CASE HISTORY
Ref: UK / CH / SR011 - Rev: 01, August 07

PROLOGIS PARK
BEDDINGTON LANE, CROYDON, UK

SLOPE REINFORCEMENT
Product: ParaGrid®, Biomac® C

Problem
Maccaferri were approached by McNicholas Plc in April 2001 to provide a design for a site perimeter retention wall 4m high, 900m long. Due to the site being constructed on a disused landfill site, the design had to meet a number of criteria. Of these, the key requirement was that McNicholas Plc could not afford to export any contaminated material from site as this would incur prohibitive landfill charges.

The initial drawings produced by the Landscape Architects showed a mass gravity gabion retaining wall around the site perimeter. However, when Maccaferri undertook preliminary design costings, the solution was found to be expensive, primarily due to the large stonefill requirement. Additionally, the gabion solution would require a significant amount of material being exported from site.

Solution
An alternative design was proposed geogrids by Maccaferri, which utilised ParaGrid 80/15S in 800m lifts to generate a 70° reinforced earth embankment with a vegetating ‘green face’. The robust technical characteristics of the ParaGrid enabled the contaminated site won material to be re-used as backfill to the reinforced soil block.

Paragrid features a polyester strength element protected by a tough polyethylene outer sheath. Paragrid is BBA certified with a design life of up to 120 years.

Client name:
McNICHOLAS PLC

Main contractor name:
O & L CONSTRUCTION

Designer:
MACCAFERRI LTD

Product used:
PARAGRID®, BIOMAC C

Construction info
Construction date: AUTUMN 2001
The design also had to accommodate buildings on piled foundations close to the top of the embankment. The reinforced embankment had to be constructed ahead of the piling schedule. Careful site control ensured that wherever piles would puncture the ParaGrid, the grid was locally cut. In two key locations buildings were too close to the top of the embankment for the reinforced earth solution. Here Maccaferri designed and supplied mass gravity retaining walls.

Construction was undertaken by specialist sub contractor O & L Construction Ltd. This commenced in September 2001 and despite a tight programme was completed on schedule.

The face of the embankment was built using a ‘rising shutter’ method of construction. The shutters temporarily hold the geogrid face at the angle whilst the Biomac C biodegradable blanket is installed. Backfill is placed and compacted on the geogrids. Once the 800 mm of backfill was complete the shutter is removed.

The biodegradable matting provides moderate erosion protection and steps backfill spilling out between the aperatus and the grid.

A wedge of good quality uncompacted topsoil is placed immediately behind the face of the structure to provide the nutrients from which vegetation establishes.

**Benefits**
The finished reinforced embankment was hydro-seeded to provide an aesthetically pleasing vegetated face requiring little or no maintenance. The steep face provided McNicholas with the required land gain at top of the embankment necessary for the industrial park.

By reusing the contaminated site-won material as structural backfill to the reinforced earth structure, McNicholas dramatically reduced the export of material to landfills. In turn, this reduced the project costs, as well as the amount of truck movements in the local vicinity reducing pollution.