | Unknown | 362990 | 6080210 |
| | | | | | 361807 | 6078990 |
| **CA3_7** | *Ossier* | Wreck | 1866 | Unknown | 360251 | 6069070 |
| | | | | | 361808 | 6078990 |
| **CA3_8** | *Mauritus* | Wreck | 1872 | Unknown | 361809 | 6078990 |
| **CA3_9** | *Elizabeth & Ann* | Wreck | 1879 | Unknown | 361809 | 6078990 |
| **CA3_10** | *Norseman* | Wreck | 19thc | Unknown | 361808 | 6078990 |
| **CA3_11** | Unknown | Wreck | 19thc | Unknown | 362798 | 6079710 |
| **CA3_12** | Unknown | Wreck | 19thc | Unknown | 361809 | 6078990 |
| **CA3_13** | *Perseverance* | Wreck | 19thc | Unknown | 361807 | 6078990 |
| **CA3_14** | Unknown | Wreck | 1943 | Unknown | 363093 | 6080110 |
| **CA3_15** | *Phasma* | Wreck | 19th-20thc | Unknown | 363207 | 6080330 |
| **CA3_16** | *Morning star* | Wreck | 20thc | Unknown | 363093 | 6080110 |
| **CA3_17** | *St Kain's well* | Monument | 1893 | Unknown | 362309 | 6078900 |

5.16. A clearly defined vessel hull is also visible in the geophysical datasets, measuring c. 18m in length with a visible beam of c. 3m (**CA_3003**; Figure 53). The site lies perpendicular to the coast, with the bow pointing towards Portpatrick. No known wreck site was identified in the DBA at this location (Coracle Archaeology 2020b), though the archives of Historic Environment Scotland tentatively record an unknown wreck (**CA3_1**) and the wreck of the *Deveonshire* (**CA3_3**) is some 210m NNE of this anomaly. Another unknown wreck (**CA3_14**) is recorded c. 290m SW of **CA_3003**.

5.17. It is important to note that the wreck is lying parallel to the cable route. An AEZ of 18m radius is therefore deemed appropriate, ensuring a minimum 15m clearance on all sides. Figure 53 illustrates the AEZ in relation to that given to **CA_3002**; the two AEZs

combined provide added protection to the wreck site. There is no evidence to suggest that debris from the wreck has been dragged away from the site.

5.18. No further wreck sites were identified within the CSC during the review of marine geophysical survey data. This, combined with the paucity and tentative nature of the loss reports described in the DBA (Coracle Archaeology 2020b), suggests that the potential for encountering unexpected cultural remains is low, although given the historic density of marine activity in this area, the potential may be better categorised as moderate.

***Submerged palaeo-landscapes***

5.19. The stratigraphic sequence outlined in the DBA (Coracle Archaeology 2020b) was confirmed by the SBP and geotechnical data. In the nearshore area at Portpatrick, the sedimentary sequence consists of sandy gravels or gravelly sands over the glacial till; the thickness of these superficial deposits varies between 1-2m to less than 0.5m where near-surface till is exposed. This pattern of generally <1m of gravelly sand / sand over till continues offshore.

5.20. A similar pattern is seen at Donaghadee, where exposed near-surface rock is intersected by a palaeo-channel along the line of the CSC, with 1-2m of sandy gravel over the rock. The palaeo-channel is filled with marine sands and thus holds no palaeo-environmental potential. Circa 1.5km beyond the landfall, the rock is overlain by glacial till, which in turn is overlain by a continuation of the near-surface gravelly-sand or clayey-sand, thinning to <1m.

5.21. No features with archaeological potential are visible (e.g. palaeo-channels with fine-grained/ organic deposits) in the SBP data from the proposed route of SCOT-NI 3. The potential for submerged palaeo-landscape features along the CSC is therefore deemed to be low.

## 6. CONCLUSIONS

***Landfall***

6.1. Five linear anomalies were identified in the geophysical survey data collected at the landfall locations; three at Portpatrick, and two at Donaghadee. These are indicative of

the presence of buried services or cables. No anomalies of archaeological potential were identified in the non-intrusive survey data.

6.2. Walkover surveys successfully identified and evaluated known heritage assets recorded in the DBA (Coracle Archaeology 2020b). One potential new feature, a stone-built beach-shelter or boat house, was identified at Portpatrick.

***Marine***

6.3. The marine geophysical survey data for the proposed SCOT-NI 3 route has been assessed for features containing archaeological potential. Twenty-three geophysical anomalies with archaeological potential have been identified within the CSC, with two highlighted as possible wreck sites. AEZs have been defined for all anomalies considered to be of high or medium archaeological potential.

6.4. There are no sub-bottom palaeo-landscape features of archaeological potential visible within the available datasets.

## 7. REFERENCES

Bonsall, J., Gaffney, C. & Armit, I. 2014. *Preparing for the future: A reappraisal of archeo-geophysical surveying on the National Roads Scheme 2001-2010*. University of Bradford report for the National Roads Authority of Ireland.

Coracle Archaeology 2020a. BT Scotland-Northern Ireland: SCOT-NI 4. Archaeological review of marine geophysical survey data and the results of archaeological surveys at the two landfall locations. Coracle Archaeology. Report No. 190203.3

Coracle Archaeology 2020b. BT Scotland-Northern Ireland: SCOT-NI 3 & SCOT-NI 4. Marine archaeological desk-based assessment. Coracle Archaeology. Report No. 190203.1.

David, A., Linford, N., & Linford, P. 2008. *Geophysical survey in archaeological field evaluation*. Second Edition. English Heritage.

Dix, J. 2008. Modelling Exclusion Zones for Marine Aggregate Dredging https://doi.org/10.5284/1000038

Gaffney, C., Gater, J., & Ovenden, S. 2002. *The use of geophysical techniques in archaeological evaluations*. IFA Paper no. 6 Institute for Archaeologists.

Global Marine 2020. Scot-NI 3. Fugro Discovery, Valkyrie and Seeker: Cable Route Survey Report. Global Marine Systems Limited, Report No. 2668-FG-J-RD-0002 SCOT-NI3.

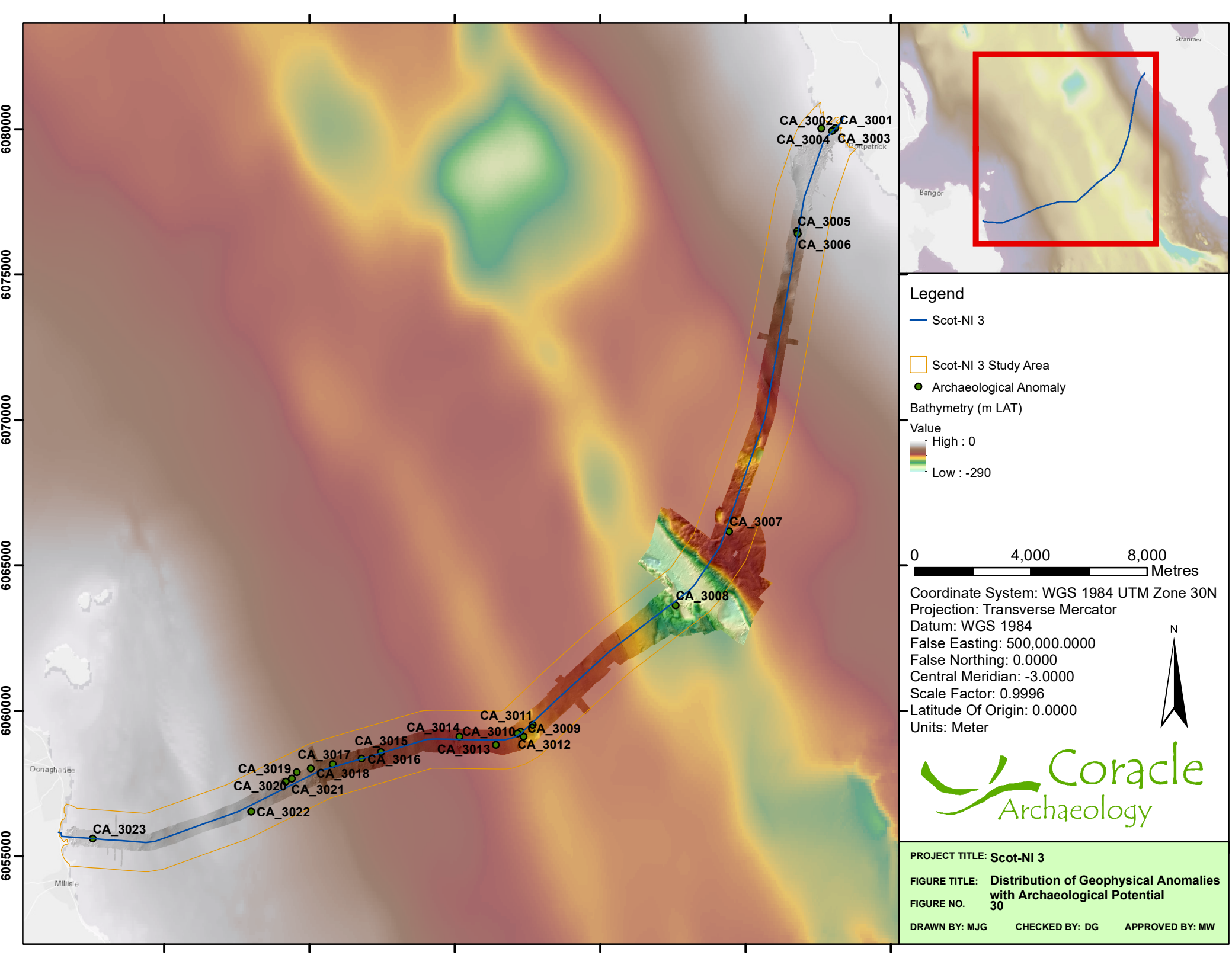
Minelab International Ltd. 2017. *X-Terra 705 Instruction manual*. Minelab.

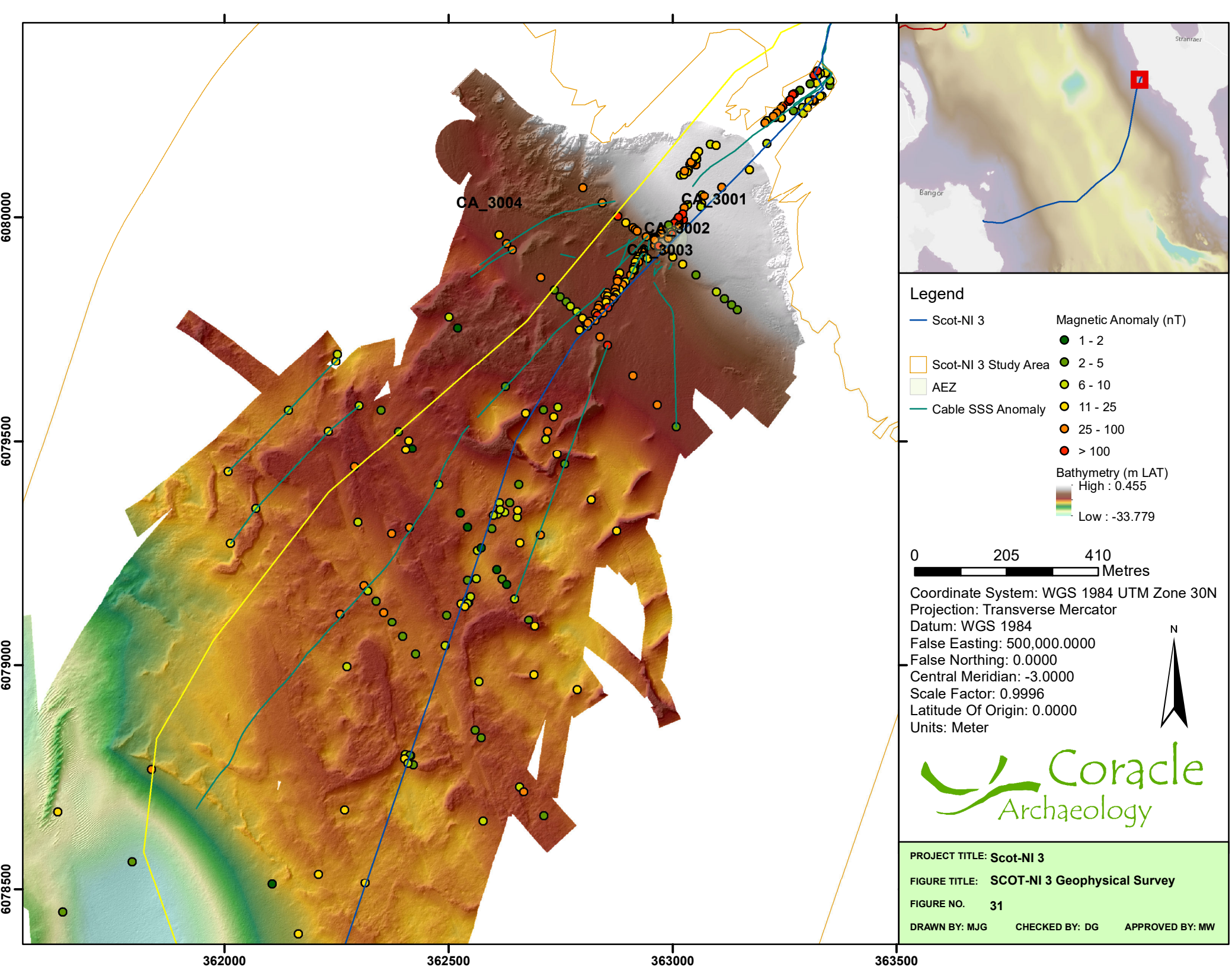
Plets, R., Dix, J. and Bates, R., 2013. *Marine Geophysics Data Acquisition, Processing and Interpretation: Guidance Notes*. Historic England, Swindon.

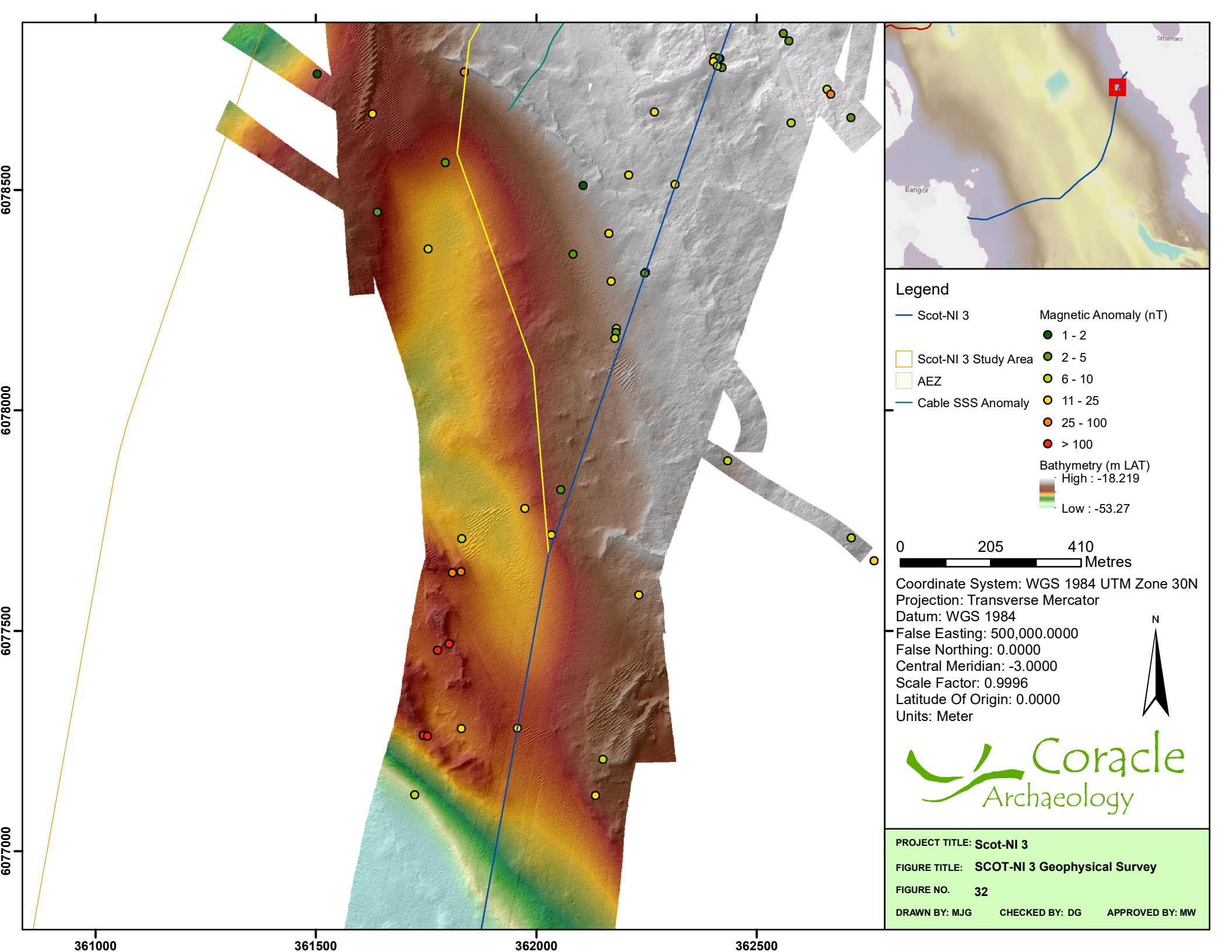
Schmidt, A., Linford, P., Linford, N., David, A., Gaffney, C., Sarris, A. & Fassbinder, J. 2015. *EAC guidelines for the use of geophysics in archaeology: Questions to ask and points to consider*. EAC Guidelines 2. *Europae Archaelogiae Consilium*, Belgium.

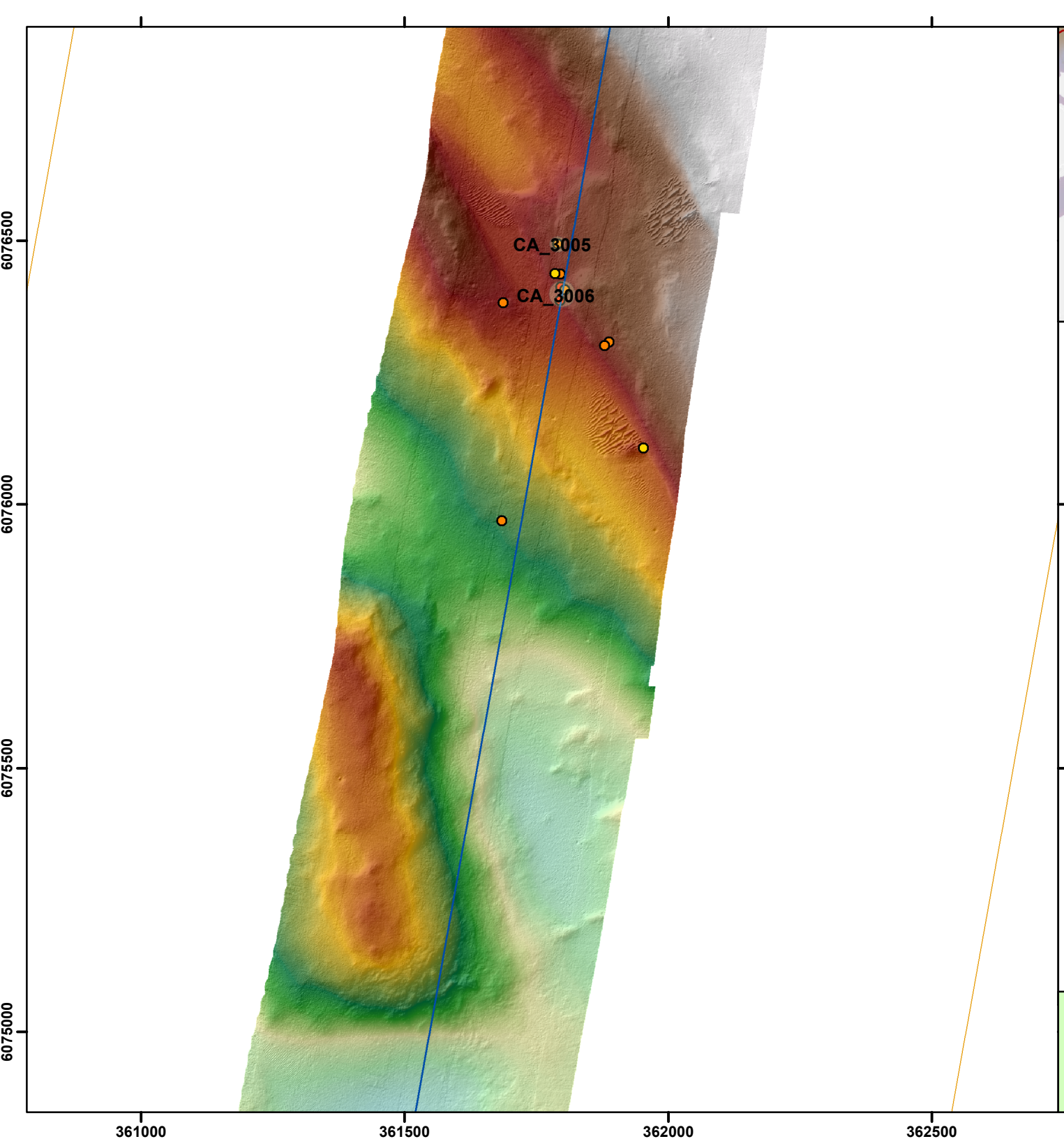
The Crown Estate & Wessex Archaeology 2010. *Model Clauses for Archaeological Written Schemes of Investigation*. London: The Crown Estate.

