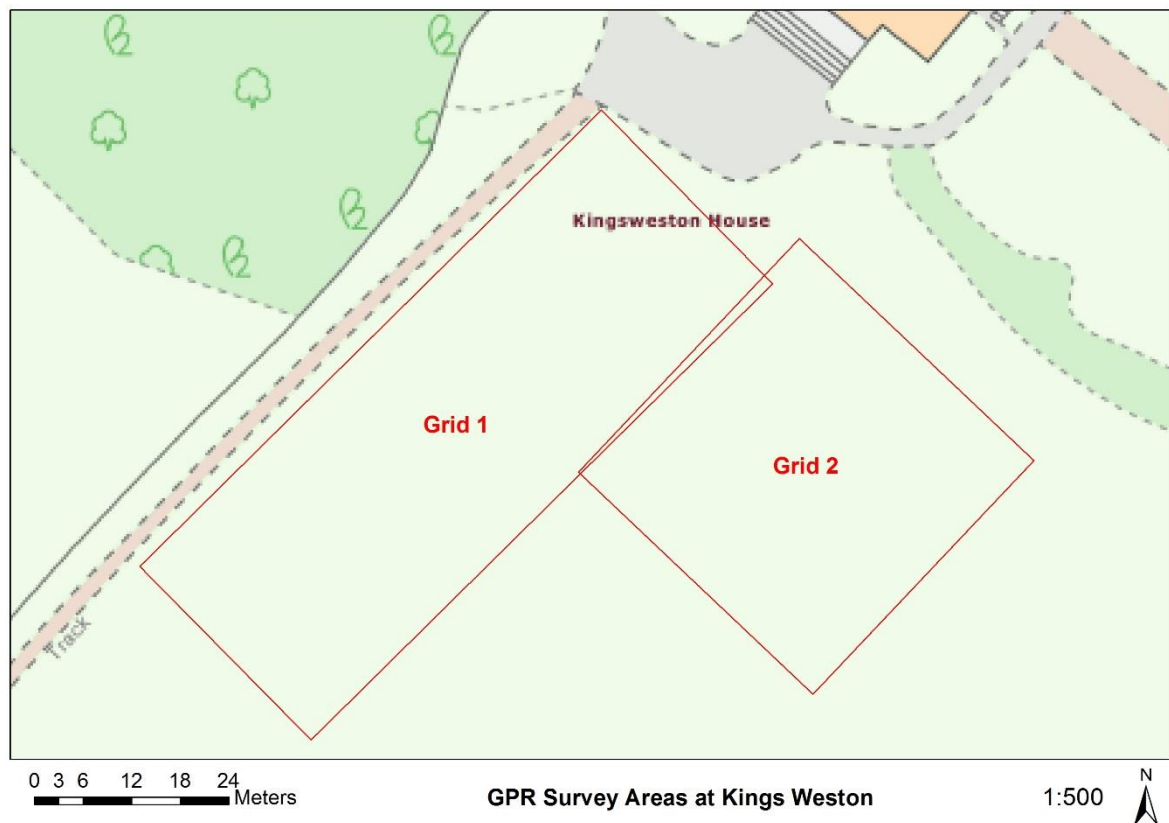


# Kings Weston

## Bristol



## Geophysical Survey Report

## Site Report: Ground Penetrating Radar at Kings Weston

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**SITE:** Grassed areas to the south of Kings Weston House.

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**DESCRIPTION:** The aim of the survey was to engage volunteers and Kings Weston Action Group members with the methods and results of a Ground Penetrating Radar survey (GPR). The areas surveyed were chosen to cover previous earth resistance surveys as much as possible during the day, for comparison of geophysical anomalies. It was hoped the GPR might provide information about subsurface remains relating to previous historic garden features on site.

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**GEOLOGY:** Farrington Member and Barren Red Member Sandstone to the northern areas, sloping to a boundary based on Mercian Mudstone conglomerate to the south of the area

**LAND USE:** Grass for recreational uses, previous use as an area of formal gardens.

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**SURVEY TYPE:** Ground Penetrating Radar  
**INSTRUMENT:** Mala Ground Explorer  
**SAMPLE INT:** 0.05m  
**CENTRE FREQUENCY:** 450MHz  
(hyperbola fit)

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**METHOD:** Parallel Lines (meandering)  
**SURVEY AREA:** 0.4ha  
**LINE INTERVAL:** 0.35m  
**AVG. SOIL VELOCITY:** 0.09m/ns

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### RESULTS:

The results show a mass of complex features under the surface soils. The energy reflectivity levels were good and show many features, some linear and compare well with resistance features, some new features not seen before in the resistance data. The long linears are around 0.4-0.5m deep and are likely drains or pipe lines or some sort (non-metallic). Compaction from vehicle access can be seen in the upper layers. There is a significant layer of highly reflective (meaning a sharp change in dielectric permittivity) material from 0.3-0.5m across the whole site which likely represents a soil profile horizon. This layer has many areas of disturbance in it which have a greater depth of reflectivity. These areas contain a high number of small hyperbolic reflections suggesting the reflecting materials are around 0.1-0.3m in shape, rather than smaller particles which would often reflect more like a layer. There are clearly other sections of linear anomalies which could be archaeologically interesting. Amorphous areas of difference are apparent in the NE half of Grid 1 and discern that there is more disturbance in this area. After 0.6m there are clear reflections from a sloping layer which due to its' shape and patterning looks to be part of the geological stratigraphy. One line in Grid 1 contains a survey effect between survey periods and is not a 'real' anomaly. For further interpretation please get in touch.

Overall the results show lots of subsurface variation and it would be worth comparing these datasets with the resistance data. For further analysis of any anomalies identified spatially in the timeslices, the corresponding 2D radar profiles should also be assessed to characterise anomalies.

Data package to be shared: MPEG videos of both grids, georeferenced timeslices.

