

Policy

Flood Risk Management

Version 1.1

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Section: Roads and Stormwater
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Flood Risk Management

Policy Objective

- to alert the community to the extent of flood prone land and the severity of flood risk;
- to inform the community of Council policy in relation to the development and use of flood prone land, with reference to the Local Environment Plan, Development Control Plan and Floodplain Risk Management Studies and Plans;
- to reduce flood risk and damage to existing areas of development;
- to ensure that future land use and development is compatible with flood risk;
- to reduce flood risk to future development to an acceptable level through appropriate land use controls, including flood planning levels;
- to complement flood warning procedures and local flood plans for the protection of and/or evacuation of flood prone areas, the relief of evacuees and the recovery of flooded areas;
- to ensure that buildings and services required for evacuation and emergency needs are sited appropriately for the flood risk;
- to put in place emergency response measures to protect essential infrastructure and services during a flood, and to ensure rapid restoration of services following flood events;
- to progressively implement the NSW Government's Flood Prone Land Policy, in accordance with the Floodplain Development Manual;
- to progressively implement the recommendations of the Tweed Valley and Coastal Creeks Floodplain Risk Management Plan.

Definitions

(Refer to DCP-A3 for further definitions)

Average Recurrence Interval (ARI) - ARI is the long-term average number of years between the occurrence of a flood as big as (or larger than) the selected event.

Design Flood Level - Flood level selected as a basis of design in flood prone areas, as defined by Tweed Development Control Plan Section A3 - Development of Flood Liable Land.

Flood Planning Levels (FPLs) - Are the combinations of flood levels (typically derived from the 100 year ARI flood for habitable purposes) and freeboards selected for floodplain risk management purposes, as determined in management studies and incorporated in management plans.

Flood Prone Land (Flood Liable Land) - Land susceptible to flooding by the PMF event. Defines the extent of floodplains. Flood Prone Land is synonymous with flood liable land.

Habitable Area - A living or working area, such as a lounge room, living room, dining room, rumpus room, kitchen, bedroom, office or the like, and includes rooms

constructed and furnished for these purposes. Rooms containing a bath and/or shower are considered habitable. Rooms containing a toilet or basin are not considered habitable if additional to a main bathroom.

Habitable Land Use - Development that facilitates the occupation or use of buildings or rooms by persons for accommodation. Includes residential accommodation; backpackers accommodation; bed & breakfast accommodation; boarding houses; dwellings; hostels; hotel accommodation; moveable dwellings; caravan parks; residential care facilities; seniors housing; serviced apartments; tourist and visitor accommodation; hospitals; accommodation, residences or dwellings associated with educational establishments.

High Island - A high island is an area above the PMF that is surrounded on its entire perimeter during a PMF event. A high island can either be a natural landform such as a high ridge (local examples are Terranora, Bilambil Heights and Hospital Hill in Murwillumbah); or can be created by raised dwellings, fill pads and upper storey refuges.

High Land - Land that is situated above PMF level.

Low Island - An area that is above the FPL and surrounded on its entire perimeter during and 100 year ARI event, but is inundated by the PMF. When flood levels exceed the FPL, in events up to the PMF, low islands become totally inundated, posing significant risk to isolated residents without flood free access to high land or shelter. Local examples include filled residential estates in Banora Point, West Kingscliff, and Pottsville, and raised dwellings in Chinderah, South Murwillumbah and Rural Villages.

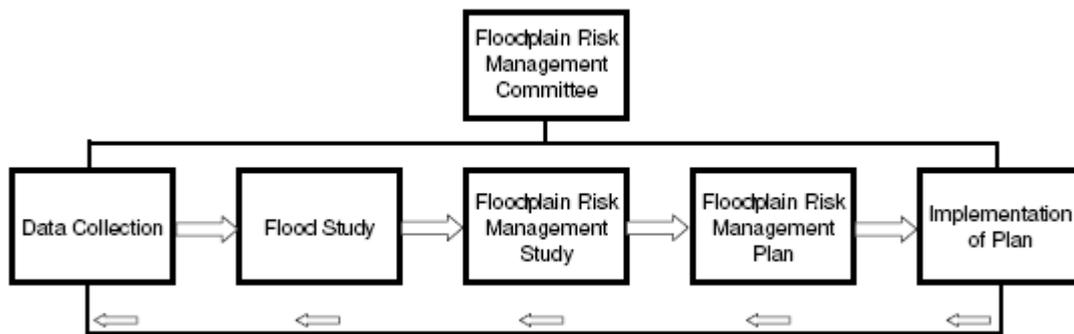
Major Flood - in Murwillumbah, is classified by the NSW State Emergency Service as an event with a level exceeding 4.8m AHD on the Murwillumbah Gauge.

