



Ramsar Information Sheet

Published on 27 September 2023

Update version, previously published on : 29 August 2001

Australia

Edithvale-Seaford Wetlands



Designation date	29 August 2001
Site number	1096
Coordinates	38°04'26"S 145°08'05"E
Area	261,00 ha

Color codes

Fields back-shaded in light blue relate to data and information required only for RIS updates.

Note that some fields concerning aspects of Part 3, the Ecological Character Description of the RIS (tinted in purple), are not expected to be completed as part of a standard RIS, but are included for completeness so as to provide the requested consistency between the RIS and the format of a 'full' Ecological Character Description, as adopted in Resolution X.15 (2008). If a Contracting Party does have information available that is relevant to these fields (for example from a national format Ecological Character Description) it may, if it wishes to, include information in these additional fields.

1 - Summary

Summary

The Edithvale-Seaford Wetlands consists of two separate wetland areas (Edithvale Wetland and Seaford Wetland) which are remnants of the once much more extensive Carrum Carrum Swamp. The Site also includes predominantly dryland areas surrounding the main wetlands. It is now modified and acts a flood control/stormwater basin for the surrounding urban areas. The wetlands are actively managed by Melbourne Water for biodiversity values, particularly waterbirds. The interactions of hydrology and vegetation provide a mosaic of habitats. The Site is internationally significant for supporting two threatened waterbird species: Australasian bittern (*Botaurus poiciloptilus*) and curlew sandpiper (*Calidris ferruginea*). It regularly supports eight international migratory shorebirds in the East Asian-Australasian Flyway, including > 1% of the population of the sharp-tailed sandpiper (*Calidris acuminata*). A number of waterbirds regularly breed at the Site, including black swan (*Cygnus atratus*), chestnut teal (*Anas castanea*), blue-billed duck (*Oxyura australis*), dusky moorhen (*Gallinula tenebrosa*) and purple swamphen (*Porphyrio porphyrio*). There are also records of wetland dependent raptors (swamp harrier; *Circus approximans*) and other wetland dependent birds (e.g. clamorous reed warbler; *Acrocephalus stentoreus*) breeding in the Site.

2 - Data & location

2.1 - Formal data

2.1.1 - Name and address of the compiler of this RIS

Responsible compiler

Institution/agency	Department of Environment, Land, Water and Planning
Postal address	8 Nicholson St, East Melbourne, Victoria 3002

National Ramsar Administrative Authority

Institution/agency	Department of Climate Change, Energy, the Environment and Water (DCCEEW)
Postal address	GPO Box 3090 Canberra, ACT 2601 Australia

2.1.2 - Period of collection of data and information used to compile the RIS

From year	1994
To year	2016

2.1.3 - Name of the Ramsar Site

Official name (in English, French or Spanish)	Edithvale-Seafood Wetlands
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2.1.4 - Changes to the boundaries and area of the Site since its designation or earlier update

(Update) A. Changes to Site boundary	Yes <input type="radio"/> No <input checked="" type="radio"/>
(Update) B. Changes to Site area	No change to area
(Update) For secretariat only: This update is an extension	<input type="checkbox"/>

2.1.5 - Changes to the ecological character of the Site

(Update) 6b i. Has the ecological character of the Ramsar Site (including applicable Criteria) changed since the previous RIS?	No
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(Update) Optional text box to provide further information

A review, based on a more rigorous application of the Ramsar guidance, indicates that the Site continues to meet criteria 2 and 6 as per the original RIS. It is no longer considered to meet criteria 1, and does meet criteria 4.

Justification for the site not meeting Criteria 1:
The appropriate bioregion for the site is the South East Coast (Victoria) drainage division. There is no comprehensive wetland inventory for this bioregion. As such the application of the terms "representative" and "rare" are difficult. The Edithvale-Seafood wetlands are remnants of what was once the Carrum Carrum Swamp, a large freshwater wetland, largely drained in the late 19th century. The wetlands are highly modified. It is difficult to make the argument that these sites are rare, representative or near-natural. As such, the site does not meet this criterion and did not meet it at the time of listing.

Justification of the site meeting criteria 4:
A review of wetland criteria in 2012 provided evidence that the site met, and continues to meet this criterion as it supports wetland-dependent species during the critical lifecycle stages of migration and breeding.

2.2 - Site location

2.2.1 - Defining the Site boundaries

b) Digital map/image

<1 file(s) uploaded>

Former maps	0
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Boundaries description

There is insufficient space to include a full boundary description here. A detailed boundary description is attached at 6.1.2.vi.

