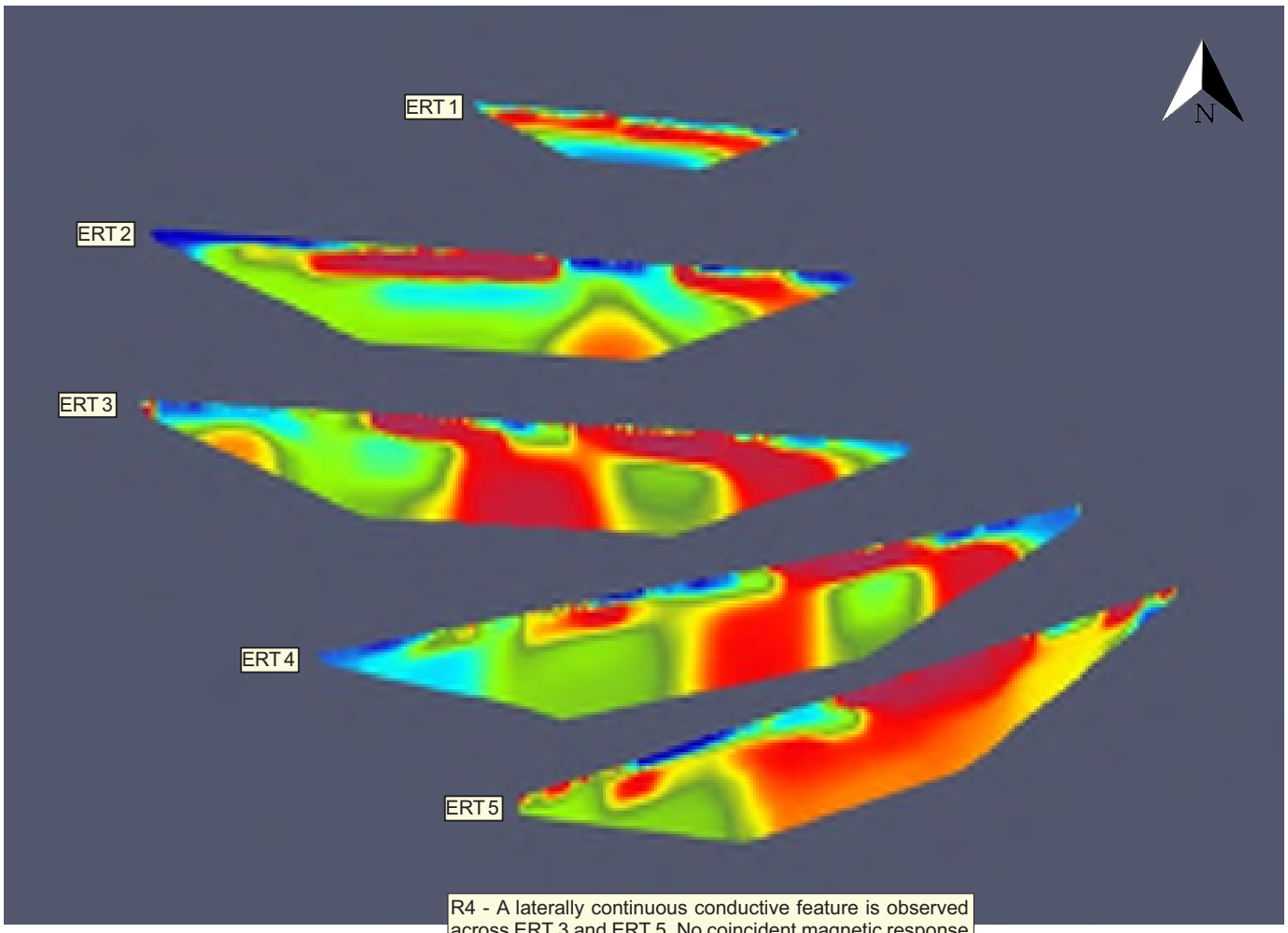
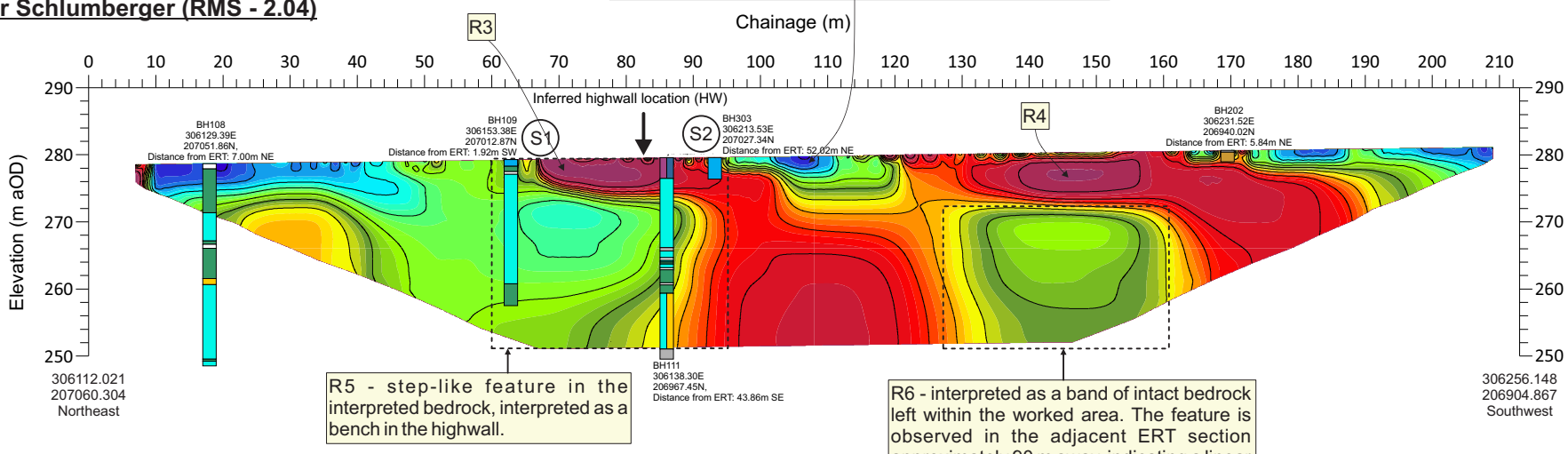
## 3D schematic of all ERT profiles, looking north (NTS)




