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APPLICATION REF
 A007041697

9.4.9 Stormwater code

9.4.9.1 Application

1. This code applies to assessing a material change of use, reconfiguring a lot or operational work if:
 - a. assessable development where this code is identified as a prescribed secondary code in the assessment benchmarks column of a table of assessment for a material change of use (section 5.5), reconfiguring a lot (section 5.6) operational work (section 5.8) or an overlay (section 5.10); or
 - b. impact assessable development, to the extent relevant.
2. When using this code, reference should be made to section 1.5 and section 5.3.3.

Note—The following purpose, overall outcomes, performance outcomes and acceptable outcomes comprise the assessment benchmarks of this code.

Note—Where this code includes performance outcomes or acceptable outcomes that relate to infrastructure design and construction works, guidance is provided in the Infrastructure design planning scheme policy.

9.4.9.2 Purpose

1. The purpose of the Stormwater code is to assess the suitability of the stormwater aspects of development.
2. The purpose of the code will be achieved through the following overall outcomes:
 - a. Development achieves acceptable levels of stormwater run-off quality and quantity by applying water sensitive urban design principles as part of an integrated stormwater management framework.
 - b. Development protects public health and safety and protects against damage or nuisance caused by stormwater flows.
 - c. Development has a stormwater management system which maintains, recreates or minimises impact to natural catchment hydrological processes.
 - d. Development ensures that the environmental values of the city's waterways are protected or enhanced.
 - e. Development minimises run-off, including peak flows.
 - f. Development maintains or enhances the efficiency and integrity of the stormwater infrastructure network.
 - g. Development minimises the whole of life cycle cost of stormwater infrastructure.

9.4.9.3 Performance outcomes and acceptable outcomes

Table 9.4.9.3.A—Performance outcomes and acceptable outcomes

Performance outcomes	Acceptable outcomes	Comments
Section A—If for a material change of use, reconfiguring a lot, operational work or building work Note—Compliance with the performance outcomes and acceptable outcomes in this section should be demonstrated by the submission of a site-		Compliant. A Concept Stormwater Management Plan has been prepared by J.C. Engineers in support of the

<p>based stormwater management plan for high risk development only.</p>		<p>proposed one (1) into two (2) lot subdivision. The stormwater strategy provides for collection, conveyance and lawful discharge of stormwater from the site via a combination of grassed swale, underground stormwater pipework and kerb adaptor connection to Lytton Road. The proposal maintains the existing drainage direction toward Lytton Road and incorporates measures to manage stormwater runoff generated by the proposed subdivision.</p>
<p>PO1 Development provides a stormwater management system which achieves the integrated management of stormwater to:</p> <ul style="list-style-type: none"> a. minimise flooding; b. protect environmental values of receiving waters; c. maximise the use of water sensitive urban design; d. minimise safety risk to all persons; e. maximise the use of natural waterway corridors and natural channel design principles. <p>Editor's note—The stormwater management system to be developed to address PO1 is not intended to require management of stormwater quality.</p> <p>PO2 Development ensures that the stormwater management system and site work does not adversely impact flooding or drainage characteristics of premises which are up slope, down slope or adjacent to the site.</p>	<p>AO1 Development provides a stormwater management system designed in compliance with the Infrastructure design planning scheme policy.</p> <p>AO2.1 Development does not result in an increase in flood level or flood hazard on up slope, down slope or adjacent premises.</p> <p>AO2.2 Development provides a stormwater management system which is designed in compliance with the standards in the Infrastructure design planning scheme policy.</p>	<p>Compliant. The SWMP confirms the site naturally drains toward Lytton Road and that the proposed stormwater management system maintains this existing drainage behaviour. The proposed system is designed to safely collect and convey runoff to the lawful point of discharge without causing nuisance or adverse drainage impacts to adjoining premises.</p>
<p>PO3</p>	<p>AO3.1</p>	<p>Compliant. Stormwater generated by the development will be directed via on-site drainage infrastructure to</p>

