

5.2.4 Terrace 1 Grid 2 survey (T1G2)

The T1G2 used a 5m transect interval and collected a small grid of only 8 transects. The data was processed through using a variable velocity migration. No comparative gouge core transect was undertaken within this survey area. The dielectric constant was set at 19, through the calibration made on T1T1 in the adjacent field. The GPR reflectance values ranges from -56 to +128. The T1G2 survey area had no major topographical variation as shown through the LiDAR last pulse DTM (Fig. 5.29). The LiDAR intensity plot of the T1G2 survey area did reveal variation within terrace 1, not apparent through the DTM model (Fig. 5.30). The variation in intensity values is interpreted as relating to variation in sediment water content. The T1G2 survey results are shown within the LiDAR intensity plot at 70% transparency. The depth slices are 0.2m thick, sliced at 0.5m intervals.

The 0.4m – 0.6m depth slice shows a subtle variation across the survey area, with a slight difference in reflection values between the south and north of the survey area (Fig. 5.31). The 0.9m – 1.1m depth slice reveals clear variation within the T1G2 survey area (Fig. 5.32). Two areas of strongly reflecting gravels are seen (T1H3 and T1H4). Interspersed between these two areas of gravel is an area of lower reflectance/higher absorbance, interpreted as a palaeochannel (T1C7). The depth of alluvium overlying the gavel unit T1H4 is less than 0.9m, due to its visibility at this depth. The gravel units T1H3 and T1H4 and T1C7 palaeochannel are visible in the 1.4m – 1.6m depth slice (Fig. 5.33). The 1.9m – 2.1m depth slice still shows the gravel unit T1H4 but the gravel unit T1H3 is no longer apparent (Fig. 5.34). The palaeochannel T1C7 is still visible. This general pattern of palaeochannel T1C7 and gravel unit T1H4 is seen in the 2.4m – 2.6m and 2.9m – 3.1m time slices (Fig. 5.35 and 5.36). Further penetration is not seen below this depth, with the base of the gravels not being encountered.

A three-dimensional model created in Radan shows the structure of the GPR survey clearly (Fig. 5.37). The gravel unit T1H4 is shown with incision from the avulsed channel (T1C7), with a clear erosional bounding surface. T1H3 is interpreted as a gravel unit within the palaeochannel T1C7, either a gravel bar or remnant terrace. This interpretation is interesting as the channel T1C7 was not evident through the DTM model but variation was visible within the LiDAR intensity data. The GPR penetration in T1C7 is shallow, at circa 1m depth. This is interpreted as a product of high water and clay content. T1C7 could be targeted for dating and palaeoenvironmental samples, due to high water content and potential anaerobic conditions, allowing good anaerobic preservation. From the three-dimensional model a chronology of these main units can be suggested. The oldest unit is the area of terrace 1 T1H4, which has been eroded into by the palaeochannel T1C7. T1H3 is interpreted as being formed through the palaeochannel T1C7 and is thus contemporary with an active stage of the T1C7.

