Mackay Regional Council

Planning ahead

Goosepond Creek Flood Study

March 2010

The Goosepond Creek Flood Study has been prepared for Mackay Regional Council by consultants, GHD Pty Ltd. The study commenced in May 2007 to update an earlier flood study prepared in 1994.

The catchment experienced an extreme flood event on 15 February 2008 and the scope of the study was expanded to include a review of the event. The impacts of revegetation and climate change have also been reviewed.

The study looks at flooding in the "trunk" system which is the Janes Creek, Goosepond Creek and Vines Creek waterways. The study does not look at flooding at a local level such as in the streets or drains which lead into the creeks.

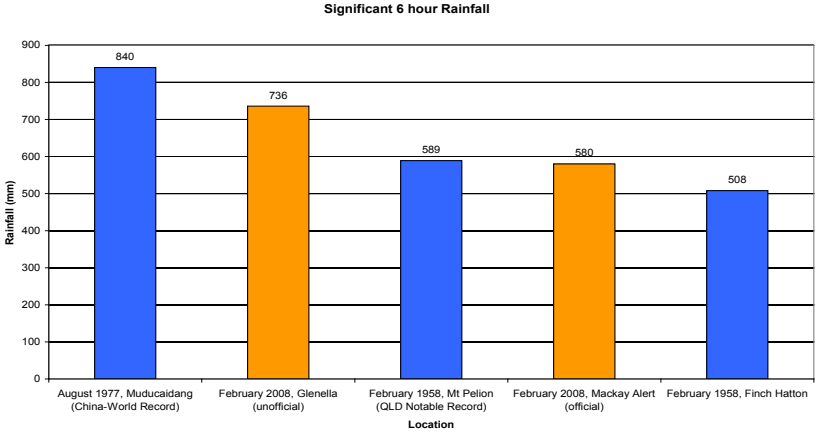
Flood history

Many people throughout Mackay suffered damage to property resulting from the extreme rainfall event on February 15, 2008. Approximately 20 per cent of the 4000 properties that were flooded in the event were in the Goosepond Creek catchment.

This event was the most significant flood event on record for the catchment.

In a six-hour period in the early morning of February 15, 2008, some 736mm of rainfall was recorded in the Glenella catchment. This is only 104mm less than the world record for rainfall in a six-hour period, which was recorded in China in 1977. The chance of this event occurring next year is less than one in 500 or 0.2 per cent.

The chart below also highlights that the rainfall recorded was greater than Queensland's notable record in February 1958 of 589mm in six hours.



What does the flood study say?

The flood study has found that recent developments have been constructed to levels which are mostly greater than the current design requirement of the one in 100-year ARI (Average Recurrence Interval) event. In fact, council's requirement for development prior to 2006 was to have ground levels greater than the 50-year ARI event.

The February 2008 event was greater than a 500 year ARI event and was generally 1.4 metres higher along Goosepond Creek than the design 100-year ARI event.

Unfortunately, it is not considered feasible to protect dwellings from flooding from events as significant as the 2008 flood.

Mitigation options

There are few areas requiring mitigation in the design 100-year ARI event, however, one of the more significant problems is around the Heaths Road and Glenella Road intersection. In order to mitigate this problem the following works are proposed:

- increase the culverts under Sugarshed Road
- increase the size of the drain from 5-10 metres to 50 metres wide.

The estimated cost of these works is about $3,000,000. In addition to reducing flooding in the immediate area, downstream flooding will reduce by up to 7cm downstream of Glenella Road for the 100-year ARI event.

Climate change and revegetation

The flood study also identifies:

- a 20 per cent increase in rainfall intensity is expected as a result of climate change. This will cause increased flood levels of between 5cm and 22cm
- revegetation of areas as per the Draft Goosepond Creek Catchment Management Plan may increase flood levels by up to 16cm in some areas.

What does the flood study say?

Consultation and additional modelling

The Goosepond Creek Flood Study was released for public comment from October 14 to November 31, 2009. Public presentations held on November 18, 2010 were attended by about 150 people.

Fifteen (15) written submissions were received on the flood study. The four most common issues raised in the submissions were:

- the need to investigate increasing the culverts under the Port Access Corridor (PAC) railway embankment (owned by QR Limited) at Glenella
- concern about revegetation increasing flood levels
- the need for regular maintenance of the floodway
- concern about new development in the catchment and changed landuse.

Considering the above, it was decided to undertake additional modelling and investigate upgrading of the culverts under the PAC and the impact of changes to landuse in the catchment.

GHD modelled increasing the culverts by about three times the size of the existing culverts under the PAC railway embankment. The increased culverts tested in the model comprised 15x1500 RCPs. The modelling found:

- for a 100-year ARI event, increasing the culverts under the railway line increased the peak flood levels downstream by between 12-13cm along the majority of Goosepond Creek.
- for an extreme event, such as the 2008 flood, increasing the culverts under the railway line reduces upstream levels by 14-16cm, however, the railway embankment is still overtopped.

In summary, it was found there was little benefit in increasing the size of the culverts under the railway line by three times their existing size.

Changing land used for sugar cane cultivation that adjoins a residential area into an open space/sports field revealed:

- for a 100-year ARI event, flood levels decreased by 13-23cm in the area of the change (eg Windmill Waters) with flood levels increasing downstream by 1-3cm.
- for an extreme event (2008), flood levels decreased by up to 35cm in Valetta Gardens, however, flood levels increased downstream by 1-4cm.
- modifying land use has localised improvements, however, flood levels downstream are slightly elevated.

The other issues raised by consultation will need to be dealt with by the Goosepond Creek working group.

Recommendations

The study recommends that a working group within council be formed to address issues in the Goosepond Creek catchment such as:

- development and flood levels
- mitigation measures and funding
- emergency management
- maintenance
- water quality.

February 2008 flood findings and update

The working group would be responsible for overseeing activities in the catchment and would consult with other organisations and the community as relevant.

It is also recommended that council further investigates the mitigation options of:

- the high flow diversion to Fursden Creek
- changed landuse in the Glenella Catchment from rural to open space.

What else has council been doing in the Goosepond Creek area following the February 2008 flood?

Council has undertaken the following works in the catchment since the 2008 flood:

- re-designed a new subdivision in the Glenella area to lower road levels to facilitate an improved outlet along the road to Janes Creek

- removed a small causeway crossing of Jones Creek near Glenfields residential development Glenella
- installed an additional 900mm diameter pipe downstream of Angelina Avenue, Glenella
- cleared vegetation along the edge of Jane Creek tributary to improve the flow along the creek
- cleared vegetation downstream of Evans Avenue
- repaired numerous damaged stormwater drainage systems
- repaired roads saturated by floodwaters
- liased with Queensland Rail regarding the maintenance of culverts under the port access corridor railway embankment at Glenella.

For more information visit www.mackay.qld.gov.au to view the report.

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