

Sea-level rise and Botany Bay: things people value, their perceptions of sea-level rise and fair council adaptation policy.

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@ Summary:

Residents living in Botany Bay understand climate change is attributed to humans and are concerned about the effect of sea-level rise on their local area. The things residents' value about their everyday lives will be significantly impacted by rising seas and residents feel they are not included in decision-making. Planning for sea-level rise can include creating an alternative space away from the foreshore area, such as Cooks Cove. This space *must* accommodate diverse local values, be protected from rising seas and policy makers *must* share information about the potential impacts to residents.

@ Introduction:

There is scientific consensus that the planet is warming and that one of the consequences is a rise in sea-levels, with increased risks of flooding and storm surges. Whilst it is difficult for planners to predict the regional impacts because of human behaviour, policy change technological advances, it is critical for planners to take sea-level rise into account for social planning. To this end, in 2016 I conducted research in Botany Bay to understand the local social values that may to be impacted by sea-level rise.

@ Why is it important to plan for sea-level rise in Botany Bay?

The Sydney Coastal Council Group identified Botany Bay as the most vulnerable area to sea-level rise in Sydney because of geography, development and demographics¹. Past studies have shown the importance of understanding how the everyday lives of coastal communities are likely to be affected by sea-level rise². Such an understanding can improve climate change adaptation planning and the fairness of adaptation outcomes.

The aim of this study was to understand what people in Botany Bay value about their everyday lives living on the coast and how this may be at risk of sea-level rise. This is the first research of its kind in urban Sydney. The results of this study can therefore provide unique insights for future coastal planning, such as the proposed development at Cooks Cove.

@ Method

An online survey was conducted between the 20th of May and the 14th of July 2016. The questions were designed to establish what residents value about their everyday lives, their views on sea-level rise and current council policies. The survey was open to residents of the former City of Botany Bay and Rockdale City Council. Overall, 49 residents completed our survey.

@ What people value, what they do and their networks

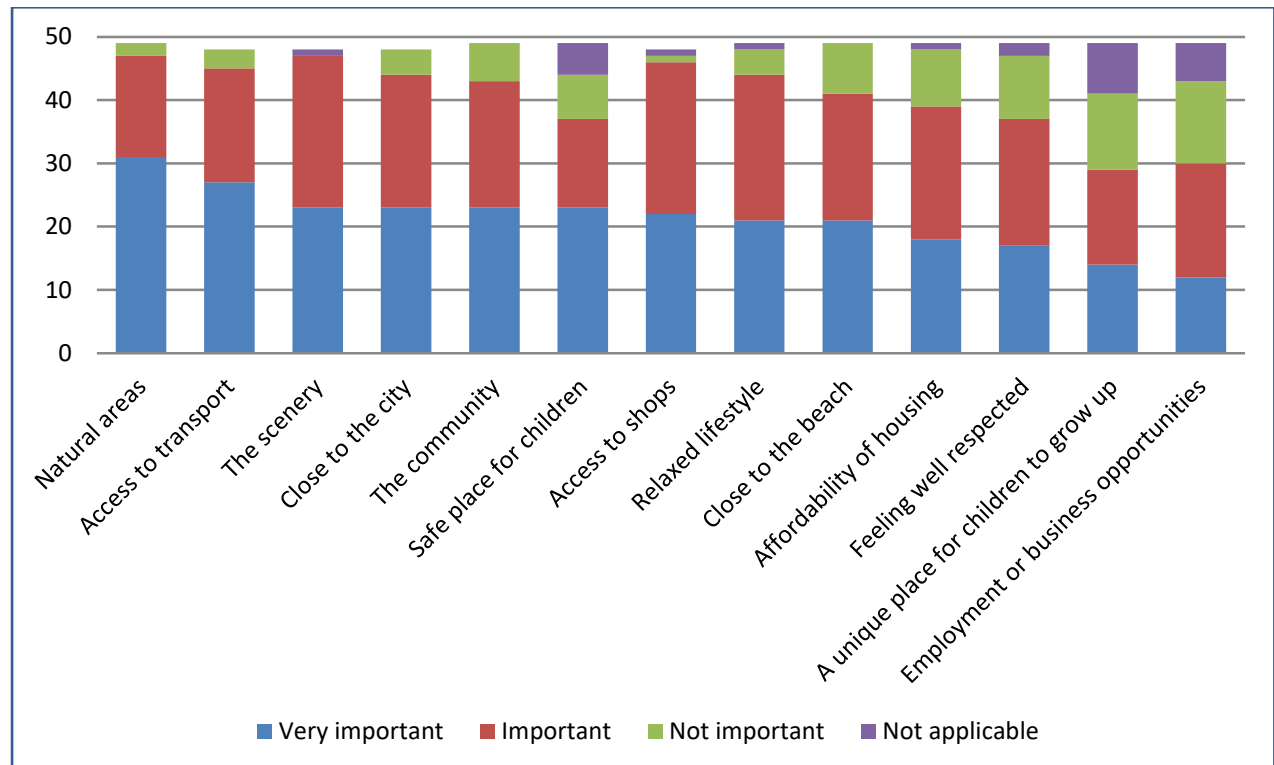
Through residents' views, we understood that Botany Bay was valued for being close to nature – such as the beach – as well as the city. It was highly valued for its affordability and

