

Teretek® Used to Fill Multiple Voids in Residential Housing Estate



INDUSTRY

Residential

STRUCTURE

Two-storey semi-detached brick houses

PROBLEM

Voids

LOCATION

Maidstone, Kent

DURATION / YEAR

8 days / 2020

TECHNOLOGY

Teretek®

BUSINESS UNIT

Mainmark UK

Summary

In 2001, approximately six years after construction was completed on a series of two-storey semi-detached brick houses in Kent England, the estate road in front of the properties was reported to have collapsed due to a burst water main drainage system which ran underneath the road. The road was subsequently re-built with the main drain runs re-laid at deeper depths, around six metres below the road surface.

Following the re-building of the road, further ground movements occurred to the land in front of house number 54. These were repaired by pumping cementitious grout into the ground, but issues persisted and in January 2014, the top surface of the 3x5m asphalt car park beside the property had sunk by 200mm. This was caused by a sustained period of wet weather during the winter of 2013-2014, which was the fifth wettest on record for the South-East of England. This period of severe weather led to a significant increase in the number of sinkholes and depressions in the ground.

Following the appearance of a shallow depression in the car park surface, the tenants were evacuated from nearby properties, due to safety concerns. The properties had been unoccupied ever since. To determine the cause and extent of the ground movements, geotechnical engineers were commissioned by Clarion Housing – the property owners – in 2015 to carry out a series of probe tests. These were undertaken across the land directly underneath the properties and surrounding areas, covering a total area of 550m². These tests identified significant areas of voiding as the soil conditions were inadequate.

Objectives

The contractor and Mainmark's client, United Living, required a solution to fill the voiding and stabilise the top layers of ground in the areas identified in the engineering report.

Teretek® Used to Fill Multiple Voids in Residential Housing Estate continued

Solution

The property owners had previously used cementitious grout and were looking to either re-utilise this solution or source an alternative such as foam concrete to fill the remaining voids as effectively as possible. However, foam concrete cannot perform the void fill exercise with the same accuracy as Mainmark's expanding geopolymer resin and relies on a cavity to flow into.

With this in mind, Mainmark was chosen for both its competitive cost and its non-disruptive Teretek® resin injection solution, which offers a targeted and dynamic approach by injecting the ground with resin filling the voids as it expands.

The key treatment area was outside of the house, around the car park and general grounds, with only a small section of the building itself needed remediating. Mainmark injected Teretek resin in a grid pattern in the designated areas to ensure a consistent layer of resin was injected across all the voids of various sizes, some significant; approximately 24 metres deep and 6-9m in diameter.

Mainmark's solution was successful in providing a quick, non-disruptive, targeted and effective remediation to the voided and weak ground. In addition to this, Mainmark was able to manage the project without the client needing to engage additional engineer support, which helped to reduce the cost of the overall project for the client. As the properties had not been occupied for some time, Mainmark's efficiency was welcomed as it allowed United Living to complete further remediation and renovation work to ensure the properties were ready for new tenants ahead of time, under budget and to a high standard.

Edward Provost-Lines, Operations Manager at United Living said, *"We were extremely happy with the level of knowledge and project management supplied by Mainmark. At United Living, we pride ourselves on being the partner and employer of choice, supporting the increasing demand for high quality, well-maintained, sustainable infrastructure and housing. We always aim to fulfil our promise to customers, shareholders and the communities in which we operate, so that their assets and the people that*

use them are in a better place when we have completed our work. So, I'm really pleased that the solution was a success and completed on time as planned."



Teretek® resin being injected to fill the voiding and stabilise the top layers of ground in one of the designated areas on the property