



Kames Bay and Marine Parade

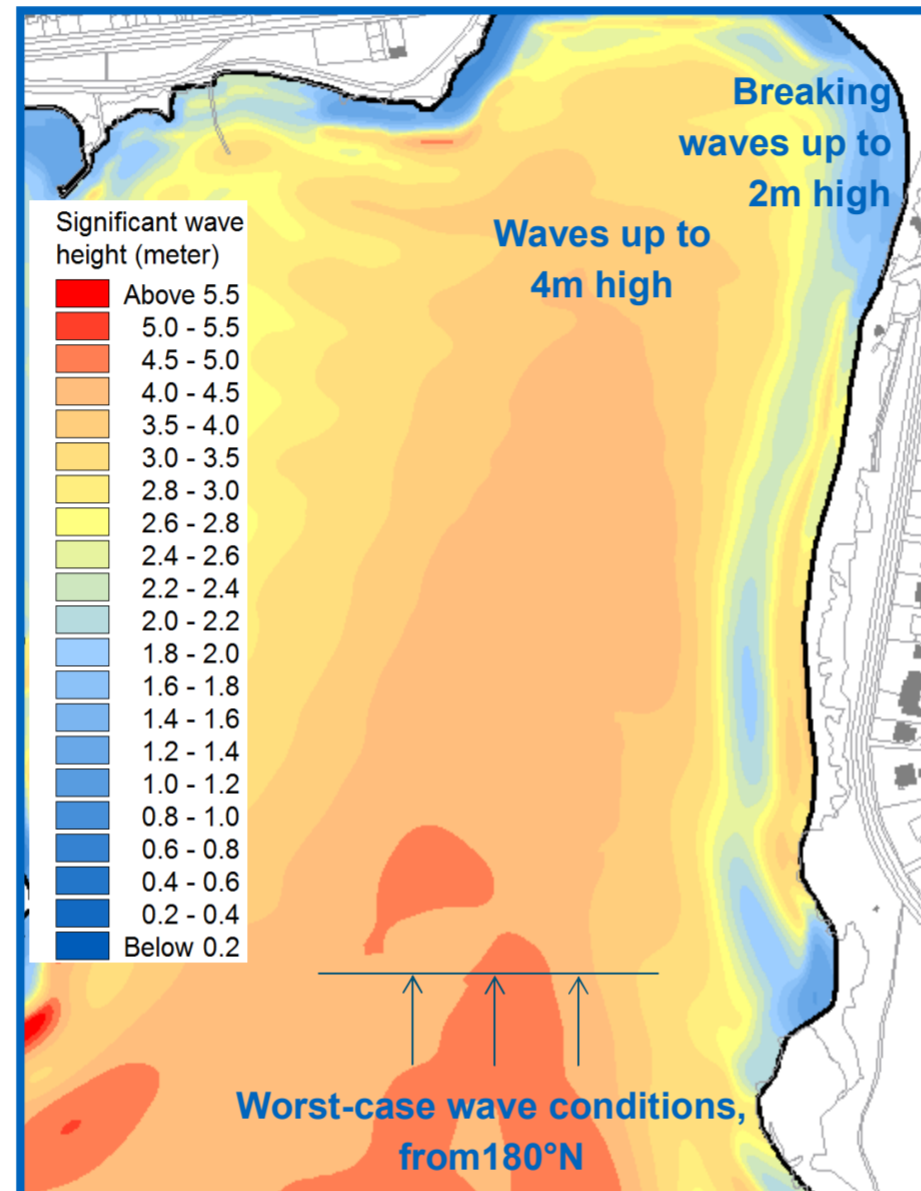
What is the hazard?

- Kames Bay and Marine Parade are very exposed to waves from the south and south west. Waves up to 4m high can occur close to the shore for storms with a 200 year return period (0.5% probability).
- On surge tides, waves can run up and over the grass area and low masonry revetment at the top of the Kames Bay beach.
- The coastal defences along Marine Parade have quite a low crest level.
- On a very high tide, large waves break over the flood wall and rock outcrops causing a dangerous level of wave overtopping.

What is at risk?

