

# NOTICE OF MEETING



## EXTRAORDINARY COASTAL ESTUARY CATCHMENT PANEL MEETING

An Extraordinary Coastal Estuary Catchment Panel Meeting of Byron Shire Council will be held as follows:

Venue	<b>Conference Room, Station street, Mullumbimby</b>
Date	<b>Friday, 7 June 2019</b>
Time	<b>12pm</b>

A handwritten signature in black ink, appearing to read 'Phillip Holloway'.

Phillip Holloway  
Director Infrastructure Services

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## CONFLICT OF INTERESTS

**What is a “Conflict of Interests”** - A conflict of interests can be of two types:

**Pecuniary** - an interest that a person has in a matter because of a reasonable likelihood or expectation of appreciable financial gain or loss to the person or another person with whom the person is associated.

**Non-pecuniary** – a private or personal interest that a Council official has that does not amount to a pecuniary interest as defined in the Local Government Act (eg. A friendship, membership of an association, society or trade union or involvement or interest in an activity and may include an interest of a financial nature).

**Remoteness** – a person does not have a pecuniary interest in a matter if the interest is so remote or insignificant that it could not reasonably be regarded as likely to influence any decision the person might make in relation to a matter or if the interest is of a kind specified in Section 448 of the Local Government Act.

**Who has a Pecuniary Interest?** - a person has a pecuniary interest in a matter if the pecuniary interest is the interest of the person, or another person with whom the person is associated (see below).

**Relatives, Partners** - a person is taken to have a pecuniary interest in a matter if:

- The person’s spouse or de facto partner or a relative of the person has a pecuniary interest in the matter, or
- The person, or a nominee, partners or employer of the person, is a member of a company or other body that has a pecuniary interest in the matter.

N.B. “Relative”, in relation to a person means any of the following:

(a) the parent, grandparent, brother, sister, uncle, aunt, nephew, niece, lineal descends or adopted child of the person or of the person’s spouse;

(b) the spouse or de facto partners of the person or of a person referred to in paragraph (a)

**No Interest in the Matter** - however, a person is not taken to have a pecuniary interest in a matter:

- If the person is unaware of the relevant pecuniary interest of the spouse, de facto partner, relative or company or other body, or
- Just because the person is a member of, or is employed by, the Council.
- Just because the person is a member of, or a delegate of the Council to, a company or other body that has a pecuniary interest in the matter provided that the person has no beneficial interest in any shares of the company or body.

### Disclosure and participation in meetings

- A Councillor or a member of a Council Committee who has a pecuniary interest in any matter with which the Council is concerned and who is present at a meeting of the Council or Committee at which the matter is being considered must disclose the nature of the interest to the meeting as soon as practicable.
- The Councillor or member must not be present at, or in sight of, the meeting of the Council or Committee:
  - (a) at any time during which the matter is being considered or discussed by the Council or Committee, or
  - (b) at any time during which the Council or Committee is voting on any question in relation to the matter.

**No Knowledge** - a person does not breach this Clause if the person did not know and could not reasonably be expected to have known that the matter under consideration at the meeting was a matter in which he or she had a pecuniary interest.

### Participation in Meetings Despite Pecuniary Interest (S 452 Act)

A Councillor is not prevented from taking part in the consideration or discussion of, or from voting on, any of the matters/questions detailed in Section 452 of the Local Government Act.

**Non-pecuniary Interests** - Must be disclosed in meetings.

There are a broad range of options available for managing conflicts & the option chosen will depend on an assessment of the circumstances of the matter, the nature of the interest and the significance of the issue being dealt with. Non-pecuniary conflicts of interests must be dealt with in at least one of the following ways:

- It may be appropriate that no action be taken where the potential for conflict is minimal. However, Councillors should consider providing an explanation of why they consider a conflict does not exist.
- Limit involvement if practical (eg. Participate in discussion but not in decision making or vice-versa). Care needs to be taken when exercising this option.
- Remove the source of the conflict (eg. Relinquishing or divesting the personal interest that creates the conflict)
- Have no involvement by absenting yourself from and not taking part in any debate or voting on the issue as if the provisions in S451 of the Local Government Act apply (particularly if you have a significant non-pecuniary interest)

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## RECORDING OF VOTING ON PLANNING MATTERS

### Clause 375A of the Local Government Act 1993 – Recording of voting on planning matters

- (1) In this section, **planning decision** means a decision made in the exercise of a function of a council under the Environmental Planning and Assessment Act 1979:
  - (a) including a decision relating to a development application, an environmental planning instrument, a development control plan or a development contribution plan under that Act, but
  - (b) not including the making of an order under Division 2A of Part 6 of that Act.
- (2) The general manager is required to keep a register containing, for each planning decision made at a meeting of the council or a council committee, the names of the councillors who supported the decision and the names of any councillors who opposed (or are taken to have opposed) the decision.
- (3) For the purpose of maintaining the register, a division is required to be called whenever a motion for a planning decision is put at a meeting of the council or a council committee.
- (4) Each decision recorded in the register is to be described in the register or identified in a manner that enables the description to be obtained from another publicly available document, and is to include the information required by the regulations.
- (5) This section extends to a meeting that is closed to the public.

