* + 1. Infrastructure works code
			1. **Application**
1. This code applies to development identified as requiring assessment against the Infrastructure works code by the Tables of Assessment in Part 5.
2. When using this code, reference should be made to Part 5.
	* + 1. **Purpose**
3. The purpose of the Infrastructure works code is to ensure that infrastructure is provided in a manner and to a standard that meets the development’s needs, the community’s needs and is safe, efficient, and maintains and enhances the environmental qualities of the Region.
4. The purpose of the code will be achieved through the following overall outcomes:
	1. infrastructure provision meets the needs of development and is safe and efficient; infrastructure is provided to the relevant standards;
	2. development achieves high environmental standards;
	3. development is located, designed, constructed and managed to avoid or minimise impacts arising from altered stormwater quality or flow, wastewater discharge, and the creation of non-tidal artificial waterways;
	4. development maintains the integrity of existing infrastructure;
	5. development does not detract from environmental values or the desired character and amenity of an area.
		* 1. **Assessment benchmarks and requirements**

**Table** [**9.3.5.3**](#_bookmark0)**.a – Infrastructure works code – benchmarks for assessable development and requirements for accepted development**

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| **Performance outcomes** | **Acceptable outcomes** | **Applicant response** |
| **For accepted development subject to requirements and assessable development** |
| **Road reserve** |
| **PO1**Development:(a) does not impede the function of the road; | **AO1.1**Development, other than Operational works by or for a public sector entity, and any associated buildings and structures, other than road infrastructure, is not located in the road reserve. |  |



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| 1. ensures the safe and efficient movement of vehicles, pedestrians and cyclists to and from the site and adjacent to the site;
2. does not have an adverse impact on the amenity of the site or surrounding area.
 | Note – Buildings and structures includes but is not limited to, decks, verandahs, porte-cocheres, layover bays, stairs, ramps or other accessibility structures, posts, fire hydrant boosters or cabinets. Accessibility structures are those features required to provide access to premises for people with a disability, including ramps and lifting devices and includes any changes of grade required to provide access for people with a disability, including retrofitting accessibility features in an existing building. |  |
| **AO1.2**Development and any associated works, does not alter the grade of the road verge:1. by more than 2.5%; or
2. where the existing crossfall of the road verge exceeds 2.5% in any direction, development, and any associated works does not alter the existing crossfall of the verge.
 |  |
| **Utilities** |
| **PO2**Development for new lots is connected to energy and telecommunications supply networks. | **AO2.1**Development for new lots is connected to the electricity and telecommunications networks in accordance with the requirements of the relevant utility provider. |  |
| **AO2.2**Where development is connected to the gas network, it is connected in accordance with the relevant standards contained in Planning Scheme Policy – FNQROC Regional Development Manual D8 Utilities. |  |
| **PO3**Padmount electricity infrastructure is incorporated into the design of development and | **AO3.1**Where Padmount electricity infrastructure is required, it is: |  |

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| does not have an adverse impact on the amenity of the site or surrounding area. | 1. not located on land used for open space or sport and recreation purposes;
2. screened from view by landscaping and/or fencing;
3. accessible for maintenance; and
4. where development is located in a Centre zone, located within the building and screened from view and does not compromise activity or visual integration from the streetscape and the private realm.
 |  |
| **Stormwater** |
| **PO4**Development, other than Building work, is designed and constructed to ensure stormwater is directed to a lawful point of discharge and has a no worsening effect on downstream or upstream properties. | **AO4.1**Stormwater associated with development, other than Building Work, is discharged to:1. a lawful connection provided from the premises to Council’s stormwater network; or
2. land under Local Government control that has a lawful drainage function immediately adjoining to the premises; or
3. an easement for drainage purpose immediately adjoining to the premises; or
4. where the site cannot discharge to a, b or c, stormwater is discharged from the site in a manner that does not result in:
	1. change to the location of stormwater discharge;
	2. an increase to peak flow velocity or volume;
	3. a concentration in stormwater discharge.

Note – The Queensland Urban Drainage Manual provides guidance on lawful points of discharge (Section 3.9). |  |

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|  | **AO4.2**Stormwater discharge must have a no worsening effect on downstream or upstream properties, associated with the following:1. diversion of stormwater;
2. concentration of stormwater flows;
3. changes in other flow characteristics;
4. changes that affect the future use of land.

