

APPENDIX 1: TECHNICAL INFORMATION ON INSTRUMENTATION AND DATA

GEOPHYSICAL INSTRUMENTATION

GPR/Ground Penetrating Radar (GSSI SIR-3000): GPR instrumentation comprises 1 central control unit for system configuration and data acquisition, a bistatic antenna (250-500mhz for archaeological purposes), and either a cart or survey wheel fixed with an odometer. GPR transmits a continuous electromagnetic pulse or wave of energy into the ground and records reflections of that energy following its interaction with buried objects and layers below the surface. Data is acquired along parallel transects or within a network of 20m²/30m² grids with measurements recorded as a function of 2-way travel time (the elapsed time for the energy wave to travel from transmitter to reflector and back to the surface). The strength of GPR reflections is proportional to the conductive and dielectric properties of the layers and objects with which the transmitted energy is incident.

Gradiometry (Bartington Grad601-4 Sensor Combined Gradiometer & GPS array): Gradiometry is perhaps the most widely used technique in archaeological geophysics. A conventional gradiometer system comprises a data logger, and at least 1 fluxgate gradiometer sensor to map variations in soil magnetism caused by buried archaeological features. These variations derive from processes of burning activity and organic enrichment of the soil which occur during phases of archaeological settlement. Gradiometer surveys require survey across a network of 20m²/30m² grids, or when integrated with GPS and a GIS data can also be collected along regularly spaced parallel lines of infinite length. The minimum recommended sampling routine for gradiometry is 0.25m x 1m.

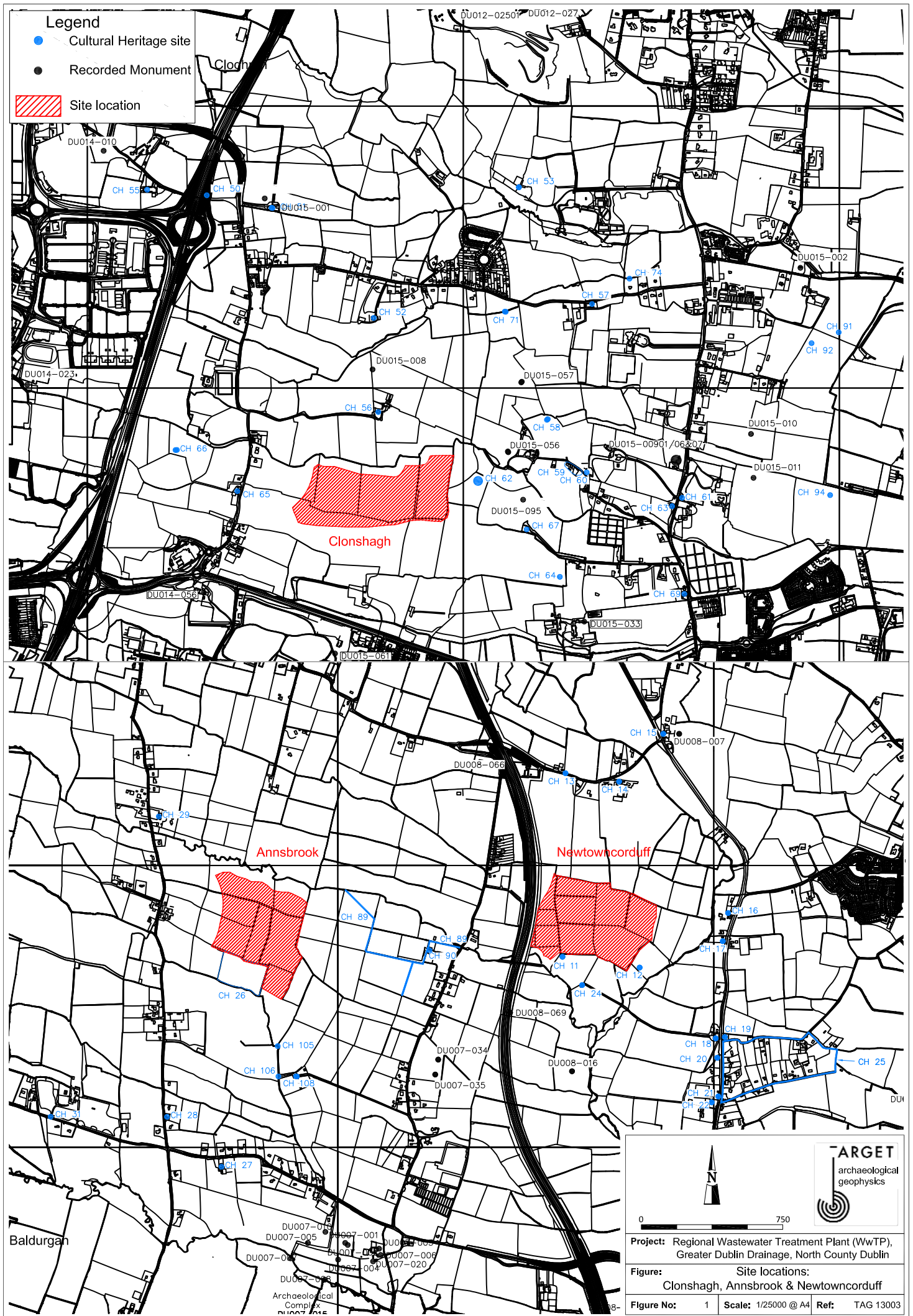
Resistivity (Geoscan RM15 & Twin Probe Array): Resistivity is generally deployed to target known or suspected buried structures, including building foundations, walled enclosures, remnants of burial cairns, and existing earthworks. Using an array of electrodes mounted on a portable frame a small electrical current is passed through the ground at regular intervals via *current* emitting electrodes and the variations in resistance above background recorded via *potential* probes. Single or parallel twin resistivity systems use a pair or 2 pairs of current and potential probes mounted on a mobile frame with 1 remote *current* and 1 *potential* probe maintained at a stationary location no less than 20m from the survey limit. Standard resistivity sampling intervals are 0.5m x 0.5m, 0.5m x 1m or 1m x 1m, with use of either sampling routine specific to the size and depth of the suspected target(s).

