MacRes® Retaining Wall Supports Access Ramp at Lincoln EfW Facility

North Hykeham, Lincolnshire



TYPE OF PROJECT	YEAR OF CONSTRUCTION	CLIENT	CONTRACTOR	DESIGNER
Vertical Walls With Concrete Facing Panels	**2013**	**Lincolnshire County Council**	**CNIM/Clugston Joint Venture**	**ARUP**

PROD. RELATED
MACRES ()

Challenge

The construction of Lincolnshire's state-of-the-art Energy from Waste (EfW) recycling plant at North Hykeham, Lincoln, presented complex ground engineering and design challenges. Built on a low-lying brownfield site with a high groundwater table, the project required innovative civil engineering solutions to ensure long-term stability and operational efficiency.

Due to the elevated groundwater levels, it was not feasible to construct the waste tipping hall at ground level, as is typical for waste management facilities. Instead, the tipping hall was positioned at first-floor level to mitigate risks associated with water ingress and ground instability.

This design change created a significant access challenge. The facility needed to accommodate a continuous flow of 40-tonne waste delivery vehicles, requiring a durable and safe heavy-duty access ramp. With a vertical rise of 6.0 metres and a maximum gradient of 1 in 10, the ramp needed to extend approximately 60 metres in length.

However, the constrained site layout meant there was insufficient space to construct a traditional straight ramp with conventional earthwork embankments and shallow side slopes. This limitation required a compact, structurally efficient retaining wall solution capable of supporting heavy vehicle loads while maximising available space.

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



Construction taking place at EfW in North Hykeham



The completed structure at EfW North Hykeham

Solution

To overcome these challenges, consulting engineers Arup designed a space-efficient, curved access ramp using a reinforced soil retaining wall system. The solution incorporated Maccaferri MacRes® precast concrete retaining wall panels to form two opposing vertical walls, significantly reducing the footprint compared to traditional embankment construction.

The structure was stabilised using PARAWEB® geosynthetic reinforcement straps, which tied the concrete panels into the reinforced soil mass. This mechanically stabilised earth (MSE) solution is widely used in infrastructure projects such as motorway bridge ramps, providing high load-bearing capacity, durability, and design flexibility.

The curved, double-sided ramp design allowed the structure to fit within the restricted site while maintaining safe vehicle access for heavy goods vehicles. In addition to forming the ramp, the MacRes® retaining wall system also supported the bank seat for a bridge section located at the top of the ramp, directly adjacent to the tipping hall access point.

Main contractor CNIM/Clugston JV appointed Maccaferri Construction to deliver the project under an indemnified design, supply, and installation contract. This integrated approach ensured a high-quality, cost-effective retaining wall solution tailored to the project's geotechnical constraints and operational demands.



Completed structure

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

OPEN GOOGLE MAPS

OPEN GOOGLE EARTH

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