Probable Maximum Flood (PMF) - The largest flood that could conceivably occur at a particular location, usually estimated from probable maximum precipitation, coupled with the worst flood producing catchment conditions. The PMF defines the extent of flood prone land, that is, the floodplain.

Policy Background

This policy applies to all flood liable land in Tweed Shire.

This policy establishes Council's framework for management of the existing, future and continuing flood risk for property affected by flooding within the Tweed Shire. The policy recognises the need for a balanced approach to floodplain management, including works and planning controls, as recommended by the NSW Floodplain Development Manual and its Floodplain Risk Management Process (see below).



Floodplain Risk Management Process
(NSW Floodplain Development Manual 2005)

This policy has been developed in accordance with Clause C9.3 and Clause I6 of the NSW Floodplain Development Manual.

This policy supersedes the following Council Policies:

- "Flood Liable Land" (Version 1.0, December 2004)
- "Flood and Floor Levels for Residential Buildings - Flood Prone Areas" (Version 1.0, December 2004)
- "Building Extensions in Flood Prone Areas" (Version 1.0, December 2004)

This Policy should be read in conjunction with the LEP, DCP, Tweed Valley Floodplain Risk Management Study and Plan, and Tweed Coastal Creeks Floodplain Risk Management Study and Plan.

Where an inconsistency arises with the Policy and an environmental planning instrument (SEPPs, REPs or LEPs), the EPI provisions prevail. Where inconsistencies with the DCP or other policy documents arise, then the higher standard/requirement shall prevail.

Tweed Shire Council is committed to the floodplain risk management process for the management of flood liable land as prescribed by the NSW Floodplain Development Manual, the NSW Flood Prone Land Policy and the relevant sections of the Local Government Act 1993.

Council will therefore review and update this policy from time to time as improved knowledge and higher learning evolves from further development and review of Floodplain Risk Management Studies and Plans in accordance with the requirements of the NSW Floodplain Development Manual.

Policy

Flooding within the Shire occurs when rainfall exceeds the capacity of creeks and rivers to convey the runoff water to the ocean. Flooding can generate rapid rises in water levels and warning times are often very short, particularly in the upper tributaries of the Tweed River. The coastal creeks and the lower reaches of the Tweed River can also be flooded from the affects of a cyclone or its remnant rain depression that creates extraordinarily high tide or ocean levels combined with heavy local rain. Flooding of this

type will generally occur with little warning except for weather forecasts predicting cyclones and rain depressions.

Since installation of the Murwillumbah Flood Gauge in 1928, nineteen (19) major floods have been recorded, the largest occurring in 1931, 1954, 1956, 1974, and 1989 and 2017. The flood of record for the Tweed River at Murwillumbah is the 2017 event, with a gauge reading of 6.25m AHD. 1954 flood levels varied in Tweed Heads from 2.51m AHD near the river mouth to 2.05m AHD in the town centre. Anecdotal evidence suggests, however, that earlier floods in 1887 and 1893 may have been higher than these floods.

Considerable time can pass between major floods, with the potential for major growth in population and floodplain usage in the intervening years. In the period since the 1989 flood, Tweed Shire has experienced one of the highest population growth rates in New South Wales, with approximately 1800 new residents per year. This had led to the creation of entire new communities via widescale residential subdivision, many of which have occurred on the floodplain.

In rural floodplains, minor flooding is controlled by levees and floodgated drainage outlets, where the agricultural use and potential flood damage has justified the expenditure. Council is responsible for the management of approximately 350 floodgates across the Shire.

In urban areas of Murwillumbah (CBD, East Murwillumbah, Dorothy / William Streets and South Murwillumbah), Tweed Heads South, and part of Seabreeze Estate at Pottsville, levees provide structural protection against flood inundation to varying degrees. In the event of a flood exceeding the levee height, the protected areas will flood quickly with little warning time and very rapid rises in water levels. In other areas, planning controls are used to contain future flood damage and address emergency response issues to minimise risk to life.