R4 - A laterally continuous conductive feature is observed across ERT 3 and ERT 5. No coincident magnetic response is observed - interpreted as a linear zone of differential backfill (possibly wetter or finer-grained material).

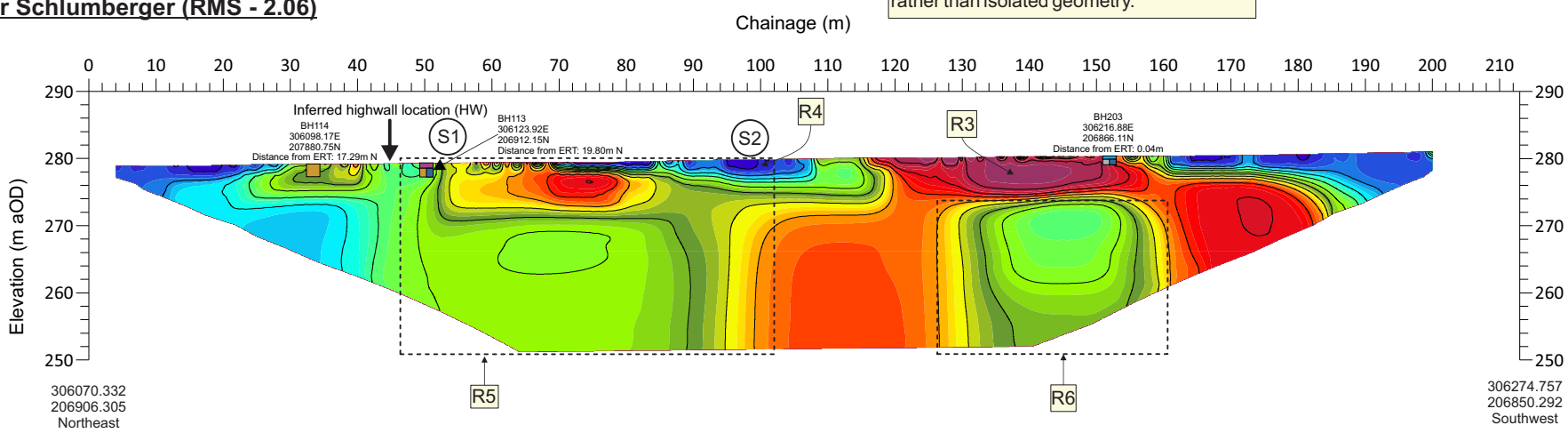
## ERT 3 - Wenner Schlumberger (RMS - 2.04)



