

## SUBMISSION ON DRAFT COASTAL MANAGEMENT SEPP AND MAPS

I offer my comments on the recently published draft Coastal Management SEPP and associated maps. I was involved in preparing an adaptation plan for Marks Pt in Lake Macquarie and am currently involved in preparing one for Blacksmiths beach and provide my comments in the context of these two plans.

Briefly, the CM Act's main objective is to deliver a balance between social, economic and environmental objectives in a sustainable manner, but it then proposes a hierarchy of controls which focus on the environmental values and only consider public safety, access to and amenity of these areas as the social values. They fail to consider the social value of "this is where we live" and the economic value of "this is where we work." In fact the environment and public amenity objectives are achieved at the expense of these latter values.

As a result, at the entrance to Lake Macquarie,  
none of the objectives of the Act can be met  
if natural coastal processes are left to follow their own course.  
I imagine this would apply at the entrance to most of the 92 lakes listed in the draft SEPP.

The three values represent competing interests that need to be balanced as best we can. In order to do that, ironically, we need to defend the three areas at the lake's entrance. Unfortunately, the preliminary maps understate the problem and draft SEPP puts hurdles in the way of protective works.

I raise five main areas of concern:

1. The published hazard map for the Coastal Vulnerability Area grossly understates the hazard. According to the SEPP seventeen LGAs currently have hazard maps. As defining the problem is the first step in the process, they should have been published with the release of the maps as it highlights the issue. The NCCARF/CoastalRisk website provides a better starting point for these maps.
2. The environmental and ecological (and economic) significance and impact of a lake's entrance with its shoals, shallows, weed beds, sand islands and channels have not been adequately recognised. What comes through the the mouth of a lake determines the health and ecology of the whole lake. This is a Coastal Management Area in its own right and arguably at the top of the hierarchy. The only mention of this is the words "lake entrance instability" in the definition of coastal hazard.
3. The area at the lake's entrance is a sand spit between two headlands several kilometres apart. Five suburbs are situated in this area. Because it is low-lying and on sand, it is all vulnerable, not just the beach area. As a result, none of the Coastal Management Areas will be preserved by natural coastal processes, nor can they be saved by managing coastal use and development. If the hierarchy is followed as prescribed, NONE of the primary objectives of the CM Act can be met at Lake Macquarie.
4. As a result of the above, Lake Macquarie City Council will have to submit a "non-complying" CM Plan to the Coastal Council. This CM Plan will rely heavily on protective works such as sea walls. The CM Act and draft SEPP currently restrict such protective works rather than enabling them. With such protective works, the greater good of Lake Macquarie, its environment, ecology, economy and the community will be served, otherwise all that the CM Act seeks to protect will be lost. I imagine all 92 lakes listed in the draft SEPP will need to consider "non-compliant" CM Plans.
5. And finally, the "non-complying" CM Plan actually does comply with the intent of the CM Act in that it seeks to protect the natural and man-made assets for the greater good of the community and environment as best it can. The LGAs will have to run the gauntlet of the Coastal Council to get these "non-compliant" CM Plans approved.

I elaborate on these points in the following pages.

## Background:

I have been involved in the preparation of a Sea Level Rise (SLR) Local Adaptation Plan (LAP) for Belmont South and Marks Point with Lake Macquarie City Council (LMCC). This plan dealt with two suburbs affected by SLR in the lake. I am currently involved in the preparation of a LAP for Blacksmiths Beach and Pelican. These two suburbs are affected by the ocean and the lake entrance channel.

I have previously made a submission on the draft Coastal Management (CM) Act and suggested that some officials might benefit from getting involved in the Blacksmiths plan to better understand the key issues associated with adapting to SLR. The benefit from this suggestion has become more obvious now that the maps which identify the CM Areas have been published.

In particular, the map for the *coastal vulnerability area*, which is defined in the CM Act as, "being land subject to coastal hazards," is grossly understated in its published form. This map is shown in Figure 1 over the page. Basically, the *vulnerability area* at Blacksmiths is the beach, and that's all. The SEPP acknowledges that 17 LGAs already have more complete maps but did not publish them. This is a critical oversight.

