Attachment 1: Datasets describing high value waterways and water dependent ecosystems in the Central Coast, NSW

Indicator	Attribute Name in GIS layer	Description	Relevance to Legislation	Data Source & Metadata
Aquaculture Leases & Sustainable aquaculture strategy areas	AQUACUL	NSW Aquaculture leases and Oyster Industry Sustainable Aquaculture Strategy Areas. The original Aquaculture Leases in NSW Estuaries dataset contains spatial data of NSW Fisheries Recognised Aquaculture Sites (RAS) where an aquaculture lease is or has been in place over the site. The original survey of RAS was completed under a collaborative project between the Surveyor-General's Department and NSW Fisheries from 1996 to 2000. A spatial data layer of aquaculture leases was sourced directly from the NSW Department of Primary Industries (DPI) for this review. Water catchments were assigned a score of 5 if aquaculture leases were present, and the score was used to calculate the overall consequence score in the risk analyses for water catchments along the NSW coast. NSW Oyster Industry Sustainable Aquaculture Strategy (OISAS) identifies those areas within NSW estuaries where oyster aquaculture is a suitable and priority outcome. A spatial data layer of sustainable oyster aquaculture sites was sourced directly from the NSW DPI for this review. Water catchments were assigned a score of 5 if sustainable oyster aquaculture sites were present, and the score was used to calculate the overall consequence score in the risk analyses for water catchments along the NSW coast.	Fisheries Management Act 1994 (NSW), Oyster Industry Sustainable Aquaculture Strategy (OISAS)	**Department of Primary Industries (DPI), Fisheries** Aquaculture Leases • http://www.dpi.nsw.gov.au/content/fisheries/aquaculture/publications/industry-directory (Website for further information) Sustainable oyster aquaculture sites • https://www.dpi.nsw.gov.au/fishing/aquaculture/publications/oysters/industry-strategy (Website for further information)

Indicator	Attribute Name in GIS layer	Description	Relevance to Legislation	Data Source & Metadata
Critical habitat	CRITHAB	Critical Habitat as defined under the Threatened Species Conservation Act 1995 (replaced by the Biodiversity Conservation Act 2016). These are areas of land that are crucial to the survival of particular threatened species, populations and ecological communities. This layer contains Critical Habitat that has been declared and is now in operation. The first Critical habitat area was gazetted in 2001. This dataset is complete, insofar as only including all Critical Habitat areas that have been declared.	Biodiversity Conservation Act 2016 (NSW)	**Available from SEED** Critical Habitat • https://datasets.seed.nsw.gov.au/dataset/1af6b157-7266-4bf2-b066-1b7ff1405859 (SEED)
Coastal wetland area	CWET	This dataset includes coastal wetlands areas managed under the Coastal Management Act. The original dataset was prepared to provide a mechanism for the consideration of applications for development that is likely to damage or destroy Coastal Wetland areas with a view to the preservation of those areas in their natural state.	State Environmental Planning Policy (Coastal Management) 2018 (NSW)	**Department of Planning, Industry and Environment** State Environmental Planning Policy (Coastal Management) 2018 • https://www.legislation.nsw.gov.au/#/view/EPI/2018/106 (Website for legislation and further information)
Freshwater fish community status	FCOM	Freshwater fish community status represents the condition of fish communities at river reach scale across NSW. Fish community data were collected from three years of biological surveys across NSW. Within the framework of the Australian Hydrological Geospatial Fabric V2 surface hydrology network, was combined with attributes from the National Environmental Stream Attributes Database and River Styles® geomorphology. Generalised Additive Modelling was used to predict a fish community status for each river reach. Fish community condition classed as being in 'fair', 'good' or 'very good' condition is included in this layer.	Fisheries Management Act 1994 (NSW)	**Department of Primary Industries (DPI), Fisheries** Fish community • https://webmap.industry.nsw.gov.au/Html5Viewer/index.html?viewer=Fisheries_Data_Portal (Portal) • https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0007/669589/fish-communities-and-threatened-species-distributions-of-nsw.pdf (Metadata for further information)