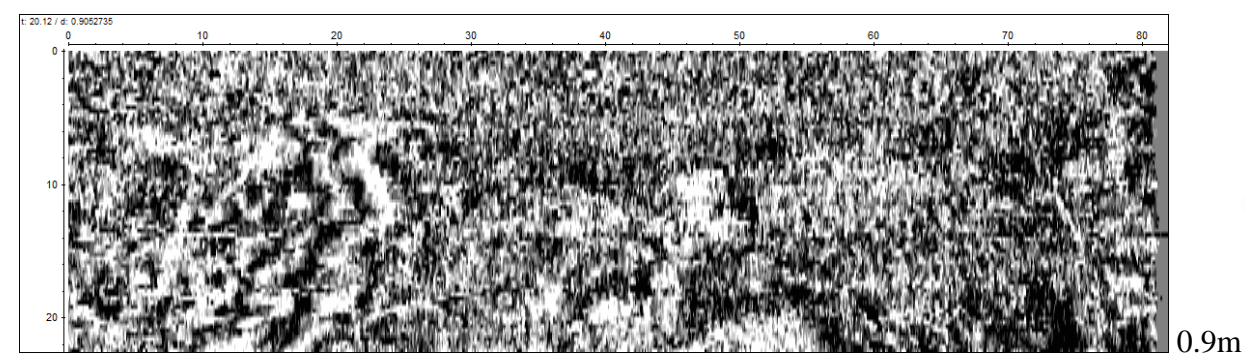
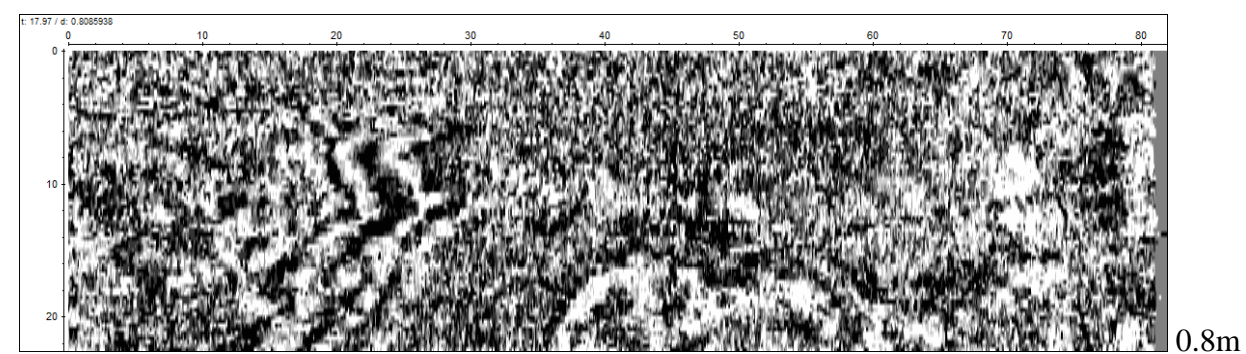
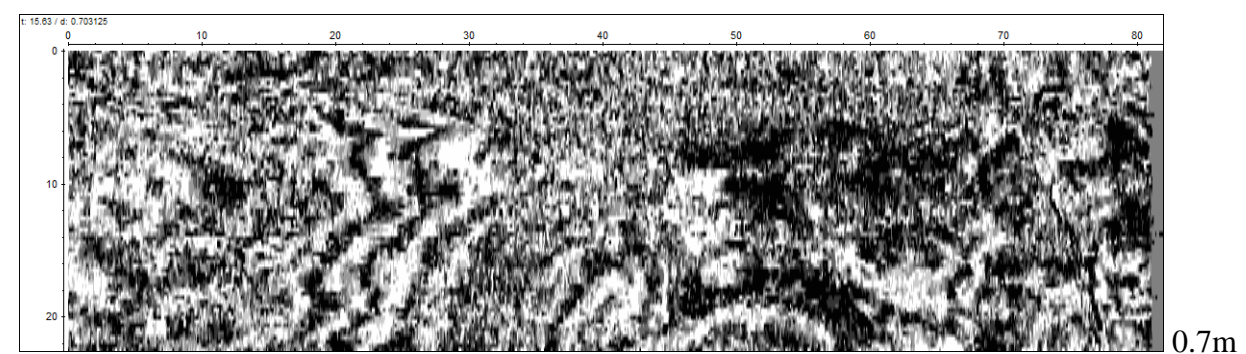
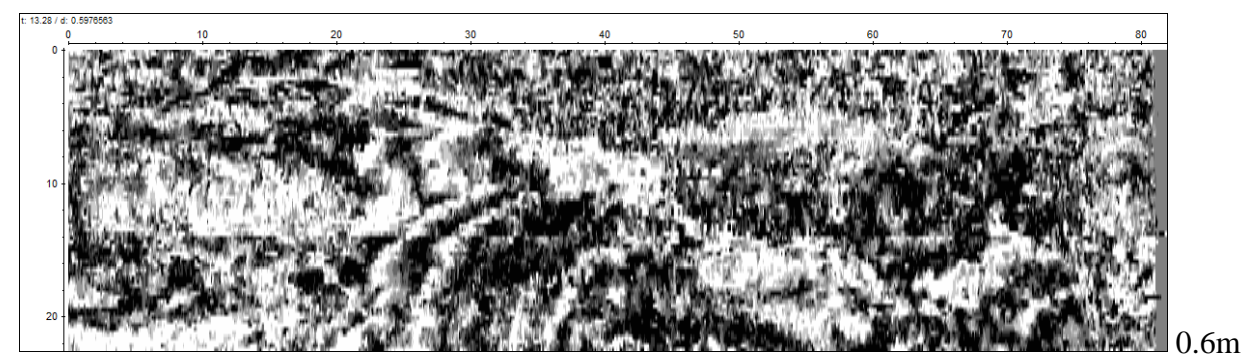
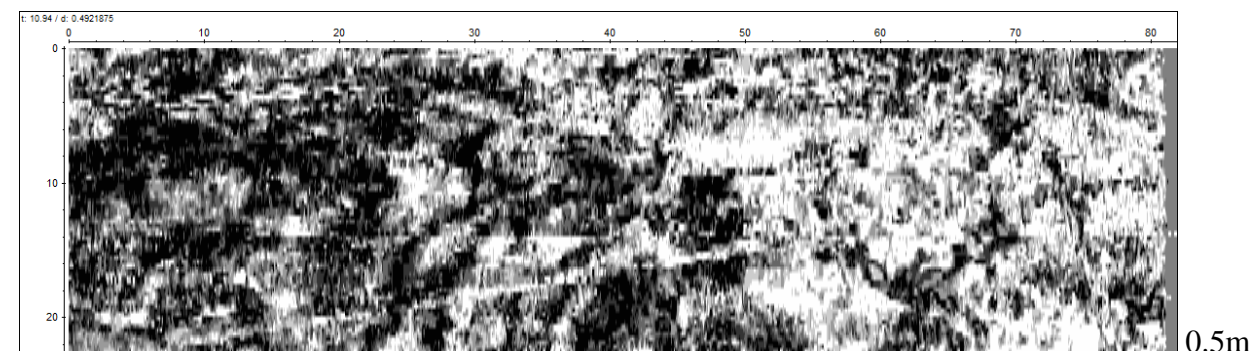
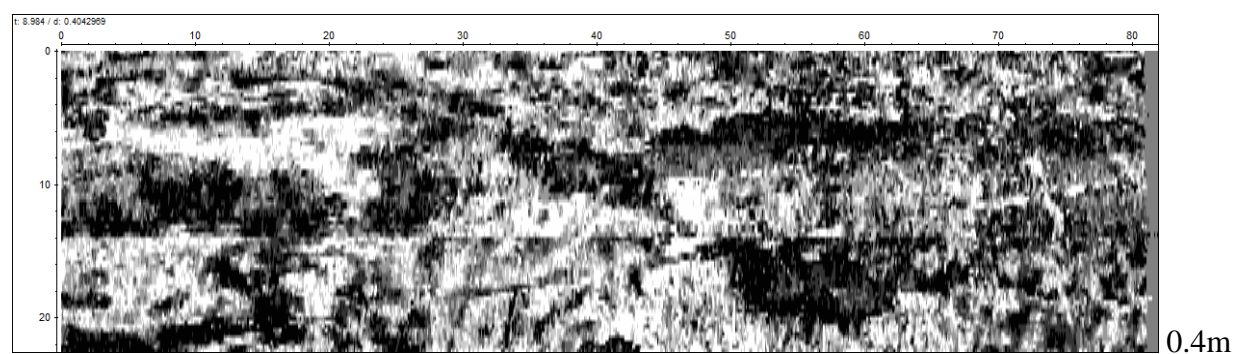