The CM Act prescribes a CM Manual whose purpose is "to impose mandatory requirements and give guidance," including a risk management process, hazard mapping, CBA and other information. Such guidance has already been provided by NCCARF, which is funded by the Federal Government. Their hazard map for Blacksmiths is shown in Figure 2 and will highlight the issue. It shows SLR of 0.74m by 2100 (which is based on RCP8.5 mid range; the high range worst case would be 1.03m) plus a "highest tide". On the NCCARF website it actually states that the hazard line is at 1.88m AHD, so if MSL is currently at say 0.1m AHD, they have apparently added 1.04m for a highest tide (which sounds about right with tidal variation being from about 0.1m to 2.3m ISLW).

There has been no allowance in the NCCARF map for a storm event. A1/100 event adds 1.5m of flood water to the lake level and 1.5m of storm surge from the ocean. Even a 1.1m flood/storm surge, which was experienced in the storms of 2007, 2015 and 2016, on top of the 1.88m will completely inundate the whole area ... the wetlands, the beach, the channel, five suburbs, golf course, air strip, shopping centre, Pacific Highway, Swansea bridge, sewer line, water, power and telcos ... all of it! It will completely change the ecology of the lake from one with a small tidal prism, to a bay with near full ocean tidal movement. In fact the CM Act fails to recognise the significance of the lake entrance with its shoals, weed beds, shallows, sand islands and channels and their impact on the lake's ecology as a whole (apart from the words "lake entrance instability" in the definition of *coastal hazard*). These areas are already under water and can not be "protected" by "managing coastal use and development".

At least 10,000 homes around the perimeter of the lake, all five coastal suburbs, plus the lake entrance form the *vulnerability area* with significant social, environmental and economic impacts.

In addition, based on the 1.2 degrees of global warming which has occurred in the last century, the projection for SLR is AT LEAST 3m over coming centuries. This is not a prediction of climate change science, it is simply the ocean playing catch-up to the historic atmospheric temperature rise. As the ocean warms up by 1.2 degrees, it will expand and some ice will melt, resulting in a SLR of 3m. At 3m SLR the five suburbs shown in Figures 1 & 2 will be permanently under water. None of the CM Areas will survive by "natural coastal processes".

The CM Act, draft SEPP and hazard maps fail to address this most fundamental hazard and its consequences. They need to acknowledge the consequences of this level of SLR.

The basic objectives of the CM Act "to protect natural coastal processes" and "to recognise that (these same) coastal processes, and the inherently ambulatory and dynamic nature of the shoreline, may result in the loss of coastal land to the sea (including estuaries and other arms of the sea), and to manage coastal use and development accordingly" are inherently in conflict at the entrance to Lake Macquarie.

"Protecting" the CM Areas by *managing coastal use and development*, as prescribed in the CM Act, cannot be met in Lake Macquarie (and, I suspect, in any coastal lake or river mouth).

Coastal protection works will be a fundamental feature of our adaptation plans. Though the *natural coastal processes* will be altered by these works, the greater good for the CM Areas as a whole will be served. But protection works have been relegated to "also-rans" in the CM Act. Rather than enable such protective works, the CM Act seeks to restrict such works, forcing the LGA to submit a "non-conforming" adaptation plan to the Coastal Council for consideration. Such consideration is not regulated in the CM Act and reduces to a matter of opinion by the Coastal Council, whose say is final. I suspect that the Coastal Council will be very busy in the first five years as it grapples with the many non-conforming CM Plans submitted by the LGAs and their communities.

