

## Structures Policy

*To provide a transparent, consistent and contemporary approach to environmental impact management of structures in the Great Barrier Reef Marine Park.*

### General Principles

- Proposals for the location of structures in the Great Barrier Reef Marine Park (Marine Park) will be assessed in accordance with the Great Barrier Reef Marine Park Authority's (GBRMPA) policy for Environmental Impact Management.
- Structures, as far as practical, will be designed and sited so as to avoid impacts on sensitive environments. To minimise risk a minimum or buffer distance between different structures and sensitive environments may be required (Table 1).

*Table 1. Indicative buffer distances between structures and sensitive environments.*

< 50m	50 to 499m	>500m
tourist pontoon	heli-pontoon	marina
underwater observatory	jetty	groyne
navigation aid	landing facility	

- Structures are not to be treated with toxic compounds such as anti-fouling paints containing Tributyltin (TBT).
- Environmental Management Plans and appropriate on-site clean-up

equipment will be required for structures where fuel or any other hazardous substance is stored.

- GBRMPA will identify unpermitted structures and identify any relevant owners and ensure that the structures are permitted or removed.

### Specific

- Government agencies must notify GBRMPA prior to construction, conduct and service of authorised navigational aids.
- A proposal for a large pontoon (Table 1) must not be located within 5km of an existing pontoon unless covered by a Plan of Management or site plan.
- The design of pontoons and associated mooring systems will require certification from a naval architect or professional engineer.
- Risk based design is advocated. This means that the design of the structure should be appropriate to the risk associated with failure. In order to do this pontoons are ranked in five categories of increasing consequence of failure (Table 2).



Table 2. Design Encounter Probabilities and return periods for pontoon structures in the GBR.

Category	Description	$P_E$	L (yr)	Nominal R (yr)
1. Small (< 15 m)	e.g. – helicopter pontoon	0.10	10	100
2. Medium (< 40 m)	usually single story no overnight staff	0.10	20	200
3. Large (> 40 m)	often multi-story overnight caretakers	0.10	30	300
4. Overnight Visitors	any size less than about 20 overnight visitors	0.05	30	600
5. Floating Hotel multi-story	more than about 20 overnight visitors	0.05	50	1000

**$P_E$ - Encounter Probability** - The encounter probability of a given event magnitude can be defined as the probability that an equal or greater magnitude event occurs within a given length of time, often selected to be the design life of the facility.

**L - Project life**

**R- Return Period** - The average waiting time between a given event magnitude equal to or greater than the specified value.

**Further Information**

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## Structures Policy

### Justification

1. The establishment of a formal structures policy is seen as an essential element in the successful management and mitigation of environmental impacts associated with structures in the Marine Park and Great Barrier Reef World Heritage Area.
2. The Department of Sustainability, Environment, Water, Population and Communities, (DSEWPaC) is the lead Commonwealth agency for proposals which occur in the Great Barrier Reef World Heritage Area. DSEWPaC will continue to liaise with GBRMPA and will seek their advice when considering matters that affect the Great Barrier Reef.
3. GBRMPA has developed these policies based on historical Marine Park Authority decisions, best available scientific and management information, community consultation and current GBRMPA practice.

### Definitions

#### 4. *Capital Dredging*

- 4.1. Dredging for navigation, to create new or enlarge existing channel, port, marina and boat harbour areas. Dredging for engineering purposes, to create trenches for pipes, cables, immersed tube tunnels, to remove material unsuitable for foundations and to remove overburden for aggregate.

#### 5. *Buffer*

- 5.1. An area or distance separating activities and/or features to minimise risk.

#### 6. *Encounter probability*

- 6.1. The encounter probability of a given event magnitude (e.g. a 5m wave height or a 40m/s wind speed) can be defined as the probability that an equal or greater magnitude event occurs within a given length of time, often selected to be the design life of the facility. Calculating encounter probability gives a better indication of the chance that the design level will be exceeded than does the specification of return period alone, because the length of time for which information is needed is explicitly included.

