

# **Can we minimize the impact of vessel moorings on coastal habitats? An inter-agency management approach in Queensland**

Kurt Derbyshire<sup>1</sup>, Rebecca Batton<sup>1</sup>, Nicola Udy<sup>2</sup>, Kimberly Foster<sup>3</sup> and Richard Marsh<sup>4</sup>

<sup>1</sup>Queensland Department of Primary Industries and Fisheries, GPO Box 46, Brisbane Qld 4001

<sup>2</sup>Queensland Parks and Wildlife Service, Environmental Protection Agency  
PO Box 402, Cleveland Qld 4163

<sup>3</sup>Maritime Safety Queensland, GPO Box 2595, Brisbane Qld 4000

<sup>4</sup>Queensland Department of Primary Industries and Fisheries, PO Box 76, Deception Bay Qld 4508

## **ABSTRACT**

Recent and increasing inter-agency cooperation in the management of vessel moorings is leading to better outcomes for Queensland's coastal zone. There are approximately 4000 registered buoy moorings in coastal Queensland. Many of these are located in and on important inshore coastal habitats such as seagrass. Cumulatively the moorings, chains and vessels account for a sizeable disturbance area. Maritime Safety Queensland (MSQ) has the primary role in moorings management through its statutory role to maintain navigational safety, and issue authorities for all buoy moorings in Queensland waters. Buoy moorings proposed in declared Fish Habitat Areas or involving disturbance of marine plants require authorisation from the Department of Primary Industries and Fisheries (DPI&F), while the Environmental Protection Agency (EPA) / Great Barrier Reef Marine Park Authority (GBRMPA) have key roles when buoy moorings are proposed in a Marine Park. Previously, buoy mooring management has suffered from a lack of coordination between agencies, resulting in unnecessary impacts on coastal environments. The Moreton Bay Marine Park rezoning provided the framework to initiate the development and use of Designated Mooring Areas in Moreton Bay, which were determined through agreement between MSQ, QPWS and DPI&F. Importantly, new buoy mooring applicants in these areas will benefit from a streamlined approval process. The agencies are also preparing an 'environmentally-friendly' mooring trial in Moreton Bay in partnership with SEQ Catchments, as use of these will form a key component of improved buoy mooring management with flow-on benefits for coastal habitats. In addition, the agencies are cooperating on buoy mooring management in other locations and assisting with establishment of a 'National Moorings Network' of mooring managers across Australia.

## **INTRODUCTION**

Boating and related recreational activities such as fishing, diving and other aquatic pursuits are iconic parts of the Queensland lifestyle and an important contributor to local and regional economies. Safe storage of and ready access to vessels are essential elements of this lifestyle.

Buoy moorings are a means of securing vessels, providing a safer alternative to anchoring and a more cost-effective option than marina storage. A buoy mooring is attached to the seabed, either by a type of block or by a drilled/screwed anchor system, and includes a system of ropes, cables or chains for the purpose of mooring a vessel. The mooring is attached to a float or buoy on the surface to mark the location of the structure.

There are currently about 4000 approved buoy moorings in Queensland. Rapid population growth centered on coastal areas is causing great challenges for coastal management, including managing the demand for vessel moorings.

The cooperative planning referred to in this paper relates mostly – although not exclusively - to moorings for private vessels of up to 15 m length used for permanent storage of vessels.

## **COMPLEXITY OF MOORINGS MANAGEMENT IN QUEENSLAND**

The management of buoy moorings in Queensland waters is complex, encompassing multiple agencies, jurisdictions and interests. Approval processes, timeframes and costs vary considerably. In the past, interaction and coordination between agencies has been poor, leading to unacceptable management outcomes and environmental impacts. This includes approval of buoy moorings by one or more agencies that would not – or in some cases could not - be approved under the legislation of another agency.

### **Maritime Safety Queensland**

Maritime Safety Queensland (MSQ) is the primary agency responsible for the management and control of buoy moorings in Queensland waters. MSQ approves placement of buoy moorings through issue of an authority under the *Transport Operations (Marine Safety) Regulation 2004*. While MSQ has a whole of state framework for approving buoy moorings, regional harbour masters may apply area specific conditions. In assessing applications for buoy mooring authorities, MSQ is primarily concerned with ensuring maritime and navigational safety.