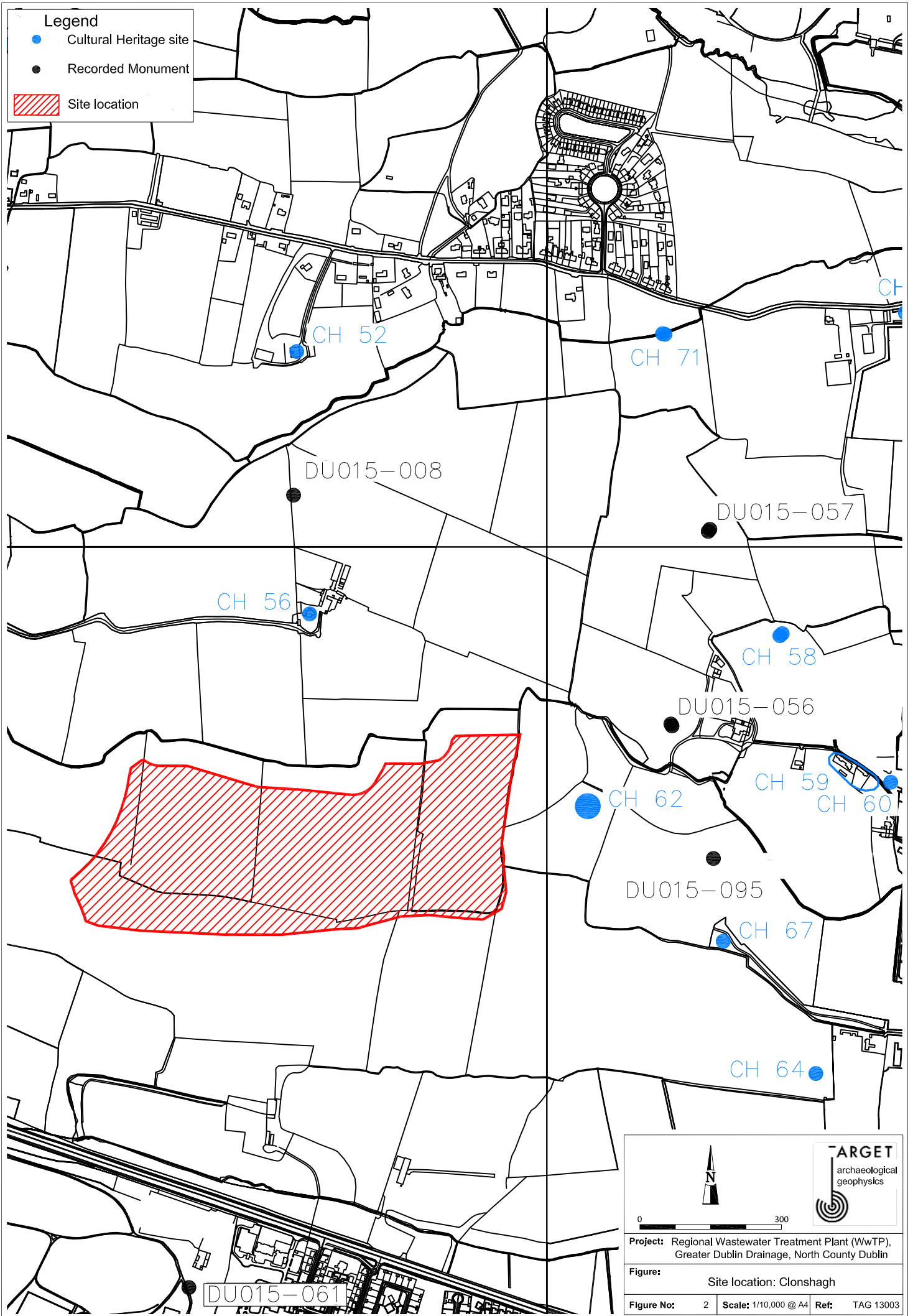
DATA DISPLAY

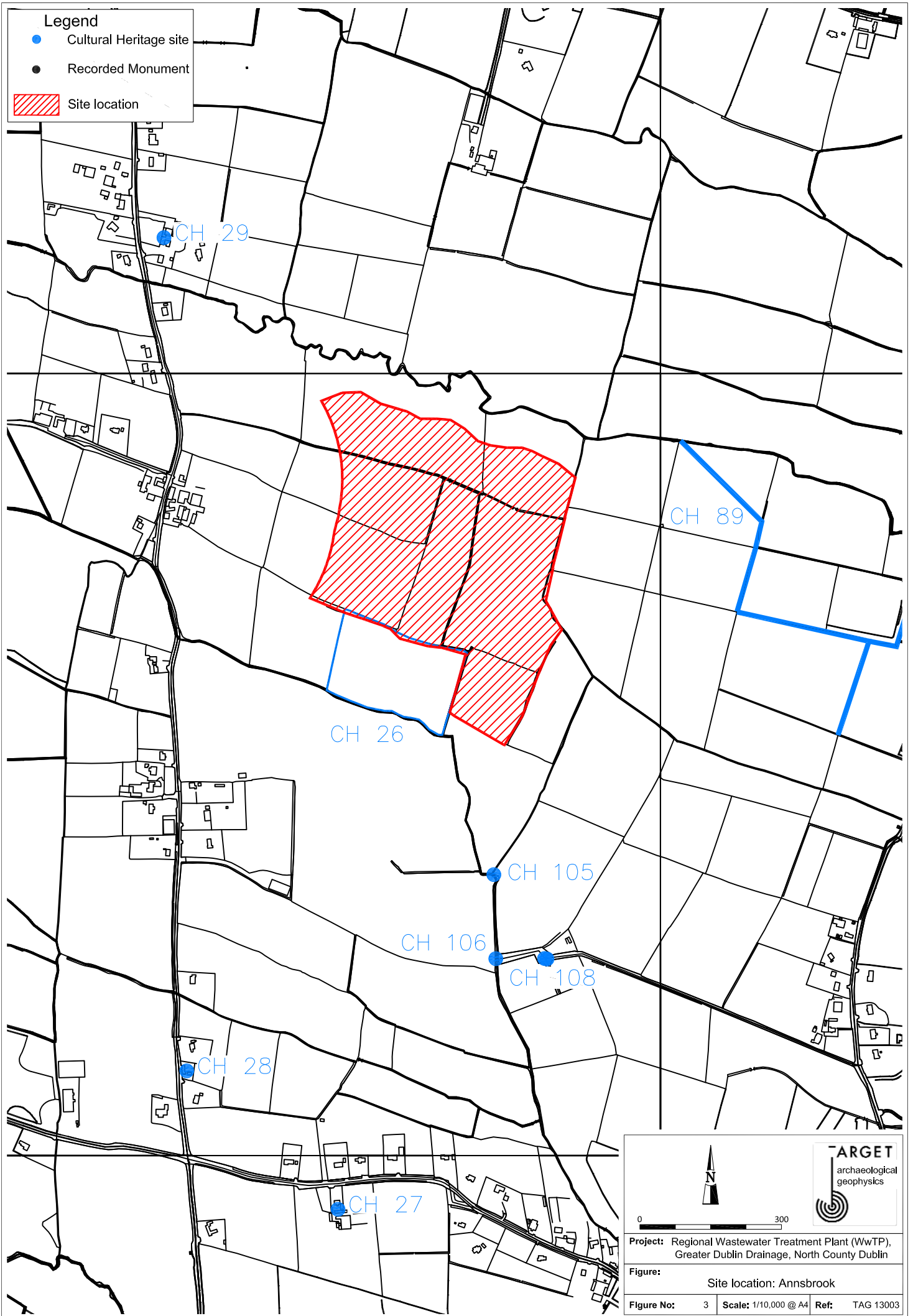
Greyscale: The greyscale format assigns a cell to each datum according to its location on the grid. The display of each data point is conducted at very fine increments, allowing the full range of values to be displayed within the given data set. This display method also enables the identification of discrete responses barely above background levels of natural soil magnetism.