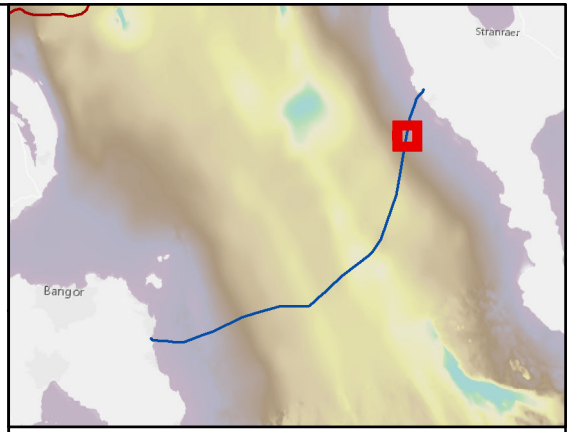
## 8. FIGURES (OVERLEAF)


CA_3001
CA_3002
CA_3003
CA_3004
CA_3005
CA_3006
CA_3007
CA_3008
CA_3009
CA_3010
CA_3011
CA_3012
CA_3013
CA_3014
CA_3015
CA_3016
CA_3017
CA_3018
CA_3019
CA_3020
CA_3021
CA_3022
CA_3023
Donaghadee
Millisle
Stranraer
Bangor
Portpatrick
6080000
6075000
6070000
6065000
6060000
6055000
340000
345000
350000
355000
360000
365000
Legend
Scot-NI 3
Scot-NI 3 Study Area
Archaeological Anomaly
Bathymetry (m LAT)
Value
High : 0
Low : -290
0
4,000
8,000
Metres
Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter
N
Coracle Archaeology
PROJECT TITLE: Scot-NI 3
FIGURE TITLE: Distribution of Geophysical Anomalies with Archaeological Potential
FIGURE NO. 30
DRAWN BY: MJG
CHECKED BY: DG
APPROVED BY: MW


CA_3004
CA_3001
CA_3002
CA_3003
6080000
6079500
6079000
6078500
362000
362500
363000
363500
Stranraer
Bangor
Legend
Scot-NI 3
Scot-NI 3 Study Area
AEZ
Cable SSS Anomaly
Magnetic Anomaly (nT)
1 - 2
2 - 5
6 - 10
11 - 25
25 - 100
> 100
Bathymetry (m LAT)
High : 0.455
Low : -33.779
0
205
410
Metres
Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter
N
Coracle
Archaeology
PROJECT TITLE: Scot-NI 3
FIGURE TITLE: SCOT-NI 3 Geophysical Survey
FIGURE NO. 31
DRAWN BY: MJG
CHECKED BY: DG
APPROVED BY: MW


6078500
6078000
6077500
6077000
361000
361500
362000
362500
Stranraer
Bangor
Legend
Scot-NI 3
Scot-NI 3 Study Area
AEZ
Cable SSS Anomaly
Magnetic Anomaly (nT)
1 - 2
2 - 5
6 - 10
11 - 25
25 - 100
> 100
Bathymetry (m LAT)
High : -18.219
Low : -53.27
0
205
410
Metres
Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter
N
Coracle
Archaeology
PROJECT TITLE: Scot-NI 3
FIGURE TITLE: SCOT-NI 3 Geophysical Survey
FIGURE NO. 32
DRAWN BY: MJG
CHECKED BY: DG
APPROVED BY: MW




## Legend

- Scot-NI 3
- Scot-NI 3 Study Area
- AEZ
- Cable SSS Anomaly

Magnetic Anomaly (nT)

- 1 - 2
- 2 - 5
- 6 - 10
- 11 - 25
- 25 - 100
- > 100

Bathymetry (m LAT)

High : -32.115

Low : -67.414

0 205 410 Metres

Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

N

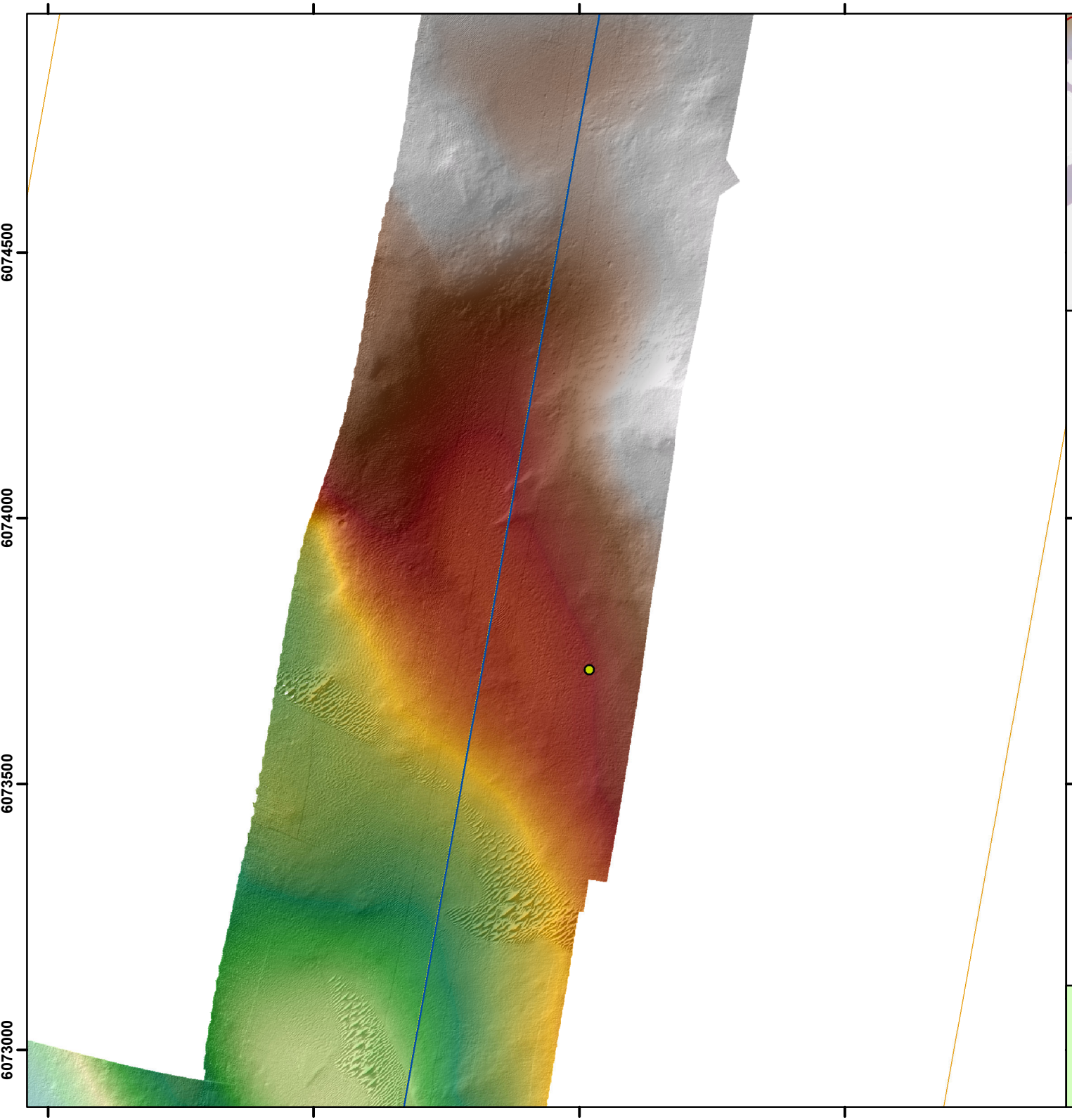
Coracle Archaeology

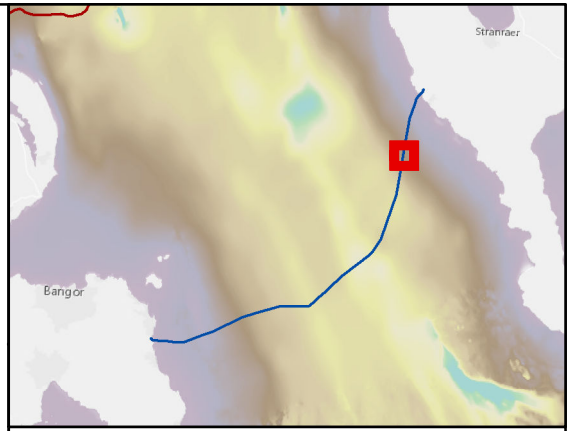
**PROJECT TITLE:** Scot-NI 3

**FIGURE TITLE:** SCOT-NI 3 Geophysical Survey

**FIGURE NO.** 33

**DRAWN BY:** MJG **CHECKED BY:** DG **APPROVED BY:** MW




## Legend

- Scot-NI 3
- Scot-NI 3 Study Area
- AEZ
- Cable SSS Anomaly

Magnetic Anomaly (nT)

- 1 - 2
- 2 - 5
- 6 - 10
- 11 - 25
- 25 - 100
- > 100

Bathymetry (m LAT)

High : -56.297

Low : -111.45

0 205 410 Metres

Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

N

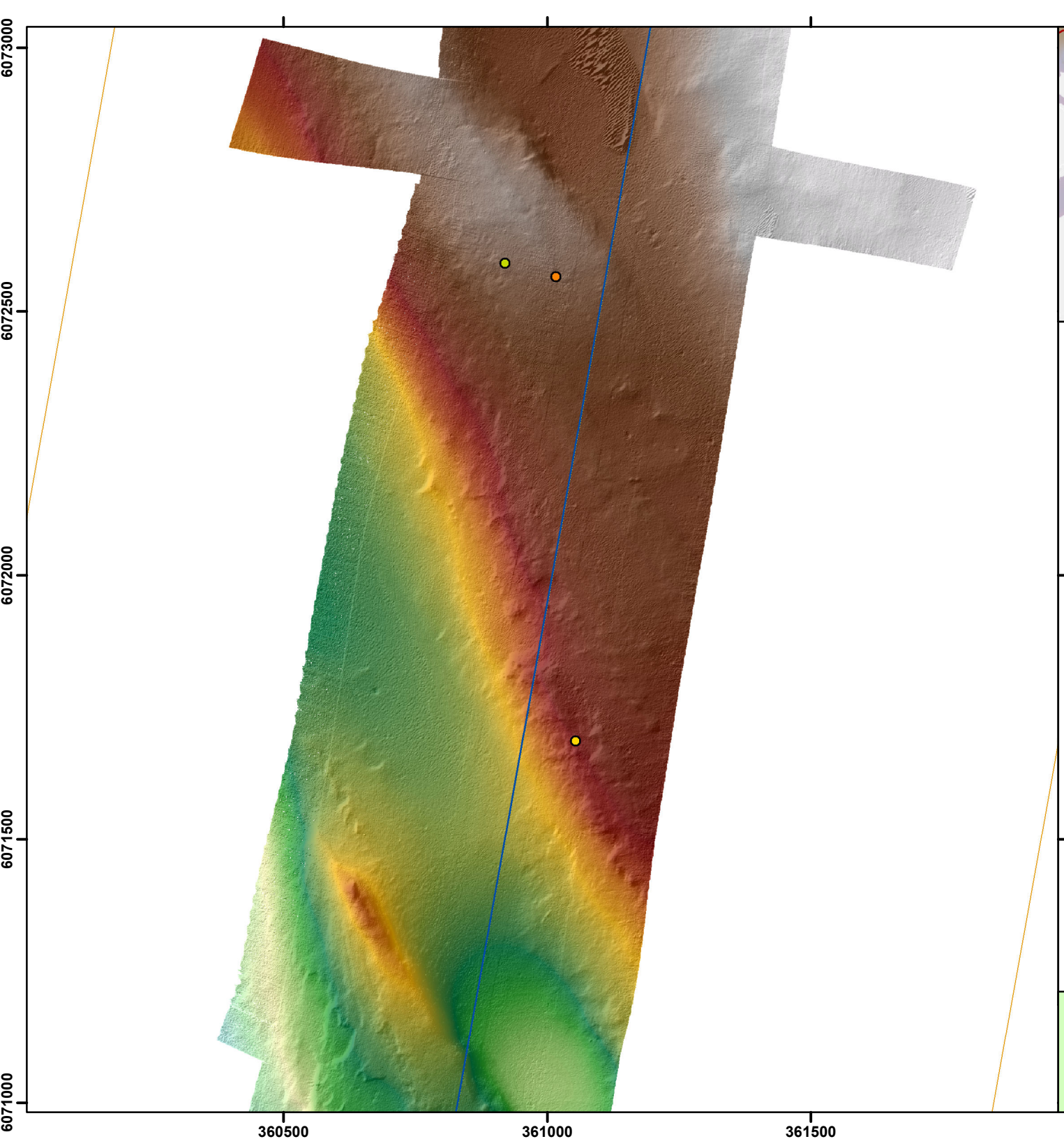
Coracle Archaeology

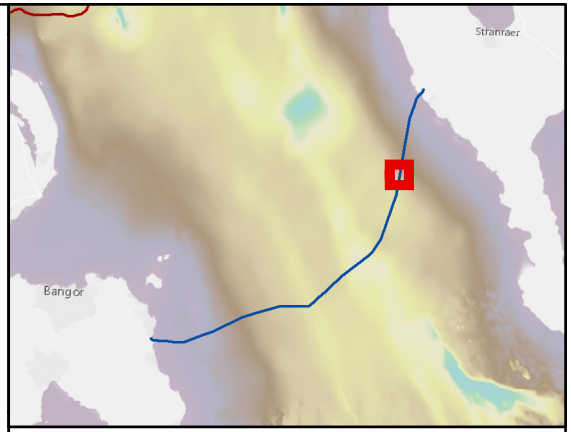
PROJECT TITLE: **Scot-NI 3**

FIGURE TITLE: **SCOT-NI 3 Geophysical Survey**

FIGURE NO. **34**

DRAWN BY: MJG CHECKED BY: DG APPROVED BY: MW




## Legend

- Scot-NI 3
- Scot-NI 3 Study Area
- AEZ
- Cable SSS Anomaly

Magnetic Anomaly (nT)

- 1 - 2
- 2 - 5
- 6 - 10
- 11 - 25
- 25 - 100
- > 100

Bathymetry (m LAT)

High : -85.207

Low : -140.526

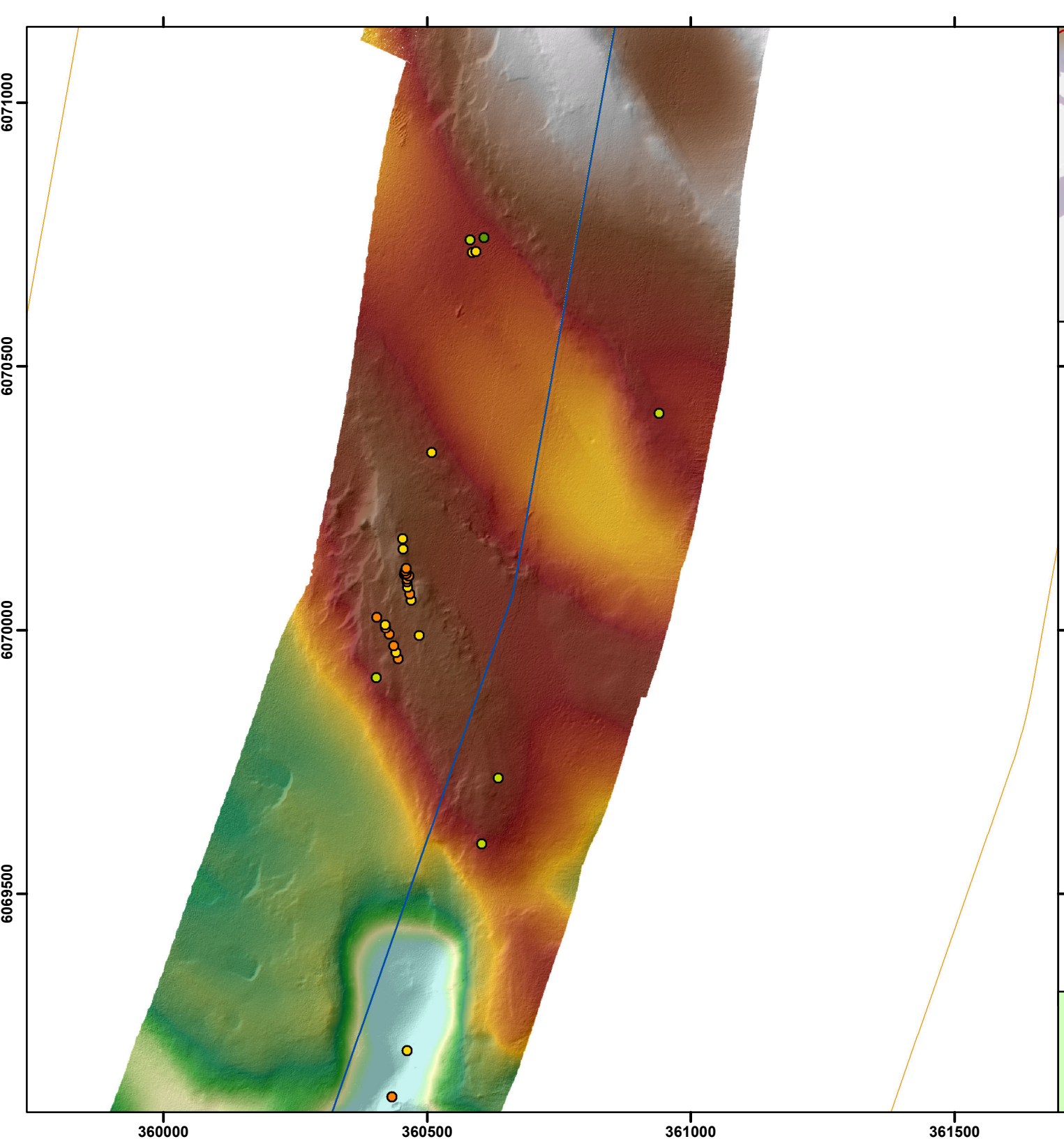
0 205 410 Metres

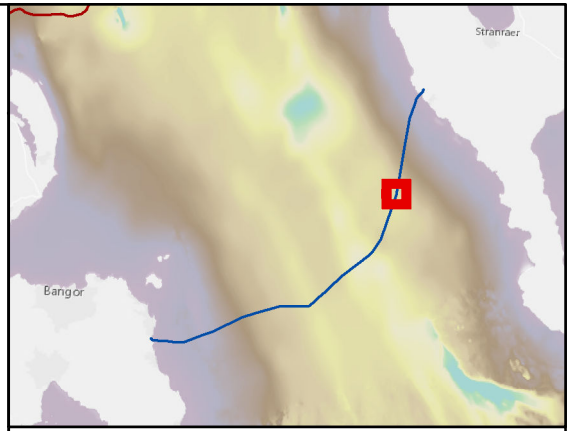
Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

N

Coracle Archaeology

| | |
|---|---|
| PROJECT TITLE: | **Scot-NI 3** |
| FIGURE TITLE: | **SCOT-NI 3 Geophysical Survey** |
| FIGURE NO. | **35** |
| DRAWN BY: MJG | CHECKED BY: DG APPROVED BY: MW |




## Legend

- Scot-NI 3
- Scot-NI 3 Study Area
- AEZ
- Cable SSS Anomaly

Magnetic Anomaly (nT)

- 1 - 2
- 2 - 5
- 6 - 10
- 11 - 25
- 25 - 100
- > 100

Bathymetry (m LAT)

High : -119.274

Low : -166.647

0 205 410 Metres

Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

N

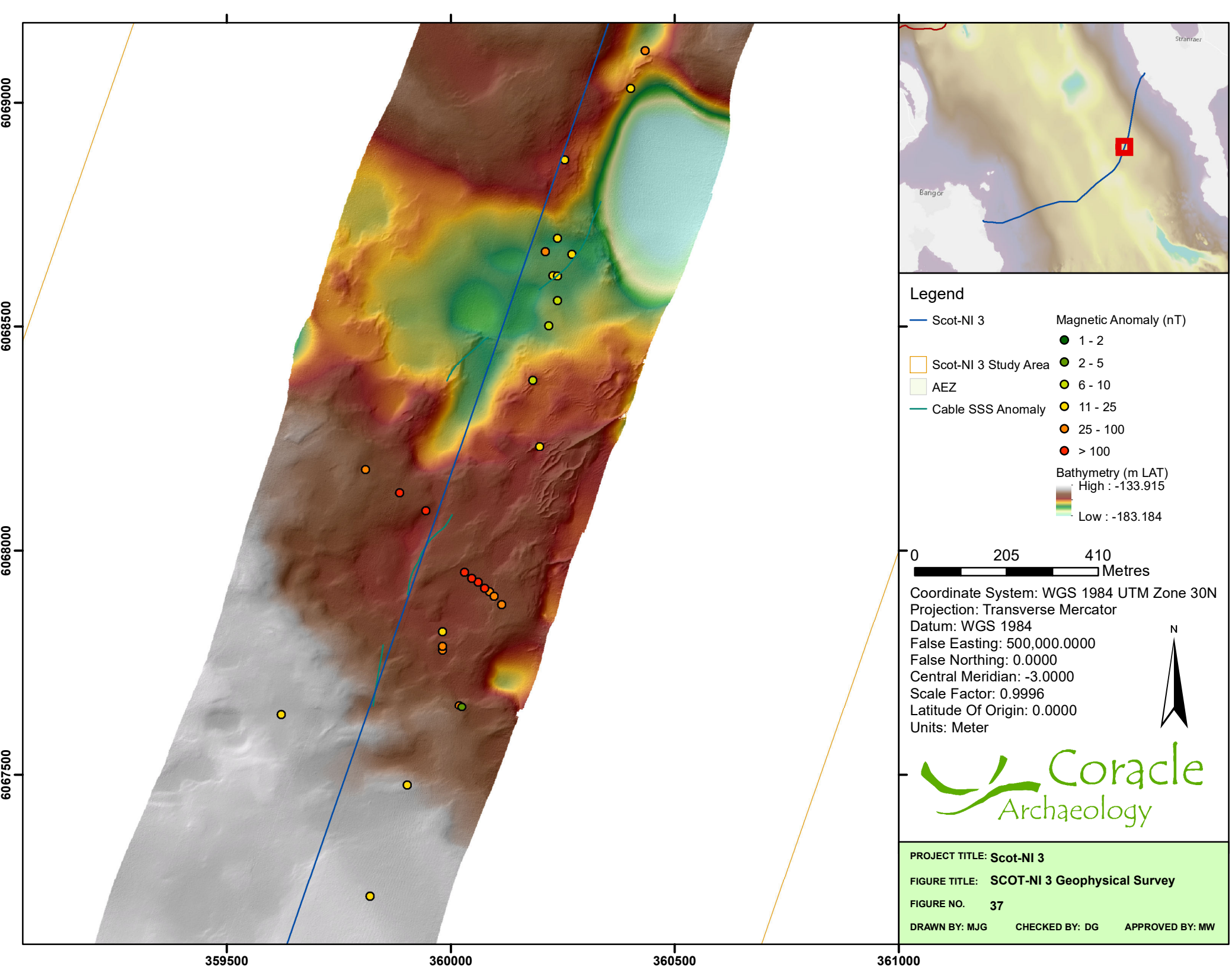
Coracle Archaeology

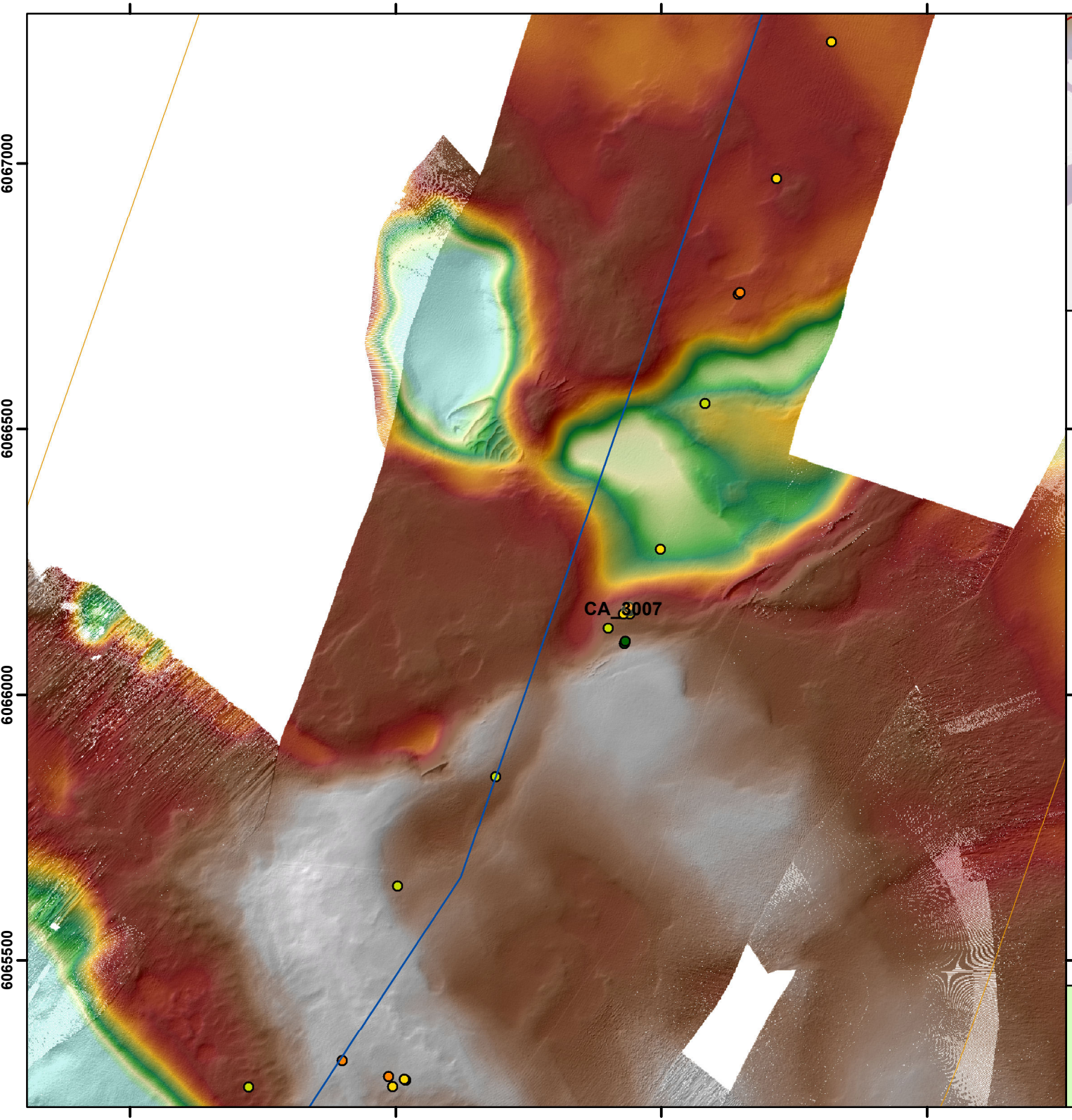
PROJECT TITLE: **Scot-NI 3**

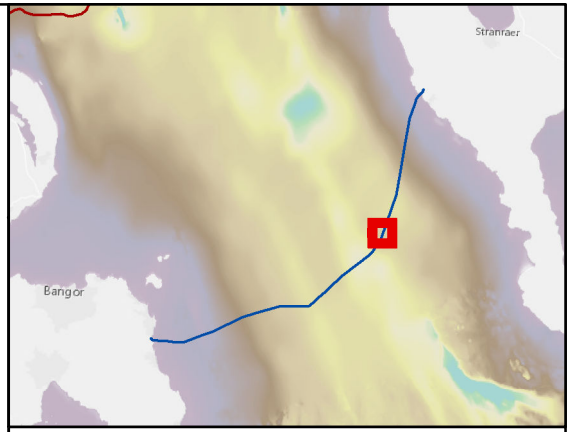
FIGURE TITLE: **SCOT-NI 3 Geophysical Survey**

