

The Proposed Auckland Unitary Plan (notified 30 September 2013)

4.12 Flooding

1. Activity table

The following table specifies the activity status of activities in areas sensitive to flood hazards.

Activities in Areas Sensitive to Flood Hazards	
Activities in flood-sensitive areas	
Activity	Activity status
Development	
Buildings containing vulnerable activities	P
Buildings containing less vulnerable activities	P
Activities in flood plains	
Development within the 1 per cent AEP flood plain	
Fences that do not obstruct flood flows and walls less than or equal to 0.5m in height	P
Fences that do obstruct flood flows and walls over 0.5m in height	D
Surface parking or parking areas	P
Below ground parking or parking areas	P
Maintenance, repair and alterations to buildings which do not result in any increase of site coverage or floor area and/or lower finished floor levels	P
Maintenance, repair and alterations to buildings which do not result in any increase of site coverage or floor area and/or lower finished floor levels	P
Public amenities, informal recreation and leisure and organised sport and recreation, including associated parks field structures but not club rooms	P
Farming and buildings accessory to farming (excluding dwellings) situated outside the urban area with a GFA equal to or less than 100m ²	P
Less vulnerable activities including all associated buildings	D
Buildings accessory to farming (excluding dwellings) with a GFA greater than 100m ² situated outside the urban area	D
Redevelopment of existing buildings accommodating vulnerable activities that increase building coverage and/or habitable floor area above flood levels	D
New vulnerable activities and all associated buildings, including conversion and/or change of use of an existing building to accommodate a vulnerable activity	NC
Storage of material in any zone, including the storage of hazardous substances where the amount of hazardous substances would be permitted by the hazardous substances rules apply to the residential zones	P
Storage of hazardous substances in any zone where the amount would not be permitted by the hazardous substances rules applying to the residential zones	D
Infrastructure within the 1 per cent AEP flood plain	
Below ground infrastructure, except septic tanks and other forms of wastewater treatment and disposal systems	P
Maintenance and repair of infrastructure, including flood mitigation and land drainage works	P
Construction of stormwater management devices or flood mitigation works that are to be vested in the council, or otherwise approved by way of a structure plan incorporated into the Unitary Plan or network discharge consent	P
Stormwater management devices and flood mitigation works that are not to be vested in council, or which have not been approved in a structure plan or network discharge consent	RD
Placement of any septic tank, wastewater treatment and disposal system and effluent disposal field	RD

The Proposed Auckland Unitary Plan (notified 30 September 2013)

Above ground infrastructure involving structures that occupy less than or equal to 25m ² of ground surface area	RD
Other above ground infrastructure involving structures that occupy more than 25m ² in ground surface area	D
Infrastructure outside of the 1 per cent AEP Floodplain and within the 0.5 per cent AEP flood plain	
Any flood-vulnerable infrastructure involving structures placed within the 0.5 per cent AEP flood plain	P
Activities within overland flow paths	
Development	
Fences located within or over an overland flow path that do not obstruct the overland flow path	P
Flood protection works within an overland flow path required to reduce the risk to existing buildings from flooding hazards	P
Infrastructure, including maintenance and minor upgrading, road construction, maintenance and resurfacing	P
Modifying the alignment of an overland flow path within a site, but not diverting the entry or exit point or reducing its capacity	P
Diverting the entry or exit point or reducing the capacity of any part of an overland flow path	RD
Any buildings or structures, including retaining walls but excluding permitted fences) located within or over an overland flow path	D
Activities in flood-sensitive areas, flood plains and overland flow paths	
Any activity within flood-sensitive areas, floodplains, overland flow paths which is unable to comply with permitted activity or controlled activity controls	D
Activities in Flood Prone Areas	
Development	
Buildings containing vulnerable activities	P
Building containing less vulnerable activities	P
Buildings with finished floor levels that do not meet the permitted activity controls	RD

2. Controls

2.1 Permitted activities

Any permitted activity that does not comply with the below controls is a discretionary activity

2.1.1 Activities within flood-sensitive areas

1. Vulnerable activities in flood-sensitive areas:
 - a. finished floor levels of buildings must be at least 500mm above the 1 per cent AEP flood level.
2. Less vulnerable activities in flood sensitive areas
 - a. finished floor levels of buildings must be at least 300mm above the 1 per cent AEP flood level.

2.1.2 Activities within the 1 per cent AEP flood plain

1. Fences
 - a. Fences must be open structures such as post and wire fence, wire mesh fence or railing type fence where at least 90 per cent of the surface area of the fence is not solid.
2. Storage of material within the 1 per cent AEP flood plain
 - a. stored goods and materials must:
 - i. not impede flood flows
 - ii. where capable of creating a safety hazard by being shifted by floodwaters, be contained and secured in order to minimise movement in times of floods
 - iii. be stored in watertight containers if they are hazardous substances.

