Key considerations in relation to significant impacts on cetacean species in the Temperate East Marine Region

Population status and ecological significance

The **humpback whale** is listed as vulnerable and migratory. The population is estimated to be growing consistently at about 10 per cent per year (Bannister & Hedley 2001; Bryden, Kirkwood & Slade 1990; Chaloupka & Osmond 1999; Paterson, Paterson & Cato 2001; Paterson, Paterson & Cato 2004). The Australian east coast population is estimated to be 10 000 individuals (Noad et al. 2008).

The **Indo-Pacific humpback dolphin** is listed as migratory. The total Australian population size of this species is unknown, but it is likely that the Indo-Pacific humpback dolphin occurs as one genetic population within Australia (DSEWPaC 2011). Regional population levels are likely to be in the low thousands on the east coast of Queensland, with populations in particular bays in the region varying between approximately 50 and 100 individuals. Populations of this inshore dolphin are highly localised, occur in small subgroups, and have low gene flow between groups (Cagnazzi 2010; Corkeron et al. 1997; Parra, Corkeron & Marsh 2006).

Top-order predators—such as dolphins—are a key functional species group, influencing abundance, recruitment, species composition, diversity and behaviour of prey species. Their removal can have a cascading effect on all the components of a food web (Heithaus 2001; Baum & Worm 2009; Ings et al. 2009, cited in Ceccarelli & Ayling 2010).

For the purposes of determining the significance of impacts of proposed actions on the two species listed above, note that:

- the humpback whale is listed as vulnerable under the EPBC Act. It should be assumed that populations of this species in and adjacent to the Temperate East Marine Region are important populations[14] of the species
- the Indo-Pacific humpback dolphin is listed as migratory under the EPBC Act. There is insufficient information to determine whether an ecologically significant proportion of the population occurs in the Temperate East Marine Region. However, it should be taken into consideration that this species generally exhibits small group sizes (less than 100 individuals), high site fidelity and geographic isolation with low gene flow between populations. As such, the loss (i.e. anthropogenic mortality) of even a very small percentage of mature animals may cause population decline or local extinction.

Species distribution and biologically important areas

Humpback whales migrate annually between their summer feeding grounds in Antarctica and their winter tropical and subtropical breeding grounds. In general, the species is sighted in southern Australian waters in May, and migrates slowly up the east and west coasts. By October, most whales have started their southward migration, and sightings are less frequent after November. During migration, individuals travel alone or in temporary aggregations of generally non-related individuals (cow–calf pairs being the exception) (Valsecchi et al. 2002).

14 Definitions of 'important population' and 'ecologically significant population' are provided in Section 1 of this schedule and are consistent with EPBC Act Policy Statement 1.1: Significant impact guidelines—matters of national environmental significance. In accordance with Policy Statement 1.1 for threatened species listed as vulnerable, such as the humpback whale, consideration should be given to whether an important population

Biologically important areas have been identified for the **humpback whale** in the Temperate East Marine Region and include (from north to south):

- the Hervey Bay area for migration/resting during migration, including resting during northbound migration (June–July) and as a resting area for females and calves on southbound migration (August–mid-October)
- Fraser Island to Moreton Bay, between the coast and 15 km offshore as a migration pathway (northbound migration peaking in June–July and southbound migration peaking in August–mid-October)
- the Moreton Bay area, for migration/resting during migration, including resting during northbound migration (peaking June–July), and as a resting area for females and calves on southbound migration (peaking August–mid-October)
- from the Queensland/New South Wales border to the Eden area for migration/resting during migration. Resting during migration between May and November, northbound (peaking June–July) and southbound (peaking August–mid-October). Feeding has been observed just to the south of the region, off Eden.

Actions undertaken offshore from the continental shelf and not affecting waters over the continental shelf have a **low risk** of significant impact on the humpback whale.

The **Indo-Pacific humpback dolphin** is found in coastal and estuarine areas of Queensland and New South Wales (Parra & Ross 2009). It occurs in a variety of inshore shallow water habitats at depths less than 20 metres, including inshore reefs, tidal and dredged channels, mangroves and river mouths (Karczmarski, Cockroft & McLachlan 2000; Parra 2006). The Indo-Pacific humpback dolphin is a generalist feeder, preying on bottom-dwelling and pelagic fish and cephalopods associated with coastal and estuarine waters (Parra & Jendensjo 2009).

Biologically important areas have been identified for the **Indo-Pacific humpback dolphin** in and adjacent to the Temperate East Marine Region and include (from north to south):

- from Hervey Bay north-east to Commonwealth waters, within the 20-metre depth contour (Queensland), for foraging
- from Hervey Bay south to Tin Can Bay, within the 20-metre depth contour (Queensland), for foraging/feeding and breeding year-round
- the southern tip of Fraser Island in coastal waters adjacent to Rainbow Beach, within the 20-metre depth contour (Queensland), for foraging
- from the north-eastern tip of Cooloola National Park south to the Queensland/New South Wales border (including Moreton Bay), within the 20-metre depth contour (Queensland), for foraging/feeding and breeding year-round
- coastal waters south of the Queensland—New South Wales border to Cabarita Beach, within the 20-metre depth contour (New South Wales), for foraging.

Further information on these areas is found in the Temperate East Conservation Values Atlas (**www.environment.gov.au/cva**).

Table S2.4 should be considered in assessing the risk of significant impact on each of the three species within and outside known biologically important areas.

Table S2.4: Advice on the risk of significant impact on humpback whale and Indo-Pacific humpback dolphin[15]

Species	Action in biologically important areas	Action outside biologically important areas	Temporal considerations[18]
Humpback whale	**High risk** of significant impact, depending on the type of action[16]	Actions undertaken outside of, and not affecting[17], biologically important areas for the humpback whale and, in the case of seismic activities, undertaken in accordance with EPBC Act Policy Statement 2.1, have a **low risk** of significant impact on this species	In the Temperate East Marine Region from early December to April[18], there is a low likelihood of encounter with humpback whales. Generally, actions undertaken anywhere in the region during this period have a **low risk** of significant impact on the species
Indo-Pacific humpback dolphin	**High risk** of significant impact, depending on the type of action[16]	Actions undertaken outside of, and not affecting[17], biologically important areas for the Indo-Pacific humpback dolphin have a **low risk** of significant impact on this species	Indo-Pacific humpback dolphins use biologically important areas all year

Further information on biologically important areas can be found in the Temperate East Conservation Values Atlas (**www.environment.gov.au/cva**).

15 This advice does not apply to actions that inherently result in prolonged or enduring changes to the biologically important areas or the marine environment in general. Actions should also be conducted in accordance with EPBC Act Policy Statement 2.1: Interaction between offshore seismic exploration and whales, where relevant.

16 see 'Nature of proposed action', following page

17 Actions that might affect a biologically important area, even when undertaken outside the area, include sound transmission that may result in behavioural reactions of whale species and/or prey, such that a physical impact is likely.

18 This time period reflects a precautionary approach and includes a buffer of one month on either end of the known periods during which humpback whales are found in these areas. The buffer has been used as there is a limited understanding of the migratory movements of humpback whales or the seasonality of their occurrence in the region before or after they are sighted in known biologically important areas.

Nature of the proposed action

The conservation values report card—cetaceans, provides an overview of the vulnerabilities and pressures on protected cetaceans in the Temperate East Marine Region. Inshore dolphins and humpback whale are particularly vulnerable to impacts from human activities because their nearshore coastal distribution overlaps with the areas of highest human use in the marine environment. Anthropogenic activities in coastal environments have the potential to significantly impact on inshore dolphins and humpback whales.

The Indo-Pacific humpback dolphin is vulnerable to physical habitat modification associated with urban/coastal development, and bycatch associated with commercial fishing activities and bather protection programs.

Pressures *of potential concern* on humpback whales include:

- climate change (changes in sea temperature, oceanography and ocean acidification)
- marine debris from a range of sources
- bycatch associated with bather protection programs.

Pressures *of potential concern* on the Indo-Pacific humpback dolphin include:

- climate change (sea level rise, changes in sea temperature and oceanography and ocean acidification)
- chemical pollution/contaminants and nutrient pollution associated with urban development and agricultural activities
- marine debris from a range of sources
- noise pollution associated with shipping and urban development
- physical habitat modification associated with dredging
- oil pollution associated with shipping
- collision with vessels
- changes in hydrological regimes.

People planning to undertake actions in biologically important areas for cetaceans should carefully consider the potential for their actions to have a significant impact on the species. For actions proposed outside biologically important areas for cetaceans, the risk of significant impact on the species is likely to be lower.

In addition to this general advice, the following actions have a **high risk** of a significant impact on humpback whales:

- actions that have a real chance or possibility of increasing rates of entanglement that potentially result in a long-term decrease in population size.

The following actions have a **risk** of a significant impact on Indo-Pacific humpback dolphins:

- actions that have a real chance or possibility of introducing a new source from which a severe chemical spill or nutrient pollution has a reasonable potential of arising (e.g. construction of ports or expansion in port facilities, development of residential, industrial or agricultural areas) within biologically important areas when the species is present
- actions that have a real chance or possibility of increasing relevant noise[19] above the ambient levels (e.g. actions resulting in a substantial increase in underwater acoustic noise from construction or ship noise) within any of the biologically important areas for this species when the species is present
- actions that have a real chance or possibility of substantially modifying, destroying or isolating habitat (e.g. dredging, changes to hydrological regimes, urban/coastal development) in a biologically important area
- actions that have a real chance or possibility increasing the rate of ship strike (e.g. increased shipping traffic associated with new or expanding port construction) within biologically important areas for this species when the species is present.

Actions that have a real chance or possibility of introducing marine debris to the biologically important areas of the Indo-Pacific humpback dolphin have a **risk** of significant impact on the Indo-Pacific humpback dolphin.

Actions that introduce a new source from which a severe oil spill or other chemical pollution has a reasonable potential of arising (e.g. increased shipping and drilling) in biologically important areas have a **risk** of significant impact on the Indo-Pacific humpback dolphin.

19 Relevant noise is defined here as low-frequency sounds (below 200Hz) that are within the same range of frequencies used by some whales.

For the Indo-Pacific humpback dolphin, given the currently incomplete knowledge of their population distribution, there is a risk of a significant impact from the actions described above outside known biologically important areas which are, however, still within the species' distribution and seasonal range in the region.

Ecotourism operations in biologically important areas for the Indo-Pacific humpback dolphin undertaken in accordance with the *Australian national guidelines for whale and dolphin watching 2005* (DEH 2005b) have a low risk of significant impact on the species. The national guidelines require strict management measures to be applied in areas where dolphin watching operations might be *of concern* (e.g. locations with a high number of operators). In an instance where these operations may be *of concern*, early advice should be sought from the Australian Government department responsible for the environment.

Advice for preparing a referral with respect to impacts on humpback whales and Indo-Pacific humpback dolphins in the Temperate East Marine Region

The 'referral of proposed action' form is available electronically at **www.environment.gov.au/epbc/indedex.html** and can also be obtained in hard copy by telephoning 1800 803 772. It includes detailed instructions about the type of information required in referring a proposed action for consideration.

In addition to the instructions included in the referral of proposed action form, if an action is referred because of the risk of significant impact on the humpback whale or Indo-Pacific humpback dolphin, consideration of the following matters is also recommended:

- If the action proposed is within a biologically important area, information should be considered about any alternative locations for the proposed action that would be outside the area, why the action is unlikely to have a significant impact or why any significant impact can be reduced to an acceptable level.
- If planning recreational or tourism operations, the *Australian national guidelines for whale and dolphin watching* (DEH 2005b) provides standards on approach distances and operating procedures.
- Referrals should be supported by scientifically credible information that places the proposal in the context of existing pressures on cetaceans and the life history characteristics of the species. The conservation values report card—cetaceans provides additional information on the range of pressures on cetaceans.
- For areas marked for long-term development involving noise-generating activities, passive acoustic monitoring programs (e.g. installation of sonobuoys) might assist in gaining the necessary understanding of the finer scale spatial and temporal patterns of some cetaceans and improve the ability to assess and mitigate impacts. It is recommended that early advice be sought from the Australian Government department responsible for the environment.

References

Bannister, JL & Hedley, SL 2001, 'Southern hemisphere group IV humpback whales: their status from recent aerial survey', *Memoirs of the Queensland Museum*, vol. 47, no. 2, pp. 587–98.

Baum, JK & Worm, B 2009, 'Cascading top-down effects of changing oceanic predator abundances', *Journal of Animal Ecology* vol. 78, no. 4, pp. 699–714.

Bryden, MM, Kirkwood, GP & Slade, RW 1990, 'Humpback whales, area V: an increase in numbers off Australia's east coast', in KR Kerry & G Hempel (eds), *Antarctic ecosystems: ecological change and conservation*, Springer-Verlag, Berlin, pp. 271–7.

Cagnazzi, D & Harrison, P 2010, 'Evidence of genetic isolation by habitat fragmentation in Indo-Pacific humpback dolphins *(Sousa chinesnsis)* from central Queensland, Australia': poster presented at American Genetic Association Annual Symposium, Hawaii, 26-28 July 2010.

Ceccarelli, D & Ayling, T 2010, 'Role, importance and vulnerability of top predators on the Great Barrier Reef: a review', research publication no. 105 for the Great Barrier Reef Marine Park Authority, Townsville, Queensland.