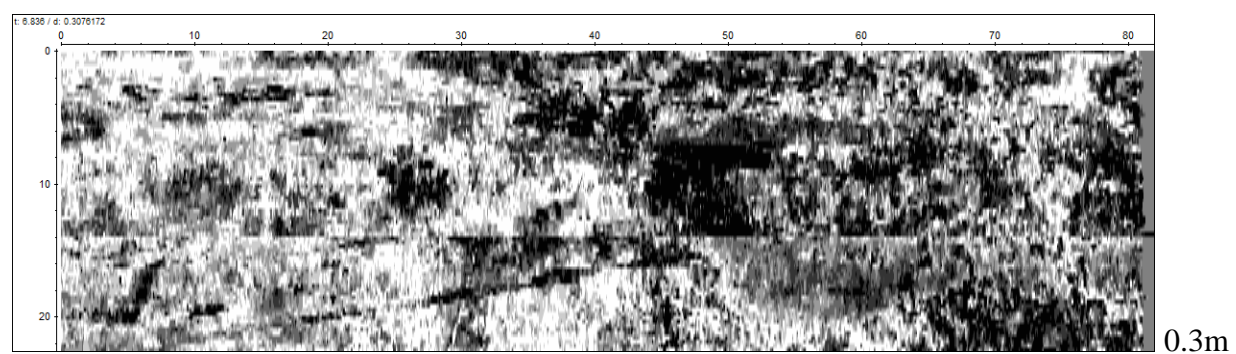
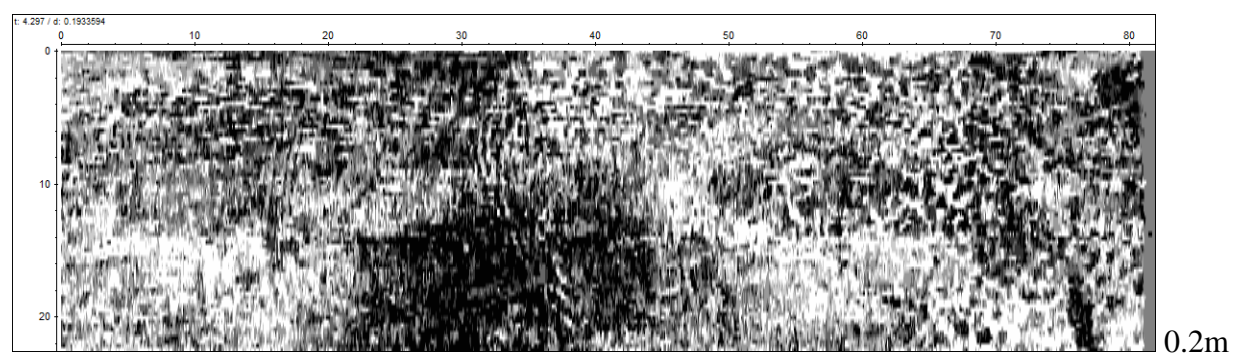
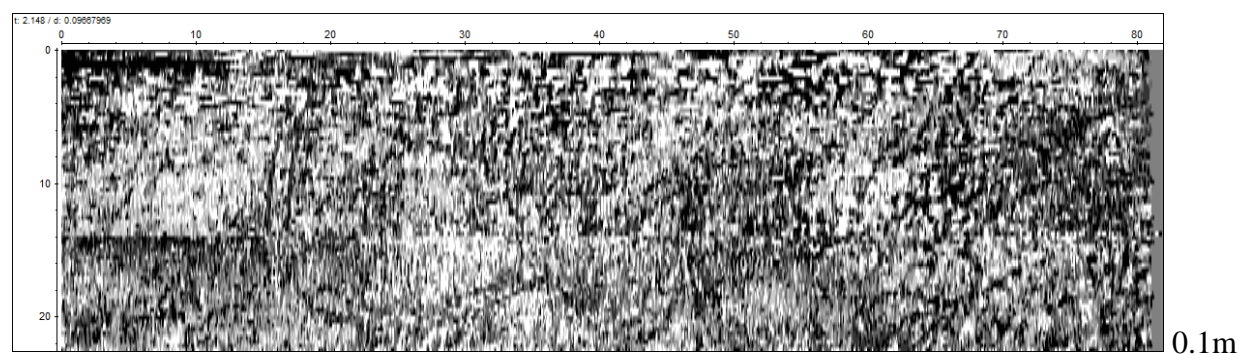
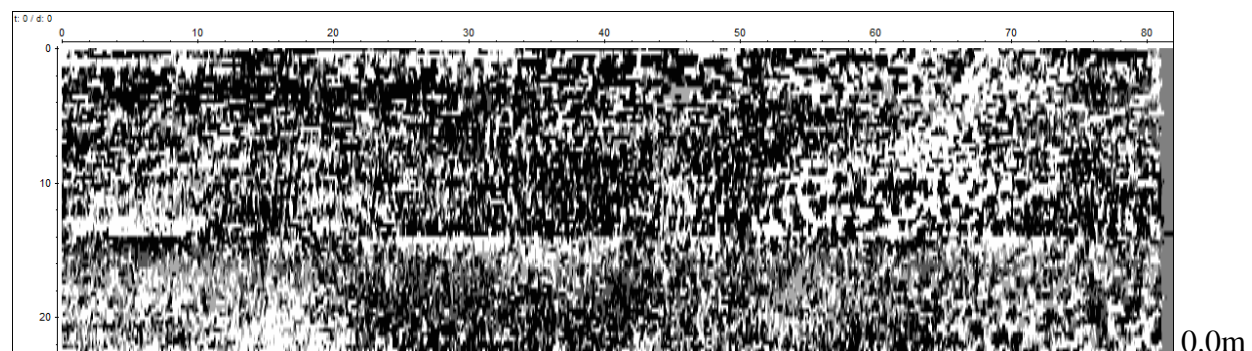
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**SURVEY DATE(S):** 11<sup>th</sup> March 2017