**BYRON SHIRE COUNCIL**  
EXTRAORDINARY COASTAL ESTUARY CATCHMENT PANEL MEETING

**BUSINESS OF MEETING**

**1. APOLOGIES**

**2. DECLARATIONS OF INTEREST – PECUNIARY AND NON-PECUNIARY**

**3. ADOPTION OF MINUTES FROM PREVIOUS MEETINGS**

3.1 Coastal Estuary Catchment Panel Meeting held on 14 March 2019

**4. STAFF REPORTS**

**Infrastructure Services**

4.1 Climate Change Strategic Planning Policy - Discussion and Review.....4

STAFF REPORTS - INFRASTRUCTURE SERVICES

**Report No. 4.1**                    **Climate Change Strategic Planning Policy - Discussion and Review**

**Directorate:**                    Infrastructure Services

5 **Report Author:**                James Flockton, Drain and Flood Engineer

Chloe Dowsett, Coastal and Biodiversity Coordinator

**File No:**                         I2019/775

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**Summary:**

This report has presented topic for discussion as requested by panel member Duncan Dey.

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**RECOMMENDATION:**

**That staff draft a reviewed Climate Change Strategic Planning Policy based on the outcomes and recommendations for content from the workshop and report back to the Panel once complete.**

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**Attachments:**

- 1 Policy: Climate Change Strategic Planning (Adopted 26 June 2014 Effective 21 July 2014 in conjunction with DCP 2014 (Current\_Policies), E2014/43283 , page 14 [↓](#)

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REPORT

The review of Council's Climate Change Strategic Planning Policy has been a pressing subject for members of the Coast and Estuary Catchment Panel (Panel) since February 2019. At the 21 February 2019 Planning Meeting, member Matthew Lambourne addressed Council in favour of the recommendation for Council' Climate Change Adaptation Processes – Update Report. On 4 March 2019 it was then requested by member Duncan Dey to table the review of the Climate Change Strategic Policy (the Policy) at the next available Panel meeting.

Information provided by Duncan Dey is outlined below.

*As Background, the Policy is a product of the Council 2012-16 that that I was on.*

*As attached, it was adopted in June 2014 based on the original of 2009 from which my Council removed items such as sensitivity testing for scenarios of higher rainfall. This was raised by Matthew in an address to your Planning Meeting of 21 February.*

*An ideal time for major review of the Policy is after the IPCC releases its review of climate change including predictions of Sea Level Rise. Such predictions are heavily concerned with the timing of SLR in years ahead. A simpler approach is to separate the debate about when certain rises occur from the debates around what happens when they occur. In that regard we should also consider Policy to examine the matters separately, thus leaving the timing question to planners and what-if questions to engineers. Neither profession can respond to the bundle.*

*While the concept above may seem radical, the reinstatement of storm rainfall sensitivity testing is not. It should be done now.*

To initiate the Policy review the 7 June Panel meeting has been dedicated to workshopping the content and intent of the Policy. A First-Pass review of the Policy has been completed by staff prior to the workshop. The current Policy is provided in full at attachment 1.

Staff will provide a short history of the Policy prior to opening up the discussion on the following headings. These headings identify the key themes of the Policy and are provided as discussion topics. Each heading has been given a timeframe to ensure the workshop stays on track and all topics are discussed.

Themes/headings are outlined below with the current wording from the CC Policy italicised. Some headings have a brief description and/or questions to initiate discussion.

Name of the Policy and Commencement (2 mins)

Current CC Policy wording:

*This Policy is known as the Byron Shire Council Climate Change Strategic Planning Policy ('Policy'). It sets out Byron Shire Council's policy position relating to climate change.*

*The current Policy was adopted by resolution of Council (Res 14-315) on 26 June 2014, to be effective 21 July 2014.*

The panel can discuss alterations to the name if the intent of the policy is likely to change to such a degree that the name is no longer appropriate.

Objectives (2 mins)

Current CC Policy wording:

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- *To set out Council's accepted climate change parameters to inform the decision making process for strategic, infrastructure and operational planning.*
  - *To mitigate impacts associated with climate change on future generations through commitment to the precautionary principle.*
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- *To review climate change parameters as further information becomes available from leading government organisations.*

The panel can discuss alterations to this wording. Should the intent of the Policy be expanded then additional wording would be appropriate to address this change in intent.

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Climate Change Parameters (10 mins)

Current CC Policy wording:

20 *The following global climate change parameters (relative to reference period 1986-2005) will be considered for Council's strategic, infrastructure and operational planning:*

- a) temperature increases of 0.4°C to 2.6 °C by 2065 and 0.3°C to 4.8 °C by 2100*
- b) sea-level rises of 17 – 38 cm by 2065 and 26 – 82 cm by the end of this century*
- c) increases in rainfall intensities by the end of this century.*

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Notes:

*All parameters have been taken from the Intergovernmental Panel on Climate Change, 'Climate Change 2013 The Physical Science Basis, Summary Report for Policymakers' document, which was released in late 2013 and can be viewed at: [http://www.ipcc.ch/report/ar5/wg1/docs/WGIAR5\\_SPM\\_brochure\\_en.pdf](http://www.ipcc.ch/report/ar5/wg1/docs/WGIAR5_SPM_brochure_en.pdf)*

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*In the absence of more current scientific analysis at a regional level, sea level rise parameters shall be applied in accordance with DECCW Sea Level Rise Policy Statement April 2009 as considered adequate by the most recent NSW Chief Scientist report (April 2012).*

35 The release of Australian Rainfall and Runoff 2016 (ARR2016) has changed the way rainfall is modelled. Further consideration of 10 and 20% rainfall increases has also become best practice.

