Carradale North Storm event

&

North Kilbrannan

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Carradale North Storm Event

What happened?

Carradale North, consisting of ten pens, shifted its position by approximately 800 metres after becoming detached from its seabed mooring system during Storm Ellen and strong tides at about 13.00 BST on 20 August 2020.

How did we act?

Regulators were immediately informed about the incident and the potential for fish escapes; key stakeholders and media were also informed within 12 hours.

By 25 August 2020, the farm was secured back in its licensed location and all 10 pens were visually inspected for integrity and/or inventoried.

Professional dive teams thoroughly inspected the mooring infrastructure and broken mooring lines were recovered.

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The equipment we use.

- Mooring lines are marine grade, ranging from 4.0cm to 4.8cm diameter ropes with a break strength of 63 - 89.5 tonnes. Carradale North was installed five years ago according to the Marine Scotland A Technical Standard for Scottish Finfish Aquaculture.

- The mooring lines installed were specified following independent modelling analysis and were rated at approximately double the strength required. The high design specifications of the mooring lines and young age of the site could not explain the cause of the incident, therefore, the recovered ropes were sent to a specialist facility for further inspection and testing.

Why did it happen?

- Mooring line failure at the southern end of the pen group was identified as the root cause of the incident. Inspection and testing of recovered ropes showed failure due to abrasion, with the likely source other mooring lines. It is concluded, based on all available evidence that these other mooring lines came into contact with pen grid mooring lines after gradual bedding in of anchors over time.

- Abrasion between crossing lines weakened them and resulted in breaks during Storm Ellen (Figure 1). This led to a “domino effect”, with several other mooring lines failing. The pen system was then moved by the waves, tide and winds during Storm Ellen.

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What were the weather conditions?

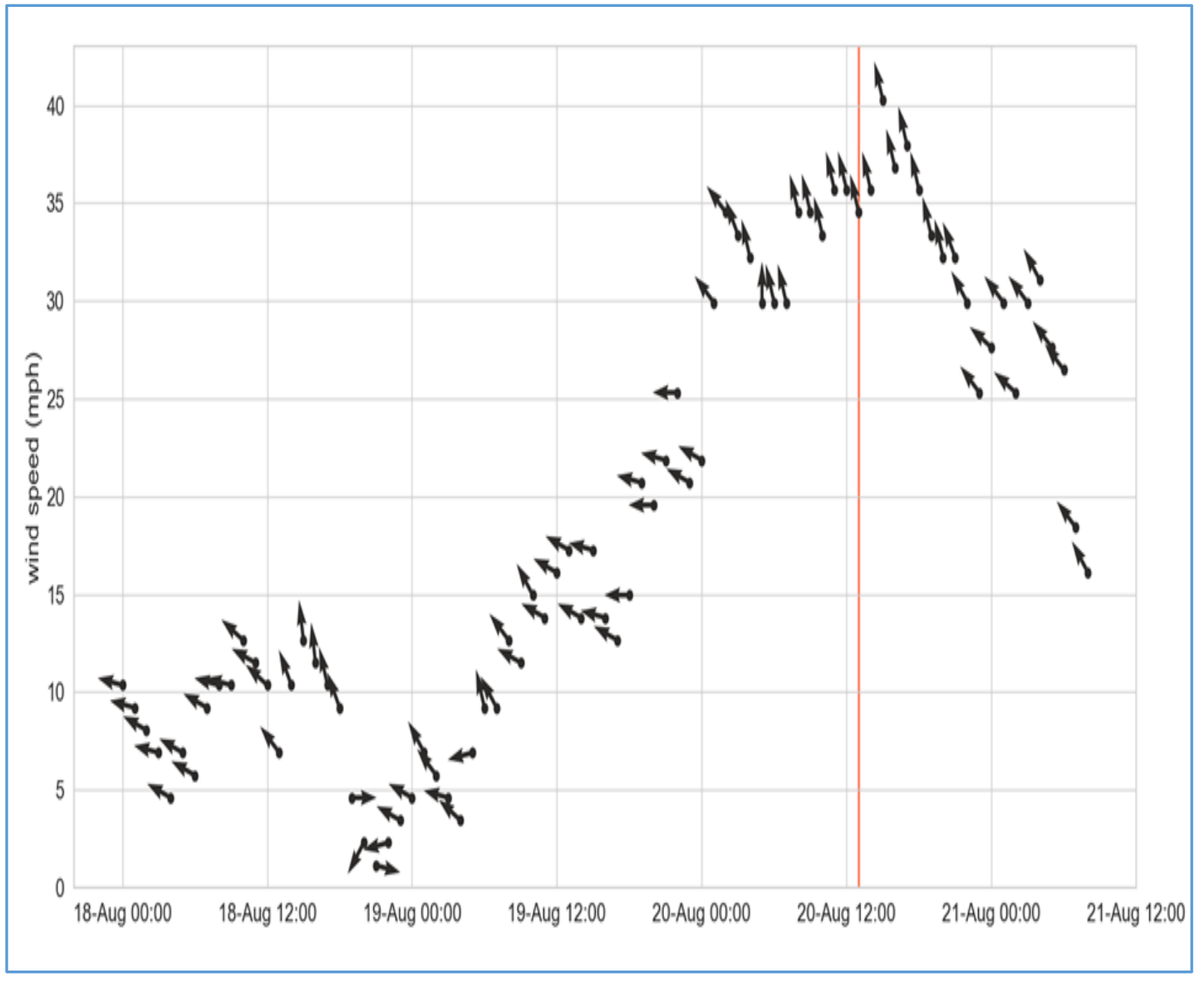
- Historically current speeds of 0.87 kts have been recorded in the vicinity of Carradale North; the strongest currents are from the South and tend to occur after local high water.