The Proposed Auckland Unitary Plan (notified 30 September 2013)

3. Parking or parking areas within the 1 per cent AEP flood plain
 - a. surface or basement parking or parking areas must be located where depth of flood waters in a 1 per cent AEP event does not exceed 200mm.
4. Farm buildings outside the urban area
 - a. finished floor levels must be at least 200mm above the 1 per cent AEP flood level
 - b. the structure is designed to withstand flood flows.
5. Stormwater management devices and flood mitigation works must be are designed, constructed, operated and maintained in accordance with any structure plan, network discharge consent and vesting requirements.

2.1.3 Flood-vulnerable infrastructure outside the 1 per cent AEP flood plain and within the 0.5 per cent AEP flood plain

1. Flood vulnerable infrastructure:
 - a. must be designed so it can remain operational during a 0.5 per cent AEP flood event
 - b. must not alter the volume and velocity of water flow or cause additional adverse flooding effects on neighbouring sites.

2.1.4 Activities within overland flow paths

1. Fences
 - a. fences must:
 - i. provide an opening equivalent to twice the area required to convey the 1 per cent AEP flow of the overland flow path
 - ii. provide an opening constructed to minimise the chances of blockage of the overland flow path.
2. Flood protection works
 - a. works must maintain the same entry and exit point of the overland flow path at the site boundary, and must not alter the volume and velocity of water flow, and must not cause additional adverse flooding effects on neighbouring sites.
3. Infrastructure, including road construction, maintenance and resurfacing
 - a. the path and capacity of the overland flow path where it enters or exits the site or crosses the road must not be altered by the works, and
 - b. where any structure is placed across the overland flow path or piping of it occurs, provision must be made for a secondary flow path that can accommodate the overland flow in a way that will not cause or increase flooding of neighbouring properties, in the event of blockage of the main flow path or when the capacity of the obstructed path is exceeded, during a 1per cent AEP storm event.

2.1.5 Activities within flood prone areas

1. Vulnerable activities in flood prone areas
 - a. finished floor levels of buildings are at least 500 mm above the 1 per cent AEP flood prone level
 - b. finished floor levels of buildings are no more than 1500mm above ground level.
2. Less vulnerable activities in flood prone areas
 - a. finished floor levels of buildings are at least 300mm above the 1 per cent AEP flood prone level.

3. Assessment - Restricted discretionary activities

3.1 Matters of discretion

The Proposed Auckland Unitary Plan (notified 30 September 2013)

The council will restrict its discretion to the matters below for restricted discretionary activities.

1. General
 - a. design of the structure, works or infrastructure
 - b. extent of any earthworks proposed
 - c. construction methodology
 - d. potential impacts on overland flow paths including:
 - i. obstruction of flows
 - ii. any change to location and capacity
 - iii. any change to overland flow on other properties.
 - e. provision of secondary flow paths
 - f. effects on existing infrastructure
 - g. potential changes in flood depth and frequency upstream and downstream of the site and potential flooding of habitable floors
 - h. provision of site access and potential effects of chosen access route
 - i. ongoing access, maintenance and reporting requirements
 - j. methods of providing for long term maintenance and protection such as easements.
2. Stormwater management devices within the 1 per cent AEP flood plain
 - a. the likely frequency of flooding of the stormwater management device for a range of flood events and the effects that the flooding may have on the function of the device, including the potential mobilisation of accumulated contaminants.
3. Wastewater treatment system and associated devices within the 1 per cent AEP flood plain
 - a. design of the device including flood proofing
 - b. potential hazards to public health
 - c. potential contamination of groundwater
 - d. the likely frequency of flooding of the device and the effects this may have on the functioning of the device.
4. Above ground infrastructure occupying no more than 25m² of ground surface area
 - a. operational and structural resilience to flood risks.
5. Buildings in flood prone areas
 - a. the nature of the risk posed by being located in the flood prone area
 - b. how the activity within the building is managed
 - c. the design of the building and the use of spaces within and under buildings.

3.2 Assessment criteria

The council will consider the relevant assessment criteria below for restricted discretionary activities.

1. Stormwater management devices
 - a. whether the design of the device, including associated earthworks, landscaping and access ways avoids impeding flood flows or otherwise exacerbate flood risk upstream or downstream of the site and how such effects can be avoided
 - b. ensuring the design of the device or mitigation works is resilient to damage from a range of flood events

The Proposed Auckland Unitary Plan (notified 30 September 2013)

