

# Coastal hazards mapping

## Frequently asked questions (FAQs)



### Technical word alert!

There are a lot of climate science, natural hazards and planning technical terms in this FAQ. Please use the technical terms guide at the end for definitions and explanations.

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## Why do councils map coastal hazards?

Coastal hazard maps help us to understand the risks in the coastal environment and to plan for our district's future.

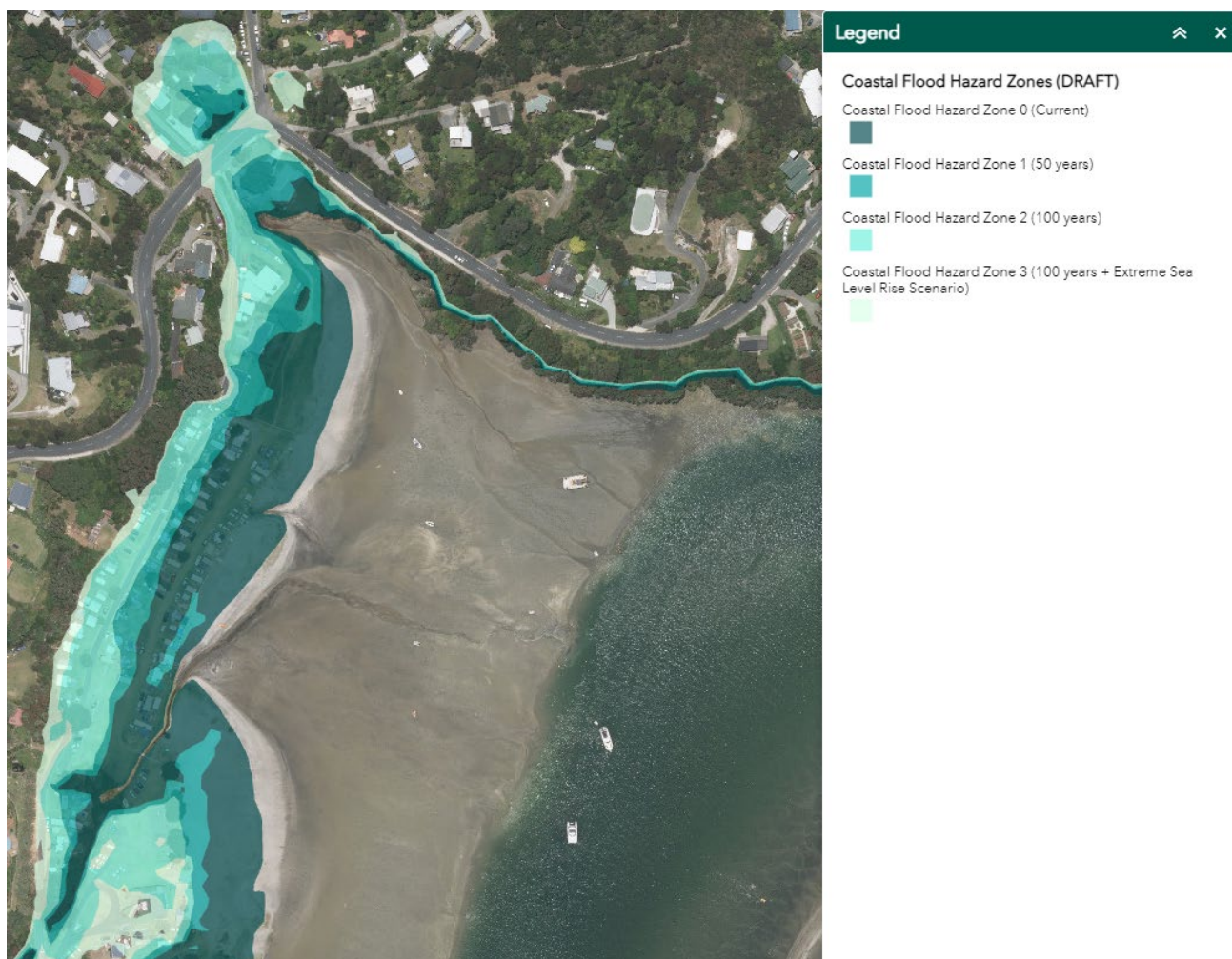
There are statutory and legislative requirements for councils to manage the significant risks from natural hazards and the effects of climate change. In particular, the New Zealand Coastal Policy Statement 2010 (Objective 5 and Policies 24-27) directs councils to identify areas that may potentially be affected by coastal hazards over a timeframe of at least 100 years.