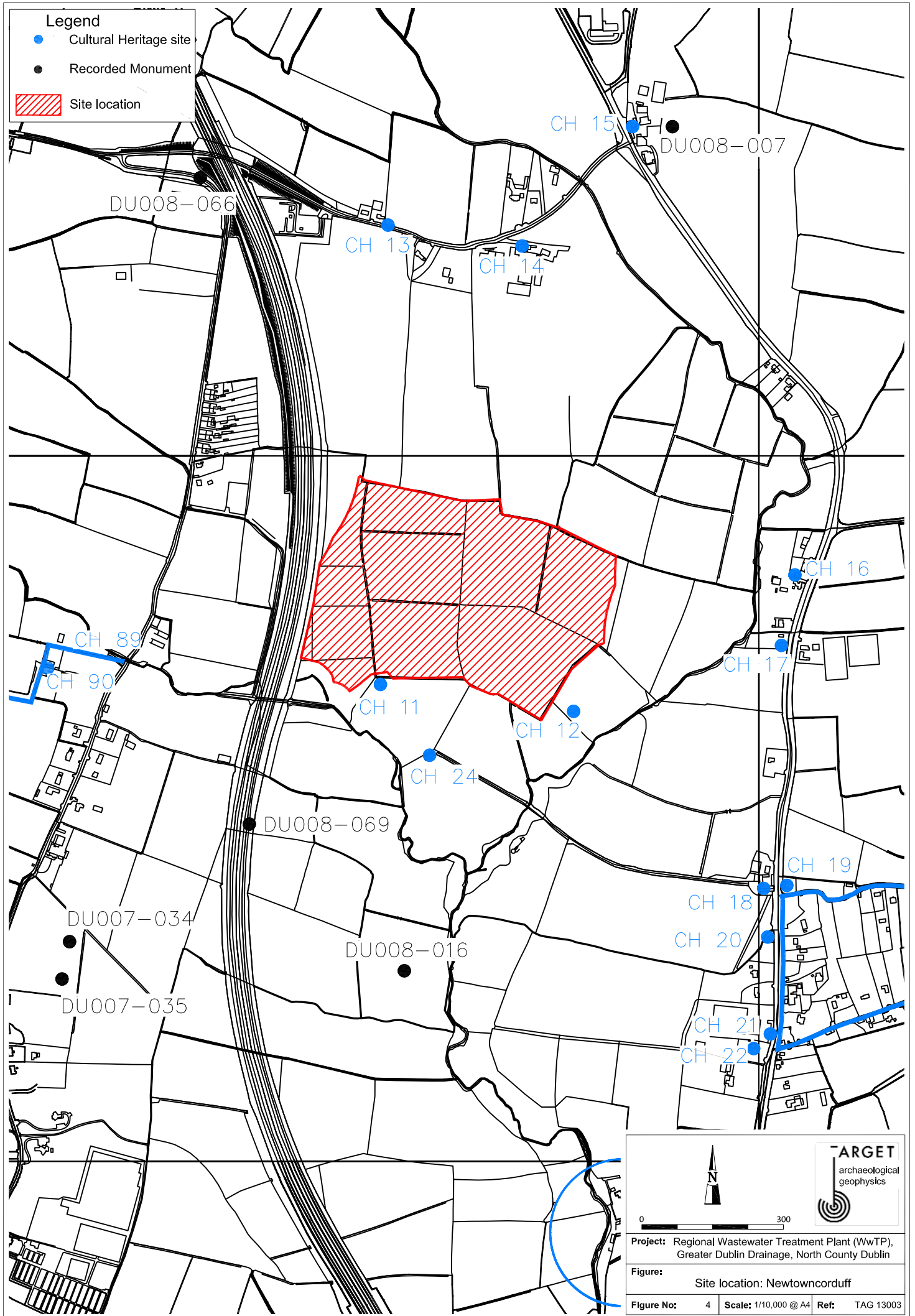
XY Trace: XY Trace displays provide a near-perspective representation of responses recorded along each instrument traverse. This display format is primarily used for identifying modern ferrous material, but can be informative on location of hearth, kiln and furnace remains, where strong magnetic responses may otherwise be dismissed as modern ferrous in origin. Responses from modern ferrous material can alternatively be identified by extracting readings beyond a specified range (e.g. +/-15nT) within a GIS, and then editing this geo-referenced data over greyscale displays.