<p>Development ensures that the stormwater management system does not direct stormwater run-off through existing or proposed lots and property where it is likely to adversely affect the safety of, or cause nuisance to properties.</p>	<p>Development ensures that the location of the stormwater drainage system is contained within a road reserve, drainage reserve, public pathway, park or waterway corridor.</p> <p>AO3.2 Development provides a stormwater management system which is designed in compliance with the standards in the Infrastructure design planning scheme policy.</p>	<p>Lytton Road as the lawful point of discharge. The proposed drainage arrangement avoids uncontrolled discharge to adjoining properties and maintains runoff generally in accordance with the natural fall of the land. Any underground stormwater infrastructure required within private land can be secured by easement if required by Council as part of conditions or detailed design.</p>
	<p>AO3.3 Development obtains a lawful point of discharge in compliance with the standards in the Infrastructure design planning scheme policy.</p>	
	<p>AO3.4 Where on private land, all underground stormwater infrastructure is secured by a drainage easement.</p>	
<p>PO4 Development provides a stormwater management system which has sufficient capacity to safely convey run-off taking into account increased run-off from impervious surfaces and flooding in local catchments.</p>	<p>AO4.1 Development provides a stormwater conveyance system which is designed to safely convey flows in compliance with the standards in the Infrastructure design planning scheme policy.</p> <p>AO4.2 Development provides sufficient area to convey run-off which will comply with the standards in the Infrastructure design planning scheme policy.</p>	<p>Compliant. The SWMP identifies pre-development and post-development catchment areas and calculates the increase in runoff resulting from additional impervious surfaces associated with the subdivision. The proposed system includes a grassed swale, stormwater pits, 150mm stormwater pipework and kerb adaptors to convey flows to Lytton Road. The concept design demonstrates that stormwater runoff can be safely managed at DA stage, with final detailed design capable of being addressed through conditions.</p>
<p>PO5 Development designs stormwater channels, creek modification works, bridges, culverts and major drains to protect and enhance the value of the waterway corridor or drainage path for fauna movement.</p>	<p>AO5 Development ensures the design of stormwater channels, creek modifications or other infrastructure, permits terrestrial and aquatic fauna movement.</p>	<p>Not Applicable. The proposal does not involve creek modification works, bridges, culverts, major drains or works within a waterway corridor.</p>
<p>PO6</p>	<p>AO6.1</p>	<p>Compliant. The proposed stormwater management system is contained within the subject site and road</p>

<p>Development ensures that location and design of stormwater detention and water quality treatment:</p> <ul style="list-style-type: none"> a. minimises risk to people and property; b. provides for safe access and maintenance; c. minimises ecological impacts to creeks and waterways. 	<p>Development locates stormwater detention and water quality treatment:</p> <ul style="list-style-type: none"> a. outside of a waterway corridor; b. offline to any catchment not contained within the development. <p>AO6.2 Development providing for stormwater detention and water quality treatment devices are designed in compliance with the standards in the Infrastructure design planning scheme policy.</p>	<p>frontage context and does not involve works within a waterway corridor. The proposed grassed swale and pipe system are capable of being accessed and maintained. A roofwater tank is also contemplated in the SWMP for future dwelling outcomes, with final sizing and configuration to be confirmed at detailed building design stage.</p>
<p>PO7 Development is designed, including any car parking areas and channel works to:</p> <ul style="list-style-type: none"> a. reduce property damage; b. provide safe access to the site during the defined flood event. 	<p>AO7.1 Development (including any ancillary structures and car parking areas) is located above minimum flood immunity levels in Table 9.4.9.3.B, Table 9.4.9.3.C, Table 9.4.9.3.D, Table 9.4.9.3.E and Table 9.4.9.3.F. Note—Compliance with this acceptable outcome can be demonstrated by the submission of a hydraulic and hydrology report identifying flood levels and development design levels (as part of a site-based stormwater management plan).</p> <p>AO7.2 Development including the road network provides a stormwater management system that provides safe pedestrian and vehicle access in accordance with the standards in the Infrastructure design planning scheme policy.</p>	<p>Compliant / Not Applicable. The site is not identified as flood mapped in the planning assessment material. The proposal is for subdivision only and does not establish finished floor levels for future dwellings. Future building work will be required to comply with applicable flood immunity and building design requirements where relevant. The proposed stormwater concept maintains controlled overland flow paths and does not create unacceptable flood risk.</p>
<p>PO8 Development designs stormwater channels, creek modification works and the drainage network to protect and enhance the environmental values of the waterway corridor or drainage path.</p>	<p>AO8.1 Development ensures natural waterway corridors and drainage paths are retained.</p> <p>AO8.2 Development provides the required hydraulic conveyance of the drainage channel and floodway, while maximising its potential to maximise environmental benefits and minimise scour.</p>	<p>Compliant. The proposal does not involve modification to a natural waterway corridor. The proposed drainage arrangement maintains the existing general drainage direction to Lytton Road and incorporates a grassed swale to assist with conveyance, velocity reduction and erosion control prior to discharge.</p>

