



Supporting the East Anglia Two (EA2) Offshore Wind Farm Asset

Peel Ports, Great Yarmouth



 **Client:** Peel Ports

 **Sector:** Infrastructure & Transport (inc. Rail)

 Outer Harbour, Peel Ports, Northgate, South Beach Parade, Great Yarmouth, Norfolk, NR30 3GY

Project Overview

Peel Ports owns and operates six of the UK's most important ports; Port of Liverpool, Heysham Port, Manchester Ship Canal, Medway (Sheerness / Chatham), Clydeport (Greenock, Hunterston, Ardrossan) and Great Yarmouth. It also operates a container terminal in Dublin.

At the port facility in Great Yarmouth, Peel Ports faced a significant infrastructure challenge: the need for high-performance pavement areas to support heavy-duty operational activities for the construction of the East Anglia Two (EA2) Offshore Wind Farm.

Partnering principal contractor Erith Contractors and Swanton Consulting, Geosynthetic Ltd provided specialist expertise in geosynthetic reinforcement and stabilisation and a robust solution to ensure the port could handle extreme loading whilst maintaining operational efficiency.

Challenge

The primary obstacle was the sheer scale of the load-bearing requirements. The new pavement needed to support heavy plant machinery and logistical traffic essential for offshore wind farm construction.

Traditional methods often involve deep excavations and costly materials; however, this project required a solution that could:

- Provide high-load-bearing capacity for heavy-duty port operations.
- Ensure long-term structural integrity under constant heavy traffic.
- Integrate multiple geosynthetic layers to manage soil separation and reinforcement.
- Be engineered collaboratively and accepted by all parties.

Innovative Solutions:

By engineered integration of Interlock geogrids and Ekotex® geotextile, we delivered a high-performance reinforced pavement capable of absorbing extreme operational loads whilst significantly reducing excavation requirements.

The Bespoke System: Geosynthetics Ltd engineered a multi-layered reinforcement and separation system tailored to the high-demand requirements of a port infrastructure project. The system incorporated Interlock high modulus geogrids in conjunction with Ekotex® non-woven geotextile to create a stabilised, high-stiffness pavement foundation.

Engineering Rationale: The technical objective was to provide reinforced working platforms for the different areas of the project such as crane operations, pavement and storage areas. The Interlock geogrids provide superior lateral restraint through aggregate interlock, increasing the composite resilient modulus of the sub-base; meanwhile, the Ekotex® geotextile provides a critical separation function, maintaining the filtration integrity of the imported granular fill by preventing the migration of subgrade fines under dynamic loading.

Collaborative Design: Operating under a “Design and Build” framework, our technical team integrated directly with Swanton Consulting. This peer-to-peer engineering collaboration ensured that the geosynthetic specifications were fully aligned with the global stability and bearing capacity requirements of the East Anglia Two (EA2) logistics platform, facilitating a rigorous technical sign-off. With the use of an engineered system integrating multiple layers of Interlock Geogrid and Ekotex® Geotextile, we delivered a series of high-performance reinforced platforms capable of supporting extreme operational loads, while significantly reducing both excavation depths and volume of imported granular materials, which vastly reduced excavation requirements.



Key Benefits Delivered:

1

Collaboration: Through partnering and technical correspondence with Swanton Consulting, we ensured the design met all engineering safety factors and stringent port authority standards, providing a data-backed, high-reliability alternative to traditional deep excavation.

2

Structural Load Distribution: The application of Interlock geogrids and Ekotex® geotextile enhanced the structural coefficient of the pavement layers, successfully distributing the extreme point loads generated by heavy offshore wind farm plant machinery.

3

Subgrade Integrity Preservation: By specifying Ekotex® geotextile, the design provides a permanent hydraulic and physical barrier that prevents subgrade pumping and contamination, ensuring the pavement maintains its designed performance characteristics over its service life.

This resulted in:

- Optimised layers of geogrid & **improved structural performance** with reductions in aggregate thickness compared with initial project design.
- Approximately **25,250 tonnes** of aggregate saved and 1,250 fewer HGV deliveries, reducing local traffic, CO₂ emissions, programme pressure, and overall environmental impact.
- Lower material and installation costs enabling **faster construction** times.

Client Testimonials

“The collaboration between Erith, Swanton Consulting, and Geosynthetics Ltd was key to this project’s success. The team managed correspondence efficiently, and it was encouraging to see all parties commit time to resolving design matters collaboratively, ultimately enabling full design acceptance.”

Frank Lee-Sang, Project Manager

“Geosynthetics were a pleasure to work with, from tender through to live project delivery. Throughout their involvement, Geosynthetics demonstrated their vast theoretical, technical, and practical expertise, supporting Swanton collaboratively through the various design iterations.”

James Lee, Senior Engineer