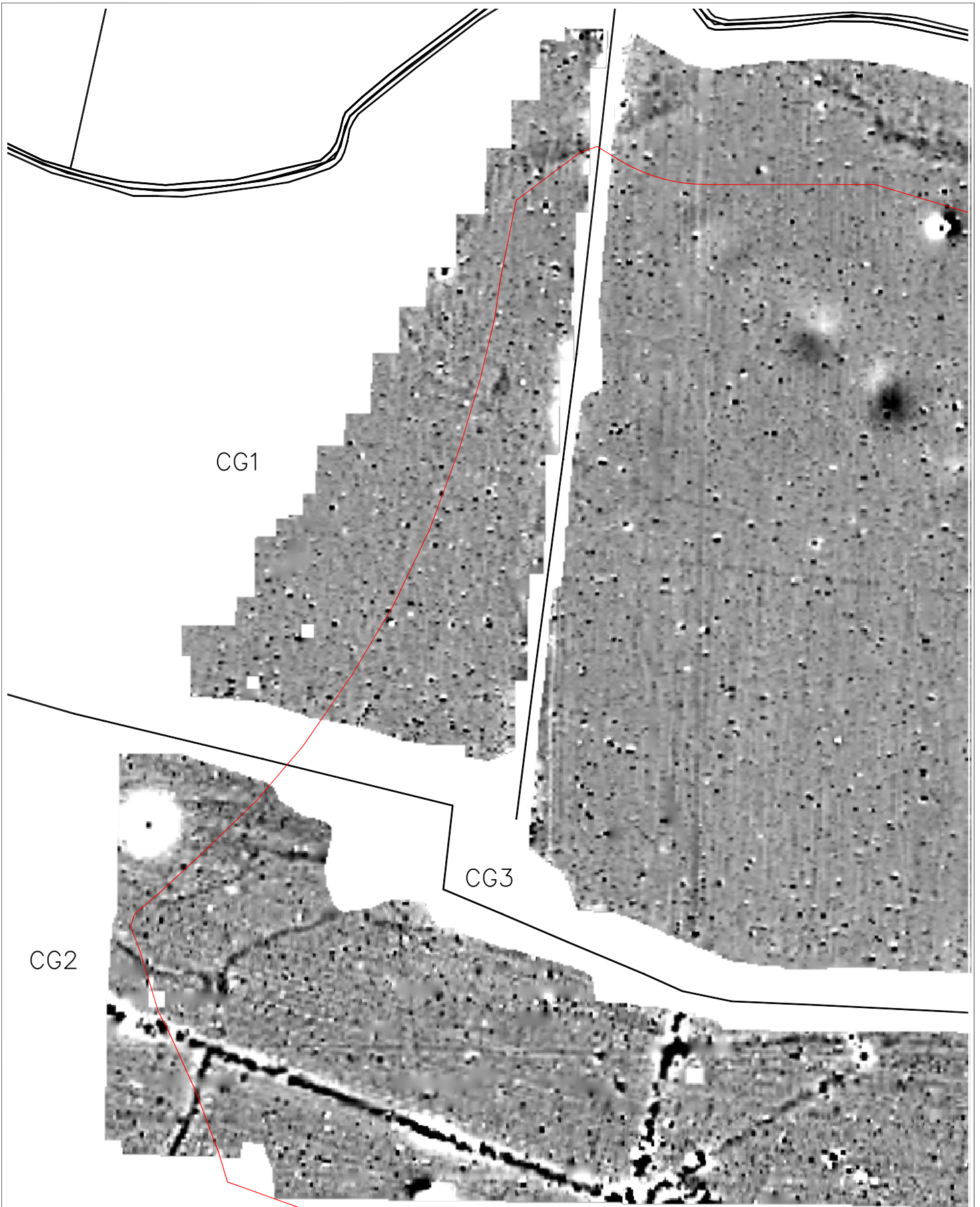
Time-slice: Radargrams collected from survey along a grid can be compiled as a 3D volume, then resampled to produce a series of 2D plans at incremental depth/time offsets. A series of Time-slice displays at 25-50cm offsets permits analysis of the varying pattern and depth of responses within a given survey area.