	<p>Editor's note—Guidance on natural channel design principles can be found in the Council's publication Natural channel design guidelines.</p> <p>AO8.3 Development provides stormwater outlets into waterways, creeks, wetlands and overland flow paths with energy dissipation to minimise scour in compliance with the standards in the Infrastructure design planning scheme policy.</p> <p>AO8.4 Development ensures that the design of modifications to the existing design of new stormwater channels, creeks and major drains is in compliance with the standards in the Infrastructure design planning scheme policy.</p>	
<p>PO9 Development is designed to manage run-off and peak flows by minimising large areas of impervious material and maximising opportunities for capture and re-use.</p>	<p>AO9 No acceptable outcome is prescribed.</p>	<p>Compliant. The SWMP identifies an increase in impervious area associated with the proposed subdivision and provides a stormwater strategy to manage the resultant runoff. The strategy contemplates roofwater capture via future rainwater tanks and includes vegetated swale conveyance to assist with runoff management. Future dwelling design can further incorporate rainwater tanks, landscaping and permeable areas to minimise runoff and support water sensitive urban design outcomes.</p>
<p>PO10 Development ensures that there is sufficient site area to accommodate an effective stormwater management system. Note—Compliance with the performance outcome should be demonstrated by the submission of a site-based stormwater management plan for high-risk development only.</p>	<p>AO10 No acceptable outcome is prescribed.</p>	<p>Compliant. The subdivision layout retains sufficient area for the proposed stormwater management infrastructure, including a grassed swale, underground pipework, pits and connection to kerb adaptors at Lytton Road. The SWMP demonstrates that stormwater infrastructure can be accommodated within the site and frontage arrangement without compromising the proposed lot configuration.</p>
<p>PO11 Development provides for the orderly development of stormwater infrastructure within a catchment, having</p>	<p>AO11.1 Development with up-slope external catchment areas provides a drainage connection sized for ultimate</p>	<p>Compliant. The proposal is a small-scale residential subdivision within an established urban catchment. The SWMP confirms the site drains toward Lytton</p>

<p>regard to the:</p> <ul style="list-style-type: none"> a. existing capacity of stormwater infrastructure within and external to the site, and any planned stormwater infrastructure upgrades; b. safe management of stormwater discharge from existing and future up-slope development; c. implication for adjacent and down-slope development. 	<p>catchment conditions that is directed to a lawful point of discharge.</p> <p>AO11.2 Development ensures that existing stormwater infrastructure that is undersized is upgraded in compliance with the Infrastructure design planning scheme policy.</p>	<p>Road and proposes discharge to the existing public stormwater drainage system via kerb adaptors. No significant external upslope catchment issues or need for trunk stormwater upgrades have been identified at concept stage.</p>
<p>PO12 Development provides stormwater infrastructure which:</p> <ul style="list-style-type: none"> a. remains fit for purpose for the life of the development and maintains full functionality in the design flood event; b. can be safely accessed and maintained cost effectively; c. ensures no structural damage to existing stormwater infrastructure. 	<p>AO12.1 The stormwater management system is designed in compliance with the Infrastructure design planning scheme policy.</p> <p>AO12.2 Development provides a clear area with a minimum of 2m radius from the centre of an existing manhole cover and with a minimum height clearance of 2.5m.</p>	<p>Compliant. The proposed stormwater infrastructure is conventional in nature and capable of being maintained. The SWMP recommends that final roof drainage, pits, pipes and kerb adaptor works be reviewed and confirmed at detailed design stage once final dwelling footprints are known. No structural impacts to existing stormwater infrastructure are anticipated.</p>
<p>PO13 Development ensures that all reasonable and practicable measures are taken to manage the impacts of erosion, turbidity and sedimentation, both within and external to the development site from construction activities, including vegetation clearing, earthworks, civil construction, installation of services, rehabilitation, revegetation and landscaping to protect:</p> <ul style="list-style-type: none"> a. the environmental values and water quality objectives of waters; b. waterway hydrology; c. the maintenance and serviceability of stormwater infrastructure. <p>Note—The Infrastructure design planning scheme policy outlines the appropriate measures to be taken into account to achieve the performance outcome.</p>	<p>AO13 No acceptable outcome is prescribed.</p>	<p>Compliant subject to construction management. The SWMP recommends appropriate erosion and sediment control measures during construction, including sediment fences, stabilised construction access and progressive stabilisation of disturbed areas. These measures can be implemented through standard conditions and construction management practices.</p>
<p>PO14</p>	<p>AO14</p>	<p>Compliant. The proposal is limited to a residential subdivision and does not involve disturbance to</p>