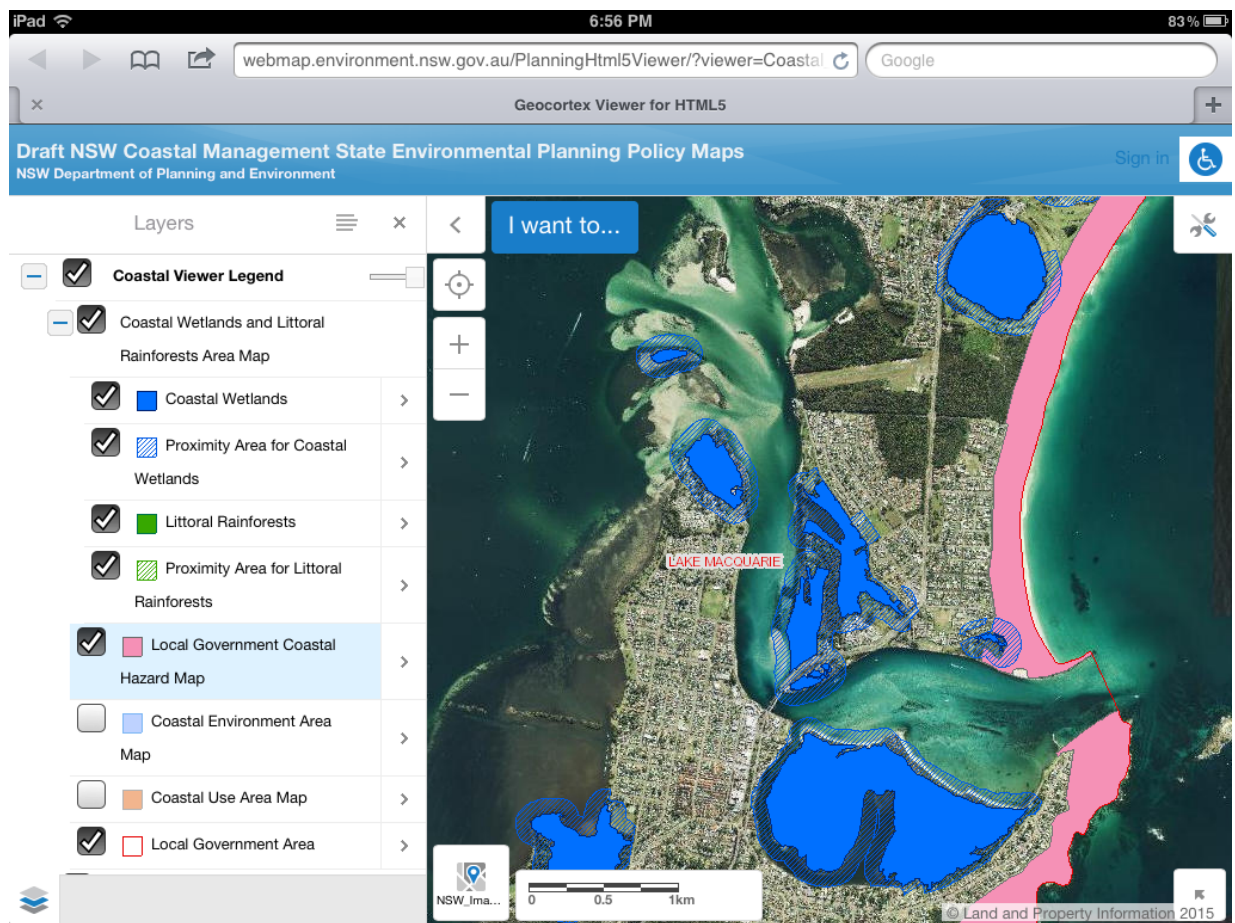


Figure1: State Government Hazard Map (plus wetlands)