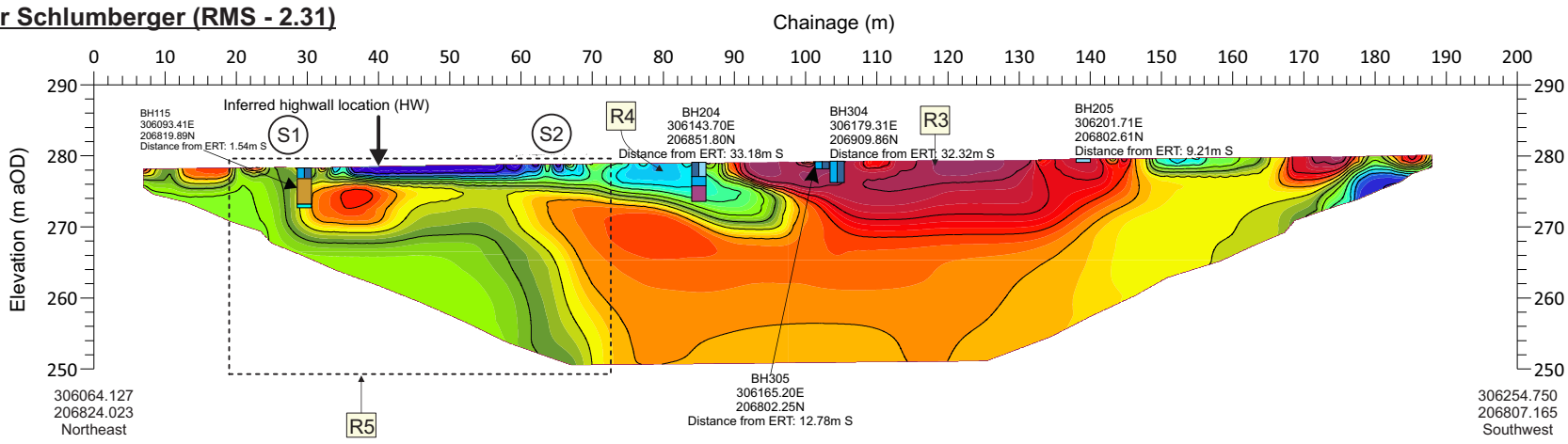

R5 - step-like feature in the interpreted bedrock, interpreted as a bench in the highwall.

R6 - interpreted as a band of intact bedrock left within the worked area. The feature is observed in the adjacent ERT section approximately 90 m away, indicating a linear rather than isolated geometry.

## ERT 4 - Wenner Schlumberger (RMS - 2.06)




## ERT 5 - Wenner Schlumberger (RMS - 2.31)




**Map key:**

Highlighted feature

Inferred highwall location (HW)

**Highwall key:**

S1 Shallow, abrupt increase in resistivity approximately 10 m thick. Potentially represents a step-like feature related to the high wall.

S2 Abrupt, vertical deepening of increased resistivity. Potentially represents the main wall and backfill material of the open cast pit.