Alongside the Northland Regional Council, Kaipara District Council has made the maps available to help start a conversation with our communities on coastal hazards and climate change. While the rate and magnitude of future sea level rise remains uncertain, we do know that rising sea levels and coastal hazards will increasingly impact development and infrastructure in Kaipara's coastal areas and affect our environments, cultures, and communities. The maps will assist Council to better prepare our communities for the future impacts of climate change and coastal hazards.

## What do the maps show?

The **coastal flooding** maps show four different scenarios as follows:

- Scenario 1 - Current day (CFHZ 0): Shows areas susceptible to coastal flooding in a 1-in-100-year storm event now and into the future with no allowance for sea level rise.
- Scenario 2 - 50-year projection (CFHZ 1): Shows areas susceptible to coastal flooding in a 1-in-50-year storm event, with a projected sea-level rise of 0.6m by 2080.
- Scenario 3 - 100-year projection (CFHZ2): areas susceptible to coastal flooding in a 1-in-100-year storm event, with a projected sea-level rise of 1.2m by 2130.
- Scenario 4 - 100-year 'extreme' projection (CFHZ 3): areas susceptible to coastal flooding in a 1-in-100-year storm event, with an 'extreme' sea-level rise scenario of 1.5m by 2130.

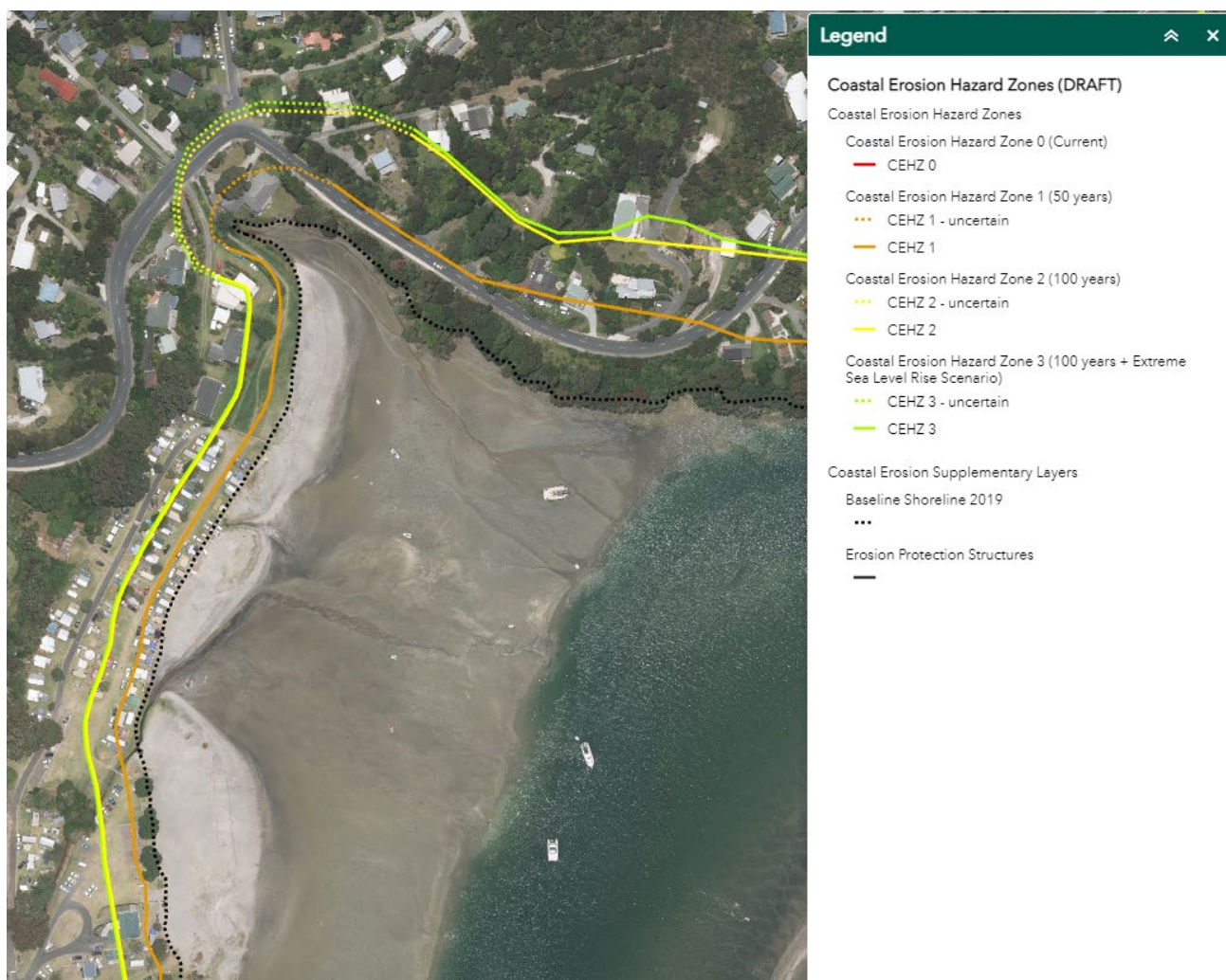


**Figure 1.** Example screenshot of coastal flood hazard zones on the Northland Regional Council web viewer (Mangawhai).

The **coastal erosion** maps contain four different scenarios as follows:

- Scenario 1 - Current day (CEHZ 0): areas currently susceptible to coastal erosion following the failure of an erosion protection structure, with no allowance for sea level rise. Note: this zone is only mapped where erosion protection structures are in place.
- Scenario 2 - 50-year projection (CEHZ 1): areas 'likely' at risk of coastal erosion over the next 50 years, with a projected sea-level rise of 0.6m by 2080.
- Scenario 3 - 100-year projection (CEHZ 2): areas 'potentially' at risk of coastal erosion over the next 100 years, with a projected sea-level rise of 1.2m by 2130.
- Scenario 4 - 100-year 'extreme' projection (CEHZ 3): areas 'potentially' at risk of coastal erosion over the next 100 years with an 'extreme' sea-level rise scenario of 1.5m by 2130.