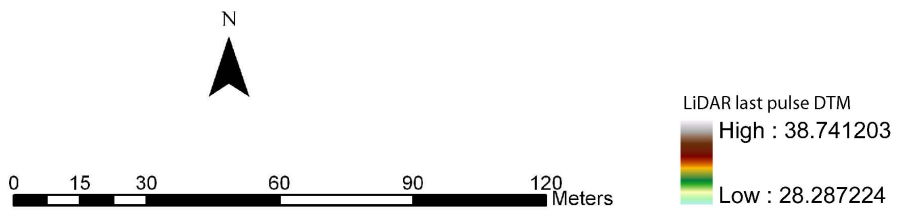
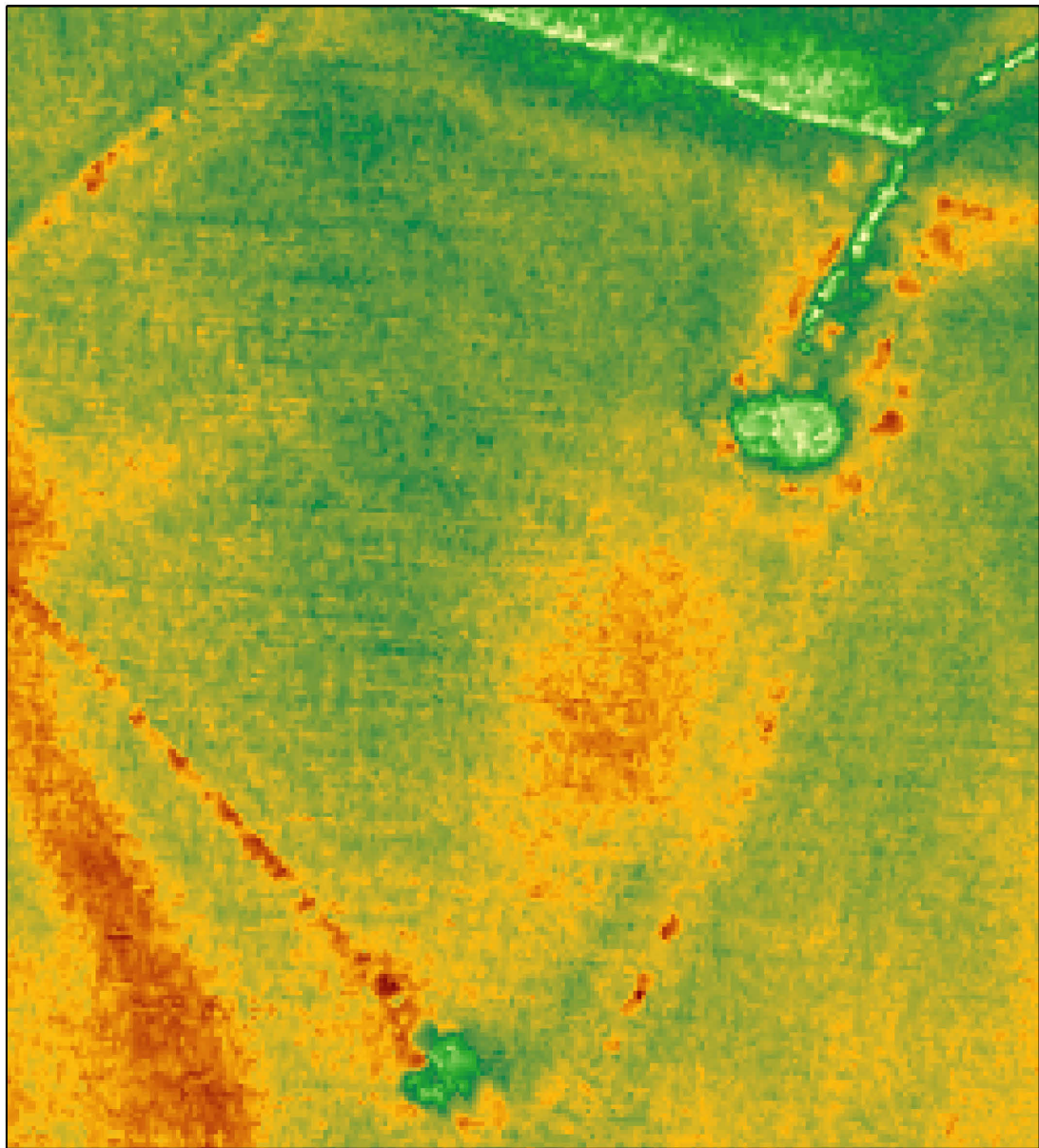


Fig 5.29: The LiDAR last pulse DTM of the T1G2 survey area. There is no significant topographic variation evident, which can be related to a change in geomorphology.

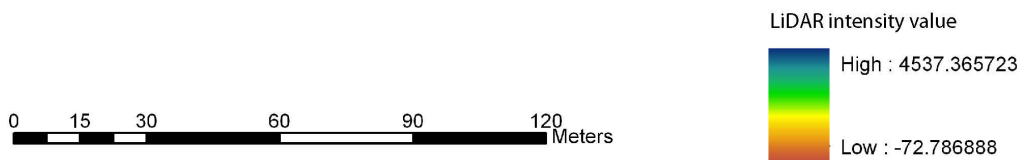
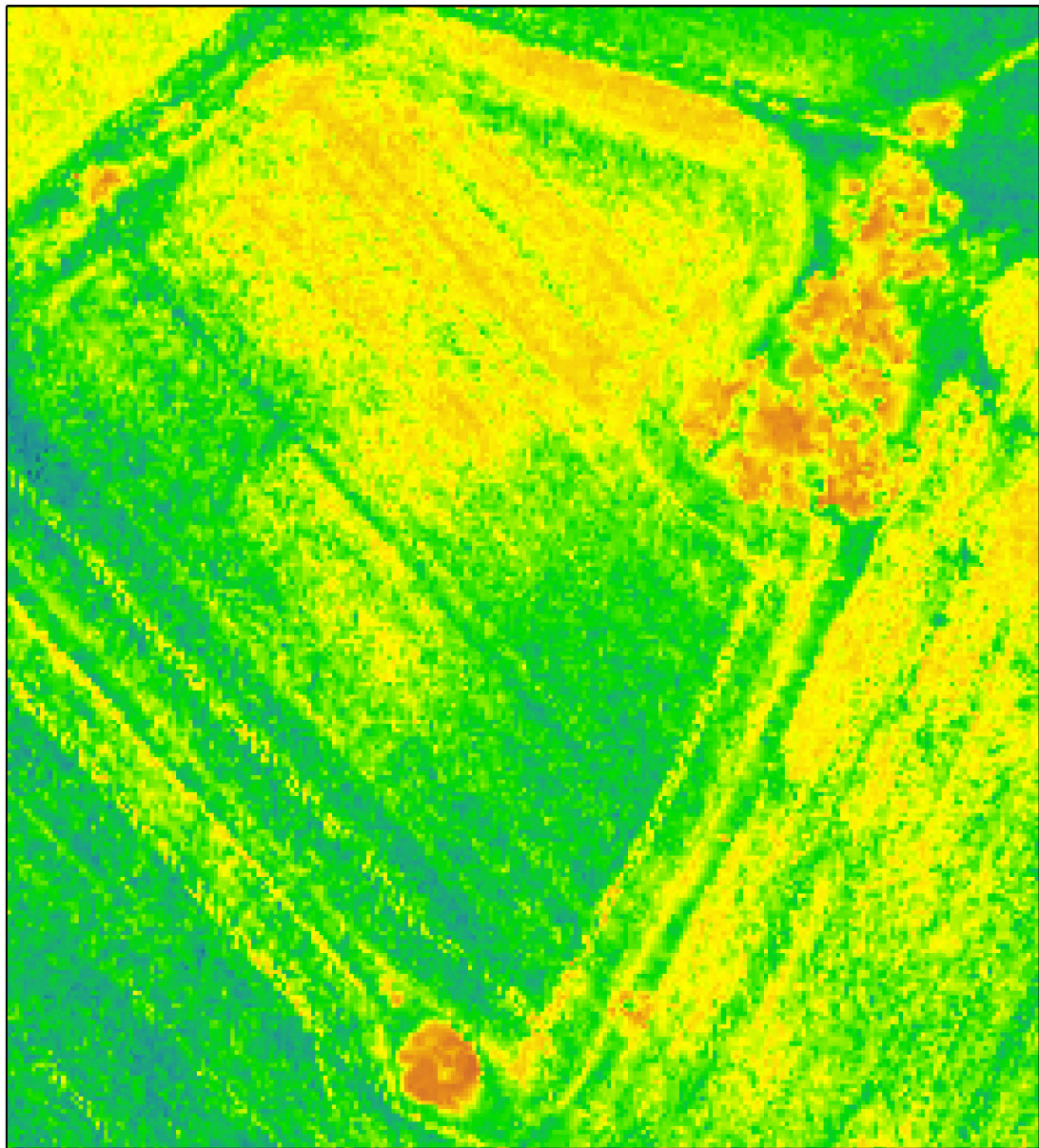


