

# CASE STUDY: IMPACT OF STORMS AND HIGH TIDES IN SEFTON



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Image: Sefton Council and North West and North Wales Coastal Group

Storm Ciara swept across the UK on 8th and 9th February 2020, bringing widespread gusts of between 70-80 mph and heavy rain. This extreme onshore wind combined with high spring tides caused devastation to parts of the Sefton coast.

All data and post-storm inspections were carried out immediately after storm Ciara had receded, which made it safe to monitor damage along the coastline. The dune systems were monitored by measuring the position of the dune toe using GPS and comparing the results in MapInfo GIS software to previous surveys captured before the storm. The overall erosion figure was calculated by measuring the difference between dune toe data at the worst affected locations. The rubble and earth defence at Hightown was measured and analysed in the same way, with GPS data captured along the length of the eroding edge.

The equipment used to capture the data was a Leica GS16 Antenna and CS20 handset attached to a detail pole. The GPS data is accurate to 5mm in the vertical axis when data is post processed. Data is available at [www.channelcoast.org](http://www.channelcoast.org).

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### Ainsdale Dunes

The dunes at Ainsdale eroded by an average of 8.1m. However, this erosion was mainly from the dune toe which should in time recover and return back to an accreting coastal section.



2

### Golf Course Frontage

Golf Course frontage was eroded by an average of 5.9m. Trees that were previously behind the dune face are now starting to fall onto the beach.



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### National Trust

The National trust frontage at Formby was eroded by 7.6m, which left lots of rubble on the beach from the old carpark site.



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### Lifeboat Rd

Lifeboat Rd dune frontage was eroded by an average of 2.8m.



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### Altcar Rifle Range

Altcar Rifle Range was eroded by 10.3m from the dune toe. This should recover back to an accreting coast line when wind-blown sand re-enters the system.



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### Hightown

Hightown frontage lost on average 6.8m from the dune toe. This area has also been laser scanned and volumetric data regarding beach levels will be available once analysis has been completed.



7

### Hightown Cliff

The Hightown Cliff rubble section lost on average 1.5m from its frontage. Some localised areas, such as the site closest to the MEPAS United Utilities pipe appear to have eroded quickly across this area. This may be due to the substrate making up the defence changing from rubble to sand as the rubble is eroded away.



8

### Crosby Promenade

Crosby promenade had several structural issues after the storms, mainly to areas that had been previously repaired. Several pieces of timber breastwork had been damaged with sections of the steel piling becoming slightly exposed due to upper beach levels dropping.



9

### Crosby Dunes

After storm Ciara, the Crosby dune system was eroded by 7.7m in places, which left large areas bare leading up to the hard sea defences. This area will recover in time when wind blown sand enters the system.



Images: Sefton Council and North West and North Wales Coastal Group