

COASTAL EROSION MANAGEMENT MANUAL

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GLOSSARY

TERMS

Accretion	<i>Accumulation of sediment which builds up land. May be the result of either natural (e.g. by the action of aeolian transport) or artificial (by the action of humans) activity.</i>
Annual Exceedance Probability	<i>A statistical term defining the probability of an event occurring annually; expressed as a percentage. (for example, a 5% AEP event has a 5% chance of being exceeded in any one year.</i>
Astronomical Tides	<i>The lowest and highest water level resulting from the effects of the moon and sun. Lowest Astronomical Tide is generally used as Chart Datum for hydrographic charts.</i>
Backshore	<i>That part of the beach/ coast landward of mean high water mark. The backshore area is generally only subject to wave activity during significant storm events, especially when they coincide with periods of high water.</i>
Bathymetry	<i>Underwater topography.</i>
Beach	<i>Beaches are accumulations of unconsolidated sediment (usually sand) that extend from the mean low tide line to the inland limit of the littoral zone (i.e. usually beyond the high water mark where there is a marked change in relief and/or to the line of permanent vegetation).</i>
Beach Material/ Sediments	<i>Granular sediments, usually sand, shell or gravel, which are transported by coastal processes.</i>
Beach Profile	<i>The outline or the shape of a beach, usually surveyed from a fixed position landward of the zone that can be disturbed by storm events, such as behind the frontal dune, extending seawards to or near the line of Mean Low Water.</i>
Bed Load	<i>The transportation of sediment through rolling, pushing and sliding of particles along the seabed by currents and turbulence.</i>
Beach Berm	<i>A nearly flat part of the beach or backshore formed by the deposition of beach material by wave action. Berms form at the limit of wave run-up on a beach. (Some beaches do not have berms, others may have one or more).</i>
Breaker Zone	<i>The area of coastal waters where shoaling effects cause waves to break. This typically occurs over an offshore bar.</i>

Clayey Bank	<i>(Referred to in Semi-hard coast) Steep faced banks of clay/soil material which typically occur in Auckland's estuaries and harbours.</i>
Cliffs	<i>A marked change in slope between the hinterland and shore where the material is predominantly rock.</i>
Coast	<i>An area of land (which may be several kilometres wide) that extends from the coastline to the area dominated by terrestrial geology and ecology.</i>
Coastal Erosion	<i>Long term (greater than 20 years) landward translation of the coastline.</i>
Coastal Geomorphology	<i>Physical features of the coastline, in relation to coastal geology and environmental processes.</i>
Coastal Marine Area	<p><i>The foreshore, seabed, coastal water, and the air space above the water –</i></p> <p>a) <i>Of which the seaward boundary is the outer limits of the territorial sea</i></p> <p>b) <i>Of which the landward boundary is the line of mean high water springs, except where that line crosses a river, the landward boundary at that point shall be whichever is the lesser of –</i></p> <p>(i) <i>One kilometre upstream from the mouth of the river; or</i></p> <p>(ii) <i>The point upstream that is calculated by multiplying the width of the river mouth by 5.</i></p>
Coastal Processes	<i>Collective term covering the action of natural processes on the coastline and seabed.</i>
Coastal Protection Works	<i>Any structure or works erected, placed or carried out on or adjacent to the foreshore to alter natural coastal processes, in order to protect land above MHWS against erosion or encroachment of the sea.</i>
Coastline	<i>The line that forms the boundary between the land and the sea (cf. shoreline)</i>
Cohesive Sediments	<i>Sediments such as clay, which are held together by electrolytic forces.</i>
Current	<i>A flow of water.</i>