Fig 5.30: The LiDAR intensity over the TIG2 survey area. An area of lower intensity values are visible to the north of the survey area, whilst higher values are seen to the south.

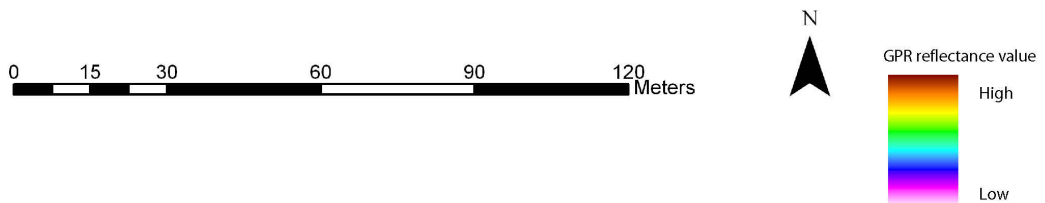
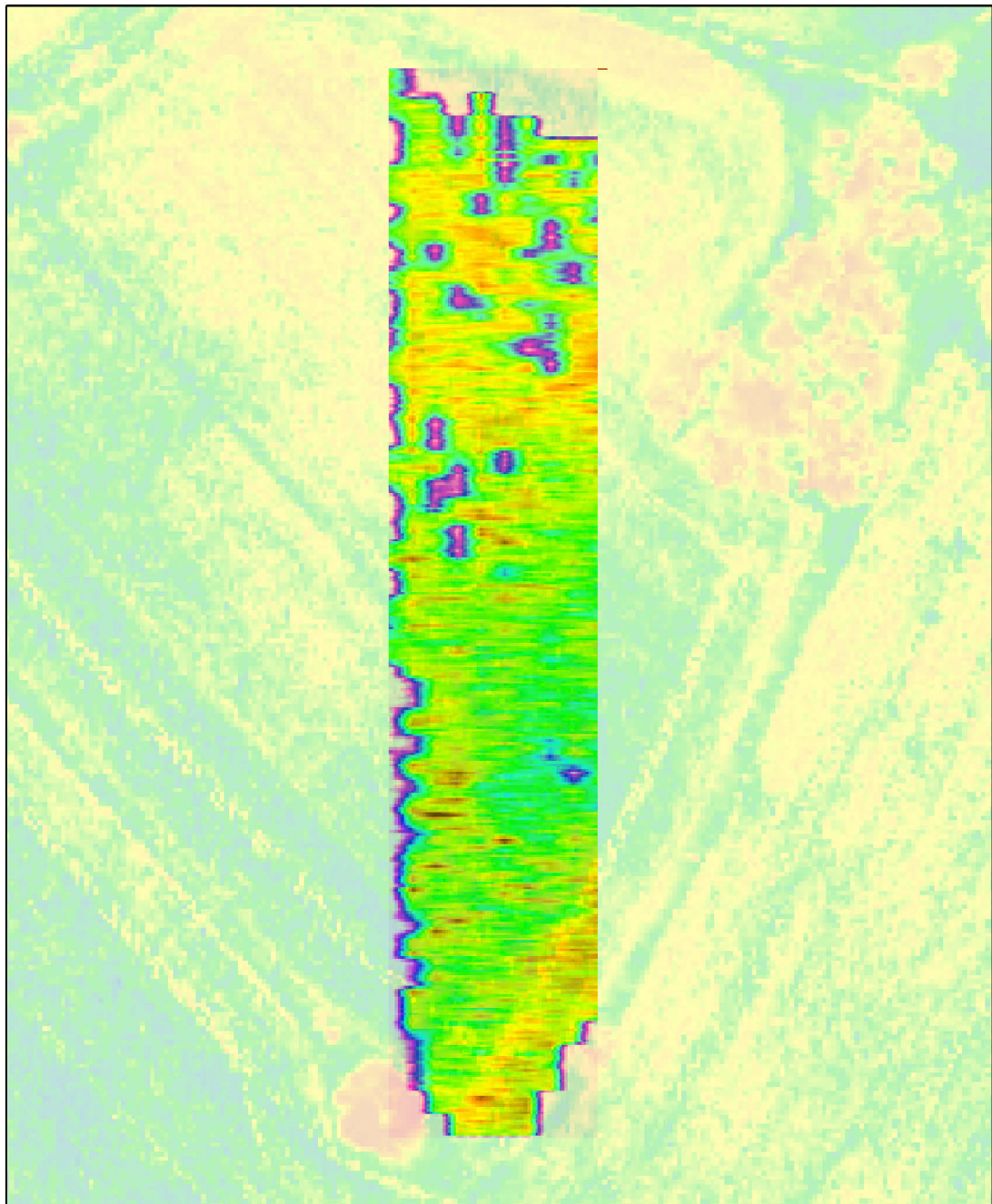