Chaloupka, M & Osmond, M 1999, 'Spatial and seasonal distribution of humpback whales in the Great Barrier Reef region', *American Fisheries Society Symposium*, vol. 23, pp. 89–106.

Corkeron, PJ, Morissette, NM, Porter, LJ & Marsh, H 1997, 'Distribution and status of hump-backed dolphins, *Sousa chinensis*, in Australian waters', *Asian Marine Biology*, vol. 14, pp. 49–59.

DEH (Department of the Environment and Heritage) 2005a, Blue, Fin and Sei Whale Recovery Plan 2005–2010, viewed 29 September 2011, **<www.environment.gov.au/biodiversity/threatened/publications/recovery/balaenoptera-sp/pubs/balaenoptera-sp.pdf>**.

DEH (Australian Government Department of the Environment and Heritage 2005b, *Australian national guidelines for whale and dolphin watching*, DEH, Canberra, viewed 3 March 2011, **<www.environment.gov.au/coasts/publications/whale-watching-guidelines-2005.html>**.

DEWHA (Australian Government Department of the Environment, Water, Heritage and the Arts) 2008, EPBC Act Policy Statement 2.1: I*nteraction between offshore seismic exploration and whales*, DEWHA, Canberra.

DSEWPaC (Australian Government Department of Sustainability, Environment, Water, Population and Communities) 2011, *Indo-Pacific humpback dolphin*, viewed 20 June 2011, **<www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=50>**.

Heithaus, MR 2001, 'Predator–prey and competitive interactions between sharks (order selachii) and dolphins (suborder odontoceti): a review', *Journal of Zoology*, vol. 253, no. 1, pp. 53–68.

Ings, TC, Montoya, JM, Bascompte, J, Bluethgen, N, Brown, L, Dormann, CF, Edwards, F, Figueroa, D, Jacob, U, Jones, JI, Lauridsen, RB, Ledger, ME, Lewis, HM, Olesen, JM, van Veen, FJF, Warren, PH & Woodward, G 2009, 'Ecological networks: beyond food webs', *Journal of Animal Ecology* vol. 78, pp. 253–69.

Karczmarski, L, Cockcroft, VG & McLachlan, A 2000, 'Habitat use and preferences of Indo-Pacific humpback dolphins Sousa chinensis in Algoa Bay, South Africa', *Marine Mammal Science*, vol. 16, no. 1, pp. 65–79.

Noad, MJ, Dunlop, RA, Paton, D & Cato, DH 2008, 'An update of the east Australian humpback whale population (E1) rate of increase', paper SC/60/SH31 submitted for consideration by the International Whaling Commission Scientific Committee, Cambridge, UK.

Parra, GJ 2006, 'Resource partitioning in sympatric delphinids: space use and habitat preferences of Australian snubfin and Indo-Pacific humpback dolphins', *Journal of Animal Ecology*, vol. 75, pp. 862–74.

Parra, GJ, Corkeron, PJ & Marsh, H 2006, 'Population sizes, site fidelity and residence patterns of Australian snubfin and Indo-Pacific humpback dolphins: implications for conservation', *Biological Conservation*, vol. 129, pp. 167–80.

Parra, GJ & Jedensjo, M 2009, Feeding habits of Australian Snubfin (Orcaella heinsohni) and *Indo-Pacific humpback dolphins* (Sousa chinensis), project report to the Great Barrier Reef Marine Park Authority, Townsville, Queensland, and Reef & Rainforest Research Centre, Cairns (22 pp.).

Parra, GJ & Ross, JGB 2009, 'Humpback dolphins, S. chinensis and S. teuszii', in WF Perrin, B Würsig & JGM Thewissen (eds) 2009, *Encyclopedia of marine mammals*, 2nd edn, Academic Press, San Diego, pp. 1100–1103.

Paterson, RAP, Paterson, R & Cato, DH 2001, 'Status of humpback whales, Megaptera novaeangliae, in east Australia at the end of the 20th century',*Memoirs of the Queensland Museum*, vol. 47, no. 2, pp. 579–86.

Paterson, R, Paterson, R & Cato, DH 2004, 'Continued increase in east Australian humpback whales in 2001, 2002', *Memoirs of the Queensland Museum*, vol. 49, no. 2, p. 712.

Valsecchi, E, Hale, P, Corkeron, P & Amos, W 2002, Social structure in migrating humpback whales (Megaptera novaeangliae), Molecular Ecology, vol. 11, pp. 507–18.

Schedule 2.3
Marine turtles of the Temperate East Marine Region

Four species of marine turtle listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) are known to occur in the Temperate East Marine Region, and all are listed as threatened and migratory under the EPBC Act.

Green and loggerhead turtles are the most common marine turtles found in the Temperate East Marine Region, with nesting sites dotted along the New South Wales and south-east Queensland coasts. Hawksbill and leatherback turtles are likely to be found foraging in the region.

The following advice relates to the marine turtles for which it has been possible to identify biologically important areas, listed in Table S2.5. Please refer to the conservation values report card—marine reptiles for a complete list of reptiles in the region and additional information (**www.environment.gov.au/marineplans/temperate-east**).

Table S2.5: Marine turtles listed as threatened and/or migratory in or adjacent to the Temperate East Marine Region for which biologically important areas have been identified

Species	Listing status
Green turtle *(Chelonia mydas)*	Vulnerable, migratory, marine
Loggerhead turtle *(Caretta caretta)*	Endangered, migratory, marine

Key considerations in relation to significant impacts on green and loggerhead turtles in the Temperate East Marine Region

Population status and ecological significance

The **green turtle** is listed as vulnerable and migratory under the EPBC Act. Three breeding aggregations (considered to be separate stock) exist in and adjacent to the region: the northern and southern Great Barrier Reef stock and the Coral Sea stock. The Temperate East Marine Region is most important for the southern Great Barrier Reef stock. This population is estimated to include 36 500 breeding females (Dethmers et al. 2010). This stock was thought to be in decline, but recent studies indicate it is now increasing (Chaloupka et al. 2007). The northern Great Barrier Reef and Coral Sea populations have an estimated 133 500 and 15 500 breeding females, respectively (Dethmers et al. 2010).

The **loggerhead turtle** is listed as endangered and migratory under the EPBC Act. The eastern Australian stock, the most important within the Temperate East Marine Region, has undergone a sharp decline since the 1970s, with estimates from the 1999–2000 breeding season of less than 500 breeding females (Limpus 2008).

For the purposes of determining the significance of impacts of proposed actions on the four species[20] listed above, note that:

- the loggerhead turtle is endangered under the EPBC Act. It is known that populations of this species occur in and adjacent to the Temperate East Marine Region
- the green turtle is listed as vulnerable under the EPBC Act. It is known that populations of this species occur in and adjacent to the Temperate East Marine Region.

Species distribution and biologically important areas

Green turtles are a global species that generally live in tropical environments within the 20 °C isotherm, but they are occasionally known to enter temperate waters. Adults forage mainly on seagrass and algae, and occasionally eat mangroves (Forbes 1994; Limpus & Limpus 2000; Pendoley & Fitzpatrick 1999), fish egg cases (Forbes 1994), jellyfish (Limpus, Couper & Read 1994) and sponges (Whiting, Guinea & Pike 2000). The species is common throughout north-eastern Australia and there are seven distinct genetic stocks within the Australian region (Dethmers et al. 2006; FitzSimmons et al. 1997). The northern Great Barrier Reef supports the largest population of nesting green turtles in Australia, with smaller breeding areas in the south (DEWHA 2009). Beyond the boundaries of the Great Barrier Reef, the islets that make up the Coringa-Herald National Nature Reserve in the Coral Sea, to the east of Cairns and Townsville, support the most significant nesting sites in the region.

20 Definitions of 'important population' and 'ecologically significant population' are provided in Section 1 of this schedule and are consistent with EPBC Act Policy Statement 1.1: Significant Impact Guidelines—Matters of National Environmental Significance. In accordance with Policy Statement 1.1, for threatened species listed as vulnerable, such as the green turtle, consideration should be given to whether an important population occurs in the area where the action is proposed; for listed migratory species, consideration should be given to whether an ecologically significant proportion of a population may be impacted.

In their post-hatchling and juvenile stages, green turtles drift on ocean currents (Carr & Meylan 1980). They travel south along the east coast of Australia on the East Australian Current, leaving the region as they move east to northern New Zealand, then continuing on the South Pacific Gyre to re-enter the region via the Coral Sea (DEWHA 2009). In their next phase, they move to shallow waters to forage on seagrass and algae, living in coral and rocky reefs, inshore seagrass beds and algal mats (Musick & Limpus 1997; Poiner & Harris 1996; Robins, Bache & Kalish 2002; Whiting, Guinea & Pike 2000). Green turtles are much smaller than other marine turtles when they leave their open ocean phase, and it is presumed that they do not travel as extensively as some other species within the south Pacific (Limpus et al. 2005, DEWHA 2009).

Biologically important areas have been identified for **green turtles** in the Temperate East Marine Region and include (from north to south):

- Mon Repos Conservation Park, for nesting, with an internesting buffer of 20 kilometres (November to February)
- Moreton Bay for foraging (year round).

The **loggerhead turtle** breeds in eastern Australia and forages throughout Queensland and New South Wales. Females predominantly nest on beaches near Bundaberg and the islands of the southern Great Barrier Reef. The largest nesting sites are Mon Repos on the mainland and Wreck Island in the Great Barrier Reef, where several hundred females lay their eggs every year. Some isolated nesting occurs south of Bundaberg and as far south as Ballina in northern New South Wales (Limpus 1985; DEWHA 2009). In their early life they are carried south by the East Australian Current to around 30° S (Limpus, Couper & Read 1994; Walker 1994), leaving the region as they move east to northern New Zealand, then travelling on the South Pacific Gyre and re-entering the region via the Coral Sea (DEWHA 2009). As large, immature turtles, their oceanic, pelagic, post-hatchling phase moves to a benthic feeding phase (Bjorndal 1997; Lanyon, Limpus & Marsh 1989; Limpus & Limpus 2000; Limpus et al. 2005). Adults and large juveniles inhabit environments with both hard and soft substrata, including rocky and coral reefs (Limpus, Fleay & Guinea 1984), muddy bays (Conway 1994), sand flats, estuaries and seagrass meadows (Limpus, Couper & Read 1994; Preen 1996; McCauley & Bjorndal 1999). Large concentrations of foraging loggerhead turtles have been found in the lagoons of the southern Great Barrier Reef islands (e.g. Heron and Wistari), as well as the Hervey Bay and Moreton Bay areas (DEWHA 2009).

Biologically important areas have been identified for **loggerhead turtles** in the Temperate East Marine Region and include (from north to south):

- the coastline between Bustard Head, Queensland, and Ballina, New South Wales for nesting, with an internesting buffer of 20 kilometres (November to February)
- Mon Repos Conservation Park–Woongara Coast for nesting, with an internesting buffer of 20 kilometres (November to February).

Further information on these areas is found in the Temperate East Conservation Values Atlas (**www.environment.gov.au/cva**).

Nature of the proposed action

The life history patterns of marine turtles, including long life spans and late sexual maturity, make them vulnerable to a range of pressures in the marine environment. Marine turtles spend their life at sea other than when adult females return to beaches in their natal region to nest (FitzSimmons et al. 1997; Chaloupka & Limpus 2001). They are highly migratory and occupy different habitats at different stages of their life.

The conservation values report card—reptiles provides a summary of the existing environment and pressures in the Temperate East Marine Region. Proposals for new actions should consider the existing environment, vulnerabilities and pressures acting on marine turtles in the region.

The green turtle is vulnerable to extraction of living resources associated with (non-domestic) commercial fishing activities; bycatch from commercial fishing activities; climate change (sea level rise); marine debris from a range of sources; and collision with vessels. Potential pressures include physical habitat modification from dredging activities; extraction of living resources from illegal, unregulated and unreported fishing activities; climate change (changes in sea and sand temperatures and oceanography); oil and chemical pollution/contaminants associated with shipping; chemical pollution/contaminants and nutrient pollution associated with urban development and agricultural activities; and light pollution from land-based and offshore activities.

The loggerhead turtle is vulnerable to bycatch from commercial fishing activities; climate change (sea level rise, changes in sea and sand temperatures); marine debris from a range of sources; and collision with vessels. Potential pressures include invasive species; physical habitat modification from dredging activities; extraction of living resources from illegal, unregulated and unreported fishing activities; climate change (changes in oceanography); oil and chemical pollution/contaminants associated with shipping; chemical pollution/contaminants and nutrient pollution associated with urban development and agricultural activities; and light pollution from land-based and offshore activities.

Growing urban and industrial development in the region is leading to an increase in recreational vessels and shipping in areas frequented by marine turtles, increasing the potential of vessel collisions for both species.