<p>Development ensures that:</p> <ul style="list-style-type: none"> a. unnecessary disturbance to soil, waterways or drainage channels is avoided; b. all soil surfaces remain effectively stabilised against erosion in the short and long term. 	<p>No acceptable outcome is prescribed.</p>	<p>waterways or drainage channels. Any disturbed surfaces associated with future civil or building works can be stabilised progressively and managed through erosion and sediment control measures.</p>
<p>PO15 Development does not increase:</p> <ul style="list-style-type: none"> a. the concentration of total suspended solids or other contaminants in stormwater flows during site construction; b. run-off which causes erosion either on site or off site. 	<p>AO15 No acceptable outcome is prescribed.</p>	<p>Compliant subject to construction management. Construction-stage impacts can be appropriately managed through erosion and sediment control measures, stabilised access points and best-practice site management. The proposal is not expected to result in unacceptable sediment export, erosion or contamination of stormwater flows.</p>
<p>Section B—Additional performance outcomes and acceptable outcomes which apply to high-risk development, being one or more of the following:</p> <ul style="list-style-type: none"> a. a material change of use for an urban purpose which involves greater than 2,500m² of land that: <ul style="list-style-type: none"> i. will result in an impervious area greater than 25% of the net developable area; or ii. will result in 6 or more dwellings. b. reconfiguring a lot for an urban purpose that involves greater than 2,500m² of land and will result in 6 or more lots; c. operational work for an urban purpose which involves disturbing greater than 2,500m² of land. 		
<p>PO16 Development ensures that the entry and transport of contaminants into stormwater is avoided or minimised to protect receiving water environmental values. Note—Prescribed water contaminants are defined in the <i>Environmental Protection Act 1994</i>. Note—Compliance with the performance outcome should be demonstrated by the submission of a site-based stormwater management plan for high-risk development only.</p>	<p>AO16 Development provides a stormwater management system which is designed in compliance with the standards in the Infrastructure design planning scheme policy.</p>	<p>Not Applicable / Compliant. Section B applies to high-risk development. The proposal involves a one (1) into two (2) lot residential subdivision over approximately 636sqm and does not exceed the high-risk development thresholds. Notwithstanding, the SWMP includes stormwater management measures appropriate to the scale and nature of the proposal.</p>
<p>PO17 Development ensures that:</p> <ul style="list-style-type: none"> a. the discharge of wastewater to a waterway or external to the site is avoided; or 	<p>AO17 No acceptable outcome is prescribed.</p>	<p>Not Applicable. The proposal does not involve wastewater discharge to a waterway or external to the site. Future dwellings will be connected to lawful urban services in accordance with relevant plumbing and utility authority requirements.</p>

