Are you ready?

IT’S STORM SEASON

Living and Loving the Tweed

Plan ahead to act on time

It’s officially storm season, where electrical thunderstorms can roll through with wind, thunder, lightning and even hail on any given day. While the wettest of the season normally comes after the New Year, it can come anytime from October to May. It’s more than eight months since the flood of 31 March 2017 – the largest seen in many locations across Tweed Shire. It’s timely to remember that this flood occurred from a relatively short storm event and a far greater flood is possible.

The best safeguard against flood and storm is preparation. Plan now for you, your family and your pets to limit your damages and losses in the event of a storm or flood hitting your area. Talk your plan through with your family and then put it on paper. And don’t forget to identify dry places where you can store belongings and clean up your yard, making sure that any item that can be thrown around in a storm is put away or tied down.

Above: In both storms and floods, items not secured can end up as flying and floating debris.

Identify your flood trigger

As a ‘rule of thumb’ for most of the Tweed Shire, if 300mm of rain falls within 24 hours you should expect significant flooding. Remember, short bursts of much less rain can cause flash flooding, particularly in the Hinterland and low-lying residential areas of Tweed Heads. Also, if you live in the lower-lying areas of Tweed Heads, Chinderah and the Coastal Villages, it’s important to understand that the worst flood will come when there is significant rain coupled with an ocean storm surge or king tide.

So, what’s your flood trigger to:
• lift your property from any under-storey?
• move your vehicle?
• pick the kids up from school?
• evacuate/leave?

Different communities will have different flood triggers. Even different people in the same community may have different flood triggers depending on their age, mobility, health, whether they have young children, the reliability of their vehicle and their factors.

During the March 2017 flood emergency, it was clear many residents had little understanding of how floods unfold in the shire or, even how they unfold in their neighbourhood. New residents were more vulnerable due to their lack of local knowledge and flood experience. Remember, every flood is different so you cannot rely solely on past experience.

To identify your flood triggers, check out the examples below to see if they might be relevant to your situation.

<table>
<thead>
<tr>
<th>Flood trigger</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>BoM releases a Moderate Flood Warning for Murwillumbah</td>
<td>Move possessions from under storey or ground floor to upper floor</td>
</tr>
<tr>
<td>When Tumbulgum Gauge reaches 1.8m AHD and it’s still raining</td>
<td>Move vehicle to high ground</td>
</tr>
<tr>
<td>When it’s been wet for days and 300mm is predicted tomorrow in the upper catchment</td>
<td>Move possessions from under storey or ground floor to upper floor or raise stock</td>
</tr>
<tr>
<td>When Moderate Flooding is predicted for Chinderah</td>
<td>Leave and stay with a friend or relative</td>
</tr>
<tr>
<td>When Major Flooding is predicted for Murwillumbah</td>
<td>Evacuate to a designated evacuation centre</td>
</tr>
</tbody>
</table>

EMERGENCY CONTACTS

Police – Fire – Ambulance 000
www.police.nsw.gov.au
www.fire.nsw.gov.au
www.ambulance.nsw.gov.au

State Emergency Services 132 500
Flood – storm – emergency
www.ses.nsw.gov.au

Bureau of Meteorology

ABC Radio
www.abc.net.au
North Coast FM 94.5
P 1300 659 994
Gold Coast FM 91.7
P 1300 903 917

NSW road information
www.livetraffic.com.au

Local road information
www.myroadinfo.com.au

Tweed Shire Council
P (02) 6670 2400
P 1800 818 326 (after hours)

If it’s flooded, FORGET IT.

TWEED SHIRE COUNCIL | Living and Loving the Tweed
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Nature’s signals are the first warnings

Above: The catchments of Tweed Shire.