Pressures *of concern* and *of potential concern* on the loggerhead and green turtles in the Temperate East Marine Region are as follows:

- increases in sea temperature, changes in sea level and changes in terrestrial sand temperature are *of concern* for the loggerhead turtle and *of potential concern* for the green turtle
- bycatch as a result of commercial fishing activities is a pressure *of concern* while bycatch as a result of illegal, unregulated and unreported fishing is *of potential concern* for both turtle species
- vessel collision is a pressure *of concern* for both turtle species
- changes in oceanography is *of potential concern* for both species
- chemical and nutrient pollution as a result of industrial and coastal development and agricultural activities is a pressure *of potential concern* for both turtle species
- marine debris from a range of sources is a pressure *of potential concern* for both turtle species
- light pollution from onshore activities (e.g. petroleum facilities, ports and urban development) is a pressure *of potential concern* for both turtle species
- physical habitat modification through dredging is a pressure *of potential concern* for both turtle species
- oil pollution is *of potential concern* for both species
- invasive species (e.g. foxes and feral pigs) is a pressure *of potential concern* for both turtle species
- non-domestic commercial fishing is *of potential concern* for green turtles.

People planning to undertake actions in biologically important areas for marine turtles should carefully consider the potential for their action to have a significant impact on the species. For actions proposed outside biologically important areas for marine turtles, the risk of significant impact on the species is likely to be lower.

The following actions have a **very high risk** of a significant impact on the loggerhead turtle:

- actions that have a real chance or possibility of resulting in an increase in collision with vessels.

The following actions have a **high risk** of a significant impact on both the loggerhead and the green turtle:

- actions that have a real chance or possibility of resulting in an increase in lighting at important nesting sites during breeding seasons. Examples of such actions include onshore sources of lighting (e.g. petroleum processing facilities, ports)
- actions, such as dredging, that have a real chance or possibility of modifying, destroying or decreasing the availability of habitat for the species
- actions that have a real chance or possibility of changing the water quality of; increasing nutrient pollution of; or introducing contaminants into, biologically important areas
- actions that have a real chance or possibility of leading to the introduction of invasive species into biologically important areas.

Actions with a real chance or possibility of resulting in an increase in collision with vessels have a **high risk** of a significant impact on the green turtle.

Actions that have a real chance or possibility of introducing marine debris to the biologically important areas of the loggerhead and green turtle have a **risk** of significant impact on these species.

Actions that introduce a new source from which a severe oil spill or other chemical pollution has a reasonable potential of arising (e.g. increased shipping and drilling) have a **risk** of significant impact on the loggerhead and green turtles.

Advice for preparing a referral with respect to impacts on green and loggerhead turtles in the Temperate East Marine Region

The 'referral of proposed action' form is available electronically at **www.environment.gov.au/epbc/indedex.html** and can also be obtained in hard copy by telephoning 1800 803 772. It includes detailed instructions about the type of information required in referring a proposed action for consideration.

In addition to the instructions included in the referral of proposed action form, if an action is referred because of the risk of significant impact on either of the two species of marine turtle considered here, consideration of the following matters is recommended:

- If the action is proposed within a biologically important area classified in a nesting, internesting or foraging area, information should be considered about alternative locations for the proposed action that would be outside the area, why the action is unlikely to have a significant impact or why any significant impact can be reduced to an acceptable level.
- Referrals should include information on how the likelihood of any significant impacts will be mitigated, considering the advice provided above on likely significant impacts to any marine turtles. Independent scientific assessments of any intended mitigation measures should be sought before submitting a referral and these assessments should be included in the referral.
- Referrals should be supported by scientifically credible information that places the proposal in the context of existing pressures on marine turtles and the life history characteristics of the species. The conservation values report card—reptiles provides information on the range of pressures on marine turtles addressed in this regional advice.

References

Bjorndal, KA 1997, 'Foraging ecology and nutrition of sea turtles', in *The Biology of Sea Turtles*, PL Lutz & JA Musick (eds), CRC Press, Boca Raton, Florida, pp. 199–232.

Carr, A & Meylan, AB 1980, 'Evidence of passive migration of green turtle hatchlings in Sargassum', *Copeia*, vol. 1980, no. 2, pp. 366–368.

Chaloupka, M & Limpus C 2001, 'Trends in the abundance of sea turtles resident in southern Great Barrier Reef waters', *Biological Conservation*, vol. 102, pp. 235–49.

Chaloupka, M, Bjorndal, KA, Balazs, GH, Bolten, AB, Ehrhart, LM, Limpus, CJ, Suganuma, H, Troeng, S & Yamaguchi, M 2007, 'Encouraging outlook for recovery of a once severely exploited marine megaherbivore', *Global Ecology and Biogeography*, vol. 17, pp. 297–304.

Conway, SP 1994, *Diets and feeding biology of adult olive ridley* (Lepidochelys olivacea) *and loggerhead* (Caretta caretta) *sea turtles in Fog Bay (Northern Territory)*, Graduate Diploma of Science thesis, Northern Territory University, Darwin.

Dethmers, KM, Broderick, D, Moritz, C, FitzSimmons, NN, Limpus, CJ, Lavery, S, Whiting, S, Guinea, M, Prince, RIT & Kennett, R 2006, 'The genetic structure of Australasian green turtles (Chelonia mydas): exploring the geographical scale of genetic exchange', *Molecular Ecology*, vol. 15, no. 13, pp. 3931–46.

Dethmers, KM, Jensen, MP, FitzSimmons, NN, Broderick, D, Limpus, CJ & Moritz, C 2010, 'Migration of green turtles *(Chelonia mydas)* from Australasian feeding grounds inferred from genetic analyses', *Marine and Freshwater Research*, vol. 61, pp. 1376–87.

DEWHA (Australian Government Department of the Environment, Water, Heritage and the Arts) 2009, 'The East Marine Bioregional Plan: Bioregional Profile', DEWHA, Canberra.

FitzSimmons, N, Limpus, C, Norman, J, Goldizen, A, Miller, JD & Moritz, C 1997, 'Philopatry of male marine turtles inferred from mitochondrial DNA markers', in *Proceedings of the National Academy of Sciences of the United States of America*, vol. 94, no. 16, pp. 8912–17.

Forbes, GA 1994, 'The diet of the green turtle in an algal based coral reef community-Heron Island, Australia', in BA Schroeder & BE Witherington (eds), *Proceedings of the Thirteenth Annual Symposium on Sea Turtle Biology and Conservation*, NOAA technical memorandum NMFS-SEFSC-341, National Technical Information Service, Springfield, pp. 57–9.

Lanyon, J, Limpus, CJ & Marsh, H 1989, 'Dugongs and turtles: grazers in the seagrass system', in AWD Larku, AJ McComb & SA Shepherd (eds), *Biology of Australian seagrasses: an Australian perspective*, Elsevier, Amsterdam, pp. 610–34.

Limpus, CJ 1985, A study of the loggerhead turtle, Caretta caretta, in eastern Australia, PhD thesis, Zoology Department, University of Queensland, Brisbane.

Limpus, CJ 2008, A biological review of Australian marine turtles. 1. Loggerhead turtle Caretta caretta (Linneaus), Queensland Environment Protection Agency, Brisbane, viewed 1 July 2011, **<www.derm.qld.gov.au/register/p02785aa.pdf>**.

Limpus, CJ, Couper, PJ & Read, MA 1994, 'The loggerhead turtle, Caretta caretta, in Queensland: population structure in a warm temperate feeding area', Memoirs of the Queensland Museum, vol. 37, pp. 195–204.

Limpus, CJ, Fleay, AF & Guinea, M 1984, 'Sea turtles of the Capricorna Section, Great Barrier Reef', in *The Capricornia Section of the Great Barrier Reef: past, present and future*, WT Ward & P Saenger (eds), Royal Society of Queensland and Australian Coral Reef Society, Brisbane, pp. 61–78.

Limpus, CJ & Limpus, DJ 2000, 'Mangroves in the diet of *Chelonia mydas* in Queensland, Australia', *Marine Turtle Newsletter*, vol. 89, pp. 13–5.

Limpus, CJ, Limpus, DJ, Arthur, KE & Parmenter, CJ 2005, *Monitoring green turtle population dynamics in Shoalwater Bay: 2000–2004*, research publication no. 83, report prepared for the Queensland Environmental Protection Agency, Brisbane, and the Great Barrier Reef Marine Park Authority, Townsville, Queensland.

McCauley, S & Bjorndal, K 1999, 'Conservation implications of dietary dilution from debris ingestion: sub lethal effects in post-hatchling loggerhead sea turtles', *Conservation Biology*, vol. 13, no. 4, pp. 925–9.

Musick, J & Limpus, C 1997, 'Habitat utilization and migration in juvenile sea turtles', in PL Lutz & JA Musick (eds), *The biology of sea turtles*, CRC Press, Boca Raton, Florida, pp. 137–63.

Pendoley, K & Fitzpatrick, J 1999, 'Browsing of mangroves by green turtles in Western Australia', *MarineTurtle Newsletter*, vol. 84, p. 10.

Poiner, I & Harris, A 1996, 'Incidental capture, direct mortality and delayed mortality of sea turtles in Australia's Northern Prawn Fishery', *Marine Biology*, vol. 125, pp. 813–25.

Preen, A 1996, 'Infaunal mining: a novel foraging method of loggerhead turtles', *Journal of Herpetology*, vol. 30, no. 1, pp. 94–6.

Robins, CM, Bache, SJ & Kalish, SR 2002, *Bycatch of sea turtles in pelagic longline fisheries: Australia*, Fisheries Research and Development Corporation, Canberra.

Walker, T 1994, 'Post-hatchling dispersal of sea turtles', in R James (comp.), *Proceedings of the Marine Turtle Conservation Workshop*, Seaworld Nara Resort, Gold Coast, 14–17 November 1990, Australian National Parks Service, Canberra.

Whiting, SD, Guinea, M & Pike, GD 2000, 'Sea turtles nesting in the Australian territory of Ashmore and Cartier islands, eastern Indian Ocean', in N Pilcher & G Ismail (eds), *Sea turtles of the Indo-Pacific: research management and conservation*, ASEAN Academic Press, London, pp. 86–93.

Schedule 2.4
Seabirds of the Temperate East Marine Region

Twenty species of seabird listed as threatened and/or migratory are known to have biologically important areas in the Temperate East Marine Region (Table S2.6), and a further 21 species may occur infrequently in the region.[21] Seabirds listed as threatened and/or migratory are matters of national environmental significance and protected under the EPBC Act. Regional advice for some seabird species in the region that are not listed as threatened or migratory is included in Schedule 2.1.

Table S2.6: Seabird species listed as threatened and/or migratory with biologically important areas in and adjacent to the Temperate East Marine Region

Species	Listing status	Breeding season and habits
Terns and noddies		
Common noddy *(Anous stolidus)*	Migratory, marine	Breeds in the region from October to January (Lord Howe and Norfolk Island groups)
Shearwaters		
Flesh-footed shearwater *(Ardenna carneipes)*	Migratory, marine	Breeds in the region from August to May Forages in the region from September to November and January to February
Short-tailed shearwater *(Ardenna tenuirostris)*	Migratory, marine	Breeds in the region from November to April
Sooty shearwater *(Ardenna grisea)*	Migratory, marine	Breeds in the region from September to April
Wedge-tailed shearwater *(Ardenna pacifica)*	Migratory, marine	Breeds in the region from November to April (Coral Sea, Great Barrier Reef, Montague Island, Muttonbird Island, Broughton Island) Breeds in the region from September to April (Lord Howe Island group) Breeds in the region from October to May (Norfolk Island group)

21 All birds that occur naturally in the region (including the airspace) are protected under the EPBC Act as listed marine species. Seabirds are those birds that rely on and have an ecological association with the marine environment. Not all the birds that occur in the Temperate East Marine Region are seabirds (a complete list of all the birds known to occur in the region is provided in the report card on seabirds).

Species	Listing status	Breeding season and habits
Petrels and storm-petrels		
Gould's petrel *(Pterodroma leucoptera)*	Endangered, migratory	Breeds in the region from August to May
Southern giant-petrel *(Macronectes giganteus)*	Endangered, migratory, marine	Forages in the region from June to October
Northern giant-petrel *(Macronectes halli)*	Vulnerable, migratory, marine	Forages in the region from June to October
Kermadec petrel *(Pterodroma neglecta)*	Vulnerable, marine	Breeds in the region from November to June
White-bellied storm-petrel *(Fregetta grallaria)*	Vulnerable, marine	Breeds in the region from February to May
Black petrel *(Procellaria parkinsoni)*	Migratory, marine	Forages in the region year-round
Providence petrel *(Pterodroma solandri)*	Migratory, marine	Breeds in the region from March to November
Wilson's storm-petrel *(Oceanites oceanicus)*	Migratory, marine	Migrates through the region North migration from April to June South migration from September to November
Albatrosses		
Antipodean albatross *(Diomedea antipodensis)*	Vulnerable, migratory, marine	Forages in the region year-round
Black-browed albatross *(Thalassarche melanophris)*	Vulnerable, migratory, marine	Forages in the region from May to November
Campbell albatross *(Thalassarche impavida)*	Vulnerable, migratory, marine	Forages in the region from June to August
Indian yellow-nosed albatross *(Thalassarche carteri)*	Vulnerable, migratory, marine	Forages in the region from May to November
Wandering albatross *(Diomedea exulans)*	Vulnerable, migratory, marine	Forages in the region from July to November

Species	Listing status	Breeding season and habits
White-capped albatross *(Thalassarche steadi)*	Vulnerable, migratory, marine	Forages in the region May to November
Boobies		
Masked booby *(Sula dactylatra)*	Migratory, marine	Breeds in the region year-round

The Temperate East Marine Region supports diverse seabird species, with areas such as the Lord Howe and Norfolk Island groups recognised both nationally and internationally as significant breeding sites (Dutson et al. 2009). The East Australian Current and the Tasman Front drive biological productivity, which offers key foraging opportunities for both resident and migratory species (DEWHA 2009).

