Catherine Street Garage Site –
Trial Pit Investigation into GPR Anomalies

21 November 2017

Kier were asked by Chesterfield Borough Council (CBC) to arrange for a Ground Penetrating Radar (GPR) survey to be carried out at the garage site located on Catherine Street, Brampton, Chesterfield. The results of the survey showed that the scan had picked up a number of anomalies, including a potential unknown buried service. In order to determine the cause of the anomalies, and determine the presence of a buried service, trial pits were arranged to be excavated across the site. Please refer to Appendix A for the results of the GPR survey, and locations of the Trial Pits.

Kier arranged for Johnson Surfacing Ltd to excavate the trial pits on 13/11/2017, using a mini excavator. James Knowles from Kier Workplace Services conducted a site visit, in order to verify the findings. Each trial pit was 1.5m x 0.6m and was up to 2m in depth. The results of the trial pits are as follows:

**Trial Pit 1**

Trial Pit 1 was located on a highlighted anomaly in-line with the potential buried service, and had dimensions of 1.5m x 0.6m. The GPR survey highlighted that the anomaly was located at a depth of approximately 1.5m; however the trial pit was dug up to 2m in depth with no buried service or anomaly identified.
Trial Pit 2
Trial Pit 2 was located to the west of Trial Pit 1 and was also located along the line of the potential buried service. Again the trial pit was dug up to 2m in depth with no buried service or anomaly identified.

Photograph 2 – Trial Pit 2
Trial Pit 3
Trial Pit 3 was located at the north east corner of the site over the area in which an anomaly was identified. The trial pit was excavated to a depth of 1.5m, where the probable cause of the abnormal reading was identified to be a buried gully grate.

Photograph 3 – Trial Pit 3

Photograph 4 – Excavated Gully Grate
**Trial Pit 4**
Trial Pit 4 was located at the centre of the site, and was positioned to excavate the areas of two highlighted anomalies. The GPR anomalies were located at an approximate depth of 1.5m; however, the pit was excavated to a depth of 2m, finding clayware that may have resulted in the anomaly.

![Photograph 5 – Trial Pit 4](image)

**Photograph 6 – Buried Clay Ware**

**Trial Pit 5**
Trial Pit 5 was located at the south west end of the site, at the location of two anomalies picked up by the GPR survey. The survey highlighted that the anomalies were located at an approximate depth of 1.5m. The trial pit was excavated to a depth of 2m, once again finding clay ware that may have caused the GPR survey to pick up an anomaly.

![Photograph 7 – Trial Pit 5](image)
Conclusion
The GPR survey had highlighted that a buried service may be located at the south east end of the site at a depth of 1.5m; however, no service was uncovered by the trial pits despite excavating trenches across the indicated line of the service to a depth of 2m.

The land was previously used for housing, which was later demolished and converted into a garage site. The trial pits located at a selection of the anomalies picked up by the GPR survey, uncovered debris which is likely to have been buried during the demolition of the properties; therefore, it is likely that the remaining anomalies were also caused by buried debris.
Appendix A – Location Plan of Trial Pits
**Notes**

- Location of trial pit trench (dimensions = length x width x depth)
- GPR anomaly from survey

1. Minimum trench width 300mm
2. All excavations to be bartered from vehicles and pedestrians with appropriate signage provided.
3. Banksmen to be present at all times to monitor excavations and traffic.
4. Safe excavation methods to be employed at all times following HSE guidance HSG47.
5. One access to garage site may be closed at a time.
6. Access to be retained to properties through garage site.
7. Excavations to be backfilled with excavated material, compacted in layers not exceeding 250mm. Revetments may be required as necessary to infill settlement.
8. All surfaces to be reinstated as existing.