In summary, the Edithvale-Seafood Wetlands Is located in Melbourne’s south eastern suburbs approximately 30 km from the city of Melbourne. The Site is comprised of two separate wetlands: Edithvale and Seafood.

The Wetlands covers an area of 103 ha.
 Section 1 is the northern part of the Edithvale site. It is comprised of parcels 1\TP820840, 1\TP131999, 1\TP225777, 2\TP225777, 1\TP83139, 1\TP820843, 2\TP820843, 1\TP385644, 1\TP414444 and 1\TP82835.

Section 2 is the southern part of the Edithvale site. It is comprised of parcels 1\TP138507, 1\TP132070, 1\TP366503, 1\TP370109, and 1\TP95924.

The Seafood site covers an area of 158 ha.
 Section 3 is the north western part of the Seafood site. It is comprised of parcels 2\LP138935, 1\TP117202, 1\TP758882, 1\TP659206, 2\TP659206, 3\TP659206, 4\TP659206, 5\TP659206, 6\TP225759, 5\TP225759, 4\TP225759, 3\TP225759, 2\TP225759, 1\TP225759.

Section 4 is the north eastern part of the Seafood site. It is comprised of parcels 1\TP382307 and 86B\PP3025.

Section 5 is the south eastern part of the Seafood site. Please see the attached boundary description for details of the boundary of Section 5.

Section 6 is the south western part of the Seafood site. Please see the attached boundary description for details of the boundary of Section 6.

2.2.2 - General location

a) In which large administrative region does the site lie?

b) What is the nearest town or population centre?

2.2.3 - For wetlands on national boundaries only

a) Does the wetland extend onto the territory of one or more other countries? Yes No

b) Is the site adjacent to another designated Ramsar Site on the territory of another Contracting Party? Yes No

2.2.4 - Area of the Site

Official area, in hectares (ha):

Area, in hectares (ha) as calculated from GIS boundaries

2.2.5 - Biogeography

Biogeographic regions

Regionalisation scheme(s)	Biogeographic region
Freshwater Ecoregions of the World (FEOW)	Eastern Coastal Australia

Other biogeographic regionalisation scheme

Biogeographic regionalisation scheme used: Australia's Topographic Drainage Divisions, Australian Hydrological Geospatial Fabric. Reference: Bureau of Meteorology (2012). Australian Hydrological Geospatial Fabric (Geofabric): Topographic Drainage Divisions and River Regions – South East Coast (Victoria) Drainage Division. (http://www.bom.gov.au/water/geofabric/documents/BOM002_Map_Poster_A3_Web.pdf).

The Australian Hydrological Geospatial Fabric (Geofabric) is a specialised Geographic Information System (GIS). It registers the spatial relationships between important hydrological features such as rivers, water bodies, aquifers and monitoring points. The National Topographic Drainage Divisions and River Regions are currently derived from Geofabric version 2. These provide a set of surface water reporting units based on drainage-enforced digital elevation models and are used to depict where water flows and drains across the landscape.

3 - Why is the Site important?

3.1 - Ramsar Criteria and their justification

<no data available>

Criterion 2 : Rare species and threatened ecological communities

Optional text box to provide further information

This criterion is only applied to wetland dependent flora and fauna that are regularly supported at the Site. The Site regularly supports two fauna species listed under the EPBC Act and or IUCN Red List:

- Australasian bittern (*Botaurus poiciloptilus*) – Endangered (EPBC and IUCN)
- Curlew sandpiper (*Calidris ferruginea*) – Critically endangered (EPBC).

The curlew sandpiper was only listed as critically endangered under the EPBC Act in 2015 and, hence was not identified as meeting this criterion in DSE (2012).

Two other nationally threatened species have been recorded in the site but are not regularly supported. There is a single record of the Australian painted snipe (*Rostratula australis*) from Edithvale in 2008 (BirdLife Australia unpublished data) and a record of two growling grass frogs (*Litoria raniformis*) from 1988.

Criterion 4 : Support during critical life cycle stage or in adverse conditions

Optional text box to provide further information

Criterion 4 was not considered to have been met in DSE (2012). However, there is evidence that the site met, and continues to meet, this criterion as it supports wetland-dependent species during the critical lifecycle stages of migration and breeding.

Twenty species of waterbirds listed under international migratory agreements have been recorded within the Site. This number includes species that, in Australia, are residents (e.g. eastern great egret) and a number of migratory species that are occasionally recorded at the Site. There are eight species of international migratory shorebirds that are regularly supported (two thirds of seasons) by the Edithvale-Seafood Wetlands.