The following advice relates only to those species listed in Table S2.6 which have known biologically important areas in the region. There is limited information on those species that may infrequently occur in the region. Please refer to the conservation values report card—seabirds for a complete list of seabirds and additional information (**www.environment.gov.au/marineplans/temperate-east**).

No specific advice is provided for birds that fly over but do not breed or feed within the Commonwealth marine area of the Temperate East Marine Region. A complete list of birds that are known to overfly the Temperate East Marine Region is provided in the conservation values report card—seabirds and migratory shorebirds.

Most actions would have low risk of significant impact on those birds listed as threatened and/or migratory which only fly over the region.

Key considerations in relation to significant impacts on 20 species of seabird in the Temperate East Marine Region

Population status and ecological significance

The **common noddy** is listed as migratory and marine. The species breeds on Lord Howe and Norfolk Islands, as well as beyond the region (e.g. Great Barrier Reef and Coral Sea) (Higgins & Davies 1996). There are estimated to be 2000 breeding pairs on islands adjacent to the Temperate East Marine Region (Higgins & Davies 1996).

The **flesh-footed shearwater** is listed as migratory and marine. The species breeds on Lord Howe Island and, in 2002–2003, there were an estimated 17 462 breeding pairs on the island (DSEWPaC 2011c). The species forages in the Tasman Sea, extending west from Lord Howe Island to waters in south-eastern Queensland (McKean & Hindwood 1965) and south-eastern Tasmania (Marchant & Higgins 1990).

The **short-tailed shearwater** is listed as migratory and marine. The species breeds on islands off the New South Wales coast, including Montague, Tollgate, Lion, Cabbage, Broughton, Little Broughton, Muttonbird, Boondelbah, Martin, Big, Bowen, Brush and Grasshopper islands. This species migrates to the northern hemisphere during the austral winter (Marchant & Higgins 1990). The global population of short-tailed shearwater is estimated to be 23 million individuals (Birdlife International 2011c).

The **sooty shearwater** is listed as migratory and marine. The species breeds on islands off the New South Wales Coast, including Montague, Tollgate, Lion, Cabbage, Broughton, Little Broughton, Muttonbird, Boondelbah, Martin, Big, Bowen, Brush and Grasshopper islands (Marchant & Higgins 1990). There were estimated to be 250 breeding pairs in New South Wales in 1979 (Lane & White 1983). This species migrates to the northern Pacific Ocean during the non-breeding (austral winter) season (BirdLife International 2011d; Brooke 2004).

The **wedge-tailed shearwater** is listed as migratory and marine. The species breeds on islands in the Lord Howe Island group, Norfolk Island group, off the New South Wales and Queensland coasts, and beyond the region (e.g. the Coral Sea) (Marchant & Higgins 1990). There is no information on breeding populations in the region.

The **black petrel** is listed as migratory and marine. The species breeds in New Zealand and there are estimated to be 1750 breeding pairs. The species forages in the Tasman Sea (ACAP 2009e).

Gould's petrel is listed as endangered and migratory. The species breeds at four locations in New South Wales: Cabbage Tree Island (1000 breeding pairs), Boodelbah Island (35 breeding pairs), Broughton Island and Little Broughton Island (Garnett, Szabo & Dutson 2011; DSEWPaC 2011a). The Australian birds are considered to be an endemic subspecies,

Pterodroma leucoptera leucoptera (Garnett, Szabo & Dutson 2011). The species disperses throughout the Tasman Sea and eastern Pacific Ocean (BirdLife International 2011a).

The **Kermadec petrel** is listed as vulnerable and marine. The species breeds on Balls Pyramid and Phillip Island and there are estimated to be 40 breeding birds on these islands (Garnett & Crowley 2000). The species forages in the Tasman Sea.

The **providence petrel** is listed as migratory and marine. The species breeds on Lord Howe Island (32 000 breeding pairs) and Phillip Island (20 individuals). The species forages in the western Tasman Sea (Birdlife International 2011b).

The **white-bellied storm-petrel** is listed as vulnerable and marine. The species breeds on Roach Island (around 1000 breeding pairs), Ball's Pyramid, Muttonbird Island and possibly Blackburn Island in the Lord Howe Island group (Garnett, Szabo & Dutson 2011; DSEWPaC 2011b). The Australian birds are considered to be a subspecies, *Fregetta grallaria grallaria* (Garnett, Szabo & Dutson 2011). The species is highly pelagic, foraging in the Tasman and Coral Seas, and rarely approaches land except near breeding colonies (Garnett, Szabo & Dutson 2011; Marchant & Higgins 1990).

Wilson's storm-petrel is listed as migratory and marine. The species breeds in Australian territory (Macquarie Island, Heard Island) and there are estimated to be 10 000 breeding birds on Australia's subantarctic islands (Garnett & Crowley 2000). The species migration path appears to follow the edge of the continental shelf until approximately the New South Wales–Queensland border and then turns eastwards (Marchant & Higgins 1990).

The **northern giant-petrel** is listed as vulnerable, migratory and marine. The species breeds in Australian territory (Macquarie Island) and there are estimated to be 1793 breeding pairs on Macquarie Island (ACAP 2010c). The species forages in the Tasman Sea.

The **southern giant-petrel** is listed as endangered, migratory and marine. The species breeds in Australian territory (Heard Island and McDonald Island, Macquarie Island) and there are estimated to be 5625 breeding pairs on Australia's subantarctic islands (ACAP 2010b). The species forages in the Tasman Sea.

The **antipodean albatross** is listed as vulnerable, migratory and marine. The species breeds in New Zealand and there are estimated to be 11 557 breeding pairs. The antipodean albatross forages in the Tasman Sea (ACAP 2009a).

The **black-browed albatross** is listed as vulnerable, migratory and marine. The species breeds in Australian territory (Heard Island and McDonald Island, Macquarie Island) and there are estimated to be 787 breeding pairs on Australia's subantarctic islands (ACAP 2010a). The black-browed albatross forages over the New South Wales shelf and generally not north of the New South Wales–Queensland border.

The **Campbell albatross** is listed as vulnerable, migratory and marine. The species breeds in New Zealand and there are estimated to be 21 000 breeding pairs. During winter, adults can be found widely dispersed in the Tasman Sea (ACAP 2009b).

The **Indian yellow-nosed albatross** is listed as vulnerable, migratory and marine. The species breeds in France, South Africa and New Zealand (a single pair has been recorded on Chatham Island), and there are estimated to be 36 500 breeding pairs globally. The species forages in the Tasman Sea (ACAP 2009c).

The **wandering albatross** is listed as vulnerable, migratory and marine. The species breeds in Australian territory (Macquarie Island) and there are estimated to be 5–10 breeding pairs on Macquarie Island (ACAP 2009d). The wandering albatross forages in the Tasman Sea.

The **white-capped albatross** is listed as vulnerable, migratory and marine. The species breeds in New Zealand and there are estimated to be 97 111 breeding pairs. The species forages in the Tasman Sea (ACAP 2011).

The **masked booby** is listed as migratory and marine. The species breeds on islands in the Lord Howe Island and Norfolk Island groups, as well as beyond the region (e.g. Great Barrier Reef and Coral Sea) (Marchant & Higgins 1990). There are estimated to be 400 breeding pairs on islands adjacent to the Temperate East Marine Region (Marchant & Higgins 1990).

As a group, seabirds consume large amounts of marine resources and therefore play an important functional role in marine ecosystems. Examples of their role include nutrient transfer from pelagic and offshore regions to islands, reefs and coasts, dispersal of seeds and movement of organic matter through the soil layers, particularly by burrow-nesting species (Congdon et al. 2007).

For the purpose of determining the significance of impacts of proposed actions on the 20 species[22] listed above, note that:

- Gould's petrel and the southern giant-petrel are listed as endangered under the EPBC Act. It is known that populations of these species occur in and adjacent to the region.

The following species are listed as vulnerable under the EPBC Act: Kermadec petrel, white-bellied storm-petrel, northern giant-petrel, Antipodean albatross, black-browed albatross, Campbell albatross, Indian yellow-nosed albatross, wandering albatross and white-capped albatross. It should be assumed that populations of these species in and adjacent to the Temperate East Marine Region are important populations of the species.

The following species are listed as migratory under the EPBC Act: common noddy, flesh-footed shearwater, short-tailed shearwater, sooty shearwater, wedge-tailed shearwater, black petrel, providence petrel, Wilson's storm-petrel and masked booby. It should be assumed that important habitat for these species occurs in the Temperate East Marine Region.

Species distribution and biologically important areas

The 20 species listed in Table S2.6 are known to either breed and/or forage in the region. In general, the albatross and petrel species only forage, feeding in offshore waters, mainly along the edge of the continental shelf. The shearwaters, boobies, terns, noddies and some smaller petrels breed on islands in and adjacent to the region, including islands in the Great Barrier Reef, Lord Howe and Norfolk Island groups and smaller islands off New South Wales.

22 Definitions of 'important population' and 'ecologically significant population' are provided in Section 1 of this schedule and are consistent with EPBC Act Policy Statement 1.1: Significant Impact Guidelines—Matters of National Environmental Significance. In accordance with Policy Statement 1.1, for threatened species listed as vulnerable, such as the antipodean albatross, consideration should be given to whether an important population occurs in the area where the action is proposed; for listed migratory species, consideration should be given to whether an ecologically significant proportion of a population may be impacted.

Biologically important areas have been identified for all 20 species and include:

- breeding areas (encompasses breeding sites and areas where the species is likely to forage to provision young)
- foraging areas
- migration pathways.

Further information on these areas is found in the Temperate East Conservation Values Atlas (**www.environment.gov.au/cva**).

Nature of the proposed action

The conservation values report card—seabirds provides an overview of the vulnerabilities and pressures on protected seabirds in the Temperate East Marine Region. Anthropogenic activities in coastal environments and offshore have the potential to significantly impact on seabirds.

Disturbance of colonies by invasive species, particularly during the breeding season, can reduce breeding success or cause direct mortality. **All seabird species** that breed in the region (see Table S2.6) are vulnerable to pest species, such as rats, rabbits and ants (e.g. Argentine ant, African big-headed ant).

Pressures *of potential concern* on **all seabird species** in the region include:

- climate change (changes in sea temperature and oceanography, ocean acidification)
- oil and chemical pollution/contaminants associated with shipping
- marine debris from a range of sources
- human presence at sensitive sites (e.g. breeding colonies).

Pressures *of potential concern* on specific species occurring in the region include:

- light pollution associated with land-based activities (shearwater and petrel species)
- bycatch from commercial fishing activities (foraging seabirds, particularly the larger species, such as the flesh-footed shearwater, short-tailed shearwater, sooty shearwater, wedge-tailed shearwater, black petrel, northern giant-petrel, southern giant-petrel, Antipodean albatross, black-browed albatross, Campbell albatross, Indian yellow-nosed albatross, wandering albatross and white-capped albatross)
- bycatch associated with recreational and charter fishing (flesh-footed shearwater)

People planning to undertake actions in biologically important areas for seabirds used for breeding, during breeding season, should carefully consider the potential for their actions to have a significant impact on the species. The risk of actions proposed outside 'breeding area' biologically important areas to have a significant impact on the species is likely to be significantly lower. For biologically important areas used for foraging, the potential for significant impact is not as high however actions undertaken within these areas during times when the species are present do carry a higher risk than actions undertaken outside these areas.

In addition to this general advice, actions with a real chance or possibility of resulting in the establishment of harmful invasive species into the biologically important areas of Gould's petrel (e.g. tourism development) have a **very high risk** of a significant impact on that species.

Actions with a real chance or possibility of resulting in the establishment of harmful invasive species in biologically important areas for all other seabird species in the region have a **high risk** of a significant impact on those species (e.g. tourism development).

The following actions have a **high risk** of a significant impact on all seabird species in the region:

- actions with a real chance or possibility of introducing a new source from which chemical contamination has a reasonable potential of arising in biologically important areas (e.g. construction of ports or expansion in port facilities leading to greater shipping traffic)
- actions with a real chance or possibility of increasing disturbances at breeding colonies (e.g. tourism, research), potentially disrupting the breeding cycle of an important population (of a threatened species) or ecologically significant proportion of the population (such as a non-breeding aggregation of a migratory species).

The following actions have a **high risk** of a significant impact on shearwaters (flesh-footed shearwater, short-tailed shearwater, sooty shearwater, wedge-tailed shearwater) and petrels (black petrel, Gould's petrel, Kermadec petrel, providence petrel, white-bellied storm-petrel, Wilson's storm-petrel, northern giant-petrel and southern giant-petrel):

- actions with a real chance or possibility of increasing lighting from land-based activities (e.g. construction of ports or expansion in port facilities; lighthouses and buildings at or around breeding colonies).

