

CASE STUDY

Zeeland Water Board — Storm-surge early warning for 340 km of coastal defence

The Zeeland Water Board needed surge warnings earlier than tide-gauge networks alone could provide, across a defence system too large to instrument densely.

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Storm-surge early warning for 340 km of coastal defence

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The Zeeland Water Board needed surge warnings earlier than tide-gauge networks alone could provide, across a defence system too large to instrument densely.

The challenge

Zeeland's defence system spans 340 km of primary and secondary flood defences protecting roughly 380,000 people. The board's existing tide-gauge network gave excellent point measurements and nothing in between. Dyke condition was surveyed on a six-year cycle by levelling, which is accurate, slow and expensive.

What we did

Terravek deployed 46 FIELDKIT 400-M tide and pressure nodes along the defence line and combined them with TIDEWATCH satellite-derived shoreline and dune volume monitoring, and an ORBIS persistent-scatterer interferometry stack for settlement. Threshold alerts are issued to the board's duty officer within 25 minutes of downlink.

Results

- Surge warnings issued on average 3.5 hours earlier than the previous process
- Dyke settlement now monitored continuously at 2 mm/year sensitivity, replacing the six-year levelling cycle for screening purposes
- Dune volume assessed after every named storm rather than annually
- Awarded the 2025 Geospatial Impact Award for Coastal Resilience

"We have not replaced our engineers' judgement. We have given them a picture of the whole system between surveys instead of four points and an assumption."

— Programme Manager, Zeeland Water Board

Products used

TIDEWATCH, FIELDKIT, ORBIS

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