*The Office of Environment and Heritage has developed Climate Change Snapshots for NSW and each of the State Planning Regions.*

40 *The snapshots provide details of the:*

*Current climate of the region*

- *likely changes in climate (temperature and rainfall) by 2030 and 2070*
  - *likely changes to Severe Fire Weather by 2030 and 2070*
  - *likely changes to Hot days (maximum temperatures >35°C)*
- 45
- *likely changes to Cold nights (minimum temperatures <2°C)*

Further information can be sourced at <https://climatechange.environment.nsw.gov.au/Climate-projections-for-NSW/Climate-projections-for-your-region>

5 It is considered appropriate that the use of Australian Rainfall and Runoff 2016 for flood and stormwater modelling be supported through the policy, as long the data is used in accordance with recommendation within ARR2016.

10 Adding 10% & 20% to the 2050 and 2100 Climate Change parameters warrants discussion with the panel prior to recommending a way forward.

Planning Horizons (10 mins)

Current CC Policy wording:

15 *2050 Climate Change Planning Horizon*

20 *With the exception of development in new release areas, certain rezoning proposals, critical facilities and special purpose facilities, a 2050 Climate Change Flood Planning horizon will be used for any strategic, infrastructure and operational planning document or designs that may be affected by climate change.*

*2100 Climate Change Planning Horizon*

25 *A 2100 Climate Change Flood Planning Horizon will be used for the purpose of all development in new release areas, certain rezoning proposals, critical facilities and special purpose facilities.*

30 It is difficult to remove the horizon timeframes with the current planning legislation Council works under, for example Coastal Management Programs assess coastal hazards within short (20 year) medium (50 year) and long (100 year) time frames. However, further emphasis on amounts of change could be added and can be discussed with the panel.

35 Further, amounts of change can be used to recommend changes in direction or requirements.

Strategic Land-Use Planning (10 mins)

Current CC Policy wording:

40 *If an adopted Flood Study or Floodplain Management Plan either does not exist, or does exist but has not suitably considered climate change in accordance with this Policy, then the following will be used:*

45 a) *For developments and major infrastructure upgrades that are subject to a requirement for the completion of a new flood study, climate change effects for the relevant planning horizon must be addressed in accordance with Section 3.5 of this policy.*

50 b) *For other development the following generally equates to the Projected 2050 Flood Planning Level for habitable development.*

*Where the site of the development is:*

- i) At or below 4m AHD an additional 0.4m shall be applied to the estimated 1 in 100 year flood level, or highest known flood level where no flood study exists, in addition to the normal 0.5m freeboard.
- ii) Above 4m AHD then the estimated 1 in 100 year flood level, or highest known flood level where no flood study exists shall be used, together with the normal 0.5m freeboard.

If an adopted Flood Study or Floodplain Management Plan does exist which suitably considers climate change in accordance with this Policy, then the following minimum flood planning levels apply:

- i) Projected 2100 flood planning level for development in new release areas, rezonings, critical facilities and special purpose facilities.
- ii) Projected 2050 flood planning level for all other development.

Strategic land use planning section only reflects issues around flood levels. Should other issues be considered?

Flood Studies and Floodplain Management Plans (10 mins)

Current CC Policy wording:

Flood studies will model the 1 in 100 year event using an envelope approach. The Climate Change Flood Planning Scenarios in Table 1 provide the climate change effects that are to be considered.

The envelope approach will model two separate events for each scenario and combine the worst results from each run to create the inundation map for that scenario. One event will be an ocean dominated event that uses the 100 year ocean (storm event) level with a 20 year Average Recurrence Interval (ARI) rainfall event. The other will be a rainfall dominated event that uses the 20 year ocean (storm event) level with a 100 year ARI rainfall event.

All Council flood studies and 2100 climate change flood planning horizon developments will also model the three sensitivity scenarios in Table 1, which are designed to consider how sensitive the catchment is to rainfall intensity increases and a large combination event (i.e. a 100 year Annual Recurrence Interval (ARI) rainfall and ocean level event). This is because the catchments within Byron Shire are short and sharp catchments, which are close to the ocean, therefore, it is not unusual for the Shire's coastal communities to experience an event with both rainfall and ocean levels peaking close to each other.

The climate change related sensitivity analyses add climate change ocean effects to the usual sensitivity analyses involved in flood and flood risk management studies undertaken in accordance with the NSW Floodplain Development Manual (i.e. using rainfall intensity only).

For the purposes of the Byron LEP 2014, the '100 year in 2100 (FPL event)' in Table 1 below is adopted as representing the **Future Flood Planning Level**.