Actions that have a real chance or possibility of introducing marine debris within biologically important areas of the 20 species of seabirds have a **risk** of significant impact on these species.

Actions that introduce a new source from which a severe oil spill has a reasonable potential of arising in biologically important areas have a **risk** of significant impact on all seabird species (e.g. increased shipping).

Advice for preparing a referral with respect to impacts on 20 species of seabirds of national environmental significance in the Temperate East Marine Region

A referral of proposed action form is available electronically at **www.environment.gov.au/epbc/index.html** and can also be obtained in hard copy by telephoning 1800 803 772. It includes detailed instructions about the type of information that is required in referring a proposed action for consideration.

In addition to the instructions included in the referral of proposed action form, if an action is referred because of the risk of significant impact on any of the 20 species of seabird discussed in this schedule, consideration of the following matters is recommended:

- If the action is proposed within a biologically important area classified as a breeding area (including breeding colonies and/or foraging areas that are likely to incorporate chick provisioning), information about alternative locations for the proposed action that would be outside the area and/or why the action is unlikely to have a significant impact or why any significant impact can be reduced to a level that is acceptable should be considered.
- Referrals should include information on how it is proposed that the likelihood of any significant impacts will be mitigated, considering the advice provided above on likely significant impacts to any seabirds. It is recommended that independent scientific assessments of any intended mitigation measures be sought before submitting a referral and that any such assessment is included in the referral.
- Referrals should be supported by scientifically credible information that places the proposal in the context of the advice on existing pressures on seabirds and the particular life history characteristics of the species. The conservation values report card—seabirds provides information on the current understanding of the range of pressures on seabirds addressed in this regional advice.

References

ACAP (Agreement on the Conservation of Albatrosses and Petrels) 2009a, *ACAP species assessment: antipodean albatross Diomedea antipodensis*, ACAP, Hobart, viewed 18 September 2010, **<www.acap.aq>.**

ACAP (Agreement on the Conservation of Albatrosses and Petrels) 2009b, *ACAP species assessment: Campbell albatross* Thalassarche impavida, ACAP, Hobart, viewed 26 August 2010, **<www.acap.aq>**.

ACAP (Agreement on the Conservation of Albatrosses and Petrels) 2009c, *ACAP species assessments: Indian yellow-nosed albatross* Thalassarche carteri, ACAP, Hobart, viewed 27 August 2010, **<www.acap.aq>**.

ACAP (Agreement on the Conservation of Albatrosses and Petrels) 2009d, *ACAP species assessment: wandering albatross* Diomedea exulans, ACAP, Hobart, viewed 10 September 2010, **<www.acap.aq>**.

ACAP (Agreement on the Conservation of Albatrosses and Petrels) 2009e, ACAP species assessment: black petrel Procellaria parkinsoni, ACAP, Hobart, viewed 20 August 2010, **<www.acap.aq>**.

ACAP (Agreement on the Conservation of Albatrosses and Petrels) 2010a, *ACAP species assessment: black-browed albatross* Thalassarche melanophris, ACAP, Hobart, viewed 11 October 2010, **<www.acap.aq>**.

ACAP (Agreement on the Conservation of Albatrosses and Petrels) 2010b, *ACAP species assessment: southern giant petrel* Macronectes giganteus, ACAP, Hobart, viewed 20 October 2010, **<www.acap.aq>**.

ACAP (Agreement on the Conservation of Albatrosses and Petrels) 2010c, *ACAP species assessment: northern giant petrel* Macronectes halli, ACAP, Hobart, viewed 13 October 2010, **<www.acap.aq>**.

ACAP (Agreement on the Conservation of Albatrosses and Petrels) 2011, *ACAP species assessment: white-capped albatross* Thalassarche steadi, ACAP, Hobart, viewed 1 February 2011, **<www.acap.aq>**.

Birdlife International 2011a, *Species factsheet*: pterodroma leucoptera, Birdlife International, Cambridge, UK, viewed 4 July 2011, **<www.birdlife.org/datazone/speciesfactsheet.php?id=3887>**.

Birdlife International 2011b, *Species factsheet*: pterodroma solandri, Birdlife International, Cambridge, UK, viewed 27 May 2011, **<www.birdlife.org/datazone/speciesfactsheet.php?id=3902>**.

Birdlife International 2011c, *Species factsheet*: puffinus tenuirostris, Birdlife International, Cambridge, UK, viewed 27 May, **<www.birdlife.org/datazone/speciesfactsheet.php?id=3934>**.

Birdlife International 2011d, *Species factsheet*: puffinus griseus, Birdlife International, Cambridge, UK, viewed 4 July 2011, **<www.birdlife.org/datazone/speciesfactsheet.php?id=3933>**.

Brooke, M 2004, *Albatrosses and petrels across the world*, Oxford University Press, Oxford.

Congdon, BC, Erwin, CA, Peck, DR, Baker, GB, Double, MC & O'Neill, P 2007, 'Vulnerability of seabirds on the Great Barrier Reef to climate change', in JE Johnson & PA Marshall (eds), *Climate change and the Great Barrier Reef*, Great Barrier Reef Marine Park Authority, Townsville, and Australian Greenhouse Office, Canberra, pp. 427–63.

DEWHA (Department of the Environment, Water, Heritage and the Arts) 2009, *The East Marine Bioregional Plan: Bioregional Profile*, DEWHA, Canberra.

DSEWPaC (Australian Government Department of Sustainability, Environment, Water, Population and Communities) 2011a, '*Pterodroma leucoptera leucoptera*', in *Species profile and threats database*, DSEWPaC, Canberra, viewed 27 May 2010, **<www.environment.gov.au/sprat>**.

DSEWPaC (Australian Government Department of Sustainability, Environment, Water, Population and Communities) 2011b, '*Fregetta grallaria grallaria*', in *Species profile and threats database*, DSEWPaC, Canberra, viewed 27 May 2010, **<www.environment.gov.au/sprat>**.

DSEWPaC (Australian Government Department of Sustainability, Environment, Water, Population and Communities) 2011c, '*Ardenna carneipes*', in *Species profile and threats database*, DSEWPaC, Canberra, viewed 27 May 2010 **<www.environment.gov.au/sprat>**.

Dutson, G, Garnett, S & Gole, C 2009, *Australia's important bird areas: key sites for bird conservation*, Birds Australia conservation statement no. 15, October 2009.

Garnett, ST & Crowley, GM 2000, *The action plan for Australian birds*, Environment Australia, Canberra.

Garnett, ST, Szabo, J & Dutson, G 2011, *The action plan for Australian birds 2010*, CSIRO Publishing, Collingwood.

Higgins, P & Davies, S (eds) 1996, *Handbook of Australian, New Zealand and Antarctic birds: volume 3—snipe to pigeons*, Oxford University Press, Melbourne.

Lane, SG & White, G 1983, 'Nesting of the sooty shearwater in Australia', *Emu*, vol. 83 no. 2, pp. 117–8.

Marchant, S & Higgins, PJ (eds) 1990, *Handbook of Australian, New Zealand and Antarctic birds: volume 1—ratites to ducks*, Oxford University Press, Melbourne.

McKean, JL & Hindwood, KA 1965, 'Additional notes on the birds of Lord Howe Island', *Emu*, vol. 64, pp. 79–97.

Schedule 2.5
Sharks of the Temperate East Marine Region

Six species of shark listed under the EPBC Act are known to occur in the Temperate East Marine Region. In addition to these listed species, two sharks occurring in the region have been nominated for listing under the EPBC Act, Harrison's dogfish and the southern dogfish.

Important breeding, feeding and aggregation areas for sharks are found throughout and adjacent to the Temperate East Marine Region. Grey nurse sharks are found on the continental shelf, occasionally venturing off the shelf to aggregate around inshore rocky reefs, islands or in rocky caves. Pelagic species such as the white, whale, mako (shortfin and longfin) and porbeagle sharks are wide ranging and diverse in their ecological niches. In general, sharks in the region predominantly feed on bony fishes and cephalopods, although some species feed on other sharks, rays, crustaceans, birds and marine mammals. Whale sharks are plankton feeders.

The following advice relates only to the grey nurse shark and the white shark for which biologically important area information is available (Table S2.7). Please refer to the conservation values report card—sharks for a complete list of sharks and additional information (**www.environment.gov.au/marineplans/temperate-east**).

Table S2.7: Sharks listed as threatened and/or migratory with biologically important areas identified within the Temperate East Marine Region

Species	Listing status
Grey nurse shark [east coast population] (*Carcharias taurus*)	Critically endangered
White shark (*Carcharodon carcharias*)	Vulnerable, migratory

Key considerations in relation to significant impacts on sharks species in the Temperate East Marine Region

Population status and ecological significance

The **grey nurse shark** is listed as two separate populations under the EPBC Act. The west coast population is listed as vulnerable, while the east coast population is listed as critically endangered. The east coast population is estimated at 1365 individuals, with 95 per cent confidence that the population is between 1146 and 1662 individuals (Cardno Ecology Lab 2010).

The **white shark** is listed as vulnerable and migratory under the EPBC Act. There are currently no estimates of the white shark population in Australian waters and no reliable measures with which to compare changes in population status over time. This is partly due to the scarcity of white sharks, but also the difficulty in distinguishing population changes from the high rates of variability in numbers observed in any one site or region between years (Bruce 2008).

Top-order predators—such as grey nurse and white sharks—are a key functional species group, influencing abundance, recruitment, species composition, diversity and behaviour of prey species. Their removal can have a cascading effect on all components of a food web (Baum & Worm 2009; Heithaus 2001; Ings et al. 2009, cited in Ceccarelli & Ayling 2010).

For the purposes of determining the significance of impacts of proposed actions on the two species[23] listed above, note that:

- the grey nurse shark (east coast population) is critically endangered under the EPBC Act. It is known that populations of this species occur in and adjacent to the Temperate East Marine Region
- the white shark is listed as vulnerable under the EPBC Act. It should be assumed that populations of this species in and adjacent to the Temperate East Marine Region are important populations of the species.

23 Definitions of 'important population' and 'ecologically significant population' are provided in Section 1 of this schedule and are consistent with EPBC Act Policy Statement 1.1: Significant Impact Guidelines—Matters of National Environmental Significance. In accordance with Policy Statement 1.1, for threatened species listed as vulnerable, such as the antipodean albatross, consideration should be given to whether an important population occurs in the area where the action is proposed; for listed migratory species, consideration should be given to whether an ecologically significant proportion of a population may be impacted.

Species distribution and biologically important areas

The **grey nurse shark** has a broad distribution within Australian waters, from subtropical to cool temperate waters. The east coast population, estimated at 1146–1662 individuals (Cardno Ecology Lab 2010) is found between the Capricornia coast of central Queensland and Narooma in southern New South Wales, although records from locations further north and south also exist. The species is found primarily in subtropical to cool temperate inshore waters around rocky reefs and islands, and is occasionally found in the surf zone and shallow bays. Grey nurse sharks have been recorded at varying depths to 230 metres, but are most commonly found at depths of 15–40 metres (Otway & Parker 2000). Critical habitats and key aggregation sites are adjacent to the region in New South Wales and southern Queensland state waters and there are also several sites in Commonwealth waters at the Cod Grounds and Solitary Islands. These regular aggregation sites may play an important role in pupping or mating activities.

Biologically important areas have been identified for the **grey nurse shark** in the Temperate East Marine Region and include:

- foraging areas
- aggregation areas
- seasonal breeding areas (mating or pupping).

Further information on these areas is found in the Temperate East Conservation Values Atlas (**www.environment.gov.au/cva**).

The **white shark** is widely distributed throughout temperate and subtropical regions and most frequently observed in inshore cool to warm temperate continental waters. Off eastern Australia, white sharks regularly range from central–southern Queensland southwards (Bruce et al. 2006; Last & Stevens 2009), from inshore rocky reefs, surf beaches and shallow coastal bays, to outer continental shelf and slope areas. They also make open ocean excursions and can cross ocean basins. Both adults and juveniles have been recorded diving to depths of 1000 metres, but most white shark movements and activities in Australian waters occur between the coast and the 100-metre depth contour (Bruce & Bradford 2008; Bruce et al. 2006). White sharks are often found in regions with high prey density and in sites where prey species aggregate. They do not live in one specific area or territory, but travel great distances between sites of temporary residency. There is also mounting evidence that they have common migratory routes between some areas of temporary residency in Australian waters (Bruce & Bradford 2008; Bruce et al. 2006). White shark movement data suggest a northerly movement along the east coast during autumn and winter, and a return to southern Australia by early summer (Bruce et al. 2006).

Biologically important areas have been identified for the **white shark** in the Temperate East Marine Region and include:

- a juvenile aggregation area off Port Stephens between September and mid-January (extending from the shoreline to the 120-metre depth contour and approximately 10–15 kilometres offshore) (Bruce & Bradford 2008)
- the distribution generally between the 120 and 1000-metre depth contours during autumn, winter and spring.

The location of pupping grounds is not known (Bruce 2008). Further information on these areas is found in the Temperate East Conservation Values Atlas (**www.environment.gov.au/cva**).

Actions undertaken offshore of the continental shelf and not affecting waters over the continental shelf in the Temperate East Marine Region have a **low risk** of significant impact on the grey nurse shark and white shark.

