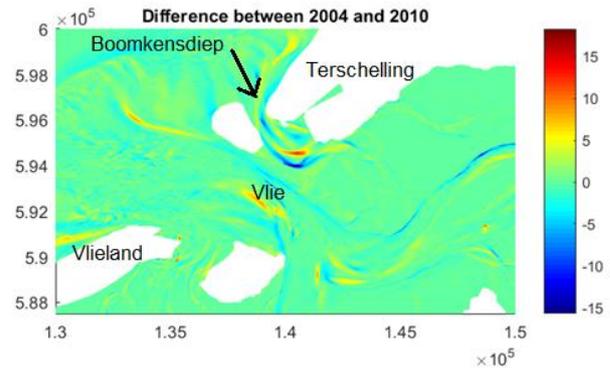


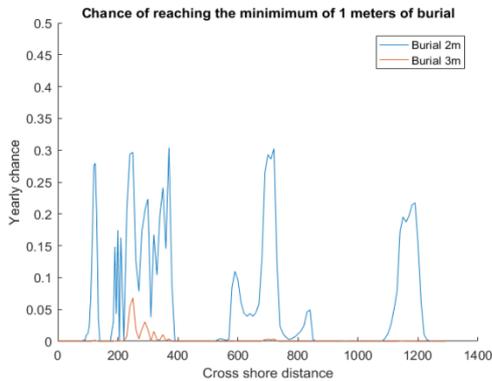
Replacing the fibre optic cable between Vlieland and Terschelling

The current fibre optic cable in the Vlie inlet between Vlieland and Terschelling is suffering from a malfunction. The current cables in the Wadden Sea experience surfacing problems related with the difficult morphodynamics in the Wadden Sea. The surfacing of cables is not allowed by law and unwanted by KPN and therefore constant reburial is needed. The goal of is to come up with a total placement plan of the new cable with should have a reasonable investment compared to the spending on reburial.

First it is important to look at the morphodynamics of the Vlie inlet. The Vlie inlet has since the closure of the Zuiderzee changed its orientation from northwest to southeast. The inlets main channel is ebb dominated and the flood inflow from the outer delta is almost radial. This leads to a more stable morphologic environment in the outer delta making it a better position for the new cable. The movement of the secondary channel the Boomkensdiep does pose a challenge for the new cable.

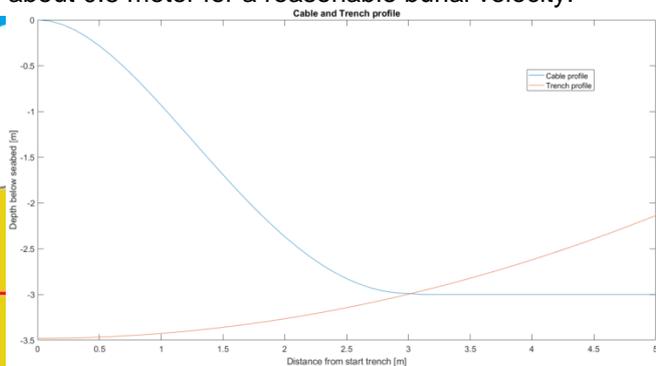
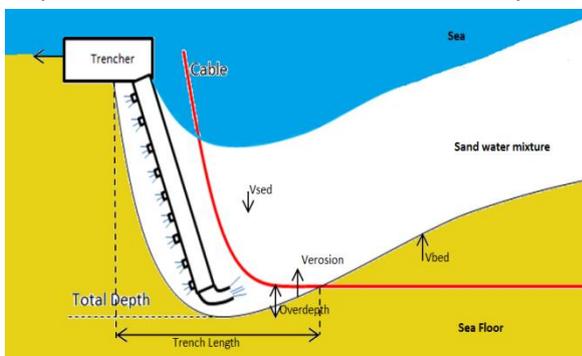


Soil is also an important property when considering the burial of a cable. The soil characteristics vary according to their location on the Wadden Sea. In the inlets the soil is uniform sandy with a mean diameter of around 200 micron. However when going to shore and further away from the inlets uniformity is decreasing along with the mean diameter.



Burial should be done using jetting since the soil is sandy and water availability is not a problem. Due to soil erosion, burial will have to be 3m to allow for a surfacing chance of 1/100 years on the Vlieland side. On the Terschelling side some maintenance can't be avoided. The route will cross the north sea side of the inlet. The cable can be single armoured cable because of the fishing and anchoring ban near the cables and the general low risk of failure.

In order to get an idea behind the needed power, trench size and trencher needed a model was developed. Here the jet trencher is eroding the sand bed in front of it while from behind the sand is allowed to settle over the cable. This model estimates that around 500 kW of power is needed to bury it up to 3 meters. With an estimated overdepth of about 0.5 meter for a reasonable burial velocity.



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