- c. whether access to the device for maintenance and maintenance plans is provided, and potential effects that may result from the proposed access route.
2. Flood mitigation works required to protect existing buildings from flood hazards
 - a. whether the works are at an appropriate scale and location in terms of the vulnerability of buildings and structures that the works are designed to protect
 - b. how the design of the works will ensure they do not result in an adverse flooding effect on properties upstream or downstream of the site.
3. Wastewater treatment and disposal system and associated devices in the 1 per cent AEP flood plain
 - a. whether the design and location of the system and/or device, including associated earthworks, avoids impeding flood flows or otherwise exacerbate flood risk upstream or downstream of the site and how such effects can be avoided
 - b. ensuring that public health hazards that may result from flood inundation are avoided
 - c. ensuring that there is no contamination of groundwater resulting from flood inundation.
4. Above ground infrastructure occupying no more than 25m² of ground surface area
 - a. whether the infrastructure service needs to remain operational during a flood event
 - b. whether the structure can withstand flood waters without causing adverse effects on upstream or downstream activities.
5. Diversion and / or alteration of overland flow path
 - a. how the continuity of overland flow paths both within the site, as well as upstream and downstream will be maintained
 - b. how potential effects on other properties from the diversion or alteration is avoided or mitigated
 - c. how effects from scouring and erosion should will be mitigated
 - d. how the proposal will avoid or mitigate adverse effects on stream ecology
 - e. ensuring that, when appropriate, an easement in favour of council is created so as to limit further changes to the overland flow path.
6. Buildings in flood prone areas
 - a. whether the building, including the underside of buildings, associated earthworks, landscaping and access ways avoids impeding flood flows or otherwise exacerbating flood risk and how such effects can be mitigated
 - b. ensuring that public health hazards that may result from flood inundation are avoided
 - c. ensuring design of the building is resilient to damage from a range of flood events
 - d. whether the building design provides for safe egress during a range of flood events
 - e. where buildings are required to locate at ground level, whether measures are proposed to manage risks to the building, occupants, and contents.

4. Special information requirements

1. A flood hazard assessment and mitigation plan is required when the following activities are proposed to be located:
 - a. less vulnerable activities in 1 per cent AEP flood plains
 - b. redevelopment of buildings containing vulnerable activities in 1 per cent AEP flood plains
 - c. farming activities located outside the urban area involving buildings greater than 100m² in area in 1

The Proposed Auckland Unitary Plan (notified 30 September 2013)

per cent AEP flood plains

- d. buildings in Flood Prone Areas with finished floor levels that do not meet permitted activity standard.

This plan should:

1. Be proportionate to the risk and appropriate to the scale, nature and location of the development.
2. Consider a range of flood events.
3. Identify and quantify the types of flooding, whether from natural or human sources, and including joint and cumulative effects, that will be experienced by the development, as well as any additional flooding effects arising from the development, and in particular:
 - a. types of flooding e.g. ponding versus fluvial, flooding from blockage of flood channels
 - b. volumes, depth and velocities of flood waters
 - c. likely presence of debris and potential for obstruction of flood flows in flood prone areas
 - d. timing and duration of flood levels, including the flood warning time available.
4. Identify the adverse effects arising from exposure to the above hazards, taking into account:
 - a. the nature and extent of development that is within the floodplain, including buildings, fences, walls and other solid structures, as well as storage areas and car parking areas
 - b. the vulnerability of people that could occupy and use the development, including arrangements for safe access/egress
 - c. the resilience of the activity and associated buildings and structures to flood damage
 - d. an assessment of residual risk after risk reduction measures have been taken into account and whether this is acceptable for the particular development or land use
 - e. the vulnerability of downstream activities and their sensitivities to risks (eg residential versus non residential activities) from hazardous and floatable material that may be entrained by a flood event, including vehicles and material stored outdoors.
5. Identify measures that are to be taken in the first instance to avoid the risks of adverse effects and where not feasible, mitigate adverse effects including:
 - a. minimising the number of people at risk and providing safe evacuation above flood levels before and during a storm event, taking into account flood warning times
 - b. safe egress/access to areas out of the flood plain and avoiding the use of basement car parking where this could trap people trying to evacuate during a flood event
 - c. the design of buildings and structures so that they do not reduce flood storage volumes or increase flood levels and velocities, such as by:
 - i. placement of buildings on areas of the site that are outside the flood plain
 - ii. raising ground floors above flood levels (taking into account potential flood levels in flood prone areas) and/or increasing flood storage volumes elsewhere on the site, provided that this does not increase flood velocities. For vulnerable activities, floor levels should be at least 500mm and for less vulnerable activities at least 300mm. above the 1 per cent AEP flood prone or flood plain level (whichever is the greater)
 - d. structural and non structural measures to improve the resilience to flooding related damage, such as
 - i. flood resistant construction (dry proofing) in areas of higher risk,
 - ii. the use of water resistant materials (wet proofing) in areas of lower risk

The Proposed Auckland Unitary Plan (notified 30 September 2013)

- iii. flood proofing of infrastructure connections in all cases
- e. site layout and management (including access and egress during flood events) to avoid hazardous and floatable materials including cars and other vehicles being carried off site and to retain overland flow paths
- f. protection of utility corridors
- g. preparation of a flood response plan specific to the activity, setting out what actions occupiers of the development are to take before and during a flood event to ensure safety of people and property.

The Proposed Auckland Unitary Plan (notified 30 September 2013)