Nature of the proposed action

The conservation values report card—sharks provides an overview of the vulnerabilities and pressures on protected sharks in the Temperate East Marine Region.

Like most sharks, **grey nurse and white sharks** are characterised by a life history (late age at maturity, slow growth rate, low fecundity, longevity, low rate of natural mortality), which restricts productivity. They therefore have a limited capacity to withstand human-induced pressures and to recover from population depletion as a result of these pressures.

As coastal environments appear to be a preferred habitat for the grey nurse and white sharks, both species could be adversely affected by anthropogenic activities in these habitats, particularly by types of actions that have the potential to result in habitat degradation.

Pressures *of concern* for the grey nurse shark include bycatch from commercial, recreational and charter fishing activities. Pressures *of potential concern* include human presence at sensitive sites and changes in sea temperature and oceanography associated with climate change.

Pressures *of concern* for the white shark include bycatch from recreational and charter fishing activities. Pressures *of potential concern* include bycatch associated with commercial fishing activities and illegal, unregulated and unreported fishing, extraction of living resources associated with non-domestic commercial fisheries and climate change (changes in sea temperature and oceanography).

People planning to undertake actions in biologically important areas for grey nurse and white sharks should carefully consider the potential for their action to have a significant impact on these species. For actions proposed outside biologically important areas the risk of significant impact on these species is likely to be lower.

Actions which have a real chance or possibility of increasing human disturbance in biologically important areas of the grey nurse shark and have a **high risk** of significant impact on this species.

Advice for preparing a referral with respect to impacts on grey nurse and white sharks in the Temperate East Marine Region

A referral of proposed action form is available electronically at **www.environment.gov.au/epbc/index.html** and can also be obtained in hard copy by telephoning 1800 803 772. It includes detailed instructions about the type of information required in referring a proposed action for consideration.

In addition to the instructions included in the referral of proposed action form, if an action is referred because of the risk of significant impact on either of the two species of shark considered here, consideration of the following matters is recommended:

- If the action is proposed within a biologically important area classified as a breeding area (including mating, pupping and aggregation areas), information about alternative locations for the proposed action that would be outside the area and/or why the action is unlikely to have a significant impact or why any significant impact can be reduced to a level that is acceptable should be considered.
- Referrals should include information on how it is proposed that the likelihood of any significant impacts will be mitigated, considering the advice provided above on likely significant impacts to sharks. It is recommended that independent scientific assessments of any intended mitigation measures be sought before submitting a referral and that any such assessment is included in the referral.
- Referrals should be supported by scientifically credible information that places the proposal in the context of the advice on existing pressures on sharks and the particular life history characteristics of the species. The conservation values report card—sharks provides information on the current understanding of the range of pressures on sharks addressed in this regional advice.

References

Baum, JK & Worm, B 2009, 'Cascading top-down effects of changing oceanic predator abundances', *Journal of Animal Ecology*, vol. 78, no. 4, pp. 699–714.

Bruce, BD 2008, 'The biology and ecology of the white shark (Carcharodon carcharias)', in M Camhi & EK Pikitch (eds), *Sharks of the open ocean*, Blackwell Scientific, Oxford, pp. 69–81.

Bruce, BD & Bradford, RW 2008, *Spatial dynamics and habitat preferences of juvenile white sharks: identifying critical habitat and options for monitoring recruitment*, final report to the Australian Government Department of the Environment, Water, Heritage and the Arts, Canberra.

Bruce, BD, Stevens, JD & Malcolm, H 2006, 'Movements and swimming behaviour of white sharks *(Carcharodon carcharias)* in Australian waters', *Marine Biology*, vol. 150, pp. 161–72.

Cardno Ecology Lab 2010, *Development and implementation of a population estimation protocol to provide an estimate of east coast population numbers for grey nurse sharks* (Carcharias taurus), report for the Australian Government Department of Sustainability, Environment, Water, Population and Communities, Canberra.

Ceccarelli, D & Ayling, T 2010, *Role, importance and vulnerability of top predators on the Great Barrier Reef: a review*, research publication no. 105 for the Great Barrier Reef Marine Park Authority, Townsville, Queensland.

Heithaus, MR 2001, 'Predator-prey and competitive interactions between sharks (order Selachii) and dolphins (suborder Odontoceti): a review', *Journal of Zoology*, vol. 253, pp. 53–68.

Ings TC, Montoya, JM, Bascompte, J, Bluethgen N, Brown, L, Dormann, CF, Edwards, F, Figueroa, D, Jacob, U, Jones, JI, Lauridsen, RB, Ledger, ME, Lewis, HM, Olesen, JM, van Veen, FJF, Warren, PH & Woodward, G 2009, 'Ecological networks: beyond food webs', *Journal of Animal Ecology*, vol. 78, pp. 253–69.

Last, PR & Stevens, JD 2009, *Sharks and rays of Australia*, 2nd edn, CSIRO Publishing, Collingwood.

Otway, NM & Parker, PC 2000, *The biology, ecology, distribution, abundance and identification of marine protected areas for the conservation of threatened grey nurse sharks in south east Australia waters*, NSW Fisheries Office of Conservation, Port Stephens.

Table A: Listed marine and cetacean species known to occur in the Temperate East Marine Region

Species (common/scientific name)	Conservation status[24]
Bony fishes	
Big-bellied or pot-bellied seahorse *(Hippocampus abdominalis)*	Marine
Bullneck seahorse *(Hippocampus minotaur)*	Marine
Duncker's pipehorse *(Solegnathus dunckeri)*	Marine
Hardwick's pipehorse *(Solegnathus hardwickii)*	Marine
Kellogg's seahorse *(Hippocampus kelloggi)*	Marine
Sad seahorse *(Hippocampus tristis)*	Marine
Weedy seadragon *(Phyllopteryx taeniolatus)*	Marine
Cetaceans	
Dolphins	
Bottlenose dolphin *(Tursiops truncatus)*	Cetacean
Common dolphin *(Delphinus delphis)*	Cetacean
Fraser's dolphin *(Lagenodelphis hosei)*	Cetacean
Indian Ocean bottlenose dolphin *(Tursiops aduncus)*	Cetacean
Pantropical spotted dolphin *(Stenella attenuate)*	Cetacean

Species (common/scientific name)	Conservation status[24]
Risso's dolphin *(Grampus griseus)*	Cetacean
Rough-toothed dolphin *(Steno bredanensis)*	Cetacean
Southern right whale dolphin *(Lissodelphis peronii)*	Cetacean
Spinner dolphin *(Stenella longirostris)*	Cetacean
Striped dolphin *(Stenella coeruleoalba)*	Cetacean
Other cetaceans	
Andrew's beaked whale *(Mesoplodon bowdoini)*	Cetacean
Arnoux's beaked whale *(Berardius arnuxii)*	Cetacean
Blainville's beaked whale *(Mesoplodon densirostris)*	Cetacean
Cuvier's beaked whale *(Ziphius cavirostris)*	Cetacean
Dwarf minke whale *(Balaenoptera acutorostrata)*	Cetacean
Dwarf sperm whale *(Kogia simus)*	Cetacean
False killer whale *(Pseudorca crassidens)*	Cetacean
Ginkgo-toothed beaked whale *(Mesoplodon ginkgodens)*	Cetacean
Gray's beaked whale, scamperdown whale *(Mesoplodon grayi)*	Cetacean

Species (common/scientific name)	Conservation status[24]
Hector's beaked whale *(Mesoplodon hectori)*	Cetacean
Long-finned pilot whale *(Globicephala melas)*	Cetacean
Melon-headed whale *(Peponocephala electra)*	Cetacean
Pygmy killer whale *(Feresa attenuate)*	Cetacean
Pygmy sperm whale *(Kogia breviceps)*	Cetacean
Shepherd's beaked whale or Tasman beaked whale *(Tasmacetus shepherdi)*	Cetacean
Short-finned pilot whale *(Globicephala macrorhynchus)*	Cetacean
Southern bottlenose whale *(Hyperoodon planifrons)*	Cetacean
Strap-toothed beaked whale, strap-toothed whale, Layard's beaked whale *(Mesoplodon layardii)*	Cetacean
True's beaked whale *(Mesoplodon mirus)*	Cetacean
Marine Reptiles	
Sea snakes	
Beaked seasnake *(Enhydrina schistosa)*	Marine
Blue-lipped sea krait *(Laticauda laticaudata)*	Marine
Colubrine sea krait, banded sea krait or yellow-lipped sea krait *(Laticauda colubrine)*	Marine

Species (common/scientific name)	Conservation status[24]
Dubois' seasnake *(Aipysurus duboisii)*	Marine
Elegant seasnake *(Hydrophis elegans)*	Marine
Horned seasnake *(Acalyptophis peronii)*	Marine
Laboute's seasnake *(Hydrophis laboutei)*	Marine
Little file snake *(Acrochordus granulatus)*	Marine
Marbled or spine-tailed seasnake *(Aipysurus eydouxii)*	Marine
Olive-headed seasnake *(Hydrophis major)*	Marine
Olive seasnake *(Aipysurus laevis)*	Marine
Plain-banded seasnake *(Hydrophis vorisi)*	Marine
Small-headed seasnake *(Hydrophis macdowelli)*	Marine
Spectacled seasnake *(Hydrophis kingii)*	Marine
Spotted seasnake *(Hydrophis ornatus)*	Marine
Stokes' seasnake *(Astrotia stokesii)*	Marine
Turtle-headed seasnake *(Emydocephalus annulatus)*	Marine
White-bellied mangrove snake *(Fordonia leucobalia)*	Marine

Species (common/scientific name)	Conservation status[24]
Yellow seasnake *(Hydrophis spiralis)*	Marine
Yellow-bellied seasnake *(Pelamis platurus)*	Marine
Seabirds	
Terns and noddies	
White tern *(Gygis alba)*	Marine
Crested tern *(Thalasseus bergii)*	Marine
Sooty tern *(Onychoprion fuscata)*	Marine
Grey ternlet *(Procelsterna cerulea)*	Marine
Black noddy *(Anous minutus)*	Marine
Shearwaters	
Little shearwater *(Puffinus assimilis)*	Marine
Petrels and storm-petrels	
Black-winged petrel *(Pterodroma nigripennis)*	Marine
Great-winged petrel *(Pterodroma macroptera)*	Marine
White-faced storm-petrel *(Pelagodroma marina)*	Marine
White-necked petrel *(Pterodroma cervicalis)*	Marine

Species (common/scientific name)	Conservation status[24]
Penguins	
Little penguin *(Eudyptula minor)*	Marine
Tropicbirds	
Red-tailed tropicbird *(Phaethon rubricauda)*	Marine

24 Species listed as threatened and/or migratory under the EPBC Act are not listed in this table

MAP DATA SOURCES

DSEWPaC (2011): Australia, World Heritage Areas

DSEWPaC (2011): Key Ecological Features in the Temperate East Marine Planning Region

DSEWPaC (2011): Ramsar Wetlands of Australia

DSEWPaC (2010): Historic Shipwrecks Register

DSEWPaC (2010): Collaborative Australian Protected Areas Database (CAPAD)

DSEWPaC (2007): Commonwealth Marine Protected Areas Managed by DSEWPaC

DSEWPaC (2006): Integrated Marine and Coastal Regionalisation of Australia v4.0

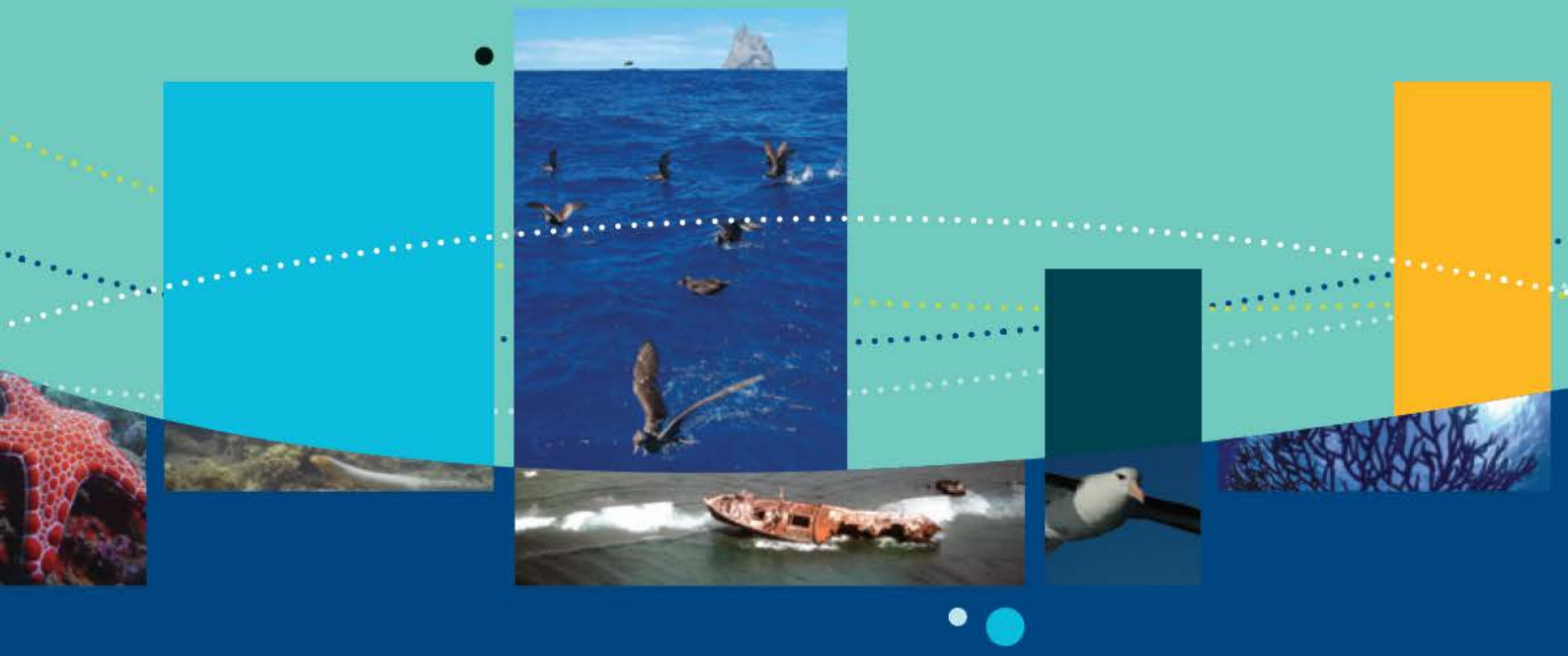
DSEWPaC (2006): Commonwealth Marine Planning Regions

