Avon-Heathcote Estuary / Ihutai

New Zealand

EAAF NETWORK SITE CODE FOR OFFICE USE ONLY:

E	A	A	F	1	3	7

Site Information Sheet on East Asian-Australasian Flyway Network Sites (SIS) – 2017 version

Available for download from http://www.eaaflyway.net/about/the-flyway/flyway-site-network/

Categories approved by Second Meeting of the Partners of the East Asian-Australasian Flyway Partnership in Beijing, China 13-14 November 2007 - Report (Minutes) Agenda Item 3.13

Notes for compilers:

1. The management body intending to nominate a site for inclusion in the East Asian - Australasian Flyway Site Network is requested to complete a Site Information Sheet. The Site Information Sheet will provide the basic information of the site and detail how the site meets the criteria for inclusion in the Flyway Site Network. When there is a new nomination or an SIS update, the following sections with an asterisk (*), from Questions 1-14 and Question 30, must be filled or updated at least so that it can justify the international importance of the habitat for migratory waterbirds.

2. The Site Information Sheet is based on the Ramsar Information Sheet. If the site proposed for the Flyway Site Network is an existing Ramsar site then the documentation process can be simplified.

3. Once completed, the Site Information Sheet (and accompanying map(s)) should be submitted to the Secretariat. Compilers should provide an electronic (MS Word) copy of the Information Sheet and, where possible, digital versions (e.g. shapefile) of all maps.

1. Name and contact details of the compiler of this form *:

Compiler 1

Full name:

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2. Date this sheet was completed *:

DD/MM/YYYY

1 June 2018

3. Country *:

New Zealand

4. Name of the Flyway Network site *:

Accepted English transcription of the Site's name.

Avon-Heathcote Estuary / Ihutai

5. Map of site *:

The most up-to-date available and suitable map of the wetland should also be appended to the SIS (only in digital format and shape file). The map must clearly show the boundary of the site.

Estuary of the Heathcote and Avon Rivers

6. Geographical coordinates (latitude/longitude, in decimal degrees) *:

Provide the coordinates of the approximate centre of the site and/or the limits of the site. If the site is composed of more than one separate area, provide coordinates for each of these areas.

Avon Heathcote Estuary / Ihutai: 43o32'30"S, 172o43'30"E

7. Elevation *: (in metres: average and/or maximum & minimum)

Near sea level.

8. Area *:

The total area of the site, in hectares. If the areas of discrete site units are known, please also list each of these together with the names (or labels) used to identify and differentiate these units.

881.474 ha

9. General overview of the site *:

A brief (two sentences) summary of the site, mentioning principal physical and ecological functions, and its importance for migratory waterbirds.

Avon-Heathcote Estuary / Ihutai is the largest, semi-enclosed shallow estuary in Canterbury, and hosts the largest concentrations of arctic waders and native oystercatchers on the east coast of the South Island.

10. Justification of Flyway Site Network criteria *:

Please provide waterbird count information (with year of latest count) that demonstrates that the site meets the criteria of the Flyway Site Network (Annex 1). That is:

- it regularly supports > 20 000 migratory waterbirds; or,
- it regularly supports > 1 % of the individuals in a population of one species or subspecies of migratory waterbird; or,
- it supports appreciable numbers of an endangered or vulnerable population of migratory waterbird
- it is a "staging site" supporting > 5 000 waterbirds, or > 0.25% of a population stage at the site.

A listing of the populations of migratory waterbirds covered by the East Asian – Australasian Flyway Partnership and the 1% thresholds is attached (Annex 3).

The "staging site" criterion is particularly difficult to apply and application of this should be discussed with the Secretariat. Also note that some species have several populations that are very difficult to distinguish in the field.

It regularly supports 1.8 per cent of the EAAF population of bar-tailed godwit - maximum count 2,052

11. Wetland Types *:

List the wetland types present (see Annex 2). List the wetland types in order of their area in the Flyway Network site, starting with the wetland type with the largest area.

G --	Intertidal mud, sand or salt flats.
F --	Estuarine waters; permanent water of estuaries and estuarine systems of deltas.
H --	Intertidal marshes; includes salt marshes, salt meadows, saltings, raised salt marshes; includes tidal brackish and freshwater marshes.
E --	Sand, shingle or pebble shores; includes sand bars, spits and sandy islets; includes dune systems and humid dune slacks.
K --	Coastal freshwater lagoons; includes freshwater delta lagoons.
J --	Coastal brackish/saline lagoons; brackish to saline lagoons with at least one relatively narrow connection to the sea.
D --	Rocky marine shores; includes rocky offshore islands, sea cliffs.
B --	Marine subtidal aquatic beds; includes kelp beds, sea-grass beds, tropical marine meadows.

12. Jurisdiction *:

Include territorial, e.g. state/region, and functional/sectoral, e.g. Ministry of Agriculture/Dept. of Environment, etc.

Territorial: Christchurch City Council (Coastal Burwood and Linwood Central Heathcote Community Boards) and Environment Canterbury.
Functional: Department of Conservation, North Canterbury Fish and Game Council and Ministry of Primary Industries.

13. Management authority *:

Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland and the title and/or name and email address/phone number of the person or persons in this office with direct responsibility for managing the wetland.

Christchurch City Council (CCC) and the Canterbury Regional Council (ECan) jointly share territorial responsibility for the Avon-Heathcote Estuary / Ihutai and have statutory responsibilities under the Resource Management Act 1991 for the management of water resources and the preparation of coastal plans.

The Department of Conservation is responsible for management of flora and fauna. The Ministry of Primary Industries manages the harvest of economically important marine fish species, sets Total Allowable Commercial Catch (TACC) and daily recreational fishing bag limits, and regulates fishing equipment and methods.

14. Bibliographical references *:

A list of key technical references relevant to the wetland, including management plans, major scientific reports, and bibliographies, if such exist. Please list Web site addresses dedicated to the site or which prominently feature the site, and include the date that the Web site was most recently updated. When a large body of published material is available about the site, only the most important references need be cited, with priority being given to recent literature containing extensive bibliographies.

Avon-Heathcote Estuary Ihutai Trust. 2012. Exploring an Estuary: A Field Guide to the Avon-Heathcote Estuary/Ihutai Christchurch. Avon-Heathcote/Ihutai Trust, Christchurch.