**Figure 2.** Example screenshot of coastal erosion hazard zones on the Northland Regional Council web viewer (Mangawhai).

## How have climate change and sea level rise been factored into the models?

The rate and magnitude of future sea level rise remains uncertain, particularly for later this century and beyond. Scientists have advised that sea level will continue to rise and that the levels are likely to rise at an accelerated rate over time, meaning changes could happen earlier than predicted.

Sea level rise information applied to the different scenarios is based on the Ministry for the Environment's [Coastal Hazards and Climate Change Guidance](#) (2017). The guidance outlines the approximate years, from earliest to latest, when specific sea level rise increments could be reached across the wider New Zealand Sea level rise is measured in meters above 1986-2005 baseline levels. This is shown in the table below. For example, depending on the global warming scenario, sea levels could rise by .6 metres as early as 2070 or as late as 2130.

The representative concentration pathways (RCPs) shown below are the four comparable scenarios used to predict how future global warming may contribute to climate change and sea level rise. Broadly speaking, the warmer the climate becomes, the faster sea levels will rise. The warmest scenarios are represented by RCP8.5H+ and lower rates of warming are represented by RCP2.6.

The coastal hazards maps apply .6m SLR, 1.2m SLR and 1.5m SLR under RCP8.5 and RCP 8.5H+ per Ministry for the Environment's guidance.

SLR (metres)	Year achieved for RCP8.5 H+ (83%ile)	Year achieved for RCP8.5 (median)	Year achieved for RCP4.5 (median)	Year achieved for RCP2.6 (median)
0.3	2045	2050	2060	2070
0.4	2055	2065	2075	2090
0.5	2060	2075	2090	2110
<b>0.6</b>	<b>2070</b>	<b>2085</b>	<b>2110</b>	<b>2130</b>
0.7	2075	2090	2125	2155
0.8	2085	2100	2140	2175
0.9	2090	2110	2155	2200
1.0	2100	2115	2170	>2200
<b>1.2</b>	<b>2110</b>	<b>2130</b>	<b>2220</b>	<b>&gt;2200</b>
<b>1.5</b>	<b>2130</b>	<b>2160</b>	<b>&gt;2200</b>	<b>&gt;2200</b>

Modified from NIWA Report *Current and future climate of the Kaipara District* (Stephens et al., 2017)

## How will Council use the mapped information?

For the first three months the maps are in an advisory, draft period. After this period, Council will apply these maps in resource and building consents.