Restricted buoy mooring authorities are issued exclusively for private recreational use by one approved vessel. Unrestricted buoy mooring authorities are issued to support maritime businesses and activities (e.g. boat builders and repairers, port authorities, marine operators, clubs) and allow different vessels to use the moorings.

### **Department of Primary Industries and Fisheries**

The Department of Primary Industries and Fisheries (DPI&F) manages fish habitats in marine and freshwaters to sustain Queensland's commercial, recreational and indigenous fisheries. Buoy moorings placed on protected marine plants (e.g. seagrasses) require authorisation from DPI&F under the *Integrated Planning Act 1997* (IPA). Buoy moorings placed in declared Fish Habitat Areas (FHAs) require authorisation from DPI&F under both IPA (a development permit) and the *Fisheries Act 1994* (a resource allocation authority). The Fisheries legislation prohibits the placement of private vessel moorings in management A declared FHAs. Declared FHA plans are available at [www.dpi.qld.gov.au](http://www.dpi.qld.gov.au) (Fisheries – Habitats – Declared Fish Habitat Areas – Plans).

### **Environmental Protection Agency**

The Environmental Protection Agency (EPA) is responsible for managing climate change and protecting the environment. EPA authorises placement of buoy moorings in state marine parks under the *Marine Parks Act 2004*. Where a mooring design constitutes tidal works under the *Coastal Protection and Management Act 1995*, an approval under IPA is required.

### **Great Barrier Reef Marine Park Authority**

The Great Barrier Reef Marine Park Authority (GBRMPA) manages the Great Barrier Reef Marine Park (GBRMP) and undertakes planning for and authorisation of vessel moorings. As the GBRMP shares Queensland waters with state marine parks, permits grant permission for activities in both (under the Queensland *Marine Parks Act 2004* and the Commonwealth *Great Barrier Reef Marine Park Act 1975*).

### **Local governments**

Where a buoy mooring design constitutes prescribed tidal works (a subset of tidal works) under the *Coastal Protection and Management Act 1995* and is within a Local Government tidal area, Local Government is the assessment manager for applications under IPA.

## **STRATEGIC MOORINGS MANAGEMENT**

There has been considerable growth in boat registrations in Queensland in recent years. Growth is expected to continue at approximately 5% annually and there is considerable pressure for the

supply of facilities to store and securely moor these vessels. Driven by the increasing demand for buoy moorings and the complexity of moorings management, agencies are implementing coordinated and inclusive strategic buoy moorings management. This partnership approach is based on implementation of three key initiatives:

- Designated Mooring Areas (DMAs). These spatially-defined areas are assessed and agreed by relevant agencies as suitable both nautically and environmentally for the placement of buoy moorings. DMAs may be established under an agreement, plan or legislation (e.g. marine park zoning) by the relevant agencies. The cooperative inter-agency planning process to establish DMAs is the key to their success.
- The use of environmentally-friendly buoy moorings (see below).
- A streamlined process for authorisation of buoy moorings. This includes the use of a self-assessable code for development under IPA, where no application or fees are required as long as the proponent meets the requirements of the code. Note that the DPI&F self-assessable code MP06 *Minor impact works in a declared fish habitat area or involving the removal, destruction or damage of marine plants* requires that an environmentally-friendly buoy mooring disturb no more than 1 m<sup>2</sup> of substrate and the mooring chain/rope and vessel must be off the substrate at all times. Where the proponent can not meet the code requirements, the standard application and assessment process under IPA and the *Fisheries Act* would apply for the proposed buoy mooring.

### **Moreton Bay Marine Park**

Cooperative buoy moorings planning within the Moreton Bay Marine Park is well advanced. The park is zoned to manage specific activities. Within a zone activities are either:

- allowed “as of right” (no permit)
- allowed with permission (permit)
- prohibited.

Currently, the installation of a buoy mooring requires a permit in all zones other than General Use. This is considered to be minor works and can be undertaken with a permit subject to assessment by the EPA.