Avon-Heathcote Estuary Ihutai Trust. 2013 Our estuary. Ihutai Management Plan.

Bolton-Ritchie, L. and Main, M. 2005. Nutrient water quality in the Avon-Heathcote Estuary/Ihutai: Inputs, concentrations and potential effects Report No. U05/71 Environment Canterbury.

Cochran, U.A.; Reid, C.M.; Litchfield, N.J.; Marsden, I.; Clark, K.J.; and Ries, W. 2014. The Avon Heathcote Estuary as a Recorder of Coseismic Vertical Deformation. GNS Science Consultancy Report 2014/128

Cromarty, P. and Scott, D.A. (Eds.) 1996. A Directory of Wetlands in New Zealand. Department of Conservation, Wellington, New Zealand.

Crossland, A. 1993. Birdlife of the Avon-Heathcote Estuary and Rivers, and their margins. Department of Conservation Technical Report.

Crossland, A.C. 2003. Ecological Values and Wildlife Opportunities of the Lower Heathcote Valley Floodplain: Report for Parks & Waterways Unit, CCC.

Crossland, A.C. 2005. A national biodiversity hot-spot from the treatment of urban wastewater - the Bromley Oxidation Ponds and Te Huingi Manu Wildlife Refuge, Christchurch. Greening the City: Bringing Biodiversity Back into the Urban Environment, Proceedings of Royal New Zealand Institute of Horticulture Conference, 21-24 October 2003: 189-198.

Crossland, A.C. 2009. Monthly abundance of Eastern Bar-tailed Godwit Limosa lapponica baueri in Central Canterbury, South Island, New Zealand. Stilt 55: 16- 19.

Crossland, A.C. 2010. The Avon-Heathcote Estuary and the Bromley Oxidation Ponds, Christchurch, New Zealand: An important area for waterbirds. Stilt 57: 5- 10.

Crossland, A.C. 2013a. Wetland bird monitoring at the Avon-Heathcote Estuary and Bromley Oxidation Ponds, Christchurch: August 2009 to July 2010. Notornis 60: 151-157.

Crossland, A.C. 2013b. Checklist to the Birds of the Avon-Heathcote Estuary, the Bromley Oxidation Ponds & Environs. 9th Update to March 2013. Unpublished Report, Greenspace Unit, Christchurch City Council.

Jones, M.B. and Marsden, I. D. 2005. Life in the Estuary. Canterbury University Press, Christchurch 179 p.

Marsden, I.D. and Knox, G.A. 2008. Estuaries, harbours and inlets. In Winterbourne, M.J., Knox, G.A., Burrows, C. and Marsden, I.D. (ed.) The Natural History of Canterbury. Canterbury University Press, Christchurch. 429-444.

Owen, S J (Ed.) (1992). The Estuary: Where Our Rivers Meet The Sea. Parks Unit, Christchurch City Council: Christchurch [NZ].

Pauling, C., T.M. Lenihan, M. Rupene, N. Tirikatene-Nash and R. Couch. 2007. The State of the Takiwa, Te Ahua Tanga o te Ihutai. Cultural Health Assessment of the Avon-Heathcote Estuary and its Catchment. 76p.

Woods, C.; L.Hawke; M. Unwin; J. Sykes; G. Kelly; and M. Greenwood. 2016 Assessment of fish populations in the Avon-Heathcote Estuary/Ihutai: 2015 NIWA Client report CHC2016-025

Zeldis, J; Skilton, J; South, P; and Schiel, D. 2011 Effects of the Canterbury earthquakes on Avon-Heathcote Estuary / Ihutai Ecology Report No. U11/14 ISBN 978-1-927195-91-8
Report prepared for Environment Canterbury & Christchurch City Council September 2011

15. Physical features of the site:

Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.

The 880ha estuary is a geologically young coastal feature, located approximately 12 kilometres east of Christchurch city centre. Two thousand years ago the shoreline was 4-5 km inland from where it is today. Around 1500 years ago offshore sand from the continental shelf and the long-shore drift of sediments from the Waimakariri and Ashley rivers began building up to the landward edge of the current Estuary. By 450 years ago a spit had developed from sediment moved southward from the Waimakariri River, closing off what was formerly a small embayment and forming the estuary (IHMP 2013). The triangular-shaped estuary is now sheltered from open ocean swells, receiving freshwater from the Avon River/Ōtākaro and Heathcote River/Ōpāwaho that mixes with seawater brought in on the incoming tides. Average depth is 1.4 m at mean high water. The Heathcote River enters at the western apex of the triangle and the Avon River on the northern apex, with the mouth at the eastern apex. The total catchment of the estuary is about 190 km2. The estuary is tidal with about 8.5 x 106 litres of seawater entering on each mean flood tide (Bolton-Ritchie and Main 2005). Land underlying the estuary consists of alternate gravel layers sandwiched between finer silts and sands left by the rivers and the sea.

Tidal range is about 2.1 m for spring tides and 1.1 m for neap tides. Over 11 million cubic metres of water pass through the estuary twice each day. Tidal influences extend considerable distances up both rivers from the estuary proper. The mixing of saline and fresh water extends up the Avon River to the Wainoni Road Bridge, a distance of 8 km, and up the Heathcote River almost to the Radley Street Bridge, a distance of 11 km (Cromarty and Scott 1996), (these distances have changed post-quake due to district-wide subsidence).

The Estuary and South New Brighton Spit continue to be very dynamic systems. Aerial photography shows that the south end of spit has been very mobile over the last century. Up to 20 houses along the open-coast and estuary shores of the spit tip now occupy areas that were foreshore in the 1940s and, to a lesser extent, in the 1960s (IHMP 2013).

The coastal climate is less variable than landward areas to the west. Situated in the lee of the Port Hills and the volcanic mass of Banks Peninsula, the estuary and surrounding areas are largely sheltered from the direct impact of adverse weather from the south and are almost frost-free as a result. The average annual rainfall, as measured at the adjacent Bromley Sewage Purification Works, is 553 mm, and while it is distributed throughout the year, the autumn and spring months tend to be wettest (Cromarty and Scott 1996).

