

Glossary of Scientific Terms

The following glossary has been accumulated from a number of sources including the Manly Hydraulics Laboratory website (http://mhl.nsw.gov.au/www/tide_glossary.htmlx), Ozestuaries and Ozcoasts websites (<http://www.ozcoasts.org.au/glossary.jsp>), the Department of Environment and Climate Change Estuary Management website (<http://dnr.nsw.gov.au/estuaries/index.shtml>), and from Toedson *et al.*, (1994). For more detailed information please visit the sources listed above.

Acid sulfate soils (ASS)	are soils and other soft sediments that contain iron sulfides (mostly pyrite (FeS ₂)) with typically smaller quantities of iron monosulfides (FeS).
Aeolian	the erosion, transport, and deposition of material by wind, and work best when vegetation cover is sparse, or absent.
AHD	Australian Height Datum
Algal bloom	proliferation of one or more phytoplankton species to high densities under favourable environmental conditions.
Alluvial	Relating to material deposited by running water.
Anaerobic	Environmental conditions where free oxygen is absent.
Anoxic	The condition of oxygen deficiency or absence of oxygen. Anoxic sediments and anoxic bottom waters are commonly produced where there is a deficiency of oxygen due to very high organic productivity and a lack of oxygen replenishment to the water or sediment, as in the case of stagnation or stratification of the water body.
ANZECC	Australian and New Zealand Environment Conservation Council
Aquatic ecosystem/system	Any body of water including lakes, streams, wetlands, reservoirs or estuaries and associated living organisms and non-living components functioning as a natural system.
Aquifer	A geological formation, group of formations, or part of a formation that stores and/or allows movement of groundwater.
Benthic	Pertaining to the seafloor (or bottom) of a river, coastal waterway, or ocean.
Biophysical	Relating to biological and physical processes.
Biota	Refers to all plant and animal life in an area.
Bioturbation	Are organisms, mainly worms or crustaceans, that disturb the sediment by burrowing or during feeding. Their activities mix the sediment layers and may cause substantial sediment resuspension.
BoM	Bureau of Meteorology
CAMBA	China Australia Migratory Bird Agreement
Catchment	The area of land which collects and transfers rainwater into a waterway.

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Chlorophyll a	is a green pigment found in plants. It absorbs sunlight and converts it to sugar during photosynthesis. Chlorophyll a concentrations are an indicator of phytoplankton abundance and biomass in coastal and estuarine waters. They can be an effective measure of trophic status [1], are potential indicators of maximum photosynthetic rate (P-max) [2] and are a commonly used measure of water quality. High levels often indicate poor water quality and low levels often suggest good conditions. However, elevated chlorophyll a concentrations are not necessarily a bad thing. It is the long-term persistence of elevated levels that is a problem
CMSS	Catchment Management Support System: designed to provide long term, broad area prediction of the impacts of different nutrient management strategies on water quality in Australian catchments.
Coastal barrier	a shore-parallel deposit of sand- to gravel-sized sediment, primarily formed through the action of waves and longshore currents, but generally modified by aeolian and tidal processes. Main components of a coastal barrier include beach, dune, and backbarrier flat. The coastal barrier may be largely separated from the mainland by a barrier lagoon or an estuary, or backed by other sedimentary deposits and bedrock.
Conceptual Model	A depiction or representation of the most current understanding of the major ecosystem features and processes (including biological, physical, chemical and geomorphic components) of a particular environment (e.g. estuaries).
DECC	Department of Environment and Climate Change
Denitrification	Conversion of oxidised forms of nitrogen, such as NO ₃ ⁻ to nitrogen gas (N ₂) by anaerobic bacteria.
Denitrification efficiency	is the percentage of inorganic nitrogen released from the sediment as dinitrogen gas (N ₂) during the decomposition of organic matter.
Deposition	The dropping of material which has been picked up and transported by wind, water, or other processes.
Dissolved oxygen	Measures of dissolved oxygen refer to the amount of oxygen contained in water, and define the living conditions for oxygen-requiring (aerobic) aquatic organisms.
DPWS	Department of Public Works and Services, now Department of Commerce.
Ebb tide	A falling tide - the phase of the tide between high water and the succeeding low water.
Ecosystem health	A term used to describe desired ecosystem conditions. the perception of health will vary depending on goals (i.e. production versus biodiversity).
EMC	Estuary Management Committee