There are records of over 20 species of waterbird breeding within the Site (Silcocks et al. 2006, Silcocks and O'Connor 2009, 2009, Silcocks 2013). The most commonly recorded breeding waterbird species are black swan (*Cygnus atratus*), chestnut teal (*Anas castanea*), blue-billed duck (*Oxyura australis*), dusky moorhen (*Gallinula tenebrosa*) and purple swamphen (*Porphyrio porphyrio*). There are also breeding records of wetland dependent raptors (e.g. swamp harrier; *Circus approximans*) and other wetland dependent birds (e.g. clamorous reed warbler; *Acrocephalus stentoreus*) breeding in the site (BirdLife Australia unpublished data).

Criterion 6 : >1% waterbird population

Optional text box to provide further information

The Site regularly supports more than 1% of the population of the sharp-tailed sandpiper (*Calidris acuminata*), which is an international migratory shorebird. The population size for this species has been calculated from maximum annual abundance between 1994 and 2015. Based on this, population size at the site is approximately 1870. According to the Wetlands International Waterbird Population Estimate (WPE), 1% of the flyway population of sharp-tailed sandpiper is 850 individuals.

The Site is an important non-breeding refuge for the endangered Australasian bittern, but data is lacking on the proportion of the population that utilizes the wetland for this purpose. This species may also meet the 1% threshold.

3.2 - Plant species whose presence relates to the international importance of the site

<no data available>

3.3 - Animal species whose presence relates to the international importance of the site

Phylum	Scientific name	Species qualifies under criterion				Species contributes under criterion				Pop. Size	Period of pop. Est.	% occurrence 1)	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
		2	4	6	9	3	5	7	8								
Birds																	
CHORDATA/AVES	<i>Anas castanea</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		Regularly breeds within the site
CHORDATA/AVES	<i>Botaurus poiciloptilus</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5	1994-2015	1	EN	<input type="checkbox"/>	<input type="checkbox"/>	EPBC - endangered	Site provides winter feeding habitat. Population size calculated from maximum annual abundance 1994 to 2015. Based on the Wetlands International waterbird population estimates for SE Australia, 1% of the total population is 5 individuals.
CHORDATA/AVES	<i>Calidris acuminata</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1870	1994-2015	2.2	LC	<input type="checkbox"/>	<input type="checkbox"/>		Non-breeding foraging habitat for international migratory species. Population size calculated from maximum annual abundance 1994 to 2015. Based on the Wetlands International waterbird population estimates, 1% of the flyway population (C&E Siberia (Bre)) is 850 individuals.
CHORDATA/AVES	<i>Calidris ferruginea</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				NT	<input type="checkbox"/>	<input type="checkbox"/>	EPBC - critically endangered	Non-breeding foraging habitat for international migratory species
CHORDATA/AVES	<i>Calidris melanotos</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		Non-breeding foraging habitat for international migratory species
CHORDATA/AVES	<i>Calidris ruficollis</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				NT	<input type="checkbox"/>	<input type="checkbox"/>		Non-breeding foraging habitat for international migratory species
CHORDATA/AVES	<i>Circus approximans</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		Regularly breeds within the site
CHORDATA/AVES	<i>Cygnus atratus</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		Regularly breeds within the site
CHORDATA/AVES	<i>Gallinago hardwickii</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		Non-breeding foraging habitat for international migratory species
CHORDATA/AVES	<i>Gallinula tenebrosa</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		Regularly breeds within the site
CHORDATA/AVES	<i>Oxyura australis</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				NT	<input type="checkbox"/>	<input type="checkbox"/>		Regularly breeds within the site
CHORDATA/AVES	<i>Porphyrio porphyrio</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		Regularly breeds within the site
CHORDATA/AVES	<i>Tringa glareola</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		Non-breeding foraging habitat for international migratory species
CHORDATA/AVES	<i>Tringa nebularia</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		Non-breeding foraging habitat for international migratory species
CHORDATA/AVES	<i>Tringa stagnatilis</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		Non-breeding foraging habitat for international migratory species

1) Percentage of the total biogeographic population at the site

The Site is an important non-breeding refuge for the endangered Australasian Bittern, but data is lacking on the proportion of the population that utilizes the wetland for this purpose. Within the Site the species inhabits emergent vegetation, but there is a balance between having sufficient cover and the vegetation being too dense for effective foraging. The Site is important for waders, which are the most numerous birds at the Site.

3.4 - Ecological communities whose presence relates to the international importance of the site

<no data available>

4 - What is the Site like? (Ecological character description)

4.1 - Ecological character

The Edithvale-Seafood Wetlands were listed in 2001, primarily for their waterbird values. There are four components, processes and services critical to the ecological character of the Ramsar site:

Waterbird diversity and abundance - 75 species of wetland dependent birds have been recorded in the site and annual maximum counts are around 5000. The site regularly supports eight species listed under international migratory agreements, including > 1% of the population of sharp-tailed sandpipers.