Note – The Queensland Urban Drainage Manual provides guidance on changes to stormwater (Section 3.6) for the purpose of determining no worsening. |  |
| **Water supply** |
| **PO5**Development provides an adequate, safe and reliable supply of potable, firefighting and general use water. | **AO5.1**Development provides a connection to Council’s reticulated water supply system, that is:1. an existing connection; or
2. a connection provided in accordance with the relevant standards contained in Planning Scheme Policy – FNQROC Regional Development Manual;

or**AO5.3**Where a reticulated water supply system is not available to the premises, an on-site water storage tank/s with a minimum capacity of 30,000 litres and access to the tank/s for fire trucks is provided for each new dwelling. |  |
| **Wastewater** |
| **PO6**Development provides for adequate treatment and disposal of wastewater. | **AO6.1**Development provides a connection to Council’s reticulated wastewater system, that is:(a) an existing connection; or |  |

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|  | (b) a connection provided in accordance with the relevant standards contained in Planning Scheme Policy – FNQROC Regional Development Manual;or**AO6.3**Where a reticulated wastewater system is not available to the premises, an on-site sewage facility or an environmentally relevant on-site sewage facility for treating and disposing sewage produced on the premises is provided in accordance with the requirements of the *Plumbing and Drainage Act 2018* and the relevant standards contained in Planning Scheme Policy - FNQROC Regional Development Manual. |  |
| **Damage and repair to existing infrastructure** |
| **PO7**Development ensures that any damage to existing infrastructure that occurs as a result of the development and any associated works is repaired to maintain the safe and efficient functioning of existing infrastructure. | **AO7.1**Any damage to existing infrastructure that occurs as a result of development and any associated works is repaired to the relevant standards contained in Planning Scheme Policy– FNQROC Regional Development Manual. |  |
| **AO7.2**Where existing footpaths are damaged as a result of development and any associated works, footpaths are reinstated ensuring:1. the damaged panel (not less than a 1.2 metre section) is replaced;
2. similar surface finishes are used;
3. it is to the relevant standards contained in Planning Scheme Policy – FNQROC
 |  |

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|  | Regional Development Manual – Standard Drawing S1035. |  |
| **AO7.3**Where existing grassed areas of the road verge are damaged as a result of development and any associated works, the damaged areas are reinstated ensuring:1. grass is reinstated to the damaged areas;
2. there is no separation in level or change in grade between the damaged and undamaged areas.

Note – artificial grass or turf is not used to reinstate existing grassed areas of the road verge that are damaged as a result of development and any associated works. |  |
| **For assessable development** |
| **Road construction** |
| **PO8**Development provides road infrastructure that:1. ensures the safe and efficient movement of vehicles, pedestrians and cyclists to and from the site and adjacent to the site;
2. connects with the adjoining and surrounding road infrastructure;
3. does not have any adverse impacts on existing road infrastructure.
 | **AO8.1**Road infrastructure is provided in accordance with the relevant standards for the particular hierarchy of the road as contained within Planning Scheme Policy – FNQROC Regional Development Manual.Note – Road hierarchies are shown in the Transport network overlay – Road hierarchy maps contained in Schedule 2. |  |
| **Stormwater** |
| **PO9**Development provides a stormwater drainage system which:(a) does not cause adverse stormwater drainage impacts to surrounding properties | **AO9.1**Development provides a stormwater drainage system that is designed and constructed to convey stormwater from the premises to Council’s drainage system in accordance with |  |

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| (including upstream or downstream of the site);1. is of sufficient capacity to safely convey stormwater from the catchment of the site;
2. minimises risk to people and property;
3. protects the environmental values of receiving waters;
4. provides for safe access and maintenance.
 | the relevant standards contained in Planning Scheme Policy – FNQROC Regional Development Manual.or**AO9.2**Development provides a stormwater drainage system that is designed and constructed to:1. safely convey minor and major stormwater flows to the lawful point of discharge;
2. achieve the stormwater management design objectives (post-construction phase) contained in Table 9.3.5.3.c;
3. maintain the natural hydraulic behaviour of catchments;
4. maintain waterway/waterbody health, biodiversity and ecosystem function.