#### 7. *Return period*

- 7.1. The severity of the design magnitude is often specified in terms of the average waiting time between magnitude equal to or greater than the specified value. Depending upon the importance of the structure being designed, the 50, 100, or 500 year values are among those commonly specified. These specifications are in terms of return period, RH, (often called Average Recurrence Interval or ARI).

#### 8. *Sensitive Environments*

- 8.1. Sensitive environments are areas that contain populations or assemblages of organisms, or habitats, that are considered to have significant conservation and/or cultural heritage values. Examples may include dugong protection areas, fish spawning aggregation sites, seagrass beds, breeding areas, and diverse, rare or very old coral assemblages.

### 9. Structure

- 9.1. A man-made structure or vessel that is physically attached to or resting on the seabed or reef, or located on or near a reef for an extended duration (more than 14 consecutive days or 30 days in any 60 day period) and cannot be removed without external assistance.

### Background

10. Many man-made structures will impact on the environment. Detrimental effects may occur during construction, operation and decommissioning and may include physical, chemical and biological impacts such as alteration of water circulation and sediment movement patterns, habitat loss, increased turbidity and siltation, shading, eutrophication, introduction of toxic substances and changes to natural species composition. Beneficial effects may include the provision of a habitat for fish, invertebrates and plants. Human benefits may include opportunities for tourism activities and public safety. Social and cultural impacts may include alienation of other users from a site or visual pollution.
11. Structures may include marinas, groynes, jetties, underwater observatories, boat ramps, pipes, artificial reefs, stinger nets, pontoons, navigation aids, aquaculture facilities, moorings and Fish Attracting Devices (FADs).
12. Pontoons provide opportunities for tourism but have the potential for direct and indirect environmental damage. The potential impact of pontoon failure during a cyclone has required a risk assessment approach for five categories of pontoon facilities (Table 2). For example, a category three structure (typical of large pontoons) has a recommended encounter probability of 0.10 and a nominal design life of 30 years. This means that the design forces (e.g wave heights) have a 10% chance of being exceeded at least once during thirty years. These larger forces may cause failure of the structure.
13. The main consequences of failure are (i) loss of use of the facility; (ii) damage to the facility; (iii) environmental damage to the site; (iv) cost of re-establishment (design, permitting, construction, installation and advertising); (iv) bad publicity affecting the owner, other operators and GBRMPA, and (v) a small, but possible, threat to shipping if components float free. For detailed information on pontoons consult Kapitzke et al (2001).
14. The use of compounds toxic to the marine environment should be controlled and minimized in the Marine Park. Many marine structures will require treatment with anticorrosive paints to extend their longevity. Such paints need to be selected and applied to avoid potential impacts associated with inappropriate levels of toxic compounds leaching into the marine environment. Similarly, the widespread use of treated timber in the marine environment can be allowed in the Marine Park where there is research to show its safe use.
15. GBRMPA has developed these policies based on historical GBRMPA decisions, best available scientific and management information, community consultation and current GBRMPA practice. In particular, industry has been keen to review previous GBRMPA policy that required structures to be certified to withstand category 4 cyclones. This interest resulted in extensive work by James Cook University (Kapitzke et al (2001)) and this policy which is based on design encounter probabilities and returns period for structures.

16. For detailed information on planning marina developments consult Bugler (1994).

### **Legislative Context**

17. Development proposals examined by GBRMPA may be located in the inshore areas of the Marine Park, often adjoining and sometimes straddling Australian, Queensland and local government jurisdictions. Relevant Commonwealth legislation includes:

#### *18. Great Barrier Reef Marine Park Act 1975 (GBRMP Act)*

18.1. The main object of the GBRMP Act is to provide for the long term protection and conservation of the environment, biodiversity and heritage values of the Great Barrier Reef Region. The main sections of the GBRMP Act which apply to structures include

18.1.1. *Discharge of waste (Section 38DD),*

18.1.2. *Restoration of the environment (Section 61A).*

18.2. Regulations may be made under the GBRMP Act to regulate or prohibit activities in the Marine Park (Section 66).

18.3. Under section 38AA of the GBRMP Act it is an offence to carry out an operation for the recovery of minerals in the Marine Park, which may include some dredging operations. There is also the *Great Barrier Reef Region (Prohibition of Mining) Regulations 1999* which was gazetted on the 23 December 1999. These regulations identify 'mining operations' which include 'operations for the recovery of minerals' as a prohibited activity in the Great Barrier Reef Region adjoining the Marine Park.