Waterbird breeding - there are records of over 20 species of waterbird breeding within the Ramsar site (Silcocks et al. 2006, Silcocks and O'Connor 2009, Silcocks 2013). The most common species are black swan (*Cygnus atratus*) and a range of ducks such as chestnut teal (*Anas castanea*) and blue-billed duck (*Oxyura australis*). There are also records of wetland dependent raptors (swamp harrier; *Circus approximans*) and other wetland dependent birds (e.g. clamorous reed warbler; *Acrocephalus stentoreus*) breeding in the site (BirdLife Australia unpublished data). Black swan (*Cygnus atratus*), Blue-billed duck (*Oxyura australis*), Chestnut teal (*Anas castanea*), Dusky moorhen (*Gallinula tenebrosa*), Purple swamphen (*Porphyrio porphyrio*) and Swamp harrier (*Circus approximans*) breed in more than two thirds of seasons.

Physical habitat waterbirds - the site comprises a mosaic of habitats that support a wide variety of waterbirds, these habitats include deeper open water, shallow open water, exposed mudflats, emergent marsh vegetation, open pasture and fringing woody vegetation.

Threatened wetland species - the site regularly supports two threatened waterbird species; Australasian bittern (*Botaurus poiciloptilus*) (recorded in 95% of seasons) and curlew sandpiper (*Calidris ferruginea*) (recorded in 68% of seasons).

There has been no unacceptable change in these critical components, processes and services since listing in 2001.

4.2 - What wetland type(s) are in the site?

Inland wetlands

Wetland types (code and name)	Local name	Ranking of extent (1: greatest - 4: least)	Area (ha) of wetland type	Justification of Criterion 1
Fresh water > Lakes and pools >> P: Seasonal/intermittent freshwater lakes		4	1	
Saline, brackish or alkaline water > Marshes & pools >> Ss: Seasonal/intermittent saline/brackish/alkaline marshes/pools		2	11	
Fresh water > Lakes and pools >> Ts: Seasonal/intermittent freshwater marshes/pools on inorganic soils		1	116	
Fresh water > Marshes on inorganic soils >> Xf: Freshwater, tree-dominated wetlands		3	4	

Other non-wetland habitat

Other non-wetland habitats within the site	Area (ha) if known
Damp sands herb rich woodland	61
Other terrestrial vegetation	69

(ECD) Habitat connectivity

The site comprises two separate wetland areas: Edithvale Wetlands and Seafood Wetlands that are approximately 6 kilometres apart.

4.3 - Biological components

4.3.1 - Plant species

Other noteworthy plant species

Phylum	Scientific name	Position in range / endemism / other
TRACHEOPHYTALILIOPSIDA	<i>Phragmites australis</i>	Invasive native species
TRACHEOPHYTALILIOPSIDA	<i>Typha orientalis</i>	Invasive native species

Invasive alien plant species

Phylum	Scientific name	Impacts	Changes at RIS update
TRACHEOPHYTALILIOPSIDA	<i>Juncus acutus</i>	Actual (minor impacts)	No change

4.3.2 - Animal species

Invasive alien animal species

Phylum	Scientific name	Impacts	Changes at RIS update
CHORDATA/MAMMALIA	<i>Felis catus</i>	Actual (minor impacts)	No change
CHORDATA/MAMMALIA	<i>Vulpes vulpes</i>	Actual (minor impacts)	No change

4.4 - Physical components

4.4.1 - Climate

Climatic region	Subregion
C: Moist Mid-Latitude climate with mild winters	Csb: Mediterranean (Mild with dry, warm summer)

Site specific scenarios for Edithvale and Seafood were made in 2015 as part of a state-wide assessment of climate change impacts to coastal wetlands (DELWP 2016a and DELWP 2016b).

These assessments are based on Grose et al. (2015) modelling of moderate (RCP 4.5) and worse case (RCP 8.5) responses to climate change. As outlined in Quinn et al. (2016), under both scenarios Edithvale and Seafood wetlands are highly exposed to the key components including:

- increased eustatic sea level;
- increased storm surge activity;
- higher temperatures;
- lower average rainfall;
- changes in seasonal rainfall with strong declines in winter and spring; and
- overall, more variable rainfall.

Sea level rise modelling shows increasing levels of inundation over the course of this century, with almost total inundation of both wetlands by 2100.