Recent earthquakes have added to the issues for the Estuary and its catchment. Significant changes occurred to the levels of the estuary bed and riverbeds, and riverbanks collapsed altering the alignment of channels. The tilting means that the tidal prism (the volume of water flowing into and out of it each tidal cycle) has been reduced by about 14 per cent, and area wetted mid-tide has shrunk by about 20 percent. Because of this the shape of the Estuary mouth and South New Brighton Spit are likely to change over the coming years.

A 2014 study investigated the effects of land deformation on saltmarsh plants and sediment around the estuary to document effects of earthquake on intertidal environments. Plants with a preference for living at certain elevations relative to tide levels had migrated landward at subsided sites and seaward at uplifted sites (Cochran et al. 2014).

The discharge of large volumes of sewage and silt-laden storm water into waterways changed the water quality and impacted on the ecology for some time (IHMP 2013).

16. Physical features of the catchment area:

Describe the surface area, general geology and geomorphological features, general soil types, and climate (including climate type).

The total catchment of this estuary is about 190 km2. The estuary is bounded on its three sides by completely different landforms:

- To the east - the 5 km sandspit
- To the west the flat, originally swampy land overlying the alluvial shingle of the Canterbury Plains, now occupied by Christchurch City.
- To the south the Port Hills forming part of the volcanic mass of Banks Peninsula.

Rainfall over the Canterbury Plains to the west of Christchurch and water from the Waimakariri River drain through the soil to these gravel layers, forming aquifers, and springs from these feed the Avon and Heathcote Rivers which drain to the estuary. Small streams flowing off the Port Hills also comprise approximately 30% of the Heathcote catchment. Major storms often cause localised flooding of the Heathcote River, but flooding of the Avon River is rare (Cromarty and Scott 1996).

17. Hydrological values:

Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.

The estuary is a semi-enclosed basin with a surface area of over 880 ha, within which the combined flows of the Avon and Heathcote Rivers meet and mix with seawater during each tidal cycle. It functions as a trap for sediments transported down the beds of the two inflowing rivers.
The Estuary provides a wide range of habitats for plant and animal species in the sand and mudflats, the wastewater treatment ponds, freshwater wetlands and surrounding grassland. Fundamental to sustaining the special values of the Estuary is maintaining the extent of the habitats, and the linkages between habitats and its wider catchments (IHMP 2012).

18. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Flyway Network site, and the ecosystem services of the site and the benefits derived from them.

The Estuary's extensive mudflats support an abundant and diverse invertebrate community (about 200 different species) and provide much of the food source for fish and birds (Cromarty and Scott 1996). The Estuary and wastewater treatment ponds are internationally recognised as a significant wetland for birds and are particularly known for large populations of migratory shorebirds. In the past 155 years, 141 bird species have been recorded (Crossland 2013b) and the site is unique for the variety of waders and wetland birds located in one place. Birds which can be found in the Estuary during late summer and autumn are geese, swan, shoveler, grey teal, ducks, pied and variable oystercatchers, bar-tailed godwit, banded dotterel, spur-winged plover, pied stilt, heron and royal spoonbill. The Estuary supports 5–6 per cent of the South Island pied oystercatcher population. Up until the 1980s the Estuary had a locally important fishery for yellow-eyed mullet, red cod, kahawai, flounder/patiki, eel/tuna, whitebait/inanga, trout and quinnat salmon. Around 37 species of fish are now found in the Estuary (IHMP 2013).

The original swamplands and native vegetation which once extended over much of the land to the west of the estuary and between the two rivers have been almost completely drained and cleared, to be covered by roads, housing and other forms of development generated by the City of Christchurch (Cromarty and Scott 1996). However, since the mid 2000's more than 40 ha of tidal wetland habitat has been restored or constructed around the margins of the estuary, including at Charlesworth Reserve, Bexley Wetland, McCormacks Bay and the Ferrymead/Heathcote Valley wetlands.

19. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the SIS.*

(Please add here the species which do not come under sec no 14)

The original swamplands and native vegetation that once extended over much of the land to the west of the Estuary and between the two rivers have been almost completely drained and cleared, to be covered by roads, housing and other forms of development. In the early 1850s plant communities on lands bordering the Estuary were dominated by raupo and flax, interspersed with tussock, fern and tutu on drier areas to the south and west, and sea rush backed by salt marsh ribbonwood along the South New Brighton Spit. Along the western and south-western shoreline the original plant communities have been replaced by open grassland bordering the Bromley settling ponds and Linwood paddocks (Cromarty and Scott 1996).

Vegetation along undeveloped sections of the Estuary shoreline is today dominated by salt marsh communities. Post the 2010-2012 series of earthquakes, the extent of these has rapidly diminished as tidal inundation and wave impact erosion has caused extensive dieback in beds of sea rush and oi oi saltmarsh along the South Brighton Spit extending to the Avon River mouth. In surviving areas, species such as glasswort, sea blite and sea rush grow immediately above mid-tide where salinities are highest (IHMP2013). Plant communities in the vicinity of the Avon River mouth include jointed wire rush Apodasmia similis, sea rush Juncus kraussii, New Zealand flax Phormium tenax, raupo Typha orientalis and saltmarsh Ribbonwood Plagianthus divaricatus, with communities of smaller plants closer to the shore which include native musk Mimulus repens, batchelor's button Cotula coronopifolia, remuremu Selleria radicans, sea primrose Samolus repens, glasswort Sarcocornia quinqueflora, salt grass Puccinellia stricta, orache Atriplex prostrata, and three-square Schoenoplectus pungens. Freshwater wetland plant associations formerly extended some distance up the Avon, throughout the Bexley wetland, Charlesworth Wetland, the Heathcote Loop and bordering McCormacks Bay (Cromarty and Scott 1996). However, much of this habitat has recently disappeared due to earthquake-caused tidal inundation and disappearance of freshwater artesian springs. These areas are partly being recolonized

by salt-tolerant plant communities.

Below the mid-tide level, patches of eelgrass Zostera novazelandica grow close to the Avon channel and cover an extensive area of many hectares along the eastern side of the estuary mudflats.

20. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 10. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the SIS.*

(Please add here the species which do not come under sec no 14)

The mudflats in the estuary provide a haven for hairy-handed crabs, mud snails (titoko), cockles, wedge shells (hanikura), whelks and microscopic creatures, which provide food for young fish and wading birds. Populations of small marine worms can exceed 20,000 per square metre (CCC). Thirty-seven species of fish have been identified from the Avon-Heathcote Estuary / Ihutai and catchment, though many occur only rarely. Species most commonly occurring are sand flounder Rhombosolea plebia, yellow-bellied flounder R. leporina, common sole Peltorhampus novaezeelandiae, yellow-eyed mullet Aldrichetta forsteri, kahawai Arripis trutta, globefish Contusus richei, spotty Pseudolabrus celidotus, common bully Gobiomorphus basalis and cockabully Tripterygion rigripenne. Other species less commonly encountered include long-finned eel Anguilla dieffenbachii, short-finned eel A. australis, whitebait Galaxias spp., brown trout Salmo trutta and quinnat salmon Oncorhynchus tshawytscha (Cromarty and Scott 1996, Marsden and Know 2008).

The Avon-Heathcote Estuary / Ihutai and the water treatment ponds are internationally recognised as an important wetland for birds, most notably in supporting 4.4% of the global population of SIPO (up to 4800+ birds); 28.7% of NZ scaup (up to 5700+ birds); 5.8% of NZ shoveler (7000+ birds) and more than 1% of bar-tailed godwit, pied cormorant, paradise shelduck, grey teal, variable oystercatcher, black-billed gull and caspian tern. Flocks of geese, swans, banded dotterel, spur-winged plover, pied stilt, white-faced heron, great egret and royal spoonbill, and many other birds can be found in the estuary during late summer-autumn.

127 species of birds have been recorded on or in the immediate vicinity of the estuary since 1980, and between 15,000 and 20,000 waterfowl make use of the estuary and water treatment ponds or their margins, peaking at up to 38,000 in late summer and autumn (Crossland, 1993; 2010; 2013a; CCC/OSNZ unpubl. data).
At various times of the year, the bird population of the wetlands may include up to 600 shags, 300 herons and spoonbills, 20,000 ducks, geese and swans, 600 pukeko, 8,000 shorebirds, 9,000 gulls, 1,000 terns and over 100 kingfishers (Cromarty and Scott).

21. Social, economic and cultural values:

a) Describe if the site has any general social, economic and/or cultural values e.g., fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values:

Nga¯i Tahu hold mana whenua and have ancestral and traditional relationships with Te Ihutai. Historically Te Ihutai was an extensive and highly valued area, part of a large network of waterways and wetlands around greater Christchurch extending to North Canterbury. It was a major source of mahinga kai (food gathering) for Nga¯i Tahu (and before them, Waitaha and Ngati Mamoe) who harvested shellfish, eels and waterfowl on the tidal flats. Ngai Tahu's special relationship with 49 bird species, 54 plant species, 7 fish species, 5 shellfish species and 6 marine mammal species some of which are present in the area, was recognised and acknowledged through the Ngai Tahu Claims Settlement Act 1998. The Estuary was an important trade route for flax and potatoes in exchange for steel adzes, axes, muskets and other goods. Several thousand campsites have been found along the sand dunes between

the estuary and the Waimakariri River mouth. A number of "kaika" (settlements) existed on the banks of the Avon and Heathcote Rivers, at Horseshoe Lake and at three other sites around the shores of the estuary.

A Māori Reserve (Te Ihutai) was established to recognise and preserve the fishing rights of Ngāi Tahu in this area as the settlement of Christchurch diminished the availability of mahinga kai resources. In 1956 this reserve was confiscated under the Public Works Act for the establishment of sewage treatment works. The discharge of human and industrial wastewater into the traditional food gathering area was and remains highly offensive to Ngai Tahu. This resulted at that time in a cultural disassociation with areas of ancestral connection for some of the whānau and hapū of Ngāi Tahu (IHMP2013.)
European settlement around the Estuary began in the 1840s, and the Estuary and rivers were main access routes to Christchurch. The Estuary was relied on for trade, food and social contact. Whaleboats, yachts, fishing vessels, paddle steamers, schooners and conventional steamers all used the Estuary to access Christchurch. Up until the early 1900s it was an important port, linking Kaiapoi, Sumner, and the bays of Banks Peninsula, carrying passengers, firewood, farm products, machinery, stock and general goods. Following the opening of the Lyttelton rail tunnel in 1867 much of this activity ceased.

In 1962 wastewater treatment ponds were added and although treatment was substantially improved, wastewater from 120,000 households (171,000 m3 per day at its peak) was discharged into the Estuary. In March 2010, the discharge was diverted into a three-kilometre long ocean outfall into Pegasus Bay.

The area is a significant social resource for Christchurch with walking, dog exercising, bird watching, sailing, photography, kayaking, wind surfing, rowing, and cycling.

b) Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning? (Double-click the checkbox to check and choose “Checked” under “Default Value” from “Check Box Form Field Options” window)

If yes, tick the box ❑ and describe this importance under one or more of the following categories:

I. Sites which provide a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland: ☐

II. Sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland: ☒

Sites of settlements are recognised at Te Rae Kura (Redcliffs), and Te Kai o Te Karoro (South New Brighton) for Waitaha iwi, Tauhinu Korokio (Mt Pleasant) for Ngati Mamoe, while Ngai Tahu settled at Kaiapoi and travelled to use the estuary. The estuary provided resources for food, houses, weaving materials and dyes as well as a network of waterways for travelling and trade.

III. Sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples: ☒

The Estuary has a non profit Trust formed by residents and supported by City and Regional council, that is working with the community and Ngai Tahu to coordinate and ensure the management of the estuary maintains its character and values for everyone. Ngai Tahu operate an environmental health monitoring scheme.

IV. Sites where relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland: ☐

22. Land tenure/ownership:

a) Within the Flyway Network site:

The bed of the Avon-Heathcote Estuary and the foreshore lands immediately above mean high water are Crown Land jointly managed by the Christchurch City Council and Canterbury Regional Council. The Regional Council Plan administered by the latter authority oversees water quality and human activities on the estuary, while the City Council administers activities on land above mean high water spring tides.

b) In the surrounding area:

The southern end of Southshore Sandspit, an extensive area of land occupied by the Bromley Sewage Works and settling ponds immediately to the north and west of the estuary, strips of land bordering the Avon and Heathcote river mouths, and various small areas adjoining the estuary to the south are public lands administered by the Christchurch City Council as various types of reserves. Land beyond these areas is largely held in private ownership and occupied for residential housing (Cromarty and Scott 1996.)