Fig 5.31: The T1G2 survey, 0.4m – 0.6m depth slice. Although this depth slice is still within the GPR near field zone, there is a slight change in reflectance between the north and south areas of the survey.

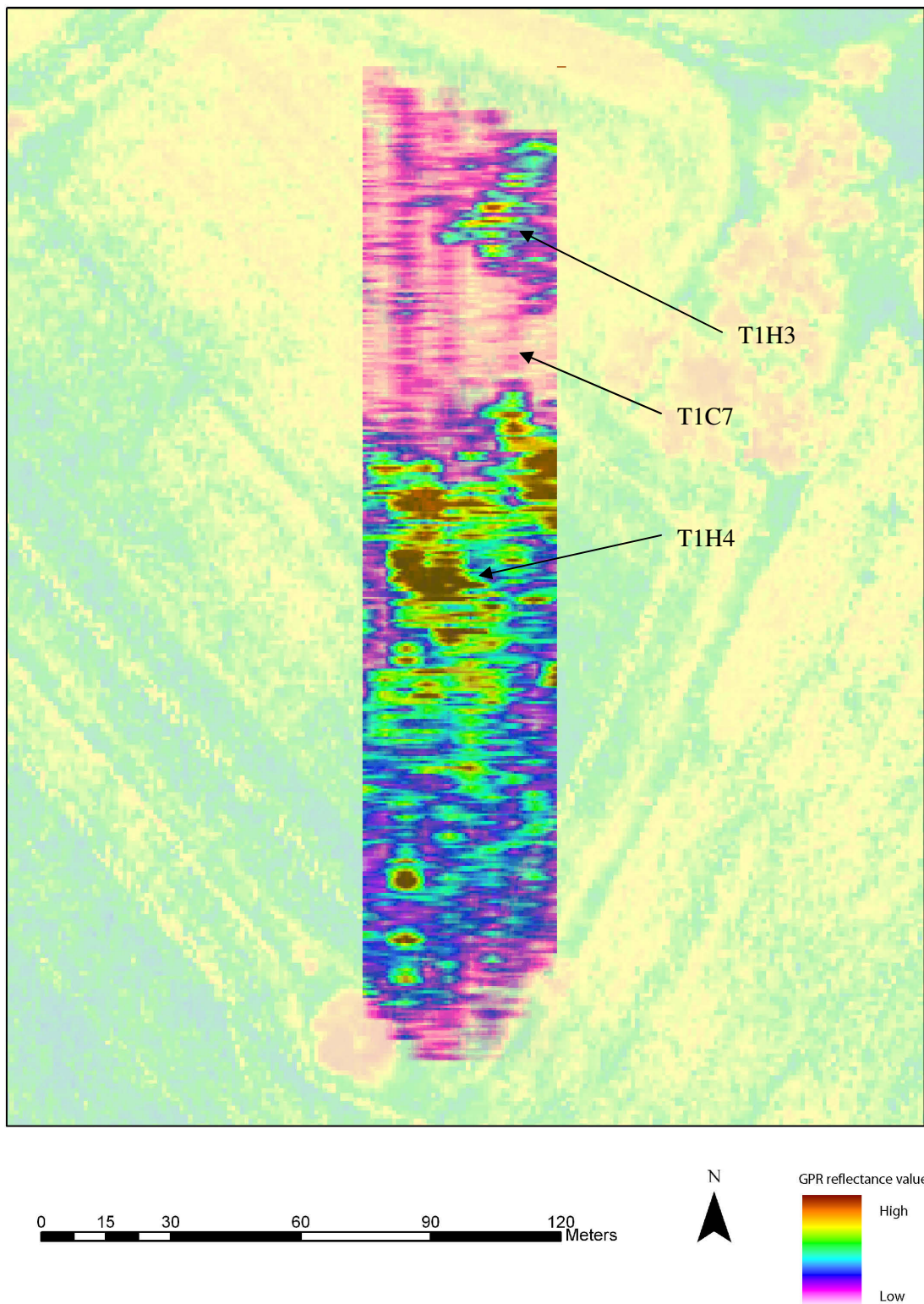


Fig 5.32: The T1G2 survey, at the 0.9m – 1.1m depth slice. At this depth slice a series of features are clearly visible being the terrace gravels T1H4, a palaeochannel T1C7 and another area of gravels T1H3.

