ISSUE NOTE: Flooding and pontoons, mooring and anchoring

Purpose

To provide a guide to improved outcomes regarding the resilience of boating infrastructure impacted by high-flow rates due to extreme weather/ flooding on the Brisbane River in February 2022.

Background

1. The 2022 Eastern Australia floods were one of the nation's worst recorded flood disasters with a series of floods that occurred in South East Queensland, the Wide Bay–Burnett and parts of coastal New South Wales.
2. On 28 February the Brisbane River's height reached 3.8 metres (12 ft), higher than the 2.3-metre (7 ft 7 in) peak height of flooding in 2013 and below the 3.9 metres recorded during the 2010–2011 Queensland floods but less than the peak height of 4.46m in 2011.
3. The flooded Brisbane River was said to have been flowing in the region of 12-14 knots and the deluge across the catchment led to significant amounts of flood debris comprised of organic and inorganic materials. The latter included a variety of vessels and pontoons, mostly residential, which broke free in the strong currents caused safety and environmental issues.
4. The State Government emergency response included assets from multiple departments, supported by volunteers, to minimise threats to safety and environmental pollution.
5. Maritime Safety Queensland (MSQ) is the marine safety and navigation authority in the State. MSQ reported 7000 tonnes of debris was collected from the river as part of the response.
6. Council requires a person who seeks to build a pontoon or jetty in Brisbane's local government tidal area to submit a development application to Brisbane City Council and receive consent from the Queensland Government, as the owner of the tidal area. The Qld Department of Environment and Science (DES) has a key role here as an assessment agency for tidal works in 'natural' waterways and has developed the prescribed tidal works code under the Coastal Protection and Management Act 1995 and Regulations. The PTW Code sets the standards for these works (in addition to Australian Standards).

Current Situation

7. The State Government is keen to establish a solution to the environmental and safety risk posed by flood impacts on marine infrastructure.
8. The BIA recognises the risks and challenges of Climate Change and will actively pursue a sustainable future for the marine industries by supporting its members interests in addressing this challenge.

Contact: Neil Patchett, Co General Manager, e. neil@bia.org.au; m 0418 279 465
PO Box 1204 Crows Nest NSW 1585. Offices: Queensland; New South Wales; and South Australia

Justification for position

BIA believes the opportunity is to enhance partnerships and collaboration with key stakeholders to minimise the risk of similar pollution and safety outcomes in future flooding events on such rivers.

Summary

To collaborate and focus on flexible and adaptive infrastructure, systems and operations to allow for future modification and to avoid 'locking in' to solutions that prove inappropriate as conditions change and risk profiles vary by location.

Recommendation

BIA suggests countermeasures need to be considered to minimise safety and pollution risks from extreme weather event floodings.

11. **Residential and commercial installation** of pontoons should include the following:

    a. Council require adherence to the Australian standard for marina design for pontoon construction.
        i. Some of these structures which failed would be unapproved – others would be built not in accordance with approved design. So an initial step may be to work on a program to identify these and providing some incentives and/ or regulation to bring them into compliance;
    b. Council administer this along the lines of pool fence certification with visual inspection by an experienced and competent person applying an appropriate assessment of compliance of standards, engineering and installation. This person could be a Registered Professional Engineer of Queensland (RPEQ) registered inspector with some experience with the appropriate Australian Standard as well as the Prescribed Tidal Works Code under Coastal Regulations
        i. and sourced from a preferred panel of appropriate engineers the Government identifies for provision of such services;
        ii. costs must be fair and reasonable
    c. DES should have a key role in the solution – along with Council and MSQ.

12. MSQ, with DES and Council, review the tethering system and safety load limits required to ensure it is appropriate for the likely future risk of significant flooding impact. This is important noting that the current standards themselves likely need to be reviewed to provide for a more conservative design to account for future (large) flood events

Contact: Neil Patchett, Co General Manager, e. neil@bia.org.au; m 0418 279 465
PO Box 1204 Crows Nest NSW 1585. Offices: Queensland; New South Wales; and South Australia

13. MSQ, with DES and Council, to consider additional engineering and load limits to be applied to the upstream tethering system and for the upstream pile(s) as these take impact loads of debris in the river. Owners and regulators should be aware of the increased risk of loadings from hydrodynamic currents and debris on the upstream face of any pontoon – this must be recognised in the structural strength of piles or mooring lines.
    a. A sensible approach (similar to that adopted in design/construction of stormwater trashracks) is to have upstream current/debris deflectors and a breakaway mechanism that releases the pontoon from all but a single very strong mooring and cable – allowing the pontoon to float downstream but be restrained
14. MSQ with Council should consider a pontoon identification number (PIN) similar to a vessel Hull Identification Number which should include country (in case of imported product), manufacturer, serial number, date of manufacture and address of where it is installed. This should be permanently attached to the pontoon hull on a weather and corrosion resistant plate, and in a standard location to eliminate guesswork of where to find it. The owner should be required to keep a copy of the PIN;
15. Council ensure a proper process of identification system for the pontoon and this could/ should make use of a QR code.
16. The RPEQ certifier conduct an in-person inspection ie every 5 years to ensure the pontoon, piles, tethering and PIN is as described, and in a fair and reasonable condition. The cost of the inspection is borne by the pontoon owner If the inspection shows that the structure is not up to scratch will need to provide for next steps – tidal works notice issued under the Coastal Protection and Management Act 1995 could be one remedy but would again need some engagement from DES on this;
17. Council to provide a clear and plain English guide available online of the approval process and requirements of installing a pontoon;
18. Where appropriate and structurally appropriate to the intended end use, the industry - including associated manufacturers and suppliers - investigates alternatives to non-biodegradable polystyrene as the void form/ positive buoyancy solution including solutions that are being successfully trialled or used in other jurisdictions.
19. As an interim measure, MSQ to work with industry to consider making a requirement to wrap polystyrene in sheeting to effectively ‘bag’ it in case of structural failure or break up of the pontoon.
20. Consideration could be given to the development, by the owner of the bed of the Brisbane River and/or the consent authority, of minimum specifications for pontoon restraint systems, which are then provided to Applicants. These specifications may differ for different sections of the river depending on current speeds and other factors. This provides a consistency of approach and a clear message of what is acceptable.

