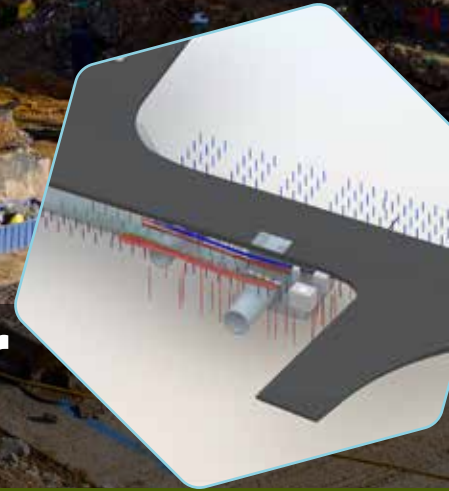




Ground Improvement for Utilities Assets



Geobear provides rapid, low-carbon ground engineering solutions for the water sector, specialising in subsidence remediation, void filling, and ground improvement.

Using advanced geopolymer injection technology, we improve the ground beneath utility assets such as pipes, sewer systems and treatment plants to prevent asset failure and the need for excavation and renewal.

Geobear is HAPAS-certified; our solutions minimise downtime, reduce environmental impact, and extend the lifespan of critical infrastructure.

Our Solutions

- Pipeline ground strengthening: Protect water, gas, and sewage pipelines from subsidence and ground movement.
- Substation Foundation Support: Ensure the structural integrity of critical energy infrastructure.
- Manhole and Access Point Rehabilitation: Maintain safe and accessible entry points to your networks.
- Ground Improvement for Facilities: Enhance the ground beneath treatment plants, storage tanks, and other utility structures.

Why Geobear?

Low carbon: Up to 75% less carbon emitted compared to alternative methods

Deliverability: Sites can be worked on and operable in one day / possession

Speed: Sites stabilised and ground improved in days, not weeks/ months

Access: Minimal access needs, one injection unit at up to 100 metre distance

Disruption: No major plant required for excavation

Clean: 16mm drilled holes, no site clean up required

Life extension: Reduces need to renew assets

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Ground Improvement for Utilities Assets

Benefits of Geobear solutions

Non-Disruptive Work

Geobear's minimally-invasive methods ensure that your infrastructure remains functional during repairs.

- Our advanced geopolymer injection technology strengthens the ground without the need for extensive excavation.
- Continuous Operations: Keep your utilities running, serving your customers without interruption.
- Reduced Disruption: No need for road closures or service shutdowns, minimising inconvenience to the public

Emergency Works

Geobear provides fast, responsive design and delivery for emergency situations:

- Swift Mobilisation: Our teams are ready to deploy quickly to address urgent ground issues.
- Effective Solutions: We restore the ground strength promptly, preventing further damage and ensuring safety.

Sustainability

Low Carbon – up to 75% fewer emissions than alternative approaches

- Low Environmental Impact: We reduce the carbon footprint compared to traditional excavation and our material is environmentally inert.
- Minimally-Invasive Techniques: By injecting geopolymer resins directly into the ground, we avoid disturbing the surrounding environment.

Engineering Expertise

With a foundation in technical excellence, Geobear offers:

- Inventors of geopolymer injection used on over 200,000 projects
- HAPAS-certified and BBA accredited
- Solutions designed by chartered engineers

Value Proposition

Geobear's solutions are not just a quick fix; they offer lasting benefits:

- Cost-Efficiency: Reduce expenses through whole-life cost savings by extending the lifespan of your assets.
- Asset Performance: Improve the stability and reliability of your infrastructure for long-term operational success.
- Avoid Future Costs: Preventative ground strengthening now can avert costly repairs or replacements down the line.

Ground injection beneath sewer system



Case Study: Baker Street Sewer – Ground Strengthening

Background

A road and sewer system had experienced significant settlement of 100–200mm, initially caused by flash flooding. Consequently, washout beneath the existing sewer pipe occurred, meaning it bowed and the joints failed which caused further soil erosion. This led to an accelerated settlement rate and loss of ground support increasing the risk of creating a localised sinkhole.