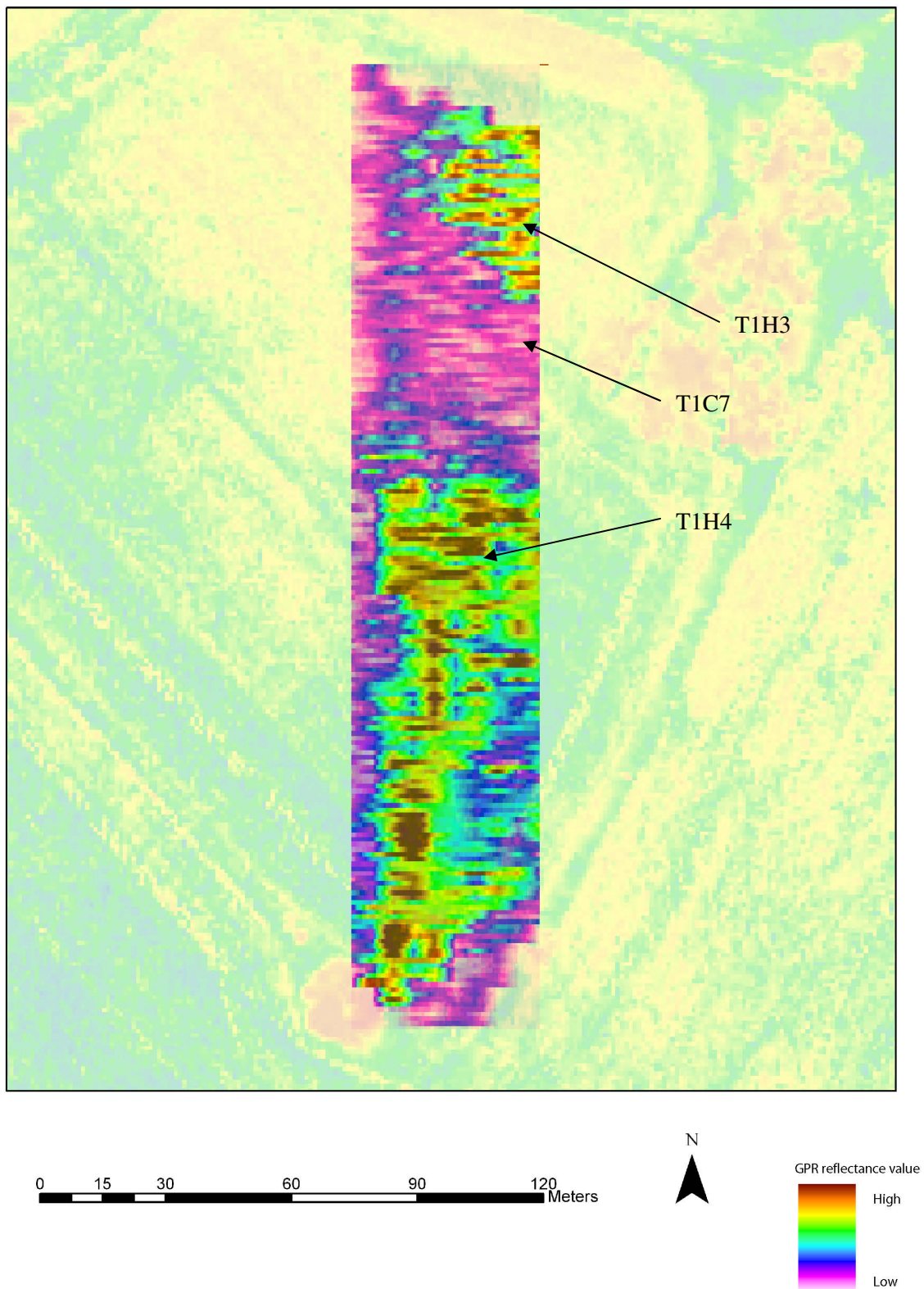


Fig 5.33: The T1G2 survey, 1.4m – 1.6m depth slice. The features T1H3, T1H4 and T1C7 are still evident.