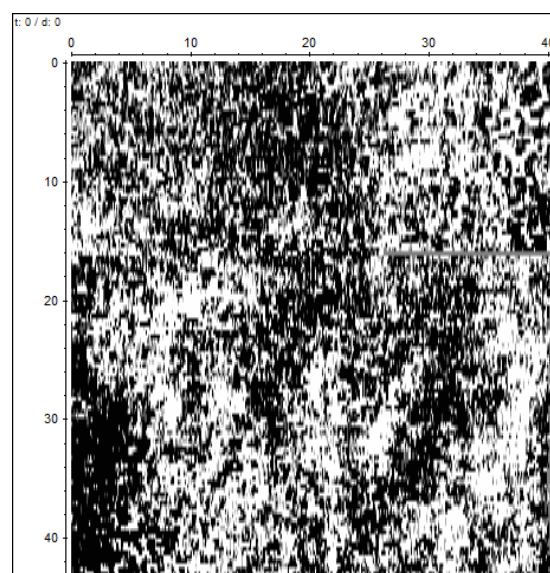
**REPORT DATE:** 28<sup>th</sup> March 2017

**COMPLETED BY:** Henry Webber (Henry.Webber@bristol.ac.uk)

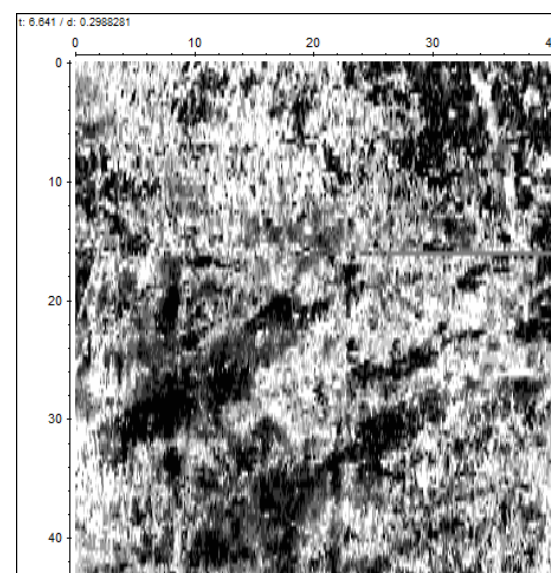




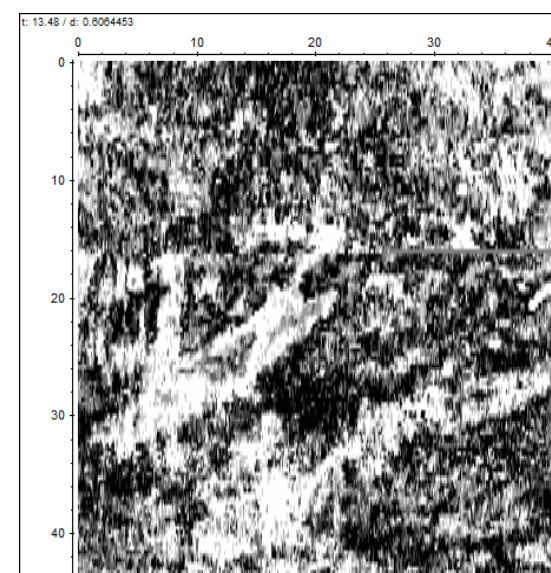




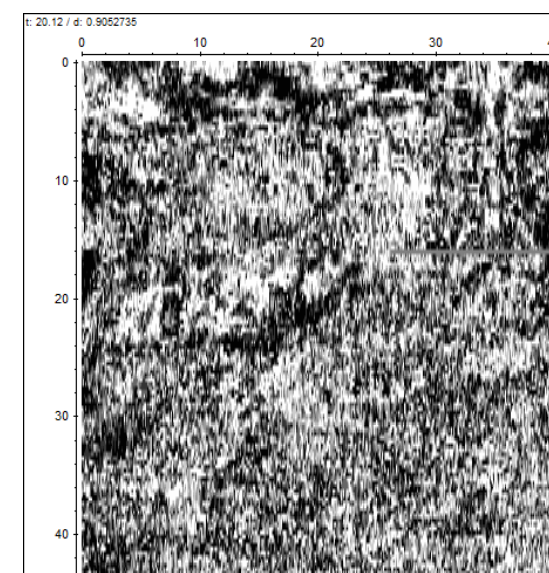
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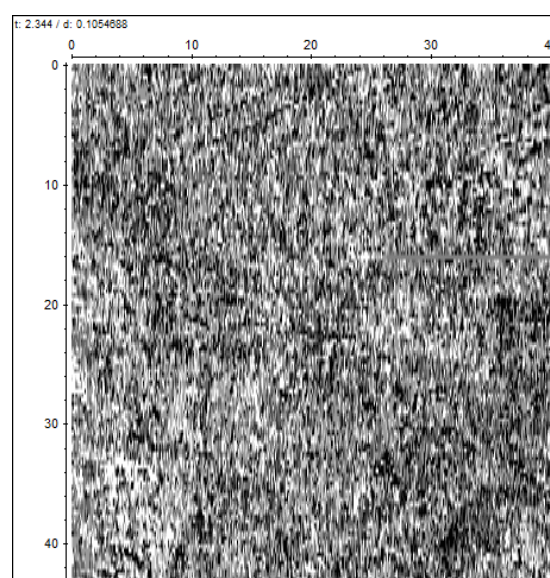
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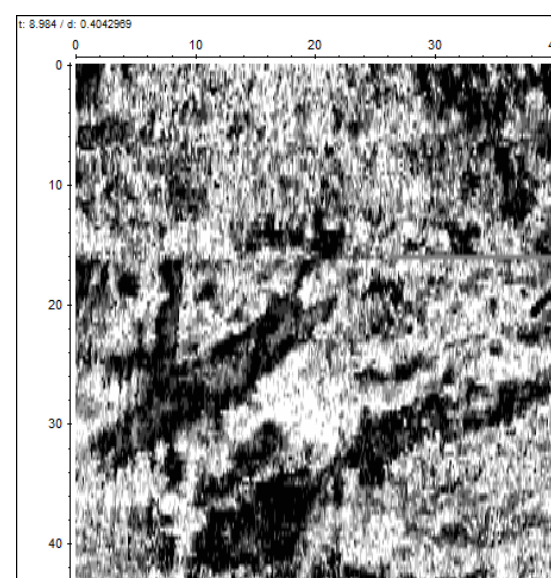
