Mine Shaft Stabilisation for Residential Development in Newmains

Newmains, Wishaw



TYPE OF PROJECT	YEAR OF CONSTRUCTION	CLIENT	CONTRACTOR	DESIGNER
Construction Over Voids	**2024**	**Bellway Homes**	**Advance Construction**	**N/A**

PROD. RELATED
MonoAxial GeoGrids (Null)

Challenge

Morgan Properties and Bellway Homes West proposed a new residential development on a brownfield site in Newmains, Wishaw, comprising two-storey houses, private gardens, internal roads, drainage infrastructure, and public amenity spaces. During the geotechnical site investigation, two abandoned mine shafts were discovered within the planned public open space, each measuring approximately 2.3 metres in diameter.

The presence of disused mine shafts posed a critical ground stability risk. Without appropriate mine shaft stabilisation measures, there was a high potential for sudden ground collapse, creating a serious hazard for future residents and users of the amenity area. Such a failure could also damage surrounding infrastructure, including roads and drainage systems. Addressing these legacy mining risks was essential to ensure safe residential development and long-term ground integrity.

A reliable and engineered solution was therefore required to mitigate the risk of mine shaft collapse, stabilise the ground, and meet regulatory requirements for building on brownfield land affected by historic mining activity.





Solution

Maccaferri delivered a specialist ground stabilisation solution combining grout-filled mine shaft treatment with high-strength geosynthetic reinforcement using Paralink. This approach is widely recognised in geotechnical engineering for effective void bridging and collapse mitigation over abandoned mine workings.

Paralink geosynthetic reinforcement was selected due to its exceptional tensile strength and low strain performance, making it ideal for applications involving potential subsurface voids. The system was installed at a depth of 2 metres below finished ground level and designed to operate at 6% strain in an axisymmetric configuration spanning each shaft.

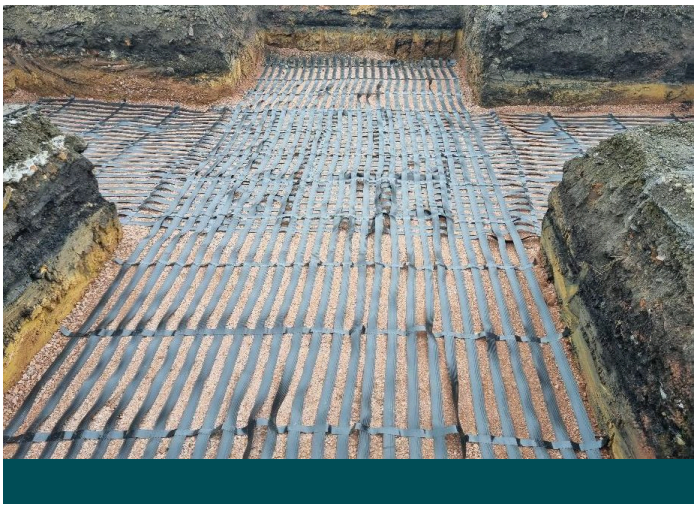
In the event of a mine shaft collapse, the reinforced layer acts as a load-bearing platform, limiting surface deformation and preventing the formation of a dangerous open void. Instead, any settlement is controlled and distributed, significantly reducing risk to people and infrastructure.

To ensure effective load transfer and long-term performance, the Paralink reinforcement was anchored radially to a distance of 4.5 metres from the centre of each shaft. This design provided robust coverage and resistance to ground movement, maintaining the safety and usability of the public amenity space.

Maccaferri's solution demonstrates best practice in mine shaft stabilisation and brownfield ground improvement, enabling safe residential development on sites affected by historic mining. The project highlights the effectiveness of geosynthetic reinforcement in mitigating geotechnical risk while ensuring compliance with modern engineering and safety standards.

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