**ERT colour scale:**

63 78 94 110 128 147 167 193 259

**RESISTIVITY** (Ohm.m)

*Increased resistivity, decreasing conductivity*

**Borehole key:**

- Made Ground (Gravel)
- Made Ground (Clay)
- Engineered Fill (Clay)
- Coal Measures
- Clay
- Mudstone
- Siltstone
- Sandstone
- Glacial Till
- Gravel
- Cobbles
- Boulders
- No Recovery/ Open Hole


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**Title:** ERT results - ERT 3 to ERT 5

**Project:** Goatmill Road

Scale: 1:1000

Drawn by/Ref: AT/9740/6

Date: April 2026

**Figure 6**

306000 306100 306200 306300 306400 306500

207200 207100 207000 206900 206800 206700

ERT 1 ERT 2 ERT 3 ERT 4 ERT 5

Z1 Z2 Z3 Z4 Z5 Z6 Z7 Z8 Z9 Z10 Z11 Z12

N

**Map key:**

- Obstruction (vegetation/Site compound/drilling equipment
- ERT profile
- Site boundary (provided by Client)
- Indicative high-wall position (provided by the Client)
- Borehole
- Extent of elevated in-phase response (EM)
- Extent of elevated analytical signal response (magnetic)
- Peak amplitude location - analytical signal
- Peak amplitude location - in-phase

Note - In-phase and analytic signal extents represent the gridded spatial footprint of each response. Peak amplitudes mark the point of maximum response. Where extents are coincident, the combined response suggests ferrous or susceptible material. Where peak amplitudes densely cluster or form linear patterns, these have been highlighted by boxes on the plan.

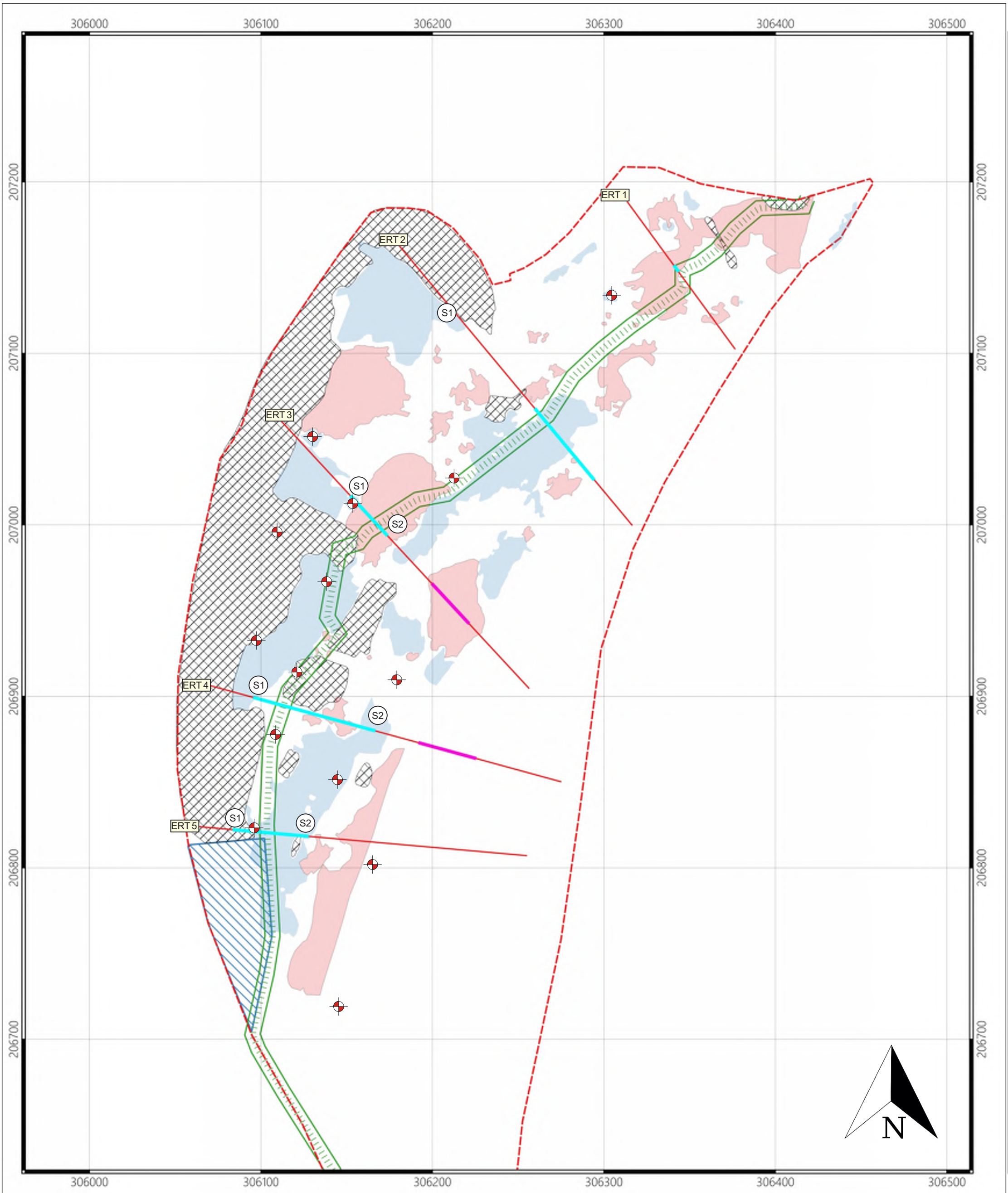
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**Title:** Electromagnetic and magnetics - combined results plot