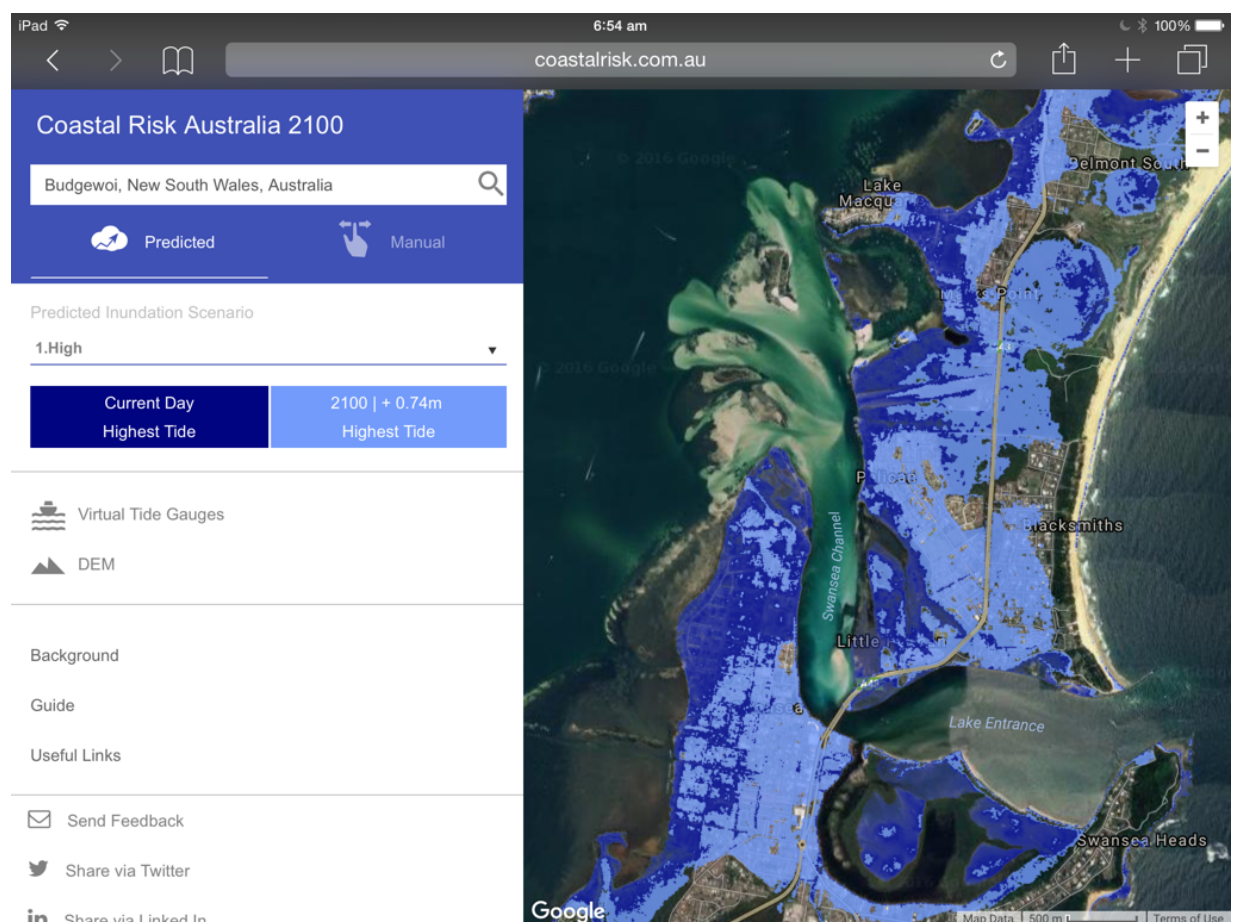


Figure 2: Federal Government Hazard Map

## APPENDIX:

This section is presented under six heads:

1. The Objectives of the CM Act
2. CM Area 1: Coastal Wetlands
3. CM Area 2: Coastal Vulnerability
4. CM Area 3: Coastal Environmental
5. CM Area 4: Coastal Use
6. Protective Works

### 1. The Objectives of the CM Act

*The objects of this Act are to manage the coastal environment of New South Wales consistent with the principles of ecologically sustainable development for the social, cultural and economic well-being of the people of the State.* The objects are regrouped, with comments, as follows:

#### Environment

- (a) *to protect and enhance natural coastal processes and coastal environmental values including natural character, scenic value, biological diversity and ecosystem integrity and resilience, and*
- (g) *to recognise that the local and regional scale effects of coastal processes, and the inherently ambulatory and dynamic nature of the shoreline, may result in the loss of coastal land to the sea (including estuaries and other arms of the sea), and to manage coastal use and development accordingly, and*
- (e) *to facilitate appropriate coastal development and land use planning decision-making, and*

These objectives are in direct conflict at the entrance to Lake Macquarie. Most of the CM Act and SEPP relates to these three points but it is not possible *to protect and enhance natural coastal processes and coastal environmental values by managing coastal use and development* in Lake Macquarie.

Rather than a triple bottom line, objective (g) is the only one which includes a strategy for achieving it.

#### Socio-economic

- (b) *to support the social and cultural values of the coast and maintain public access, amenity and use, and*
- (c) *to acknowledge Aboriginal peoples' spiritual, social, customary and economic use of the coastal zone, and*
- (d) *to recognise the coast as a vital economic zone and support sustainable coastal economies, and*

These objectives are lumped together under CM Area 4, but ignore the important social value of "this is where we live." The economic value is covered in (d) but the word is not even mentioned in the SEPP. Unlike the Environmental objectives, there is no associated strategy to achieve these objectives. CM Area 4 is merely placed underneath the other three CM Areas in the hierarchy, i.e. if the former objectives can't be achieved it is OK providing the Environment objectives are achieved. There is no guidance in the CM Act or SEPP on how to act if the Environment objectives can't be achieved.