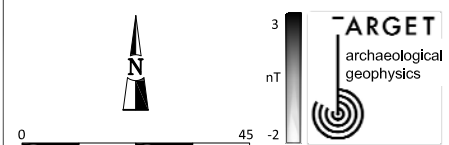




CG1

CG3

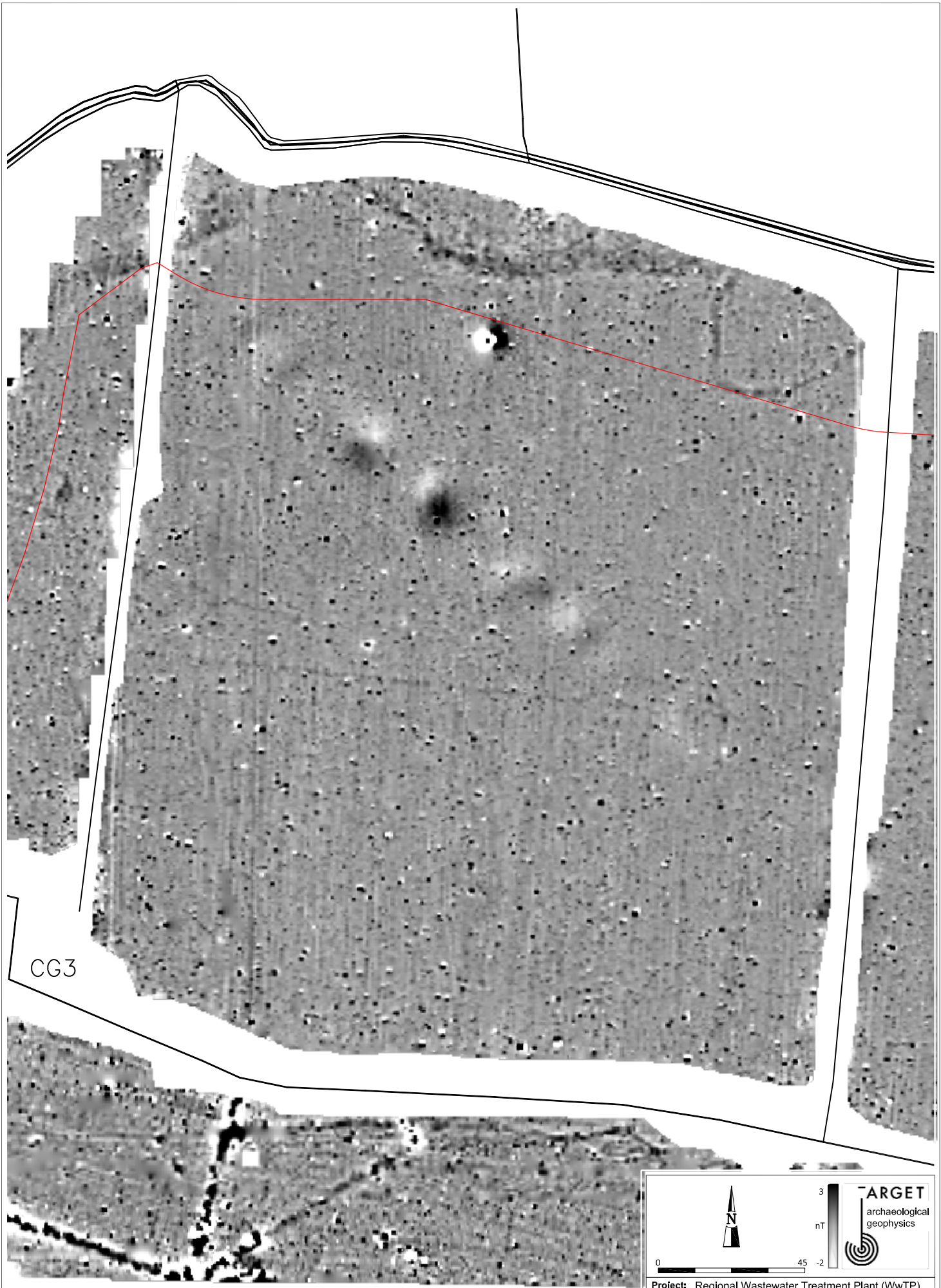
CG2



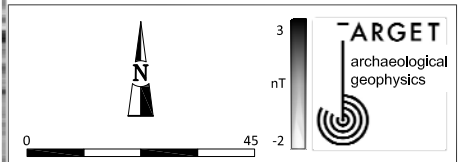
Project: Regional Wastewater Treatment Plant (WwTP),
Greater Dublin Drainage, North County Dublin

Figure:
Interpolated greyscales: Clonsagh, CG1-CG3

Figure No: 5 **Scale:** 1/1500 @ A4 **Ref:** TAG 13003



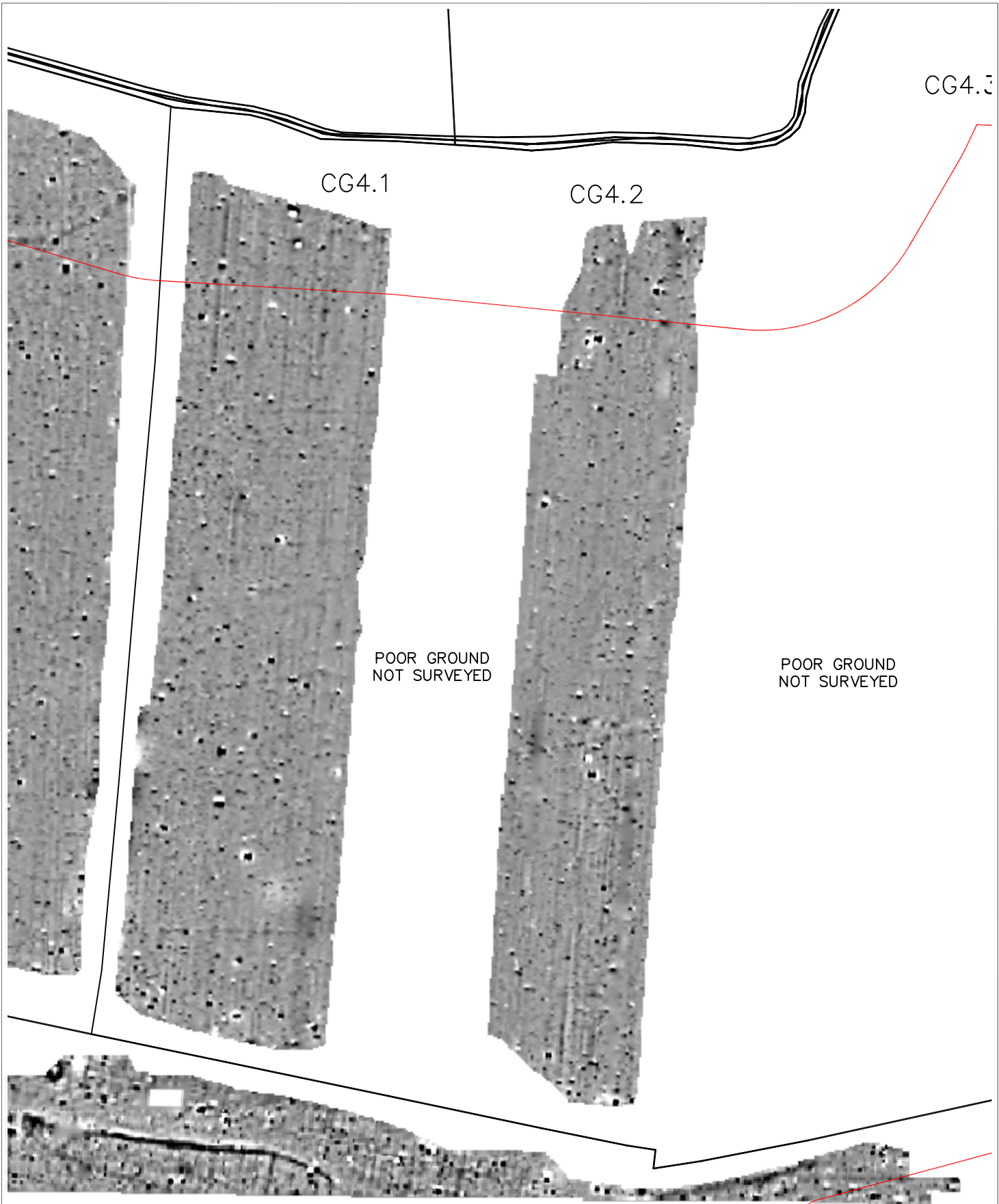
CG3



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Greater Dublin Drainage, North County Dublin