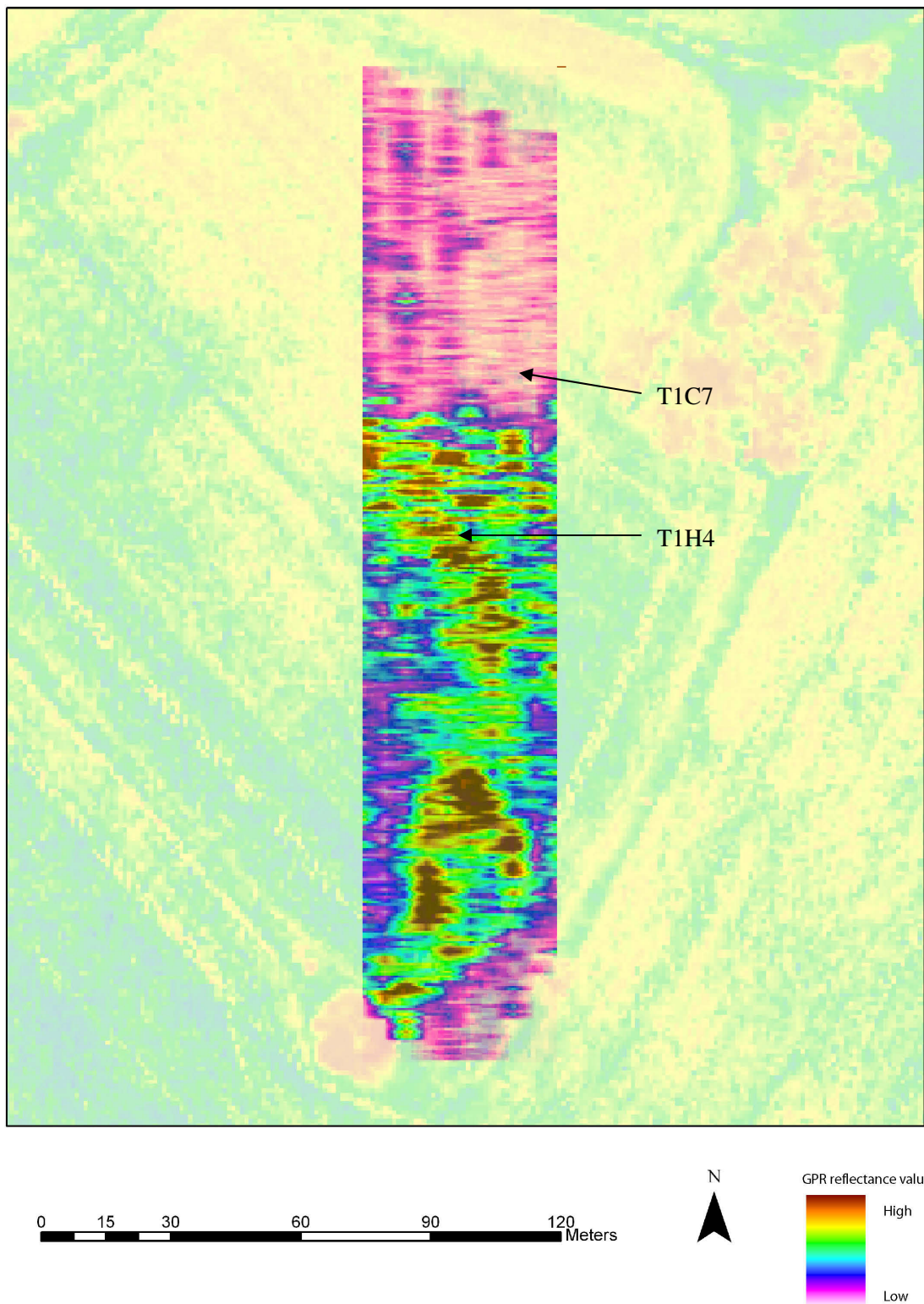


Fig 5.34: The T1G2 survey, 1.9m – 2.1m depth slice. The gravel unit T1H3 is not evident at this depth.