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EMP	Estuary Management Plan
ENSO	El Nino Southern Oscillation, see Southern Oscillation.
Enterococci	Bacteria of the genus <i>Enterococcus</i> that may be used to determine the extent of faecal contamination of recreational waters. The <i>Enterococcus</i> group is a sub-group of faecal streptococci. It is differentiated from other faecal streptococci by growth at higher temperatures and salt concentrations in the laboratory, and by the ability to survive in marine waters under conditions that are unfavourable for most other faecal microorganisms.
Epifauna	Animals that live on the sediment but do not burrow into it.
Estuary	a coastal water body that receives inputs of water and sediment from fluvial and marine sources, and that is regularly or intermittently affected by tides. Generally formed through marine inundation of river valleys and other topographic depressions as a result of marine transgression or subsidence.
Eutrophication	Process of enrichment of nutrients, especially nitrogen and phosphorous.
Fecal coliform	The portion of the coliform bacteria group which is present in the intestinal tracts and faeces of warm-blooded animals. A common pollutant in water.
Fine sediment	A sediment comprising fine-grained material such as mud or clay particles.
Flood tide	A rising tide - the phase of the tide between low water and the next high tide.
Flood-tide delta	a type of tidal delta formed by the deposition of sandy sediment inward (landward) of an estuary entrance or a tidal inlet, primarily by flood-tidal currents.
Flushing	Exchange of water between an estuary or coastal waterway and the ocean.
Flushing rate	Time required for a volume of water equivalent to the estuary volume to mix with the ocean or the reservoir volume to be discharged.
Fluvial	Pertaining to a river or freshwater source
Geographic information system (GIS)	a computer-based system for the storage, manipulation, and analysis of spatial data.
Geomorphology/Geomorphic	The study of the nature and history of landforms and the processes which create them.
Groundwater	Water stored underground in rock fractures and pores.
Habitat	A specific type of place within an ecosystem occupied by an organism, population or community that contains both living and non-living components with specific biological, chemical and physical characteristics including life requirements (e.g. food, shelter and water).

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Heavy metals	Metallic elements with relatively high atomic weights such as lead, cadmium, rsenic and mercury. Generally toxic in relatively low concentrations to plant and animal life.
HHNP	Hat Head National Park
High water (HW)	The highest level reached by the water during one tidal cycle. Also called high tide.
Higher high water (HHW)	The highest of the high waters (or single high water) of any specified tidal day due to the declination AI effects of the Moon and Sun. HHW(SS) refers to the HHW of the Spring Solistice.
Highstand	a period of relatively high sea level, such as that currently prevailing globally
Holocene	The most recent geologic epoch of the Quaternary period of geologic time, extending from about 10,000 years ago to the present. The Holocene is the latest epoch of the Quaternary period.
Hydrographic survey	A survey of a body of water to determine several classes of data pertaining to it, such as depth, configuration and nature of the bottom, direction and force of the currents, heights and times of tides, location of fixed objects for navigation purposes, etc. These data form the basis for a navigational chart.
ICOLLs	Acronym for <i>Intermittently Closed and Open Lakes and Lagoons</i> , referring to Coastal Lagoons and some Wave-Dominated Estuaries under low runoff conditions.
Indian Spring Low Water (ISLW)	A tidal datum originated by Sir G. Darwin when investigating tides of India. An elevation depressed below mean sea level by the amount equal to the sum of amplitudes of the four main harmonic constituents: M2, S2, K1 and O1.
Infauna	Animals that live within the sediment.
Intertidal mud flats	are un-vegetated, generally low gradient and low energy environments that are subject to regular tidal inundation, and that consist of poorly- to moderately-sorted sandy mud and muddy sand.
Intertidal zone	The zone between mean high water and mean low water, subject to regular submersions and emersions, important for species zonation.
IPCC	Intergovernmental Panel on Climate Change
JAMBA	Japan Australia Migratory Bird Agreement
Ka	Thousand years before present
KSC	Kempsey Shire Council
Lag	A coarse-grained residue left behind after finer particles have been transported away, due to the inability of the transporting medium to move the coarser particles.