Ground conditions were classed as 'very loose ground' based on standard penetration testing and the requirement was to improve the ground conditions to a medium density.

The client urgently needed to stabilise the ground and reduce further settlement, to accommodate complete pipework repairs (re-lining).

Laser monitors used to measure lift



Challenges

A major difficulty for the client was the site location and options available. The traditional option would have been the full excavation of the site to around 6.5m. The area in question is a busy town road with buildings on either side and is at the junction with an access road to a large supermarket.

A large amount of temporary works such as sheet piling, service diversion and a much larger road closure area would have been required, all involving heavy machinery to achieve this.

Geobear's solution is based on the use of ground injections that involve using a geopolymer material to stabilise the soil. It involved injecting expansive resin at various depths to densify and compact the loose or eroded soil beneath the pipes.

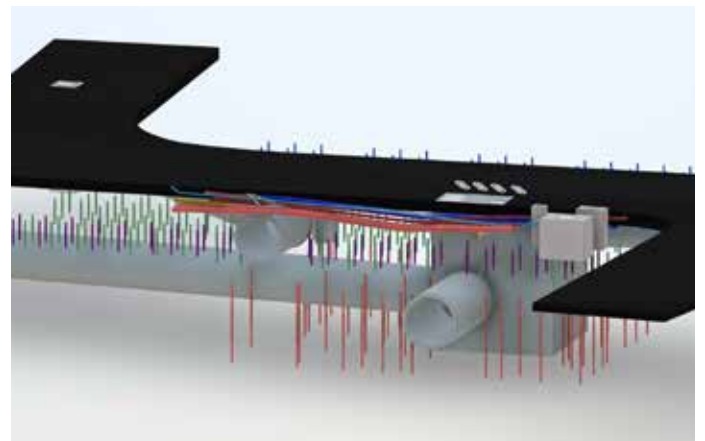
Modelling with BIM

The Geobear engineers used Plaxis modelling to illustrate the achievable improvement in ground conditions through a geopolymer material. This data could reassure the client that the proposal was suitable and would achieve the desired outcomes.

This is the first time geopolymer technology was used on such an extensive scale to permanently treat poor ground under a sewer system.

Geobear worked with the client in the engineering design phase. The teams used BIM (Building Information Modelling) and overlaid the Geobear treatment drawings to ensure the accurate placement of injections to avoid clashes with buried services.

BIM model with injection tubes



Geobear injection tubes needed to be inserted to depths of 7.5m, to facilitate this a working platform was required to be constructed. However, once the project commenced, the Geobear technical team concluded that the use of a working platform could be circumvented by using rod-driving. The Geobear team successfully used the rod driving method and saved five days of the programme and notable cost with this intervention.

The project was successfully delivered and the client's expectations for improvement in standard penetration test values were met. The threat of a sinkhole was removed and full sewer repair could proceed.

The Geobear works were completed on time ahead of the original schedule due to the work platform not being required. The verified ground conditions post-treatment achieved 3 times increase in soil density as a result of the injection.

Ground conditions on site were classed as 'very loose ground' based on standard penetration testing (SPT) and the requirement was to improve the ground conditions to a medium density. At the treatment depth between 4.5 to 7.5 metres, the SPT results showed 0-1. Post-treatment with geopolymer, the improvement was between 5-15 exceeding the client's requirement.



Client Testimonial, Utilities PM

The unforeseen circumstances presented us with a particularly challenging situation. On approaching Geobear to propose a solution their engineering team worked collaboratively with us to develop an appropriate and innovative solution to the unique conditions on the site. The site team delivering the project has exceeded expectations and Geobear has clearly met all our objectives.

Partner with Geobear

With years of experience supporting utilities, we understand the pressures of maintaining infrastructure in a fast-changing environment.

For more information or to discuss your specific needs, contact Geobear today:

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