4.4.2 - Geomorphic setting

a) Minimum elevation above sea level (in metres)

a) Maximum elevation above sea level (in metres)

- Entire river basin
- Upper part of river basin
- Middle part of river basin
- Lower part of river basin
- More than one river basin
- Not in river basin
- Coastal

Please name the river basin or basins. If the site lies in a sub-basin, please also name the larger river basin. For a coastal/marine site, please name the sea or ocean.

The Edithvale-Seafood Wetlands are located within 3 kilometres of the coast of Port Phillip Bay. Edithvale-Seafood is within a highly urban catchment and receives stormwater from surrounding urban landscapes.

4.4.3 - Soil

Mineral

(Update) Changes at RIS update No change Increase Decrease Unknown

Organic

(Update) Changes at RIS update No change Increase Decrease Unknown

No available information

Are soil types subject to change as a result of changing hydrological conditions (e.g., increased salinity or acidification)? Yes No

Please provide further information on the soil (optional)

The soils at both Edithvale and Seafood Wetlands consisted of a peat layer. However, the northern depressions of Edithvale North Wetland were excavated into underlying sands in 1987. In 1988, similar excavations at the southern end of Seafood Swamp broke through the peat layer into acid-sulfate soils which caused salinisation and lowered pH. With the addition of lime and the oxidation process declining with time, pH was 4.8 – 5.0 in 2005. In the remainder of Seafood Wetland the peat layer remains relatively intact.

4.4.4 - Water regime

Water permanence

Presence?	Changes at RIS update
Usually permanent water present	
Usually seasonal, ephemeral or intermittent water present	

Source of water that maintains character of the site

Presence?	Predominant water source	Changes at RIS update
Water inputs from groundwater	<input type="checkbox"/>	No change
Water inputs from surface water	<input checked="" type="checkbox"/>	No change

Stability of water regime

Presence?	Changes at RIS update
Water levels fluctuating (including tidal)	No change

Please add any comments on the water regime and its determinants (if relevant). Use this box to explain sites with complex hydrology:

The site is used for stormwater storage and retention, with the water regime managed within those constraints to maintain ecological character and the mosaic of habitats. A 2011 environmental water requirements study indicated that the water regime at the Edithvale wetland cells largely met the requirements of ecological character. The then more stable shallow water conditions at Seafood Wetland were resulting in an expansion of emergent vegetation and a loss of waterbird foraging habitat. Water management now aims to inundate to full level in winter with a gradual drawdown over late spring and summer. For more information see the ECD section 6.1

(ECD) Connectivity of surface waters and of groundwater	Groundwater from marine aquifers are hydraulically connected to regional water table at Seafood Wetland. Stormwater inputs periodically flush shallow groundwater maintaining freshwater conditions.
(ECD) Stratification and mixing regime	The sites are predominantly shallow and well mixed. Some temporary stratification occurs in the deeper pools.

4.4.5 - Sediment regime

Sediment regime unknown

Please provide further information on sediment (optional):

Stormwater is the primary source of sediments to the wetlands.

(ECD) Water turbidity and colour	Median turbidity levels have generally not above 50 NTU, occasional recordings above 50 NTU in Seafood Wetland cells
(ECD) Light - reaching wetland	No information available
(ECD) Water temperature	No information available

4.4.6 - Water pH

Acid (pH<5.5)

(Update) Changes at RIS update No change Increase Decrease Unknown

Circumneutral (pH: 5.5-7.4)

(Update) Changes at RIS update No change Increase Decrease Unknown

Alkaline (pH>7.4)

(Update) Changes at RIS update No change Increase Decrease Unknown

Unknown

Please provide further information on pH (optional):

The site maintains a pH of between 6 and 8 under most circumstances. Periodically low pH (4) is recorded when water levels are low and acid sulfate soils are exposed which occurs in two of the Seafood wetland cells. Low pH observations are typically recorded between August and November during the wetting cycle of these cells.

4.4.7 - Water salinity

Fresh (<0.5 g/l)

(Update) Changes at RIS update No change Increase Decrease Unknown

Mixohaline (brackish)/Mixosaline (0.5-30 g/l)

(Update) Changes at RIS update No change Increase Decrease Unknown

Unknown

Please provide further information on salinity (optional):

Salinity at the site has risen, but this occurred mostly prior to the time of listing. Salinity is higher at Seafood Wetland than Edithvale Wetland. Salinity rises as water levels drop and salts become concentrated in a residual pool of water. Saline groundwater also intrudes into some wetland cells in the site when surface water levels in the cells are low. Stormwater inflows increase fresh conditions and lower salinity levels.