Kaipara District Council already uses hazard information, such as coastal hazard mapping, to inform Council processes and ensure Council is meeting its statutory obligations in respect to Land Information Memorandums (LIMs), Project Information Memorandums (PIMs), resource consents under the Resource Management Act 1991 and building consents under the Building Act 2004, as discussed in further detail below.

### *Resource Management Act 1991*

Under the RMA, councils are required to recognise and provide for the management of significant risks from natural hazards as a matter of national importance (s6(h)) and have particular regard to the effects of climate change (s7(i)).

National instruments prepared under the RMA also place requirements on councils. For example, the New Zealand Coastal Policy Statement 2010 (NZCPS) details existing national objectives and policies for coastal natural hazards. Specifically, policy 24 requires councils to identify coastal areas that will be potentially affected by coastal hazards over at least the next 100 years. Policy 25 sets the policy framework for planning decisions for land use and development in areas potentially affected by coastal hazards, with an emphasis on avoidance and reduction of risks. Additionally, Councils must give effect to the NZCPS and other national directives through Regional Policy Statements, Regional Plans and the District Plan.

The Northland Regional Policy Statement and Operative Kaipara District Plan (2013) set out the current management approaches for managing risks from natural hazards. These plans also include controls on the use of land for the purpose of the avoidance or mitigation of natural hazards.

### *Resource Consents*

Council processes already account for sea level rise and coastal hazards when processing and making decisions on resource consents. The existing Kaipara District Plan was declared Operative in 2013 and does not include the current, 2017, coastal hazards maps or the updated, 2021, coastal hazards maps. However, by reference in the Operative District Plan, Council takes the most up-to-date hazards maps into account in consents processes.

On any applicable proposal, planners will take into consideration the updated coastal hazards maps when processing consents and assess potential impacts. Consideration of the maps will depend on the type of activity proposed and the level of current and future risk.

Kaipara District Council will incorporate the updated maps into the District Plan through our ongoing District Plan review process.

### *Building Consents*

Council currently accounts for sea level rise and coastal hazards when processing and issuing decisions on building consents. Under the Building Act 2004, Council is required to take into account certain natural hazards, including coastal flooding, when determining whether to grant building consents on land subject to specified natural hazards, with certain exceptions (under s.71-74).

The Kaipara District Plan sets out a standard approach for industry professionals (e.g. architects, surveyors and engineers) and establishes acceptable floor and ground levels to be incorporated into building designs. Council takes a precautionary approach to the management of natural hazards in coastal areas, which helps people to avoid situations in which people or their property could be at risk from a potential hazard.

E1 of the Building Code requires buildings and site work to be constructed to protect people and other property from the adverse effects of surface water. Performance standard E1.3.2 requires that surface water, resulting from an event having a 2% AEP [i.e. 1 in 50-year event], shall not enter housing, communal residential and communal non-residential buildings.

### *Climate Change Adaptation*

Councils across Te Taitokerau Northland have been working on a region-wide approach to enable communities to work towards long-term adaptation planning for sea level rise and coastal hazards. The coastal hazards maps are an important starting step in long-term adaptation planning. The maps help Kaipara District Council start a conversation with communities on how best to respond to and prepare for a changing coastal environment.

Responding to the impacts of sea level rise is a big challenge for the Kaipara District Council and input from our communities is vital. Council will use these maps to hold a series of conversations planned in 2021 and 2022 about risk, vulnerability, and options and responses in relation to coastal hazards.

### **My property is included in the mapped area, what does this mean?**

If your property is located within an area identified as being exposed to coastal *flooding*, there is a risk that it may be directly affected by seawater during a storm event. Your property may also be cut off during elevated seas either now or in the future.

If your property is located within an area identified as being exposed to coastal *erosion*, there is a risk either now or in the future that the land may become unstable or be affected by the sudden or gradual loss of land.

