

## Realisation and Implementation of Withernsea LSO

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### ABSTRACT

Withernsea is located in Yorkshire, UK approximately 18 miles east of Hull on the Holderness Coast. The geographical location of Withernsea is surrounded by rapidly eroding coastlines due to the geology being mainly soft boulder clay. In 2011, due to an observed significant increase in the coastal erosion rate at Withernsea, monitoring surveys/investigations were carried out to analyse the increased erosion rates, determine future coastal erosion rates, as well as its potential impacts/effects on the existing Waste Water Treatment Works (WwTW) located at the top of the coastal cliff.

The original design of the existing outfall took into consideration the predicted seabed changes and cliff erosion at the time. However, continuous storm events at the site location amplified the rates of erosion, putting the existing long sea outfall (LSO) and WwTW at risk of becoming inoperable by the year 2024 as opposed to year 2051 (asset life of 60 years).

Based on the predicted cliff erosion rates (7m a year) and exposure of the existing outfall on the foreshore, Yorkshire Water Services had no choice but to relocate the existing WwTW and a potential site for a new WwTW was identified. A replacement outfall was required as part of the WwTW relocation scope to maintain the existing outfall discharges for the remaining life of the WwTW

Royal HaskoningDHV completed planning, consenting, monitoring, investigations, design and supervision.

This paper will discuss the challenges presented for the realisation, design and installation team to enable the implementation of the existing outfall protection works and new outfall replacement.

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