4.4.8 - Dissolved or suspended nutrients in water

Eutrophic

(Update) Changes at RIS update No change Increase Decrease Unknown

Unknown

Please provide further information on dissolved or suspended nutrients (optional):

The Edithvale-Seafood Wetlands are located within a highly urbanised area and the dominant water source for the system is stormwater and drainage water. Urban water sources are known to be high in nutrient and sediment loads, particularly carried in the first flushes after heavy rainfall (ANZECC and ARMCANZ 2000). Monitoring of water column nutrient concentrations indicates periodic eutrophic conditions at both Seafood and Edithvale Wetlands. However, this is not surprising for urban wetlands receiving primarily stormwater inflows and there is no indication of a sustained rising trend.

(ECD) Dissolved organic carbon	No information available
(ECD) Redox potential of water and sediments	No information available
(ECD) Water conductivity	No information available

4.4.9 - Features of the surrounding area which may affect the Site

Please describe whether, and if so how, the landscape and ecological characteristics in the area surrounding the Ramsar Site differ from the site itself: i) broadly similar ii) significantly different

- Surrounding area has greater urbanisation or development
- Surrounding area has higher human population density
- Surrounding area has more intensive agricultural use
- Surrounding area has significantly different land cover or habitat types

Please describe other ways in which the surrounding area is different:

The catchment of the Edithvale-Seafood Wetland is highly urbanised. Connectivity of flow has been progressively disrupted since European settlement due to drainage of natural water courses, and a high degree of modification of surface water flows. At the time of Ramsar listing in 2001 and now, surface inflows to the wetlands are primarily from drains, many of which are controlled. Groundwater inflows are now much more significant due to wetland excavations in the late 1980s and drainage from residential areas at Seafood Wetland. Outflows are also controlled as are flows between wetland cells.

4.5 - Ecosystem services

4.5.1 - Ecosystem services/benefits

Regulating Services

Ecosystem service	Examples	Importance/Extent/Significance
Hazard reduction	Flood control, flood storage	High

Cultural Services

Ecosystem service	Examples	Importance/Extent/Significance
Recreation and tourism	Nature observation and nature-based tourism	High
Scientific and educational	Educational activities and opportunities	High
Scientific and educational	Major scientific study site	High

Supporting Services

Ecosystem service	Examples	Importance/Extent/Significance
Biodiversity	Supports a variety of all life forms including plants, animals and microorganisms, the genes they contain, and the ecosystems of which they form a part	High

Other ecosystem service(s) not included above:

Physical habitat for waterbirds:
 Hydrology and vegetation type have been identified as the most important habitat components for supporting waterbirds at the Ramsar site (Tzaros and Silcocks 2004). The wetlands have been divided into habitat zones and three zones are considered most important for waterbirds (Quinn et al. 2016):

Edithvale

- Edithvale North 1 - deeper water for a number of duck species, surrounded by tall reeds; and
- Edithvale South 1 – shallow wetlands that are seasonally dry providing foraging habitat for shorebirds, grading to tall marsh at the fringes, providing cover for species such as Australasian bittern and Latham’s snipe.

Seafood (Figure 5):

- North 2 Pool, Seafood Central West 1 and Seafood Central East 2 – mosaic of deeper water, tall marsh, deeper saline ponds important for all wetland bird species.

The mosaic nature of the habitat is what supports the broad range of species.

Within the site:

Outside the site:

Have studies or assessments been made of the economic valuation of ecosystem services provided by this Ramsar Site? Yes No Unknown

4.5.2 - Social and cultural values

- i) the site provides 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) the site has exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland
- iii) the ecological character of the wetland depends on its interaction with local communities or indigenous peoples
- iv) 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

<no data available>

4.6 - Ecological processes

(ECD) Primary production	No information available
(ECD) Nutrient cycling	In the Edithvale South Wetlands, as the wetlands dry in late summer and autumn, lush growth of Salt Club-rush (<i>Bolboschoenus caldwellii</i>) occurs. The species that sustains nutrient cycling in these cells.
(ECD) Carbon cycling	No information available
(ECD) Animal reproductive productivity	There are records of over 20 species of waterbird breeding within the Ramsar site.
(ECD) Vegetational productivity, pollination, regeneration processes, succession, role of fire, etc.	<i>Phragmites australis</i> and <i>Typha</i> spp. have been expanding reducing floristic diversity and changes the structure of the vegetation from an open wetland to a dense, tall sward.
(ECD) Notable species interactions, including grazing, predation, competition, diseases and pathogens	No information available
(ECD) Notable aspects concerning animal and plant dispersal	No information available
(ECD) Notable aspects concerning migration	Eleven migratory species are recorded at the site, 8 of these species being regularly recorded.
(ECD) Pressures and trends concerning any of the above, and/or concerning ecosystem integrity	Edithvale and Seafood Wetlands will also become more saline over time with eustatic sea level rise exacerbating tidal intrusions. Rising salinity is likely to result in shifts from freshwater to more saline tolerant conditions.