**Table 1: Climate Change Scenarios for use in Flood Modelling and Flood Planning**

Scenario	Predicted Sea Level Rise (Metres above 1990 mean sea levels)	Catchment inflow (rainfall event)	Ocean Boundary Peak Tailwater Condition in (M)AHD	Increase in rainfall intensity
100 year event Current Conditions	0	20 year ARI 100 year ARI	*2.6 (Ocean Dominated) 2.2 (Rain Dominated)	0
100 year event in 2050	0.4	20 year ARI 100 year ARI	2.6 (Ocean Dominated) 2.4 (Rain Dominated)	0
100 year event in 2100 (FPL event)	0.9	20 year ARI 100 year ARI	3.1 (Ocean Dominated) 2.9 (Rain Dominated)	0
Sensitivity test 1	0.4	20 year ARI 100 year ARI	2.6 (Ocean Dominated) 2.4 (Rain Dominated)	10%
Sensitivity test 2	0.9	20 year ARI 100 year ARI	3.1 (Ocean Dominated) 2.9 (Rain Dominated)	30%
Sensitivity test 3	0.9	100 year ARI	3.1 (Ocean & Rainfall Dominated)	30%

**Source:** Figures are in accordance with recommendations from DECCW Sea Level Rise Policy Statement April 2009 and DECCW Practical Consideration of Climate Change guideline 2007.

\*The 100 year peak ARI ocean level of 2.6m AHD is based on a coastal assessment undertaken nearly 30 years ago and includes, wave and wind set up and barometric pressure effects. It is considered to have some allowance for sea level rise but the amount is unknown. It is the accepted level across the state for the 100 year flood tailwater condition and its application in Byron Shire dates back to the Brunswick River Flood Study (1986) and Belongil Creek Flood Study (1986)..

5 The Office of Environment and Heritage (OEH) have released a Floodplain Risk Management Guide - Modelling the Interaction of Catchment Flooding and Oceanic. For inundation levels in coastal waterways. The document recommends differing ocean levels for the 100 year event, dependent upon entrance type. It recommends 2.1m AHD for the Brunswick River mouth and 2.65m AHD for Tallow and Belongil Creek mouths. This results in some changes to the above numbers. A reduction of current condition water levels for Brunswick River and a mild increase of 10 5cm for the others. This can be discussed with the panel, but given OEH are recommending different, these should be adopted.

Further information can be found at:

15 <https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Water/Floodplains/modelling-catchment-flooding-oceanic-inundation-150769.pdf?la=en&hash=41092E03528FEF91161826E5FE5D9E5CD2D13598>

20 <https://www.environment.nsw.gov.au/topics/water/floodplains/floodplain-guidelines>

<https://climatechange.environment.nsw.gov.au/>

Coastline Management Planning (10 mins)

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Current CC Policy wording:

10 *Sea level rise parameters to be applied for the purposes of coastline management planning are in accordance with DECCW Sea Level Rise Policy Statement April 2009, as considered adequate by the most recent NSW Chief Scientist report (April 2012).*

15 Following a review by the NSW Chief Scientist and Engineer and stage one coastal management reforms, the NSW Government announced that Councils would have the flexibility to determine their own sea level rise projections to suit their local conditions. The Government would no longer prescribe statewide sea level rise projections for use by Councils and the 2009 NSW Sea Level Rise Policy Statement would no longer be NSW Government policy.

20 OEH has released guidelines on incorporating sea level rise into flood risk and coastal hazard assessment and these guidelines will be used in developing Coastal Management Programs for Council. This document will be revised as part of the coastal reform process. In the interim, reference to the NSW sea level rise planning benchmarks in this document should be taken as referring to Council's adopted sea level rise projections.

25 Further information can be found at:

<https://climatechange.environment.nsw.gov.au/Impacts-of-climate-change/Sea-level-and-coasts>

<https://www.environment.nsw.gov.au/resources/water/coasts/10760CoastRiskManGde.pdf>

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Biodiversity Planning (8 mins)

Current CC Policy wording:

35 *Impacts to coastline, coastal floodplain and river /waterway biodiversity due to coastal erosion and shoreline recession, salt water intrusion to ground water, and tidal inundation and changes to hydraulic behaviour of waterways result in: habitat loss; habitat fragmentation; habitat squeeze; increased competition; and ecosystem health decline.*

40 *Therefore, appropriate buffering of natural ecosystems from development is to be incorporated into strategic plans, land use controls and development proposals to allow room for the migration of those communities as sea levels rise and/or changes in hydraulic behaviour of waterways are realised.*

45 *Also, current and potential future wildlife corridors are to be identified and protected via land use controls to allow for the survival and adaptation of ecological communities and associated biodiversity.*

50 The panel can discuss alterations to this wording

Biophysical Socio-Economic Thresholds (5 mins)

Current CC Policy wording:

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*Biophysical and socio-economic thresholds are limits of their resilience beyond which it is assumed that irreversible degradation may ensue. The precautionary principle is a response to uncertainty in the face of poorly understood thresholds. In the absence of adequate data to determine thresholds or direction from State Government Council will apply the precautionary principle.*

The panel can discuss alterations to this wording

Review of Current Plans (5 mins)

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Current CC Policy wording:

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*Council's planning and strategic documents and infrastructure policies, where their content may be affected by climate change, will be reviewed to incorporate the impacts of the Climate Change Flood Planning Scenarios and Climate Change Parameters, as funding and resources, including grants, permit.*

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The panel can discuss alterations to this wording This item could be further expanded with direction towards types of documents or documents that should be updated.

