

# Lake Macquarie Sea Level Rise Preparedness Adaptation Policy

Version 01

8 September 2008

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## INFORMATION ABOUT THIS DOCUMENT (INTERNAL USE ONLY)

### Authorisation Details

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### Version History

Version No.	Date Changed	Modified By	Details / Comments
01	September 2008	NF	Original version based on Council resolution of 25 August 2008.

### Further Document Information and Relationships

<b>REPOL Report TRIM Document No</b>	N/A	<b>REPOL Date of Endorsement:</b>	N/A
<b>Date of Adoption by Council:</b>	25 August 2008	<b>Review Timeframe:</b>	Within 12 months of an ordinary Council election
<b>Policy History:</b>			
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<b>Related Legislation:</b>	<i>(Legislation)</i>	<i>(Relationship/Context)</i>	
	<ul style="list-style-type: none"> <li>• Coastline Management Manual</li> <li>• Floodplain Management Manual</li> </ul>	Related State Government documents	
<b>Related Policies:</b>	<i>(Policy Name &amp; TRIM Document No.)</i>	<i>(Relationship/Context)</i>	
	N/A	N/A	
<b>Related Business Rules / Procedures / Work Method Statements:</b>	<i>(Document Name &amp; TRIM Document No.)</i>	<i>(Relationship/Context)</i>	
	N/A	N/A	

## Policy Objectives

### OUR COMMITMENT

Lake Macquarie City Council is committed to working with its residents to identify and respond to emerging hazards and risks associated with sea level rise (SLR). We are committed to preparedness and adaptation responses informed by environmental, social, and economic sustainability.

### OUR GOAL

To provide a policy framework to assist Council and Lake Macquarie residents, as stewards of our City's environment, to respond responsibly and proactively to emerging SLR hazards and risks.

## Policy Statement

### OUR PLAN

To achieve this, Council:

1. Has adopted the NSW Department of Environment and Climate Change's projected upper sea level rise figure for the year 2100 of up to 0.91m as the basis for Council staff and the community to proceed with risk assessment, policy development, community empowerment, and planning and development decisions
2. Will continue to monitor, review, and manage the risks associated with climate change relating to local government functions
3. Review the above figure if and when the NSW Government recommends a level under its planning policies, guidelines, or manuals, and/or in the light of new scientific evidence
4. Will continue to undertake community consultation and community empowerment activities in partnership with Lake Macquarie residents and other stakeholder partners
5. Will develop and progressively implement and review the Lake Macquarie Sea Level Rise Preparedness and Adaptation Schedule as a tool for managing Council's adaptation response to sea level rise.

### INTERIM GUIDELINES

The following interim guidelines are provided to assist staff in implementing this Policy:

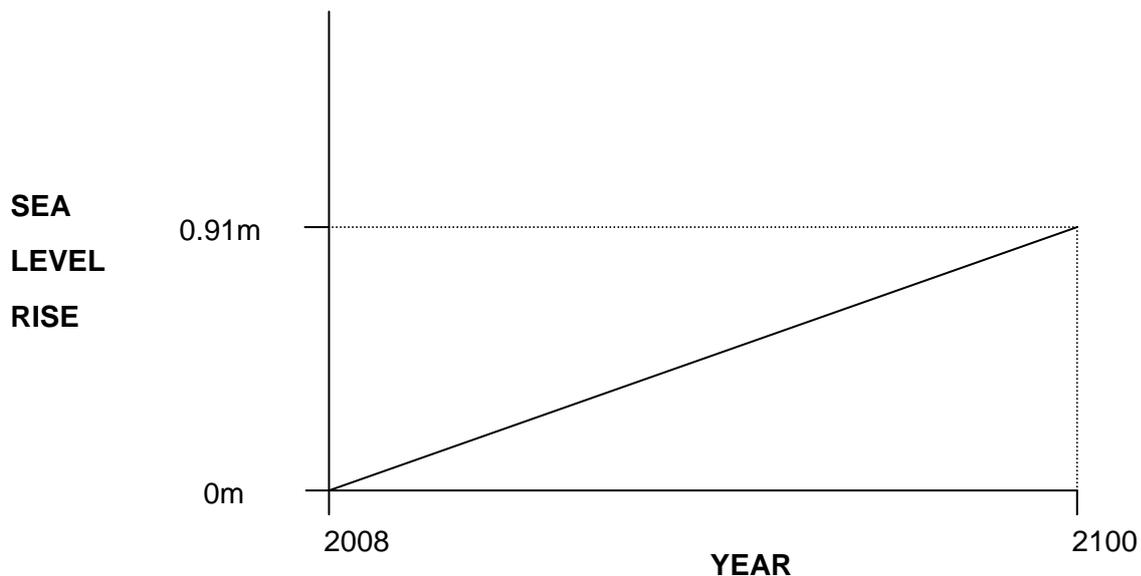
1. Council has to consider the effect of climate change when determining development applications.
2. Required floor levels for buildings will be considered in accordance with the following principles:
  - a). Each DA is to be considered on a case by case basis (as is required by law).
  - b). Council have regard to the Floodplain Risk Management Guideline issued 25 October 2007 by the Department of Environment and Climate Change (NSW)