Figure:
Interpolated greyscales: Clonsagh, CG3

Figure No:	6	Scale:	1/1500 @ A4	Ref:	TAG 13003
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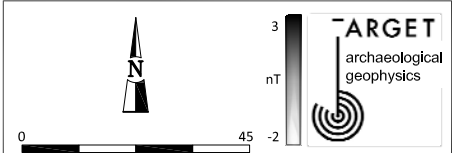
CG4.1

CG4.2

CG4.3

POOR GROUND
NOT SURVEYED

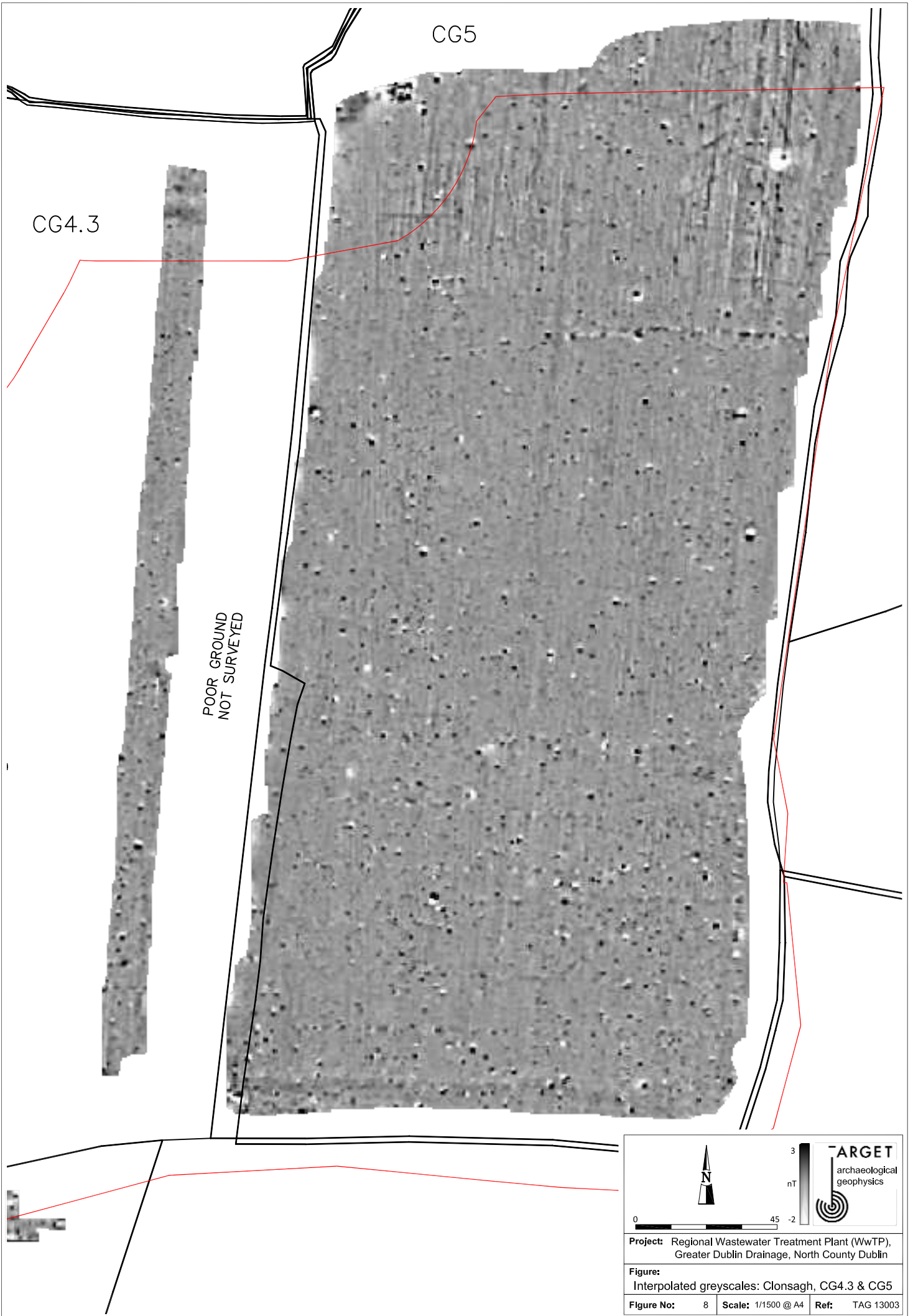
POOR GROUND
NOT SURVEYED

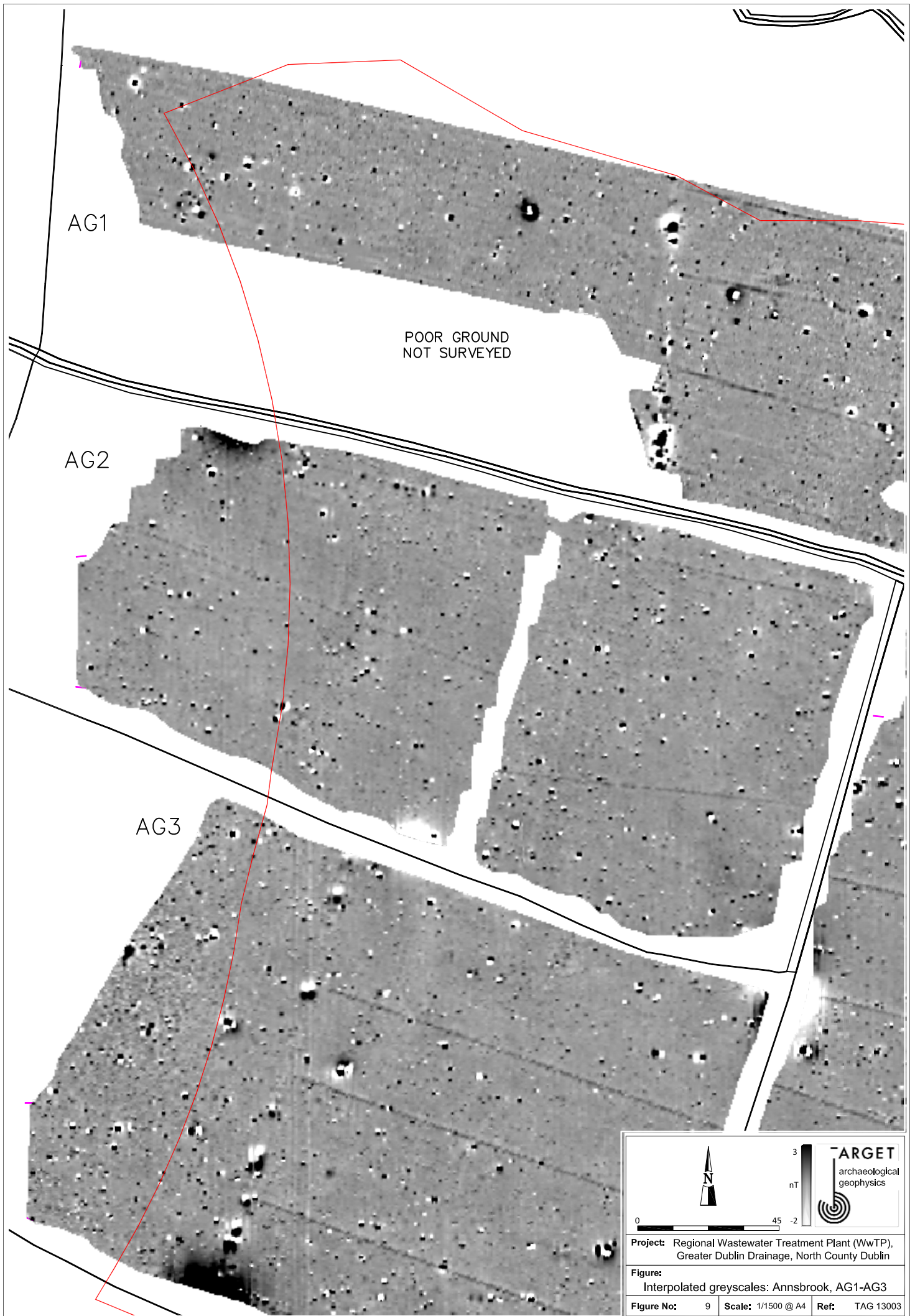


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Figure:
Interpolated greyscales: Clonsagh, CG4.1 & CG4.2

Figure No: 7 **Scale:** 1/1500 @ A4 **Ref:** TAG 13003







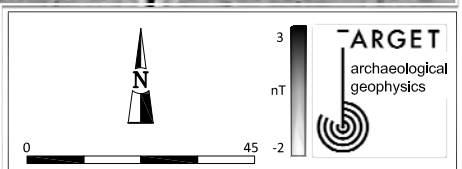
GROUND SURVEYED

POOR GROUND NOT SURVEYED

AG4

POOR GROUND NOT SURVEYED

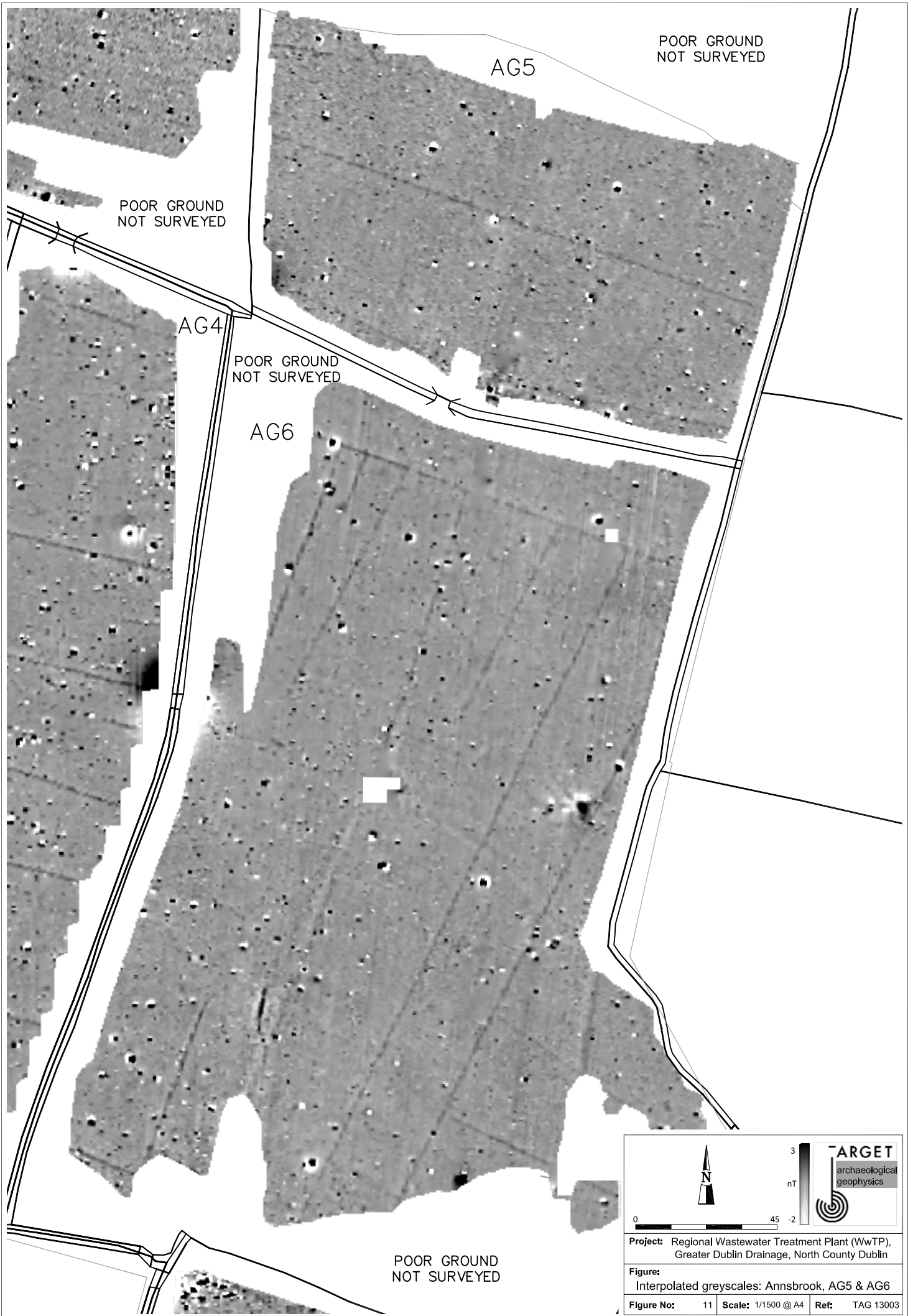
AG6



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Figure:
Interpolated greyscales: Annsbrook, AG4