Review of Climate Change Parameters (5 mins)

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Current CC Policy wording:

35  
*Climate Change Parameters will be reviewed and/or updated upon receipt of more current scientific analysis, including further Intergovernmental Panel on Climate Change (IPCC) reports and/or Commonwealth Scientific and Industrial Research Organisation (CSIRO) or NSW Government Department recommendations.*

No changes are proposed to this item. IPCC, CSIRO and other Government departments (such as OEH) are still the appropriate sources.

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Resourcing (5 mins)

Current CC Policy wording:

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*Council will pursue grant opportunities to further examine climate change issues as they affect planning and infrastructure provisions.*

The panel can discuss alterations to this wording

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Other

Staff have held internal discussions and questioned whether 'other' issues should be considered by the Policy. The following are other issues staff feel could be considered at this workshop:

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1. Fire

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Danger to existing and future development presented by increased fire risk is not discussed in the policy. Given this issue has a likelihood of increasing it should be considered for possible addition to the policy.

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2. Emissions reduction

Given the recent declaration of a Climate Emergency by Council and the possible change in the intent of the Policy. Emissions reduction maybe an appropriate subject for the Policy to address.

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3. Assets renewal

The Policy could toughen expectations around asset renewals to ensure asset and materials with considerable design lives consider potential impacts from a changed climate. The amount of consideration would be dependent upon the design life of the asset.

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4. Climate Adaptation Planning

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Adaption to Climate Change is highly likely to be required. Numerous scientists have agreed we have gone beyond the point of no change. Change will occur even if we drastically lower emissions immediately, therefore, have adaption within the Policy is appropriate.

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An example for an adaptation Policy could be a requirement that all buildings within the 2100 Flood Planning Level area have a construction method that allows for adaptation of the building if flood levels increase due to Climate Change.

5. Stormwater

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Underground drainage networks typically have a life expectancy of approximately 80 years. Therefore all underground drainage networks should be designed with rainfall intensity increase predictions for 50 years beyond the date of design.

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This would be beyond the current day design capacity required by Council's engineering standards. But is considered appropriate given the risks created by Climate Change.

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**Financial Implications**

This report does not generate any financial implications for Council, however, the outcomes of the policy update may impact staff resourcing and budget decision in the future.

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**Statutory and Policy Compliance Implications**

This report proposes to review and update an existing Council policy. The current policy will remain in force until such time that a new updated policy is adopted by Council.

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## **BYRON SHIRE COUNCIL**

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### **POLICY NO 14/006**

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## **CLIMATE CHANGE STRATEGIC PLANNING**

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# BYRON SHIRE COUNCIL

STAFF REPORTS - INFRASTRUCTURE SERVICES

4.1 - ATTACHMENT 1

## INFORMATION ABOUT THIS DOCUMENT

<b>Date Adopted by Council</b>	12 November 2009	<b>Resolution No.</b>	09-968
<b>Policy Responsibility</b>			
<b>Review Timeframe</b>	Annual or as new information becomes available		
<b>Last Review Date:</b>	June 2014	<b>Next Scheduled Review Date</b>	

### Document History

Doc No.	Date Amended	Details Comments eg Resolution No.
821831	Created January 2009	DRAFT as per Resolution 08-700
842993	Created April 2009	DRAFT with amendments as per Resolution 09-136
864518	Created June 2009	Public Exhibition Draft as per resolution 09-435
894194	Created September 2009	Public Submission Draft for Council consideration at meeting 22 October 2009
#908785	12/11/09	Adopted 12/11/09 Res No. 09-968
E2013/75179		DRAFT to 20 March 2014 Ordinary Meeting
E2014/20025	20 March 2014	Res 14-118 - Public exhibition version
E2014/26920	10 June 2014	DRAFT to 26 June 2014 Extraordinary Meeting
E2014/43283	26 June 2014	Adopted Version, Effective 21/07/14 – Res 14-315

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### Further Document Information and Relationships