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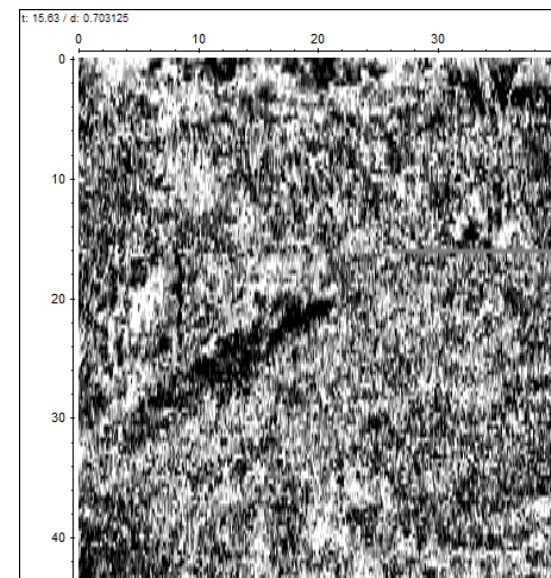
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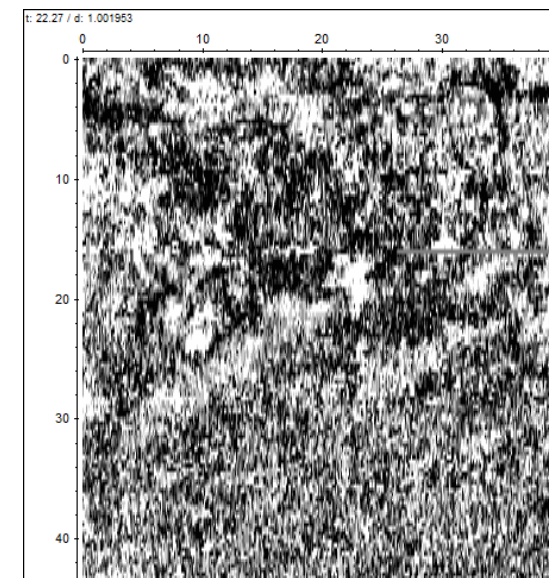
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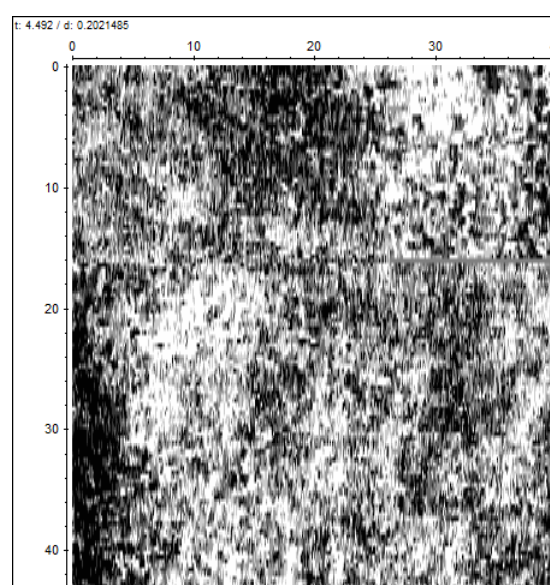
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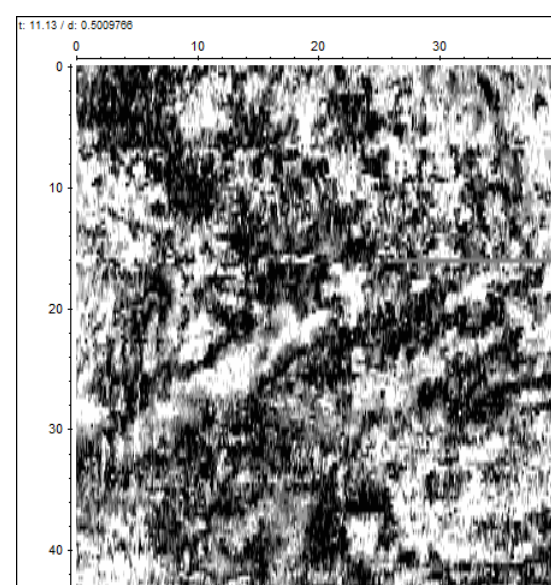
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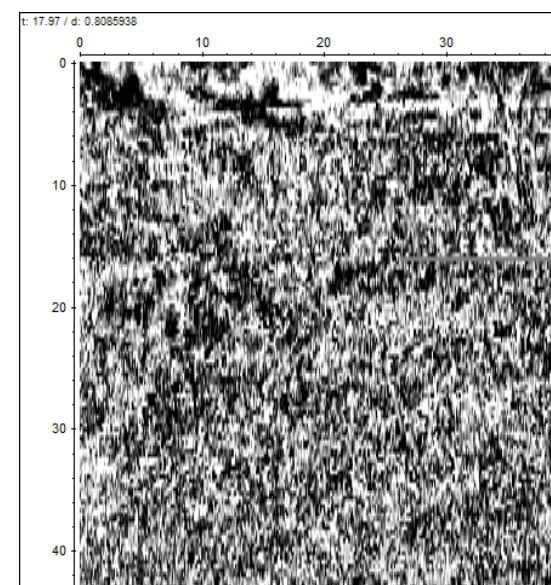
1m