Residents in flood prone areas should be very conscious of their situation, be alert during any periods of predicted high rainfall, be prepared to relocate possessions from areas liable to inundation, and respond to emergency services directions.

Council's flood mitigation strategy is to maximise community safety and minimise future potential damage due to flooding, both by structural protection and by planning controls to ensure that only appropriate compatible development occurs on floodplains in the future.

Flood Extents and Flood Planning Levels

Flood Planning Levels (FPL's) are prescribed by DCP Section A3 - Development of Flood Liable Land.

Council has acquired information on predicted flood extents, levels and velocities over many localities from a variety of flood studies. Flooding information may be obtained from the Engineering Division by enquiry. Fees and charges may apply.

Flood planning levels may change from time to time, as new flood predictions or observations of real events come to hand. While older developments may have met

Council's flooding standards at the time of approval (such as minimum fill or floor levels), changes to flood planning levels may render these developments non-compliant in terms of current policy and development controls. This may affect the ability of owners to obtain flood insurance or further develop the property.

Proponents are advised to obtain a Section 149 Certificate to determine the flood planning levels applicable to specific parcels of land.

Variations to Habitable Floor Levels

For dwellings with existing floor levels below the adopted minimum floor level, "minor extensions" for habitable uses are permissible, with the concurrence of the Director Planning & Regulation.

Larger additions will only be considered for recreational rooms constructed of flood compatible materials, and provided furnishings therein are readily removable and can be relocated to an on-site storage area above the minimum habitable floor level. Concurrence of the Development Assessment Panel is required.

Section 149 Certification

Amongst other things, Clause 279 and Schedule 4(7) of the Regulations to the Environmental Planning and Assessment Act 1979 state that a Section 149(2) Certificate must contain information relating to:

"Whether or not the land is affected by a policy ... that restricts the development of the land because of the likelihood of land slip, bushfire, flooding, tidal inundation, subsidence, acid sulphate soils or any other risk."

The primary function of the Section 149 Certificate Notation is as a planning tool for notification that the land is affected by a policy that restricts development due to the likelihood of a risk, in this instance, flooding. The Section 149 Certificate can play a role in community awareness but should not be relied on to provide detailed flood information.

Part of Council's statutory responsibility is to update Section 149 Certificates as new information, that poses a risk to the community, becomes available.

For the purpose of flood risk, Section 149(2) and Section 149(5) Certificates are used to inform property owners, prospective property buyers and property developers of the flood risk associated with any particular property and that development may be restricted.

Applications for the Development of Flood Prone Land

Exempt and complying development on flood prone land must satisfy Section A10 of the DCP.

Flood prone development requiring consent must satisfy the LEP and DCP Section A3,

LEP Amendments and Rezoning Applications

The acceptability of applications to amend the Tweed Local Environment Plan to permit habitable uses or intensified residential development on the floodplain shall be assessed on the basis of topographic characteristics of the subject land, according to Figure 1 below and the related risk management approach to flood events in Table 1.