<b>Related Legislation</b>	<i>Environmental Assessment and Planning Act 1979</i>
<b>Related Policies</b>	
<b>Related Procedures/ Protocols, Statements, documents</b>	<p>Intergovernmental Panel on Climate Change (IPCC), 'Climate Change 2013: <i>The Physical Science Basis, Summary Report for Policymakers</i>' document, which was released in late 2013 and can be viewed at: <a href="http://www.ipcc.ch/report/ar5/wg1/docs/WGIAR5_SPM_brochure_en.pdf">http://www.ipcc.ch/report/ar5/wg1/docs/WGIAR5_SPM_brochure_en.pdf</a></p> <p>NSW Chief Scientist &amp; Engineer, <i>Assessment of the science behind the NSW Government's sea level rise planning benchmarks</i>, April 2012. <a href="http://www.chiefscientist.nsw.gov.au/.../CSE-Report-Sea-Level-Rise-Benchmarks_.pdf">www.chiefscientist.nsw.gov.au/.../CSE-Report-Sea-Level-Rise-Benchmarks_.pdf</a></p> <p>Intergovernmental Panel on Climate Change (IPCC), <i>Climate Change 2007: The Physical Science Basis</i>. <a href="http://www.ipcc.ch/">http://www.ipcc.ch/</a></p> <p>Department of Environment and Climate Change (DECCW) Floodplain Risk Management Guideline: <i>Practical Consideration of Climate Change</i>, 25 October 2007. <a href="http://www.pittwater.nsw.gov.au/_data/assets/pdf_file/0016/34630/DECCW_FRM_Guideline_Practical_Consideration_of_Climate_Change_25-10-07.pdf">http://www.pittwater.nsw.gov.au/_data/assets/pdf_file/0016/34630/DECCW_FRM_Guideline_Practical_Consideration_of_Climate_Change_25-10-07.pdf</a></p> <p>Commonwealth Scientific and Industrial Research Organisation (CSIRO), <i>Projected Changes in Climatology Forcing for Coastal Erosion in NSW</i>, August 2007. <a href="http://www.environment.nsw.gov.au/resources/climatechange/nswdnrreportv1020070824.pdf">http://www.environment.nsw.gov.au/resources/climatechange/nswdnrreportv1020070824.pdf</a></p> <p>Australian Government, Department of the Environment and Water Resources: <i>Climate Change Adaptation Actions for Local Governments</i>, 2007. <a href="http://www.climatechange.gov.au/impacts/publications/local-government.html">http://www.climatechange.gov.au/impacts/publications/local-government.html</a></p> <p>SMEC '<i>Belongil Creek: Impact of Climate Change on Tailwater Level (Sea Level Rise)</i>', Discussion Paper, July 2007.(#694571)</p> <p>NSW Coastline Management Manual. <a href="http://www.environment.gov.au/coasts/publications/nswmanual/index.html">http://www.environment.gov.au/coasts/publications/nswmanual/index.html</a></p> <p>Byron Shire Greenhouse Action Strategy, 2008. <a href="http://www.byron.nsw.gov.au/publications">http://www.byron.nsw.gov.au/publications</a></p> <p>Byron Shire Local Environmental Study, 2008. <a href="http://www.byron.nsw.gov.au/publications">http://www.byron.nsw.gov.au/publications</a></p>

# BYRON SHIRE COUNCIL

## STAFF REPORTS - INFRASTRUCTURE SERVICES

## 4.1 - ATTACHMENT 1

	<p>Climate Change Risk Assessment – (note: information arising from current grant funded work)</p> <p>Draft Byron Local Environmental Plan 2014 (gazetted [insert date])</p> <p>International Council for Local Environmental Initiatives (ICLEI), <i>Local Government Climate Change Adaptation Toolkit</i>, March 2009. <a href="http://www.iclei.org/fileadmin/user_upload/documents/ANZ/CCP/CCP-AU/Projects/AI/AdaptationToolkit/Toolkit_CCPAdaptation_Final.pdf">http://www.iclei.org/fileadmin/user_upload/documents/ANZ/CCP/CCP-AU/Projects/AI/AdaptationToolkit/Toolkit_CCPAdaptation_Final.pdf</a></p> <p>Sea Level Rise Policy Statement, 2009 Department of Environment and Climate Change NSW <a href="http://www.environment.nsw.gov.au/climateChange/sealevel.htm">http://www.environment.nsw.gov.au/climateChange/sealevel.htm</a></p> <p>Byron and Tweed Shire Councils: Climate Change Risk Assessment, Final Report, May 2009, GHD</p> <p>Byron and Tweed Shire Councils Climate Change Adaptation Action Plan, June 2009, GHD</p> <p>Byron Shire Climate Change Adaptation Implementation Schedule #977169</p> <p>Australia's Biodiversity and Climate Change: A strategic assessment of the vulnerability of Australia's biodiversity to climate change, Australian Government, 2009. <a href="http://www.climatechange.gov.au/impacts/pubs/biodiversity-vulnerability-assessment.pdf">http://www.climatechange.gov.au/impacts/pubs/biodiversity-vulnerability-assessment.pdf</a></p>
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# BYRON SHIRE COUNCIL

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**POLICY TITLE** Climate Change Strategic Planning

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**1. NAME OF THE POLICY AND COMMENCEMENT**

This Policy is known as the *Byron Shire Council Climate Change Strategic Planning Policy* ('Policy'). It sets out Byron Shire Council's policy position relating to climate change.

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The current Policy was adopted by resolution of Council (Res 14-315) on 26 June 2014, to be effective 21 July 2014.

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**2. OBJECTIVES**

- To set out Council's accepted climate change parameters to inform the decision making process for strategic, infrastructure and operational planning.
- To mitigate impacts associated with climate change on future generations through commitment to the precautionary principle.
- To review climate change parameters as further information becomes available from leading government organisations.

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**3. POLICY STATEMENTS**

**3.1 Climate Change Parameters**

The following global climate change parameters (relative to reference period 1986-2005) will be considered for Council's strategic, infrastructure and operational planning:

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- a) temperature increases of 0.4°C to 2.6 °C by 2065 and 0.3°C to 4.8 °C by 2100
- b) sea-level rises of 17 - 38cm by 2065 and 26 - 82cm by the end of this century
- c) increases in rainfall intensities by the end of this century.