For some properties, the main dwelling or other buildings are not included on the map, but some parts of the property may still be affected. For example, this could be part of a driveway, an area of a garden, or part of a paddock.

Scenario 1 maps show present day exposure. Scenarios 2,3, and 4 maps show exposure from 2060 onwards until after 2130. Please see the question - 'What do these maps show?' for more detail on the mapped scenarios and projected timeframes.

Please see the question - 'How will Council use the mapped information?' to find out more about how this information affects resource and building consents.

### **What should I do with this information?**

As of April 2021, Northland Regional Council has written to all newly affected landowners. As a landowner, you do not necessarily have to take any action as a result of receiving this information.

Starting this year, Kaipara District Council and Northland Regional Council will be working with communities on climate change adaptation options and actions. This is part of the developing regional adaptation strategy and part of Kaipara District Council's climate change work programme. We encourage you to become actively involved in the conversation about coastal hazards and the development of an adaptation approach for both the region and the district. To find out where Kaipara District Council is in our wider climate change adaptation work, visit our [climate change webpage](#).

If you would like to discuss the impacts of the mapping in terms of what you can do with your property, please contact Kaipara District Council Customer Services at 0800 727 059 or email [council@kaipara.govt.nz](mailto:council@kaipara.govt.nz).

If you have any questions concerning how the maps were developed, or you have information that you think may benefit this mapping work, get in touch with Northland Regional Council on 0800 002 004 or email [mailroom@nrc.govt.nz](mailto:mailroom@nrc.govt.nz).

### **Why is my property shown as being subject to flooding when it's not directly connected to the coast?**

The actual extent of the land subject to flooding will be dependent on its connectivity and distance to the coast. For example, low lying land not directly connected to the coast may appear on the maps due to its low elevation.

In some cases, areas may not be directly exposed to seawater flooding from overland flow. They could instead be exposed to 'ponding' flooding caused by an inflow of seawater through stormwater pipes, or through elevated groundwater levels and river flooding that may become more common as sea levels rise.



## **How will the hazard maps affect my property value or insurance now and in the future?**

As the mapped information will vary from property to property across the district, Council is not in a position to determine whether there will be any impacts on individual property values. However, if you have concerns, Council does recommend that you seek professional advice from a property valuation expert or your insurance provider.

The insurance industry does use local government-produced natural hazards data, along with their own assessments, to quantify natural hazard risk to determine insurance coverage and/or premiums.

## **How will this mapped information affect my Council rates?**

At this stage, Council is uncertain as to the implications on rates. This may depend on what future mitigation or adaption options the community chooses, and the associated cost of these options over varying timeframes, alongside future Council and central government decisions.

In general, how your property is rated depends on where you live, what services your property has access to and the value of the property. The annual rates requirement for each rate type is determined through the Council's Annual Plan and Long Term Plan process. View our [rates webpage](#) for more information about how Council sets rates.

## **What if I want to sell my property?**

When you are selling your property, you and your agent are legally obliged to share all relevant information about it to potential purchasers. It's also important that potential buyers undertake their own due diligence.

Under the Local Government Official Information and Meetings Act 1987, councils have an obligation to make natural hazards information available. District councils also have specific obligations under the Building Act 2004 to allow people to access information held by council about their property, or any property they are interested in.

The data used to prepare the maps will be applied on Land Information Memorandum (LIMs) and Project Information Memorandum (PIMs). The LiDAR derived data used in the mapping is also available by contacting Northland Regional Council.

## **My property is not shown on the maps even though I live near the coast, am I still affected?**

In regards to coastal flooding, there may be properties close to the coast that are not included in the mapping because they are elevated or because they are defended by structures or natural features which divert flooding.

For coastal erosion, there may be some properties located close to the coast which are not included in the mapping for various reasons, including: geology, geomorphology, and/or coastal processes of the location. In some cases, the coast line may be accreting instead of eroding.

However, this does not necessarily mean that these landowners and residents are not affected by coastal hazards. Rising sea levels and coastal hazards are likely to impact the 'everyday life' activities for Kaipara's coastal communities. For example, coastal flooding and coastal erosion could lead to loss of road access to individual properties or between villages, loss of delivery of services such as telecommunication, loss of access to coastal recreational reserves and coastal habitats, or loss of sacred sites of significance to Māori.