0.2m



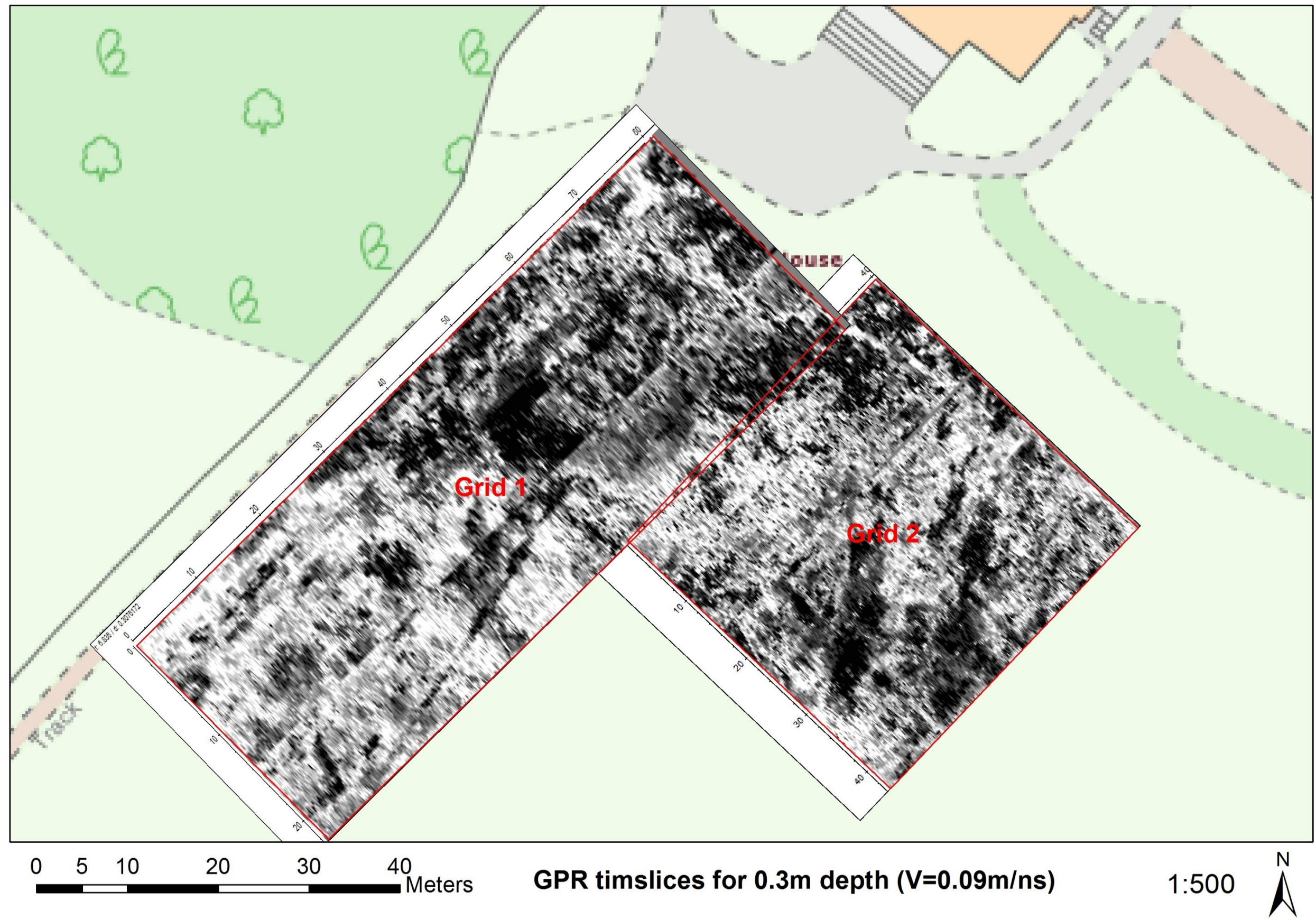
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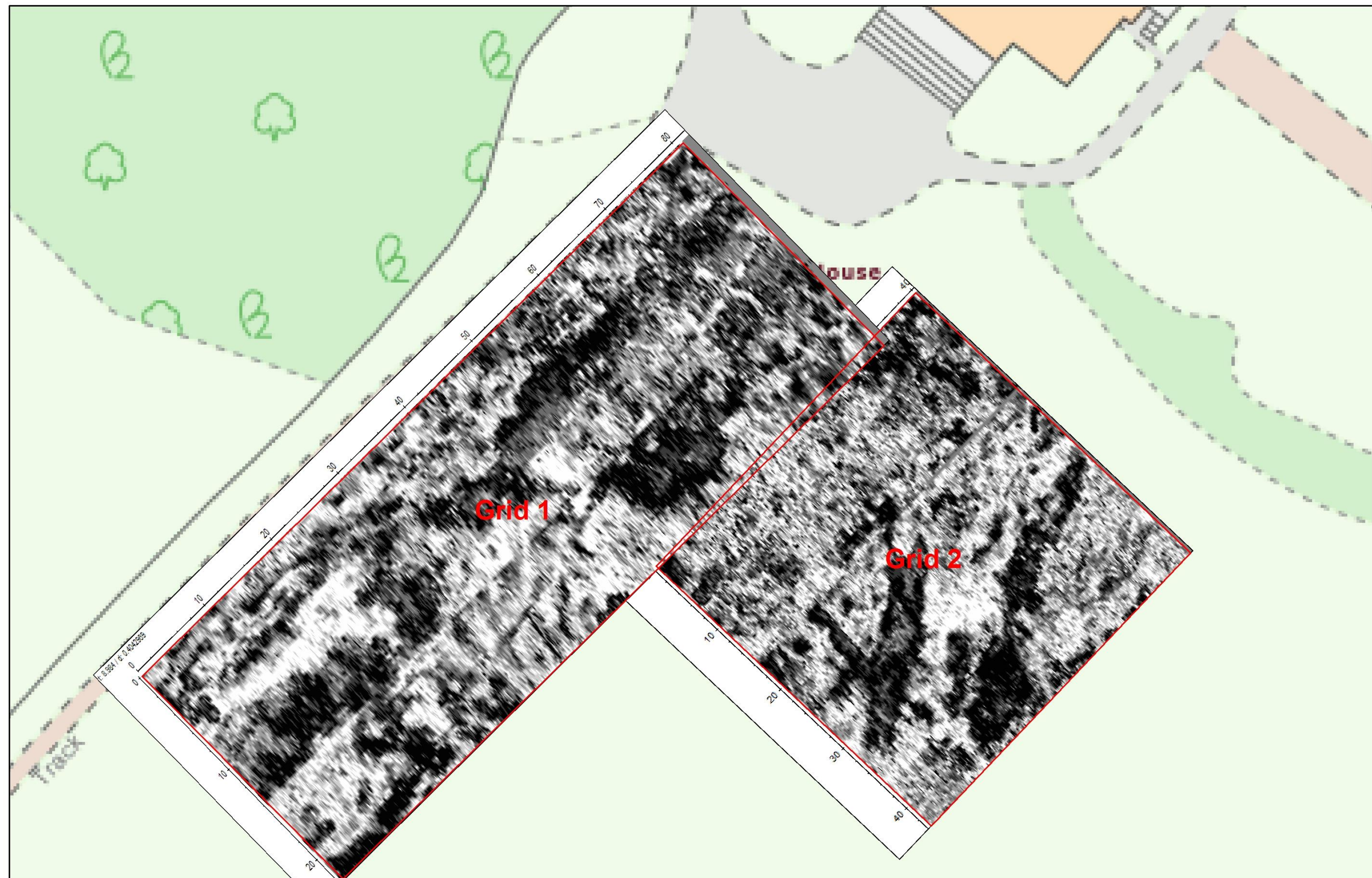