Figure 1 - Land Classification

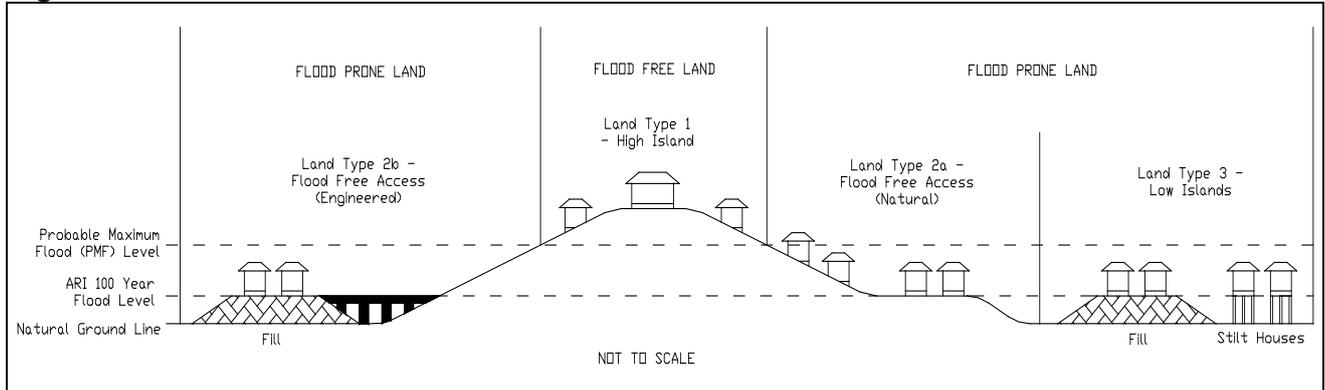


Table 1 - Assessment Criteria for TLEP Amendments that Facilitate Additional Habitable Land Use on the Floodplain

Land Classification	Description	Risk Management Approach	Comments	Is Application Acceptable for Further Consideration?
Land Type 1 - High Islands	Land is above PMF level	Shelter in Place - Flood Free Refuge	Residents remain in situ for duration of the flood emergency. High islands may or may not be serviced by critical infrastructure such as hospitals.	Yes
Land Type 2a - Flood Free Access (Natural)	Topography naturally grades to land that is above PMF level	Evacuation	Residents relocate to flood free areas as flood levels rise above design flood level for local roads and dwellings. Evacuation efficiency is dependent upon mode of transport (road or pedestrian evacuation), services available at the destination (evacuation centre, medical facilities), and ability of residents to travel (aged, infirmed, disabled, young children).	Yes
Land Type 2b - Flood Free Access (Engineered)	Land is linked to land above PMF level by fill, roads, bridges and the like	Evacuation	As for 2a	Yes
Land Type 3 - Low Islands	Land and dwellings are constructed at design flood level but below PMF level, with no flood free access to land above PMF	Rescue	Relies on emergency services to remove residents from the flood risk for events that cut local access routes. This is contrary to Tweed LEP 2000 and the NSW Floodplain Development Manual and is not a valid risk management approach.	No

The above table provides criteria for the exclusion of LEP amendment proposals that contain unacceptable flooding risks to human life. Applications that pass this test and are eligible for further consideration will still be required to deal with other flood related risks (e.g. impact on flood behaviour, floodplain environment or flood conveyance function) in accordance with this Policy, DCP Section A3 and Floodplain Risk Management Studies, as well as non-flood related planning issues.

Refer to the Tweed Valley Floodplain Risk Management Study (2014) and the Tweed Coastal Creeks Floodplain Risk Management Study (2015) for further commentary and policy guidance regarding LEP amendments and rezonings.

Community Awareness & Education

Provision of Flood Level Information

Flood levels are determined as part of the Flood Studies carried out for the individual floodplains within the Tweed Shire. Flood levels can assist property owners and their representatives in assessing possible flood risk on properties and should be used in conjunction with a detailed topographic ground survey.

Flood Level information is available by contacting Council's Engineering & Operations Division. Fees and charges may apply.

In rural areas where Council does not have any flooding records, it is recommended that interested parties satisfy themselves as to the possible extent of flood affect on the property, if any, by seeking out and heeding reliable local historical information.

Community Awareness

Community awareness and appreciation of the existing flood risk on the floodplain will promote appropriate land use and development in flood affected areas. A well informed community will more readily understand the need for protection of life and property and general building and development controls imposed by Council.

One aspect of a community's preparedness for flooding is the "flood awareness" of individuals. This includes awareness of the flood risk in their area and how to protect their family and property when an event occurs. It is fair to assume that the level of awareness drops as individuals' memories of previous experience dim with time. Community awareness of flood risks can be maintained or increased by measures including:

- Distribution of flood safe publications to residences and businesses, prepared in conjunction with the SES;
- Community workshops and displays;
- Media releases and advertisements;
- Provision of additional flood information at community outlets, such as Libraries and Community Centres and on Council's webpage.

Other measures may also be identified and implemented as part of the Floodplain Risk Management Study and Plan process.

Management of Emergency Response

The State Emergency Service is the primary combat agency responsible for emergency response during a flood event. The SES, with assistance from Council's Local Emergency Management Officer (LEMO), facilitates an appropriate emergency response and evacuation strategy, co-ordinated through the Tweed Shire Local Emergency Management Committee (LEMC). The SES and the LEMC, with the assistance of Council, is responsible for the preparation and review of Local Flood Plans to develop an appropriate disaster response plan.