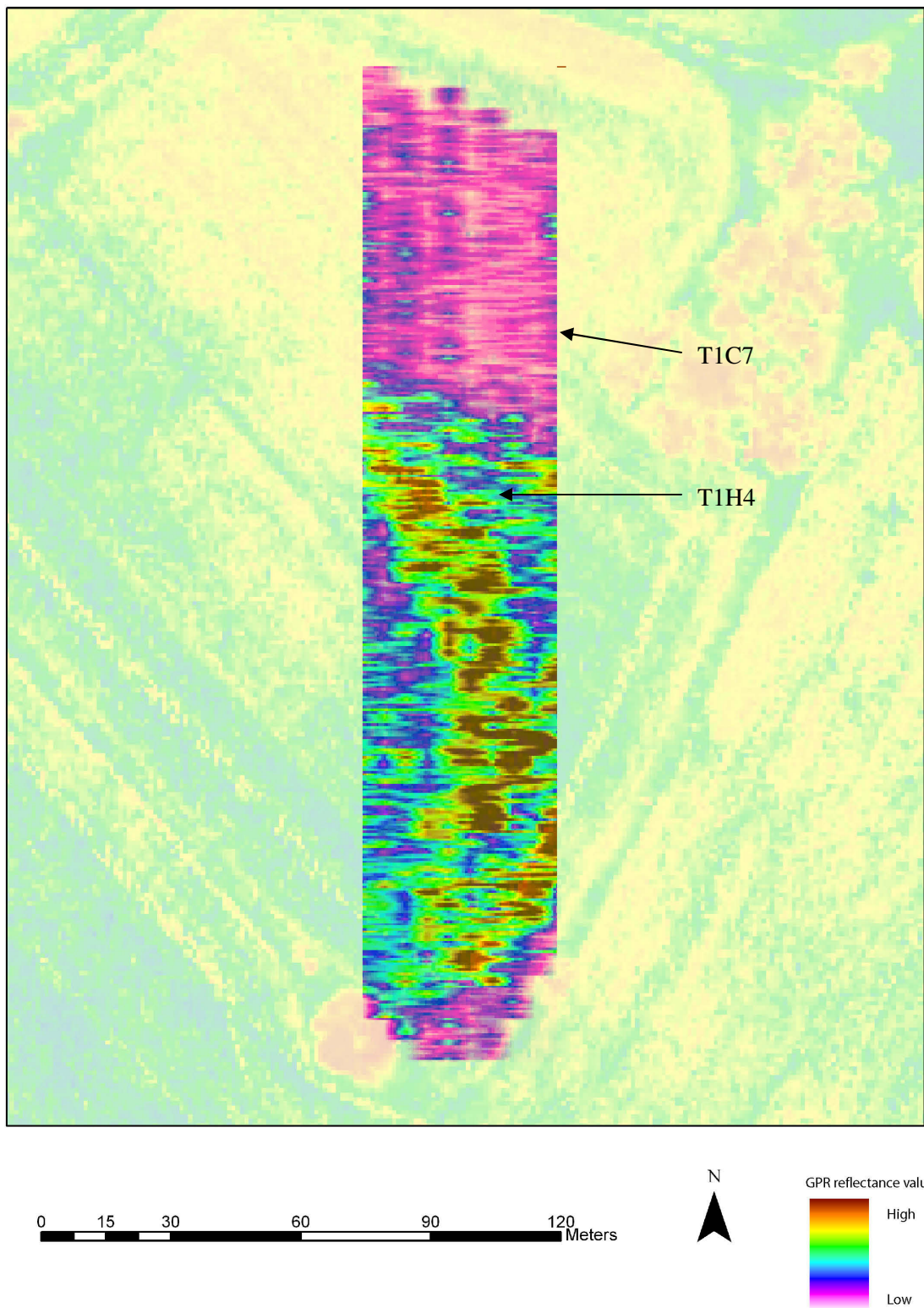


Fig 5.35: The T1G2 survey, 2.4m – 2.6m depth slice. The gravel unit T1H4 and the palaeochannel T1C7 are evident.