**Project:** Goatmill Road

| | |
|---|---|
| Scale: | 1:2000 |
| Drawn by/Ref: | AT/9740/7 |
| Date: | April 2026 |

**Figure 7**




**Map key:**

- Obstruction (vegetation/Site compound/drilling equipment)
- ERT profile
- Site boundary (provided by Client)
- Indicative high-wall position (provided by the Client)
- Borehole
- **R5** - Step-like feature identified from ERT sections
- **R6** - Band feature identified from ERT sections
- Decreases in conductivity
- Increases in conductivity
- Site compound/drilling rig
- (S1) Shallow, abrupt increase in resistivity approximately 10 m thick. Potentially represents a step-like feature related to the high wall.
- (S2) Abrupt, vertical deepening of increased resistivity. Potentially represents the main wall and backfill material of the open cast pit.

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**Title:** EM ground conductivity and ERT combined results plot

**Project:** Goatmill Road

| | |
|---|---|
| Scale: | 1:2000 |
| Drawn by/Ref: | AT/9740/8 |
| Date: | April 2026 |

**Figure 8**

# Appendices

# Magnetic Survey

The magnetic survey technique is based on mapping localised variations in the Earth's magnetic field caused by sub-surface magnetic materials, which range from naturally occurring magnetic minerals to man-made ferrous objects. This leads to a wide range of applications, from small-scale archaeology and engineering surveys to detect buried metallic objects to large-scale surveys carried out to investigate regional geological trends or mineralisation.

Magnetic surveys are carried out using a man-portable instrument with readings taken on a regular grid or along selected traverse lines. The equipment functions by measuring the Earth's magnetic field to very high precision at each survey station. Ferrous materials in the subsurface have an induced magnetic field that is superimposed on the Earth's field at that location, creating a magnetic anomaly. The spacing of survey stations depends on the width of the expected anomaly, which broadens with the size and depth of burial of the targeted feature. Continuous profiling methods may be used for a high-resolution dataset.

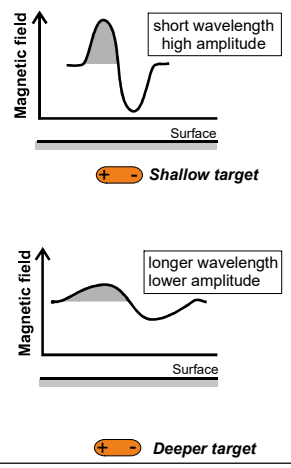
Magnetometer data are stored digitally by the survey instrument and downloaded to a field computer at the end of each day. The magnetic data are then processed to enhance any identifiable anomalies and presented on colour-contoured plots overlain with site maps (when available).