#### Risk management

- (f) *to mitigate current & future risks from coastal hazards, taking into account the effects of climate change, and*
- (i) *to encourage and promote plans and strategies to improve the resilience of coastal assets to the impacts of an uncertain climate future including impacts of extreme storm events, and*

We wait for the CM Manual to see how these objectives are to be met. The manual is the only place where the economic value is mentioned as part of a generic process for assessing risk. The SEPP does not even mention the word "economic" or any derivative. The balance between the social, economic and environment values will be critical if the Environmental objectives can't be met as prescribed, but this has not been covered anywhere.

#### Governance

- (h) *to promote integrated and co-ordinated coastal planning, management and reporting, and*
- (j) *to ensure coordination of the policies and activities of government and public authorities relating to the coastal region and to facilitate the proper integration of their management activities, and*
- (k) *to support public participation in coastal management and planning and greater public awareness, education and understanding of coastal processes and management actions, and*
- (l) *to support the objects of the Marine Estate Management Act 2014.*

Important, but secondary objectives in terms of the main theme.

## 2a. CM Area 1: Coastal Wetlands

Figure 1 highlights the wetlands at the entrance to Lake Macquarie. What is immediately obvious is that some wetlands have been missed (the area around Swan Bay for instance). These can be added later as the process unfolds.

What is also obvious from Figure 2, is that these areas will not be preserved by *natural coastal processes*. It is futile to make room for these areas to recede as sea level rises because the whole area will be totally inundated.

For the same reason, *managing coastal use and development* on the land is also futile.

Because of their impact on the whole of the lake's health and ecology, it is probably futile to offset these areas with wetlands elsewhere in the lake.

Ironically, by allowing *natural coastal processes* to prevail, we will LOSE all of the *coastal environmental values including natural character, scenic value, biological diversity and ecosystem integrity and resilience*. These are two features of the same objective.

The Marks Pt LAP recognises that the chief strategy to adapt to SLR is to raise the land and defend the borders. Raising the land occurs during the regular maintenance cycle of the assets. No asset lasts forever. Major maintenance is carried out at least every 50 years. In the worst case, this means knock down and rebuild of the asset AND raise the land before you rebuild.

Knocking down a house and rebuilding it every 100 years is not such a big thing.  
Raising roads by 20 to 30 cm every time you do maintenance is not such a big thing.  
Raising pipes and other infrastructure when you do major maintenance is not such a big thing.

A similar strategy may have to be applied to "save" the wetlands. Rehabilitation of wetlands is envisaged in the CM Act but perhaps not to this level.

Protecting the boundary is done by sea walls. Ironically, in order to protect the wetlands, seawalls may need to be built on Blacksmiths beach and in the channel. This has not been envisaged by the CM Act but I feel it will feature for every lake & river entrance on the coast.

These are unavoidable decisions and they are known now and should be envisaged in the SEPP.

## 2b. CM Area 1a: Watercourse and Lake Entrances

There are environmentally critical areas have been overlooked altogether in the CM Act, viz the shoals, weed beds, shallows, sand islands and channels. These are critical to the health and ecology of the lake and should have been afforded a CM Area of their own, equal to wetlands and littoral forests. These "shallows" will become "deeps" with SLR. Water velocities will increase as the entrances get wider & deeper, tidal prisms will increase, breeding grounds will alter. In short the health & ecology of the whole lake is determined by what comes through its mouth.

"Coastal lake or watercourse entrance instability" is recognised in the definition of a *coastal hazard* (in the fine print of Clause 4 - Definitions), but the impact on the lake's health and ecology has been missed and the ramifications have not been considered.

This critical area is not actually on "land", but under water, and the CM Act is solely focussed on controlling development on "land". But in the "fine print" of the definitions, "beach" includes "submerged land to a depth of 40m seaward" on the coast, and "submerged land to a depth of 10m" in estuaries. This would extend the coastal beach zone to nearly 2km off Blacksmiths beach and would encapsulate the whole lake.

Therefore, including "submerged land" as already defined would qualify the shallows as a legitimate CM Area. And this is an absolutely critical area that has been missed.

Though they are underwater, artificial off-shore reefs are built in this coastal area.