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Notes:

All parameters have been taken from the Intergovernmental Panel on Climate Change, 'Climate Change 2013 The Physical Science Basis, Summary Report for Policymakers' document, which was released in late 2013 and can be viewed at: [http://www.ipcc.ch/report/ar5/wg1/docs/WGIAR5\\_SPM\\_brochure\\_en.pdf](http://www.ipcc.ch/report/ar5/wg1/docs/WGIAR5_SPM_brochure_en.pdf)

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In the absence of more current scientific analysis at a regional level, sea level rise parameters shall be applied in accordance with DECCW Sea Level Rise Policy Statement April 2009 as considered adequate by the most recent NSW Chief Scientist report (April 2012).

**3.2 2050 Climate Change Planning Horizon**

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With the exception of development in new release areas, certain rezoning proposals, critical facilities and special purpose facilities, a 2050 Climate Change Flood Planning horizon will be used for any strategic, infrastructure and operational planning document or designs that may be affected by climate change.

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**3.3 2100 Climate Change Planning Horizon**

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A 2100 Climate Change Flood Planning Horizon will be used for the purpose of all development in new release areas, certain rezoning proposals, critical facilities and special purpose facilities.

**3.4 Strategic Land-use Planning**

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If an adopted Flood Study or Floodplain Management Plan either does not exist, or does exist but has not suitably considered climate change in accordance with this Policy, then the following will be used:

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a) For developments and major infrastructure upgrades that are subject to a requirement for the completion of a new flood study, climate change effects for the relevant planning horizon must be addressed in accordance with Section 3.5 of this policy.

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b) For other development the following generally equates to the Projected 2050 Flood Planning Level for habitable development.

Where the site of the development is:

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i) At or below 4m AHD an additional 0.4m shall be applied to the estimated 1 in 100 year flood level, or highest known flood level where no flood study exists, in addition to the normal 0.5m freeboard.

ii) Above 4m AHD then the estimated 1 in 100 year flood level, or highest known flood level where no flood study exists shall be used, together with the normal 0.5m freeboard.

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If an adopted Flood Study or Floodplain Management Plan does exist which suitably considers climate change in accordance with this Policy, then the following minimum flood planning levels apply:

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i) Projected 2100 flood planning level for development in new release areas, rezonings, critical facilities and special purpose facilities.

ii) Projected 2050 flood planning level for all other development.

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**3.5 Flood Studies and Floodplain Management Plans**

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Flood studies will model the 1 in 100 year event using an envelope approach. The Climate Change Flood Planning Scenarios in Table 1 provide the climate change effects that are to be considered.

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The envelope approach will model two separate events for each scenario and combine the worst results from each run to create the inundation map for that scenario. One event will be an ocean dominated event that uses the 100 year ocean (storm event) level with a 20 year Average Recurrence Interval (ARI) rainfall event. The other will be a rainfall dominated event that uses the 20 year ocean (storm event) level with a 100 year ARI rainfall event.

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All Council flood studies and 2100 climate change flood planning horizon developments will also model the three sensitivity scenarios in Table 1, which are designed to consider how sensitive the catchment is to rainfall intensity increases and a large combination event (i.e. a 100 year Annual Recurrence Interval (ARI) rainfall and ocean level event). This is because the catchments within Byron Shire are short and sharp catchments, which are close to the ocean, therefore, it is not unusual for the Shire's coastal communities to experience an event with both rainfall and ocean levels peaking close to each other.

The climate change related sensitivity analyses add climate change ocean effects to the usual sensitivity analyses involved in flood and flood risk management studies undertaken in accordance with the NSW Floodplain Development Manual (i.e. using rainfall intensity only).

For the purposes of the Byron LEP 2014, the '100 year in 2100 (FPL event)' in Table 1 below is adopted as representing the **Future Flood Planning Level**.

**Table 1: Climate Change Scenarios for use in Flood Modelling and Flood Planning**

Scenario	Predicted Sea Level Rise (Metres above 1990 mean sea levels)	Catchment inflow (rainfall event)	Ocean Boundary Peak Tailwater Condition in (M)AHD	Increase in rainfall intensity
100 year event Current Conditions	0	20 year ARI 100 year ARI	*2.6 (Ocean Dominated) 2.2 (Rain Dominated)	0
100 year event in 2050	0.4	20 year ARI 100 year ARI	2.6 (Ocean Dominated) 2.4 (Rain Dominated)	0
100 year event in 2100 (FPL event)	0.9	20 year ARI 100 year ARI	3.1 (Ocean Dominated) 2.9 (Rain Dominated)	0
Sensitivity test 1	0.4	20 year ARI 100 year ARI	2.6 (Ocean Dominated) 2.4 (Rain Dominated)	10%
Sensitivity test 2	0.9	20 year ARI 100 year ARI	3.1 (Ocean Dominated) 2.9 (Rain Dominated)	30%
Sensitivity test 3	0.9	100 year ARI	3.1 (Ocean & Rainfall Dominated)	30%

**Source:** Figures are in accordance with recommendations from DECCW Sea Level Rise Policy Statement April 2009 and DECCW Practical Consideration of Climate Change guideline 2007.

