



Byron Shire Council



Agenda

Ordinary Meeting

Thursday, 25 May 2017

held at Council Chambers, Station Street, Mullumbimby
commencing at 9.00am

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Ken Gainger
General Manager

Notice of Motion No. 9.4 Lowering Flood Levels in North Byron Floodplain
File No: I2017/605

I move:

1. That Council investigate the potential to lower the flood levels in the Marshall's Creek floodplain by reinstating floodwater outlets with suitable environmentally friendly structures along the foreshore north of the Brunswick River and provide a report to council by the end of 2017.
2. That Council doubles the effort with staff, and funding from all available resources to speed up the flood mitigation works, gutters, drain and channel cleaning, increasing pipe sizes where necessary, road culverts, gutters and causeways and to review the program annually.

Signed: Cr Alan Hunter

Councillor's supporting information:

The recent flood event in the shire has again given reason to question if Council is doing enough to manage this ongoing issue. As we develop further areas into more residences, roads, public spaces and sport fields we encroach into areas less suitable than those areas first chosen, so our technology and management practices need to keep pace.

There is significant reason to believe we can reduce the negative impacts of these major rain events if we were focussed so.

Too many of our citizens were negatively impacted by this recent flood. Homes, businesses and community infrastructure in areas of our shire have been seriously affected and it is without doubt, Council has been asleep at the wheel in preparation for such events.

It is the elected council that has ultimate responsibility. It is our responsibility not staff. The issue needs to be addressed in 2 ways:

1. The bigger picture; The North Byron floodplain is not unlike a big dam. A large catchment area with a now, quite restricted outlet or spillway, backing up into homes and shops.
 - There have been a number of natural spill ways closed off over the years for one reason or another, some developer initiated, impacting on the flow of flood waters
 - Population pressure will continue to place demand on extending the residential area boundaries
 - Pressure will continue to be placed on council to build structures to protect developed areas and foreshores within the flood zone
2. The smaller picture; A continuing clogging of the internal arteries that distribute the first storm water into the channels and drains into the rivers and creeks, clogged with green waste and silted up gutters and pipes.

Council has a number of flood studies that have in part addressed issues and practices that have impacted on flooding but little has been done to progress the lessen from past floods.

There has been a concentration on how development should occur, often in the floodplain, to minimise the impacts of flooding, not necessarily managing these events.

It is now time for Councillors to man up and deliver on our community expectation. To make decisions. To make good.

Staff comments by James Flockton, Flood and Drainage Engineer, Infrastructure Services:
(Management Comments must not include formatted recommendations – resolution 11-979)

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Item one:

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The Marshall Creek Floodplain Management Plan (adopted by Council November 1997) investigated a flood mitigation option of creating floodwater outlets north of Brunswick Heads. The following text is an extract from the document:

10.4 Ocean Outlets

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Three sites have been identified for assessment for the construction of flood outlets through the frontal dune to the Pacific Ocean. The sites are located at:

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- *Holiday Village" between New Brighton at South Golden Beach;*
- *Ocean Shores North, north of the "Fern Beach" subdivision; and*
- *Wooyung, some 3.5 km north of South Golden Beach.*

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The proposed outlets comprise the excavation of 75 m wide slots through the dune with variable bed levels. The outlets at "Holiday Village" and Ocean Shores North are to be some 1.7 m above high tide level, while the outlet at Wooyung is proposed to be tidal. The proposed combinations of flood outlets above was defined by the Floodplain Management Committee after the Value Management Workshop (Reference 13) was completed.

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The coastal dynamic processes are discussed in detail in Chapter 4. The impact of these processes on the performance of the ocean outlets is outlined below.

As noted in Chapter 4, the ocean water levels can be seen as comprising of a series of components principally:

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- *tidal variations;*
- *storm surge;*
- *coastal wind set-up;*
- *nearshore wave set-up; and*
- *possible addition to the above by "Greenhouse" changes to ocean static levels .*

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The various components of the "Steady" ocean water levels are indicated on Figure 6.

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It is estimated that wave setup on the open beaches at the identified outlet sites resulting from 5 m high offshore waves would effectively raise the ocean water level on the beach by 0.8 m. By comparison, these waves would pass through the Brunswick River entrance with minimal obstruction and dissipate as they travelled up the main river channel.

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As a result, there would be a difference in water level of 0.8 m between the beach and the river. This means that any outlets must be located where the flood level in Marshalls Creek is at least 0.8 m higher than the ocean water level at the entrance to the Brunswick River in order that floodwaters can discharge to the ocean. If this condition is not satisfied, seawater from the ocean will flow through the opening and increase flooding along Marshalls Creek.