¹ (Preston et al. 2008)

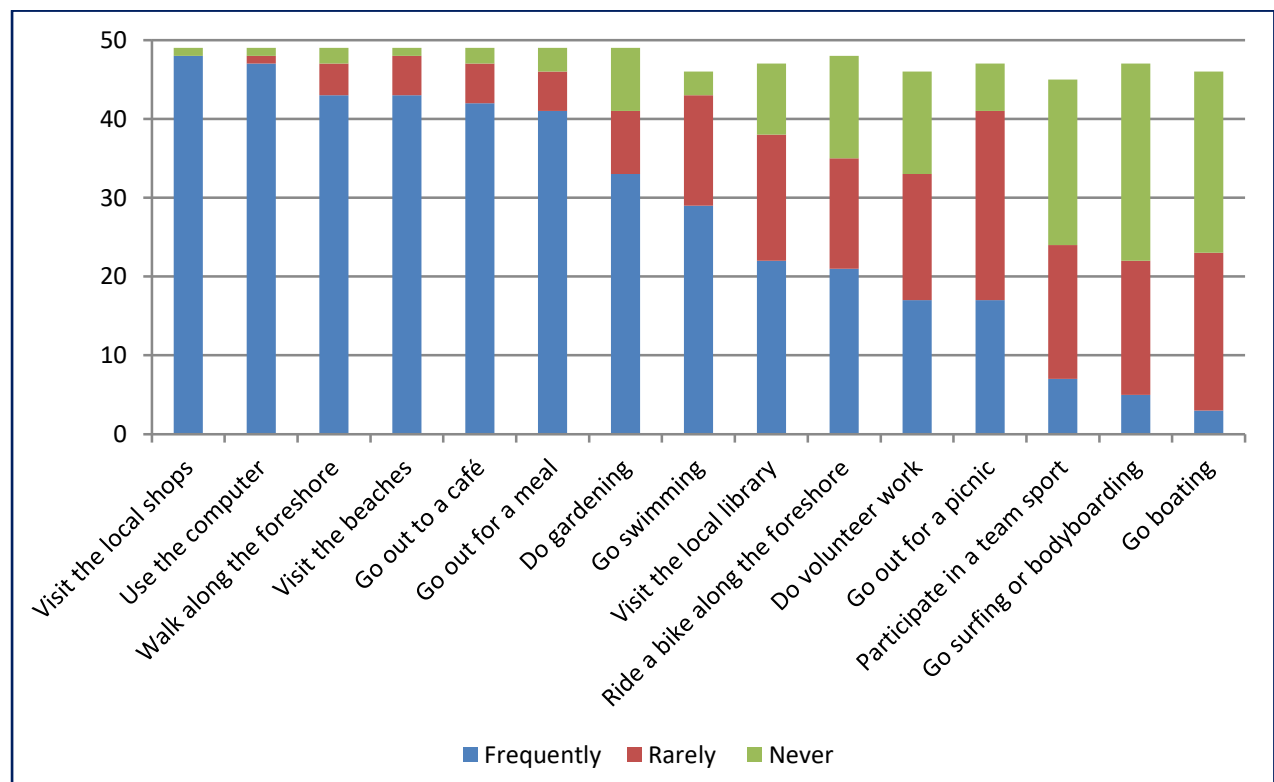
² (Barnett et al. 2014)

because residents have access to important amenities like the shops, schools and medical centres. The multicultural community of Botany Bay was very important to residents and the foreshore is one place where they can connect with their valued community by walking, biking and swimming in the natural areas. Most residents spent time with their family and friends in their daily lives and some even volunteered in local community groups.

What residents value about living in Botany Bay:



What residents of Botany Bay do in their spare time:



@ What were residents' beliefs about sea-level rise?

The majority (78%) of the respondents understood that sea-level rise is at least in some way attributed to humans, which makes the residents of Botany Bay similar to other Australian studies³. The majority of residents (57%) felt that sea-level rise is a very serious issue for Botany Bay but more (72%) felt that it is a bigger concern for the world. Half of the sample (57%) felt that the effect of sea-level rise on their local area will be within the next 25 years but some residents expressed uncertainty about the time frame for impacts. The results suggested that there is lack of understanding or information for residents about the local effects of sea-level rise on Botany Bay.

@ How did residents feel about council adaptation policy?