Seawalls, breakwalls and groynes are built in these coastal and estuarine areas.

Seawalls and training walls are built on the boundaries of this estuarine area.

Dredging is carried out in this area.

Bridges are built over this area (and sometimes become unstable in this area).

Cables and pipes are laid under this area.

Marinas are built over this area (and sometimes collapse into this area, e.g. Milano's).

All of these structures alter the *natural coastal processes* (some by design) but they are considered necessary for the greater "social, cultural and economic well-being of the people of the state." There is no intention to harm the environment or ecology of the lake, though it could be argued that we don't often get the balance right. But it is a reality that must be, and is, acknowledged by any revised legislation, viz:

*The objects of this Act are to manage the coastal environment of New South Wales consistent with the principles of ecologically sustainable development for the social, cultural and economic well-being of the people of the State.*

This over-riding objective seems to be lost in the the CM Act and draft SEPP.

The emphasis is on:

*(g) to recognise that the local and regional scale effects of coastal processes, and the inherently ambulatory and dynamic nature of the shoreline, may result in the loss of coastal land to the sea (including estuaries and other arms of the sea), and to manage coastal use and development accordingly.*

At the entrance to the 92 lakes listed in the SEPP, LGAs need guidance on how to balance the triple bottom line in an ecologically sustainable manner, not how to retreat from the advance of an ambulatory and dynamic shoreline.

It is clear that by omitting this zone, we do not fully understand all of the issues yet. It would have made more sense to define five zones by their features (wetland/littoral forest, entrances, environmental, social usage & economic usage) and then superimpose a dynamic vulnerability area over the top of these four zones. We certainly should not be prescribing legislation to control these issues until we understand the issues.

### **3. CM Area 2: Coastal Vulnerability**

The hazard maps grossly understate this area in their currently published form. Though the SEPP acknowledges that 17 LGAs have more complete maps, it has failed to publish them in the appropriate time. Seeing the extent of these areas makes a big difference strategically in terms of understanding the issues and the consequences.

The *coastal vulnerability area*, is defined in the CM Act as, "being **land** subject to coastal hazards." The lake entrance is not on "land", but underwater, but as argued above is on submerged land and should be included as a vulnerability area.

At Lake Macquarie, with say 1m of SLR, there will be (say) 80-100m of beach recession. Ungala road runs parallel to Blacksmiths beach, just in front of the sand dunes. With 80-100m of recession, the waterline will reach the toe of the sand dunes, the sand dunes will collapse and become the beach, and Ungala Rd will be exposed (as per Collaroy, Wamberal, ...etc).

Because Ungala Rd is at 2.5m AHD maximum and the highest point in the area, the first storm will annihilate the road and houses from the ocean, and flood waters will inundate them (all) from the lake (refer Figure 2).

In the LAP, the risk management options we are looking at are a sea wall, groynes and/or an extension to the breakwall, and an offshore reef. The offshore reef is the least invasive and saves the beach, but it needs to be proven.

One thing is certain. In order to save anything like the beach, the lake entrance, the wetlands, and the community, one of these options must be chosen. The CM Act and SEPP should provide for this.

#### **4. CM Area 3: Coastal Environmental**

Now we come to the lake. Currently the lake is "protected" from high tide by the narrow entrance channel, particularly at Swansea bridge. A variation from 0.1m to 2.3m ISLW in ocean tides translates to only 200 to 300 mm movement in the lake, even at Belmont.

Should we allow the beach and sand dunes to collapse, the whole area will inevitably become inundated. A 150m wide entrance will become many kilometres wide. The lake will no longer be protected from the full tidal movement. It will be like starting off with sea levels equivalent to the flood levels from the Pasha Bulker storm (approx 1m) and having the Pasha Bulker storm levels on top of that twice daily with the high tide.

The whole perimeter of the lake, at least equivalent to the current flood hazard line, is in the *vulnerability area*. The ecological and environmental impact is HUGE, not to mention the socio-economic impacts dealt with next. And it is dependent on protecting/defending the entrance, which itself is dependent on putting protection works on Blacksmiths beach and in the channel.

The CM Act and SEPP should envisage this and facilitate rather than restrict it.