23. Current land (including water) use:

a) Within the Flyway Network site:

The estuary constitutes a locally important recreational fishery for yellow-eyed mullet, red cod, kahawai, flounders, eels and whitebait. The estuary is also very popular for a range of boating activities including, yachting, wind-surfing, kite-surfing, and kayaking (Cromarty and Scott 1996).

b) In the surroundings/catchment:

With the exception of the South Brighton Sandspit to the east of the estuary, the Linwood paddocks and the adjacent Bromley Wastewater treatment ponds bordering the shoreline to the west, the estuary is almost surrounded by private land which has been developed for housing or a variety of minor industrial uses. As a result of earthquakes residential density has reduced dramatically in the surrounding area.

24. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:

a) Within the Flyway Network site:

A series of large earthquakes between 2010 and 2012 affected greater Christchurch and the sensitive environment of the Estuary. The Estuary bed has risen near the Heathcote River in the south and dropped in the north near the Avon River by as much as half a metre, altering drainage and inter-tidal water levels. Riverbed levels have also changed and banks have collapsed altering the alignment of channels. Sand volcanoes from liquefaction erupted throughout the Estuary altering ecosystems. Issues facing the Avon-Heathcote Estuary as outlined in the Ihutai Management Plan 2013 include:

- Water Quality: Overall water quality improved with the diversion of wastewater to the ocean outfall in March 2010. Previously the treated wastewater was a significant contributor of nutrients, in particular ammoniacal nitrogen and dissolved reactive phosphorus, and bacterial and viral contamination.

  Effluent from the wastewater treatment ponds can contain copper, lead and nickel. The effluent from the Bromley treatment plant has been treated to remove 99.9% of harmful micro-organisms. Stormwater flowing into the estuary can contain zinc from galvanised roofs, house paint and oil from roads The run-off from the city and land around the estuary also contains bacteria and viruses from rubbish, offal and faeces from birds, dogs, rats and other animals, all entering rivers and drains. Birds on the water treatment pond banks and in the water contribute faeces bacteria to the pond and water discharging into the estuary. While the majority of bacteria decline after a day or so, bacteria can survive in the sediment of the

mudflats, which when disturbed by boats and storms, mixes with the water (Christchurch City Council.)
After heavy rains stormwater runoff, animal and bird wastes, and pollutants contribute to poor water quality. Even in ordinary circumstances much work remains to be done to improve the quality of the water entering from the Avon River/Ō tā karo and Heathcote River/Ō pā waho area.

- Sedimentation and Erosion: The growth of Christchurch has had a significant influence on the rate of erosion and sedimentation affecting the Estuary. Much of the sediment and silt and associated organic wastes and heavy metals deposited have been sourced from surface water and drains flowing into Christchurch's rivers all of which can impact on human health and safety and are detrimental to estuarine ecology. Improved storm water management was gradually reducing the amount of silt entering the Estuary. Liquefaction brought sand and silt to the surface on the land and in the rivers so the Estuary will continue to receive silt for years to come.

- Changes to Estuarine Ecology: Natural events such as earthquakes, storms and flood events, and human activities on or surrounding the Estuary directly impact on the habitats, wildlife and vegetation. Key threats to the ecological viability and health of the Estuary include:
    - Habitat change (development and reclamation around Estuary margin) although this is set to reverse with substantial clearance of suburban development at Bexley in the NW corner of the estuary and upstream along the Avon River.
    - Habitat disturbance from human activities
    - Water quality
    - Sedimentation
    - Toxic contamination (domestic, industrial and agricultural)
    - Nutrient levels, and the potential for eutrophication
    - Rubbish disposal and dumping
    - Dredging
    - Proliferation of plant and animal pests and diseases
    - Alteration in the quality, volume and rate of water flows, and
    - Pressure from insensitive and intensive recreation.

- Climate Change and Sea Level Rise: Recent estimations predict sea level rise to be nearly 1m by 2100 resulting in even greater changes to the Estuary. Increases in sea level will have impacts on the salinity and depth of water affecting estuarine habitat, and rate of sedimentation. Increased storminess due to climate change will mean greater wave run up on the Estuary margins impacting on the salt marsh habitat.

- Sea Lettuce and Agar weed Growth: Prolific sea lettuce and Agar weed (Gracilaria) growth has been a contentious issue for many years. Sea lettuce is a naturally occurring estuarine alga but with high levels of nutrients, particularly nitrogen, this alga has in some summers multiplied to become a nuisance plant.

- Open Spaces: Road reserves enabling access along the edge of the Estuary were provided over 150 years ago. Dynamic coastal processes have eroded some of this publicly vested land leaving private property now directly fronting the Estuary. Maintaining public access in these areas is a complex issue involving the rights of the public and property owners' rights to privacy. Sections of the shoreline of the Estuary currently closed to the public to protect wildlife and public assets are under increasing pressure to be opened for public access. Some non-consented structures such as jetties and boat ramps are found along the shoreline, which in some cases impede public access.

- Degradation of the Estuary Margins: The Estuary margins differ markedly from their natural form that existed prior to European settlement. Since this time natural wetlands and salt marshes have been lost to development including roads, housing, recreational facilities and the construction of wastewater treatment ponds. The soft shores have been replaced with hard edges, unnatural and often unsightly structures. In some places rubble has been used for reclamation. The overall result is a shoreline that detracts from the natural values and open space character of the Estuary. The most significant implications from this loss of natural estuary margin include:

- modification to water flows
- loss of important habitats for fish and birdlife
- removal of buffers for natural events such as flooding, sea level rise and shoreline erosion contamination from uncontrolled fill used during reclamations
- reduction in access

b) In the surrounding area:

25. Conservation measures taken:

a) List national and/or international category and legal status of protected areas, including boundary relationships with the Flyway Network site:

In particular, if the site is partly or wholly a World Heritage Site and/or a UNESCO Biosphere Reserve, please give the names of the site under these designations.

Most land immediately adjoining the estuary is publicly owned and designated under a variety of reserve categories including Local Purpose, Recreation, Plantation, Esplanade, Drainage and Waterworks Reserves. The seven treatment ponds and adjacent paddocks bordering the western side of the estuary have been designated as a Wildlife Management Reserve.

