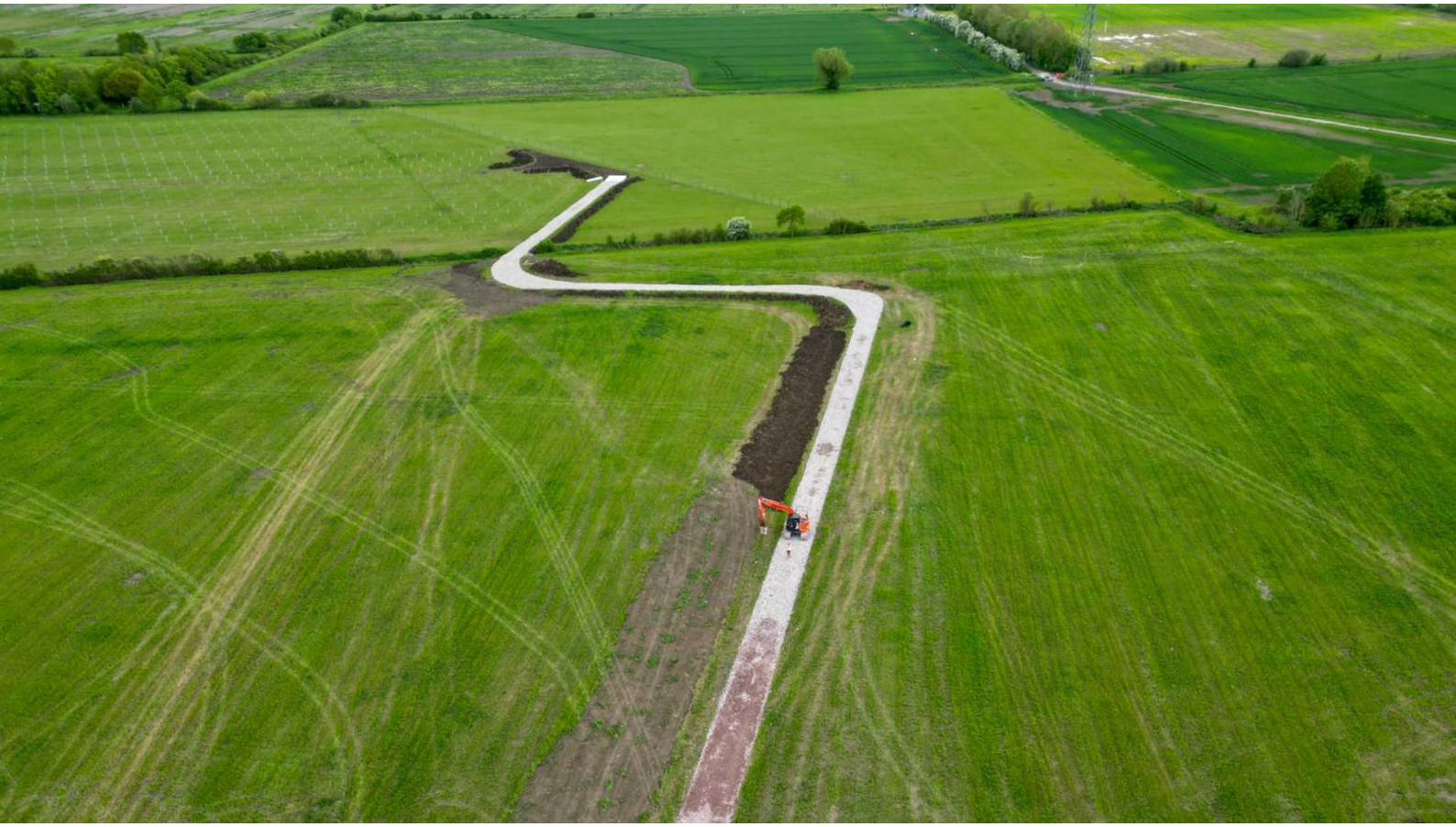
Infrastructure

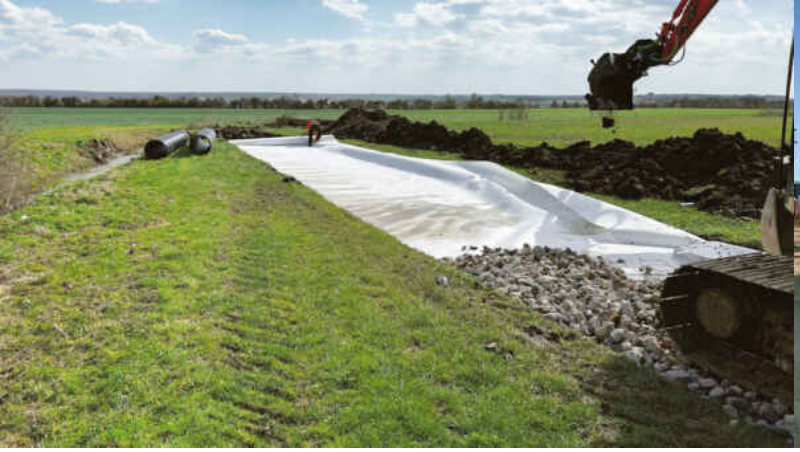
Haul roads & compounds for solar park & electricity storage facility