\*The 100 year peak ARI ocean level of 2.6m AHD is based on a coastal assessment undertaken nearly 30 years ago and includes, wave and wind set up and barometric pressure effects. It is considered to have some allowance for sea level rise but the amount is unknown. It is the accepted level across the state for the 100 year flood tailwater condition and its application in Byron Shire dates back to the Brunswick River Flood Study (1986) and Belongil Creek Flood Study (1986)..

## 3.6 Coastline Management Planning

Sea level rise parameters to be applied for the purposes of coastline management planning are in accordance with DECCW Sea Level Rise Policy Statement April 2009, as considered adequate by the most recent NSW Chief Scientist report (April 2012).

## 3.7 Biodiversity Planning

5 Impacts to coastline, coastal floodplain and river /waterway biodiversity due to coastal erosion and shoreline recession, salt water intrusion to ground water, and tidal inundation and changes to hydraulic behaviour of waterways result in: habitat loss; habitat fragmentation; habitat squeeze; increased competition; and ecosystem health decline.

10 Therefore, appropriate buffering of natural ecosystems from development is to be incorporated into strategic plans, land use controls and development proposals to allow room for the migration of those communities as sea levels rise and/or changes in hydraulic behaviour of waterways are realised.

15 Also, current and potential future wildlife corridors are to be identified and protected via land use controls to allow for the survival and adaptation of ecological communities and associated biodiversity.

### 3.8 Biophysical and Socio-economic Thresholds

20 Biophysical and socio-economic thresholds are limits of their resilience beyond which it is assumed that irreversible degradation may ensue. The precautionary principle is a response to uncertainty in the face of poorly understood thresholds. In the absence of adequate data to determine thresholds or direction from State Government Council will apply the precautionary principle.

### 3.9 Review of Current Plans

25 Council's planning and strategic documents and infrastructure policies, where their content may be affected by climate change, will be reviewed to incorporate the impacts of the Climate Change Flood Planning Scenarios and Climate Change Parameters, as funding and resources, including grants, permit.

### 3.10 Review of Climate Change Parameters

35 Climate Change Parameters will be reviewed and/or updated upon receipt of more current scientific analysis, including further Intergovernmental Panel on Climate Change (IPCC) reports and/or Commonwealth Scientific and Industrial Research Organisation (CSIRO) or NSW Government Department recommendations.

### 3.11 Resourcing

40 Council will pursue grant opportunities to further examine climate change issues as they affect planning and infrastructure provisions.

4. DEFINITIONS

**Annual exceedance probability (AEP)** is the chance of a flood of a given or larger size occurring in any one year, usually expressed as a percentage. For example, if a peak flood discharge of 100 m<sup>3</sup>/s has an AEP of 1%, it means that there is a 1% chance of a peak flood discharge of 100m<sup>3</sup>/s or larger occurring in any one year.

**Average recurrence interval (ARI)** is the long term average number of years between the occurrence of a flood as big as or larger than the selected event. For example floods with a discharge as great as or greater than the 20 year ARI flood event will occur on average once every 20 years. ARI is another way of expressing the likelihood of occurrence of a flood event.

**Critical Facilities** are uses where any inundation or loss of function in an extreme flood would represent an unacceptable level of risk. It includes emergency services organisations (SES HQ, Police Stations, Fire Stations (including rural bushfire), Ambulance Stations, Hospitals), Public Halls (where used for flood evacuation centre), Intensive Aged Care, Nursing Homes, Telephone Exchanges, Telecommunication Repeaters, Flood Evacuation Centres and Flood Refuges, and Critical Service Facility Components (e.g. essential components of sewage treatment plants, essential water supply reservoirs).

**Flood Planning Level (FPL)** has the same meaning as in Byron LEP 2014. It is the combination of flood levels (derived from significant historical flood events or floods of specific AEP) and freeboard selected for floodplain risk management purposes, as determined in management studies and incorporated in management plans. The required FPL varies with land use.

**Freeboard** is a factor of safety to provide reasonable certainty that the risk exposure selected in deciding on a particular flood chosen as the basis for the particular Flood Planning Level (FPL) is actually provided, and is incorporated into the FPL. The freeboard is the difference between the particular FPL and the flood used to derive it and may vary with different land uses, parts of the floodplain or types of mitigation works.

**New Release Areas** refer to largely undeveloped sites that have been rezoned or subdivided for urban development (ie. residential, industrial, commercial) purposes in accordance with this Policy.

**Projected 2050 flood planning level** means the level of a projected 2050 climate change flood event derived in accordance with Section 3.5 of this policy plus 0.5m freeboard.

**Projected 2100 flood planning level** means the level of a projected 2100 climate change flood event derived in accordance with Section 3.5 of this policy plus 0.5m freeboard.

**Special Purpose Facilities** means infrastructure, community service and other developments where use of the General FPL is considered to represent an unacceptable level of risk for the type of development. Included in this category are developments such as: generating works; sub stations; liquid fuel depots; units for aged persons (other than self-care); retirement villages (other than self-care); schools; and hazardous industries.