Historical river heights

There are a number of river gauges throughout Tweed Shire which measure the depth of the rivers at all times. Since records began, maximum heights of the rivers at gauge locations are:

<table>
<thead>
<tr>
<th>Town/village</th>
<th>Metres</th>
<th>When</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uki</td>
<td>12.9</td>
<td>2017</td>
</tr>
<tr>
<td>Tyalgum</td>
<td>11.0</td>
<td>1989</td>
</tr>
<tr>
<td>Chillingham</td>
<td>6.8*</td>
<td>2017</td>
</tr>
<tr>
<td>Murwillumbah</td>
<td>6.3</td>
<td>2017</td>
</tr>
<tr>
<td>Tumbulgum</td>
<td>4.0</td>
<td>2017</td>
</tr>
<tr>
<td>Chinderah</td>
<td>2.9</td>
<td>1954</td>
</tr>
<tr>
<td>Tweed Heads</td>
<td>2.2</td>
<td>1954</td>
</tr>
</tbody>
</table>

*Chillingham Gauge has moved. New readings do not correlate with historic levels.

Move to higher ground; rising creeks and rivers.

Check your insurance

The insurance industry in Australia defines flooding as:

The covering of normally dry land by water that has escaped or been released from the normal confines of:

• any lake, or any river, creek or other natural watercourse, whether or not altered or modified; or
• any reservoir, canal, or dam.

All new homes and contents insurance policies in Australia include flood cover, however many choose to opt out of flood cover, exclude flood from business policies or choose not to insure at all. Cover for stormwater will not generally extend to include flood events. Policy holders should understand the difference and upgrade their policy if flood cover is required. If an initial quote is too expensive, shop around. For more information, see http://understandinsurance.com.au/types-of-insurance/flood-insurance.
Council has adopted the 1% AEP (1:100 Annual Exceedance Probability) flood as the design standard for most kinds of residential buildings.

In new subdivisions, such as on the Tweed Coast or around Banora Point, this is the minimum level that each house block is required to be filled to. Floor levels in the habitable part of the dwelling (living rooms, bedrooms, kitchens etc) need to be built 0.5m above this level.

In areas where filling is not allowed or is impractical, raised pole houses are constructed. You will see these types of homes in South Tweed, Tumbulgum, Condong, South Murwillumbah and Chinderah. Again, the habitable floor level needs to be at least 0.5m above the 1% AEP flood level.

Areas below the habitable floor level need to be built to structurally sound flood standards. The floor plan for the under-storly shown on this page outlines the simple building techniques you can use to make your house more flood resilient and easier to dry and clean after a flood. This floor plan is for a house in Tumbulgum, which was cleaned and fully functional again by 3pm the day after the 31 March 2017 flood.

Secure flood openings with 65 per cent openness – H3 treated timber fixed to galvanised supports. Easy wash out under.

1. Ground floor timber stud walls to be H3 treated and lined with cement sheeting screw fixed only with lower edge terminating 300mm above top of bottom plate to allow free draining of flood water with deep skirting to cover gap. At least one 20mm hole to be drilled in each noggin to allow frame to drain.
2. Slab for water tank and gas cylinders to be homogenous with ground slab to provide a flood anchorage base.
3. All general power outlets to be a minimum of 2.0m above ground slab.
4. All light switches to be a minimum of 1.5m above ground slab.
5. Electrical meter box to be positioned on external wall above known flood heights.
6. Habitable flood level to be at or above Council’s minimum requirement for the area.

Non-habitable space

Laundry

Garage

3000L Water

Power points at 2.0m above ground floor level and light switches at 1.2m high. Light and power circuits on the ground floor are on separate circuits from the upper level which allows the ground floor to be switched off as flooding approaches.

Stairs constructed using H3 treated timber and marine ply with lowest riser cover removable to allow underside of stair to be flushed easily. The wide internal stairs allow the easy move of belongings upstairs as the flood advances.

Removable skirting board allows framework to be flushed clean of silt. Timber framework below flood level is H3 treated timbers for water resistance and noggin above have holes drilled in them to allow the frame to easily drain. The wall lining is cement shear for water resistance. White walls were easily cleaned the day after flood waters receded using a product like 30 Seconds and then pressure cleaned.
**Tune in when it’s happening**

In an unfolding event, get up-to-date information by listening to the official emergency channel, ABC North Coast 94.5 FM or ABC Gold Coast 91.7 FM.

Your local radio station may have some information but is not an official emergency broadcaster.