FIGURE NO. **36**

DRAWN BY: MJG CHECKED BY: DG APPROVED BY: MW


6069000
6068500
6068000
6067500
359500
360000
360500
361000
Stranraer
Bangor
Legend
Scot-NI 3
Scot-NI 3 Study Area
AEZ
Cable SSS Anomaly
Magnetic Anomaly (nT)
1 - 2
2 - 5
6 - 10
11 - 25
25 - 100
> 100
Bathymetry (m LAT)
High : -133.915
Low : -183.184
0
205
410
Metres
Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter
N
Coracle
Archaeology
PROJECT TITLE: Scot-NI 3
FIGURE TITLE: SCOT-NI 3 Geophysical Survey
FIGURE NO. 37
DRAWN BY: MJG
CHECKED BY: DG
APPROVED BY: MW




## Legend

- Scot-NI 3
- Scot-NI 3 Study Area
- AEZ
- Cable SSS Anomaly

Magnetic Anomaly (nT)

- 1 - 2
- 2 - 5
- 6 - 10
- 11 - 25
- 25 - 100
- > 100

Bathymetry (m LAT)

High : -119.637

Low : -211.467

0 205 410 Metres

Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

N

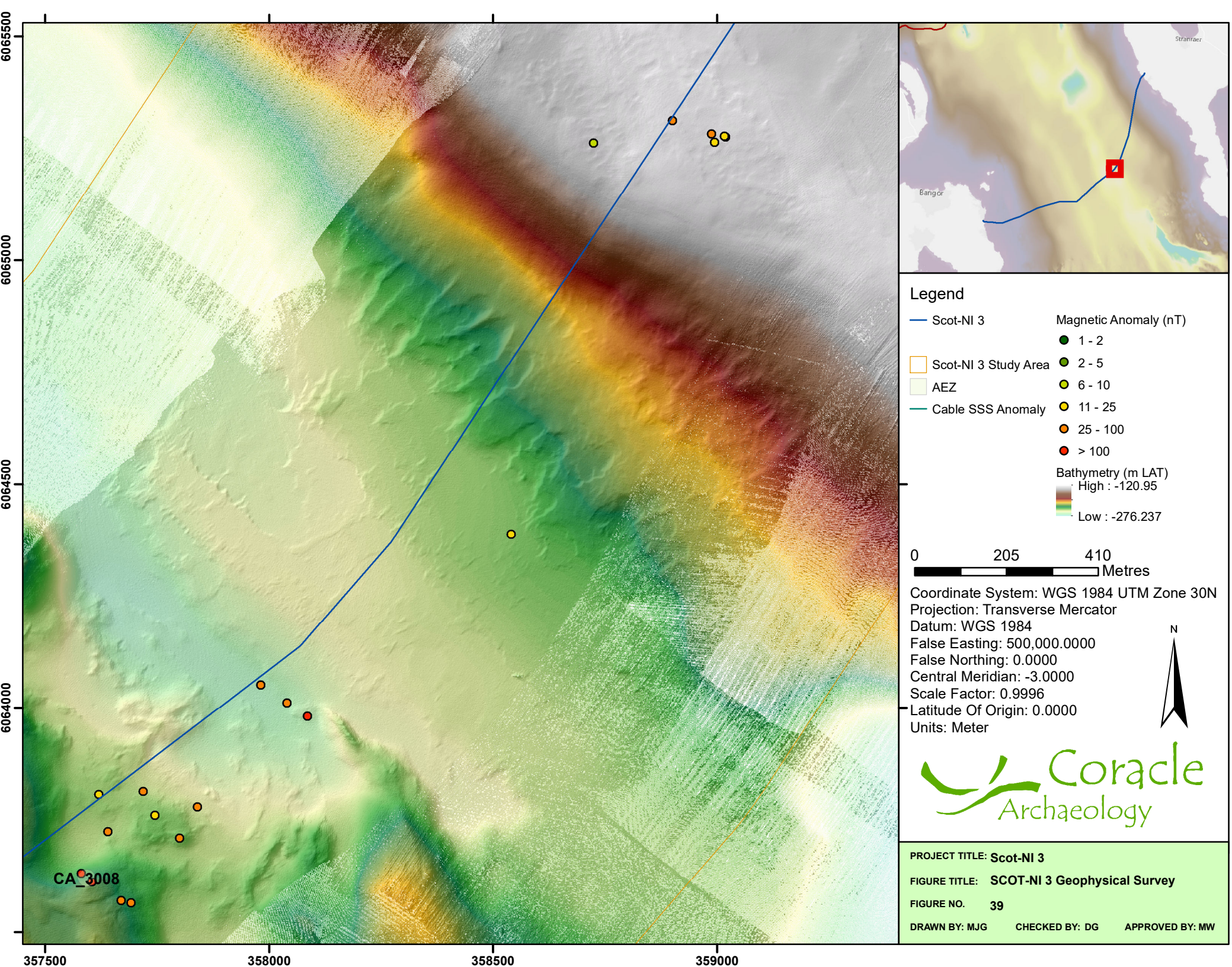
Coracle Archaeology

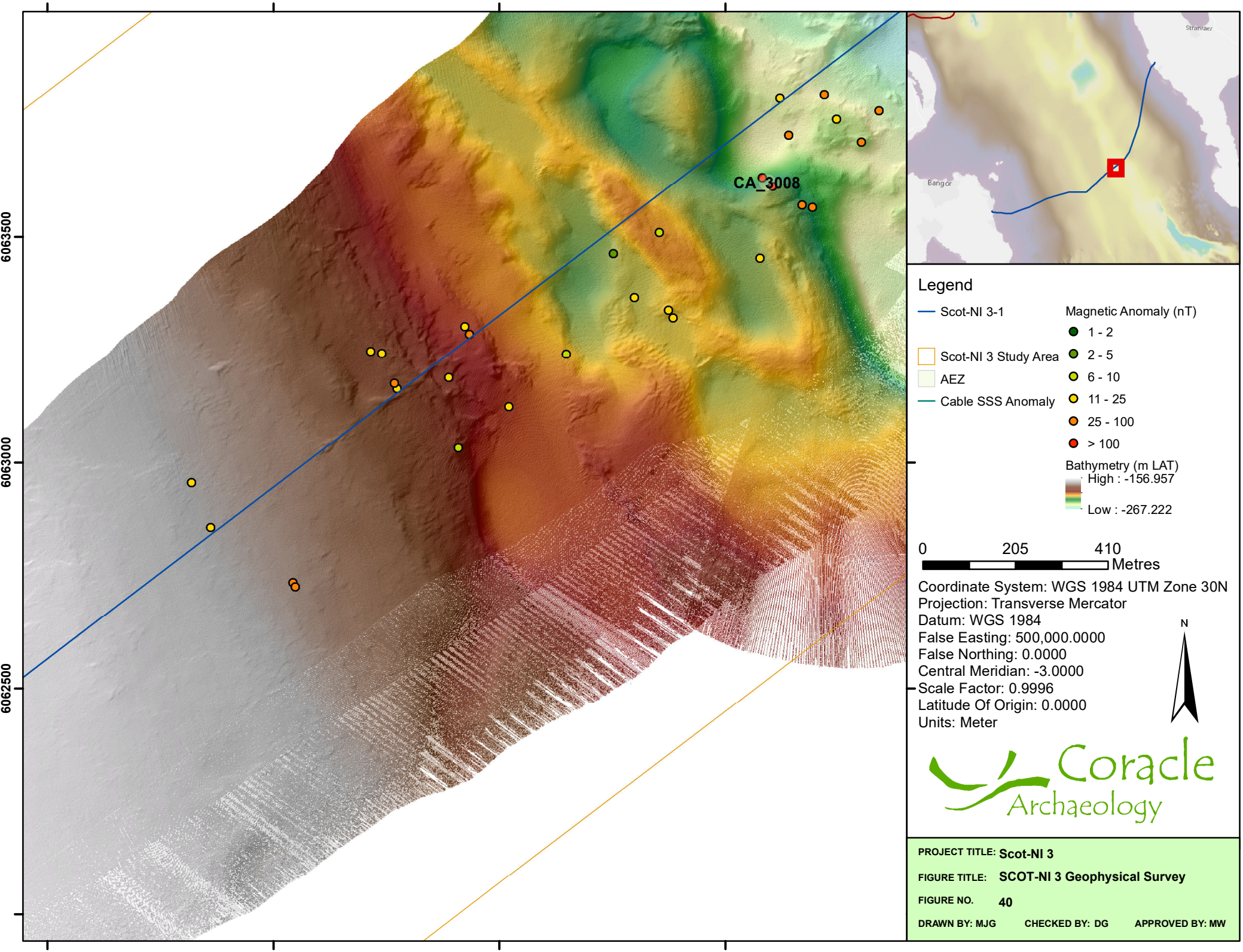
PROJECT TITLE: **Scot-NI 3**

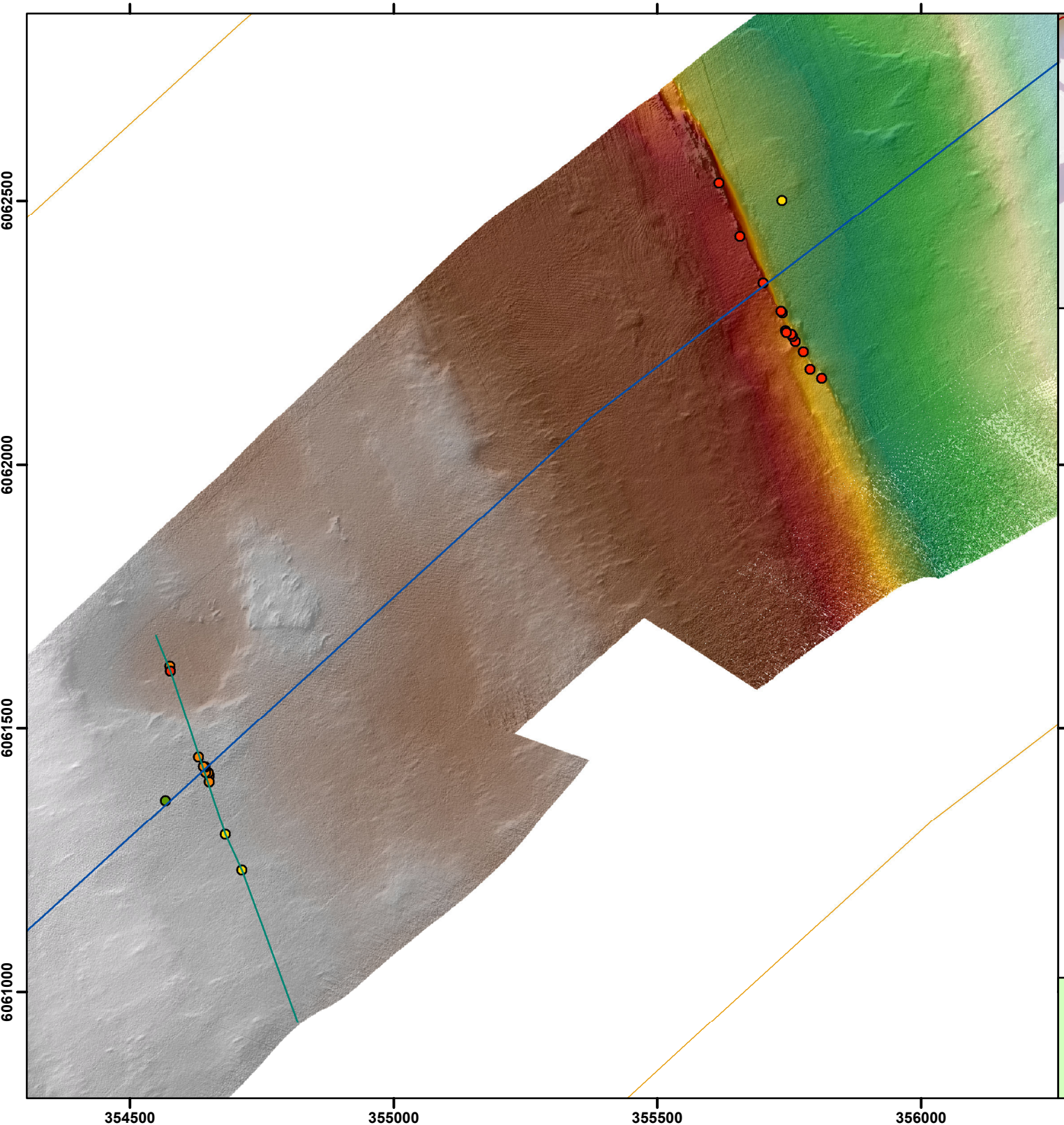
FIGURE TITLE: **SCOT-NI 3 Geophysical Survey**

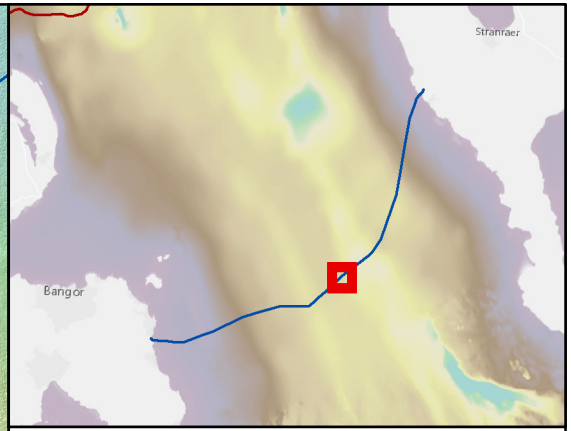
FIGURE NO. **38**

DRAWN BY: MJG CHECKED BY: DG APPROVED BY: MW


6065500
6065000
6064500
6064000
357500
358000
358500
359000
CA_3008
Stranraer
Bangor
Legend
Scot-NI 3
Scot-NI 3 Study Area
AEZ
Cable SSS Anomaly
Magnetic Anomaly (nT)
1 - 2
2 - 5
6 - 10
11 - 25
25 - 100
> 100
Bathymetry (m LAT)
High : -120.95
Low : -276.237
0
205
410
Metres
Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter
N
Coracle
Archaeology
PROJECT TITLE: Scot-NI 3
FIGURE TITLE: SCOT-NI 3 Geophysical Survey
FIGURE NO. 39
DRAWN BY: MJG
CHECKED BY: DG
APPROVED BY: MW


CA_3008
6063500
6063000
6062500
356000
356500
357000
357500
Stranraer
Bangor
Legend
Scot-NI 3-1
Scot-NI 3 Study Area
AEZ
Cable SSS Anomaly
Magnetic Anomaly (nT)
1 - 2
2 - 5
6 - 10
11 - 25
25 - 100
> 100
Bathymetry (m LAT)
High : -156.957
Low : -267.222
0
205
410
Metres
Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter
N
Coracle
Archaeology
PROJECT TITLE: Scot-NI 3
FIGURE TITLE: SCOT-NI 3 Geophysical Survey
FIGURE NO. 40
DRAWN BY: MJG
CHECKED BY: DG
APPROVED BY: MW




## Legend

- Scot-NI 3-1
- Scot-NI 3 Study Area
- AEZ
- Cable SSS Anomaly

Magnetic Anomaly (nT)

- 1 - 2
- 2 - 5
- 6 - 10
- 11 - 25
- 25 - 100
- > 100

Bathymetry (m LAT)

High : -132.144

Low : -168.839

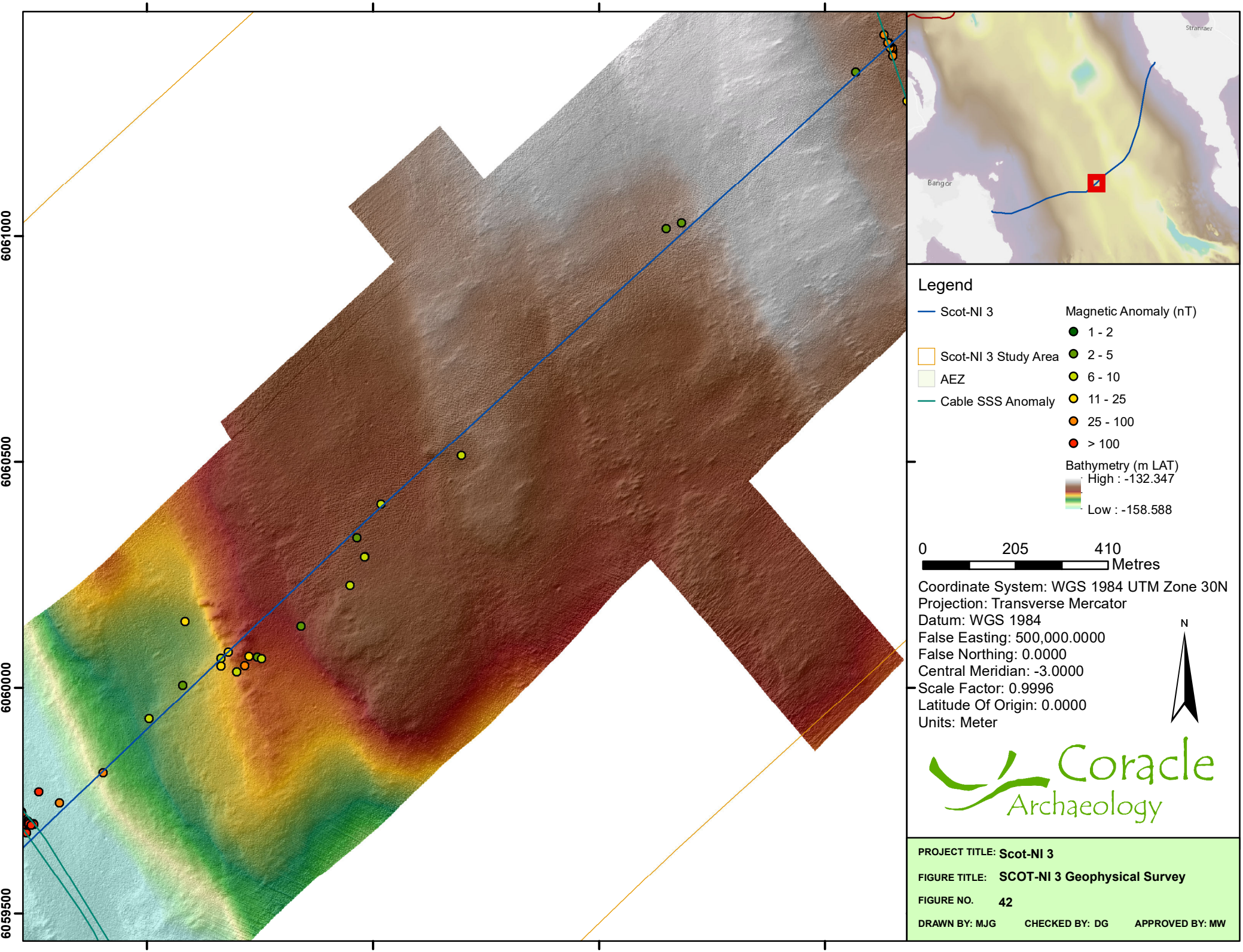
0 205 410 Metres

Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

N

Coracle Archaeology

| | |
|---|---|
| PROJECT TITLE: | Scot-NI 3 |
| FIGURE TITLE: | SCOT-NI 3 Geophysical Survey |
| FIGURE NO. | 41 |
| DRAWN BY: MJG | CHECKED BY: DG APPROVED BY: MW |




## Legend

- Scot-NI 3
- Scot-NI 3 Study Area
- AEZ
- Cable SSS Anomaly

Magnetic Anomaly (nT)

- 1 - 2
- 2 - 5
- 6 - 10
- 11 - 25
- 25 - 100
- > 100

Bathymetry (m LAT)

High : -132.347

Low : -158.588

0 205 410 Metres

Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

N

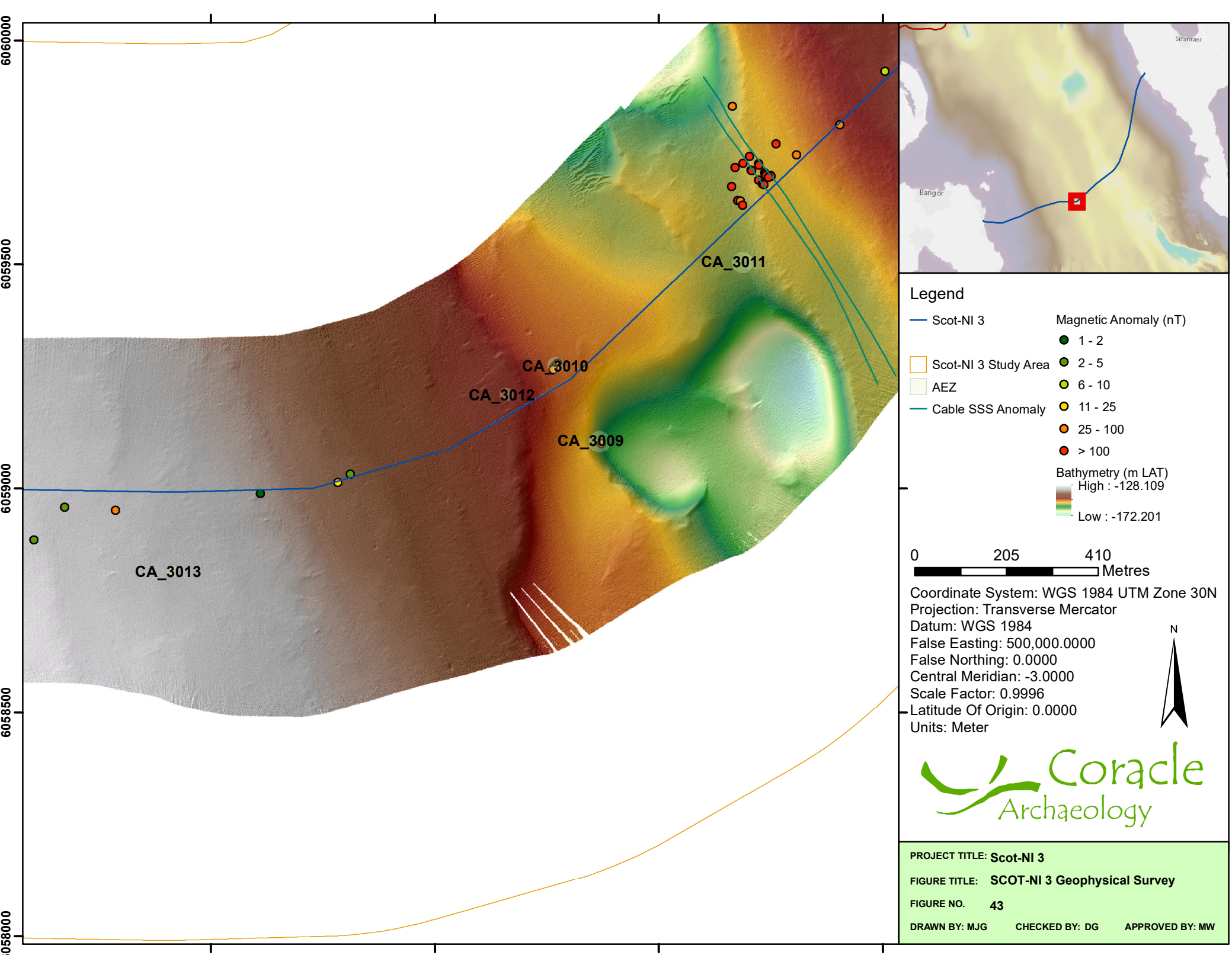
Coracle Archaeology

PROJECT TITLE: **Scot-NI 3**

FIGURE TITLE: **SCOT-NI 3 Geophysical Survey**

FIGURE NO. **42**

DRAWN BY: MJG CHECKED BY: DG APPROVED BY: MW




## Legend

- Scot-NI 3
- Scot-NI 3 Study Area
- AEZ
- Cable SSS Anomaly

Magnetic Anomaly (nT)