5 - How is the Site managed? (Conservation and management)

5.1 - Land tenure and responsibilities (Managers)

5.1.1 - Land tenure/ownership

Public ownership

Category	Within the Ramsar Site	In the surrounding area
Provincial/region/state government	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Local authority, municipality, (sub)district, etc.	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Private ownership

Category	Within the Ramsar Site	In the surrounding area
Commercial (company)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Other types of private/individual owner(s)	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Provide further information on the land tenure / ownership regime (optional):

Edithvale Wetland consists of freehold land which is owned and managed by Melbourne Water. Seafood Wetland consists of freehold land owned by Melbourne Water and a Crown land conservation reserve for which Melbourne Water has formal management responsibility.

5.1.2 - Management authority

Please list the local office / offices of any agency or organization responsible for managing the site:

Melbourne Water
990 LaTrobe Street, Docklands, VIC 3008

Provide the name and/or title of the person or people with responsibility for the wetland:

William Steele, Senior Biodiversity Scientist, Integrated Planning

Postal address:

PO Box 4342 Melbourne VIC 3001

E-mail address:

william.steele@melbournewater.com.au

5.2 - Ecological character threats and responses (Management)

5.2.1 - Factors (actual or likely) adversely affecting the Site's ecological character

Human settlements (non agricultural)

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Housing and urban areas	Low impact	High impact	<input type="checkbox"/>	No change	<input checked="" type="checkbox"/>	increase

Water regulation

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Drainage			<input checked="" type="checkbox"/>		<input type="checkbox"/>	
Salinisation			<input checked="" type="checkbox"/>		<input type="checkbox"/>	

Human intrusions and disturbance

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Recreational and tourism activities	Low impact	High impact	<input checked="" type="checkbox"/>	increase	<input checked="" type="checkbox"/>	increase

Natural system modifications

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Fire and fire suppression	Low impact	High impact	<input checked="" type="checkbox"/>	No change	<input type="checkbox"/>	No change

Invasive and other problematic species and genes

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Invasive non-native/ alien species	Low impact	Medium impact	<input checked="" type="checkbox"/>	No change	<input type="checkbox"/>	No change
Problematic native species	Medium impact	High impact	<input checked="" type="checkbox"/>	increase	<input type="checkbox"/>	No change

Pollution

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Household sewage, urban waste water	Low impact	High impact	<input checked="" type="checkbox"/>	No change	<input type="checkbox"/>	No change

Climate change and severe weather

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Storms and flooding			<input type="checkbox"/>		<input checked="" type="checkbox"/>	

Please describe any other threats (optional):

Invasive weed species which threaten the wetlands include:
 - non native species - spiny rush (*Juncus acutus* subsp. *acutus*) (medium risk)
 - native species - *Phragmites australis* and *Typha* spp. (high risk)
 Invasive animal species which threaten the wetlands include: foxes, cats, rats (extreme risk), pigs and rabbits (medium risk) and mosquitofish (unspecified risk)
 (Quinn et al. 2016)

5.2.2 - Legal conservation status

Non-statutory designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
Important Bird Area	Carrum Wetlands IBA	http://www.birdlife.org/datazone/sitefactsheet.php?id=24547	whole

5.2.3 - IUCN protected areas categories (2008)

- Ia Strict Nature Reserve
- Ib Wilderness Area: protected area managed mainly for wilderness protection
- II National Park: protected area managed mainly for ecosystem protection and recreation
- III Natural Monument: protected area managed mainly for conservation of specific natural features
- IV Habitat/Species Management Area: protected area managed mainly for conservation through management intervention
- V Protected Landscape/Seascape: protected area managed mainly for landscape/seascape conservation and recreation
- VI Managed Resource Protected Area: protected area managed mainly for the sustainable use of natural ecosystems

<no data available>

5.2.4 - Key conservation measures

Legal protection

Measures	Status
Legal protection	Implemented

Habitat

Measures	Status
Improvement of water quality	Implemented
Habitat manipulation/enhancement	Implemented
Hydrology management/restoration	Implemented

Species

Measures	Status
Control of invasive alien plants	Implemented
Control of invasive alien animals	Implemented

Human Activities

Measures	Status
Regulation/management of recreational activities	Implemented
Communication, education, and participation and awareness activities	Implemented
Research	Implemented

