Q: How do the sand wave migration patterns compare to other wind farms in the North Sea?
A: Migration rates of sand waves in the Hollandse Kust (west) Wind Farm Zone are considered to be moderate with main migration directions parallel to the coast and migration rates in the order of a couple of meters per year. Locally, large-scale seabed features influence the sand wave migration patterns. The found migration patterns are very much comparable to other areas such as Hollandse Kust (zuid), Hollandse Kust (noord) (for the general migration patterns) and Borssele (for the influence of large-scale seabed features).

Q: What is the impact of the changing megaripple dimensions?
A: The seasonal variation in megaripple dimensions causes uncertainties in short term bed level fluctuations. Generally these seasonal fluctuations are in the order of a couple of decimetres (comparable to the megaripple dimensions). When considering the changing dimensions, locally bed levels can become a couple of decimetres higher or lower than expected. This might influence scour protections and cable burial depths.

Q: What is causing the increased seabed level changes in the western part of the wind farm?
A: Bed level changes caused by sand wave migration are a result of the combined dynamics and dimensions of sand waves. For the western part of Hollandse Kust (west) the sand waves are both significantly more mobile (e.g. migrating with a couple of meters per year) and somewhat higher compared to other parts of the wind farm zone. Therefore bed level changes in this area were found to be largest in this part of the wind farm zone.

Q: Which (scour protection) solution is most preferable in the Hollandse Kust (west) Wind Farm Zone?
A: There is no single preferable scour protection solution for HKW. The selection of the scour protection method depends strongly on the preferred mitigation scenario (allowing some scour development or not), risk level, the type of structure (monopile, jacket, GBS), availability of scour protection material and equipment of the installation contractor. Ultimately it will be a decision based on all these (and perhaps more) considerations. What we do show in our report is that loose rock is commonly most versatile in any scour mitigation scenario and therefore most commonly used. Also, being the most commonly applied scour protection material many contractors have dedicated equipment for subsea rock installation. It is therefore our expectation that most developers will select loose rock scour protections to apply in HKW.

Q: Do you see extreme weather events causing the scour depth to increase significantly?
A: We see that the deepest scour holes typically develop under current-dominated conditions with limited wave action (see also Section 4.3 of the scour and scour mitigation report). Wave-dominated events (storms) typically lead to some backfilling of the scour hole; resulting in a more shallow (but wider) scour hole. So while extreme weather events are expected to influence the scour hole shape, it will not necessarily result in a deeper scour hole. One exception to this is when the scour hole is still far away from equilibrium (e.g. in the first year after MP installation), in that situation a storm could lead to accelerated scour development. Also, for the stability of scour protection, extreme weather events are the governing condition.