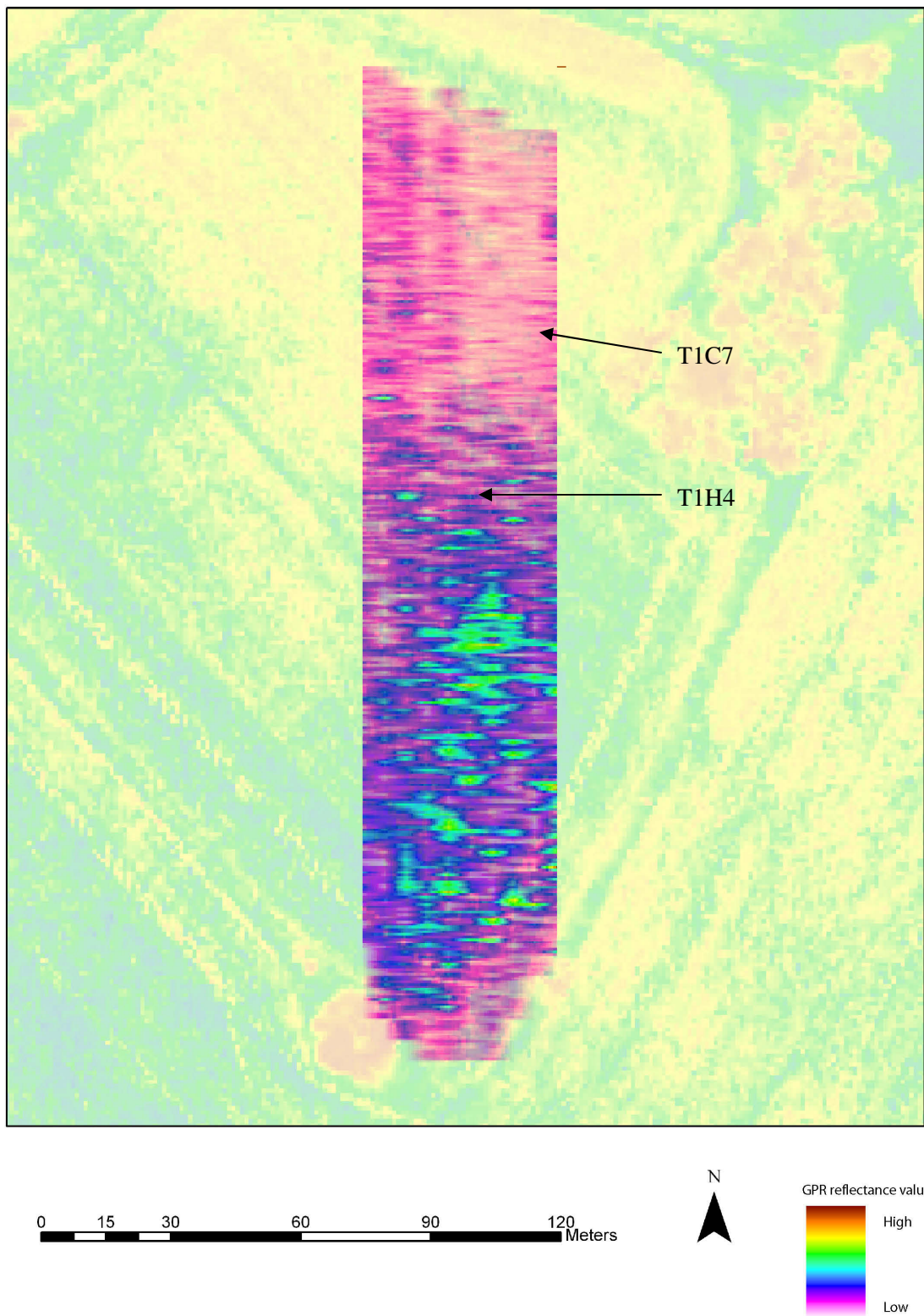


Fig 5.36: The T1G2 survey, 2.9m – 3.1m depth slice. Again the gravel unit T1H4 and the palaeochannel TIC7 are evident.

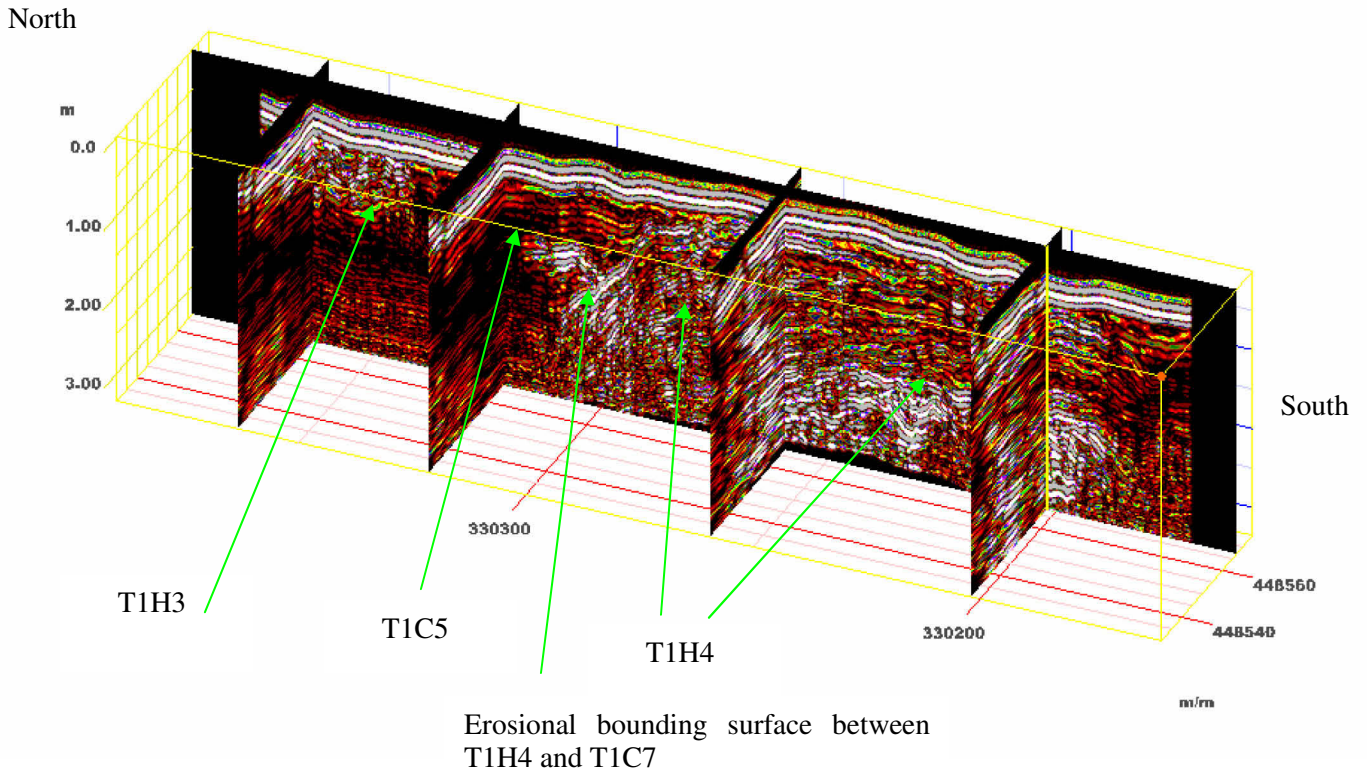


Fig 5.37: A pseudo 3D section produced through Radan, showing the relationships of T1H4, T1H3 and T1C7. There is a clear erosional bounding surface between T1H4 and T1C7. T1H3 appears to be a relatively shallow feature within T1C7.