Residents were asked a number of questions about their council's climate adaptation policy: if they feel included, if the outcomes are fair, if the policies are consistent between communities over time and if council gives them enough information and speaks to them with respect. The only questions that most residents had strong opinions about indicated they feel they are excluded from adaptation policy discussion and there is not enough information about the issue. The uncertain responses illustrate that the respondents perceived that they are not being included in policy decisions, that council does not explain things clearly, nor do they know who to talk to about sea-level rise.

@ What are we going to do with the study?

Our study proposed an adaptation plan for Botany Bay and in particular the foreshore, based upon the values, networks and activities of residents. One of our recommendations considered an alternative space, like Cooks Cove, away from the foreshore which could be a recreational area for residents to undertake their valued activities with people they care about. However, we also recommended this area – as well as the foreshore - be protected against rising seas, storms and flooding, based upon a design in Lower Manhattan in New York, which was implemented after Hurricane Sandy.

Our policy recommendations:

Adaptation strategy	Recommendations:
Retreat	Council could also explore building an alternative recreational space in a less exposed area to the foreshore; this area can be Cooks Cove. · The recreation space would include walking, biking and swimming areas. · Relocation of existing bike and walking tracks may be compensated by an interconnected network of bike and walking paths around the entire Bayside Council area. · Some residents identified a lack of buses servicing Rockdale in the open-ended questions, so a shuttle bus could connect the wards of

³ (Reser et al. 2012)

	Bayside Council to this new recreation space. · Entrepreneurial residents may appreciate employment or business opportunities in the new space⁴.
Protection	Council should consider building a storm resistant lifestyle centre away from the foreshore: · Engineering plans in post-Hurricane Sandy New York illustrate how it is possible to allow residents to continue walking, biking, exercising and swimming in a vulnerable foreshore area. · 'The Big U' project in Lower Manhattan uses storm resilient engineering materials and includes salt-resistant greenspaces and lifestyle amenities such as cafes, bike paths and spaces for tai-chi⁵. Council could emulate this space in Botany Bay.
Accommodation	The planning and policy process can ensure: · A short, medium and long term plan is created for foreshore management. · Previous research into Sydney Councils discussed charging residents a levy to fund foreshore management⁶. · Financial contributions must be made by other stakeholders using the bay: for their next environmental plan, which expires in 2018⁷, Sydney Airport Corporation could allow domestic and international flyers who purchase airline tickets to offset carbon by paying a levy to Botany Bay. · Bayside Council should explore securing the financial contribution of NSW Ports. · All levies accumulated could be kept in a 'Future Fund' and managed by Bayside Council. · A foreshore policy can be implemented to gauge the wider community reaction before changing private property¹⁴⁹Cs.

The study's analysis also took into account the best way to engage with residents based upon their beliefs about sea-level rise. There were three different ways people living in Botany Bay respond to sea-level rise: residents either felt *alarmed*, *uncertain* or *disengaged* about the issue. Therefore the study also recommended different ways to inform residents living in Botany Bay about the risks from rising seas, storms, erosion and flooding:

- ✓ Residents who are *alarmed* about sea-level rise would like to be informed about how the Department of Planning and Council are addressing sea-level rise; particularly the effects in their local area and the time frame. One approach would be to include information and resources that can be downloaded from Bayside Council website, even a video. These residents would likely take part in community consultation or even contribute to creating collective community gardens or buffer zones against sea-level rise.

⁴ (Karlsson, van Oort and Romstad 2015)

⁵ (Rebuild By Design 2016)

⁶ (Taylor, Harman and Inman 2013)

⁷ (Sydney Airport 2014)

- ✓ Residents who are *uncertain* need information about the spatial and temporal effects of sea-level rise and the intergenerational implications for their families. They also require a flood action plan in plain English because of the prevalence of non-English speakers living around Botany Bay. As these residents are community-minded they will likely attend flood action workshops run by council, community groups or the local library.
- ✓ Residents who are *disengaged* with sea-level rise are difficult to engage with about environmental risks because they tend to keep to their own groups and are less likely to believe in climate change. However, they will respond to verbal and visual signage around the foreshore and Cooks Cove about the effects of storms and erosion and how Bayside Council and the Department of Planning are assisting with management.

🕒 Conclusion:

- We would like both the Department of Planning and Bayside Council to take into consideration the findings from our study for the Cooks Cove plan.
- At present there is little information on the Department of Planning website about how rising seas are being taken into account – specifically the projections or time frame for impacts - for the proposed developments around Cooks Cove⁸.
- Residents of Botany Bay need information about sea-level rise and to be informed about how the likely impacts are incorporated into planning.
- Our study showed that the needs, beliefs and values of Botany Bay residents *about sea-level rise* must be taken into account during planning.

Additional information:

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⁸ See Cooks Cove Flood Impact Assessment (Department of Planning and Environment 2016) and Floodplain Risk Management Guide (Office of Environment and Heritage 2015).

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