Note – To satisfy the requirements of AO9.2 a drainage study is to be prepared and certified by a suitably qualified Registered Professional Engineer of Queensland (RPEQ). |  |
| **PO10**Development is designed, constructed and operated to avoid or minimise adverse construction related impacts on stormwater quality in natural and developed catchments by:1. achieving stormwater quality objectives;
2. protecting natural ecosystems and environmental values;
3. maintaining waterway hydrology.
 | **AO10.1**A stormwater quality management plan is prepared, and provides for achievable stormwater quality treatment measures meeting design objectives listed in Table 9.3.5.3.b, reflecting land use constraints, such as:1. erosive, dispersive and/or saline soil types;
2. landscape features (including landform);
3. acid sulfate soil and management of nutrients of concern; and
4. rainfall erosivity.

Note – To assist in satisfying the requirements of AO10.1, the stormwater quality management plan is to be prepared and certified by a suitably qualified Registered Professional Engineer of Queensland (RPEQ). |  |

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|  | **AO10.2**An erosion and sediment control plan is prepared that demonstrates that the release of sediment-laden stormwater is avoided for the nominated design storm event, and minimised when it is exceeded by addressing design objectives listed in Table 9.3.5.3.b for:1. drainage control;
2. erosion controls;
3. sediment control;
4. water quality outcomes;
5. waterway stability and flood flow management.

Note – During construction phases of development, contractors and builders are to have consideration in their work methods and site preparation for their environmental duty to protect stormwater quality.Note – To assist in satisfying the requirements of AO12.2, the erosion and sediment control plan is to be prepared and certified by a suitably qualified Registered Professional Engineer of Queensland (RPEQ). |  |
| **AO10.3**Erosion and sediment control practices are designed, installed, constructed, monitored, maintained, and carried out in accordance with the erosion and sediment control plan. |  |
| **Lighting** |
| **PO11**Development provides lighting to roads and parks that provides appropriate levels of illumination for the safe and efficient movement of vehicles, pedestrians and cyclists and users of open space. | **AO11.1**Development provides road and park lighting in accordance with the relevant standards contained in Planning Scheme Policy - FNQROC Regional Development Manual D8 Utilities. |  |

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| **Pathways** |
| **PO12**Development provides active transport infrastructure in appropriate locations and at the appropriate standard. | **AO12.1**Pathways (including footpaths, cycle paths, shared pathways and kerb ramp crossovers) are located where identified in accordance with the following:1. The Planning Scheme Policy - FNQROC Regional Development Manual for the following hierarchy of road to the frontage of the site; Access Street, Minor Collector Road, Major Collector Road, Sub Arterial Road, Arterial Road and Industrial Collector Street; or
2. The Transport network overlay - Pedestrian network and cycle network overlay maps contained in Schedule 2; or
3. The network plans contained in Council’s Active Transport Strategy; or
4. The Local Government Infrastructure Plan Transport network - Pedestrian and cycle movement - Plans for trunk infrastructure maps contained in Schedule 3.

Note - Council’s Active Transport Strategy provides guidance on the pedestrian and cycle infrastructure identified on the transport network overlay - pedestrian network maps and cycle network maps contained in Schedule 2. |  |
| **AO12.2**Pathways are provided in accordance with the relevant standards contained in the Planning Scheme Policy - FNQROC Regional Development Manual – Standard Drawing S1035. |  |
| **Trunk infrastructure provision** |
| **PO13** | **AO13.1**No acceptable outcomes identified. |  |

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| Development is designed and constructed in accordance with the Local Government Infrastructure Plan (and mapping and supporting material) contained within Part 4 and Schedule 3.Note – trunk infrastructure is the infrastructure shown in the Local Government Infrastructure Plan for the following networks:* water supply;
* wastewater;
* stormwater;
* transport (roads and pedestrian and cycle movement)
* public parks and land for community facilities.