The results of the magnetic survey are usually presented as total field and analytical signal plots. The total field data may be used to observe the general character of the magnetic field across the survey area, while the peak values (pink) displayed on the analytical signal plot indicate the source positions for dipole type magnetic anomalies. In general terms, the interpretation of a magnetic anomaly is based on observing the type (pole/dipole), amplitude and wavelength of the anomalous features.

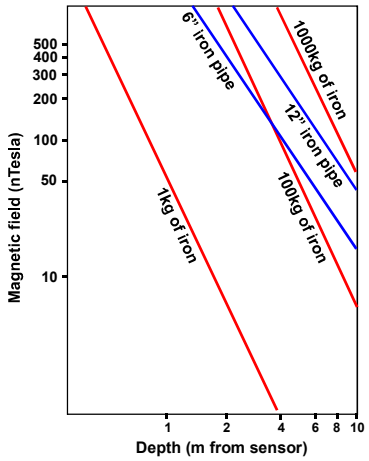
**Gradiometer survey**



**Magnetic anomalies**



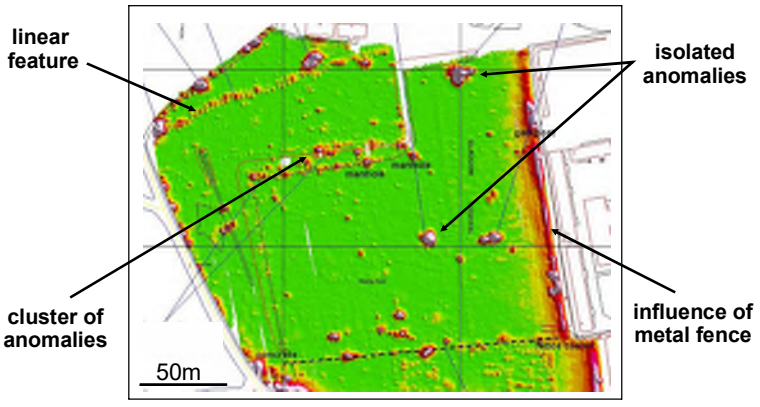

**Guide to anomaly size**




**Towed gradiometer with dGPS**



**Analytical signal plot**




***Constraints***

Metal objects or structures close to the survey area (fences, vehicles, debris etc.) produce a strong signal that can overshadow more subtle effects of sub-surface anomalies.


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# Electromagnetic Survey

The electromagnetic (EM) technique involves the generation of an EM field at the surface and measuring the response of the ground as it propagates into the subsurface. The main components of an EM survey instrument are a transmitter (for the generation of the primary field) and a receiver (for measuring the induced secondary field). The instrument functions by inducing current into the ground via a transmitter coil which causes the generation of secondary electromagnetic fields in any ground conductors present within the depth range of the particular instrument. These secondary fields are measured at a receiver coil, and the instrument can record ground conductivity and in-phase component (metal indicator) at each survey station.

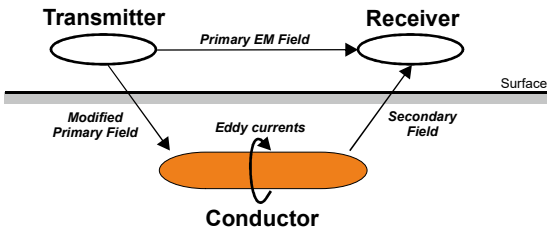
Electromagnetic (EM) surveys are carried out using man-portable instruments with readings taken on a regular grid or along selected traverse lines. If site conditions permit, the EM instrument may be mounted/towed behind a quad bike and positional control is provided by dGPS. The selection of the particular EM instrument (GEM2/EM-38/EM-31/EM-34) is based on the required penetration depth of the survey.

The results from the EM survey can be presented as colour contoured plots of conductivity and inphase (metal response) data. In general terms, a relative increase in conductivity values usually indicates a local increase in clay content or water saturation. However, if there is a corresponding increase in the inphase response, the influence of some artificial source is likely (i.e. metal).

