

## Frequently asked questions

### **Q: Why is Council considering any changes at the mouth of Maroochy River?**

**A:** Council conducts regular inspections of the four sandbag groynes at the mouth of the Maroochy River. These occur around once per month on average and regularly during any storm events as Council considers these structures high risk for erosion and damage.

Throughout their life, Council has routinely identified a range of issues with the current structure such as loss of bags (especially at the heads of the structures), vandalism, deformations of individual bags, slumping of parts of the structure and visible damage to foundation bags after scour/storm events.

Current maintenance techniques involving placing new bags on top of old bags has proven ineffective due to algae decreasing the friction between bags, and deformations/loss of individual bags which does not allow placement on flat surfaces. An alternative maintenance technique involves removing the required number of bags to create an interlocking pattern (much like brickwork) which significantly increases cost.

The failure level of the groynes (and seawall) over the past 14 years indicates that the structures are not performing to the design standard. Given this design uncertainty, which is compounded by the current degraded state of the groynes, it is expected that should a severe event occur then significant damage to the structure could occur. It may be possible that undesirable impacts associated with the failure of the groyne field would include erosion impacts on Cotton Tree Holiday Park which could extend south to the Maroochy Surf Club.

Council has spent around \$80,000 per annum on average over the last four years on maintenance of the groyne field structures. This cost is expected to escalate as the structures continue to age and structural integrity continues to be compromised. Council is concerned that this approach represents an unsustainable investment and potentially poses a significant risk of loss of assets in the event of

structural failure during a large storm and erosion event.

### **Q: What was the purpose of the International Coastal Management (ICM) report and what did it recommend?**

**A:** The ICM report was commissioned to provide Council with an independent assessment of the short-term reactive maintenance needs and costs to provide a temporary solution to assist in maintaining the structures while further investigations and analysis of future renewal options were considered.

This included an assessment of the four groynes and seawall in their current state, their usefulness in achieving the original purpose and function of the groyne field, and some options to improve future performance. As ICM was the company that originally designed the groyne structures, it was considered logical to seek input from them regarding the short-term maintenance requirements.

The ICM report indicates two key issues which were detailed in the Executive Summary - bag stability and bag durability. ICM recommended a range of options for maintenance and/or renewal including:

- repairing with existing sized bags;
- rebuilding with bigger bags;
- trialing new geofabric options;
- rebuilding with rock.

The existing structures were designed on a trial basis, and are thought to be the oldest known structures of this kind in this open coastal environment within Australia. The information presented in the ICM Condition Assessment indicates that the existing structures are under-designed and would require significant maintenance to return to design standard.

Maintenance costs detailed by ICM in the Executive Summary are an estimate only. Council has undertaken a more detailed assessment, based on demonstrated experience, which includes costing the difficulty

in placing bags at the groyne heads which will cost significantly more. The costs are closer to \$2,000/bag which indicates the replacement of 175 bags will cost around \$350,000. This is consistent with Council's experiences in maintaining these structures.



**Q: What coastal processes are affected by the proposed changes at the mouth of the Maroochy sandbag groynes?**

**A:** In terms of Coastal Engineering, actions such as dune management, beach renourishment, regulations and restrictions on activities, such as boating/fishing or vehicle access, are considered 'soft' shoreline management options.

The establishment of structures, such as geobag or rock groynes, is considered to be hard, more permanent, options.

Hard structures impact coastal processes mostly by the footprint of the structure and the height of the structure, and therefore both rock and geobag groynes have similar coastal sediment transport impacts if they have the same footprint and height as each other.

Therefore if the current sandbag groynes were replaced by new geobags or rock groynes in a similar footprint and a similar height, it is expected that rips and currents will occur at the same rate and at locations as currently experienced and there would be no change to sediment transport patterns either locally or on a regional level.

The major difference in the impacts to sediment transport is that rock is able to dissipate wave energy caused in storm events better than

sandbags. Thus sandbags increase the energy of the reflected wave, increasing erosion at the base of the structure during storm events.

**Q: Did Council consider wider environmental and cultural implications of the options presented for the renewal of the groynes at the Maroochy River mouth?**

**A:** Council will be subject to all applicable State and Federal legislation which includes cultural heritage, environmental (coastal processes), fisheries resources and migratory bird impacts.

