

Countess Wear Flood Resilience

Pell Frischmann
South West Water
Collaboration
£2m

The project objective was to implement flood protection measures to protect the works from an extreme flood event, including the need to recover / maintain serviceability.

With the nature of the ground conditions, there was a risk that the site would flood by:

- Overtopping, based on breach of defences; and
- Excessive ground water levels caused by increased hydraulic head.

To achieve the objectives effectively, a plan to collaborate with necessary parties was established.

Full height defences along the river frontage were initially suggested to prevent overtopping. However, a risk-based approach was articulated to the Environment Agency based on 35-40 years climate change, with the canal providing protection on the south-western perimeter.

This eliminated the need for a 3m high defence considered detrimental to the adjacent Site of Special Scientific Interest.

By collaborating with specialist hydrogeological modellers at Exeter University to construct a computational hydrogeological model, the extent and depth of sheet piling was optimised and the need for grouting was eliminated.

Various environmental constraints e.g. only undertaking non-intrusive works during the winter period to minimise impacts on over-wintering birds were negotiated and met.

Additional liaison with SWW Operations and the Environment Agency led to agreement of an operational control philosophy for use in an extreme event.

Extensive collaboration was undertaken around buildability aspects of the flood defences to protect existing services, involving ground-penetrating radar and 175 trial holes.

Proactive collaboration with the Client, regulator, designers, specialist hydrogeologists, environmental organisations, contractors, supply chain specialists and local parties helped to ensure that mitigation measures were effectively promoted and implemented. This minimised environmental impacts and provided a 40% budget saving. This highly sensitive environmental site is now significantly better protected against extreme flooding caused by changing weather patterns and climate change.