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:
2. 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
3. impact assessable development, to the extent relevant.
4. 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:
3. 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.
4. Development protects public health and safety and protects against damage or nuisance caused by stormwater flows.
5. Development has a stormwater management system which maintains, recreates or minimises impact to natural catchment hydrological processes.
6. Development ensures that the environmental values of the city’s waterways are protected or enhanced.
7. Development minimises run-off, including peak flows.
8. Development maintains or enhances the efficiency and integrity of the stormwater infrastructure network.
9. 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

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| --- | --- |
| Performance outcomes | Acceptable outcomes |
| 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-based stormwater management plan for high risk development only. | |
| PO1  Development provides a stormwater management system which achieves the integrated management of stormwater to:   1. minimise flooding; 2. protect environmental values of receiving waters; 3. maximise the use of water sensitive urban design; 4. minimise safety risk to all persons; 5. maximise the use of natural waterway corridors and natural channel design principles.   Editor’s note—The stormwater management system to be developed to address PO1 is not intended to require management of stormwater quality. | AO1  Development provides a stormwater management system designed in compliance with the Infrastructure design planning scheme policy. |
| 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. | AO2.1  Development does not result in an increase in flood level or flood hazard on up slope, down slope or adjacent premises. |
| AO2.2  Development provides a stormwater management system which is designed in compliance with the standards in the Infrastructure design planning scheme policy. |
| PO3  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. | AO3.1  Development ensures that the location of the stormwater drainage system is contained within a road reserve, drainage reserve, public pathway, park or waterway corridor. |
| AO3.2  Development provides a stormwater management system which is designed in compliance with the standards in the Infrastructure design planning scheme policy. |
| AO3.3  Development obtains a lawful point of discharge in compliance with the standards in the Infrastructure design planning scheme policy. |
| AO3.4  Where on private land, all underground stormwater infrastructure is secured by a drainage easement. |
| 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. | 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. |
| AO4.2  Development provides sufficient area to convey run-off which will comply with the standards in the Infrastructure design planning scheme policy. |
| 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. | AO5  Development ensures the design of stormwater channels, creek modifications or other infrastructure, permits terrestrial and aquatic fauna movement. |
| PO6  Development ensures that location and design of stormwater detention and water quality treatment:   1. minimises risk to people and property; 2. provides for safe access and maintenance; 3. minimises ecological impacts to creeks and waterways. | AO6.1  Development locates stormwater detention and water quality treatment:   1. outside of a waterway corridor; 2. offline to any catchment not contained within the development. |
| 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. |
| PO7  Development is designed, including any car parking areas and channel works to:   1. reduce property damage; 2. provide safe access to the site during the defined flood event. | 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). |
| 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. |
| 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. | AO8.1  Development ensures natural waterway corridors and drainage paths are retained. |
| 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.  Editor’s note—Guidance on natural channel design principles can be found in the Council’s publication Natural channel design guidelines. |
| 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. |
| 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. |
| 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. | AO9  No acceptable outcome is prescribed. |
| 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. | AO10  No acceptable outcome is prescribed. |
| PO11  Development provides for the orderly development of stormwater infrastructure within a catchment, having regard to the:   1. existing capacity of stormwater infrastructure within and external to the site, and any planned stormwater infrastructure upgrades; 2. safe management of stormwater discharge from existing and future up-slope development; 3. implication for adjacent and down-slope development. | AO11.1  Development with up-slope external catchment areas provides a drainage connection sized for ultimate catchment conditions that is directed to a lawful point of discharge. |
| AO11.2  Development ensures that existing stormwater infrastructure that is undersized is upgraded in compliance with the Infrastructure design planning scheme policy. |