Indicator	Attribute Name in GIS layer	Description	Relevance to Legislation	Data Source & Metadata
River Condition Index	HEVAE	Instream value of rivers, as per the River Condition Index (RCI), including streams classified as "medium", "high" or "very high". The RCI is a long-term reporting tool for changes in riverine condition and associated input attributes and is intended for use in state of the catchment and state of the environment reporting. The overall RCI is a composite score based on a number of subindices, such as the hydrological stress index to denote river reaches that have altered flow regimes as a result of water extractions, irrigation channels, dams, impoundments, or changes to natural geomorphology and/or ecological functions. The original spatial data layer on the hydrological stress for all river reaches in NSW was sourced directly from the NSW Department of Primary Industries Water.	Water management Act 2000 (NSW)	**Department of Planning, Industry and Environment** River Condition Index (RCI) • https://www.industry.nsw.gov.au/water/science/surface-water/monitoring/river-health/river-condition-index (Report for further information)
Important Wetlands	IMPWET	Important wetlands cited in the Directory of Important Wetlands in Australia (DIWA), Third Edition (EA, 2001), plus various additions for wetlands listed after 2001. This coverage is a compilation of various data sources and has been collected using a variety of methods. This dataset should therefore be used as an indicative guide only to wetland boundaries and locations. The data has been collated by the Federal Government Department of the Environment and Water Resources from various datasets including those supplied by the relevant State agencies. The criteria for the definition of a wetland used in this dataset is that adopted by the Ramsar Convention, namely: "areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters.		**Available from SEED** Directory of Important Wetlands in Australia (DIWA) • https://datasets.seed.nsw.gov.au/dataset/directory-of-important-wetlands-in-australia (SEED)

Indicator	Attribute Name in GIS layer	Description	Relevance to Legislation	Data Source & Metadata
Riparian lands watercourses and Vulnerable lands	LEPRIP	Local Environmental Plan (LEP) Riparian Land and Watercourses and Local Environmental Plan (LEP) Riparian Vulnerable Lands. The LEP Riparian Land and Watercourses dataset identifies land where development implications exist to reduce impacts in riparian lands and watercourses, as designated by a NSW environmental planning instrument. Riparian lands are a transition zone between the land and the watercourse that is important for maintaining or improving the shape, stability and ecological functions of a watercourse. The LEP Vulnerable Lands Protected Riparian dataset maps protected land, or in recent times State Protected Land (SPL) where maintenance of tree cover on certain land is covered by legislation. The purpose of protected land is to regulate the destruction of trees on land susceptible to erosion or land that is otherwise environmentally sensitive. This was administered under part IV, Division 2 of the Soil Conservation Act, 1938. Also, under the Native Vegetation Regulation 2005, vulnerable land, land that is steep or highly erodible, protected riparian land or special category land needed to be identified.	Standard Instrument (Local Environmental Plans) Order 2006, LEP	**Available from SEED** Local Environment Plan zones - Riparian Lands Watercourses • https://datasets.seed.nsw.gov.au/dataset/epi-riparian-lands-watercourses (SEED) Local Environment Plan zones - Vulnerable Lands Protected Riparian • https://datasets.seed.nsw.gov.au/dataset/vulnerable-land-protected-riparian73a9e (SEED)