Geoscience Australia (2006): Australian Maritime Boundaries (AMB) v2.0

Geoscience Australia (2009): Australian Bathymetry and Topography

Geoscience Australia (2004): Gazetteer of Australia

Geoscience Australia (2003): Australia, TOPO-2.5M Topographic Data



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Attachment L

Summary of public submissions
All submissions provided on USB

173 individual submissions- opposed
1238 campaign submissions - opposed
8 individual submissions – support

From	Support / Oppose	Key Issues
Australian Marine Conservation Society	Oppose	▪ The values of the Moreton Bay Ramsar Wetland will be significantly negatively impacted ▪ Species protected by the EPBC Act will be negatively impacted by the duration of the activity and increased boat activity and pollution ▪ The development will impact a large number of feeding and roosting sites for migratory species protected under international agreements ▪ The proposal will impact a significant population of koalas ▪ The project will destroy seagrass habitats upon which EPBC listed species are dependent ▪ Ongoing light, noise and physical pollution impacts to the Ramsar wetland post construction ▪ The proposed action is not critical infrastructure as the housing and shopping developments can be built on less sensitive and already disturbed areas
Birdlife Australia	Oppose	▪ The project is expected to have clearly unacceptable impacts on Matters of National Environmental Significant protected under the EPBC Act ▪ The Australian Government's *Wildlife Conservation Plan for Migratory Shorebirds (2016)* identifies the need to protect migratory shorebird habitat across the flyway, including important habitat in Australia ▪ Conservation advice for the Eastern Curlew identifies Australia's obligation to maintain and improve protection of all feeding and roosting sites for the species, for which there is no evidence to suggest that habitat can be successfully recreated ▪ Australia is obligated to protect migratory shorebird habitat under several international agreements

From	Support / Oppose	Key Issues
Birds Queensland (Queensland Ornithological Society Inc)	Oppose	▪ The proposal does not support a key strategy in the Federal Department of Environment "Conservation Plan for Migratory Shorebirds" ▪ Australia should take its obligations under the Ramsar treaty seriously ▪ Any reclamation of the Moreton Bay Marine Park would be unacceptable under the EPBC Act
Brisbane Marketing (Brisbane City Council)	Support	▪ The development will enable the region to showcase natural assets
Brisbane Residents United	Oppose	▪ The proposal shows a lack of response to the known climate change impacts on this region ▪ Mangroves and wetlands protect shorelines and will be beneficial in the future against increased storm surges and sea invasion ▪ The development is outside of what was the agreed urban footprint ▪ The development will have negative impacts on three matters protected by the EPBC Act o A wetland of international significance o Listed Threatened Species o Migratory Species ▪ Australia has an international obligation to protect Ramsar-listed wetlands
s47F – Global Flyway Network	Oppose	▪ The development is in a Ramsar site ▪ The development is in habitat for critically endangered fauna
Community Alliance for Responsible Planning (C.A.R.P)	Oppose	▪ The proposed project would adversely impact an area which uniquely combines the internationally significant wetlands, habitat for migratory shorebirds and a healthy koala population ▪ Dredging activity would destroy many hectares of seagrass beds and harm corals ▪ The proposed project will destroy feeding grounds for migratory shorebirds, including the Eastern Curlew (critically endangered)

From	Support / Oppose	Key Issues
		▪ All that is wanted and needed at Toondah Harbour is an upgrade of the harbour facilities
s47F PhD Candidate | Centre for Biodiversity and Conservation Science School of Biological Sciences University of Queensland	Oppose	▪ The proposed development site contains wildlife species that of significant conservation concern ▪ The federal government has a responsibility to see the conservation of species listed under the Act ▪ Australia has an obligation to protect Ramsar Wetlands and species that rely on the area ▪ Australia is a party to the United Nation's Convention on Biological Diversity. The 20 Aichi Biodiversity Targets were adopted in 2010. o Australia must, by 2020, prevent the extinction of known threatened species and improve their conservation status o Australia must, by 2020, drastically reduce the loss of natural habitats and must reduce pollution. ▪ The approval of Toondah Harbour directly contravenes the targets and would set a dangerous precedent for other coastal development
s47F State Council Wildlife Preservation Society of Queensland	Oppose	▪ The referral lacks a real understanding of the migratory wader birds that frequent the area, their roost sites and their feeding grounds ▪ There is great concern for how the fauna will be protected, including marine life
s47F Adjunct Research Fellow Environmental Futures Research Institute Griffith University	Oppose	▪ Developments like Toondah Harbour with up to 10,000 people concentrated in a small area will have a large impact on the viability of ecosystems in the bay ▪ These types of over-developments chip away at the environment undermining its health and capacity to recover
East Asian-Australasian Flyway Partnership (EAAFP) Shorebird Working Group	Oppose	▪ The Moreton Bay Ramsar site is an internationally significant site for the Eastern Curlew ▪ The development footprint includes high quality feeding habitat for this species ▪ The Australian Government led the International Single Species Action Plan for the

From	Support / Oppose	Key Issues
		Conservation of Far Eastern Curlew with key priorities such as ensuring all important non-breeding habitat is protected and adequately managed ▪ The Australian Government should uphold its obligations under the plan, as well as other international agreements ▪ The development of this site would set a dangerous precedent to develop other Ramsar-listed wetlands
s47F – Former Redland Shire Councillor	Oppose	▪ The barge and ferry terminal need a makeover, not an enormous development as there is no need for thousands of apartments in Moreton Bay ▪ This proposal was deemed unsuitable for environmental impacts because of the acid sulphate soils
Friends of Stradbroke Island Association Inc.	Oppose	▪ The project should be declared clearly unacceptable due to the proposed destruction of Ramsar protected wetlands ▪ The proposed action will destroy the feeding grounds of different species of migratory birds, including critically endangered birds ▪ The foreshore area included in the proposal holds a significant population of koalas ▪ The referral states that approximately 50% of the area proposed to be destroyed is covered in seagrass – an important source of food for EPBC listed species ▪ The high risk of pollution from the construction and ongoing operation which will impact on the values of the Ramsar site
Infrastructure Association of Queensland	Support	▪ Provide an upgrade to ageing infrastructure ▪ Boost the amenity of the area and the capacity of the marine facilities ▪ Positive economic impact
Koala Action Group Qld Inc	Oppose	▪ The Assessment of Federal Environmental issues should not be given to the Queensland State Government as the state has proclaimed its support and is likely to be biased.

From	Support / Oppose	Key Issues
		▪ The Project has been established under the Economic Development Act 2012 which is not covered by the bilateral agreement with the Federal Government ▪ The proposal is likely to have a significant impact on matters protected by the EPBC Act ▪ Dredging will cause silt plumes and they will destroy corals of Moreton Bay before they are able to be studied ▪ The area hosts an important koala population ▪ The koala population has declined by 80% in the last 20 years, however the area still has a colony of healthy breeding koalas that should be protected under the act ▪ 10,000 people participated in the most recent koala survey – indicating far more support for the population to remain protected and not threatened by this proposal
s47F – Freelance Writer	Oppose	▪ Moreton Bay is known to provide shelter to migrating whales, often with calves ▪ The area has an important population of koalas that would be negatively impacted by the increased traffic in the area ▪ There are turtle nesting beaches in Moreton Bay, and important feeding grounds for multiple species of turtles, including green and loggerhead ▪ Moreton Bay is home to approximately 800 dugongs that feed on the seagrasses that will be destroyed by the development ▪ New corals have been discovered in Moreton Bay ▪ A newer safer harbour is needed, but not at Toondah where the ecology of the bay and the islands is too valuable.
National Parks Association of Queensland	Oppose	▪ NPAQ support an upgrade to the current ferry terminal, however the scale and extent of the Toondah Harbour Project is inappropriate given its location within and adjacent to the Moreton Bay Ramsar site ▪ Direct and permanent damage to over 40 ha of the Moreton Bay Ramsar wetland through

From	Support / Oppose	Key Issues
		dredging, sedimentation, litter and runoff ▪ Significant impacts on EPBC Act listed migratory bird species ▪ Significant impacts on the local koala population ▪ Significant loss of seagrass – important food source for dugongs and turtles, and also for fish and prawn spawning ▪ The protection of the wetlands should be upheld according to Australia's commitment nationally and internationally
s47F Centre for Biodiversity and Conservation Science Centre for Marine Science University of Queensland	Oppose	▪ The dredging and reclamation of over 40ha of protected wetlands should be sufficient to refuse approval ▪ Dredging will have cascading impacts on water quality within Moreton Bay, leading to declines of coral reef and seagrass habitat, as well as the species that depend on these habitats ▪ Key Australian objectives for migratory species include: Maintain and enhance important habitat ▪ Declines in wetland habitats can have impacts on the fishing and prawning industry as breeding and recruitment grounds will be destroyed
Queensland Conservation Council	Oppose	▪ The proposal will impact significantly on matters protected by the EPBC Act ▪ The proposal should be declared a controlled action ▪ It should not be made a 'coordinated project' under the Queensland *State Development and Public Works Organisation Act 1971*
Queensland Wader Study Group (QWSG)	Oppose	▪ The Federal Department of Environment's 'Conservation Plan for Migratory Shorebirds', launched by the Minister for the Environment in 2016 notes the importance of conserving shorebird habitat as the key strategy. ▪ There is a need to revitalise the Toondah Harbour ferry terminal, however the proposed development extends beyond the needs of the community ▪ If development occurs it should be undertaken in an environmentally sensitive way that

From	Support / Oppose	Key Issues
		respects Australia's obligations under the Ramsar Convention and protects threatened species ▪ The proposed development will contribute to the on-going decline in the number of migratory birds ▪ There is no discernible strategy to address the long-term impacts of the lengthy development period on shorebirds ▪ The consultant reports produced state that the immediate site development will have a negative effect on the near by roosting site (Cassim Island)
Redlands 2030	Oppose	▪ There is no demonstrable demand for a development such as Toondah ▪ As the increasing effects of urban development along the coastline impact EPBC Act listed species, remnant habitat should be more highly regarded and preserved due to the dwindling areas of Protected Areas ▪ The studies suggest that the loss of salt marsh community is offset because similar habitat is nearby, however this is an endangered ecological community and needs to be considered more substantially
Sealink Travel Group	Support	▪ Support a new marina, improved ferry facilities and improved amenities.
Secretariat – Ramsar Convention on Wetlands	Oppose	▪ The proposed development extends into the Moreton Bay Ramsar Site ▪ The proposed project will have an adverse impact on the ecological character of the Moreton Bay Ramsar Site and the criteria under which the wetland was designated ▪ Loss of wetland habitat for development will set a precedent for other developments in the future ▪ The Referral document states that the proposed development will likely impact on the ecological character of the Ramsar Site and this impact will be significant ▪ The Government of the Commonwealth of Australia has an obligation to promote the conservation of the Moreton Bay Ramsar Site and to consider its international responsibilities

From	Support / Oppose	Key Issues
		for the conservation, management and wise use of the migratory shorebirds at the site ▪ The impacts from increased disturbance to the area from greater boat traffic has not been evaluated ▪ The impact from increased pollution have not been mentioned ▪ With reference to the Articles of the Ramsar Convention on Wetlands which are relevant to this case, it states that: ~ Contracting Parties shall "…formulate and implement their planning so as to promote the conservation…" of their Ramsar Sites (Article 3.1); ~ "Each Contracting Party shall consider its international responsibilities for the conservation, management and wise use of migratory stocks of waterfowl…" (Article 2.6); ~ "Each Contracting Party shall arrange to inform the Ramsar Secretariat "…at the earliest possible time if the ecological character of any wetland in its territory and included in the List has changed, is changing or is likely to change as the result of technological developments, pollution or other human interference." (Article 3.2); ~ Contracting Parties have the right to restrict the boundary of their Ramsar Site because of "…urgent national interests…" and to inform the Ramsar Secretariat "…at the earliest time…" if this were to happen (Article 2.5); ~ "Where a Contracting Party in its urgent national interest, deletes or restricts the boundaries of a wetland included in the List, it should as far as possible compensate for any loss of wetland resources, and in particular it should create additional nature reserves for waterfowl and for the protection, either in the same area or elsewhere, of an adequate portion of the original habitat." (Article 4.2) ~ "If Contracting Parties make alterations to their list of Ramsar Sites or changes in the character of the Ramsar Sites, then the Secretariat will "…arrange for these matters to be discussed at the next Conference." (Article 8.2d)
s47F MSc (Conservation Biology), Ba Inf & Tech, Dip Applied Science (Marine Resources). Program Wildlife	Oppose	▪ The proponent fails to adequately address the negative impacts to fauna ▪ The proponent fails to disclose the high fidelity migratory wader birds have towards their feeding sites and roosting areas