- The afternoon high tide on 20 August 2020 would have occurred at Carradale North at approximately 14:00 BST and the tides were approaching Springs in that period with a tidal range in excess of 3 metres.

- The sustained gale and storm force winds from the South-SouthEast would have contributed to the naturally strong tidal currents in Kilbrannan Sound.

- Storm force gusts in excess of 55 mph were recorded at Campbeltown Airport on the morning of 20 of August 2020 and severe gale force gusts from the South-SouthEast persisted throughout the day, likely causing significant swell to build up in Kilbrannan Sound.

- The combination of these factors would have produced significant loading and movement on both the feed barge and grid moorings on the day of the incident.



Wind speed and direction at Campbeltown before, during and after the incident at Carradale North. Circles denote wind speed. Arrows originating from circles denote wind direction. The orange vertical line denotes the approximate time of the incident.

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What are we doing?

1. Review all farming locations where mooring lines are at risk of coming into contact with pen mooring lines.

2. Submit applications for Planning Permission and a Marine Licence for a relocation of the Carradale Fish Farm feed barge.

3. Review our mooring analysis procedures and ensure specifications for moorings are developed independent of equipment supplier and where possible produced by internationally accredited aquaculture engineering consultancies.

4. Implement and complete a programme to strengthen mooring lines and anchors at eight of Mowi's most exposed fish farms prior to the winter storm season.

5. Increase the frequency and intensity of sub-surface mooring inspections across all farming locations with farms in the most exposed locations receiving a minimum of one detailed ROV survey per annum.

6. In combination with sub surface mooring inspections we will, at our most exposed farming locations, increase the frequency and intensity of physical moorings inspection pre and post winter, carried out by specialist moorings support vessels and staff.

7. Commission an assessment of the use of GPS tracking buoys attached to pen infrastructure to act as an 'early warning' of pen movements outwith the range that would normally be expected due to tidal or wind influences.

8. Develop a dedicated equipment management system allowing full overview and control of technical equipment including scheduling of all site maintenance and servicing requirements.

Carradale North storm Event

- What are we doing?