Other:

The Edithvale-Seafood Wetlands Ramsar site is actively managed by Melbourne Water, which has instigated a large number of monitoring and management activities since the last Ramsar Rolling Review in 2011. This includes:

- Monthly monitoring of birds by BirdLife Australia
- Development and implementation of a kangaroo management plan
- Development and implementation of a fire management plan for the Seafood portion of the site
- Assessment of the hydrology of the site and hydrology works at Seafood
- Water quality review
- Assessment of vegetation condition and weed mapping
- Active vegetation mapping including weed control and control of native invasive wetland species
- Active community engagement and participation through the Edithvale-Seafood Wetlands Community Liaison Committee

Being a Ramsar site, the wetland is offered legal protection from development pressures under the EPBC act, however it does not classify under any other legal conservation status

5.2.5 - Management planning

Is there a site-specific management plan for the site? Yes

Has a management effectiveness assessment been undertaken for the site? Yes No

If the site is a formal transboundary site as indicated in section Data and location > Site location, are there shared management planning processes with another Contracting Party? Yes No

Please indicate if a Ramsar centre, other educational or visitor facility, or an educational or visitor programme is associated with the site:

Edithvale-Seafood Wetland Education Centre <https://www.melbournewater.com.au/getinvolved/education/programs/eswdc/pages/edithvale-seafood-wetland-discovery-centre.aspx>

5.2.6 - Planning for restoration

Is there a site-specific restoration plan? Yes, there is a plan

5.2.7 - Monitoring implemented or proposed

Monitoring	Status
Water regime monitoring	Implemented
Water quality	Implemented
Plant community	Implemented
Plant species	Implemented
Animal species (please specify)	Implemented
Birds	Implemented

Monthly monitoring of birds at the site since 2003;
Monitoring also of kangaroos, frogs, bats, mosquitoes.

6 - Additional material

6.1 - Additional reports and documents

6.1.1 - Bibliographical references

ANZECC and ARMCANZ (2000) Australian and New Zealand guidelines for fresh and marine water quality. Volume 1, The guidelines. Australian and New Zealand Environment and Conservation Council, Agriculture and Resource Management Council of Australia and New Zealand.

Department of Environment, Land, Water and Planning (2016a). Climate change vulnerability and adaptive capacity of coastal wetlands. Decision Support Framework – Volume 1. Department of Environment, Land, Water and Planning, East Melbourne, Victoria.

Department of Environment, Land, Water and Planning (2016b). Climate change vulnerability and adaptive capacity of coastal wetlands. Decision Support Framework – Volume Two. Department of Environment, Land, Water and Planning, East Melbourne, Victoria.

Grose, M. et al., 2015, Southern Slopes Cluster Report, Climate Change in Australia Projections for Australia’s Natural Resource Management Regions: Cluster Reports, eds. Ekström, M. et al., CSIRO and Bureau of Meteorology, Australia

Quinn, D., Sutton, F., Hale, J., and McMahon, A. (2016). Edithvale-Seaford Wetlands Ramsar Site Management Plan. Melbourne Water, Melbourne, Victoria.

Silcocks, A. (2013). Edithvale and Seaford Wetlands Bird Survey Project 2012-13. Unpublished consultancy report prepared for Melbourne Water. Birds Australia, Melbourne, Victoria.

Silcocks, A.1 Ehmke, G. Tzaros, C. and Weston, M.A. (2006). Edithvale and Seaford Wetlands Bird Survey Project 2003-06. Report No. 3. Final Report 2003-2006. Unpublished consultancy report prepared for Melbourne Water by Birds Australia, Melbourne.

Silcocks, A. and O’Connor, N. (2009). Edithvale and Seaford Wetlands Bird Survey Project 2006-09. Unpublished consultancy report prepared for Melbourne Water. Birds Australia, Melbourne, Victoria.

6.1.2 - Additional reports and documents

i. taxonomic lists of plant and animal species occurring in the site (see section 4.3)

<no file available>

ii. a detailed Ecological Character Description (ECD) (in a national format)

<1 file(s) uploaded>

iii. a description of the site in a national or regional wetland inventory

<no file available>

iv. relevant Article 3.2 reports

<no file available>

v. site management plan

<1 file(s) uploaded>

vi. other published literature

<1 file(s) uploaded>

6.1.3 - Photograph(s) of the Site

Please provide at least one photograph of the site:



Edithvale South Wetland (Yvette Baker, 01-10-2008)

6.1.4 - Designation letter and related data

Designation letter

<1 file(s) uploaded>

Date of Designation