The Plans for trunk infrastructure contained in Schedule 3 identify the location of future trunk infrastructure.The Schedule of Works in Part 4 Local Government Infrastructure Plan contains details of the trunk infrastructure, including timing. |  |  |
| **Network utility infrastructure** |
| **PO14**Development provides utility network infrastructure is located, designed and constructed to the relevant standards contained in Planning Scheme Policy – FNQROC Regional Development Manual.Note – Network utility infrastructure includes water supply, wastewater; stormwater, energy supply and telecommunications network infrastructure. | **AO14.1**No acceptable outcomes identified. |  |
| **Firefighting infrastructure** |
| **PO15**Development provides firefighting infrastructure in accordance with the relevant standards contained in Planning Scheme Policy – FNQROC Regional Development Manual. | **AO15.1**Hydrants are located, designed and constructed in accordance with the relevant standard contained in Planning scheme policy – FNQROC Regional Development Manual. |  |

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|  | **AO15.2**Hydrants are suitably identified so that fire services can locate them at all hours.Note – Hydrants are identified as specified in the Department of Transport and Main Roads Technical Note: ‘Identification of street hydrants for fire fighting purposes’ available under ‘Publications’. Planning scheme policy – FNQROC Regional Development Manual Standard drawing S2005 also includes details for road marking to identify hydrant locations. |  |
| **AO15.3**Residential streets and common access ways within a common private title have hydrants placed at intervals of not more than 120 metres and at each intersection. Hydrants may be situated above or below ground. Above ground Hydrants may have a single outlet |  |
| **AO15.4**Commercial and industrial streets and access ways within streets serving commercial and industrial properties such as factories, warehouses and offices are provided with above or below ground fire hydrants at not more than 90 metre intervals and at each street intersection. Above ground fire hydrants have dual valved outlets. |  |
| **Construction management** |
| **PO16**Construction activities and works are undertaken in a manner that avoids, mitigates and minimises any adverse impacts on the road network and users, public safety and the amenity of the surrounding area. | **AO16.1**Development, and any associated construction activities, including but not limited to: the loading and unloading, or storage, of materials or the storage of vehicles does not occur within the road reserve. |  |

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|  | or**AO16.2**Development is undertaken in accordance with a traffic management plan prepared by a suitably qualified and experienced person in accordance with the Manual of Uniform Traffic Control Devices Part 3 and the Austroads Guide to Temporary Traffic Management Part 2: Traffic Management Planning. |  |
| **PO17**Construction activities and works are undertaken in a manner that avoids, mitigates and minimises any adverse impacts on public safety, the amenity of the surrounding area or the environment.Note – A construction management plan prepared by a suitably qualified person may be required to demonstrate compliance with the Performance Outcome. A construction management plan, should include but is not limited to the following matters:1. Screening of works such that nuisance to nearby residents and businesses does not occur;
2. Construction signage;
3. Dust, noise, odour and light emission suppression and management to avoid nuisance;
4. Hours of carrying out works in accordance with the Environmental Protection Act and Policies;
5. Storage of machinery, material and vehicles onsite so as to avoid creating a nuisance to surrounding properties and roads;
6. Construction access arrangements;
7. Relevant approvals to the carrying out of works (including this approval and any subsequent approvals, including permits under local laws);
8. Weed and pest species management and
9. Any associated Erosion and Sediment Control Plan or Traffic Management Plan.
 | **AO17.1**Construction activities and works are undertaken in accordance with the relevant standards and procedures contained in the Planning Scheme Policy - FNQROC Regional Development Manual - CP1 Construction procedures. |  |
| **AO17.2**Prior to the commencement of any construction activities, public notices and project signage are placed in accordance with the relevant standards and procedures contained in the Planning Scheme Policy - FNQROC Regional Development Manual - CP1 Construction procedures. |  |