and the Sensitivity Analysis in Section 1 of that document and fix the following requirements:

- i. adopt a 0.91m high level ocean impact sea level;
- ii. follow the upper level of rainfall increase by 2100 of 30% from DECC *Practical Consideration of Climate Change (2007)*, resulting in a calculated 0.18m rise in lake levels in respect of 1% ARI rainfall and storm volume;
- iii. add those values in (i.) and (ii.) to the value of 1.88m (which represents the 100-year ARI design flood level of 1.38m and 0.5m freeboard buffer);
- iv. discount an amount of 0.2m for climate change uncertainty already incorporated in freeboard;
- v. assume a building life of 50 years - 100 years depending on building type or use.

Note: These calculations are reflected in the table below.

- 3. If the developer seeks to fix a lower level for their proposal, then they should submit a site-specific flood study, which would then enable Council to evaluate the proposal on its merits. However, Council should reserve the right to submit the study to peer review or evaluation by an independent expert if it considers it appropriate to do so.
  
- 4. Taking into account the 0.91 metre expected upper limit of sea level rise from the year 2008 to the year 2100 it is considered appropriate to prepare for a linear increase of 1cm in the sea level per year. This is reflected in the chart below and the total indicative floor levels will reflect this linear increase.



Example table for habitable room in residential or commercial building:

	Revised proposal (for 100-yr development life) 1	Revised proposal (for 50-yr development life) 1
1% ARI <sup>2</sup>	1.38m	1.38m
Freeboard <sup>3</sup>	0.50m	0.50m
Rainfall <sup>4</sup>	0.18m	0.10m
SLR <sup>5</sup>	0.99m	0.49m
Discount from climate change uncertainty already incorporated in freeboard <sup>6</sup>	- 0.20m	- 0.20m
Total	2.85m	2.27m

1. Council's solicitor nominates a 100-year development life, however, the figures for both 100-year and 50-year life are provided. A 50-year development life is used in the May 2008 report and is considered more consistent with residential development life, eg: a development application received in 2008, the development life of the building would extend to 2058. The design development life would need to be specified at the time of application.
2. The 1% ARI (i.e. the 1:100 year flood) level is from the Lake Macquarie Flood Study (1998)
3. Freeboard is an additional amount above the 1%ARI level, to allow a margin for modelling uncertainty and local risk. The NSW Floodplain Management Manual (2005) recommends a freeboard of 0.5m, which has been adopted in the Lake Macquarie Floodplain Management Plan. In Lake Macquarie the freeboard is approximately based on uncertainties in design flood estimates (0.20m), climate change uncertainty (rainfall and ocean level rise - 0.2m), and wave action (0.1m). These estimates are provided by Richard Dewar, Director Webb McKeown & Associates, the consultants who undertook the Lake Macquarie Floodplain Management Study (2000) and Lake Macquarie Waterway Floodplain Management Plan (2001). Note: in Lake Macquarie, a freeboard of 0.5m is provided for habitable rooms in residential and commercial buildings, however, no freeboard applies in non-habitable rooms and industrial buildings.
4. Rainfall is calculated on the upper level of rainfall increase by 2100 of 30% from DECC Practical Consideration of Climate Change (2007). The calculations for Lake Macquarie are from Patterson Britton Appendix W – Trinity Pont Marina Environmental Assessment, which calculates a lake level from the local rainfall data. This level is reduced proportionally for the 50-year planning period.
5. Sea level rise is from the IPCC (2007) and CSIRO (2007) reports on climate change, using their upper scenario of 0.91m. The level is reduced proportionally for the 50-year planning period.
6. As SLR and increased rainfall are now specifically included in the calculation of elevated lake levels, they are double counted as they are also included in the freeboard consideration (see note 2). The final level needs to "discounted" to avoid double counting.