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Levee	Natural or artificial ridge or embankment to prevent flooding or restrict movement of water.
Littoral drift	movement of sediment along a beach by swash and backwash of waves that approach the shore obliquely.
Longshore current	coast-parallel current that develops when waves approach the shoreline at an oblique angle. Longshore currents typically operate along extended and relatively straight sectors of sandy shorelines, and are an important agent of sediment transport in coastal barrier systems.
Longshore drift (littoral drift)	movement of sediment along a beach by swash and backwash of waves that approach the shore obliquely.
Low water (LW)	The lowest level reached by the water during one tidal cycle. Also called low tide.
Macro-invertebrate	An animal without a backbone and large enough to be seen without magnification.
Mean diurnal tide level (MDTL)	A tidal datum. The arithmetic mean of mean higher high water and mean lower low water.
Mean high water (MHW)	A tidal level. The average of all high waters observed over a sufficiently long period.
Mean High Water Neaps (MHWN)	A tidal level. The average of all high water observations at the time of neap tide over a period time (preferably 19 years). Applicable in semi-diurnal waters only.
Mean High Water Springs (MHWS)	A tidal level. The average of all high water observations at the time of spring tide over a period time (preferably 19 years). Applicable in semi-diurnal waters only.
Mean low water (MLW)	A tidal level. The average of all low waters observed over a sufficiently long period.
Mean Low Water Neaps (MLWN)	A tidal level. The average of all low water observations at the time of neap tide over a period of time (preferably 19 years). Applicable in semi-diurnal waters only.
Mean Low Water Springs (MLWS)	A tidal level. The average of all low water observations at the time of spring tide over a period of time (preferably 19 years). Applicable in semi-diurnal waters only.
Microtidal	Coastal ocean or waterway with a low mean tidal range, e.g. less than 2 metres.
Mouth	The entrance of the coastal waterway, or the place where the sea meets or enters the coastal waterway.
Mud	Fine sedimentary material, typically comprising both inorganic (mineral) and organic material.
Neap tide	Tide smaller than the mean tidal range. Occurs about every two weeks, during half-Moons.
NEXSYS	Nutrient Expert System: an expert system for estimating non-point source nutrient export rates.
Organic material	Once-living material (typically with high carbon content), mostly of plant origin.

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Pleistocene	the earlier part of the Quaternary, between approximately 1.8 million and 10 000 years before present.
Prograde	The outward building of a sedimentary deposit, such as the seaward advance of a delta or shoreline.
Quaternary	in the geologic timescale, the most recent period in Earth's history, from approximately 1.8 million years ago to the present. Subdivided into the Pleistocene and Holocene.
Rehabilitation, remediation	Action to return a landform, vegetation, or water body to as near as original condition as practical. Implies making land and water resources useful again after disturbance.
Residence Time	The average time a hypothetical particle of water spends in solution between the time it first enters and the time it is removed from a coastal waterway.
Resuspension	Process in which sediment particles on the substrate are brought back into water column suspension by waves, tides, or wind.
Rocky reefs	feature a hard substrate that may occur at supra-tidal to sub-tidal elevations. Surfaces are generally non-depositional and sometimes erosional, and are usually dominated by epifaunal and algal communities.
Run-off	The difference in quantity between precipitation and the combination of evaporation and transpiration. The resulting water that supplies rivers and lakes after evaporation and transpiration have occurred. Includes water that soaks into the earth and is available as groundwater. Surface run-off does not include groundwater.
Saltmarsh	A coastal saltmarsh is a community of plants and animals that grow along the upper-intertidal zone of coastal waterways.
Salt-wedge	An intrusion of sea water into a coastal waterway in the form of a wedge along the seabed. The lighter fresh water from riverine sources overrides the denser salt water
Sand	grains with diameters between 0.06 mm to 2 mm
Seagrass	Marine flowering plants which generally attach to the substrate with roots.
Sedimentary environment	Refers to a characteristic suite of sediment types defined by mineralogical composition and grain size that are deposited within specific landform and energetic environments. Also known as 'sedimentary facies'.
Semidiurnal	Having a period or cycle of approximately one-half of a tidal day.
SEPP 14 Wetland	A wetland protected under State Environmental Planning Policy #14.
SEPP	State Environmental Planning Policy
Silt	grains with diameters between 0.002 mm to 0.06 mm