Ongoing effort over many years has been directed toward reducing sedimentation of the estuary, terminating or redirecting industrial and stormwater effluents from direct discharge into the estuary (Cromarty and Scott 1996.). There has also been considerable land allocation and resources put in to habitat restoration projects around the edge of the estuary, including the development of the 20ha Charlesworth Reserve, the 12.5 ha Bexley Wetlands and the 6+ ha Ferrymead/Heathcote valley Wetlands (all three comprising tidal basin construction and development of saltmarsh and coastal bush habitats) . Additional smaller-scale habitat restoration works include saltmarsh and coastal bush restoration at McCormacks Bay, South New Brighton Park, Sandy Point and and Southshore Spit. These projects are all at various stages of implementation by CCC.

b) If appropriate, list the IUCN (1994) protected areas category/ies which apply to the site (tick the box or boxes as appropriate, see Annex 3):

Ia ☐; Ib ☐; II ☐; III ☐; IV ☐; V ☐; VI ☐; N/A ☒

c) Does an officially approved management plan exist; and is it being implemented?:

The Avon-Heathcote Estuary / Ihutai Trust (the Trust) is a not-for-profit organisation formed by residents and supported by Christchurch City Council (CCC), Environment Canterbury (ECan) and community funders. The purpose of the Trust is to coordinate and ensure that the management of the Estuary enhances and maintains the special character and natural values of the Estuary for everyone.
The Trust works with partners ECan, CCC, Nga¯i Tahu and the community of Christchurch to

- protect and restore the natural values of the Estuary
- create education and research opportunities
- speak on behalf of and involve the community in restoration projects
- improve opportunities for participating in and viewing the estuary environment.

Objectives of the Plan

- confirm the values of the Avon Heathcote Estuary/Ihutai
- endorse a community vision for the Estuary
- highlight issues relevant for the management of the Estuary
- grow the relationship with Nga¯i Tahu that acknowledges and recognises Nga¯i Tahu's

relationship with Te Ihutai, and
- establish an Action Plan from which decisions for the sustainable management of the Estuary are made, including policy development, projects or future investment.

If yes, is it being implemented?: If no, is one being planned?

Communities working together will help to ensure the integrated management of the issues that affect the Estuary. The Trust is committed to working closely with the following parties to ensure effective integrated management of the Estuary:

Mana Whenua - Restoring the Estuary to a more natural state by improving the water quality will be a significant factor in re-building the relationship for Ngāi Tahu with Te Ihutai to the point where there is a desire for active participation and support for restoration.

Manaanui Iwi Management Plan
Ngāi Tahu rūnanga have created a Mahaanui Iwi Management Plan to provide guidance on Ngāi Tahu values, issues and aspirations for the recognition, protection and management of taonga (treasures) and cultural interests.

Regional and City Councils - The management of the Estuary is the responsibility of both CCC and ECan. CCC responsibilities are largely focused on the land margins outside the Coastal Marine Area while ECan is responsible for the control of activities on the Estuary, noise, water quality and quantity, discharges, extraction of sand, shingle and other natural materials, and hazard mitigation. In 2016 both Councils became signatories to a ten-year Memorandum of Understanding to support AHEIT to achieve its goals under the IMP.

Educational and Research Organisations – The support of Universities and other research organisations who undertake scientific and social studies of the Estuary are extremely important in making informed management decisions.

General Community - Greater education of the general public is needed to change the perception of the community toward the Estuary, to ensure they recognise it as a remarkable natural feature which has many uses (2013 Ihutai Management Plan.)

d) Describe any other current management practices:

26. Conservation measures proposed but not yet implemented:

e.g. management plan in preparation; official proposal as a legally protected area, etc.

The entire estuary area, lower rivers, associated wetlands, the Bromley wastewater treatment ponds and areas of significant lowland grassland habitat have recently been denoted Sites of Ecological Significance (SES) under the Christchurch City Council City Plan process.

The Avon-Heathcote Estuary / Ihutai Trust has commenced working with CCC and other agencies to develop an ecological management plan for the estuary. The Estuary Trust has also prepared an Ihutai Management Plan 2013 which details a 10 year work programme and is the basis for agreements and decisions to be made between the key partners including the Christchurch City Council, Environment Canterbury and Ngai Tahu.

The City Council is about to start community consultation to develop an Estuary Edge Master Plan. This plan is expected to be completed in 2017 and then will be a guide for future decision-making related to development, restoration and conservation measures on the edges of the estuary.

27. Current scientific research and facilities:

e.g., details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

Bird populations on the estuary are regularly monitored by regional parks staff of the Christchurch City Council and these data are shared with Birds New Zealand for the annual winter, summer and February wader counts. Other monitoring data are shared with DOC, Environment Canterbury, Fish & Game, etc. Birds New Zealand volunteers undertake regular observation of wader flocks and make frequent checks of banded birds, particularly Bar-tailed Godwits and Variable Oystercatchers.

Well over 100 reports, studies, theses and B.Sc. Honours projects which focus on a very wide range of ecological, biological, toxic waste, drainage and catchment management issues specifically associated with the estuary, are on record. Research and studies have been completed on riparian, landscape, historic and recreational values, erosion and sedimentation, contaminant and nutrient loadings, benthic invertebrates, fish stocks and movements, birdlife, riparian vegetation, educational use and floodplain management. Faculty staff and students of the University of Canterbury (Ilam campus) within the city have made significant contributions to past studies and research work on the estuary, as have also the staff of the Canterbury Regional Council and Christchurch City Council. The Lincoln University campus is situated approximately 15 km southwest of the city, and several Crown Research Institutions, including Landcare Research and the National Institute of Water and Atmospheric Research (NIWA), maintain regional offices within the greater Christchurch area (Cromarty and Scott 1996). The Avon-Heathcote Estuary Trust provides Phd students each year with a scholarship to conduct research including post earthquake changes in the estuary, cultural and social significance of the estuary and seagrass population. The results are presented at a public meeting and data made available on the website.

28. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:

e.g. visitors' centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

The Avon Heathcote Estuary / Ihutai Trust has initiated several community restoration projects in order to engage the general community in active support of the Estuary; the current projects focus on the Charlesworth Wetland Reserve and McCormacks Bay. In addition, the Trust (along with the city council) is an active partner in managing the annual Farewell to the Godwits event; this is now in its 15th year and has become a popular and well publicised way to celebrate the association of the Estuary with the godwits. The Trust is also an active partner (with McCormacks Bay Residents Association) in organising the annual Estuary Fest; this event is three years old but has also become a popular celebration of the Estuary. In addition the Trust regularly promotes the Estuary through informative articles in community newspapers and by organising annual planting days and information talks and walks for the general public, and businesses. Local schools are actively encouraged to undertake guided visits to the estuary where students conduct activities including plant identification, litter clean up, planting and bird observation. Rawhiti School being an example where students visit Charlsworth Wetland Reserve once every month as part of their school curriculum. The Estuary Trust is currently establishing a comprehensive monitoring project assisted by a senior ecologist to establish the success of the restoration project seeking evidence of presence on lizards and insects. Results are published on the "Nature Watch" website encouraging the public to take an interest in the topic of research.

29. Current recreation and tourism:

State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

The close proximity to the urban area makes the Estuary a significant social resource for the city. The Estuary provides for a wide variety of recreational uses including yachting, windsurfing, kiteboarding, fishing, picnicking, canoeing and kayaking, bird watching, walking and jogging. The margin of the Avon River and estuary provides a variety of experiences – passing through pine forest, native shrubs and tidal flats.

The Avon-Heathcote Estuary / Ihutai is an ideal place to go bird watching. The western shoreline next to the treatment ponds and the tip of Southshore spit offer some of the easiest close-up viewing of roosting waders and terns anywhere in the country.

Recently the Christchurch Coastal Pathway Group (http://www.christchurchcoastalpathway.org.nz/) in a community partnership with the City Council established a 4 metre wide pathway between Ferrymead and Sumner. The path will cater for children, pedestrians, cyclists, skateboarders and people with impaired mobility such as scooter and wheelchair users. The pathway is being included in infrastructure projects such as Ferrymead Bridge, Main Road three-laning, the causeway and Beachville sea wall, have all been completed. The recently launched Christchurch 360 trail (http://christchurch360trail.org.nz/) traverses parts of the western and southern sides of the estuary as part of a route that encircles Christchurch, taking in areas of natural and historical interest. Other tracks and trails include routes within Charlesworth and Bexley wetlands, around the shoreline of McCormacks Bay, within and around the edges of Southshore Spit tip; and along both sides of the Lower Heathcote river and saltmarshes. On the lower Avon and north-eastern side of the estuary the long-established coastal pathway provides access to much of the northern estuary shoreline.

30. Threats *:

Which of the following threats is present historically – when the threat stopped but the effects are still there (H), currently (C) or potentially (P)?

	Historically	Currently	Potentially
Residential and commercial development			
housing and urban areas	☒	☒	☒
commercial and industrial areas	☒	☐	☒
tourism and recreation areas	☒	☒	☒
Agriculture and aquaculture			
annual and perennial non-timber crops	☐	☐	☐
wood and pulp plantations	☐	☐	☐
livestock farming and ranching	☒	☒	☒
marine and freshwater aquaculture	☒	☐	☒
Energy production and mining			
oil and gas drilling	☐	☐	☐
mining and quarrying	☐	☐	☐
renewable energy	☐	☐	☒
Transportation and service corridors			
roads and railroads	☒	☒	☒
utility and service lines	☒	☒	☒
shipping lanes	☒	☐	☐

flight paths	☐	☐	☐
Biological resource use			
hunting and collecting terrestrial animals	☒	☒	☒
gathering terrestrial plants	☒	☐	☐
logging and wood harvesting	☒	☐	☐
fishing and harvesting aquatic resources	☒	☒	☒
Human intrusions and disturbance			
recreational activities	☒	☒	☒
war, civil unrest and military exercises	☐	☐	☐
work and other activities	☒	☒	☒
Natural system modifications			
fire and fire suppression	☐	☐	☐
dams and water management/use	☐	☐	☒
other ecosystem modifications	☐	☐	☒
Invasive and other problematic species and genes			
invasive non-native/alien species	☐	☐	☒
problematic native species	☒	☒	☒
introduced genetic material	☐	☐	☐
Pollution			
household sewage and urban waste water	☒	☒	☒
industrial and military effluents	☒	☐	☒
agricultural and forestry effluents	☒	☐	☐
garbage and solid waste	☒	☒	☒
air-borne pollutants	☒	☐	☐
excess energy	☐	☐	☐
Geological events			
volcanoes	☐	☐	☐
earthquakes/tsunamis	☒	☒	☒
avalanches/landslides	☐	☐	☒
Climate change and severe weather			

habitat shifting and alteration	☐	☒	☒
droughts	☐	☐	☒
temperature extremes	☐	☐	☒
storms and flooding	☒	☒	☒

Please write here any additional threats and comments/queries you have on the threats.

Annex 1: Criteria for the inclusion of sites in the Flyway Site Network

(From the Partnership Text)

To be considered for inclusion in the Flyway Site Network, this Partnership adopts the following criteria:

a. Convention on Wetlands (Ramsar, Iran, 1971) criteria for internationally important sites for migratory waterbirds. That is:

   Criterion 2: A wetland should be considered internationally important if it supports vulnerable, endangered, or critically endangered species or threatened ecological communities.

   Criterion 5: A wetland should be considered internationally important if it regularly supports 20,000 or more waterbirds.

   Criterion 6: A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird.

b. The staging criteria as applied under the Asia - Pacific Migratory Waterbird Conservation Strategy. That is:

   i. A staging site should be considered internationally important if it regularly supports 0.25% of individuals in a population of one species or subspecies of waterbirds on migration.

   ii. A staging site should be considered internationally important if it regularly supports 5,000 or more waterbirds at one time during migration.

c. Under exceptional circumstances a site can be nominated if it supports migratory waterbirds at a level or stage of their life cycle important to the maintenance of flyway populations. Justification of such nominations will be considered by the Partnership on a case by case basis.

Annex 2: Ramsar Classification System for Wetland Type

The codes are based upon the Ramsar Classification System for Wetland Type as approved by Recommendation 4.7 and amended by Resolutions VI.5 and VII.11 of the Conference of the Contracting Parties. The categories listed herein are intended to provide only a very broad framework to aid rapid identification of the main wetland habitats represented at each site.