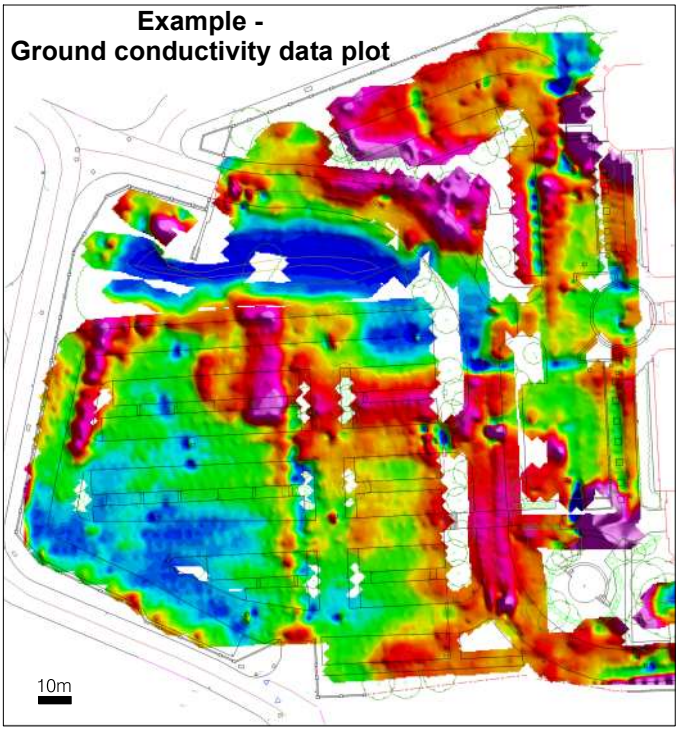

Hand carried EM Survey set-up


EM Survey set-up on a quad bike

**General principle of EM surveying**




**Example - Ground conductivity data plot**




At the end of the survey, the data are downloaded to a field computer and corrected for instrument, diurnal and positional shifts. Additional editing may be carried out to remove non-essential or 'noisy' data values/positions. The dataset is then processed to enhance any identifiable anomalies.

***Constraints***

Power lines, buildings, metal structures (fences, rebar, vehicles, debris etc.) and buried services can interfere with the electromagnetic measurements.


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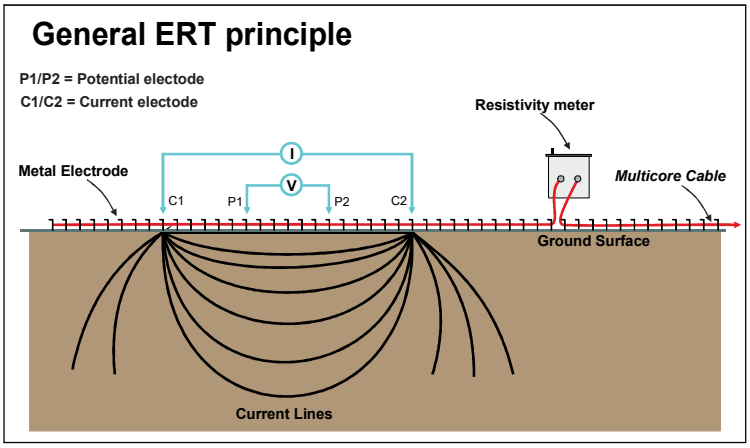
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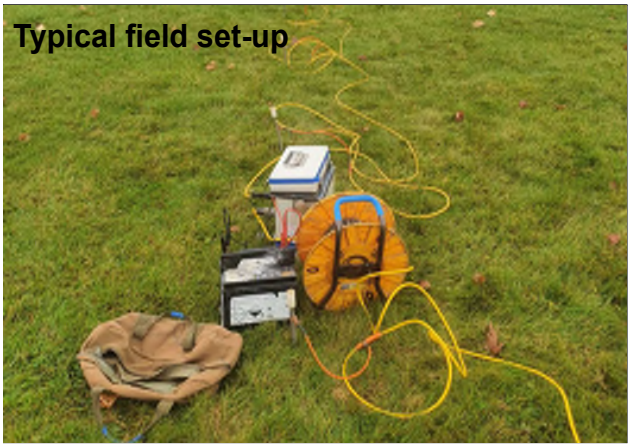
# Electrical Resistivity Tomography