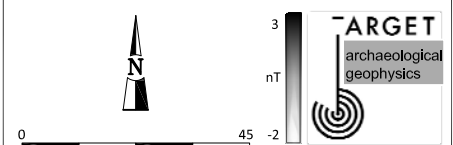
Figure No: 10 Scale: 1/1500 @ A4 Ref: TAG 13003





POOR GROUND
NOT SURVEYED

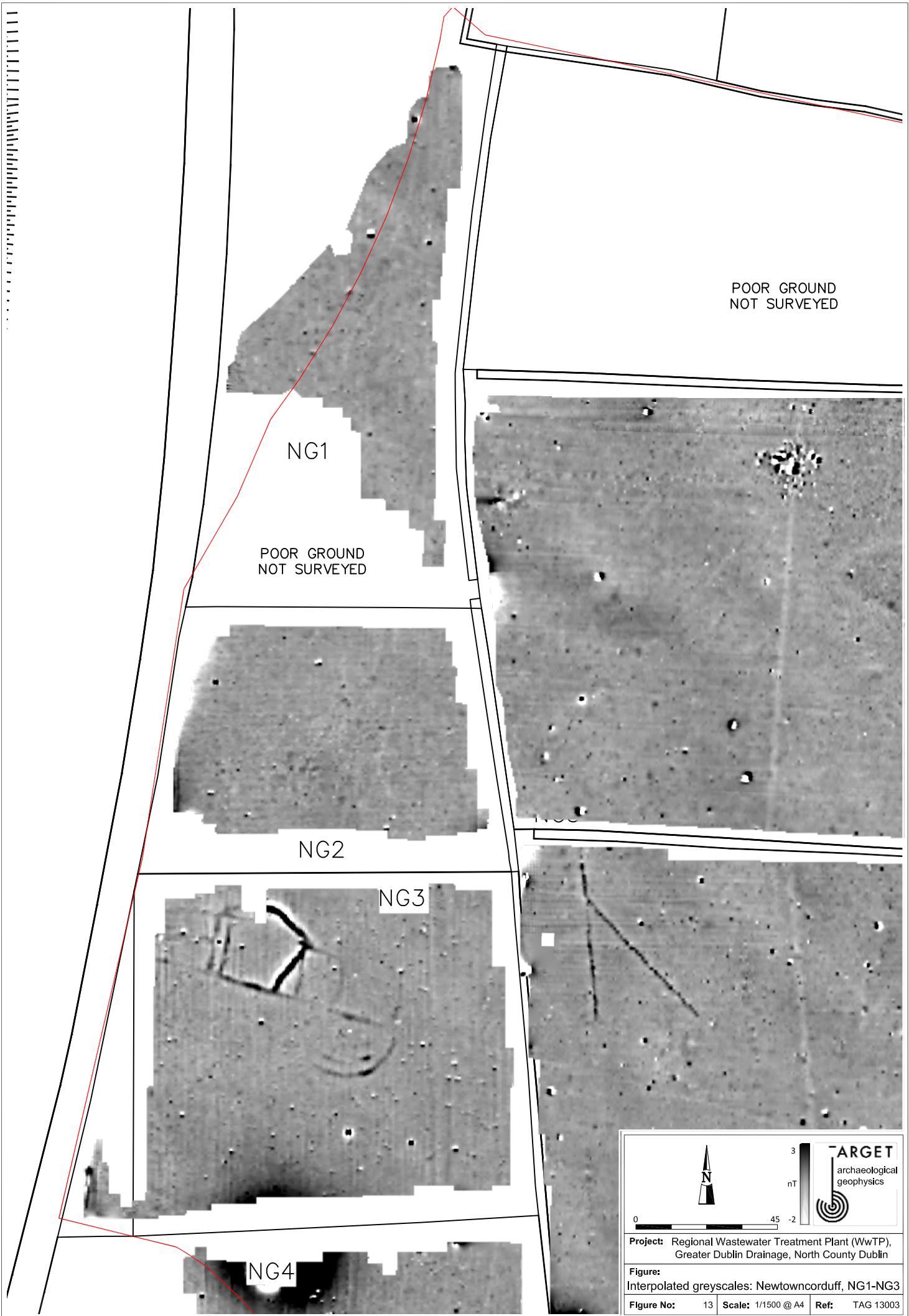
AG7



Project: Regional Wastewater Treatment Plant (WwTP),
Greater Dublin Drainage, North County Dublin

Figure:
Interpolated greyscales: Annsbrook, AG7

Figure No: 12 Scale: 1/1500 @ A4 Ref: TAG 13003



POOR GROUND
NOT SURVEYED

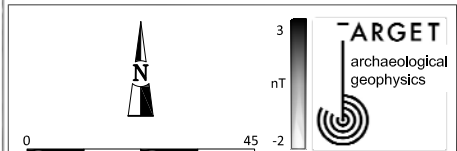
NG1

POOR GROUND
NOT SURVEYED

NG2

NG3

NG4



Project: Regional Wastewater Treatment Plant (WwTP),
Greater Dublin Drainage, North County Dublin

Figure:
Interpolated greyscales: Newtowncorduff, NG1-NG3

Figure No: 13 Scale: 1/1500 @ A4 Ref: TAG 13003

POOR GROUND
NOT SURVEYED

NG5

NG1

POOR GROUND
NOT SURVEYED

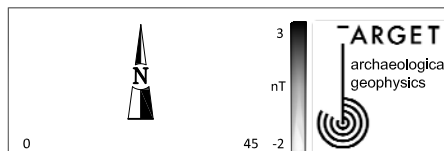
NG2

NG3

NG4

NG6

N



Project: Regional Wastewater Treatment Plant (WwTP),
Greater Dublin Drainage, North County Dublin

Figure:
Interpolated greyscales: Newtowncorduff, NG4-NG6

Figure No: 14 Scale: 1/1500 @ A4 Ref: TAG 13003