<p>b. if the discharge cannot practicably be avoided, the development minimises wastewater discharge through re-use, recycling, recovery and treatment.</p> <p>Note—The preparation of a wastewater management plan can assist in demonstrating achievement of this performance outcome. Editor's note—This code does not deal with sewerage which is the subject of the Wastewater code.</p>		
<p>Section C—Additional performance outcomes and acceptable outcomes for assessable development for a material change of use or reconfiguring a lot</p>		
<p>PO18 Development protects stormwater infrastructure to ensure the following are not compromised:</p> <ul style="list-style-type: none"> a. the long term infrastructure for the stormwater network in the Long term infrastructure plans; b. the existing and planned infrastructure for the stormwater network in the Local government infrastructure plan; c. the provision of long term, existing and planned infrastructure for the stormwater network which: <ul style="list-style-type: none"> i. is required to service the development or an existing and future urban development in the planning scheme area; or ii. is in the interests of rational development or the efficient and orderly planning of the general area in which the site is situated. <p>Editor's note—A condition which requires a proposed development to keep permanent improvements and structures associated with the approved development clear of the area of long term infrastructure, may be imposed.</p>	<p>AO18 Development protects stormwater infrastructure in compliance with the following:</p> <ul style="list-style-type: none"> a. for long term infrastructure for the stormwater network, the Long term infrastructure plans; b. for existing and planned infrastructure for the stormwater network, the Local government infrastructure plan; c. the standards for stormwater drainage in the Infrastructure design planning scheme policy. 	<p>Compliant. The subject site is located within an established urban area and the proposal is not expected to compromise existing or planned stormwater infrastructure. The proposed system directs stormwater to Lytton Road and the existing public stormwater network. Any detailed connection requirements can be addressed through Council conditions and operational works or plumbing approval processes where required.</p>
<p>PO19 Development provides for the payment of extra trunk infrastructure costs for the following:</p>	<p>AO19 No acceptable outcome is prescribed.</p>	<p>Compliant / Not Applicable. The site is located within the Priority Infrastructure Area. The proposed subdivision is minor in scale and is not anticipated to require trunk stormwater infrastructure to be provided</p>

<p>a. for development completely or partly outside the priority infrastructure area in the Local government infrastructure plan;</p> <p>b. for development completely inside the priority infrastructure area in the Local government infrastructure plan involving:</p> <ul style="list-style-type: none"> i. trunk infrastructure that is to be provided earlier than planned in the Local government infrastructure plan; ii. long term infrastructure for the stormwater network which is made necessary by development that is not assumed future urban development; iii. other infrastructure for the stormwater network associated with development that is not assumed future urban development which is made necessary by the development. <p>Editor's note—The payment of extra trunk infrastructure costs for development completely inside the priority infrastructure area in the Local government infrastructure plan is to be worked out in accordance with the Charges Resolution.</p> <p>Editor's note—See section 130 Imposing Development conditions (Conditions for extra trunk infrastructure costs) of the <i>Planning Act 2016</i>.</p>		<p>earlier than planned or require additional trunk infrastructure beyond standard development servicing requirements. Any applicable infrastructure charges can be levied by Council in accordance with the adopted infrastructure charges framework.</p>
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Table 9.4.9.3.B—Categories of flood planning levels

Flooding type ⁽¹⁾	Minimum design floor or pavement levels (m AHD) ⁽²⁾ (refer to Table 9.4.9.3.C for assignment of these categories)				
	Category A	Category B	Category C	Category D	Category E
Waterway ^(A) or open channel	1% AEP flood level + 500mm	1% AEP flood level + 300mm	1% AEP flood level	1% AEP flood level	5% AEP flood level
Overland flow flooding ^(B)	2% AEP flood level	2% AEP flood level	2% AEP flood level	2% AEP flood level	5% AEP flood level

	+500mm	+300mm			
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Notes—

(1) Where the site is subject to more than one type of flooding that is overland flow flooding, creek or waterway flooding or river flooding, the minimum flood immunity level is the highest level determined from these sources.

(2) Where flood levels are not available from Council's Floodwise Property Report such as overland flow flooding, the applicant will need to engage a suitably qualified Registered Professional Engineer Queensland with expertise in undertaking flood studies to estimate the relevant flood level.

Note ^(A) A waterway, including any indicated on the planning scheme maps, is defined as any element of a river, creek, stream, gully or drainage channel, including the bed and banks, typically with a catchment area greater than 30ha.

Note ^(B) Overland flow flooding usually occurs when the capacity of the underground piped drainage system is exceeded and/or when the overland flow path is blocked. Localised overland flow paths generally traverse along roadways, and in the older established areas, through private properties within existing low points and gullies. A localised overland flow path is not characterised by well-defined bed and banks and the contributing catchment is generally less than 30ha.