- **Bureau of Meteorology (BoM) website** – this is the official weather watcher and forecaster and it issues severe thunderstorm warnings, severe weather warnings, flood watches and flood warnings. Go to [www.bom.gov.au](http://www.bom.gov.au).
- **NSW SES website** for flood bulletins, evacuation warnings and orders. The SES is the lead agency in emergencies. They tell you when to ‘prepare to go’ and ‘to go’, but don’t expect them to be there to get you out because by that time it may be too late. Go to [www.ses.nsw.gov.au](http://www.ses.nsw.gov.au).
- **MyRoadInfo website for road closures** – all councils in the Northern Rivers Region put their roadworks and road closure information on this site. During an unfolding flood, the data can lag due to the need to verify information before publishing it or lack of access to certain areas. Go to [www.myroadinfo.com.au](http://www.myroadinfo.com.au).

There are two reference gauges used by BoM and the SES for flood warnings, namely:

1. **Murwillumbah Gauge** (located in front of the Murwillumbah Civic Centre), and
2. **Barneys Point Gauge** (located on the old highway bridge abutment in Chinderah Village).

**Council mitigates flood risk**

Council is responsible for floodplain risk management in the Tweed Valleys and Coastal Creek catchments and has prepared a range of studies and plans. These studies help shape our flood-related development controls, such as setting rules for the rezoning of land, considering the cumulative impact of filling, designing evacuation capabilities into subdivision design and major land releases.

Council also is responsible for ensuring compliance to current building standards and codes and providing suitable land to accommodate SES services.

Council is responsible for closing local roads (not the Pacific Highway). Roads are closed when there is water over them and they are deemed unsafe or when directed by the Police or SES. Council updates its information on the MyRoadInfo site as it becomes available.

The Tweed Shire flood levee system is owned and maintained by Council.

**Flood modelling proved accurate**

The March 2017 flood essentially did what Council’s flood-modelling predicted it would do when this volume of rain falls within this period of time. The event approximated a 1% AEP (Annual Exceedance Probability) flood in many locations.

The observed flood behaviour was consistent with Council’s floodplain risk management studies for the Tweed Valleys floodplains of the past 13 years. These studies will be reviewed using actual data from the March 2017 flood to ensure the modelling remains accurate.

**The dam makes no difference**

Clarrie Hall Dam is not a flood mitigation dam. As soon as Clarrie Hall Dam fills, water is released via the spillway. As such, it makes no material difference to any flood event.

**When do the levees overtop?**

Levees should never be considered complete protection from flood. All of Tweed Shire’s flood levees will eventually be overtopped when a big enough flood occurs.

While levees are designed to keep river water out, during a flood the drainage outlets will be closed and the levee will act as a dam to keep local rainwater in.

An important observation from the March 2017 flood is that the intense rainfall on Thursday night continued for as little as four hours more into Friday morning, the Murwillumbah CBD Levee would have overtopped and completely filled the CBD area.

**Murwillumbah levees**

- Dorothy-William Street
- Murwillumbah CBD
- South Murwillumbah
- East Murwillumbah

**Murwillumbah CBD Levee** overtops at 6.3m AHD on the Murwillumbah Gauge. **East Murwillumbah Levee** overtops at approximately 6.3m AHD on the Murwillumbah Gauge or less if flooding in the Rous River is heavier. **Dorothy/William Street Levee** overtops at roughly 6.3m AHD on the Murwillumbah Gauge or less if flooding in the Rous River is heavier. The **South Murwillumbah Levee** is much lower and begins to overtop at 4.8m on the Murwillumbah Gauge.

**Tweed Heads South Levee** begins to overtop at approximately 2.2m on the Barney’s Point Gauge or Dry Dock Gauge.

While not levee protected areas, water will begin to flow overbarrier Drive in Tumbulgum when the Tumbulgum Gauge reaches about 2.4m and floodwaters will begin to enter Chinderah, over Chinderah Bay Drive, when the Barney’s Point Gauge reaches about 1.6m.

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**Above:** Holstone Lane in South Murwillumbah shows the damage a flood can wreak on both residential houses and businesses.