| PO12  Development provides stormwater infrastructure which:   1. remains fit for purpose for the life of the development and maintains full functionality in the design flood event; 2. can be safely accessed and maintained cost effectively; 3. ensures no structural damage to existing stormwater infrastructure. | AO12.1  The stormwater management system is designed in compliance with the Infrastructure design planning scheme policy. |
| 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. |
| 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:   1. the environmental values and water quality objectives of waters; 2. waterway hydrology; 3. the maintenance and serviceability of stormwater infrastructure.   Note—The Infrastructure design planning scheme policy outlines the appropriate measures to be taken into account to achieve the performance outcome. | AO13  No acceptable outcome is prescribed. |
| PO14  Development ensures that:   1. unnecessary disturbance to soil, waterways or drainage channels is avoided; 2. all soil surfaces remain effectively stabilised against erosion in the short and long term. | AO14  No acceptable outcome is prescribed. |
| PO15  Development does not increase:   1. the concentration of total suspended solids or other contaminants in stormwater flows during site construction; 2. run-off which causes erosion either on site or off site. | AO15  No acceptable outcome is prescribed. |
| Section B—Additional performance outcomes and acceptable outcomes which apply to high-risk development, being one or more of the following:   1. a material change of use for an urban purpose which involves greater than 2,500m2 of land that: 2. will result in an impervious area greater than 25% of the net developable area; or 3. will result in 6 or more dwellings. 4. reconfiguring a lot for an urban purpose that involves greater than 2,500m2 of land and will result in 6 or more lots; 5. operational work for an urban purpose which involves disturbing greater than 2,500m2 of land. | |
| 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 *Environmental Protection Act 1994*.  Note—Compliance with the performance outcome should be demonstrated by the submission of a site-based stormwater management plan for high-risk development only. | AO16  Development provides a stormwater management system which is designed in compliance with the standards in the Infrastructure design planning scheme policy. |
| PO17  Development ensures that:   1. the discharge of wastewater to a waterway or external to the site is avoided; or 2. if the discharge cannot practicably be avoided, the development minimises wastewater discharge through re-use, recycling, recovery and treatment.   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. | AO17  No acceptable outcome is prescribed. |
| Section C—Additional performance outcomes and acceptable outcomes for assessable development for a material change of use or reconfiguring a lot | |
| PO18  Development protects stormwater infrastructure to ensure the following are not compromised:   1. the long term infrastructure for the stormwater network in the Long term infrastructure plans; 2. the existing and planned infrastructure for the stormwater network in the Local government infrastructure plan; 3. the provision of long term, existing and planned infrastructure for the stormwater network which: 4. is required to service the development or an existing and future urban development in the planning scheme area; or 5. is in the interests of rational development or the efficient and orderly planning of the general area in which the site is situated.   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. | AO18  Development protects stormwater infrastructure in compliance with the following:   1. for long term infrastructure for the stormwater network, the Long term infrastructure plans; 2. for existing and planned infrastructure for the stormwater network, the Local government infrastructure plan; 3. the standards for stormwater drainage in the Infrastructure design planning scheme policy. |
| PO19  Development provides for the payment of extra trunk infrastructure costs for the following:   1. for development completely or partly outside the priority infrastructure area in the https://www.brisbane.qld.gov.au/planning-building/planning-guidelines-tools/local-government-infrastructure-plan-lgip-2016-2026Local government infrastructure plan; 2. for development completely inside the priority infrastructure area in the Local government infrastructure plan involving: 3. trunk infrastructure that is to be provided earlier than planned in the Local government infrastructure plan; 4. long term infrastructure for the stormwater network which is made necessary by development that is not assumed future urban development; 5. other infrastructure for the stormwater network associated with development that is not assumed future urban development which is made necessary by the development.   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.  Editor's note—See section 130 Imposing Development conditions (Conditions for extra trunk infrastructure costs) of the *Planning Act 2016*. | AO19  No acceptable outcome is prescribed. |

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 +500mm | 2% AEP flood level +300mm | 2% AEP flood level | 2% AEP flood level | 5% AEP flood level |

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 building only | Category A(6) |
| 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 *Electricity Act 1994*) 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

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| --- | --- | --- |
| 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.