#### **5. CM Area 4: Coastal Use**

The Pacific Highway runs through this area, bringing everybody to the area to enjoy its natural features, in addition to its commercial use (the alternate is to drive around the western side of the 110 square km of lake). The Pacific Highway will be inundated by 1m SLR at high tide.

There is an opening bridge on the highway at Swansea with less than 1.6m clearance at high tide. With SLR, a bridge opening will be required to let even a kayak go through. With widening and deepening of the channel as sea level rises, water velocities will become dangerous and bridge foundations may become unstable (again). It will be inundated.

There is an air strip at Pelican on the Pacific Highway. It will be inundated.

There is a golf course across the road. It will be inundated.

There are several caravan parks. They will be inundated.

There is a shopping centre at Swansea with all the services it provides. It will be inundated.

A sewer line runs along nine mile beach, through Blacksmiths and under the bridge. It will be inaccessible. Similarly for power lines, telcos and water mains which run under the bridge.

And of course five coastal suburbs will be inundated and those communities will have to be relocated. At least 10,000 properties are within the current flood hazard line around the lake. All of those houses, and the families who live there, will need to be relocated. Alternate housing will need to be found by either greenfield development or increased density - a strain the state's infrastructure does not need.

This is where we live, and we love it here because of the environment.



As the population increases, more people will want to live here, not less.

All of this is not doomsday, it is fact. It is not a matter of if, it is a matter of when. Sea level will rise by at least 3m, the only question is how quickly. If climate change predictions are correct, it will climb quicker and higher, but 3m is already locked in. The CM Act only acknowledges maintaining public access, amenity and safety as the social values. It ignores the impacts described above. The CM Act and SEPP should acknowledge this reality and accommodate it.

## 6. Protective Works

Clause 27 currently prescribes that "protective works shall not ... unreasonably limit public access ... or pose a threat to public safety."

It could be argued that protective works such as seawalls, by definition, do exactly that. The definition of what is "reasonable" and what constitutes a "threat" is left to the interpretation of the Coastal Council. The Coastal Council can make recommendations to: reject the plan, and impose an alternative plan, and fine the LGA \$5M for not complying.

These are serious impediments for an LGA which is trying to comply with the intent of the CM Act by proposing protective works which ultimately seek to protect the natural and man-made assets for the greater good of the community and environment as best it can. The LGAs will have to run the gauntlet of the Coastal Council to get these non-compliant CM Plans approved. The CM Act and SEPP should not require such CM Plans to be approved by the back door.

The SEPP reinforces this by stipulating, for example:

*Development consent must not be granted to development on land unless the consent authority is satisfied that the proposed development:*

- (a) if there is an existing beach adjacent to the proposed development—allows for the ambulatory and dynamic nature of the beach and foreshore or provides for beach nourishment, and*
- (b) is not likely to cause increased risk of coastal hazards on that land or other land, and*
- (c) is not likely to alter coastal processes to the detriment of the natural environment or other land, and*
- (d) is not likely to reduce the public amenity, access to and use of any beach, foreshore, rock platform or headland adjacent to the proposed development, and*
- (e) incorporates appropriate measures to manage risk to life and public safety from coastal hazards.*

Seven of the eleven clauses in the "Development controls for coastal management areas" in the SEPP start with "*Development consent must not be granted ...*"

It will be a struggle to argue for protective works on Blacksmiths beach with clauses like this in the SEPP, even though such works **reduce the risk** of coastal hazards, and alter coastal processes **to the benefit** of the natural environment, and maintain some form of public amenity that would otherwise be completely lost.

## Conclusion

In order to reflect an emphasis on the triple bottom line, the CM Areas should have identified land that is environmentally sensitive, socially sensitive and economically sensitive.

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|----------------------|---|
| Environment CM Areas | - this is what we love, i.e. littoral forests/wetlands, beaches, lake foreshore, shallows.  |
| Social CM Areas      | - this is where we play, i.e. public amenities  |
|                      | - this is where we live, i.e. residential   |
| Economic CM Areas    | - this is where we work, i.e. main roads & infrastructure, airports, shopping centres, etc. |

The "coastal vulnerability" area is not an area in its own right, it is an overlay of the hazard map over the CM Areas.

If managing development in these areas is the main strategy, and imposing a hierarchy of controls is what is intended, then it should be overtly evident that the required balance in the triple bottom line is achieved by following this hierarchy, not favouring one area at the expense of the others as is currently the case.