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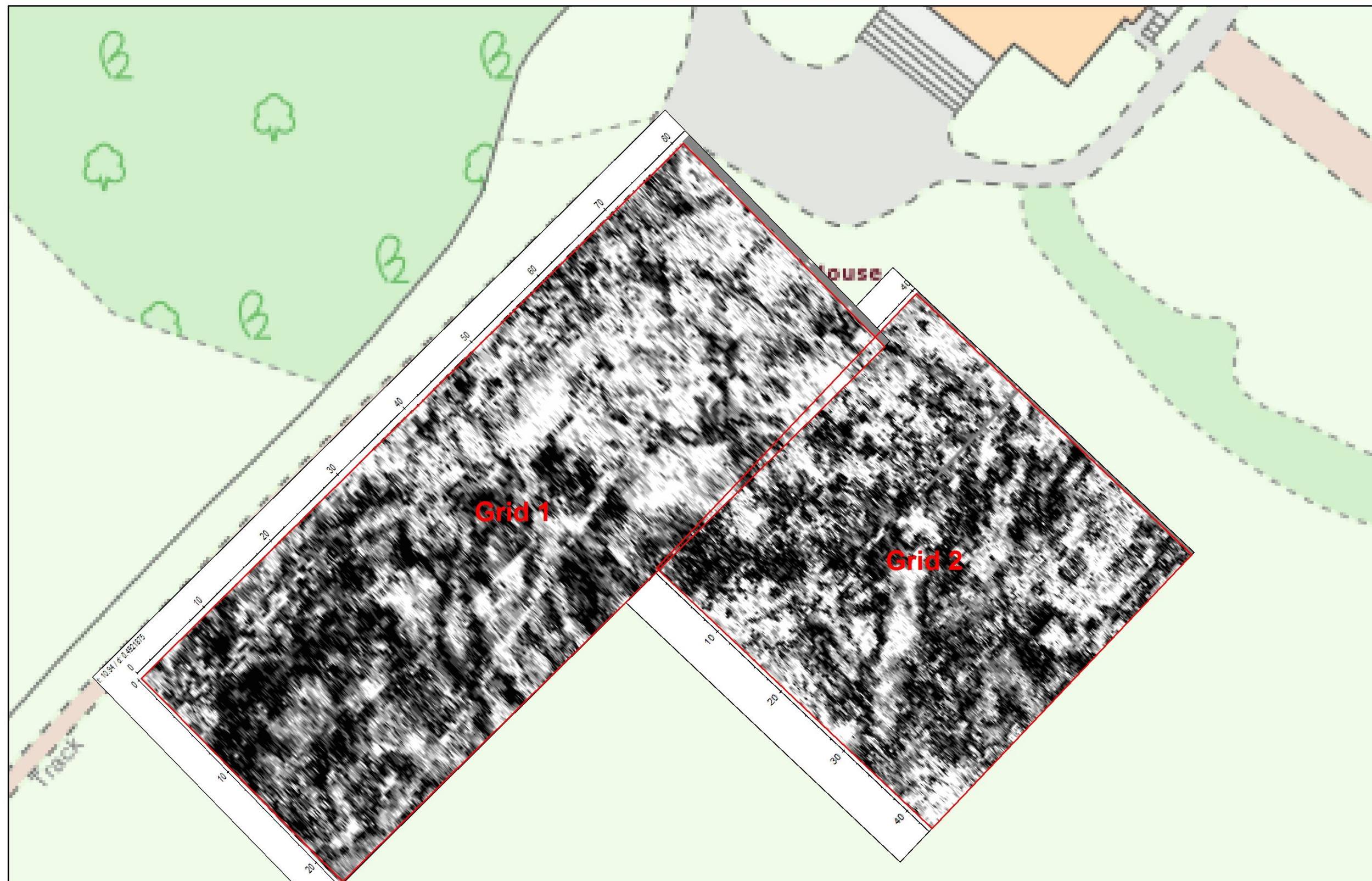
0 5 10 20 30 40 Meters