Historically there was little liaison with other agencies, which lead to issue of approvals that contradicted another agency’s legislation. The need for a new approach was identified and in 2000 EPA developed an agreement with MSQ for buoy moorings in Moreton Bay based on four assessment categories - unrestricted areas; non-conditional areas; conditional areas; restricted areas. The resulting referral and assessment procedure based on individual application assessment was complex and time-consuming. It became unwieldy with increasing numbers of mooring applications and was vulnerable to absence of knowledgeable/specialised staff. In addition, the process did not recognise the statutory interests of DPI&F.

The need for comprehensive and collaborative buoy moorings planning and management that included all relevant agencies all agencies was clear and all agencies met to plan the way forward. EPA, MSQ and DPI&F have now implemented a buoy moorings planning process for the Moreton Bay Marine Park that includes:

- agreed DMAs, which are specified in the *Marine Parks (Moreton Bay) Zoning Plan 2008*
- a streamlined approvals process. Through the provisions of the marine park zoning plan and DPI&F’s self assessable code MP06, environmentally friendly moorings can be installed within DMAs in the marine park (outside of management A declared FHAs) with permission required only from MSQ.

A remaining challenge for buoy mooring management is to confirm the suitability of environmentally-friendly buoy moorings in Moreton Bay (see below).

### **Town of Seventeen-Seventy**

Strategic moorings management in Round Hill Creek at the Town of Seventeen-Seveny has been spurred by an increase in the number of commercial vessels operating from the area. Round Hill Creek is part of the Seventeen-Seveny – Round Hill declared FHA and the Great Barrier Reef (GBR) Coast State Marine Park. The increased number of vessels, coupled with the navigation channel shifting through natural riverine processes has resulted in buoy moorings occupying the deepest part of the channel, requiring additional navigation aids to ensure safe passage of vessels.

Liaison between regional staff of DPI&F, MSQ and EPA has identified a suitable DMA location within the declared FHA and Marine Park. The proposed DMA would include the minimal placement of new moorings and the relocation of some existing moorings.

Unlike the Moreton Bay Marine Park, there is no rezoning process underway in the GBR Coast Marine Park, and at the time of writing agencies were developing options for the most appropriate means to implement the proposed DMA.

## **ENVIRONMENTALLY-FRIENDLY MOORING TRIALS**

### **The problems with block and tackle moorings**

Moorings chains of 'traditional' block and tackle buoy moorings drag on the substrate as tidal currents and changing wind directions swing boats around on their moorings, resulting in significant scouring of sediments and disturbance to seagrass and other benthic marine plants. The amount of disturbance can be up to 0.1 ha per vessel, in the shape of a halo. When this impact area is multiplied by the large number of moorings currently present in Queensland's sheltered waters and predicted future growth in demand for new moorings, this represents a significant area of seagrass and other benthic habitats being disturbed.



Plate 1. Aerial perspective of impacts of a traditional block and tackle mooring on seagrass habitats in Moreton Bay. Note disturbance 'halo'.

Concern about the seagrass damage caused by traditional moorings is high in south-east Queensland's coastal community. At least three 'environmentally-friendly mooring' designs are available in Australia, which may be installed and used with minimal impact to seagrass and other marine habitats. These are the:

- Seagrass Friendly Mooring System
- Ezy-Rider Mooring (Global Moorings)
- Seaflex Mooring.

These designs are used to varying extents in other jurisdictions (e.g. Rottnest Island in Western Australia and in parts of NSW and Victoria), but have not been used in Queensland. While the south-east Queensland boating community supports the use of moorings that cause little or no impact, it welcomes any studies into the effectiveness of these environmentally-friendly mooring designs to safely secure vessels. The agencies involved support the trials to ensure stakeholder and agency confidence in the suitability of the new designs in Queensland waters.

## **Moreton Bay environmentally-friendly mooring trials**

DPI&F, EPA, MSQ and SEQ Catchments are working collaboratively with key stakeholders including the Moreton Bay Seafood Industry Association (MBSIA), Moreton Bay Access Alliance (MBAA), Tangalooma Resort, University of Queensland and Seagrass Watch, on the project 'Environmentally - Friendly Mooring Trial and Development of a Strategic Moorings Replacement Program - Moreton Bay, Queensland'. The project has funding and in-kind support from project partners, as well as Community Coastcare funding, to trial the three mooring types at four locations in Moreton Bay.