These values are also outlined in the Sunshine Coast Shoreline Erosion Management Plan which informs the options for management of all beaches across the region, including management of the Maroochy River mouth.

Council has received preliminary advice from the State agencies that there would be no additional legislative requirement to assess environmental impacts in the event that existing structures are replaced with rock, as both sandbags and rock are considered hard/terminal protection structures by all levels of government.

It is also important to note that because the design standard is uncertain, more than 175 bags have been lost to the surrounding environment, some ending up as far north as Mudjimba. These bags are made up of composite fibres including polyester and, in the broader environmental considerations, the impact of these marine plastics should also be considered.

Council undertook cultural heritage assessments and received cultural heritage approval with the construction of the existing structures. As the area has been previously eroded and constructed on, if Council renewed the current structures within the same footprint this would be in keeping with current cultural heritage obligations. Any new or additional infrastructure would require cultural and environmental assessments and approvals from state and federal agencies.

**Q: What is included in the scope of works for all the reports and plans?**

**A:** Council has only included the four groynes. The groynes are the structures that are perpendicular (at right angles) to the shoreline. The seawall that connects all of the groynes together was not included in the Cost Benefit Analysis (CBA). Council has also considered the need to either continue or reduce the renourishment of Maroochydoore Beach in its CBA.

As an example for both the replacement options that utilise the same footprint (geobag to geobag or geobag to rock), an ongoing renourishment program of the same amount as we currently spend was factored into the CBA while for the 200m rock groyne option, Council has considered this renourishment to be reduced due to greater retention of sand along the current northern renourishment beach area.

Council did not consider the renourishment costs associated with erosion that may occur on the northern side of the 200m rock groyne in the CBA. Council expects there will be a cost for this renourishment, however the amount is uncertain at this stage. Further numerical and physical modelling will be required to confirm this.

**Q: What is the expected life of the sandbag groynes?**

**A:** The initial detailed design drawings for the sandbag groynes as a whole structure did not include a life expectancy as they were considered an experimental design. The material that the bags are made of has an expected life of 25 years (provided by the manufacturer), but as this is the first time such a structure has been used, the life expectancy of the structure itself is unknown.

**Q: Would replacing the sandbag groynes to rock result in increased velocity of the water around the structures and/or sand movements along Maroochydoore Beach?**

**A:** In terms of coastal processes (the way sand moves on the coastline as a result of weather, tides and currents) both sandbags and rock

structures in the same footprint, of the same height and same depth, are considered “hard” structures and will cause similar sand and water movements around them. Both rock and sandbag structures are considered effective erosion protection measures during their life span.

Major physical and numerical modelling would be required before any designs or approvals were sought for a structure such as the breakwater link to Pincushion Island or the 200m rock groyne which would potentially cause major changes to the current sand and channel locations.

**Q: Is Council aware of the river cycles over the past 100 or so years?**

**A:** Yes, Council engineers take a number of factors into account, including the cyclical nature of mouth movement at the Maroochy River. Additionally, weather cycles such as La Nina and El Nino play major roles in coastal sediment transport cycles.

Council has good aerial imagery from the State Government which shows the cycles of the Maroochydoore River mouth from 1958 to the present day. These images are a good historical record of the way the river oscillates.

Other documentation that Council has with respect to the river mouth placement before 1958 comes from historical photos, documents and local knowledge.

**Q: If we reconstruct the groynes with new sandbags are there any new technologies available to increase their life?**

**A:** Council will be committed to ensuring that investigations occur both nationally and internationally to get the most up-to-date information about new technologies. As the current structures were designed 18-19 years ago, it is expected that a new bag design would be sought and it would be the intent of Council to ensure that any design changes increase the life of the structure or decrease the maintenance of the structure.

Some technologies that Council engineers have been made aware of so far include

denser bags, larger bags, bags with increased durability to withstand vandalism and material variations to increase algal and UV resistance.

**Q: A lots of kids use this area. Aren't sandbags a safer option for children using the area rather than rocks?**

**A:** In the last 17 years, Council hasn't had any claims around injuries to the public from the sandbag groynes at this site in Maroochydore or from the rock groyne at Kings Beach. Most coastal protection structures around Australia are made from rock and some injuries do occur from time to time. Council acknowledges that sandbags are softer underfoot and have less hard/angular areas which may benefit the public if any slips occur.



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