

# JOG and Teretek® Used to Raise and Re-level Three Business Units in East London

PROJECT PROFILE

UK21-610

mainmark



## INDUSTRY

Commercial

## STRUCTURE

Three business units

## PROBLEM

Subsidence

## LOCATION

Manor Way Business Centre, Rainham, Essex, United Kingdom

## DURATION / YEAR

August – November 2021

## TECHNOLOGY

JOG Computer-Controlled Grouting and Teretek®

## BUSINESS UNIT

Mainmark UK

## Summary

A 7,706m<sup>2</sup> business park in Rainham, Essex had slowly subsided over a period of around 30 years. Built on made ground, the subsidence was causing foundation issues resulting in unlevel buildings and significant cracking in walls.

Manor Way Business Centre, located in a busy area of East London, is home to multiple businesses. The three business units that required urgent attention measured a combined 3,280m<sup>2</sup> with the worst affected building having subsided by 208mm at its lowest point. The building needed to be returned to a -80mm contour as further lift past this point did not bring additional benefit.

Initial investigations carried out by Mainmark, using Pagani Geotechnical Equipment, identified that the ground was weak and highly variable across the site. Demolishing and rebuilding was not an option as the ground still needed treatment. This left two options for the site owner: Piling or geopolymer resin injection.

Piling would have caused a large amount of disruption and noise pollution as it meant excavation and pouring new concrete piles. This made it an unviable option as it would have been too invasive, time consuming and expensive. Mainmark's unique combination of non-invasive Teretek® resin injection and JOG Computer-Controlled Grouting was the only true option for strengthening the ground and achieving the required lift, while allowing all tenants to remain on-site, avoiding serious disruption and cost.

## Objectives

The client's objective was to strengthen the ground and re-level the three buildings which had been impacted by subsidence. This was a crucial safety requirement within the business units so that both the operation of machinery and storage of equipment could take place without risks.

**JOG and Teretek® Used to Raise and Re-level Three Business Units in East London** continued

## Solution

The variation of poor soil, slopes and embankments across the site required a versatile solution to both strengthen the ground and raise and re-level the structures. Hence, Mainmark opted for a combination of its JOG Computer-Controlled Grouting and Teretek® resin injection technology.

The perimeter of the buildings needed work to help repair the prevalent cracks, as well as improve the weakened ground and fill the voids. Therefore, Teretek resin injection was initially used to strengthen the weak ground under the buildings, whilst JOG was deployed using pin-point technology to facilitate non-invasive, accurate, and fast-acting computer-controlled grouting to lift the structures in a complementary approach.

JOG was also utilised within the interior to provide relief to the load-bearing walls and, inside the buildings, Teretek was used alongside JOG to fill voids and re-establish and re-level the sunken floors. This combination method was paramount to maintain the integrity of the buildings, helping to make them safe for staff to use once more. Mainmark was able to successfully treat approximately 55 lineal metres or 990m<sup>2</sup> across buildings 1 and 3, with a further 1300m<sup>2</sup> or 66 lineal metres for building 2.

Mainmark's JOG and Teretek teams worked simultaneously across the buildings during the project, helping to further reduce the time taken in completing the works.

However, the project was not without challenges. The steep embankments around the site required injection to be tailored to contain the material in the zones that required the treatment. Additional Teretek injection was also carried out to further strengthen the ground and allow for a more uniform final lift.

Despite this, Mainmark was able to complete the project in just over two months which is a comparatively short period of time compared to alternative solutions. Mainmark was able to avoid disturbances to all the site's 19+ units, allowing the tenants to remain and avoid serious disruptions to their business operations. The mobile and modular nature of the JOG and Teretek equipment allowed for the ease of

transportation, assembly, and demobilisation, enabling Mainmark to work around the tenant's operations.

The Mainmark team established a close relationship with both the client and the tenants, with communication being consistent and detailed. Trust was instilled between both parties, ultimately resulting in the project being completed both on time and within budget and the most severely affected building was lifted 140mm.

Simon Berry, Director, Berwen Limited said: *"We were facing a very difficult situation with subsidence across the site, which, although very gradual, was approaching the point where it had to be addressed in one way or another. The issue was that there were very few options open to us in terms of remediation until we were introduced to Mainmark. From our first contact, and through subsequent meetings, we realised that Mainmark's technology offered a viable solution that could, not only address the subsidence and level the buildings, but could also achieve this whilst allowing the tenants to stay in occupation and thus protect our income stream - it sounded almost too good to be true! Over the following months however, this is exactly what transpired, the ground was improved and the building raised and levelled with minimal impact to the tenants. We are hugely grateful to the whole team at Mainmark for their efforts, skill and professionalism in bringing the project to a successful end point, on time and within the budget they laid out in the early stages."*



Above: A Mainmark technician checking building levels and the non-invasive JOG Computer-Controlled Grouting injectors placed around the exterior of one of the units.