- 1 - 2
- 2 - 5
- 6 - 10
- 11 - 25
- 25 - 100
- > 100

Bathymetry (m LAT)

High : -128.109

Low : -172.201

0 205 410 Metres

Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

N

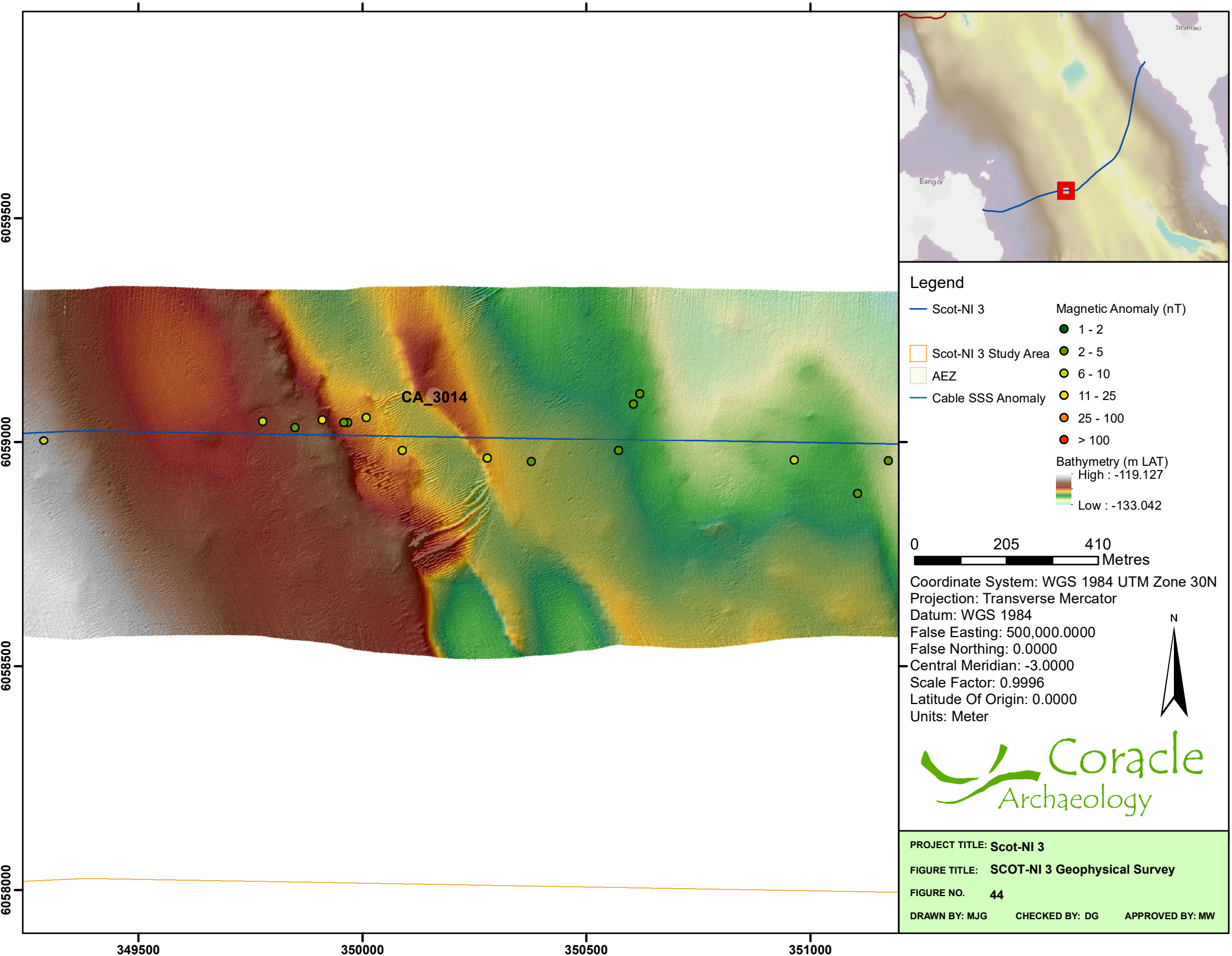
Coracle Archaeology

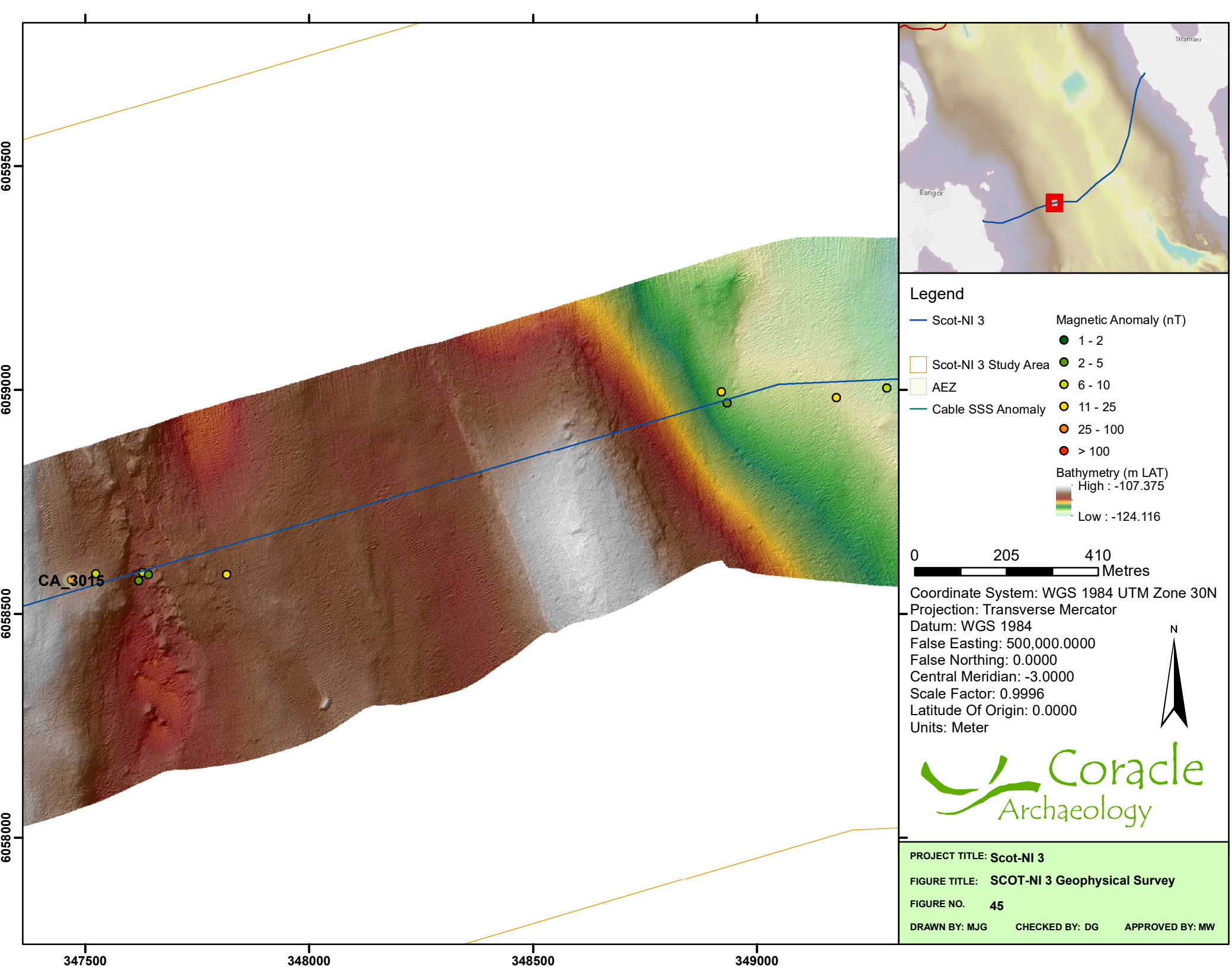
PROJECT TITLE: **Scot-NI 3**

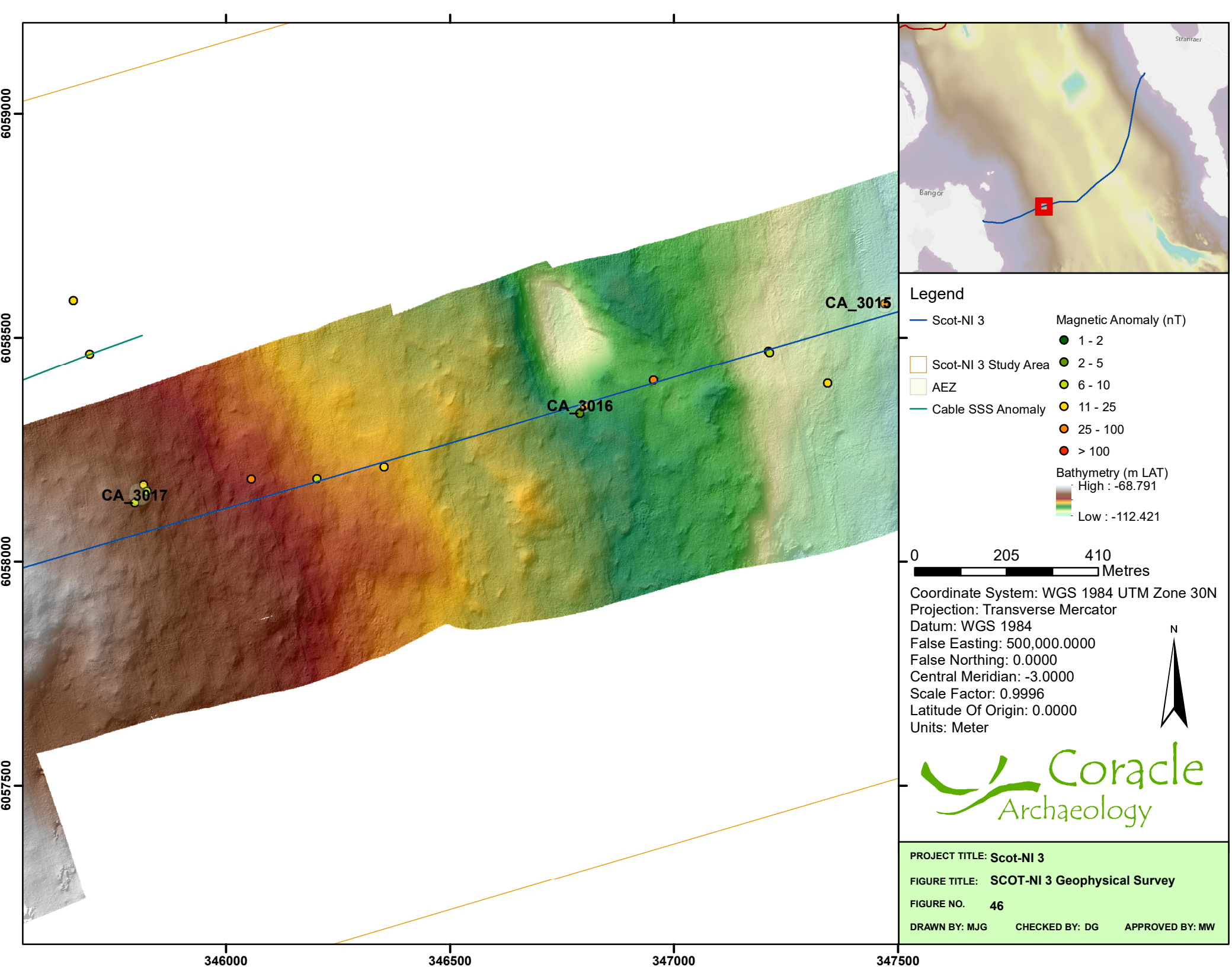
FIGURE TITLE: **SCOT-NI 3 Geophysical Survey**

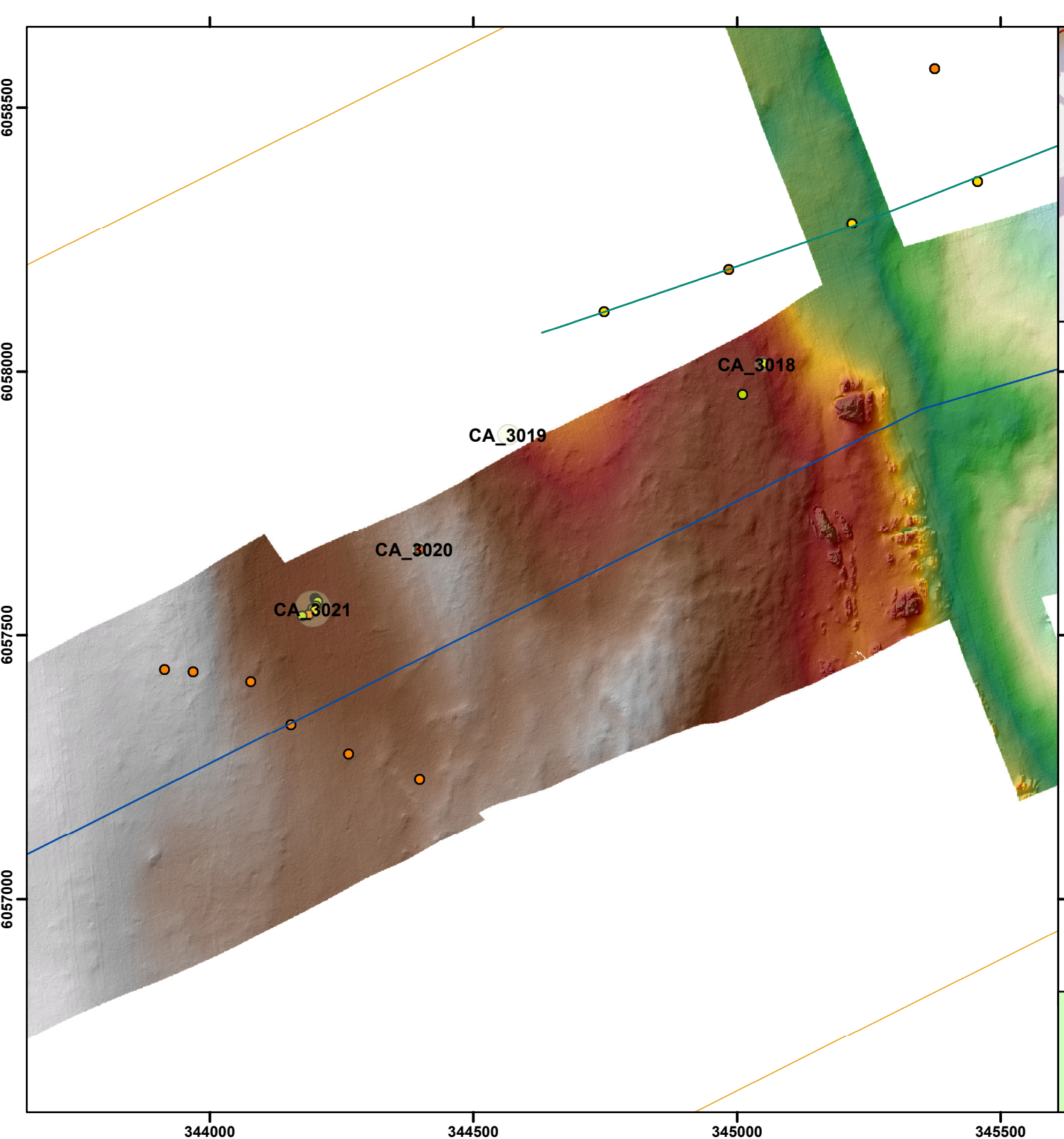
FIGURE NO. **43**

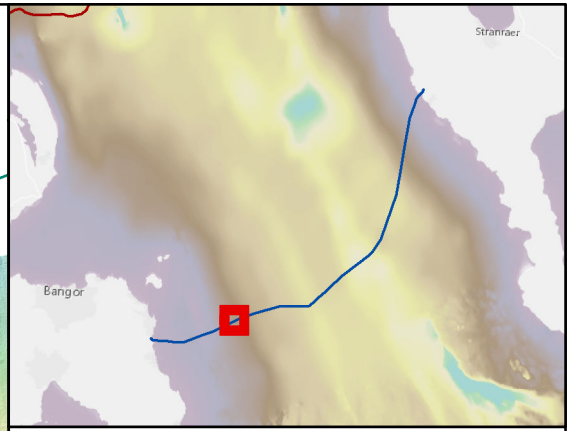
DRAWN BY: MJG CHECKED BY: DG APPROVED BY: MW


6059500
6059000
6058500
6058000
349500
350000
350500
351000
CA_3014
Bangor
Stranraer
Legend
Scot-NI 3
Scot-NI 3 Study Area
AEZ
Cable SSS Anomaly
Magnetic Anomaly (nT)
1 - 2
2 - 5
6 - 10
11 - 25
25 - 100
> 100
Bathymetry (m LAT)
High : -119.127
Low : -133.042
0
205
410
Metres
Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter
N
Coracle
Archaeology
PROJECT TITLE: Scot-NI 3
FIGURE TITLE: SCOT-NI 3 Geophysical Survey
FIGURE NO. 44
DRAWN BY: MJG
CHECKED BY: DG
APPROVED BY: MW


6059500
6059000
6058500
6058000
347500
348000
348500
349000
CA_3015
Bangor
Stranraer
Legend
Scot-NI 3
Scot-NI 3 Study Area
AEZ
Cable SSS Anomaly
Magnetic Anomaly (nT)
1 - 2
2 - 5
6 - 10
11 - 25
25 - 100
> 100
Bathymetry (m LAT)
High : -107.375
Low : -124.116
0
205
410
Metres
Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter
N
Coracle
Archaeology
PROJECT TITLE: Scot-NI 3
FIGURE TITLE: SCOT-NI 3 Geophysical Survey
FIGURE NO. 45
DRAWN BY: MJG
CHECKED BY: DG
APPROVED BY: MW


6059000
6058500
6058000
6057500
346000
346500
347000
347500
CA_3015
CA_3016
CA_3017
Stranraer
Bangor
Legend
Scot-NI 3
Scot-NI 3 Study Area
AEZ
Cable SSS Anomaly
Magnetic Anomaly (nT)
1 - 2
2 - 5
6 - 10
11 - 25
25 - 100
> 100
Bathymetry (m LAT)
High : -68.791
Low : -112.421
0
205
410
Metres
Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter
N
Coracle
Archaeology
PROJECT TITLE: Scot-NI 3
FIGURE TITLE: SCOT-NI 3 Geophysical Survey
FIGURE NO. 46
DRAWN BY: MJG
CHECKED BY: DG
APPROVED BY: MW




## Legend

- Scot-NI 3
- Scot-NI 3 Study Area
- AEZ
- Cable SSS Anomaly

Magnetic Anomaly (nT)

- 1 - 2
- 2 - 5
- 6 - 10
- 11 - 25
- 25 - 100
- > 100

Bathymetry (m LAT)