Indicator	Attribute Name in GIS layer	Description	Relevance to Legislation	Data Source & Metadata
Macrophyte habitat	MACROPH	Macroyphyte habitat including Halophila, Ruppia, Mangrove, Posidonia, Saltmarsh or Zostera. The original Estuaries datasets contain the water boundary of each estuary in NSW up to its tidal limits and includes areas vegetated with the macrophytes. The macrophyte information comprising areas of seagrass (predominantly inundated), mangrove (regularly inundated) and saltmarsh (occasionally inundated) from the NSW Department of Primary Industries (DPI) Macrophyte (2005) spatial layer (Estuarine_Macrophytes) was incorporated into the temporary hydrological catchments and waterbody layer. This Macrophyte layer did not provide coverage for the Sydney Central Coast area of NSW. A gap existed between the Hunter River and Bellambi Lake catchments, leaving a total of 35 catchments whose estuarine boundary were not altered by the inclusion of macrophyte information. In addition to the Central Coast gap there were a further 36 catchments along the coast that did not have Macrophyte information.	**All:** Fisheries Management Act 1994 (NSW) **Saltmarsh:** Biodiversity Conservation Act, 2016 (NSW) Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth) **Mangrove & Saltmarsh:** Coastal Management Act, 2016 (NSW) **Selected populations of Posidonia:** Fisheries Management Act 1994 (NSW) – endangered population (Port Hacking, Botany Bay, Sydney Harbour, Pittwater, Brisbane Waters and Lake Macquarie) Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth) - Hawkesbury Manning Bioregion	**Available from SEED** Estuaries (including macrophyte detail) • https://datasets.seed.nsw.gov.au/dataset/estuaries-including-macrophyte-detail5ebff (SEED)
Aquatic Reserves and Marine parks	MPA	Marine Park and Aquatic Reserve boundaries in NSW as described in the NSW Marine Estate Management (Management Rules) Regulation 1999 and NSW Government Gazette (Aquatic Reserves). Polygons and associated data are identical to those submitted to the DoE for the CAPAD 2018.	Marine Estate Management Act 2014 (NSW)	**Available from SEED** NSW Marine Protected Areas • https://datasets.seed.nsw.gov.au/dataset/nsw-marine-protected-areas (SEED)

Waterways located within protected areas	PROWEST	Estuaries and Hydro Areas (water body areas or watercourses) that are located within National Parks and Wildlife Estate, Crown Reserve Estate, Declared Wilderness, Environmental Planning Instrument (EPI) - Drinking Water Catchments, or National Heritage List area and are therefore protected waterways. The original Estuaries datasets contain the water boundary of each estuary in NSW up to its tidal limits and includes areas vegetated with the macrophytes; seagrass, mangrove, and saltmarsh. A survey of the tidal limits was carried out between 1996 and 2005 by Manly Hydraulics Laboratory on behalf of the Department of Natural Resources. This dataset was developed under a new Monitoring, Evaluation and Reporting (MER) Program initiated by the NSW Government in 2007 to assess and better manage the health of natural resources across the State. The original Hydro area dataset defines the hydrography feature types as water body area and water course. It is a polygon feature class of the NSW Digital Topographic Database (DTDB), within the Hydrography theme. Hydro area feature class is also classified as perennial, non-perennial or mainly dry. A general criteria used for classification is that water is present for at least nine years out of ten years.	National Parks and Wildlife Act 1974 (NSW) Crown Land Management Act 2016 (NSW) Water management Act 2000 (NSW) State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011 (NSW)	**Available from SEED** Estuaries • https://datasets.seed.nsw.gov.au/dataset/estuaries12439 (SEED) National Parks and Wildlife Estate • https://datasets.seed.nsw.gov.au/dataset/nsw-national-parks-and-wildlife-service-npws-estate3f9e7 (SEED) Declared Wilderness • https://datasets.seed.nsw.gov.au/dataset/nsw-declared-wildernessea39b (SEED) EPI - Drinking Water Catchments • https://datasets.seed.nsw.gov.au/dataset/epi-drinking-water-catchment (SEED) National Heritage List • https://datasets.seed.nsw.gov.au/dataset/national-heritage-list (SEED) **Department of Finance, Services and Innovation** Hydro Area • https://sdi.nsw.gov.au/catalog/search/resource/details.page?uuid=%7BEC757E51-AE90-4438-9B07-ACA9012386B5%7D (Metadata for further information) **Department of Planning, Industry and Environment** Crown Reserve Estate • https://www.industry.nsw.gov.au/lands/what-we-do