The purpose of the project is to provide long-term protection to seagrass areas potentially impacted by increased vessel activity and mooring use in Moreton Bay, by:

- trialing the environmentally-friendly moorings to determine their efficacy in securing boats in Moreton Bay's environmental conditions and reducing impacts to habitat, including:
  - a. monitoring and documenting their effectiveness
  - b. establishing which environmentally-friendly mooring designs are effective and recommending these for use in Queensland
- reviewing policies and procedures to streamline application processes as an incentive for deployment of environmentally-friendly moorings
- developing education and awareness packages to promote the effective use of environmentally-friendly moorings in Queensland.

### **Trial methodology**

Volunteer agreements will be established with existing buoy mooring authority holders in each area in order to conduct the trials. Tangalooma Resort has also expressed interest in participating in the project. One of each of the three environmentally-friendly mooring designs will be installed at each of the four locations, in close proximity to existing moorings - twelve (12) trial moorings in total. These will replace 12 traditional moorings to be removed.

Ecological studies performed by the University of Queensland over an 18 month period will involve monitoring of infaunal (animals living in the sediment), epibenthic (animals living on the sediment), seagrass and macroalgae communities. Seagrass Watch will characterise marine plant species and density at each site. The ability of the moorings to effectively secure vessels will be documented.

### **Outcomes**

It is expected that the Moreton Bay trial will identify the suitability of environmentally-friendly mooring designs for use in the Bay, and in similar areas of Queensland. To further show the effectiveness of these designs, demonstration moorings may be later installed and monitored in other parts of coastal Queensland to encourage their use.

## **A NATION-WIDE ISSUE – NATIONAL MOORINGS NETWORK**

In June 2008, a moorings meeting was held in Cairns attended by the WA Rottneest Island Authority, GBRMPA, DPI&F, EPA, MSQ, Parks Victoria and NSW Maritime. Key issues discussed included moorings policy and planning, inter-agency coordination, compliance, design and maintenance of moorings, environmentally-friendly moorings and tourist / visitor moorings. It became apparent that each jurisdiction shares similar issues with moorings and may gain from a forum to share experiences and information. This has seen the establishment of the National Moorings Network (NMN).

The NMN consists of an email list for its growing membership, a logo and an interactive webpage (under development) with input from relevant moorings management agencies from each jurisdiction. The next NMN forum is scheduled for mid-2009, to be hosted by Parks Victoria, and

will include discussion of environmentally-friendly mooring technology updates, national standards for moorings, and administrative processes including the use of spatial GIS technology.

## **CHALLENGES AHEAD**

Although significant progress has been made with increased inter-agency moorings planning and streamlining approvals processes, there are many challenges ahead to reduce the impacts of moorings on Queensland's marine habitats. One key issue is for agencies to develop an appropriate and consistent means of implementing DMAs in different locations (e.g. through legislation, strategic agencies agreement, publication of DMAs on agency web sites, etc.).

A key issue for the introduction of environmentally-friendly moorings is that some designs may require a tidal works or prescribed tidal work approval, therefore adding another layer of administrative complexity and discouraging their use. The EPA is working to resolve this issue through a legislative amendment to exclude buoy moorings from the definition of tidal works.

Another important issue is the higher cost of environmentally-friendly moorings, especially when only small numbers are being constructed and installed. This issue may be resolved by confirmation and awareness of the benefits of these moorings, increased demand and economies of scale, and establishment of a local environmentally-friendly moorings industry.

Finally, some design alterations may be required to allow use of environmentally-moorings in all of the sensitive habitats where moorings are placed in Queensland waters. For example, the current environmentally-friendly mooring designs are not suitable for use in water shallower than 1.8m at low tide, which prevents their use in important habitats of Moreton Bay.

## **TAKE HOME MESSAGES**

- Traditional block and tackle buoy moorings can have a significant impact on seagrass and other habitats.
- An inter-agency approach to moorings planning and approval is being implemented in Queensland for better management of buoy moorings and protection of the marine environment.
- There are new environmentally-friendly mooring designs being trialed in Queensland.
- The National Moorings Network has been formed to share information and experiences on moorings management throughout the country.

## **ACKNOWLEDGEMENTS**

Thank you to Dr John Beumer for reviewing this paper.

## **REFERENCES**