Base course reinforcement

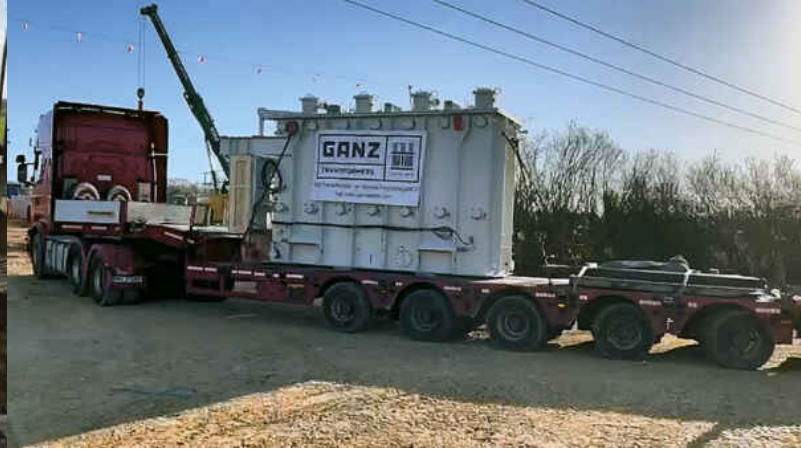
- **Project Name**
  Bulphan Fen Solar Farm, Essex, UK
- **Client**
  Enso Energy Ltd, UK
- **Contractor/Installer**
  Tugwell Contracting Ltd, UK
- **Product**
  Combigrid® 40/40 Q1 GRK 4 C



Naue



Pic. 1: Installation of base course on top of Combigrid®



Pic. 2: Flat-bed trailer on access road

Situated around 10 miles north of the River Thames, between Tilbury and Brentwood, the Bulphan Fen Solar Farm and electricity storage facility is expected to generate sufficient green energy to power over 23,000 homes for the next 35 to 40 years, displacing around 16,000 tonnes of carbon dioxide per year when compared to electricity generation from non-renewables.

Innovative infrastructure for sustainable progress

Along with internal access tracks designed to accommodate heavy vehicular traffic across the site during the initial construction period, and later for ongoing maintenance of the ground-mounted photovoltaic solar arrays, the site infrastructure will also include battery-based electricity storage containers together with substation and inverter/transformer stations.

Rising to the challenge with cutting-edge solutions

Enso Energy is developing the facility on a site comprising 18 fields, which are underlain by London Clay and covered predominantly by alluvium. The entire 138-hectare site is classified as Subgrade 3b; essentially, some of the poorest quality land available in the area. For solar farm specialist Tugwell Contracting, the task of providing a network of robust and stable access tracks and compounds in these conditions was a potential challenge.

Naue's sales manager for southern England and Wales, Jake White, explained: "Below the surface, ground conditions were far from ideal, and initial designs for the project had indicated the need for two layers of geotextile; one laid onto a compacted soil base and covered with a coarse aggregate sub-base of at least 30cm depth, followed by a second geotextile layer topped with a permeable layer of finer grade aggregate."

A synergy of strength and sustainability with Naue Combigrid®

Thankfully, having had previous experience using Naue's geocomposite products on other installations, Tugwell Contracting were confident that a simpler geosynthetic solution could work for this project.

"Combigrid® was the perfect solution for the project at Bulphan Fen", says Jake White. "With a nonwoven geotextile and a geogrid layer combined into a single product, installation is simplified for projects where separation, filtration, stabilisation and reinforcement properties are all essential. In addition, the geogrid's excellent tensile strength at low elongations reduces the depth of the aggregate layer significantly."

Combigrid® combines a laid geogrid, made of stretched, monolithic flat bars with welded junctions, and a mechanically-bonded and calendered filter geotextile welded within the geogrid's structure. Combigrid® is used for stabilisation and reinforcement of soils in many fields of infrastructure, environmental protection, and hydraulic engineering applications.

At Bulphan Fen, Combigrid® could be installed directly to the soft subgrade, with the integrated geotextile working as a separation layer between the subsoils and the coarse recycled aggregate layer above and the geogrid element playing its role to improve the bearing capacity of the aggregate layer; together reducing surface deformation from vehicle movements, and ensuring long-term filter stability and extended service life.