Indicator	Attribute Name in GIS layer	Description	Relevance to Legislation	Data Source & Metadata
				(Webpage for further information)
Strahler streams located within protected areas	PROWSTRAH	All Strahler stream orders ≥1 that are located within National Parks and Wildlife Estate, Crown Reserve Estate, Declared Wilderness, Environmental Planning Instrument (EPI) - Drinking Water Catchments, or National Heritage List area and are therefore protected waterways.	National Parks and Wildlife Act 1974 (NSW) Crown Land Management Act 2016 (NSW)	**Department of Industry** Strahler Stream Order • https://www.industry.nsw.gov.au/__data/assets/pdf_file/0020/172091/Determining-Strahler-stream-order-fact-sheet.pdf (Fact Sheet for further information)
Ramsar listed wetland name	RAMSAR	Ramsar listed wetlands. The Ramsar Convention is an inter-governmental treaty that embodies the commitments of its member countries to maintain the ecological character of their Wetlands of International Importance. OEH is responsible for managing the majority of Ramsar wetlands in NSW.	The Ramsar Convention	**Available from SEED** Ramsar wetlands of NSW • https://datasets.seed.nsw.gov.au/dataset/ramsar-wetlands-of-nsw0c113 (SEED)
Stream geomorphic condition	RSCOND	Geomorphic condition of streams as per the River Styles assessment, including streams classified as "good" or "moderate". The River Styles Framework is a tool used to characterise geomorphology, which provides baseline information and understanding of river forms, processes, evolution, condition and trajectory. The spatial layer has 3 main primary layers, being River Style, Geomorphic Condition, and Recovery Potential.	Water Management Act 2000 (NSW)	**NSW Office of Water** River Styles • https://data.gov.au/data/dataset/06fb694b-d2f1-4338-ab65-a707c02f11d7 (Data and metadata)

Indicator	Attribute Name in GIS layer	Description	Relevance to Legislation	Data Source & Metadata
Stream recovery potential	RSPOT	Recovery potential of streams, as per the River Styles assessment, including streams classified as "conservation", "high recovery", or "rapid recovery". See above regarding the River Styles Framework.	Water Management Act 2000 (NSW)	**NSW Office of Water** River Styles • https://data.gov.au/data/dataset/06fb694b-d2f1-4338-ab65-a707c02f11d7 (Data and metadata)
Littoral rainforest area	SEPLIT	This dataset includes littoral rainforest area managed under the Coastal Management Act. The original dataset was derived from SEPP26 (Littoral Rainforest) mapping. It has been updated to include Littoral Rainforests within the Sydney metropolitan region. The data provides a mechanism for the consideration of applications for development that is likely to damage or destroy littoral rainforest areas with a view to the preservation of those areas in their natural state.	State Environmental Planning Policy (Coastal Management) 2018	**Department of Planning, Industry and Environment** State Environmental Planning Policy (Coastal Management) 2018 • https://www.legislation.nsw.gov.au/#/view/EPI/2018/106 (Website for legislation and further information)
Strahler stream order	STRAH4	Strahler stream orders of ≥ 4. Strahler Stream Order was created in 2012 using the RivEx (river network) tool and a topographic drainage layer within ArcMap.	Water Management Act 2000 (NSW)	**Department of Industry** Strahler Stream Order • https://www.industry.nsw.gov.au/__data/assets/pdf_file/0020/172091/Determining-Strahler-stream-order-fact-sheet.pdf (Fact Sheet for further information)