Deep Water	<i>Depth of water where wave motion does not interact with the seabed. The limit of deep water is depths $> L/2$ (where L is wave length).</i>
Design Event	<i>The extreme wave or storm event which a structure or some other type of physical work is required to withstand in terms of structural integrity.</i>
Design Life	<i>The length of time a structure or some other type of physical work is required to function for.</i>
Diffraction	<i>The lateral transfer of energy along a wave crest, which occurs when a barrier such as a headland or breakwater interrupts wave progress.</i>
Dissipative Beach	<i>A beach with a wide, shallow gradient and therefore a large surface area for energy dissipation.</i>
Downdrift	<i>In the direction in which a current or sediment is moving.</i>
Dunes	<i>Mounds of loose sand formed by the wind, considered part of a soft coast.</i>
Dynamic Equilibrium	<i>A long term condition where erosion and accretion are in balance and the net position of the coast, despite minor fluctuations, remains stable.</i>
Ebb Current	<i>Outgoing tide, when water level decreases with time.</i>
Embayment	<i>An indentation in the coast forming an open Bay.</i>
Erosion	<i>A general term for the removal of material from exposed surfaces by the action of natural processes.</i>
Escarpment	<i>An almost vertical slope along the backshore which is caused by erosion. It may vary in height from centimetres to metres, depending on the nature and composition of the materials that make up the coast.</i>
Estuaries	<i>Semi-enclosed water bodies at the interface between rivers and the sea, in which tidal exchange and freshwater from land drainage are mixed.</i>
Flood Current	<i>Incoming tide, when water level increases with time.</i>
Foredune	<i>The dune lying between the incipient dune and the hinddune area. Some beaches may not have an incipient dune, in which case the most seaward dune is the foredune.</i>
Foreshore	<i>Any land covered and uncovered by the ebb and flow of the tide at mean spring tides.</i>
Geomorphology	<i>Physical features of the surface of the earth, in relation to geology</i>

	<i>and environmental processes.</i>
Geotextile	<i>A synthetic fabric used as a filter to control the amount of fine particles.</i>
Gross Sediment Transport	<i>The total amount of material moving past a given point in a year regardless of direction.</i>
Groyne	<i>A structure generally perpendicular to the coastline built to control the longshore movement of beach material.</i>
Hard Coast	<i>Rocky coastlines, typically cliff and shore platform.</i>
Hazard	<i>The interaction of coastal processes with human use, property or infrastructure, the action of which adversely affects or may adversely affect human life, property or assets.</i>
Headland	<i>A high, steep-faced promontory extending into the sea, usually composed of rock.</i>
Inshore	<i>In beach terminology, the zone of variable width extending from the low water line through the breaker zone.</i>
Intermediate Water	<i>Depths of water where wave motion and the seabed begin to interact. Water depths in the range $< L/2$, $> L/20$ (where L is wave length).</i>
Littoral Drift	<i>The movement of beach material in the littoral zone by waves and currents. Includes movement parallel (longshore transport) and perpendicular (onshore-offshore transport) to the coast.</i>
Littoral zone	<i>Beach and surf zone.</i>
Longshore	<i>Along (parallel) the shore.</i>
Longshore Drift	<i>Transport of waterborne sediments in a direction approximately parallel to the coast by longshore currents.</i>
Mean High Water Mark (MHW)	<i>The average height of all high water levels.</i>
Mean High Water Springs (MHWS)	<i>The average of the heights of each pair of successive high waters during that period of about 24 hours in each semi-lunation, when the range of the tide is greatest.</i> <i>The "line of MHWS" is determined by:</i> <i>(a) Determining the vertical height of the MHWS level; and then</i> <i>(b) Projecting that height onto the shore profile to determine the horizontal location of the MHWS contour.</i>
Mean Sea Level	<i>The average level of the surface of the sea.</i>
Morphology	<i>The visual shape of landforms.</i>

Nearshore	<i>Section of a beach profile which is between the breakpoint of the waves and the landward limit of wave action. Comprises the breaking zone, surf zone and swash zone.</i>
Net Sediment Transport	<i>Difference between updrift and downdrift sediment transport rates along a coast.</i>
Non-cohesive Sediments	<i>Coarse sediments which are not influenced by electrolytic forces, and act as individual sediment particles.</i>
Offshore	(i) <i>In beach terminology, the zone of variable width extending from the breaker zone to the seaward edge of the continental shelf.</i> (ii) <i>A direction seaward of the shore.</i>
Offshore Current	(i) <i>Any current in the offshore zone.</i> (ii) <i>Any current flowing in an offshore direction.</i>
Onshore	<i>A direction landward from the sea.</i>
Pocket Beach	<i>A beach bound between headlands.</i>
Reflected Wave	<i>That part of an incident wave that is returned seawards when a waver impinges on a beach, seawall or other reflecting surface. Reflection co-efficient is expressed as a ratio of the reflected to incident wave height.</i>
Reflective Beach	<i>A beach with a steep gradient and a small surface area for wave energy dissipation.</i>
Refraction	<i>Bending of waves which results in changes to wave length and speed along a wave crest as the wave is influenced by the bathymetry of the underlying seabed. Wave crests become more parallel with the coastline in shallow water.</i>
Revetment	<i>A cladding of stone, concrete or other material used to protect a sloping surface of a coastline against erosion. A revetment relies on the adjacent soil mass for strength.</i>
Revetment Structure	<i>A structure which relies on the adjacent soil mass for strength. It is a facing or wearing surface.</i>
Rip-rap	<i>A layer or facing of quarrystone, usually well graded within wide size limit, placed to prevent erosion.</i>
Rubble	<i>Loosely placed rock.</i>