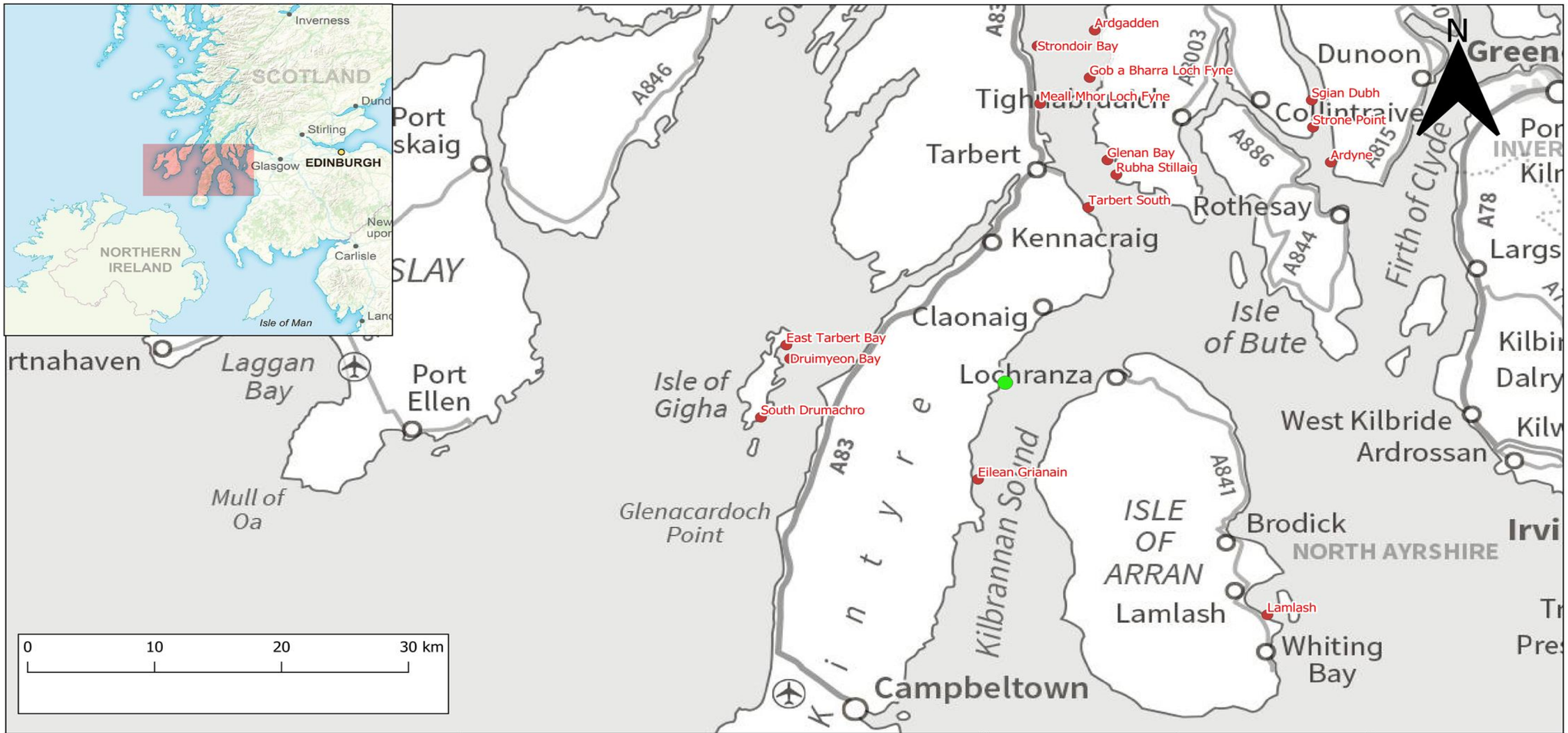
- A comprehensive genetics study has begun in Scotland to confirm wild salmon's current genetic profile and to track the potential for genetic change should interbreeding of farm-raised and wild salmon occur.

- The fish which escaped from the Carradale farm were sexually immature and will not spawn until winter 2021. Until that time, the fish will be subject to intense predation, reducing their numbers and potential for negative impact.

- The study will be managed by the wild-fish conservation body Fisheries Management Scotland, supported by Government scientists from Marine Scotland Science, and funded by Mowi Scotland, and will add to the understanding of one of the high-level pressures on Scotland's wild salmon.

- The Scottish Government has identified a wide range of pressures to include: over-exploitation, predation, invasive species, habitat loss, commercial fisheries and the effects of climate change. "