High : -48.805

Low : -84.76

0 205 410 Metres

Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

N

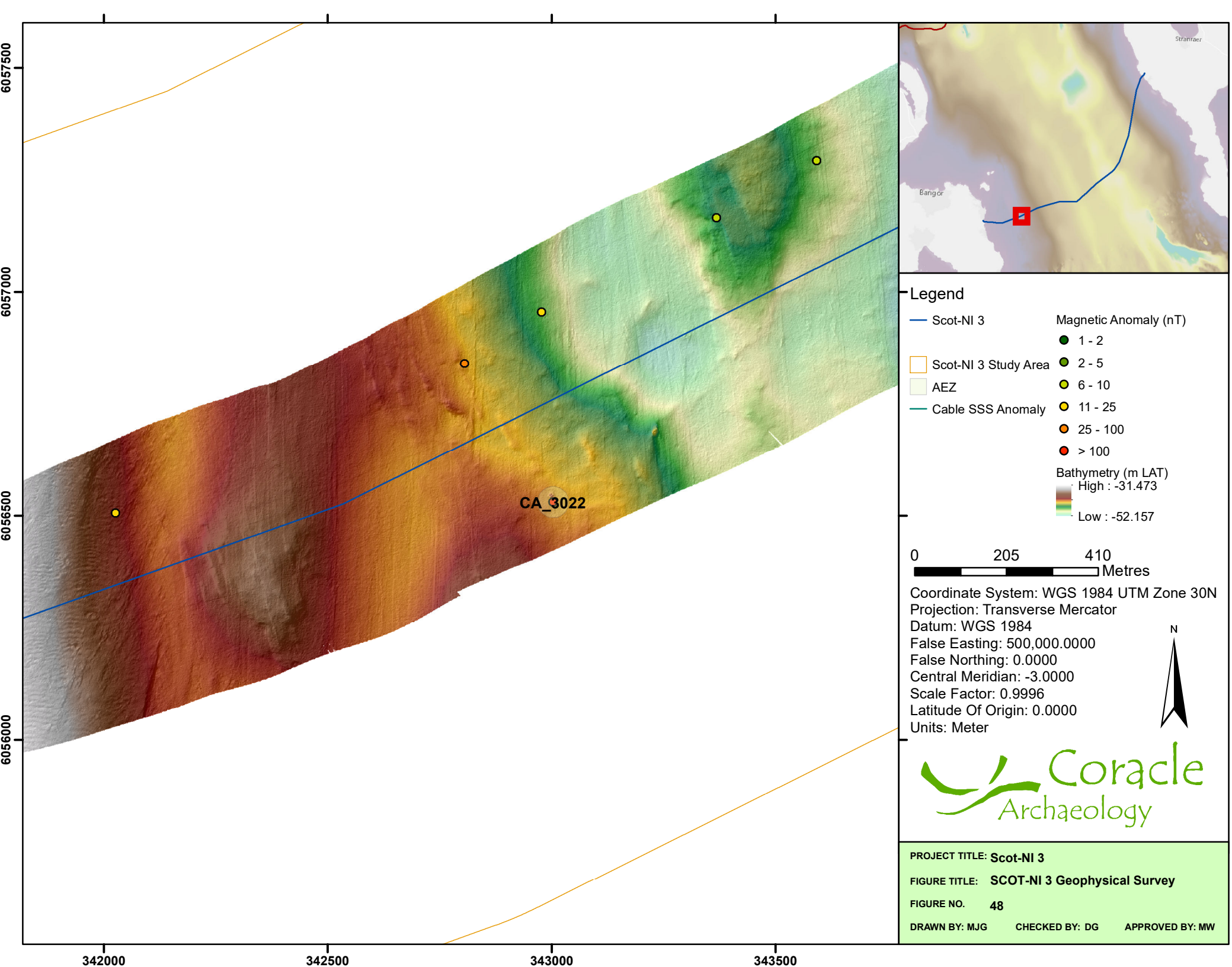
Coracle Archaeology

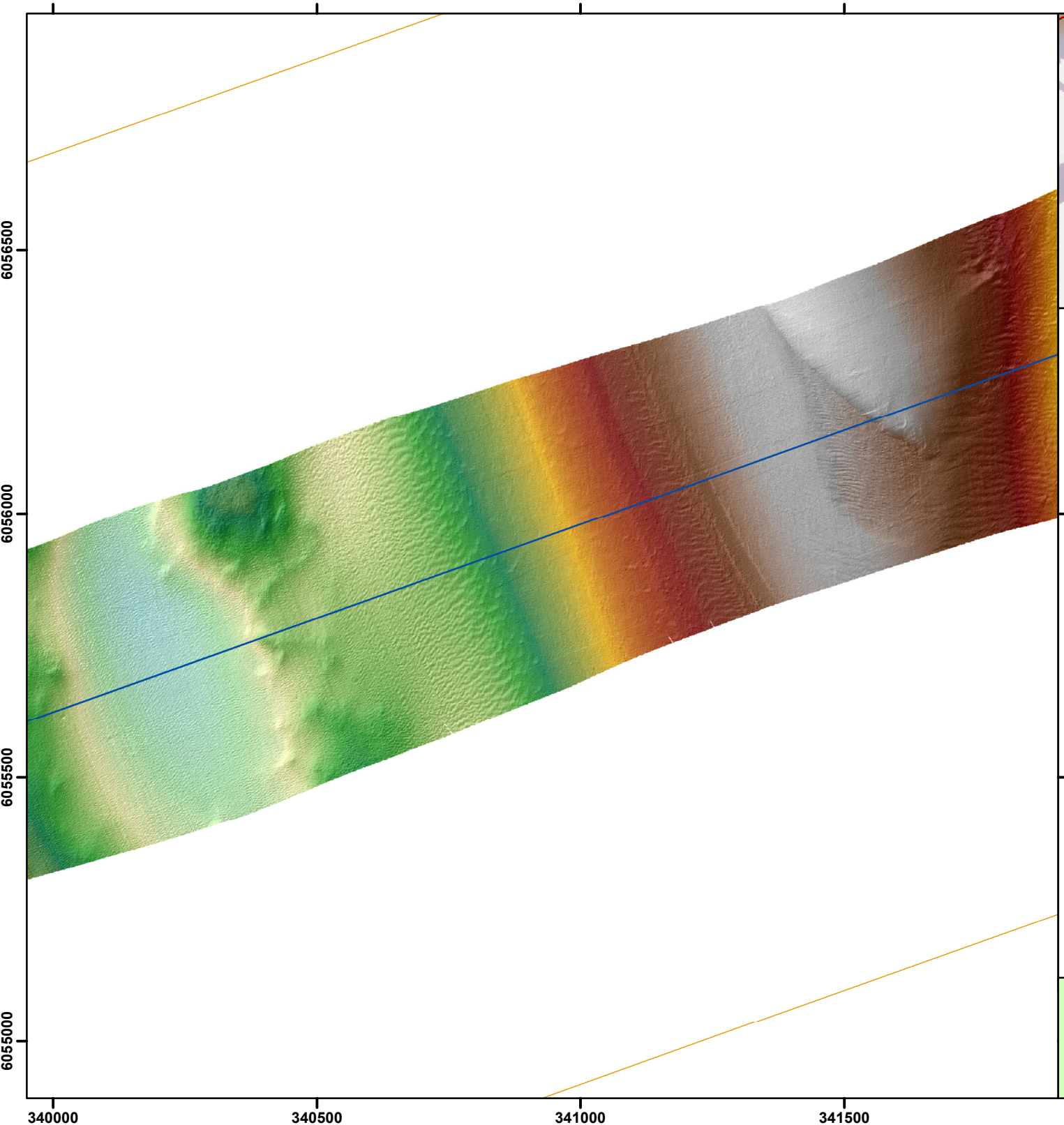
PROJECT TITLE: **Scot-NI 3**

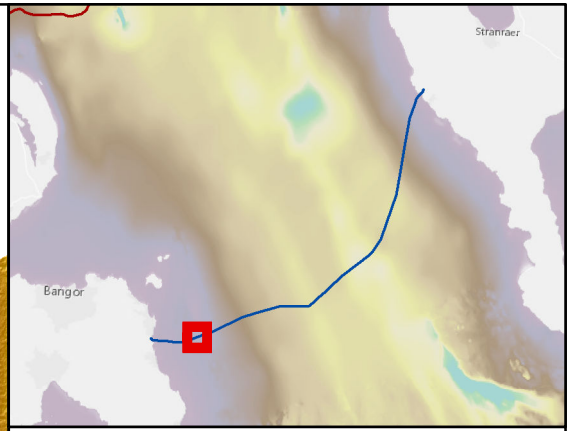
FIGURE TITLE: **SCOT-NI 3 Geophysical Survey**

FIGURE NO. **47**

DRAWN BY: MJG CHECKED BY: DG APPROVED BY: MW


6057500
6057000
6056500
6056000
342000
342500
343000
343500
CA_3022
Bangor
Legend
Scot-NI 3
Scot-NI 3 Study Area
AEZ
Cable SSS Anomaly
Magnetic Anomaly (nT)
1 - 2
2 - 5
6 - 10
11 - 25
25 - 100
> 100
Bathymetry (m LAT)
High : -31.473
Low : -52.157
0
205
410
Metres
Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter
N
Coracle
Archaeology
PROJECT TITLE: Scot-NI 3
FIGURE TITLE: SCOT-NI 3 Geophysical Survey
FIGURE NO. 48
DRAWN BY: MJG
CHECKED BY: DG
APPROVED BY: MW




## Legend

- Scot-NI 3
- Scot-NI 3 Study Area
- AEZ
- Cable SSS Anomaly

Magnetic Anomaly (nT)

- 1 - 2
- 2 - 5
- 6 - 10
- 11 - 25
- 25 - 100
- > 100

Bathymetry (m LAT)

High : -22.046

Low : -44.989

0 205 410 Metres

Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

N

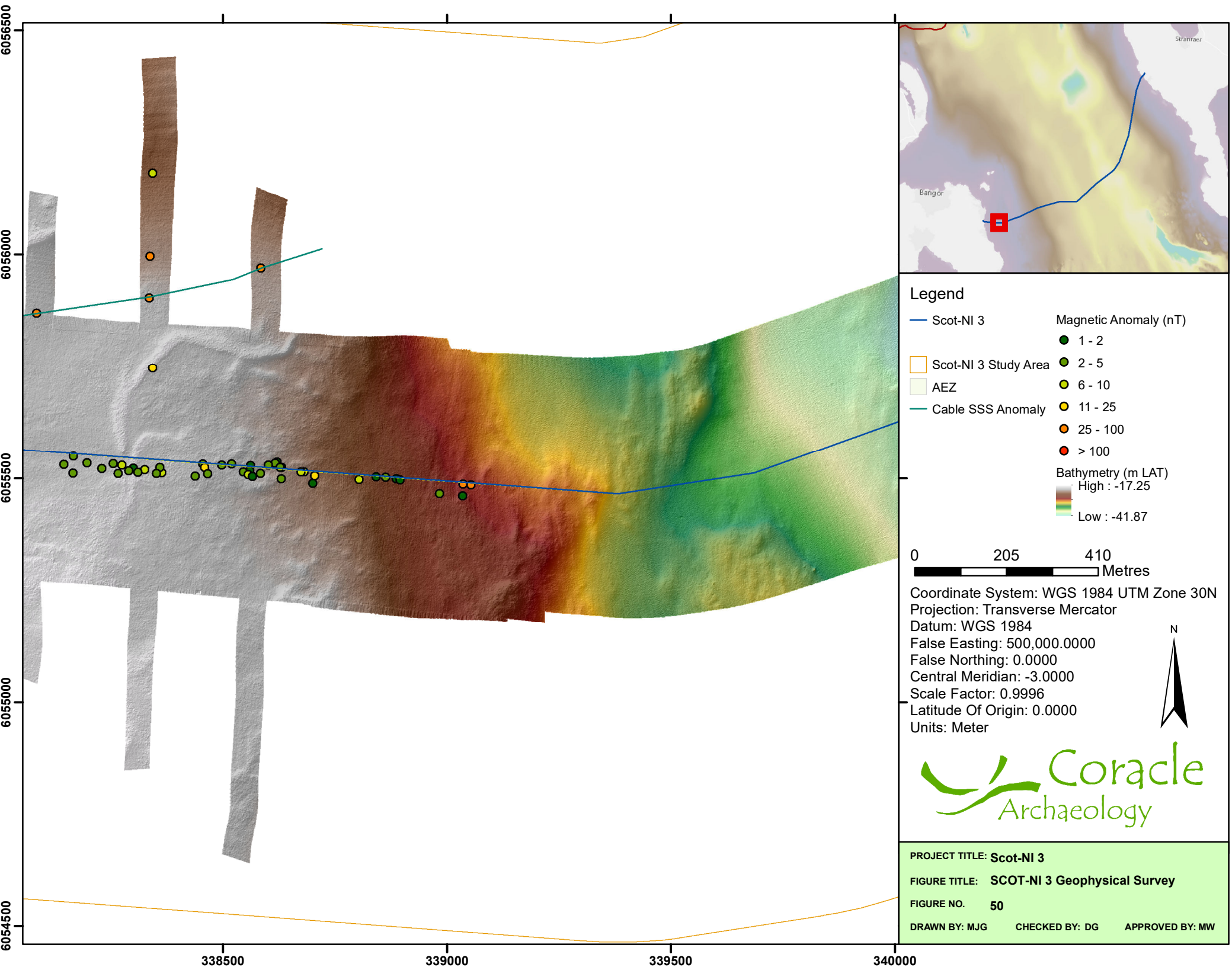
Coracle Archaeology

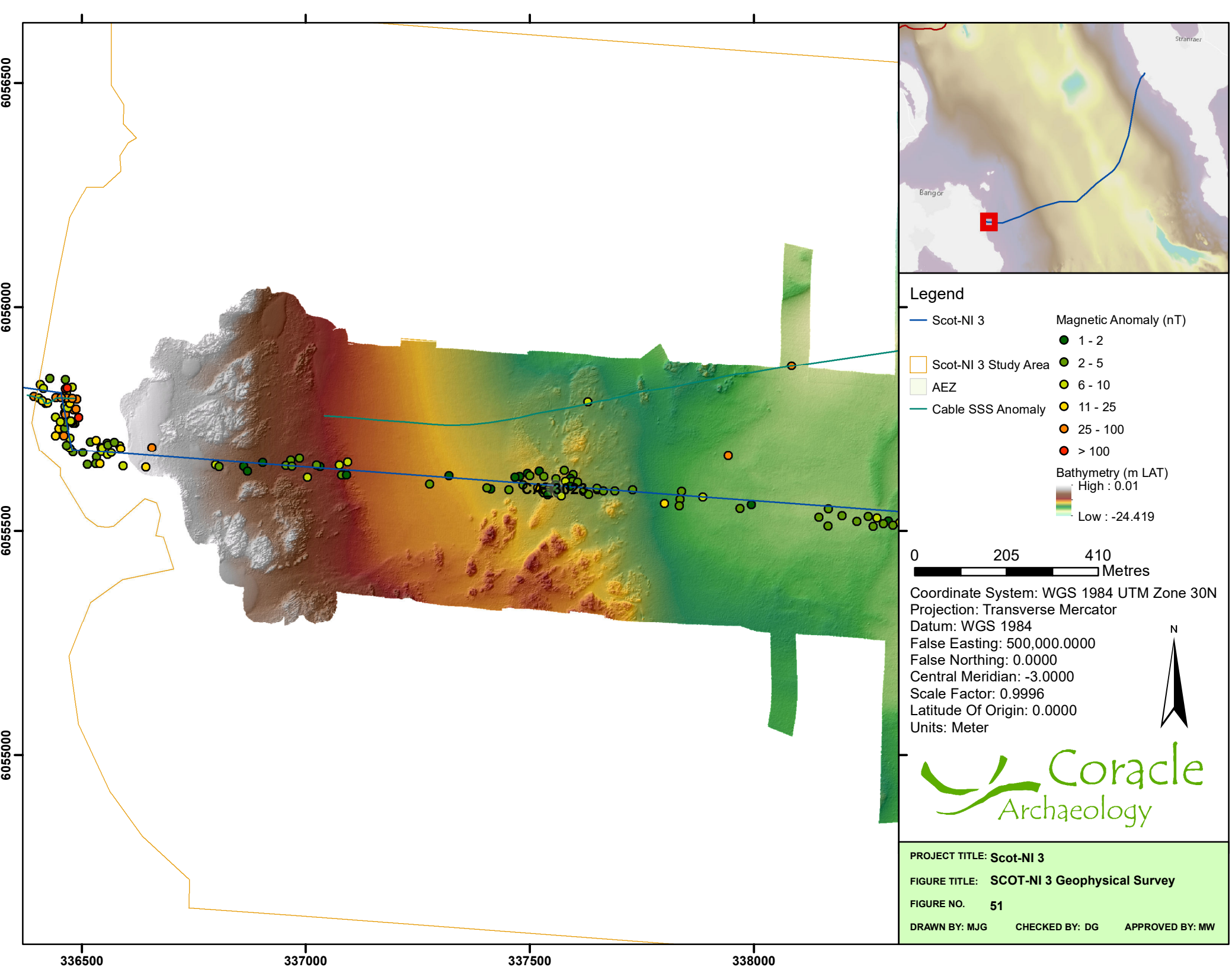
**PROJECT TITLE:** Scot-NI 3

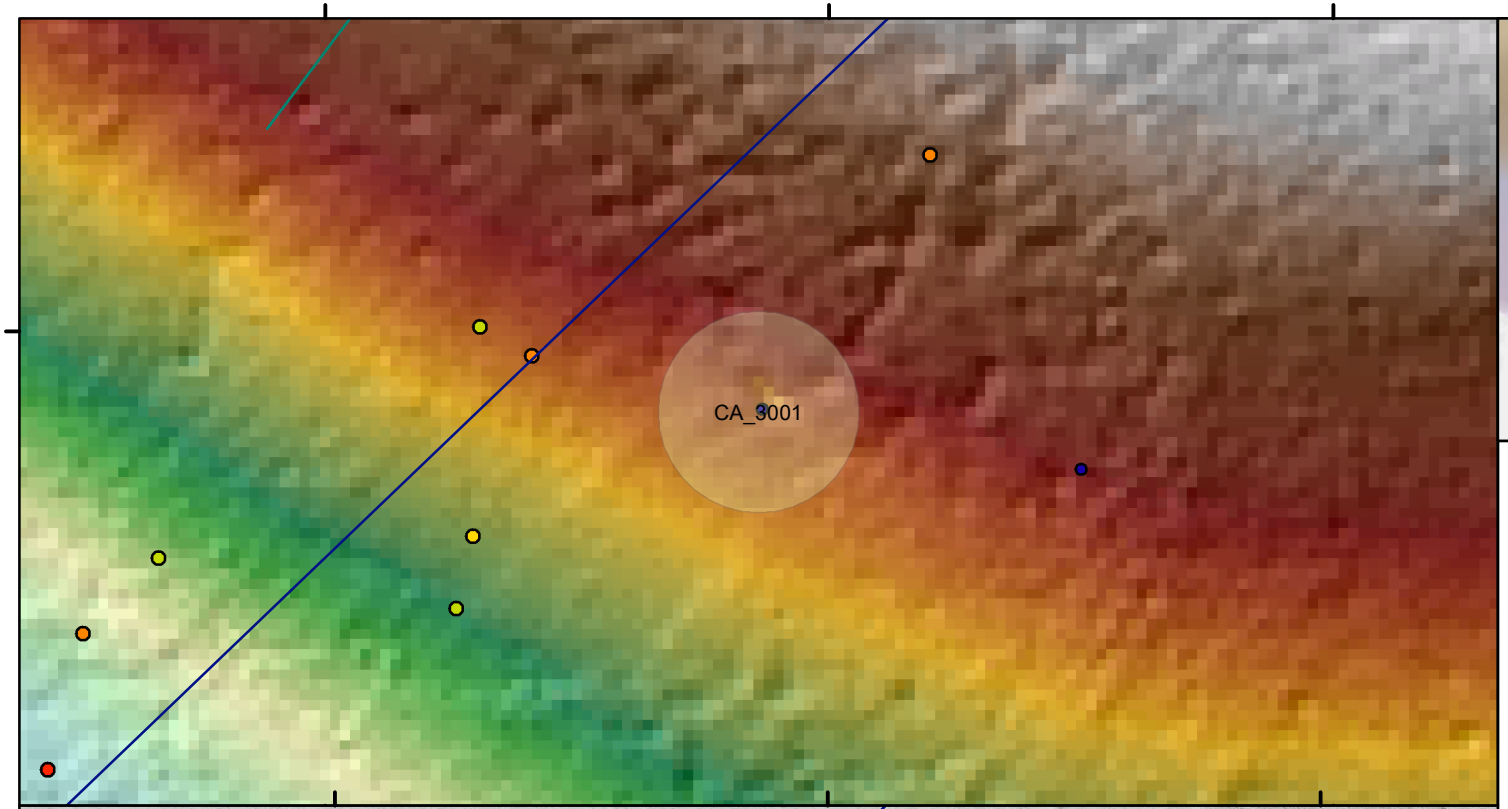
**FIGURE TITLE:** SCOT-NI 3 Geophysical Survey

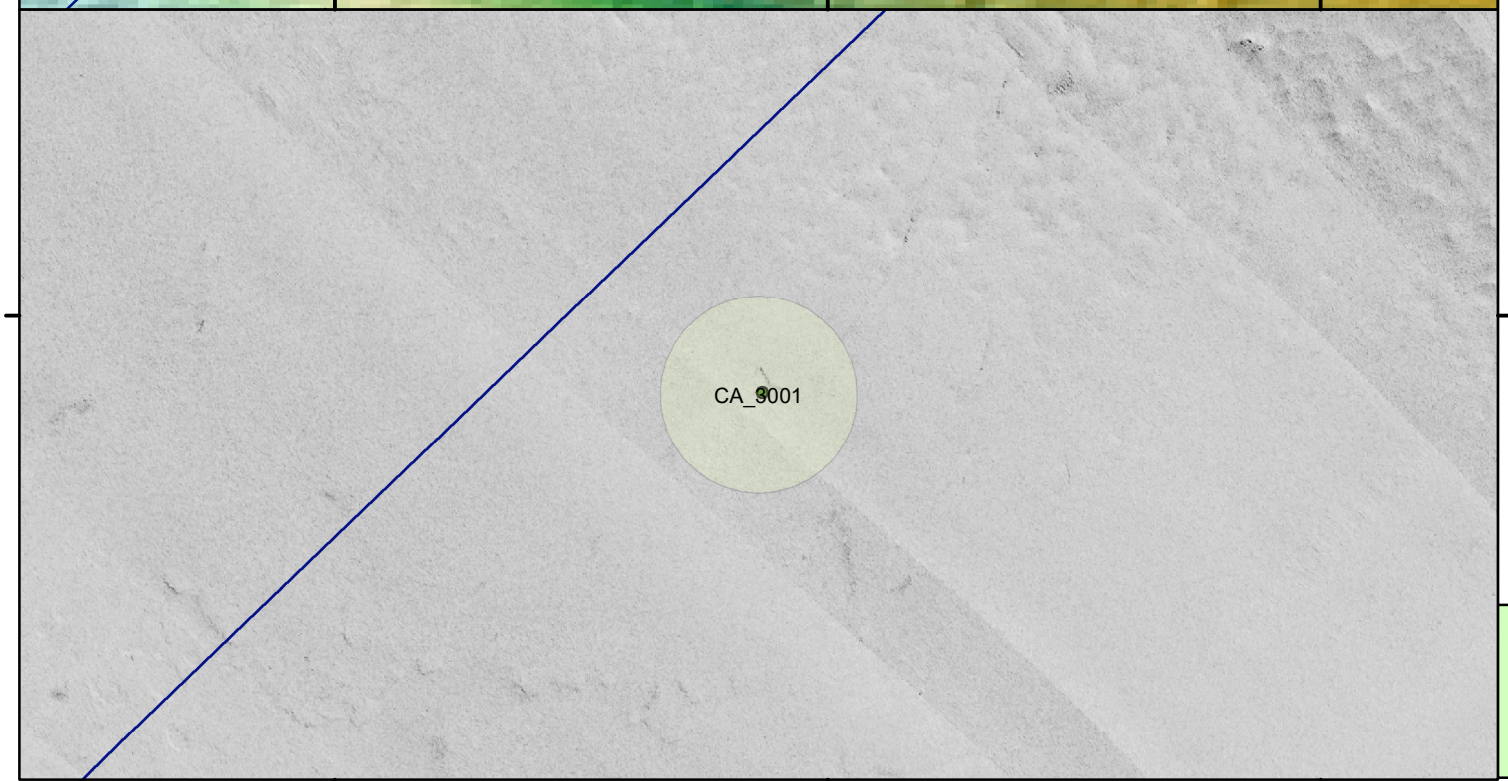
**FIGURE NO.** 49

**DRAWN BY:** MJG **CHECKED BY:** DG **APPROVED BY:** MW


6056500
6056000
6055500
6055000
6054500
338500
339000
339500
340000
Stranraer
Bangor
Legend
Scot-NI 3
Scot-NI 3 Study Area
AEZ
Cable SSS Anomaly
Magnetic Anomaly (nT)
1 - 2
2 - 5
6 - 10
11 - 25
25 - 100
> 100
Bathymetry (m LAT)
High : -17.25
Low : -41.87
0
205
410
Metres
Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter
N
Coracle
Archaeology
PROJECT TITLE: Scot-NI 3
FIGURE TITLE: SCOT-NI 3 Geophysical Survey
FIGURE NO. 50
DRAWN BY: MJG
CHECKED BY: DG
APPROVED BY: MW


6056500
6056000
6055500
6055000
336500
337000
337500
338000
Stranraer
Bangor
Legend
Scot-NI 3
Scot-NI 3 Study Area
AEZ
Cable SSS Anomaly
Magnetic Anomaly (nT)
1 - 2
2 - 5
6 - 10
11 - 25
25 - 100
> 100
Bathymetry (m LAT)
High : 0.01
Low : -24.419
0
205
410
Metres
Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter
N
Coracle
Archaeology
PROJECT TITLE: Scot-NI 3
FIGURE TITLE: SCOT-NI 3 Geophysical Survey
FIGURE NO. 51
DRAWN BY: MJG
CHECKED BY: DG
APPROVED BY: MW



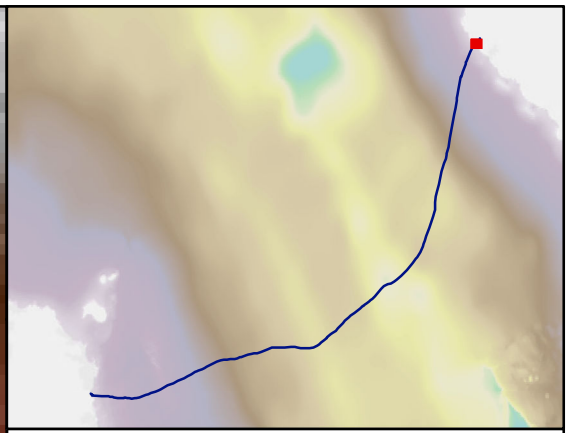

6080050

6080050

363050

363100

363150



## Legend

- Scot-NI 3
- AEZ
- Boulder SSS Anomaly
- Cable SSS Anomaly
- Other SSS Anomaly

Magnetic Anomaly (nT)

- 1 - 2
- 2 - 5
- 6 - 10
- 11 - 25
- 25 - 100
- > 100

Bathymetry (m LAT)