From	Support / Oppose	Key Issues
Queensland Coastal Citizen Science. Secretary, Wildlife Preservation Society of Queensland Bayside Branch (QLD) Inc.		▪ The subject site is an important site for migratory shorebirds ▪ Cumulative pressures are not addressed by the proponent, a matter raised in the 2016 State of the Environment Report ▪ The seagrass meadows within the subject site are regularly used by EPBC listed species ▪ Urbanisation of a wetland of international importance is not a wise use of a wetland
Southern Moreton Bay Islands Coastcare	Oppose	▪ The Development should be refused due to the potential impacts on MNES ▪ Significant earthworks and construction will have long term and structurally significant impacts on the viability of the threatened species and ecological communities in the wider Moreton Bay area
Stradbroke Island Management Organisation Inc. (SIMO)	Oppose	▪ The development will have negative impacts on MNES ▪ As a contracting party to the Ramsar Convention, Australia has an international obligation to protect Ramsar listed wetlands
Straddie Chamber of Commerce	Support	▪ The area is already significantly impacted and an environmentally sensitive development may improve water quality ▪ There is only a small amount of intact habitat in the area ▪ Providing controls are implemented, the impact of the development could be managed and would not increase impacts on sensitive areas such as wading bird habitat or seagrass beds
Wildlife Preservation Society of Queensland Logan Branch Inc	Oppose	▪ The proposal fails to demonstrate how the fauna will be adequately and appropriately protected. The area supports biodiversity of international significance ▪ The proponents have not adequately addressed how the marine life, mangroves and seagrass meadows will be protected ▪ The proposal does not address cumulative impacts on the Moreton Bay Marine Park ▪ The imposition of numerous and complex conditions tend to be meaningless as there are not the resources available to police the conditions

From	Support / Oppose	Key Issues
		▪ The development could be implemented if it did not propose to dredge a Ramsar wetland and kept all development on land
Individual Submissions x 149	Oppose	▪ The proposal should be rejected because the referral states that it will have a significant impact on matters protected by the EPBC Act ▪ Australia has international obligations to protect wetlands, migratory birds and threatened species ▪ Dredging and reclamation of 40ha of Moreton Bay Ramsar Site goes against the obligations under the Ramsar Convention, it will impact other areas within the Moreton Bay Ramsar Site and will destroy habitat critical to the survival of turtles, dugongs, fish, prawns, seabirds, migratory wader species ▪ The impacts to migratory species such as the Eastern Curlew will be too significant for a critically endangered species ▪ The site will significantly impact the local koala population ▪ Concerns over the long-term impacts from the development, including noise, lighting and pollution on the species impacted ▪ The development should not be considered critical infrastructure as there are many other suitable sites and proposals that would benefit the community and have no need to dredge reclaim areas of a Ramsar Site ▪ The community supports an upgrade to the ferry terminal, but not the proposed development as it looks currently
Individual Submissions x 4	Support	▪ The proposal will improve the ferry terminal and upgrade the local infrastructure ▪ There will be potential to increase access to North Stradbroke Island ▪ There is support for it to progress so the proposal is given a thorough Environmental Impact Assessment

From	Support / Oppose	Key Issues
		▪ There is support, as long as key environmental aspects of the area are preserved
Campaign Submissions x 1238	Oppose	▪ This development proposal will have negative impacts on three Matters of National Environmental Significance protected under the EPBC Act ▪ Australia is a contracting party to the Ramsar Convention, and therefore has an international obligation to protect Ramsar-listed wetlands. ▪ Any development that intends to reclaim part of a Ramsar site should be declared a 'clearly unacceptable action' under the EPBC Act.

FOI 180804
Document 15

From:	Barker, James
To:	s22
Cc:	Tregurtha, James; s22 de Brouwer, Gordon; Knudson, Dean; s22 Taylor, Mark
Subject:	RE: Request for Statement of Reasons - Controlled Action Decision - EPBC 2017/7939 (Toondah Harbour) [SEC=UNCLASSIFIED]
Date:	Wednesday, 21 June 2017 2:38:33 PM
Attachments:	image001.jpg image002.jpg image003.jpg

Yes, we'll action accordingly. Our standard practice is also to cc the proponent for natural justice reasons. So we'll forward a copy to Walker Group at the same time we send it out to HSI (today or tomorrow).

From: s22
Sent: Wednesday, 21 June 2017 9:32 AM
To: Barker, James <James.Barker@environment.gov.au>
Cc: Tregurtha, James <James.Tregurtha@environment.gov.au>; s22 @environment.gov.au>; de Brouwer, Gordon <Gordon.deBrouwer@environment.gov.au>; Knudson, Dean <Dean.Knudson@environment.gov.au>; s22 @environment.gov.au>
Subject: RE: Request for Statement of Reasons - Controlled Action Decision - EPBC 2017/7939 (Toondah Harbour) [SEC=UNCLASSIFIED]

Yes – I assume this is how we normally deal with these matters.

Thanks

From: Barker, James
Sent: Wednesday, 21 June 2017 9:27 AM
To: s22 @environment.gov.au>
Cc: Tregurtha, James <James.Tregurtha@environment.gov.au>; s22 @environment.gov.au>; de Brouwer, Gordon <Gordon.deBrouwer@environment.gov.au>; Knudson, Dean <Dean.Knudson@environment.gov.au>; s22 @environment.gov.au>
Subject: RE: Request for Statement of Reasons - Controlled Action Decision - EPBC 2017/7939 (Toondah Harbour) [SEC=UNCLASSIFIED]

Hi s22

The Minister signed a statement of reasons for this decision, as enclosed. If ok with you, we will send this to the applicant under a short cover letter from the Department.

Thanks
James

From: s22
Sent: Tuesday, 20 June 2017 6:25 PM
To: Barker, James <James.Barker@environment.gov.au>
Cc: Tregurtha, James <James.Tregurtha@environment.gov.au>; s22 @environment.gov.au>
Subject: FW: Request for Statement of Reasons - Controlled Action Decision - EPBC 2017/7939 (Toondah Harbour) [SEC=UNCLASSIFIED]

For action please.

From: Frydenberg, Josh (MP) [mailto:Josh.Frydenberg.MP@aph.gov.au]
Sent: Tuesday, 20 June 2017 6:23 PM
To: MinisterialCorrespondence <MinisterialCorrespondence@environment.gov.au>
Cc: s22 @environment.gov.au>
Subject: FW: Request for Statement of Reasons - Controlled Action Decision - EPBC 2017/7939 (Toondah Harbour)

s22
Office of the Hon Josh Frydenberg MP
Federal Member for Kooyong | Minister for the Environment and Energy

Electorate Office | 695 Burke Road, Camberwell VIC 3124 | t: 03 9882 3677
Parliament House Office | M1:17, Parliament House, Canberra ACT 2600 | t: 02 6277 7920

e: s22 @aph.gov.au | w: www.joshfrydenberg.com.au

From: Laura Muir [mailto:laura@hsi.org.au]
Sent: Tuesday, 20 June 2017 4:36 PM
To: Frydenberg, Josh (MP)
Subject: Request for Statement of Reasons - Controlled Action Decision - EPBC 2017/7939 (Toondah Harbour)

Dear Minister Frydenberg,

Please find attached a request from Humane Society International for a written statement of reasons for the controlled action decision you made under section 75 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) on 8 June 2017 regarding EPBC Act Referral 2017/7939 (a copy of the notification of your decision is also attached).

Thank you for your attention to this request, we look forward to your response.

Regards,
Laura

Laura Muir
Project Officer
Humane Society International

(02) 9973 1728

PO Box 439
Avalon NSW 2107

Download your copy of *Threatened*, HSI's new policy book

FOI 180804
Document 16

THE HON JOSH FRYDENBERG MP
MINISTER FOR THE ENVIRONMENT AND ENERGY

MC17-012016

The Hon Steven Ciobo MP
Minister for Trade, Tourism and Investment
Member for Moncrieff
Parliament House
CANBERRA ACT 2600

Dear Minister

Thank you for your letter concerning the proposed Toondah Harbour development.

I note the matters raised by Cr Williams in her letter to you, and that the Toondah Harbour proposal has been granted Tourism Major Project Facilitation status.

As you are aware, the original proposal was referred under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) in November 2015. To allow for further consultation, the timeframe for making a decision on whether or not the project required assessment under the EPBC Act was extended at the request of the proponent, the Walker Group.

In May this year the Walker Group submitted a new referral replacing its original 2015 proposal. After careful consideration of this new referral, I have decided that the proposed Toondah Harbour Development requires a comprehensive environmental assessment under the EPBC Act.

I understand that Walker Group is now considering whether to apply for 'coordinated project' status for the proposal, under the Queensland *State Development and Public Works Organisation Act 1971*. If the project is granted that status, it would be assessed by the Queensland Coordinator-General. That process is also accredited under a bilateral agreement between the Commonwealth and the State, to ensure that a single process can satisfy both State and Commonwealth environmental assessment requirements.

Thank you for bringing Cr Williams' correspondence to my attention.

Yours sincerely

JOSH FRYDENBERG

FOI 180804
Document 19

From: Barker, James
To: s22
Cc: de Brouwer, Gordon; Thompson, Malcolm; Knudson, Dean; Cahill, Matt; Tregurtha, James; Papps, David; Taylor, Mark; s22
Subject: FYI: Toondah harbour, outcome of pre-referral meeting on 26 April [SEC=UNCLASSIFIED]
Date: Friday, 28 April 2017 5:24:34 PM

Hi s22

Fyi as briefly mentioned this afternoon, we had a further discussion with Walker Group on Wednesday, and some points from that meeting are below.

Walker Group advised me this afternoon that they are likely to submit a new referral for the Toondah Harbour proposal on Tuesday/Wednesday next week (noting that it is a public holiday in Qld on Monday).

Regards
James

From: Barker, James
Sent: Friday, 28 April 2017 4:55 PM
To: 'Peter.Saba@walkercorp.com.au' <Peter.Saba@walkercorp.com.au>
Cc: s47F s22 @environment.gov.au>; s22 @environment.gov.au>
Subject: Toondah harbour, outcome of pre-referral meeting on 26 April [SEC=UNCLASSIFIED]

Hi Peter

Thank you for the opportunity to meet with you on Wednesday to discuss your proposed new referral for the Toondah Harbour Project.

One thing we flagged at the meeting was that we would follow up to confirm the key issues that we discussed. From our perspective these were:

- We discussed the pros and cons of submitting a new referral. Walker Group proposes to submit a new referral for the proposal in the coming week, including to reflect substantive changes to the project (in particular movement of the boundary in relation to Cassim Island), and provide more detailed assessment of impacts against Ramsar values.
- Walker Group are likely to seek a decision on the new referral within the ordinary statutory timeframe.
- A focus of the referral is to refine the methodology for considering the impacts to the ecological characteristics of the RAMSAR wetland. Walker Group considers the proposed methodology is a starting point from which to do further scientific analysis of the impacts.
- The Department provided some comments on the paper at the meeting. The Department advised that, in principle, the methodology seems reasonable but we will seek to provide further advice after having considered it in more detail.
- The Department advised that the more detail that can be included in the referral the better, including potential mitigations and offsets.
- The Department continues to have concerns with the project's footprint and impacts, including

the proposed reclamation within the RAMSAR wetland.

Actions:

- The Department will seek to provide comments on the proposed methodology as soon as possible, including with input from the Department's Ramsar area. Although Walker Group would like comments on the proposed methodology, Walker Group indicated that it may not wait for the comments before submitting the new referral.
- The Department will provide advice on recommended buffer zones for the Eastern Curlew (sent by email to s47F on 26 April).

Grateful if you can confirm whether this summary is consistent with your own notes of the meeting.

Please note that the Department cannot give any assurance about the particular statutory process that may be applied on a proposed action until it has been referred under the EPBC Act. Once the formal referral is received and the cost recovery fee is paid, the Minister or delegate will consider whether the proposed action in accordance with the EPBC Act. Further information may be requested by the Department for the purposes of making that decision.

I also note that I have spoken to your consultant s47F (in response to his call to me) earlier this afternoon. s47F advised me that you are likely to submit the referral Tuesday/Wednesday next week.

If you have any additional questions or clarification please contact me.

Regards
James

James Barker
Assistant Secretary | Assessments and Governance Branch
Environment Standards Division
Department of the Environment and Energy
t: 02 6274 2694 | e: james.barker@environment.gov.au