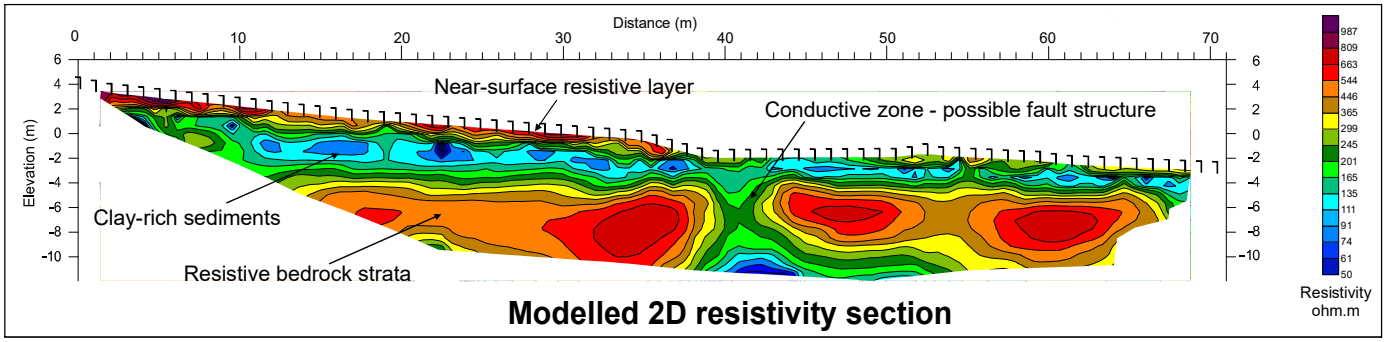
The resistivity technique is a useful method for characterising the sub-surface materials in terms of their electrical properties. Variations in electrical resistivity (or conductivity) typically correlate with variations in lithology, water saturation, fluid conductivity, porosity and permeability, which may be used to map stratigraphic units, geological structures, sinkholes, fractures and groundwater.

The acquisition of resistivity data involves the injection of current into the ground via a pair of electrodes and then the resulting potential field is measured by a corresponding pair of potential electrodes. The field set-up requires the deployment of an array of regularly spaced electrodes, which are connected to a central control unit via multi-core cables. Resistivity data are then recorded via complex combinations of current and potential electrode pairs to build up a pseudo cross-section of apparent resistivity beneath the survey line. The depth of investigation depends on the electrode separation and geometry, with greater electrode separations yielding bulk resistivity measurements from greater depths.

The recorded data are transferred for processing. To derive a cross-sectional model of true ground resistivity, the measured data are subject to a finite-difference inversion process via RES2DINV software.

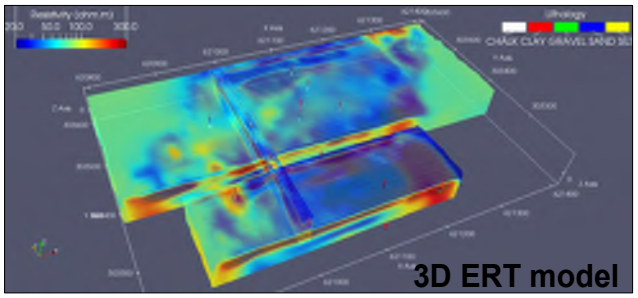



**Modelled 2D resistivity section**

The true resistivity models are presented as colour contour sections revealing spatial variation in subsurface resistivity. The 2D method of presenting resistivity data is limited where highly irregular or complex geological features are present, and a 3D survey may be required. Geological materials have characteristic resistivity values that enable identification of boundaries between distinct lithologies on resistivity cross-sections. At some sites, however, there are overlaps between the ranges of possible resistivity values for the targeted materials which therefore necessitates use of other geophysical surveys and/or drilling to confirm the nature of identified features.




***Constraints:***

Readings can be affected by poor electrical contact at the surface. An increased electrode array length is required to locate increased depths of interest therefore, the site layout must permit long arrays. Resolution of target features decreases with increased depth of burial.


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