- Wave overtopping causes flooding of the roads and the level of overtopping can be dangerous for pedestrians and traffic, for storms occurring every year on average.
- Properties along Marine Parade and most of Kames Bay on West Bay Road are set back inland at a higher level. There is a low risk of internal flooding to properties, but the gardens are expected to flood most years.
- There is a risk of flood damages to properties along Kelburn Street.

Wave modelling results for existing conditions offshore of Kames Bay and Marine Parade (storms occurring every 200 years on average, 0.5% probability)



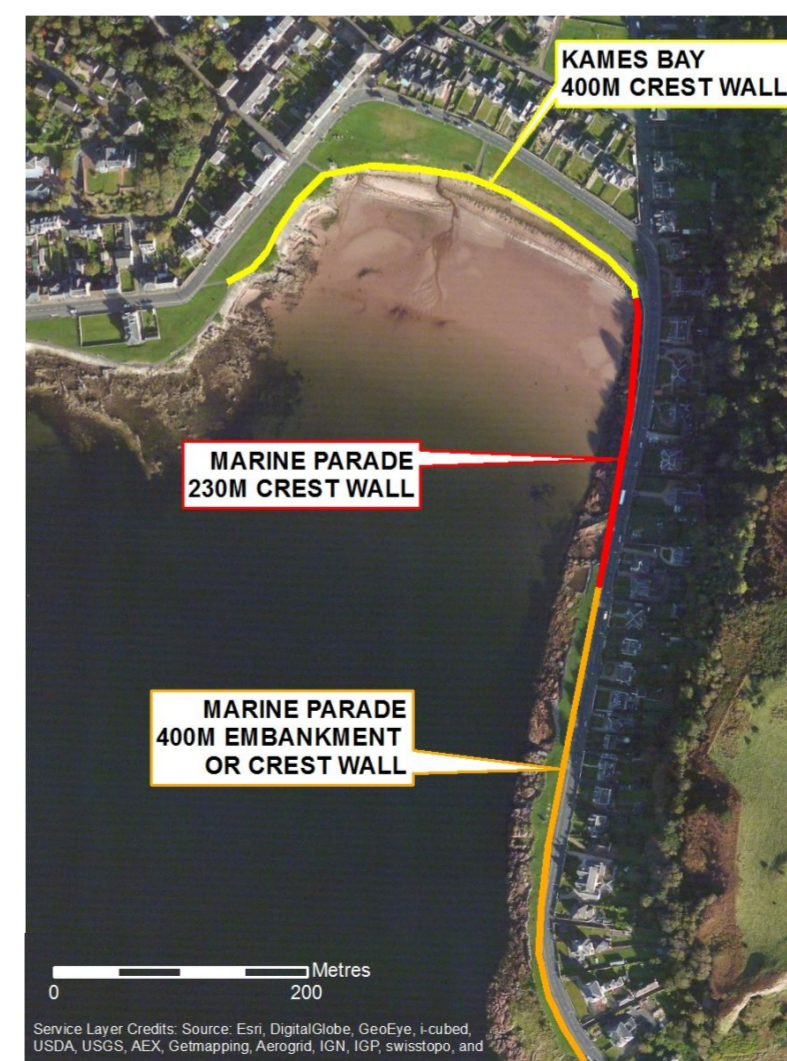
Proposed solution

Breakwaters or rock revetments are not viable solutions for this area due to deep water close to the shore and potential impacts on environmental conditions in Kames Bay.

To reduce wave overtopping along Marine Parade to a safe level, a 1.2m high wave return wall is needed. Along the southern half of Marine Parade, a higher defence level could be achieved by raising the level of the grass bank.

The road might still flood and there may be a safety risk to vehicles on a 200-year return period storm but the risks would be greatly reduced and flooding of properties would not be expected.

For Kames Bay, a 0.8m high wall would be needed around the landward side of the promenade, plus drainage improvements to the grass area to deal with residual overtopping.



Estimated costs:

- 400m flood wall (Kames Bay): £1,352,000
- 230m crest wall (Marine Parade): £1,166,000
- 400m embankment (Marine Parade): £1,352,000