To assist in identification of the correct Wetland Types to list in section 19 of the RIS, the Secretariat has provided below tabulations for Marine/Coastal Wetlands and Inland Wetlands of some of the characteristics of each Wetland Type.

Marine/Coastal Wetlands

A -- **Permanent shallow marine waters** in most cases less than six metres deep at low tide; includes sea bays and straits.

B -- **Marine subtidal aquatic beds**; includes kelp beds, sea-grass beds, tropical marine meadows.

C -- **Coral reefs**.

D -- **Rocky marine shores**; includes rocky offshore islands, sea cliffs.

E -- **Sand, shingle or pebble shores**; includes sand bars, spits and sandy islets; includes dune systems and humid dune slacks.

F -- **Estuarine waters**; permanent water of estuaries and estuarine systems of deltas.

G -- **Intertidal mud, sand or salt flats**.

H -- **Intertidal marshes**; includes salt marshes, salt meadows, saltings, raised salt marshes; includes tidal brackish and freshwater marshes.

I -- **Intertidal forested wetlands**; includes mangrove swamps, nipah swamps and tidal freshwater swamp forests.

J -- **Coastal brackish/saline lagoons**; brackish to saline lagoons with at least one relatively narrow connection to the sea.

K -- **Coastal freshwater lagoons**; includes freshwater delta lagoons.

Zk(a) – **Karst and other subterranean hydrological systems**, marine/coastal

Inland Wetlands

L -- **Permanent inland deltas**.

M -- **Permanent rivers/streams/creeks**; includes waterfalls.

N -- **Seasonal/intermittent/irregular rivers/streams/creeks**.

O -- **Permanent freshwater lakes** (over 8 ha); includes large oxbow lakes.

P -- **Seasonal/intermittent freshwater lakes** (over 8 ha); includes floodplain lakes.

Q -- **Permanent saline/brackish/alkaline lakes**.

R -- **Seasonal/intermittent saline/brackish/alkaline lakes and flats**.

Sp -- **Permanent saline/brackish/alkaline marshes/pools**.

Ss -- **Seasonal/intermittent saline/brackish/alkaline marshes/pools**.

Tp -- **Permanent freshwater marshes/pools**; ponds (below 8 ha), marshes and swamps on inorganic soils; with emergent vegetation water-logged for at least most of the growing season.

Ts -- **Seasonal/intermittent freshwater marshes/pools on inorganic soils**; includes sloughs, potholes, seasonally flooded meadows, sedge marshes.

U -- **Non-forested peatlands**; includes shrub or open bogs, swamps, fens.

Va -- **Alpine wetlands**; includes alpine meadows, temporary waters from snowmelt.

Vt -- **Tundra wetlands**; includes tundra pools, temporary waters from snowmelt.

W -- **Shrub-dominated wetlands**; shrub swamps, shrub-dominated freshwater marshes, shrub carr, alder thicket on inorganic soils.

Xf -- **Freshwater, tree-dominated wetlands**; includes freshwater swamp forests, seasonally flooded forests, wooded swamps on inorganic soils.

Xp -- **Forested peatlands**; peatswamp forests.

Y -- **Freshwater springs; oases**.

Zg -- **Geothermal wetlands**

Zk(b) – **Karst and other subterranean hydrological systems**, inland

Note: "**floodplain**" is a broad term used to refer to one or more wetland types, which may include examples from the R, Ss, Ts, W, Xf, Xp, or other wetland types. Some examples of floodplain wetlands are seasonally inundated grassland (including natural wet meadows), shrublands, woodlands and forests. Floodplain wetlands are not listed as a specific wetland type herein.

Human-made wetlands

1 -- **Aquaculture** (e.g., fish/shrimp) **ponds**

2 -- **Ponds**; includes farm ponds, stock ponds, small tanks; (generally below 8 ha).

3 -- **Irrigated land**; includes irrigation channels and rice fields.

4 -- **Seasonally flooded agricultural land** (including intensively managed or grazed wet meadow or pasture).

5 -- **Salt exploitation sites**; salt pans, salines, etc.

6 -- **Water storage areas**; reservoirs/barrages/dams/impoundments (generally over 8 ha).

7 -- **Excavations**; gravel/brick/clay pits; borrow pits, mining pools.

8 -- **Wastewater treatment areas**; sewage farms, settling ponds, oxidation basins, etc.

9 -- **Canals and drainage channels, ditches.**

Zk(c) -- **Karst and other subterranean hydrological systems**, human-made

Annex 3: IUCN Protected Areas Categories System

IUCN protected area management categories classify protected areas according to their management objectives. The categories are recognized by international bodies such as the United Nations and by many national governments as the global standard for defining and recording protected areas and as such are increasingly being incorporated into government legislation.

Ia Strict Nature Reserve
Category Ia are strictly protected areas set aside to protect biodiversity and also possibly geological/geomorphical features, where human visitation, use and impacts are strictly controlled and limited to ensure protection of the conservation values.

Ib Wilderness Area
Category Ib protected areas are usually large unmodified or slightly modified areas, retaining their natural character and influence without permanent or significant human habitation, which are protected and managed so as to preserve their natural condition.

II National Park
Category II protected areas are large natural or near natural areas set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area, which also provide a foundation for environmentally and culturally compatible, spiritual, scientific, educational, recreational, and visitor opportunities.

III Natural Monument or Feature
Category III protected areas are set aside to protect a specific natural monument, which can be a landform, sea mount, submarine cavern, geological feature such as a cave or even a living feature such as an ancient grove. They are generally quite small protected areas and often have high visitor value.

IV Habitat/Species Management Area
Category IV protected areas aim to protect particular species or habitats and management reflects this priority. Many Category IV protected areas will need regular, active interventions to address the requirements of particular species or to maintain habitats, but this is not a requirement of the category.

V Protected Landscape/ Seascape
A protected area where the interaction of people and nature over time has produced an area of distinct charcter with significant, ecological, biological, cultural and scenic value: and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values.

VI Protected area with sustainable use of natural resources

Category VI protected areas conserve ecosystems and habitats together with associated cultural values and traditional natural resource management systems.