**GPR timslices for 0.4m depth ( $V=0.09\text{m/ns}$ )**

1:500







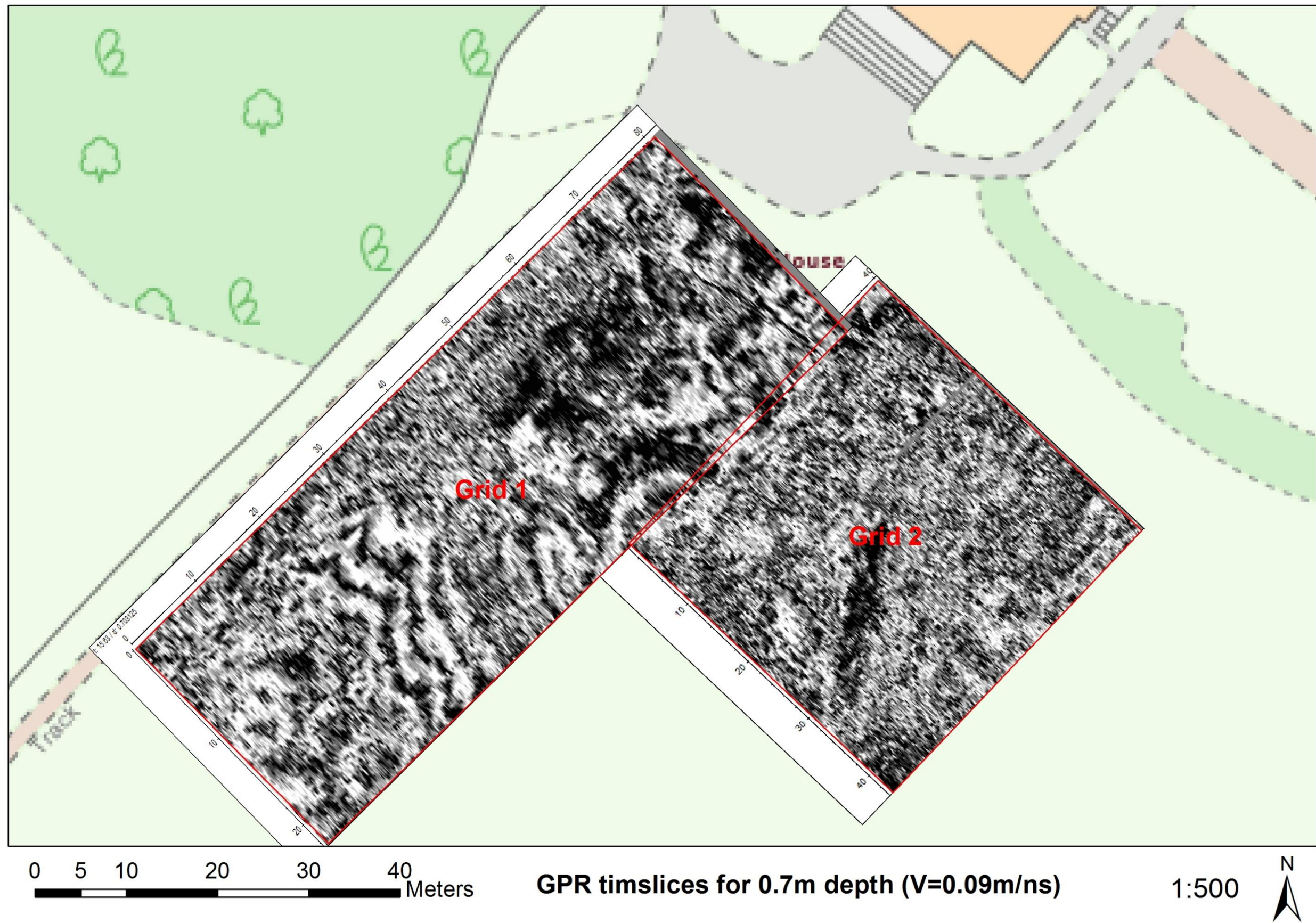
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GPR timelapses for 0.5m depth ( $V=0.09\text{m/ns}$ )

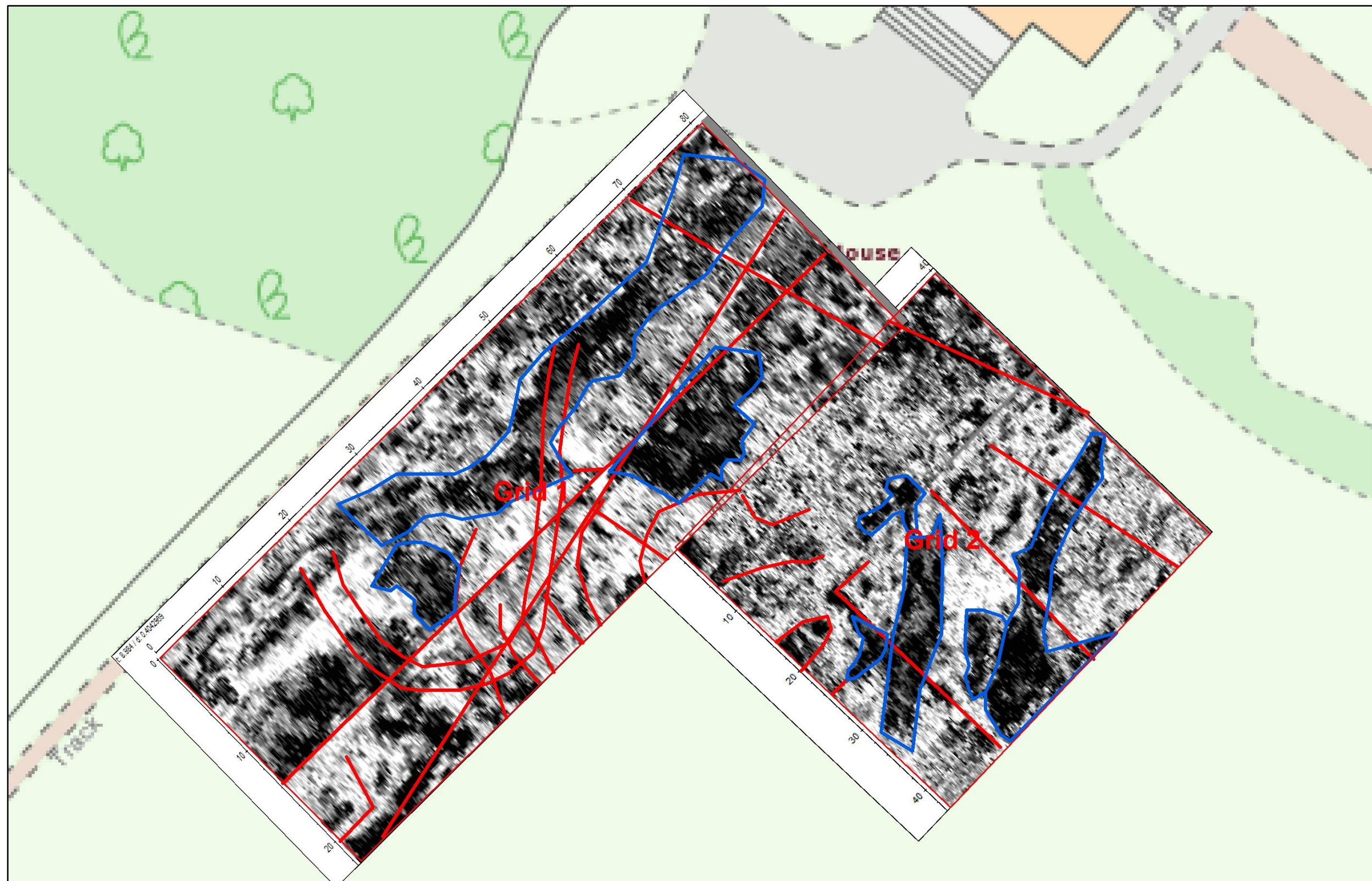
1:500











0 3 6 12 18 24 Meters

**GPR timslices and interpretation for 0.4m depth ( $V=0.09\text{m/ns}$ ) 1:500**





Example of a 2D profile of one line of data. This demonstrates the sloping layer marked in red, the disturbances to the upper layer in the soil profile marked by blue markers. The reflection of the pipe/drain can be seen at 72m along the profile. For further analysis of individual features the 2D profiles should always be interrogated alongside the 3D time slices.