High : -4.296

Low : -8.118

0 15 30 Metres

Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

N

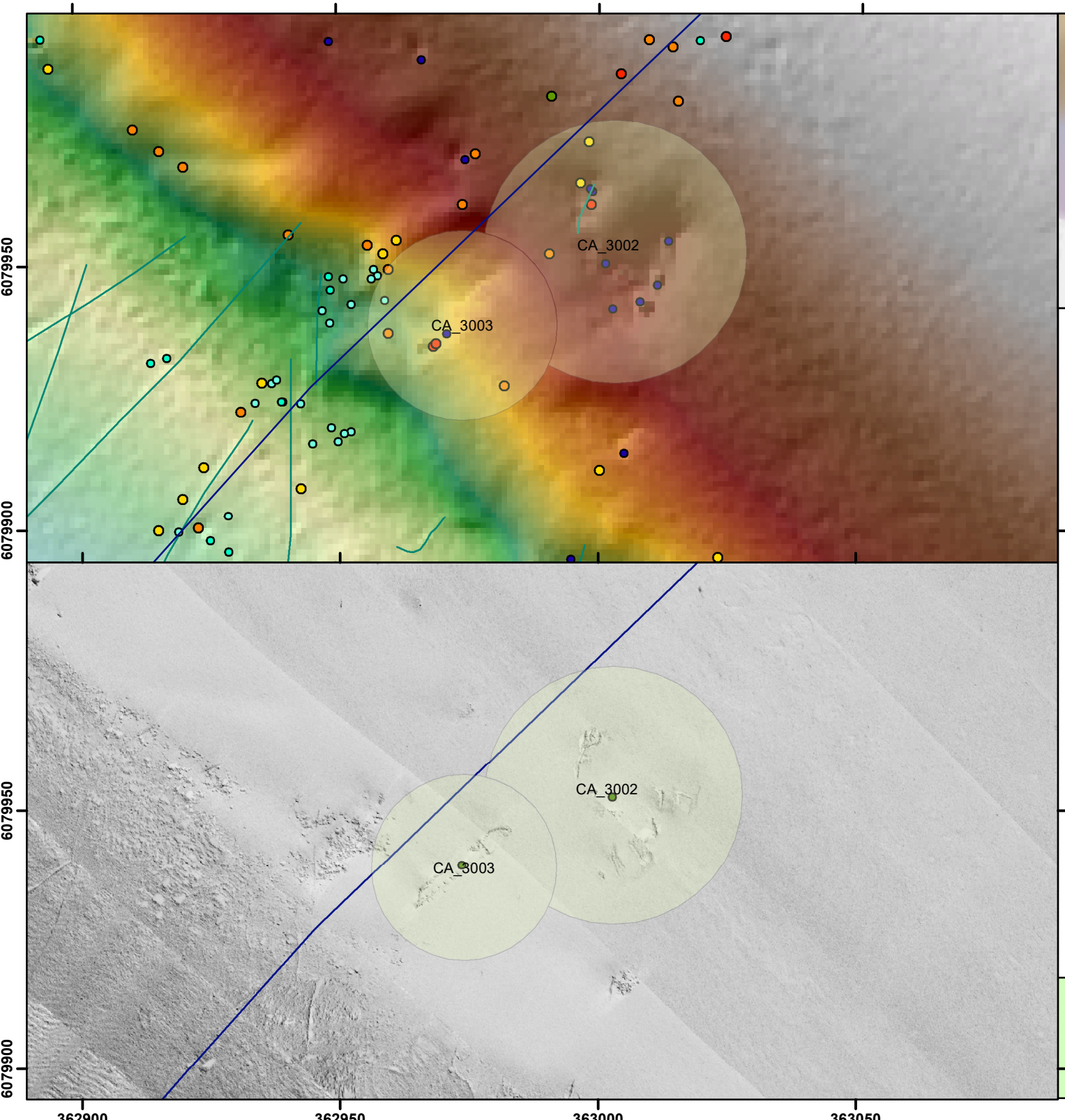
Coracle Archaeology

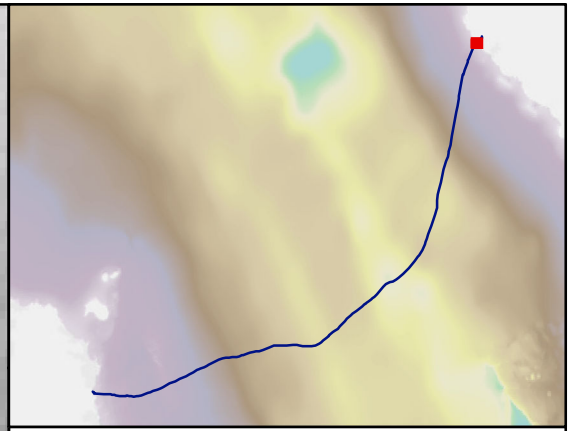
PROJECT TITLE: **Scot-NI 3**

FIGURE TITLE: **Geophysical Anomalies CA_3001**

FIGURE NO. **52**

DRAWN BY: MJG CHECKED BY: DG APPROVED BY: MW



## Legend

- Scot-NI 3
- AEZ
- Boulder SSS Anomaly
- Cable SSS Anomaly
- Other SSS Anomaly

Magnetic Anomaly (nT)

- 1 - 2
- 2 - 5
- 6 - 10
- 11 - 25
- 25 - 100
- > 100

Bathymetry (m LAT)

High : -6.989

Low : -16.211

0 20 40 Metres

Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

N

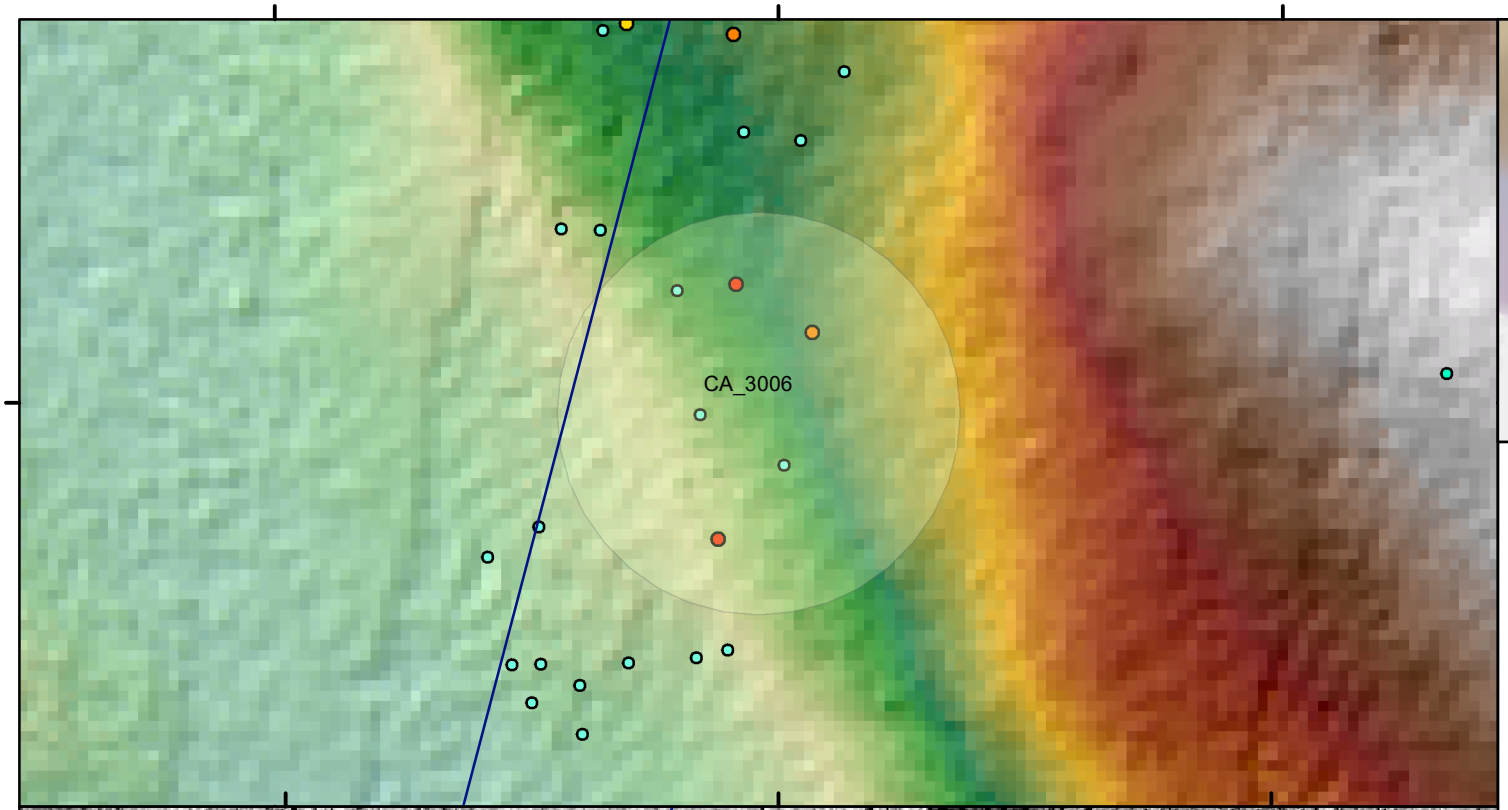
Coracle Archaeology

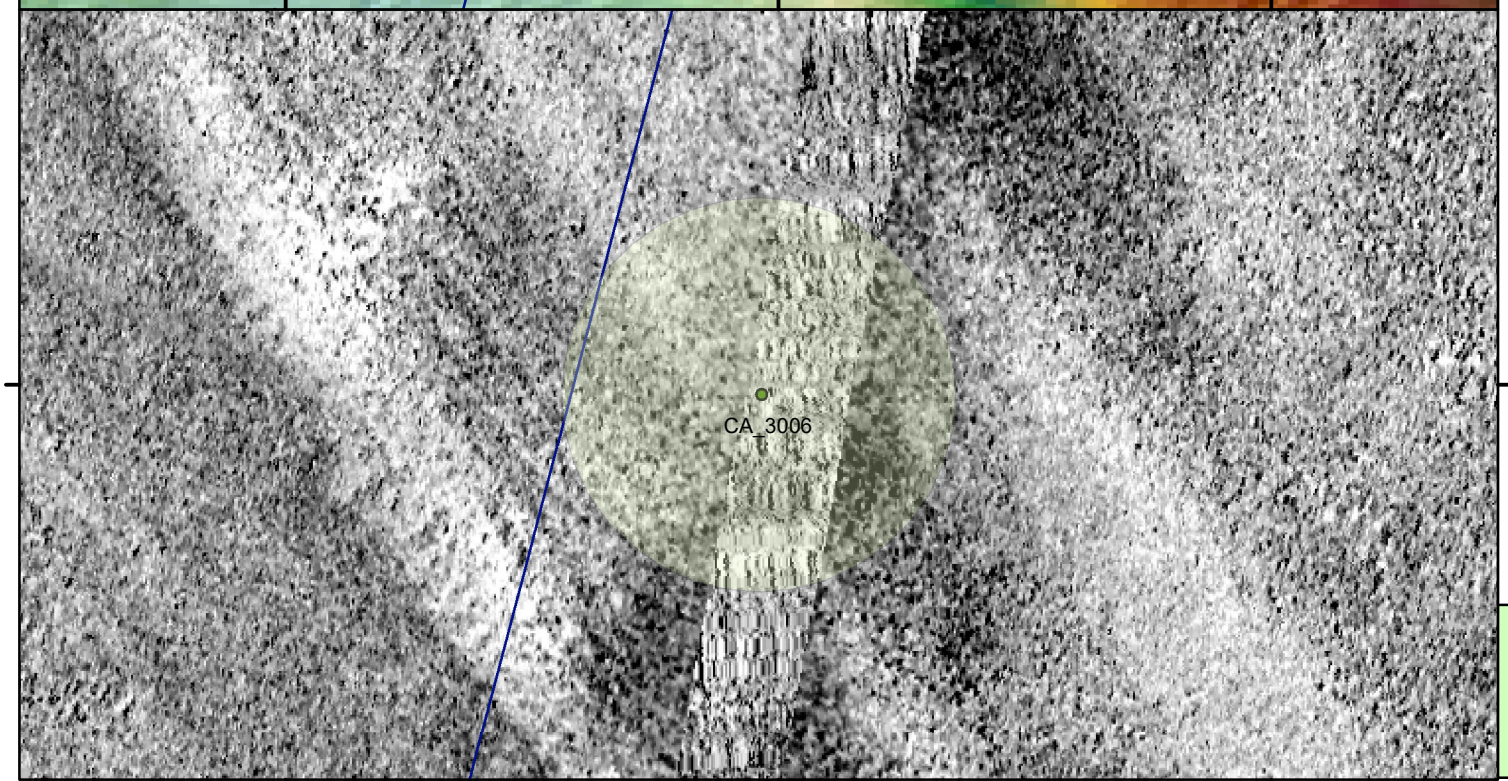
PROJECT TITLE: **Scot-NI 3**

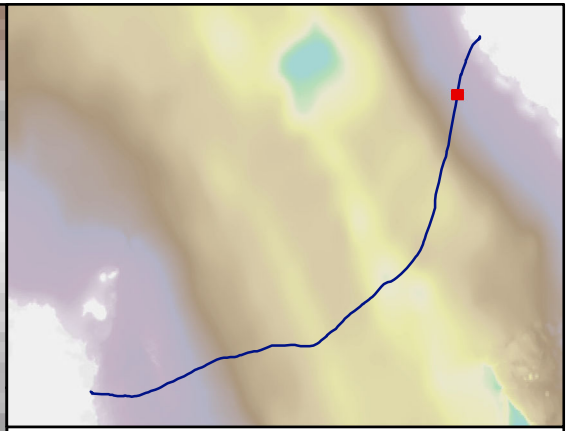
FIGURE TITLE: **Geophysical Anomalies CA_3002-3003**

FIGURE NO. **53**

DRAWN BY: MJG CHECKED BY: DG APPROVED BY: MW



6076400

6076400

361750

361800

361850

## Legend

- Scot-NI 3
- AEZ
- Boulder SSS Anomaly
- Cable SSS Anomaly
- Other SSS Anomaly

Magnetic Anomaly (nT)

- 1 - 2
- 2 - 5
- 6 - 10
- 11 - 25
- 25 - 100
- > 100

Bathymetry (m LAT)

High : -44.809

Low : -50.381

0 15 30 Metres

Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

N

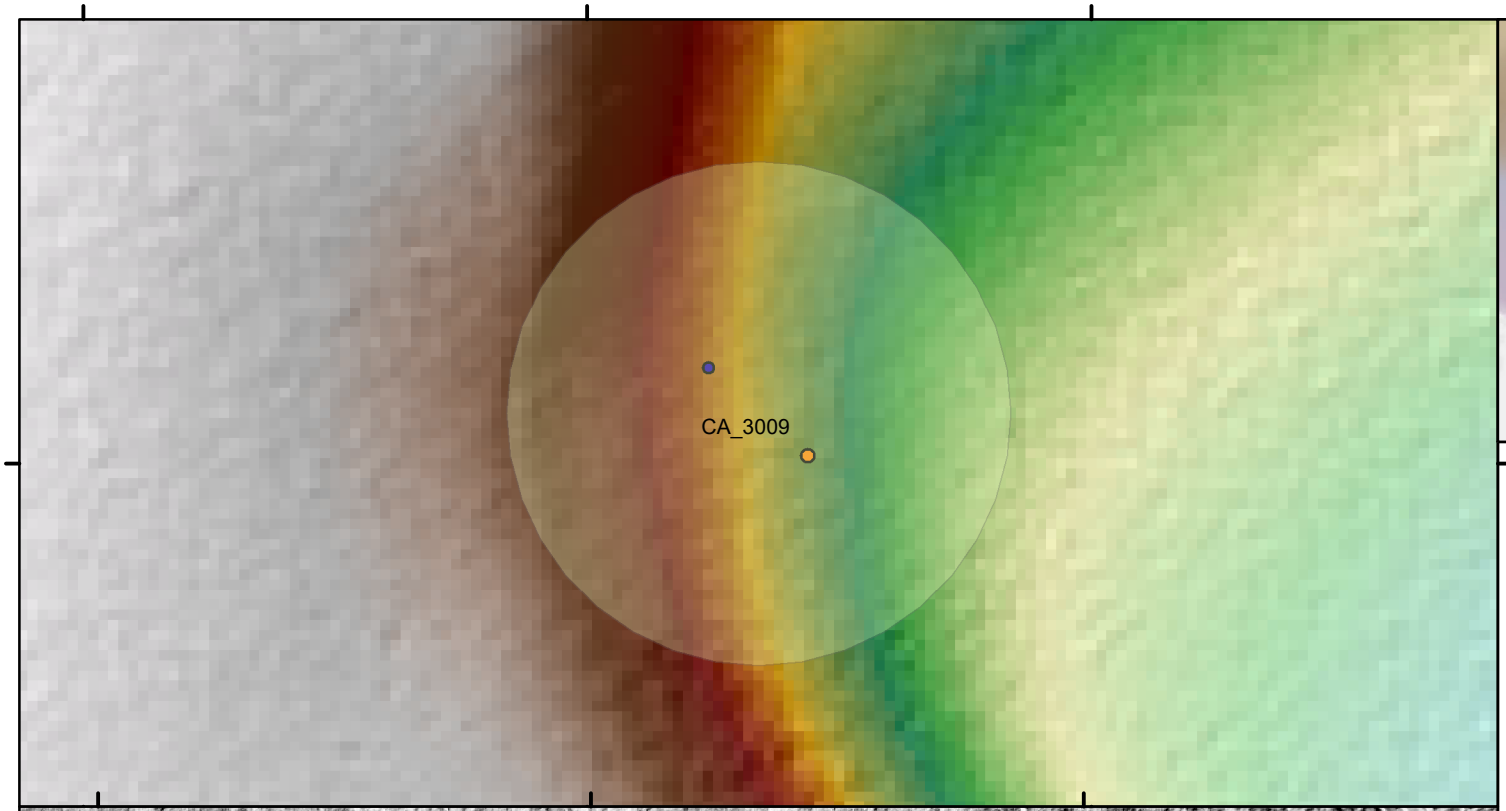
Coracle Archaeology

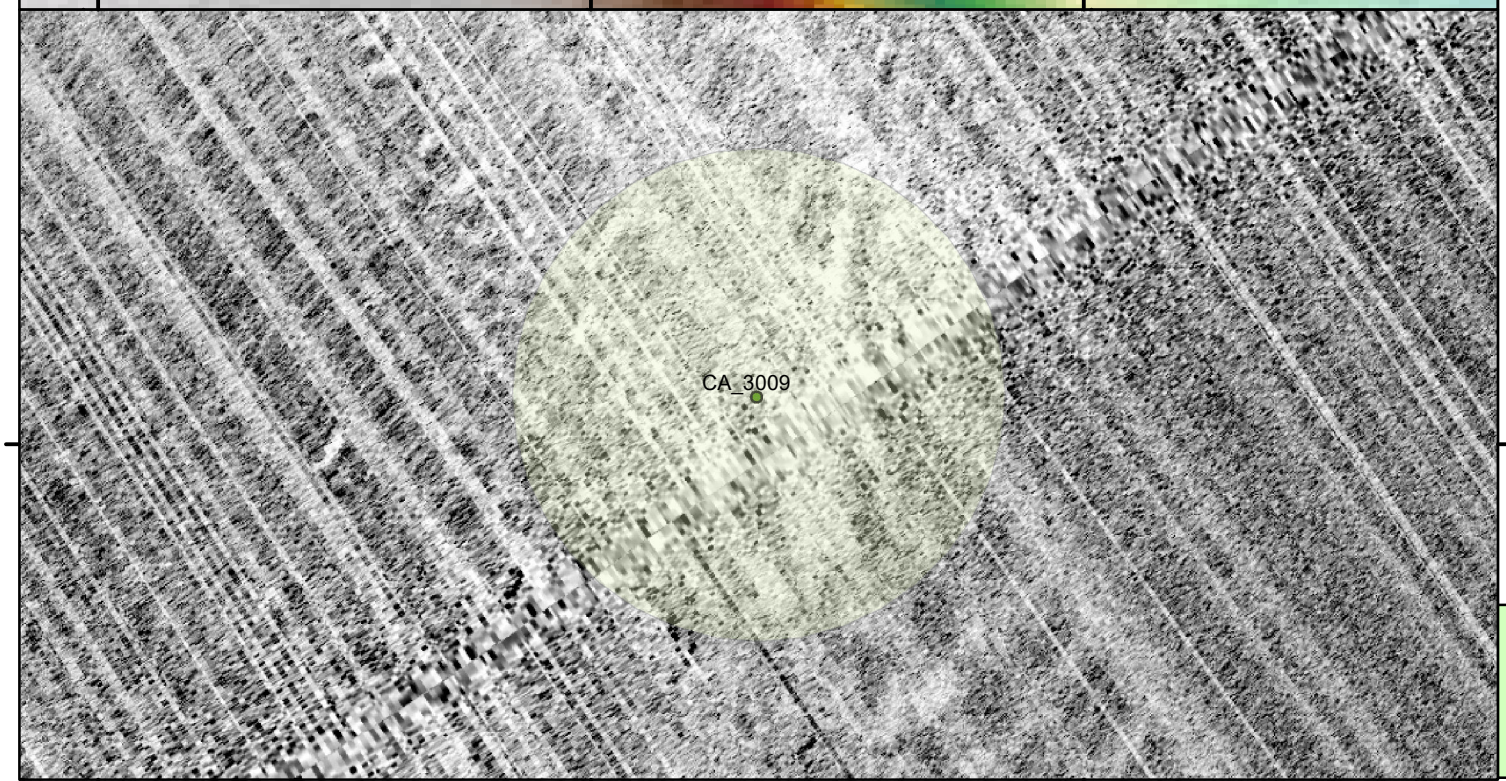
PROJECT TITLE: **Scot-NI 3**

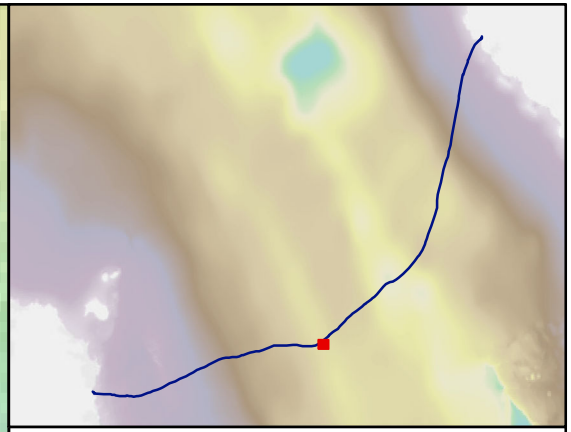
FIGURE TITLE: **Geophysical Anomalies CA_3006**

FIGURE NO. **54**

DRAWN BY: MJG CHECKED BY: DG APPROVED BY: MW



6059100

6059100

352300

352350

352400

## Legend

- Scot-NI 3
- AEZ
- Boulder SSS Anomaly
- Cable SSS Anomaly
- Other SSS Anomaly

Magnetic Anomaly (nT)

- 1 - 2
- 2 - 5
- 6 - 10
- 11 - 25
- 25 - 100
- > 100

Bathymetry (m LAT)