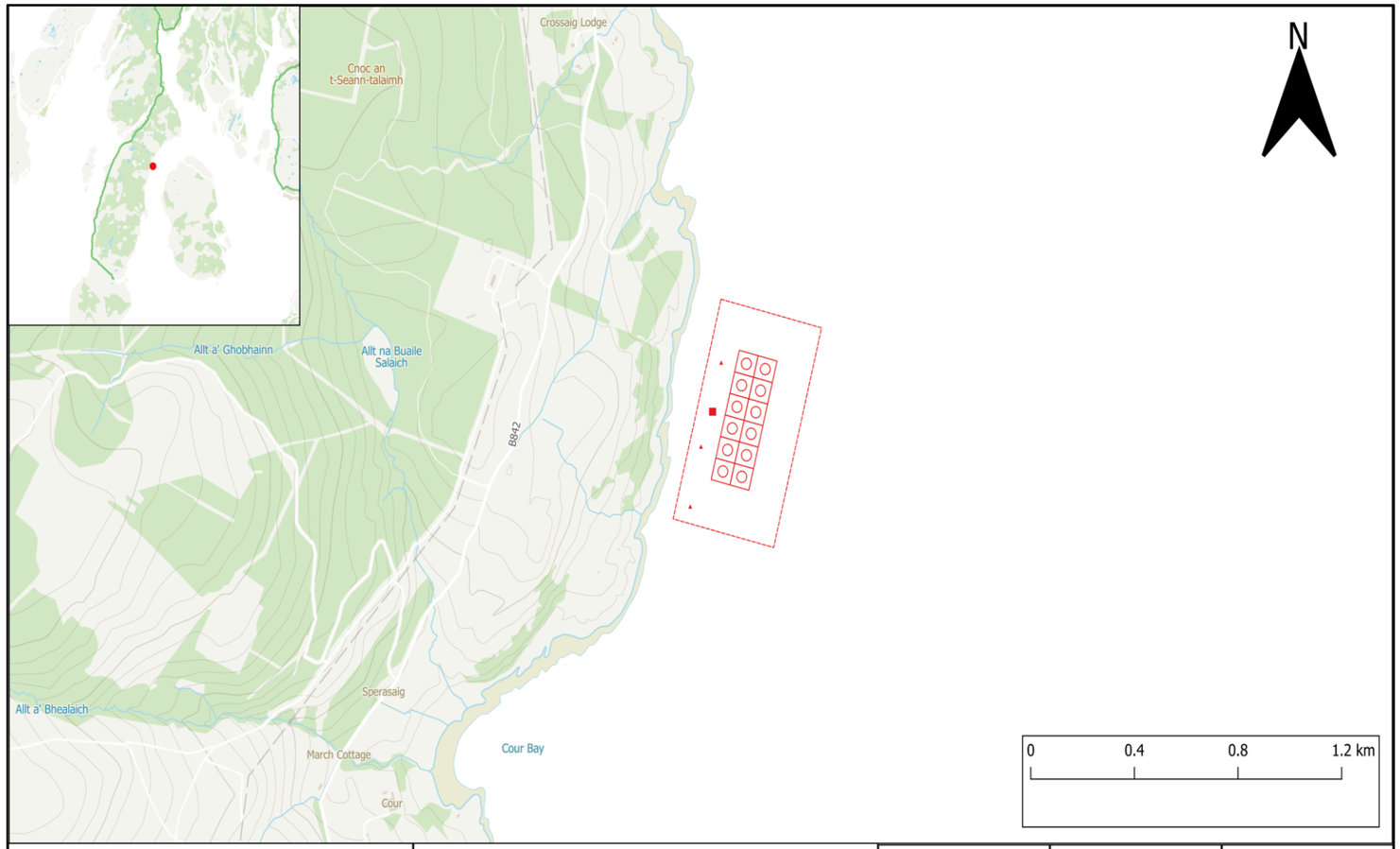
North Kilbrannan Proposal



NORTH KILBRANNAN FISH FARM	**Legend** Proposed location of North Kilbrannan farm Active farms in the region (Scotland's aquaculture data)	1:300000	2019-09-20	GM
MAP OF SITE LOCATION				
Figure 1: Proposed location of N Kilbrannam farm and other active farms in the area		**Scale**	**Date**	**Drawn**

North Kilbrannan Proposal

- Mowi has applied for planning permission for a new salmon farm, “North Kilbrannan”, in Kilbrannan Sound off the East coast of Kintyre.
- The site would comprise 12x120m circular cages with a 400t feed barge.
- North Kilbrannan would hold a maximum of 2475 tonnes of Atlantic salmon if permission is successful.
- SEPA has already approved an environmental licence for the site, after assessing for any potential adverse environmental effects.
- Mowi intends to service North Kilbrannan from Mowi’s shore base at Carradale harbour; we will improve and enhance the facilities there.



NORTH KILBRANNAN FISH FARM	**Legend**	1:13000	2020-05-19	GM
MAP OF SITE LOCATION	pens and grid mooring area ancillary moorings feed barge			
Proposed location and infrastructure for North Kilbrannan fish farm		**Scale**	**Date**	**Drawn**

North Kilbrannan Proposal

- The proposal will create 9 new jobs and support more than 100 supply chain jobs, a lot of them local.
- For every £ of investment in the farm, another £4 is returned to the Scottish economy through the multiplier effect.
- Mowi invests in our local communities directly and indirectly.
- Overall the site is located to have minimal visual impact whilst the cage mooring area is of compact design to reduce its overall size.
- The proposed location is very good from a farming perspective and shows Mowi is committed to the East Kintyre Peninsula.

How the North Kilbrannan fish farm would look from the B842, south of Cour Bay

Thank you

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MOWI