Scour	<i>Removal of the material by hydrological forces, especially at the base or toe of a structure.</i>
Seawall	<i>A structure separating land and the sea, primarily designed to prevent erosion of the land due to wave action.</i>
Sediment Budget	<i>A process of quantifying the inputs of sediment to and losses of sediment from a specific coastal compartment to obtain the net sediment surplus or deficit.</i>
Semi-hard Coast	<i>Coastlines consisting of cohesive materials such as clays and semi-hard rock, typically clayey banks.</i>
Shallow Water	<i>Depths of water where wave motion and the seabed interact significantly. Water depths $< L/20$. (where L is wave length).</i>
Shoaling	<i>The transformation of a wave when it enters shallow water, typically by decreasing speed, shortening wave length and increase in wave height.</i>
Shore	<i>The area of land in immediate contact with the sea, including the zone between high and low water lines.</i>
Shoreline	<i>The intersection of a specified plane of water with the shore (e.g. the high water shoreline would be the intersection of the plane of mean high water with the shore).</i>
Significant Wave Height	<i>The average height of the highest of one third of the waves in a given sea state.</i>
Soft Coast	<i>Coastlines consisting of unconsolidated sediments such as sand, cobbles or shell, typically beaches and dunes.</i>
Spring Tides	<i>Larger variations in tidal water elevations due to particular alignments of the sun and moon. Resulting in Mean High Water Springs and Mean Low Water Springs.</i>
Storm Surge	<i>The combined effects of atmospheric pressure setup and wind setup, causing a localised increase in water elevation.</i>
Surf Zone	<i>Part of the nearshore, between the outermost breaker and the swash zone, characterised by broken waves moving in a landwards direction.</i>
Suspended Load	<i>Transportation of sediments (mainly clay, silt and fine sand particles) which are suspended in the water by turbulence and then transported by currents.</i>
Swash Zone	<i>The most landward component of the nearshore zone of a beach profile. The area where there is an up rush and back wash of water on the beach profile.</i>

Tides	<i>Changes in water level resulting from the gravitational effects of the sun and moon.</i>
Tombolo	<i>An accumulation of sediment between a beach and an offshore reef or island, caused by refraction and diffraction of waves around the reef or island.</i>
Transmission	<i>Passage of wave energy through an object (e.g. a breakwater).</i>
Updrift	<i>In the opposite direction to which a current or sediment is moving.</i>
Wave Climate	<i>The description of the variable wave characteristics (e.g. period, height and direction) over a long period of time at a specific site.</i>
Wave Height	<i>The vertical distance between a wave trough and a wave crest.</i>
Wave Length	<i>The distance between consecutive wave crests or wave troughs.</i>
Wave Period	<i>The time taken for consecutive wave crests or wave troughs to pass a given point.</i>
Wave Runup	<i>The vertical distance above mean water level reached by the uprush of water from waves across a beach or up a structure.</i>
Wave Setup	<i>The increase in water level within the surf zone above mean still water level caused by the breaking action of waves.</i>
Wind Setup	<i>The increase in mean sea level caused by the "piling up" of water on the coastline by the wind.</i>

ACRONYMS

AEE	<i>Assessment of Environmental Effects</i>
AEP	<i>Annual Exceedance Probability</i>
ARC	<i>Auckland Regional Council</i>
HAT	<i>Highest Astronomical Tide</i>
HW	<i>High Water</i>
LAT	<i>Lowest Astronomical Tide</i>
MHWS	<i>Mean High Water Springs</i>
MLWS	<i>Mean Low Water Springs</i>
MSL	<i>Mean Sea Level</i>
NIWA	<i>National Institute of Water and Atmospheric Research</i>
NZCPS	<i>New Zealand Coastal Policy Statement</i>
PRP:C	<i>Proposed Auckland Regional Plan: Coastal</i>
RMA	<i>Resource Management Act</i>
RPS	<i>Auckland Regional Policy Statement</i>
TLA	<i>Territorial Local Authority</i>

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