High : -151.356

Low : -163.139

0 15 30 Metres

Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

N

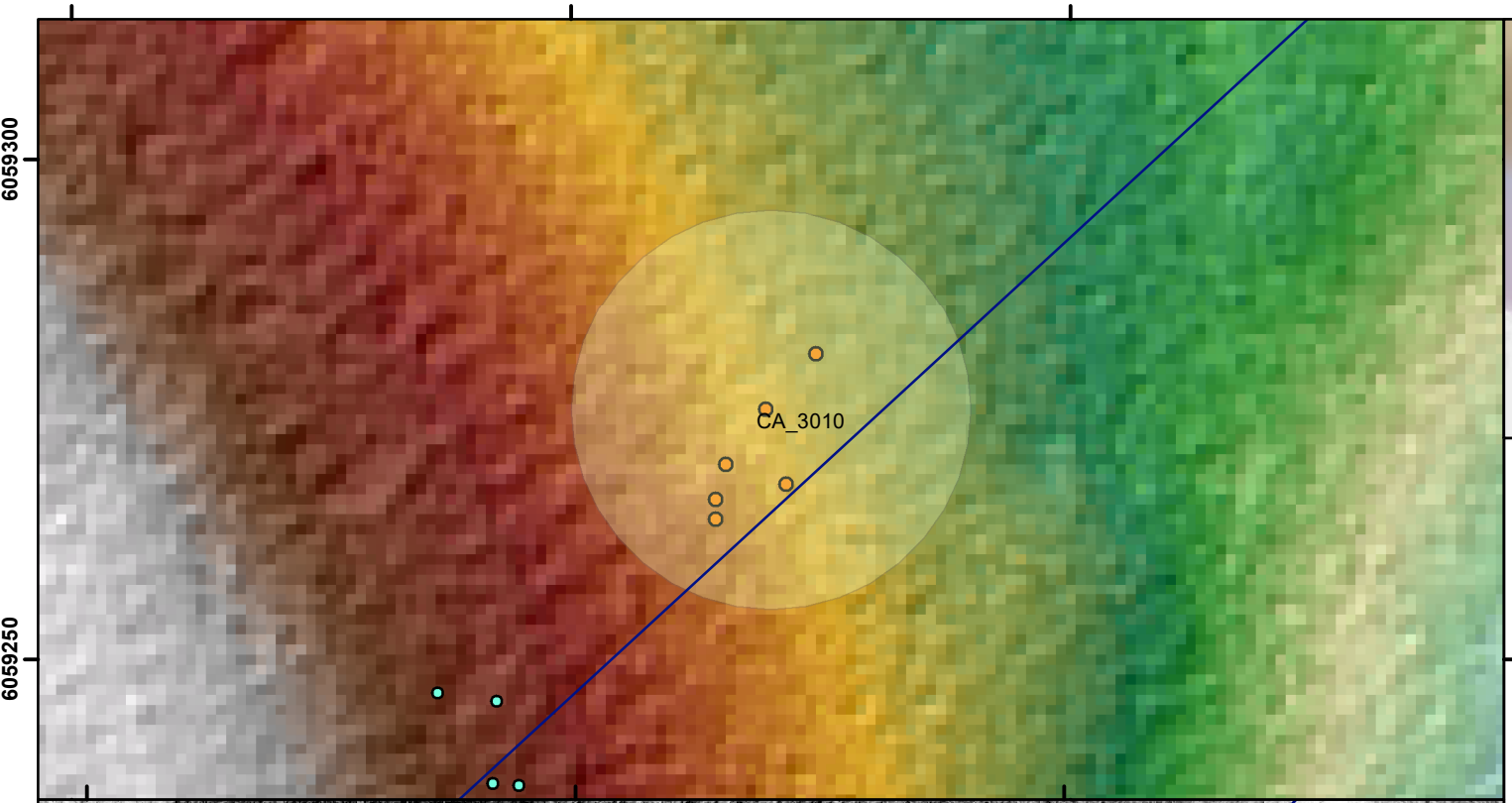
Coracle Archaeology

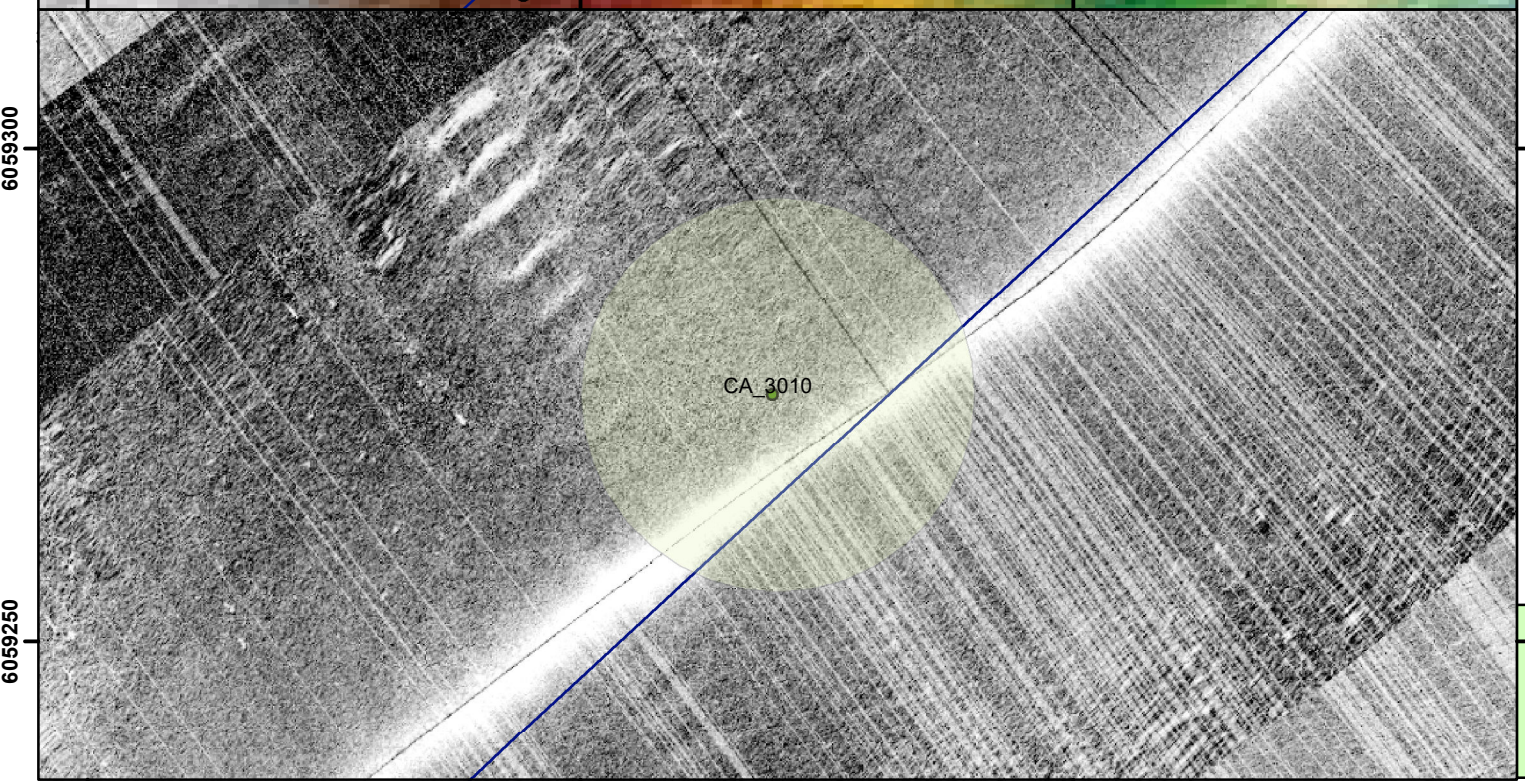
PROJECT TITLE: **Scot-NI 3**

FIGURE TITLE: **Geophysical Anomalies CA_3009**

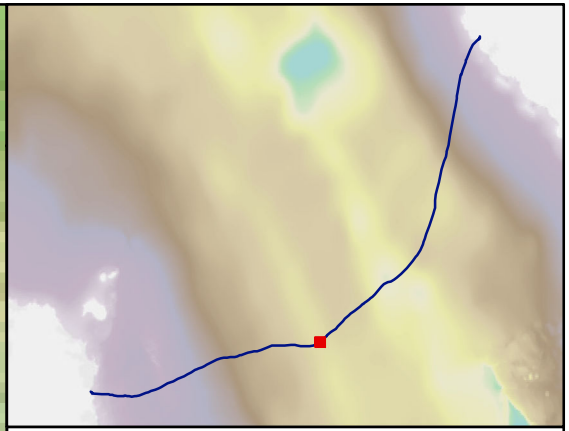
FIGURE NO. **55**

DRAWN BY: MJG CHECKED BY: DG APPROVED BY: MW




6059300
6059250
6059300
6059250
352200
352250
352300



## Legend

- Scot-NI 3
- AEZ
- Boulder SSS Anomaly
- Cable SSS Anomaly
- Other SSS Anomaly

Magnetic Anomaly (nT)

- 1 - 2
- 2 - 5
- 6 - 10
- 11 - 25
- 25 - 100
- > 100

Bathymetry (m LAT)
High : -146.967
Low : -152.185

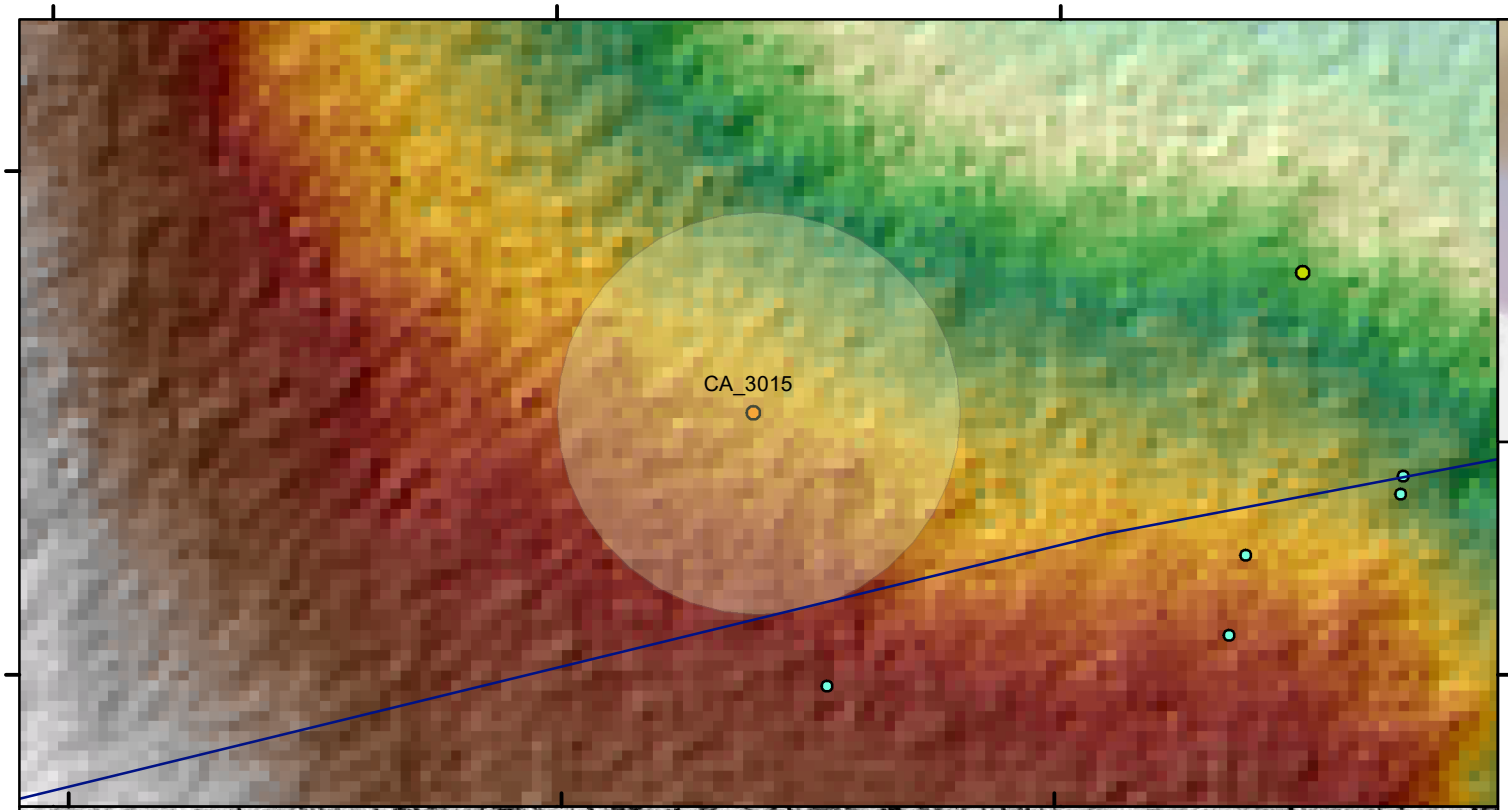
0 15 30 Metres

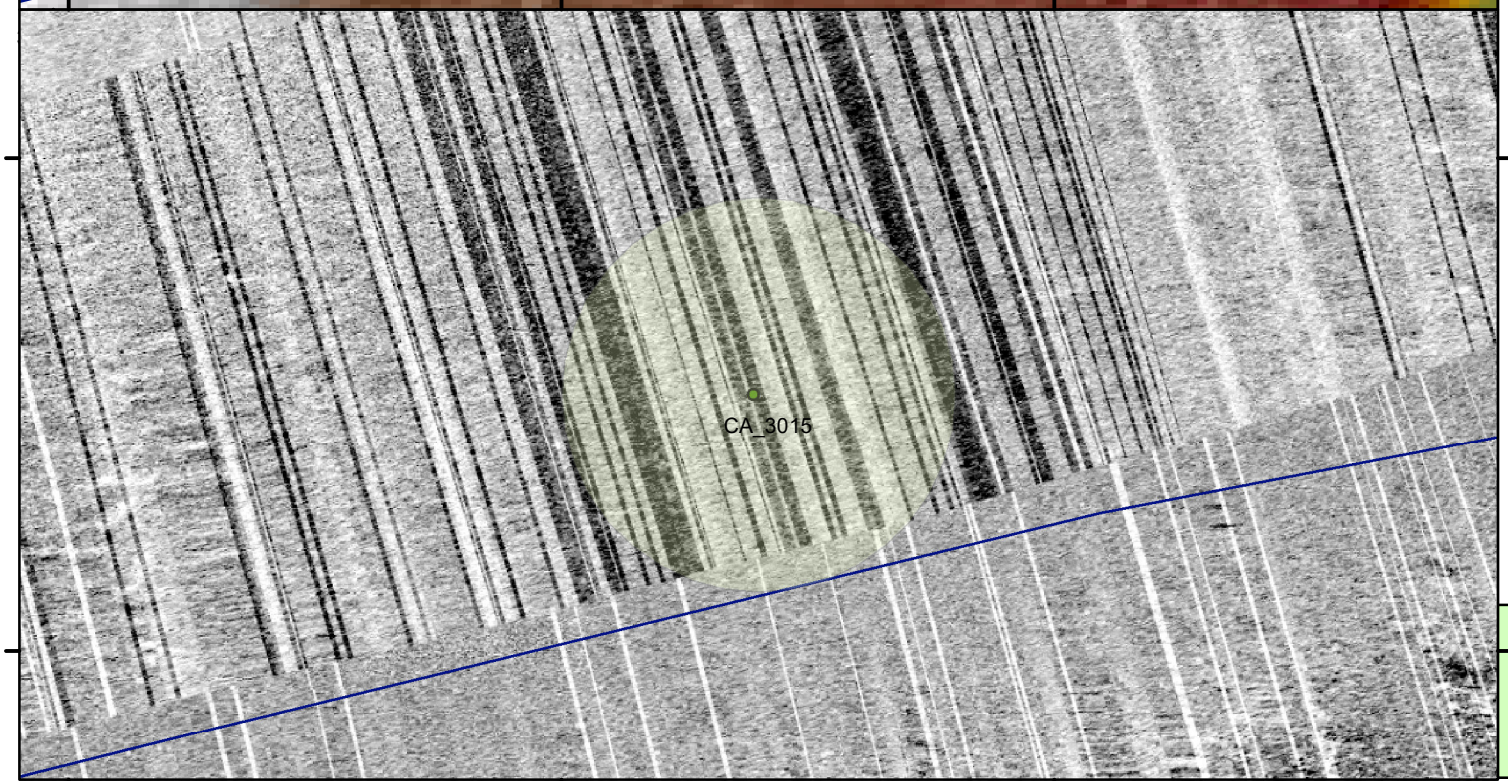
Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

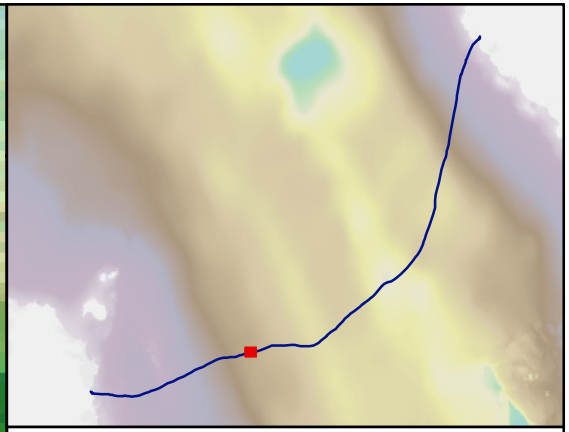
N

Coracle Archaeology

PROJECT TITLE: **Scot-NI 3**
FIGURE TITLE: **Geophysical Anomalies CA_3010**
FIGURE NO. **56**
DRAWN BY: MJG CHECKED BY: DG APPROVED BY: MW



6058600
6058550
6058600
6058550
347400
347450
347500

## Legend

- Scot-NI 3
- AEZ
- Boulder SSS Anomaly
- Cable SSS Anomaly
- Other SSS Anomaly

Magnetic Anomaly (nT)

- 1 - 2
- 2 - 5
- 6 - 10
- 11 - 25
- 25 - 100
- > 100

Bathymetry (m LAT)
High : -109.626
Low : -111.872

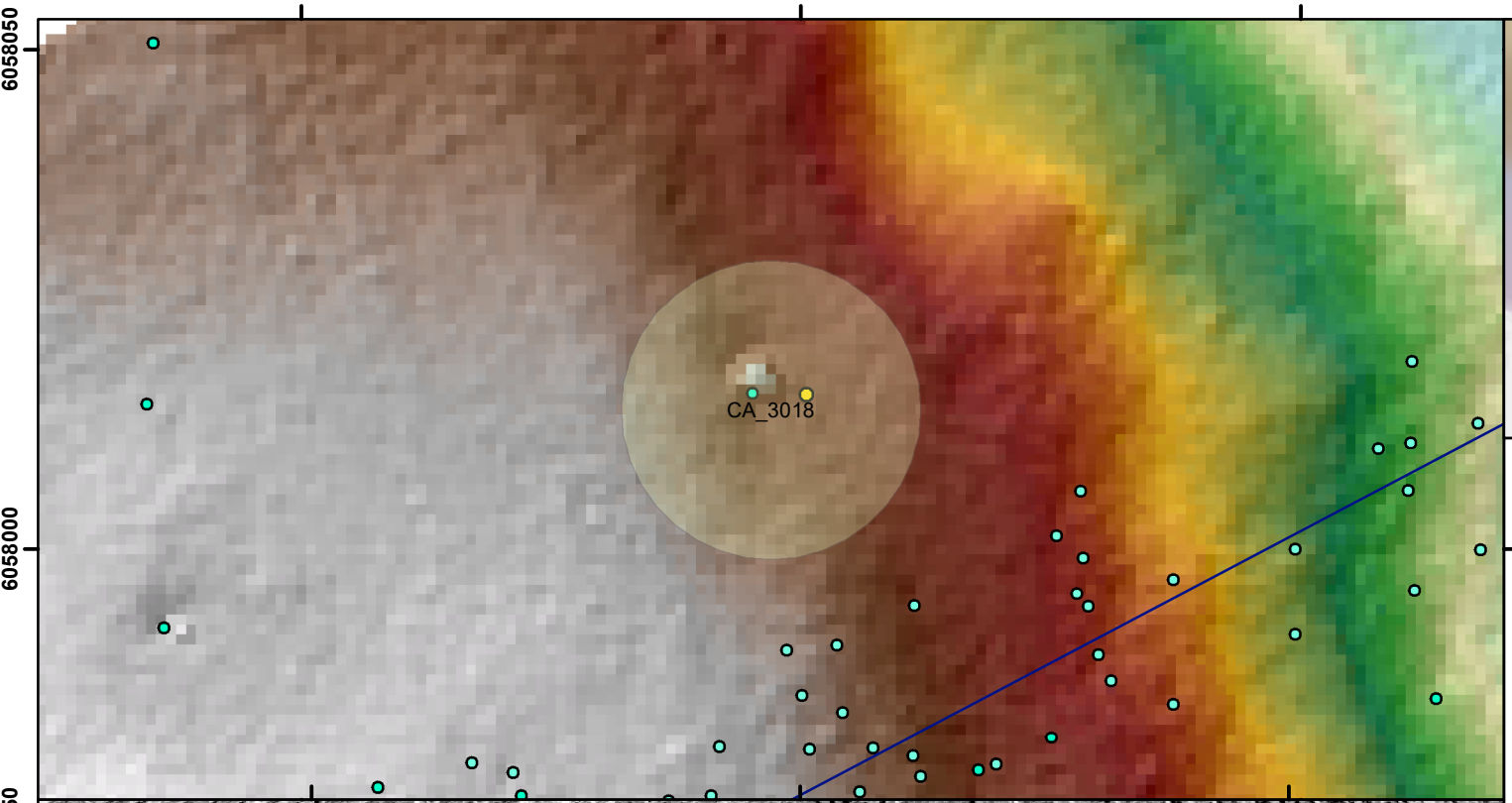
0 15 30
Metres

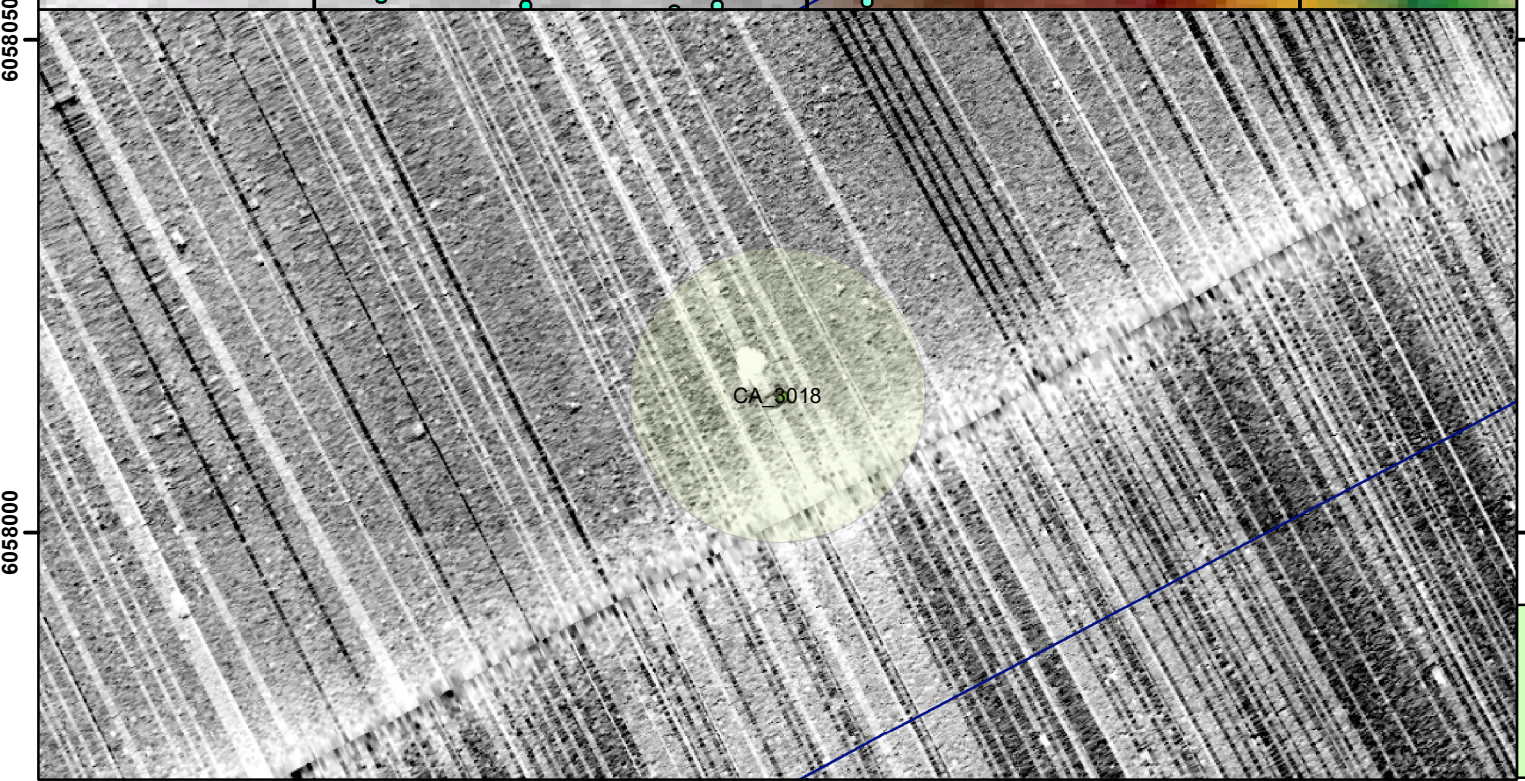
Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

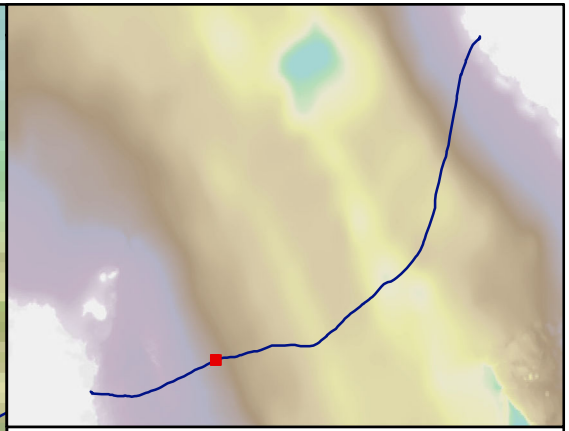
N

Coracle Archaeology

PROJECT TITLE: **Scot-NI 3**
FIGURE TITLE: **Geophysical Anomalies CA_3015**
FIGURE NO. **57**
DRAWN BY: MJG CHECKED BY: DG APPROVED BY: MW