#### *19. Great Barrier Reef Marine Park Regulations 1983*

19.1. In deciding whether or not to grant an application the GBRMPA must consider matters outlined in Regulation 88Q (mandatory considerations) and may consider matters outlined in Regulation 88R (discretionary considerations). Mandatory considerations include: the potential impacts of the proposal on the environment and on the social, cultural and heritage values of the Marine Park; options for monitoring, managing and mitigating the potential impacts; the objectives of the Marine Park zone in which the proposal will take place; whether the proposal requires an approval under the *Environment Protection and Biodiversity Conservation Act 1999*; written submissions from the public about the proposal; and matters relevant to the proper and orderly management of the Marine Park. Other relevant regulations include: Regulation 94, which applies to the removal of property within the Marine Park; and Part 8 of the Regulations, which sets out environmental management charges for structures and the discharge of waste.

#### *20. Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*

20.1. On 25 November 2009, legislative changes came into effect to better integrate the GBRMP Act with the national environment law – the EPBC Act, so that a single environmental impact assessment system applies to development proposals in the Marine Park. If a development proposal is referred under the EPBC Act, and the action or a component of that action requires a permission under the GBRMP Act, the EPBC Act referral is deemed to be a Marine Park application.

20.2. The legislative changes also establish the Marine Park as a 'matter of national environmental significance' (known as a NES matter) under the EPBC Act. This means that development proposals outside the Marine Park that are likely to have a significant

impact on the environment of the Marine Park, or other NES matters, must be assessed under the EPBC Act.

### 21. *Environment Protection (Sea Dumping) Act 1981*

21.1. The Sea Dumping Act provides for the protection of the environment by regulating dumping at sea, incineration at sea and artificial reef placements.

### 22. *Sea Installations Act 1987*

22.1. The Sea Installations Act regulates the placement, use and maintenance of seabed installations in Australian waters. A sea installation refers to any man made structure that is in contact with the seabed and used for an environment-related activity (e.g. tourism, recreation).

## References

23. Ayling, A.M and Ayling, A.L (1998). Norman Reef Great Adventures Pontoon: 1997 biological survey and summary of damage from cyclone Justin. Research publication No. 46 published by Great Barrier Reef Marine Park, Townsville
24. Bugler, M. (Ed) (1994). Environmental guidelines for marinas in the Great Barrier Reef Marine Park. Published by Great Barrier Reef Marine Park, Townsville. 102pp.
25. Kapitzke, I.R., Matheson, M.J and Hardy, T.A (2001). Reef infrastructure guidelines – tourist pontoons. CRC Reef Research Centre.

## Marine Park Authority (MPA) Board Decision(s)

26. MPA 193/1

## Relationship to other GBRMPA Policies or Position Statements

27. This Policy relates to the following GBRMPA Policies and Position Statements at the time of review:

- 27.1. Environmental Impact Management Policy - sets the framework for assessment, mitigation and management of environmental impacts associated with permitted activities in the Marine Park and Great Barrier Reef World Heritage Area.
- 27.2. Dredging and Spoil Disposal Policy - is considered when assessing the impact of dredging and spoil disposal in accordance with the Environmental Impact Management Policy.
- 27.3. Position Statement on Aquaculture within the Great Barrier Reef Marine Park – is considered when assessing the impact of aquaculture activities in accordance with the Environmental Impact Management Policy.
- 27.4. Position Statement on the Translocation of Species in the Great Barrier Reef Marine Park – is considered when assessing activities under the Environmental Impact Management Policy that may involve the translocation of species.
- 27.5. Policy on Moorings in the Great Barrier Reef Marine Park – is considered when assessing the impact of moorings in accordance with the Environmental Impact Management Policy.

27.6. Sewage Discharges from Marine Outfalls to the Great Barrier Reef Marine Park - is considered when assessing the impact of sewage discharges in accordance with the Environmental Impact Management Policy.

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