Note—A flood event with an AEP of 1% is the equivalent of a 100 year ARI flood event.

Note—A flood event with an AEP of 2% is the equivalent of a 50 year ARI flood event.

Note—A flood event with an AEP of 5% is the equivalent of a 20 year ARI flood event.

Note—The flood immunity level in some older inner-city areas is often controlled by local ponding.

Table 9.4.9.3.C—Flood planning level categories for development types

BCA building classification ⁽¹⁾	Development types and design levels, assigned design floor or pavement levels	Category Refer to Table 8.2.11.3.L
Class 1—4	Habitable room	Category A
	Non-habitable room including patio and courtyard	Category B
	Non-habitable part of a Class 2 or Class 3 building excluding the essential services ⁽²⁾ control room	Category B
	Parking located in the building undercroft of a multiple dwelling	Category C
	Carport ⁽⁴⁾ , unroofed car park; vehicular manoeuvring area	Category D
	Essential electrical services ⁽²⁾ of a Class 2 or Class 3	Category A ⁽⁶⁾

	building only	
	Basement parking entry ⁽³⁾	Category C + 300mm
Class 5, Class 6, or Class 8	Building floor level	Category C
	Garage or car park located in the building undercroft ⁽³⁾	Category C
	Carport ⁽⁴⁾ or unroofed car park	Category D
	Vehicular access and manoeuvring areas	Category D
	Basement parking entry ⁽³⁾	Category C
	Essential electrical services ⁽²⁾	Class 8 — Category C ⁽⁶⁾ Class 5 & 6 — Category A ⁽⁶⁾
Class 7a	Refer to the relevant building class specified in this table	
Class 7b	Building floor level	Category C
	Vehicular access and manoeuvring area	Category D
	Essential electrical services ⁽²⁾	Category C
Class 9	Building floor level	Category A
	Building floor level for habitable rooms in Class 9a or 9c where for a residential care facility	0.2% AEP flood
	Garage or car park located in the building undercroft ⁽³⁾	Category C
	Carport ⁽⁴⁾ or unroofed car park	Category D
	Vehicular access and manoeuvring areas	Category D
	Essential electrical services ⁽²⁾	Category A
Class 10a	Car parking facility	Refer to the relevant building class specified in this table

	Shed ⁽⁵⁾ or the like	Category D
Class 10b	Swimming pool	Category E
	Associated mechanical and electrical pool equipment	Category C
	Other structures	Flood immunity standard does not apply

Notes—

⁽¹⁾ Refer to the Building Code of Australia for definitions of building classifications.

⁽²⁾ Essential services include any room used for fire control panel, telephone PABX, sensitive substation equipment including transformers, low voltage switch gear, high-voltage switch gear, battery chargers, protection control and communication equipment, low voltage cables, high-voltage cables and lift controls.

⁽³⁾ Basement car parks must be suitably waterproofed and all air vents, air-conditioning ducts, pedestrian access and entry and exit ramps at the car park entrance have flood immunity in accordance with this table.

⁽⁴⁾ A shelter for a motor vehicle, which has a roof and one or more open sides, and which can be built against the side of a building.

⁽⁵⁾ A slight or rough structure built for shelter and storage; or a large strongly built structure, often open at the sides or end.

⁽⁶⁾ Where essential services are proposed in a basement below the specified flood planning level, the flood immunity of all air vents, air-conditioning ducts, pedestrian access, lift shafts and entry/exit ramps at the basement entrance and any other openings into that basement must conform to Category A for Residential development, and the relevant basement entry level of all other uses. This will require a waterproof basement design to prevent floodwaters entering the basement to ensure flood immunity.

Note—A flood event with an AEP of 2% is the equivalent of a 50 year ARI flood event.

Note—A flood event with an AEP of 0.2% is the equivalent of a 500 year ARI flood event.

Note—Where a building has a combination of uses that includes a component of class 2, 3 or 9, the essential services for that building shall comply with the requirements of the building class with the greatest flood immunity requirement.

Note—Use classes for residential development also include basement storage.

