

Burghley Green Sustainable Drainage Geosynthetic Clay Liners (GCL) Solution

Cambourne, Cambridgeshire



TYPE OF PROJECT

Waterproofing Of
Reservoirs, Lakes And
Channels

YEAR OF CONSTRUCTION

2021

CLIENT

Bovis Homes / Taylor
Wimpey

CONTRACTOR

ECL Civil Engineering

DESIGNER

ECL Civil Engineering

PROD. RELATED

GCL (25000m²)

Challenge

Burghley Green, a high-quality residential development by Taylor Wimpey in West Cambourne, Cambridgeshire, was constructed on a former greenfield site. The transition from natural land to a built environment introduced a significant increase in impermeable surfaces, including roads, rooftops, and paved areas. This change disrupted the site's natural drainage patterns, leading to increased surface water runoff and a higher risk of localised flooding.

To address these challenges, a robust Sustainable Drainage System (SuDS) strategy was required. The design incorporated a series of attenuation ponds to manage stormwater, reduce runoff rates, and improve water quality. These drainage ponds also needed to meet environmental and aesthetic objectives, enhancing the landscape while supporting biodiversity through the creation of habitats for aquatic plants and wildlife.



MacLine GCL lining in place post-construction



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Solution

Maccaferri provided an effective and sustainable solution through the installation of MacLine GCL W20 geosynthetic clay liners across the site's drainage ponds. The MacLine GCL W20 is an advanced waterproofing system consisting of a layer of natural bentonite clay encapsulated between durable non-woven geotextiles. When hydrated, the bentonite forms a low-permeability barrier, ensuring reliable containment of water within the ponds.

A key benefit of using MacLine GCL is its self-healing capability. If the liner is punctured or damaged, the bentonite expands upon contact with water, sealing the breach and maintaining the integrity of the system. This feature significantly enhances long-term performance and reduces maintenance requirements compared to traditional lining solutions.

The installation process was efficient and cost-effective. Unlike HDPE liners, which require specialist welding, the MacLine GCL was supplied in rolls and simply unrolled onto the prepared subgrade. Adjacent panels were overlapped to create a continuous impermeable layer, allowing installation to be carried out quickly by competent contractors without specialist equipment.

In total, approximately 25,000 m² of MacLine GCL W20 was supplied and installed across four drainage ponds at Burghley Green. The solution delivered a durable, environmentally friendly, and visually integrated SuDS system, supporting both effective water management and ecological enhancement.



Lagoon with vegetation and habitats establishing



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