Due to local topography and demographics, and the expected intensity of flood producing weather events, emergency response in Tweed Shire may be significantly

constrained. Flood modelling shows that even urban areas, such as the Murwillumbah CBD, which are protected by a levee, can be rapidly inundated with little warning should overtopping and/or failure of the levee occur. A high intensity rainfall event in June 2005 demonstrated that many urban areas in the Lower Tweed, including contemporary subdivisions and filled housing estates, can be subject to stormwater flash flooding that rapidly cuts evacuation routes and access roads.

The potential lack of suitable lead time for flood emergency response means that individual property owners need to be prepared in their own right, and be able to act wisely without assistance. Where properties are within an area that can be affected by any flood event, occupants should ensure that they have in place an appropriate evacuation plan known to all household members. This plan should ensure that any chosen evacuation route will be available in such an event. The evacuation plan should consider the safety of the family pets and the preservation of important items such as legal documents and family memorabilia such as photographs. Residences should also maintain an emergency kit, containing items including a portable radio, torch, spare batteries, candles and waterproof matches, a first aid kit, medication supplies, fresh food and water, strong shoes, rubber gloves, and waterproof bags for valuables. The SES may provide advice to home and business owners as to appropriate emergency response measures in their area.

During flood emergencies, community enquiries should be directed to the SES. The Bureau of Meteorology is responsible for issuing all watches and warnings associated with severe weather and flood events, for dissemination by local media outlets.

Flood Mitigation Works

Implementation of Structural Works

The purpose of flood mitigation measures is to modify the behaviour of a flood by reducing flood levels or velocities or by excluding floodwaters from areas at risk.

Flood mitigation measures, by their structural nature, may have environmental and ecological impacts (positive or negative) and so any proposal for such works must be subject to strict and detailed assessment in accordance with the existing planning and assessment legislation.

Structural works such as detention basins, levees and drainage amplifications, are determined through assessment within the Floodplain Risk Management Studies and preferred works are nominated through the Floodplain Risk Management Plans.

The implementation of works is undertaken through Council's works programs and is subject to the availability of funding from various sources including Council's revenue, government grant funding, Section 94 Contributions and developer direct contributions.

Voluntary House Raising and Voluntary Purchase

Voluntary house raising and voluntary purchase of flood affected dwellings, where justified by a Floodplain Management Plan, are valid strategies for minimising the risk to life and property.

Council will continue to investigate these strategies, along with other works and planning measures, as part of its future preparation of floodplain management studies and plans.

Interaction with the Local Flood Plan

Implementation of management measures can impact on the emergency management planning for floods documented in the local flood plan. (refer Appendix N of the NSW Floodplain Development Manual 2005)

Changes in flood behaviour, flood warning systems, or critical levels for evacuation can impact upon flood response and associated planning.

Therefore, it is important that the SES and LEMC be informed of any such changes, as and when they occur so adjustments, as necessary, can be made to the local flood plan.

Council will continue to interact with the SES and other relevant agencies through the Floodplain Management Committee and the Local Emergency Management Committee to ensure compatibility with local flood plans and procedures.

APPENDIX A - References

1. Floodplain Development Manual - The Management of Flood Liable Land, New South Wales Government, April 2005
2. Tweed Shire Council Development Control Plan, Section A3 - Development of Flood Liable Land
3. Tweed Shire Local Flood Plan, State Emergency Service
4. Tweed Valley Floodplain Risk Management Study, 2014.
5. Tweed Coastal Creeks Floodplain Risk Management Study, 2015.

Related Legislation

Not applicable

Compliance

Not applicable

Forms

Not applicable

Review Period

This policy will be reviewed within 12 months of the election of each new Council or more frequently in the event of any legislative changes or change in circumstances.

Useful Links

[Tweed Shire Council website](#)

Version Control:

Version History		
Version #	Summary of changes made	Date changes made
1.0	Incorporated into new policy template	20/06/2013
1.0	Minor amendment due to organisation restructure <i>Planning & Infrastructure</i> now <i>Roads & Stormwater</i>	19/06/2013
1.1	General review Delete information that is duplicated in DCP A3. Update progress of floodplain risk management process. Update to reflect record flooding in March 2017	03/07/2017
1.1	Adopted by Council	15/02/2018