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The identified outlet sites satisfy the water level differential constraint. However, the Wooyung outlet in the early stages of a flood event would tend to admit water from the ocean into the Marshalls Creek area. This would be the direct opposite of the proposed function of the outlet, ie to discharge floodwaters to the ocean.

The outlets at "Holiday Village" and Ocean Shores North would discharge floodwaters when the level of the floodwaters in Marshalls Creek exceeded the water level on the beach and exceeded the level

of any constructed weirs at the outlets. This would depend on the magnitude of the creek flood, tidal phase and ocean storm conditions.

5 *The ocean outlets would need to be located at a level which prevented ocean storm waves from passing through the outlets and discharging seawater into the Marshalls Creek system.*

This occurred in May 1975 when the ocean waves broke through the frontal dune at "Sheltering Palms", the southern end of New Brighton and north of New Brighton.

10 *The dune north of New Brighton had been overtopped in October 1972 and had not built up to an adequate height. Earthmoving machinery was used to repair the break in the dune following the 1974 event. The coastal processes have continued the replenishment of the dune. The location of the break-through is still evident in recent aerial photography, some 20 years after the event.*

15 *The analysis of ocean storm water levels outlined in Chapter 4 recommends a minimum crest level for the outlets at RL 4.0 m AHD. This level is 1.2 m above the 1% AEP flood level in Marshalls Creek at the "Holiday Village" site.*

20 *There are conflicting requirements for the dune heights. Prevention of ocean break through into the Marshalls Creek floodplain requires the dunes to be kept high. However, allowance for (or dependence on) a flood breakout through the dunes to reduce flood levels requires the dunes to be kept low such that a natural break can occur.*

25 *It would be possible to adjust the dune height by earthmoving machinery by:*

- *maintaining the dune height to prevent ocean inundation;*
- *maintaining a stockpile of material at the break-out point;*
- *on receipt of flood warning, cutting the beach dune such that a natural erosion process can begin; and*
- *refilling the low level break from the stock pile after the flood recession to accelerate the natural re-building of the dune.*

35 *It is not considered prudent to undertake the alternative procedure of keeping the dune low and building during ocean storms because of the dangers of operation of machinery near a surf zone.*

40 *The short time scale of Marshalls Creek flooding, the limited warning and the occurrence of ocean storms would require earthmoving equipment to be on virtually permanent standby to lower the outlet in advance of the creek flood and to rebuild the outlet to withstand ocean storm conditions immediately following the creek flood.*

Large volumes of sand would have to be excavated, stored and returned within a short period of time. This is clearly not practical.

45 *The estimated reduction in 1% AEP flood levels which may be achieved with the ocean outlets is 0.08 to 0.1 m at New Brighton and Ocean Shores (Ref.16). There are 4 houses in New Brighton and 4 houses in Ocean Shores which are inundated in floodwaters less than 0.1 m deep in the 1% AEP flood. This option may prevent floodwaters entering some these houses.*

50 *Therefore, construction of the ocean outlets is considered to be relatively ineffectual, due to the small number of houses protected and impracticable due to the management and operational requirements.*

Therefore at this stage the construction of outlets is not recommended.

55 Should Council wish to further pursue floodwater outlets north of Brunswick Heads the most appropriate method is via a Floodplain Risk Management Study and Plan.

Such a plan will scientifically investigate the effects of such openings on flood levels and complete a cost benefit analysis of such a mitigation option.

Council is currently awaiting a grant approval from the Office of Environment and Heritage for the purposes of preparing the North Byron Floodplain Risk Management Study and Plan. This is the next step following on from the North Byron Flood Study. A number of flood mitigation options will be investigated in this study, included a fresh review of the ocean outlet idea. The most cost effective options will be included in the Floodplain Management Plan for action. It is recommended that Council await the outcome of this study and plan

Item 2

10 Council already has two (2) adopted Floodplain Management Plans.

The plans cover Tallow Creek (Suffolk Park) and Belongil Creek (Byron Bay).

15 Both these plans have unfunded flood mitigation projects to the value of \$12,289,500. All these works could potentially attract two thirds funding from state government, however, this funding cannot be attracted until Council can fund its one third of the costs.

20 Adoption of the North Byron Floodplain Management Plan will increase the amount of unfunded flood mitigation works. The total value of proposed flood mitigation works following the adoption of a third Floodplain Management Plan will likely exceed \$20 million.