Contact: Neil Patchett, Co General Manager, e. neil@bia.org.au; m 0418 279 465
PO Box 1204 Crows Nest NSW 1585. Offices: Queensland; New South Wales; and South Australia

21. In addition to regular compliance inspections, a trigger mechanism for inspections should be included related to particular magnitude flooding events or similar by risk according to location.
22. MSQ to consider what steps can be introduced as quick wins and interim measures whist standards are brought up to an appropriate level where necessary re.,: manufacture, installation, inspections and de-commissioning.
    a. The aim must be to aim for flexible and adaptive measures and standards that avoid 'locking in' a solution which is proven through time to be inadequate, particularly against the background of the dynamic nature of Climate Change and variabilities in the marine environment by location and waterway characteristics.
    b. An approach which responds to counter measures in zones by risk level would help restrain red tape and cost implications impacting all such infrastructure which may be in extremely low risk installations and locations especially if applied across other areas in Qld. For eg., establish a map of known or agreed boundaries of the areas affected by river flooding & those not affected, throughout QLD. (Reduced risk of incurring potential unnecessary long term compliance or expense on unaffected marina operators).
    c. Furthermore, it would be recommended that any high-risk zone areas are clearly identified in the policy/ strategy/ program description online or in legislation to help avoid any increased or additional insurance costs imposed by the insurance industry on unaffected operators.

23. **Mooring/ anchoring of vessels** should be reviewed as follows:

i. Phase One:

a. MSQ/DES to review the mooring apparatus specifications/ standards applied for use in the river to ensure the standards, engineering and installation are appropriate for the likely risk of future flooding impact;
b. MSQ/Council to review its requirements upon owners of moored/ anchored vessels to ensure the mooring/ anchored apparatus is routinely serviced and maintained as sufficient, fit for purpose and such conditions are spelt out in the mooring permit/ licence/ anchoring permissions; and
c. MSQ/Council to review its education, compliance and enforcement programs relating to owners of vessels moored/ anchored vessel in the river.

ii. Phase Two:

a. MSQ should review, in collaboration with stakeholders including the Queensland Maritime Committee, the following:
    i. the appropriateness of private moorings, by location, in the Brisbane River. Consideration should be given to all moorings on the river to be managed by an appropriate commercial provider experienced in managing moorings. The notes above should be incorporated into the

Contact: Neil Patchett, Co General Manager, e. neil@bia.org.au; m 0418 279 465
PO Box 1204 Crows Nest NSW 1585. Offices: Queensland; New South Wales; and South Australia

commercial management of such moorings. Should this be considered difficult to deliver, as there are many private moorings in the river and tributaries, an easier first step may be an inspection and certification process to a stated standard)

b. MSQ to work with stakeholders including the Queensland Maritime Committee to consider making it a condition of using a mooring/ anchoring on the river that the vessel is 'seaworthy' and insured, and that it is the mooring owners' responsibility for the adherence to this.
    i. Should this be considered problematic for moorings, as the tidal works approval traditionally attaches to the coastal land and is designed to define and accommodate an adjacent water allocation area. The holder of the development approval needs to ensure the moored vessel does not extend outside of the defined water allocation area; but the works approval does not extend to the condition or operation of the vessel. Creating a nexus between the approval and the vessel condition may only be able to be applied to new development as opposed to myriad of existing development approvals); and
    ii. MSQ to adopt a Hull Identification Number system (as recommended in the War on Wrecks Recommendations) and the Australian Builders Plate as means to identify new and used vessels, ensure compliance with vessel capacity and safety standards, and resolve issues relating to abandoned, wrecked and/ or adrift vessels.
    iii. There should be minimum specifications/standards available for mooring apparatus (swing moorings). The minimum specifications/standards could differ depending on the degree of shelter from current and wind. Inevitably, in the absence of clear minimum specifications/standards the matter can end up a struggle between the vessel owner, the swing mooring installation contractor, the commercial marina operator (for commercial swing moorings), and the maritime authority.

24. Flood communications to boat owners

iii. MSQ to review existing or emerging communication opportunities to improve advisory, early warning and emergency advice to recreational and commercial vessel owners on the river via technology such as sms messaging. For example this could include advice to consider alternative safe havens but only if it is safe to do so.

iv. Work should be done to identify where these safe harbour areas are and there may need to be additional moorings approved/established to provide capacity; and

v. MSQ to consider that upon knowledge of the likelihood of flooding, the Harbourmaster should issue a "Notice to Mariners" that all vessels on moorings or anchor are to evacuate the Brisbane River to a safe harbour or anchorage outside of the Brisbane River boundary. This procedure should be

Contact: Neil Patchett, Co General Manager, e. neil@bia.org.au; m 0418 279 465
PO Box 1204 Crows Nest NSW 1585. Offices: Queensland; New South Wales; and South Australia

agreed by all vessels and persons managing a mooring prior to use. The commercial operator should also provide evidence of an emergency plan that details the evacuation procedure.

ISSUE DATE: 24 August 2022

Contact: Neil Patchett, Co General Manager, e. neil@bia.org.au; m 0418 279 465
PO Box 1204 Crows Nest NSW 1585. Offices: Queensland; New South Wales; and South Australia