Table 9.4.9.3.D—Flood planning levels for a new road

Flooding type ⁽¹⁾	Minimum design levels at the crown of the road (m AHD) ⁽²⁾	
	Residential development	Industrial or commercial development
Waterway ^(A) or open channel	1% AEP flood level	2% AEP flood level
Overland flow flooding ^(B)	2% AEP flood level	2% AEP flood level

Notes—

⁽¹⁾ Where the site is subject to more than 1 type of flooding, the minimum flood planning level is the highest level determined from these sources. It should be noted that the flooding planning level in some older areas

is often controlled by local ponding.

(2) Where flood levels are not available from Council's Floodwise Property Report, such as overland flow flooding, the applicant will need to engage a suitably qualified Registered Professional Engineer Queensland with expertise in undertaking flood studies to estimate the relevant flood level.

Note ^(A) A waterway including any indicated on the planning scheme maps is defined as any element of a river, creek, stream, gully or drainage channel, including the bed and banks typically with a catchment area greater than 30ha.

Note ^(B) Overland flow flooding usually occurs when the capacity of the underground piped drainage system is exceeded and/or when the overland flow path is blocked. Localised overland flow paths generally traverse along roadways, and in the older established areas, through private properties within existing low points and gullies. A localised overland flow path is not characterised by well-defined bed and banks and the contributing catchment is generally less than 30ha.

Note—A flood event with an AEP of 1% is the equivalent of a 100 year ARI flood event.

Note—A flood event with an AEP of 2% is the equivalent of a 50 year ARI flood event.

Note—A flood event with an AEP of 5% is the equivalent of a 20 year ARI flood event.

Table 9.4.9.3.E—Flood planning levels for essential community infrastructure

Type of essential community infrastructure	Minimum design levels
Emergency services	0.2% AEP flood
Emergency services, where for an emergency shelter	0.5% AEP flood
Emergency services, where for police facilities	0.5% AEP flood
Hospital and health care service, where associated with a hospital	0.2% AEP flood
Community facility where involving storage of valuable records or items of historic or cultural significance (e.g. galleries and libraries)	0.5% AEP flood
State-controlled roads Major or minor electricity infrastructure not otherwise listed in this table Utility installation where for rail transport services Air service Telecommunications facility	No specific recommended level but development proponents should ensure that the infrastructure is optimally located and designed to achieve suitable levels of service, having regard to the processes and policies of the administering government agency.
Power stations (as defined in the <i>Electricity Act 1994</i>) or renewable energy facility.	0.2% AEP flood
Major electricity infrastructure where a major switch yard	0.2% AEP flood

Substations	0.5% AEP flood
Utility installation where for a sewage treatment plant	DFE
Utility installation where for a water treatment plant	0.5% AEP flood

Note—A flood event with an AEP of 0.2% is the equivalent of a 500 year ARI flood event.

Note—A flood event with an AEP of 0.5% is the equivalent of a 200 year ARI flood event.

Table 9.4.9.3.F—Flood planning levels for reconfiguring a lot

Flooding type ⁽¹⁾	Minimum lot levels (m AHD) ⁽²⁾	
	Residential	Other than residential
Waterway ^(A) or open channel	1% AEP flood level + 300mm	1% AEP flood level
Overland flow flooding ^(B)	1% AEP flood level + 300mm	2% AEP flood level

Notes—

⁽¹⁾ Where the site is subject to more than one type of flooding, the minimum flood immunity level is the highest level determined from these sources.

⁽²⁾ Where flood levels are not available from Council's Floodwise Property Report such as overland flow flooding, the applicant will need to engage a suitably qualified Registered Professional Engineer Queensland with expertise in undertaking flood studies to estimate the relevant flood level.

Note ^(A) A waterway including any indicated on the planning scheme maps is defined as any element of a river, creek, stream, gully or drainage channel, including the bed and banks typically with a catchment area greater than 30ha.

Note ^(B) Overland flow flooding usually occurs when the capacity of the underground piped drainage system is exceeded or when the overland flow path is blocked. Localised overland flow paths generally traverse along roadways, and in the older established areas, through private properties within existing low points and gullies. A localised overland flow path is not characterised by well-defined bed and banks and the contributing catchment is generally less than 30ha.

Note—A flood event with an AEP of 1% is the equivalent of a 100 year ARI flood event.

Note—A flood event with an AEP of 2% is the equivalent of a 50 year ARI flood event.