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Southern Oscillation (ENSO)	The El Nino - Southern Oscillation (ENSO) is a global climatic phenomenon marked by see-saw shifts in air pressure between the Indo-Australian and eastern regions of the Tropical Pacific. El Nino and La Nina refer to extreme phases in the 2-7 year cycle. During the warm 'El Nino' phase, the Australian seaboard cools, SE trade winds slacken and extended periods of drought are experienced in Australia. In the cool 'La Nina' phase, the seas around Australia warm, the SE trade winds intensify, and widespread rain and flooding occur in Australia. The strength and phase of ENSO is measure by the Southern Oscillation Index (SOI). Consult the Bureau of Meteorology web site for a more comprehensive discussion of ENSO.
Spring Tide/King Tide	Tide greater than the mean tidal range. Occurs about every two weeks, when the Moon is full or new.
Stormwater	Stormwater runoff comprises all forms of runoff from urban areas. It is enhanced by the web of impervious surfaces, including roads, roofs, footpaths, car parks and other structures, and is conveyed to coastal waterways by natural and man-made conduits and drains.
Strandplain	a coastal lowland formed through progressive shoreline progradation. Generally consists of beach ridges and associated features.
Stratification	Physical layering of the water column resulting from density differences caused by salinity or temperature variation.
Subtidal	Permanently below the level of low tide, an underwater environment.
Supratidal	The zone of shore between the mean high water mark and the astronomical high water (spring tide) mark.
Swale	a shallow topographic depression, particularly that associated with coastal barriers and alluvial plains.
Tidal Current	An alternating, horizontal movement of water associated with the rise and fall of the tide, these movements being caused by gravitational forces due to the relative motions of Moon, Sun and Earth.
Tidal Prism	Volume of water moving into and out of an estuary or coastal waterway during the tidal cycle.
Total Kjeldahl Nitrogen (TKN)	The sum of organic nitrogen and ammonia in a water body. Measured in milligrams per liter (mg/L). High measurements of TKN typically results from sewage and manure discharges to water bodies.
Total Nitrate and Nitrite	Nitrogen Nitrate (NO ₃) plus nitrite (NO ₂) as nitrogen. In lakes, most nitrate/nitrogen is in NO ₃ form. It is measured in milligrams per liter (mg/L). Elevated levels of nitrates/nitrogen are often caused by over application of fertilizers that leach into waterbodies.
Total Nitrogen (TN)	is the sum of nitrate (NO ₃), nitrite (NO ₂), organic nitrogen

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and ammonia (all expressed as N). Note that for laboratory analysis purposes, Total Kjeldahl Nitrogen (TKN) is a test performed that is made up of both organic nitrogen and ammonia.

Total Phosphorus (TP)

A nutrient essential to the growth of organisms, and is commonly the limiting factor in the primary productivity of surface water bodies. Total phosphorus includes the amount of phosphorus in solution (reactive) and in particle form. Agricultural drainage, wastewater, and certain industrial discharges are typical sources of phosphorus, and can contribute to the eutrophication of surface water bodies. Measured in milligrams per litre (mg/L).

Turbidity

The condition resulting from the presence of suspended particles in the water column which attenuate or reduce light penetration.

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