Indicator	Attribute Name in GIS layer	Description	Relevance to Legislation	Data Source & Metadata
Water dependent threatened or migratory bird sightings	TBIRDS	Water dependent threatened NSW or Commonwealth listed birds, and water dependent migratory birds included in bilateral migratory bird agreements with Japan (JAMBA), China (CAMBA) or the Republic of Korea (ROKAMBA) or the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention). The recorded sightings were obtained from NSW BioNet and refined to those within a 50m distance of the species and within the last 25 years (any dates >May 1994). The NSW BioNet Species Sighting data collection includes flora and fauna records maintained in the Species Sightings module of the NSW BioNet-Atlas application, at OEH. This BioNet data collection consists of over 13 million observation records sourced from incidental sightings and systematic flora and fauna surveys. Observations include plants, mammals, birds, reptiles, amphibians, some fungi and invertebrates (such as insects and snails listed under the Threatened Species Conservation Act) and some fish.	Biodiversity Conservation Act, 2016 Environment Protection and Biodiversity Conservation Act 1999 Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention) China-Australia Migratory Bird Agreement (CAMBA) Japan-Australia Migratory Bird Agreement (JAMBA) Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA)	**Available from SEED** NSW Bionet Species Sighting Data Collection • https://datasets.seed.nsw.gov.au/dataset/nsw-bionet-species-sightings-data-collection8a9c4 (SEED) • http://www.bionet.nsw.gov.au/ (Website for further information)
Water dependent threatened fauna sightings	TFAUNA	Water dependant fauna species (Commonwealth & State - threatened, critically endangered and vulnerable) fauna (excluding birds) sightings The recorded sightings were obtained from BioNet and refined to those within a 50m distance of the species and within the last 25 years (any dates >May 1994). See above about the NSW BioNet Species Sighting data collection.	Biodiversity Conservation Act, 2016 (NSW) Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)	**Available from SEED** NSW Bionet Species Sighting Data Collection • https://datasets.seed.nsw.gov.au/dataset/nsw-bionet-species-sightings-data-collection8a9c4 (SEED) • http://www.bionet.nsw.gov.au/ (Website for further information)

Indicator	Attribute Name in GIS layer	Description	Relevance to Legislation	Data Source & Metadata
Threatened Fish species distribution - Australian Grayling This indicator is not present in this dataset.	TFSAG	The predicted current distribution of Australian Grayling (*Prototoctes maraena*) in NSW. All available records of the species were collated and assessed for accuracy. For current distribution, only records after 1 January 1994 were used. Within the framework of the Australian Hydrological Geospatial Fabric V2 surface hydrology network, the records were associated with attributes from the National Environmental Stream Attributes Database. Modelling the current geographic distribution of each listed threatened freshwater aquatic species or population was undertaken using MaxEnt 3.3.3; a widely used species distribution modelling program that utilises presence records to generate probabilities of occurrence based on a suite of environmental variables quantified across the area of interest.	Fisheries Management Act 1994	**Department of Primary Industries (DPI), Fisheries** • https://webmap.industry.nsw.gov.au/Html5Viewer/index.html?viewer=Fisheries_Data_Portal (Portal) • https://data.gov.au/data/dataset/4332044c-059f-4059-bb7f-741147922243 (Website for further information)
Threatened Fish species distribution – Darling River Hardy This indicator is not present in this dataset.	TFSDRHH	The predicted current distribution of Darling River Hardy (*Craterocephalus amniculus*) in NSW. See above for information on the original data.	Fisheries Management Act 1994	**Department of Primary Industries (DPI), Fisheries** See above.
Threatened Fish species distribution - Eastern Freshwater Cod This indicator is not present in this dataset.	TFSEFC	The predicted current distribution of Eastern Freshwater Cod (*Maccullochella ikei*) in NSW. See above for information on the original data.	Fisheries Management Act 1994	**Department of Primary Industries (DPI), Fisheries** See above.