6058050
6058000
6058050
6058000

345000
345050
345100

## Legend

- Scot-NI 3
- AEZ
- Boulder SSS Anomaly
- Cable SSS Anomaly
- Other SSS Anomaly

Magnetic Anomaly (nT)

- 1 - 2
- 2 - 5
- 6 - 10
- 11 - 25
- 25 - 100
- > 100

Bathymetry (m LAT)
High : -62.138
Low : -68.284

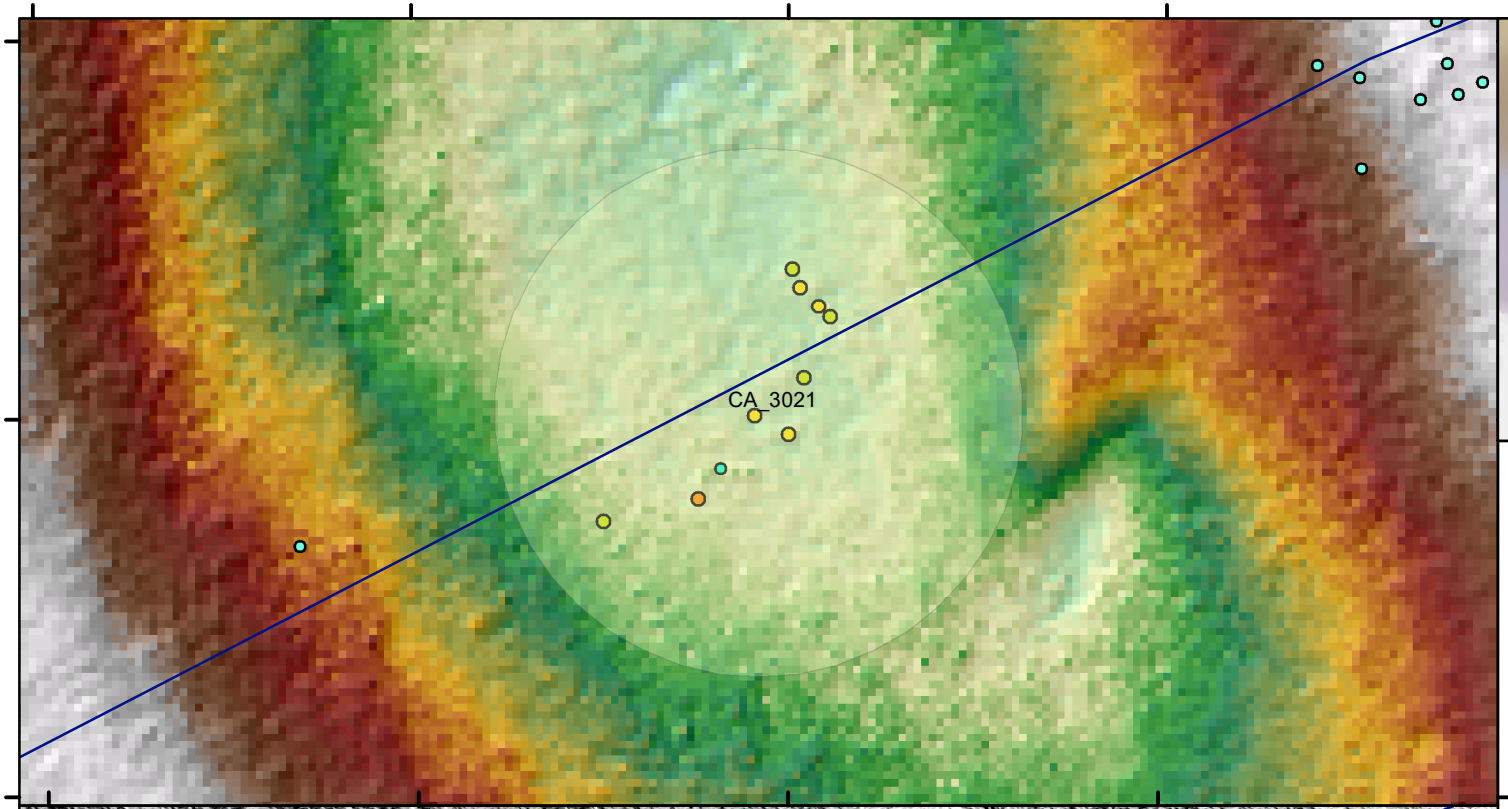
0 15 30
Metres

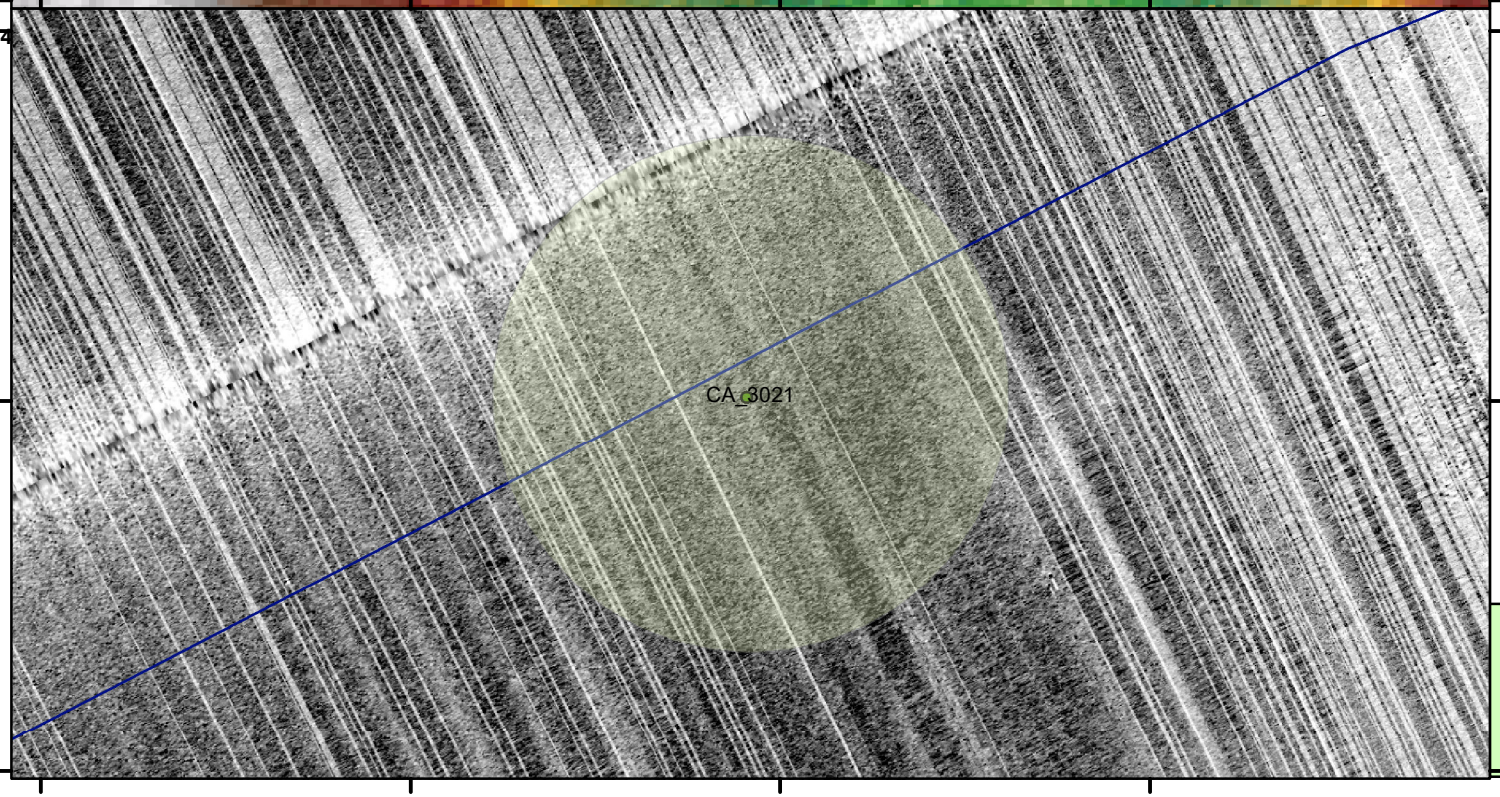
Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

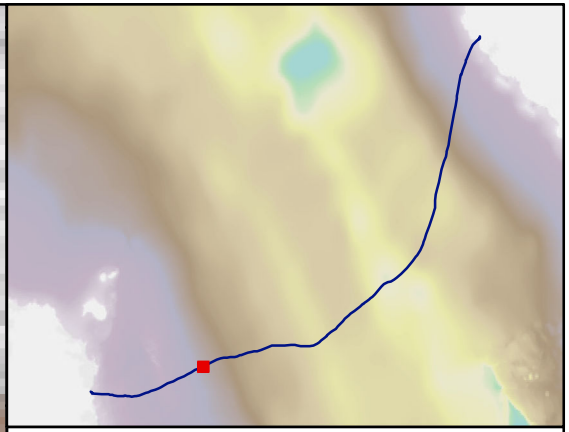
N

Coracle Archaeology

PROJECT TITLE: **Scot-NI 3**
FIGURE TITLE: **Geophysical Anomalies CA_3018**
FIGURE NO. **58**
DRAWN BY: MJG CHECKED BY: DG APPROVED BY: MW



6057600
6057550
6057600
6057550

344100
344150
344200
344250

## Legend

- Scot-NI 3
- AEZ
- Boulder SSS Anomaly
- Cable SSS Anomaly
- Other SSS Anomaly

Magnetic Anomaly (nT)

- 1 - 2
- 2 - 5
- 6 - 10
- 11 - 25
- 25 - 100
- > 100

Bathymetry (m LAT)
High : -58.594
Low : -60.344

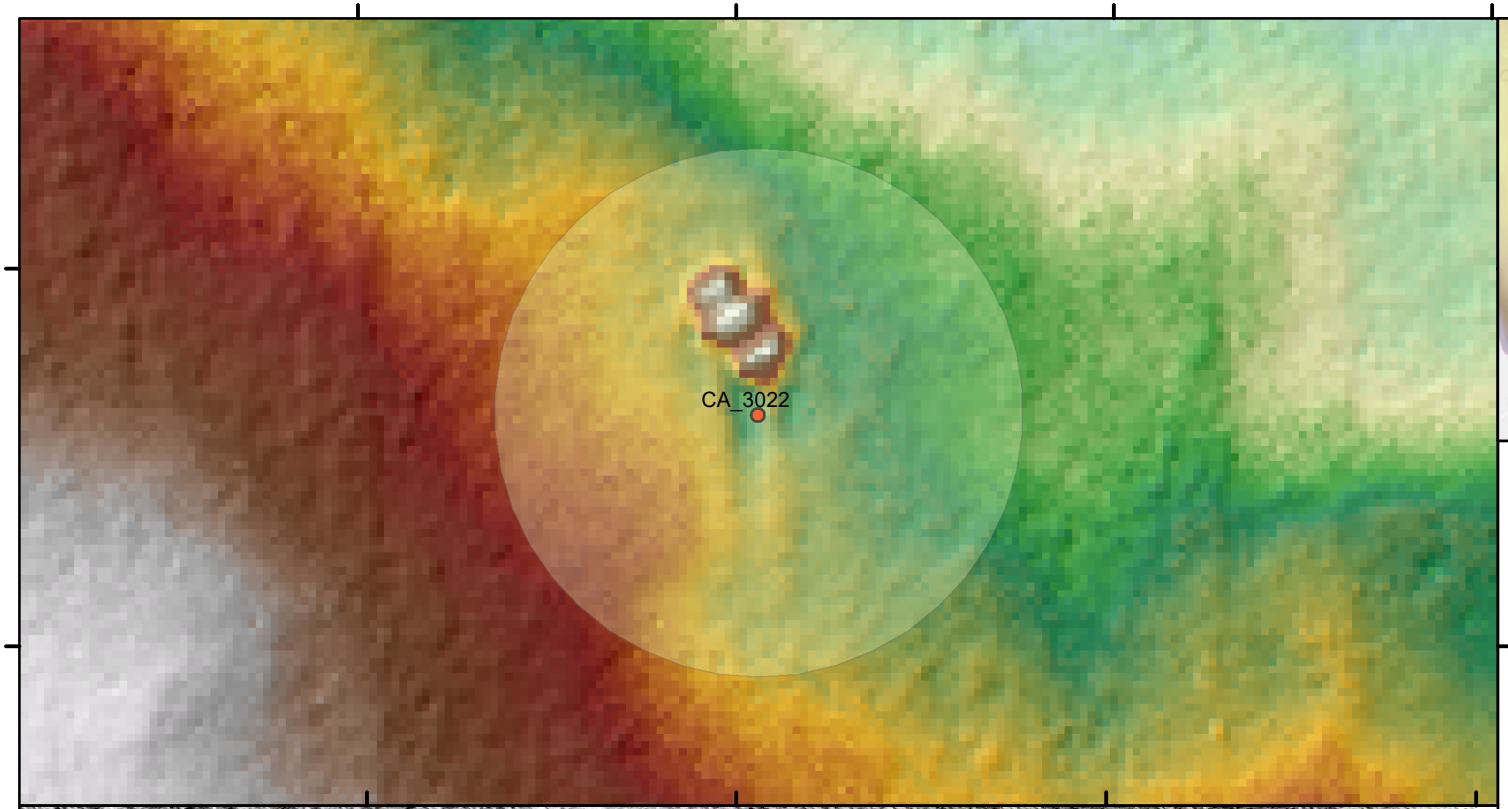
0 20 40 Metres

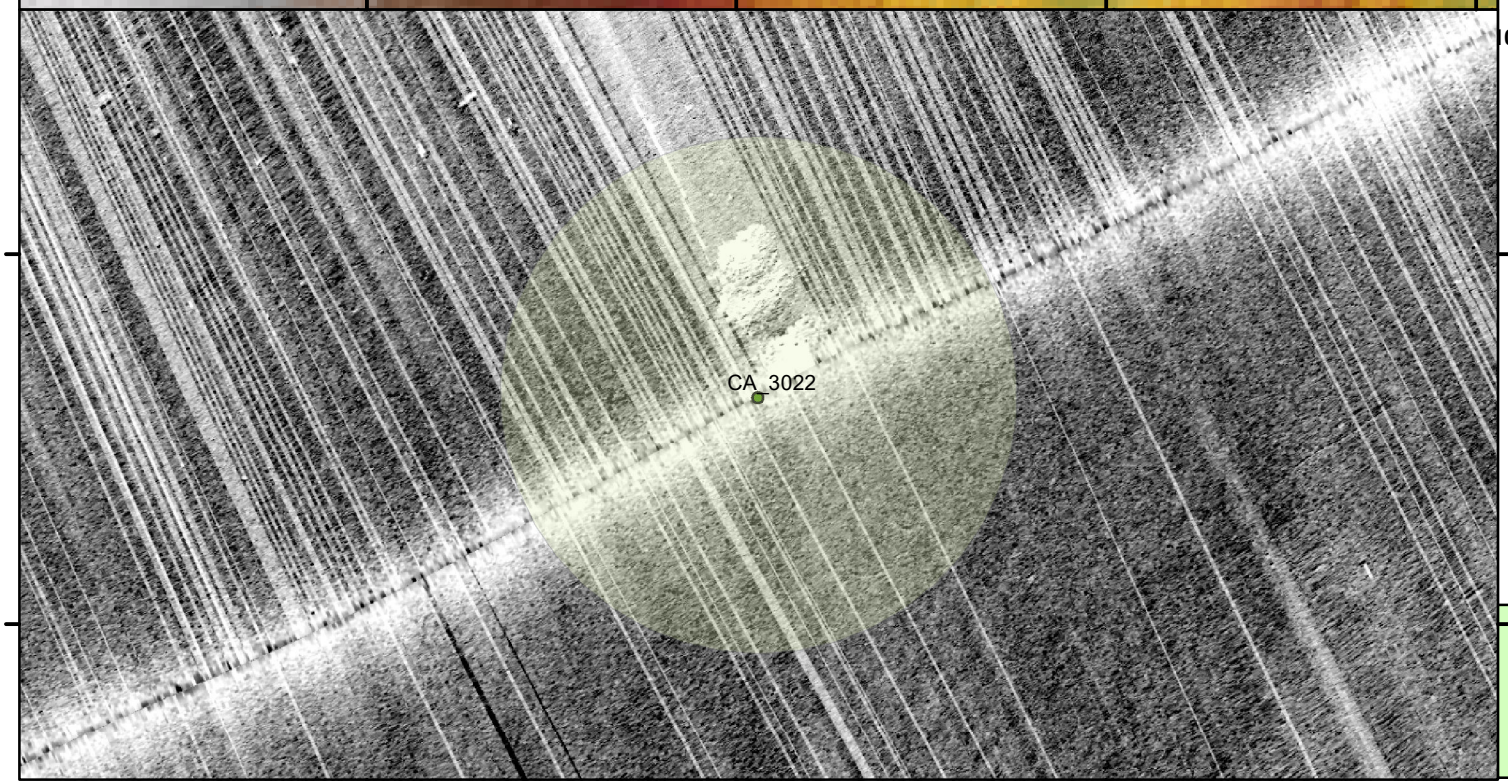
Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

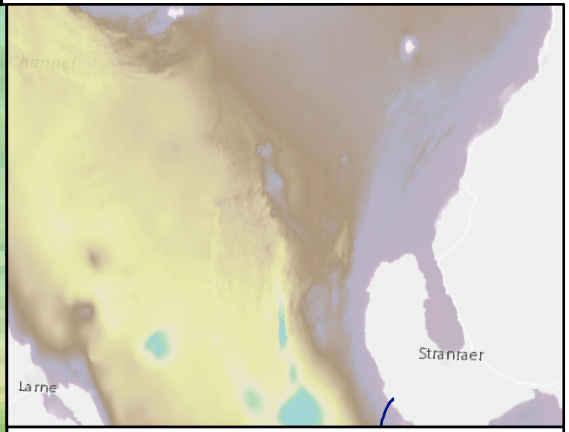
N

Coracle Archaeology

PROJECT TITLE: **Scot-NI 3**
FIGURE TITLE: **Geophysical Anomalies CA_3021**
FIGURE NO. **59**
DRAWN BY: MJG CHECKED BY: DG APPROVED BY: MW




6056550
6056500
6056550
6056500
342950
343000
343050
343100

## Legend

- Scot-NI 3
- AEZ
- Boulder SSS Anomaly
- Cable SSS Anomaly
- Other SSS Anomaly

Magnetic Anomaly (nT)

- 1 - 2
- 2 - 5
- 6 - 10
- 11 - 25
- 25 - 100
- > 100

Bathymetry (m LAT)

High : -40.721

Low : -43.767

0 20 40 Metres

Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

N

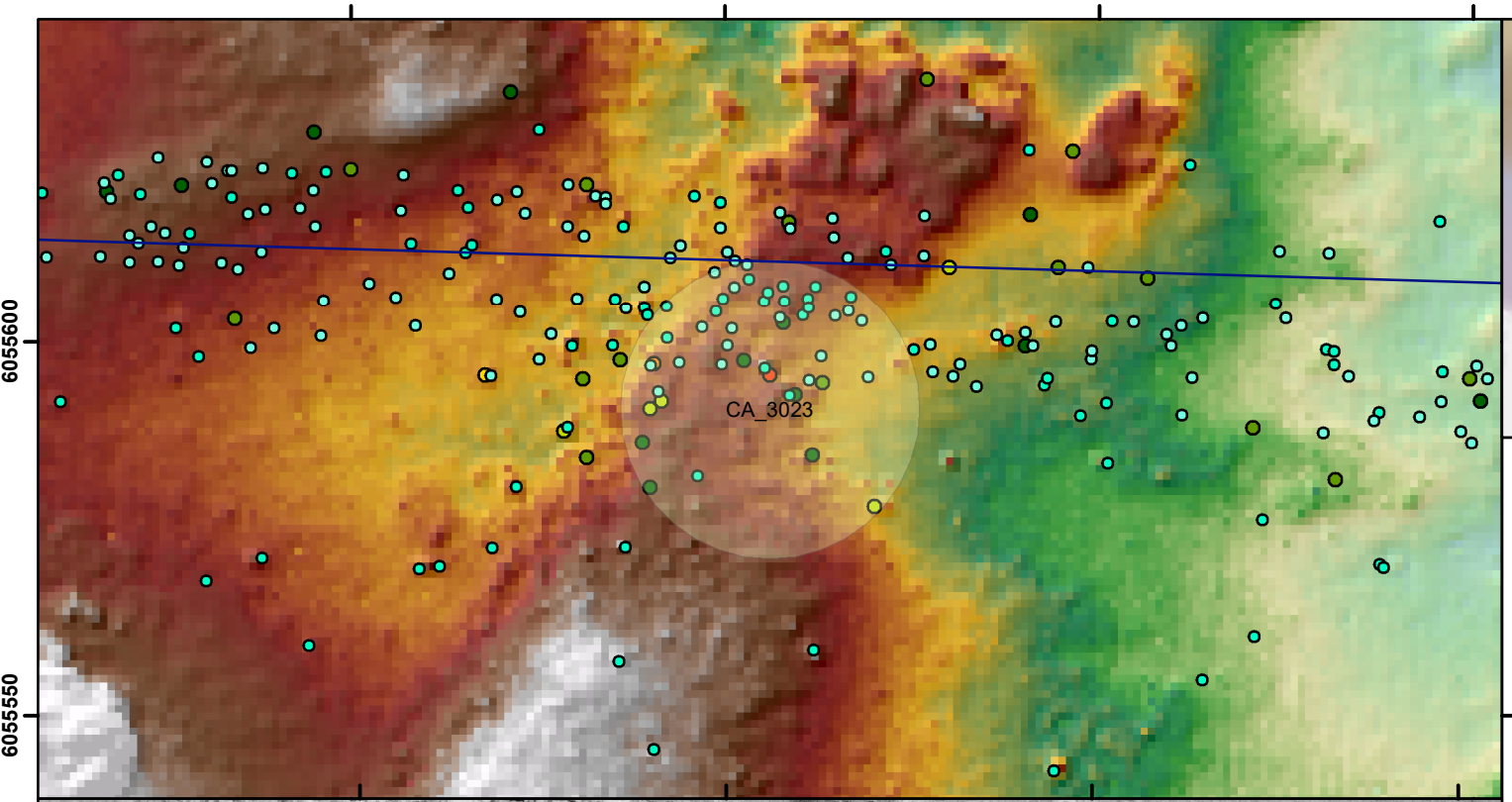
Coracle Archaeology

PROJECT TITLE: **Scot-NI 3**

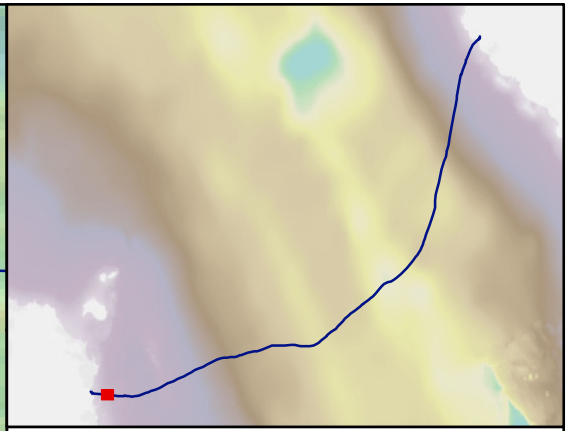
FIGURE TITLE: **Geophysical Anomalies CA_3022**

FIGURE NO. **60**

DRAWN BY: MJG CHECKED BY: DG APPROVED BY: MW







6055600
6055550
6055600
6055550
337500
337550
337600
337650

## Legend

- Scot-NI 3
- AEZ
- Boulder SSS Anomaly
- Cable SSS Anomaly
- Other SSS Anomaly

Magnetic Anomaly (nT)

- 1 - 2
- 2 - 5
- 6 - 10
- 11 - 25
- 25 - 100
- > 100

Bathymetry (m LAT)
High : -13.3
Low : -16.432

0 20 40 Metres

Coordinate System: WGS 1984 UTM Zone 30N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -3.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

N

Coracle Archaeology

PROJECT TITLE: **Scot-NI 3**
FIGURE TITLE: **Geophysical Anomalies CA_3023**
FIGURE NO. **61**
DRAWN BY: MJG CHECKED BY: DG APPROVED BY: MW