There may also be other natural hazards that should also be taken into consideration, such as stormwater flows, river and stream flooding or elevated groundwater levels that may become more prevalent as sea level rises. To learn more about climate change impacts on natural hazards visit Kaipara District Council's [climate change webpage](#).

## **What is not in the mapping?**

The coastal area is a dynamic, changing environment where a mix of natural hazard processes can occur, either individually or in combination.

In addition to the coastal hazards shown in Northland Regional Council's coastal hazards map viewer, there are other natural hazards that may impact the coastal area. The combined and ongoing effects of these natural hazards (where known) need to be considered holistically when considering options for future growth and development.

## **How was the mapping done?**

The maps were developed through technical assessments and modelling by different hazards and engineering consultants. In short, coastal flood hazard modelling considers elevation, land coverage, tidal information and applies sea level rise, storm surge and wave run-up scenarios.

Coastal erosion modelling considers geology, geomorphology, wave and tidal patterns, historical information and applies sea level rise, storm surge and wave run-up scenarios. If you would like more information on the technical process, you can contact Northland Regional Council by emailing [mailroom@nrc.govt.nz](mailto:mailroom@nrc.govt.nz) or by calling 0800 002 004.

Additionally, the technical reports can be found on the Northland Regional Council [technical reports page](#).

## What else is the Council doing about climate change?

Council is developing a work programme dedicated to climate change planning and response. This work programme will set out goals and actions on mitigation, adaptation, and Council leadership. Council will be working with Mana Whenua partners, residents, community groups, businesses, and industries, rangatahi, and additional stakeholders to decide on what climate action is appropriate for the various locations across the district. Visit our [climate change webpage](#) for more information.

## How can I find out more?

Contact Northland Regional Council if you would like to know more about the maps and how they were developed.

- Visit [www.nrc.govt.nz/coastalmaps](http://www.nrc.govt.nz/coastalmaps)
- Call 0800 002 004
- Email [mailroom@nrc.govt.nz](mailto:mailroom@nrc.govt.nz)

Contact Kaipara District Council if you would like to know more about the potential impacts of the mapping on your land.

- Visit our [natural hazards webpage](#)
- Call Customer Services at 0800 727 059
- Email [council@kaipara.govt.nz](mailto:council@kaipara.govt.nz)
- If you have a specific question about consents email [rmaconsents@kaipara.govt.nz](mailto:rmaconsents@kaipara.govt.nz)

## Help with technical terms

Technical term	Definition
<b>Annual exceedance probability (AEP)</b>	The chance or probability of a natural hazard event (such as a storm tide) of a particular size or greater occurring or being exceeded annually. It is usually expressed as a percentage. For example, a 1% AEP event has a 1% chance of occurring in any year. This can also be referred to as a 1 in 100-year event.
<b>Coastal accretion</b>	Occurs when there is a net gain of sediment (such as sand) in the immediate shoreline area, resulting in the beach profile elevating/advancing seaward. Simply put when a coastal area like a beach is 'growing' instead of eroding.
<b>Protection structures</b>	Structures that have the purpose or effect of protecting land from a coastal hazard including flooding or erosion. Protection structures can include stopbanks, seawalls, rock revetments and causeways.
<b>Flooding</b>	Freshwater or seawater flooding of land or buildings. Coastal flooding specifically relates to flooding from seawater. Also known as coastal inundation.
<b>Representative Concentration Pathways (RCP)</b>	A standard set of scenarios (pathways) which describe different climate futures, all of which are considered possible depending on how much greenhouse gases are emitted in future years. The different pathways include different global responses to greenhouse gas emission controls.
<b>Sea level rise (SLR)</b>	The rise in the level of the sea. Relative (or local) sea level rise includes both the change of the level of the sea (such as from global warming) and movement of the land (such as from earthquake subsidence) for the relevant coastal area. Tidal gauges measure relative sea level rise.

Technical term	Definition
<b>Storm surge</b>	The rise in the level of the sea caused solely by a storm; this is caused by wind and wave action and low barometric pressure.
<b>Storm-tide</b>	The observed seawater level during a storm.
<b>Wave run-up</b>	The additional height of waves as they break and run up the shore. Individual waves can move much farther up the beach slope than the mean waterline.