25 To deliver flood mitigation strategies/works it is important that Council continue to prioritise flood mitigation works to be included in annual budgets into the future and ensure less appropriate projects are not placed in front of flood mitigation works, despite weather conditions of the time.

The Office of Environment and Heritage are responsible for administering the NSW Government's floodplain management grants program. This program supports local government to manage flood risk. This is main funding support which is available to Councils for flood mitigation works. Their website notes the following:

30 *On 27 October 2016, \$4.59 million in funding was awarded to local councils and other authorities to undertake priority projects to assess the risks and reduce the impacts of flooding in NSW. In total, 43 projects were supported in the 2016–17 funding round. In addition a one off grant was awarded to Wagga Wagga City Council outside of the standard grant process for its Wagga Wagga Main City and North Wagga Levee Construction – Stage 2 for \$2,130,007*

Link to flood grant program <http://www.environment.nsw.gov.au/coasts/Floodgrants.htm>

40 Councils are expected to fund maintenance works such as; gutter, drain and channel cleaning, increasing pipe sizes, road culverts and replacing causeways from general revenue funds.

Years of rate pegging and continued increases to operating and material costs has resulted in less work being achieved by Council each year. This has resulted in three situations.

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- firstly Council operating in a more reactive manner instead of a programmed manner
 - secondly, in order to manage risk and the community's safety the majority of Council's infrastructure budget has needed to be directed towards road operations and renewal
 - 50 • thirdly, the degradation of all Council's assets below desired levels. Byron Shire Council is not alone, many NSW Councils are in a similar situation.

Additionally, the community have an expectation that Council spend a proportion of its annual budget on the provision of new assets and infrastructure. This expectation is unlikely to change in

the future, resulting in Council needing to continue to balance its expenditure across maintenance operations, asset renewal and provision of new assets.

5 Stormwater asset renewal or upgrade has generally been unfunded over the last decade, unless total asset failure occurs and Council's drainage maintenance budget is largely insufficient to provide the desired maintenance levels.

10 The stormwater levy has helped provide some much needed drainage funding; however, expenditure of these funds has clear rules and is generally only used to fund resolution of smaller drainage problems occurring on private land. This money cannot be used for maintenance purposes.

15 The recently approved rate rise above rate pegging will help to change this situation. Council's expenditure will be audited for the next ten years, this audit will expect to find increases in drainage funding. Therefore, additional funds must be directed towards drainage infrastructure maintenance, repair and renewal in the future. Change will be slow, but it will increase as we see the cumulative impact of higher annual rate increases.

20 Grant funding for maintenance works is not available unless it is linked to larger projects, such as flood mitigation projects noted above.

Other Proposed Future Actions

25 Staff are currently completing the following post flood works:

1. preparation of a review of rainfall volumes, river heights and flood levels in order to obtain a snap shot of how the flood behaved and the Annual Recurrence Interval of the event
2. liaison with the State Emergency Service regarding flood warnings. Council manages a flood warning system which relies upon river level gauges. The SES uses this system to make flood decisions, including whether evacuation is required and the level of flood warning to issue to the community. The flash flooding nature of the last two floods has questioned the appropriateness of Council's flood warning system. A system which uses rainfall gauges to predict flood levels may be more appropriate and provide better warning times for the community. The cost and appropriateness of such a system are being investigated and will likely be a recommendation within the North Byron Floodplain Management Plan.
3. considering methods of communicating the above to the community

40 Financial/Resource/Legal Implications:

45 Flood mitigation schemes are inherently expensive. Generally, Councils wishing to complete such schemes will adopt a Floodplain Management Plan and use this plan as leverage to attract 2 to 1 funding between state government and Council for the works. Without an adopted plan state government are very unlikely to fund a flood mitigation scheme because it has not been investigated appropriately and its likely success has not been proven.

50 Council simply does not have the budget to complete a flood mitigation scheme without the support of state government, therefore, any flood mitigation schemes for North Byron Shire will need to await the adoption of the North Byron Floodplain Management Plan.

55 Under the NSW Floodplain Development Manual 2005 Councils are responsible for, preparation of Flood Studies, Floodplain Risk Management Studies and Plans, Asset investigation, design, design and construction, Construction and maintenance of drainage and flood mitigation work,

Flood education, Emergency response and Public infrastructure, Post flood data collection and review.

- 5 The state government is responsible for support through legislation, definition of broad policy, specialised technical advice, financial assistance (OEH) and emergency management (SES).

Is the proposal consistent with any Delivery Program tasks?

Yes, the proposed North Byron Floodplain Risk Management Study and Plan.