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Threatened Fish species distribution - Fitzroy Falls Spiny Crayfish	TFSFFSC	The predicted current distribution of Fitzroy Falls Spiny Crayfish (*Euastacus dharawalus*) in NSW. See above for information on the original data.	Fisheries Management Act 1994	**Department of Primary Industries (DPI), Fisheries** See above.
Threatened Fish species distribution - Macquarie Perch	TFSMP	The predicted current distribution of Macquarie Perch (*Macquaria australasica*) in NSW. See above for information on the original data.	Fisheries Management Act 1994	**Department of Primary Industries (DPI), Fisheries** See above.
Threatened Fish species distribution - Oxleyan Pygmy Perch This indicator is not present in this dataset.	TFSOPP	The predicted current distribution of Oxleyan Pygmy Perch (*Nannoperca oxleyana*) in NSW. See above for information on the original data.	Fisheries Management Act 1994	**Department of Primary Industries (DPI), Fisheries** See above.
Threatened Fish species distribution - Purple Spotted Gudgeon This indicator is not present in this dataset.	TFSPSG	The predicted current distribution of Purple Spotted Gudgeon (*Mogurnda adspersa*) in NSW. See above for information on the original data.	Fisheries Management Act 1994	**Department of Primary Industries (DPI), Fisheries** See above.

Indicator	Attribute Name in GIS layer	Description	Relevance to Legislation	Data Source & Metadata
Groundwater Dependent Ecosystems (Subsurface)	GDEsub	Groundwater Dependent Ecosystems reliant on sub surface expression of groundwater. The dataset expresses the potential for groundwater interaction/ use of vegetation ecosystems across Australia. It shows the ecosystems that use groundwater from beneath the water table or in the capillary zone. The dataset was created by analysing all vegetation polygons contained in existing maps, and the outcome of the analysis identified which of those polygons were potentially interacting with groundwater. The analysis initially identified vegetation polygons that were using another water source in addition to rainfall using remote sensing (MODIS and Landsat) data. These ecosystems are known as IDEs. The IDEs were then analysed further to determine whether the additional water source was likely to be groundwater, soil water or surface water. Where this additional information enabled a conclusion to be made on the potential of each vegetation IDE to be using groundwater, the ecosystem was included in the GDE layer ('Reliant on subsurface groundwater') and categorised as having either a high, moderate or low potential for groundwater interaction.	Water management Act 2000 (NSW)	**Bureau of Metrology** GDE Subsurface Presence of Groundwater • http://www.bom.gov.au/water/groundwater/gde/ (Website for further information)

Indicator	Attribute Name in GIS layer	Description	Relevance to Legislation	Data Source & Metadata
Groundwater Dependent Ecosystems (Surface)	GDEsurf	Groundwater Dependent Ecosystems that rely on groundwater that has been discharged to the surface, such as baseflow or spring flow. The dataset expresses the potential for groundwater interaction/use for river/spring/ wetland ecosystems across Australia. It shows the ecosystems that rely on groundwater that has been discharged to the surface, such as baseflow or spring flow. The dataset was created by analysing all river /spring/ wetland polygons contained in existing maps, and the outcome of the analysis identified which of those polygons were potentially interacting with groundwater. All river/spring/wetland polygons are considered to be accessing a source of water in addition to rainfall, and hence, they are all IDEs. The river /spring/ wetland ecosystems were analysed to determine whether the additional water source was likely to be groundwater, water in the unsaturated zone or surface water. Where this additional information enabled a conclusion to be made on the potential of each river/spring/wetland ecosystem to be interacting with groundwater, the ecosystem was included in the GDE layer ('Reliant on surface expression of groundwater') and categorised as having either a high, moderate or low potential for groundwater interaction.	Water management Act 2000 (NSW)	**Bureau of Metrology** GDE Surface Expression of Groundwater http://www.bom.gov.au/water/groundwater/gde/ (Website for further information)
Water dependent threatened flora sightings	TFLORA	Water dependant (Commonwealth & State - threatened, critically endangered and vulnerable) flora sightings The recorded sightings were obtained from BioNet and refined to those within a 50m distance of the species and within the last 25 years (any dates >May 1994). See above about the NSW BioNet Species Sighting data collection.	Biodiversity Conservation Act 2016 (NSW) Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)	**Available from SEED** NSW Bionet Species Sighting Data Collection - https://datasets.seed.nsw.gov.au/dataset/nsw-bionet-species-sightings-data-collection8a9c4 (SEED) - http://www.bionet.nsw.gov.au/ (Website for further information)