Reinforced Soil Retaining Wall in Luton Sustainable Chalk Stabilisation with Mineral Terramesh®

Luton, Bedfordshire, United Kingdom



TYPE OF PROJECT	YEAR OF CONSTRUCTION	CLIENT	CONTRACTOR	DESIGNER
Reinforced Soil Walls And Slope Reinforcement	**2019**	**Redrow Homes**	**Ground Developments Ltd (GDL)**	**Ground Engineering Solutions Ltd (GES)**

PROD. RELATED

TerraMesh (719m2), MonoAxial GeoGrids (7500m2)

Challenge

A former Vauxhall Motors factory site on the outskirts of Luton was acquired by Redrow Homes for residential development, offering a prime location but presenting significant engineering challenges. The brownfield site featured steeply sloping terrain composed of structureless chalk, a material with limited load-bearing capacity and poor stability when left untreated.

To maximise land use efficiency and enable viable housing layouts, the development required the formation of a series of engineered terraces. One key area demanded the construction of a retaining structure approaching 10 metres in height. The combination of steep gradients, weak chalk geology, and the scale of the proposed earthworks created a complex geotechnical problem requiring an innovative and cost-effective solution.

MACCAFERRI LTD. 9 Blenheim Office Park Fenlock Road, Long Hanborough, Oxfordshire OX29 8LN, UK
PH:+44 1865 770555 E-mail: info.uk@maccaferri.com



Mineral Terramesh units being erected – Note MacDrain to



Cement improved chalk as structural backfill

Solution

Rather than disposing of excavated chalk and importing quarried fill material, contractor GDL, designers GES, and Maccaferri developed a sustainable value-engineered solution. By applying cement stabilisation, the site-won chalk was repurposed as structural backfill for a reinforced soil retaining wall. This approach significantly reduced waste, eliminated off-site disposal, and minimised the environmental impact associated with importing new materials.

Maccaferri designed and supplied a Mineral Terramesh® reinforced soil retaining wall system, enabling the construction of a 9.6-metre-high structure with a steep 70° face angle. The system was reinforced with ParaGrid® polymer geogrids, providing long-term stability and ensuring performance under load in challenging ground conditions.

The Mineral Terramesh® system is manufactured from double-twist woven wire mesh, made from Zn-Al 5% galvanised steel and enhanced with a PoliMac® polymer coating. This advanced coating technology delivers a design life exceeding 120 years and is fully BBA HAPAS approved, offering superior durability and environmental performance compared to traditional PVC-coated alternatives.

From a construction perspective, the solution improved efficiency through factory-assembled facing units, combining woven mesh with a Class A galvanised welded mesh (50mm x 50mm apertures). This not only provided an architecturally appealing finish but also accelerated installation by reducing on-site assembly requirements. The system allows the use of smaller facing aggregates (typically 75mm clean stone), enhancing both buildability and visual consistency.

Each Mineral Terramesh® unit includes integral 3-metre reinforcement tails, forming a continuous connection between the facing and the reinforced soil mass. This ensures structural integrity while maintaining flexibility and adaptability during construction.



Face finish of Mineral Terramesh



Mineral Terramesh nearing full height



Face finish of Mineral Terramesh



Mineral Terramesh 3 years after construction

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