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| **PO18**Work is undertaken in a manner which minimises adverse impacts on vegetation that is to be retained. | **AO18.1**Works include, at a minimum:1. installation of protective fencing around retained vegetation during construction;
2. erection of advisory signage;
3. no disturbance, due to earthworks or storage of plant, materials and equipment, of ground level and soils below the canopy of any retained vegetation;
4. removal of declared noxious weeds.
 |  |
| **Non tidal artificial waterways** |
| **PO19**Development involving non-tidal artificial waterways is planned, designed, constructed and operated to:1. protect natural ecosystems and environmental values;
2. be compatible with the land use constraints for the site for protecting natural ecosystems and environmental values;
3. be compatible with existing tidal and non- tidal waterways;
4. perform a function in addition to stormwater management;
5. achieve water quality objectives**.**
 | **AO19.1**Development involving non-tidal artificial waterways ensures:1. environmental values in downstream waterways are protected;
2. any groundwater recharge areas are not affected;
3. the location of the waterway incorporates low lying areas of the catchment connected to an existing waterway;
4. existing areas of ponded water are included.
 |  |
| **AO19.2**Non-tidal artificial waterways are located:1. outside natural wetlands and any associated buffer areas;
2. to minimise disturbing soils or sediments;
3. to avoid altering the natural hydrologic regime in acid sulphate soil and nutrient hazardous areas.
 |  |
| **AO19.3**Non-tidal artificial waterways located adjacent to, or connected to a tidal waterway by means of a weir, lock, pumping system or similar ensures: |  |

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|  | 1. water levels are maintained to prevent lowering of groundwater within adjacent acid sulfate soil;
2. there is sufficient flushing or a tidal range of

>0.3m;1. any tidal flow alteration does not adversely impact on the tidal waterway;
2. there is no introduction of salt water into freshwater environments.
 |  |
| **AO19.4**Non-tidal artificial waterways are designed and managed for any of the following end-use purposes:1. amenity (including aesthetics), landscaping or recreation; or
2. flood management, in accordance with a drainage catchment management plan; or
3. stormwater harvesting plan as part of an integrated water cycle management plan; or
4. aquatic habitat.
 |  |
| **AO19.5**The end-use purpose of the non-tidal artificial waterway is designed and operated in a way that protects natural ecosystems and environmental values. |  |
| **AO19.6**Monitoring and maintenance programs adaptively manage water quality to achieve relevant water quality objectives downstream of the non-tidal artificial waterway. |  |

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|  | **AO19.7**Aquatic weeds are managed to achieve a low percentage of coverage of the water surface area, and pests and vectors are managed through design and maintenance. |  |

**Table** [**9.3.5.3.**](#_bookmark0)**b – Stormwater management design objectives (Construction phase)**

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| --- | --- |
| **Issue** | **Design objectives** |
| **Drainage control**(Temporary drainage works) | 1. Design life and design storm for temporary drainage works:
	1. Disturbed area open for <12 months—1 in 2-year ARI event;
	2. Disturbed area open for 12–24 months—1 in 5-year ARI event;
	3. Disturbed area open for > 24 months—1 in 10-year ARI event.
	4. Where works are located immediately up-slope of an occupied property that would be adversely affected by the failure or overtopping of the structure – 1 in 10-year ARI event.
2. Design capacity excludes minimum 150 mm freeboard.
3. Temporary culvert crossing—minimum 1 in 1-year ARI hydraulic capacity.
 |
| **Erosion control**(Erosion control measures) | 1. Minimise exposure of disturbed soils at any time.
2. Divert water run-off from undisturbed areas around disturbed areas.
3. Determine the erosion risk rating using local rainfall erosivity, rainfall depth, soil-loss rate or other acceptable methods.
4. Implement erosion control methods corresponding to identified erosion risk rating.
 |
| **Sediment control**(Sediment control measures, Design storm for sediment control basins, Sediment basin dewatering) | 1. Determine appropriate sediment control measures using:
	1. potential soil loss rate; or
	2. monthly erosivity; or
	3. average monthly rainfall.
2. Collect and drain stormwater from disturbed soils to sediment basin for design storm event:
	1. design storm for sediment basin sizing is 80th% five-day event or similar.
3. Site discharge during sediment basin dewatering:
	1. TSS < 50 mg/L TSS; **or**
	2. Turbidity not >10% receiving waters turbidity, whichever is the lower: and
 |

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| **Issue** | **Design objectives** |
|  | (c) pH 6.5–8.5. |
| **Water quality**(Litter and other waste, hydrocarbons and other contaminants) | 1. Avoid wind-blown litter; remove gross pollutants.
2. Ensure there is no visible oil or grease sheen on released waters.
3. Dispose of waste containing contaminants at authorised facilities.
 |
| **Waterway stability and flood flow management**(Changes to the natural waterway hydraulics and hydrology) | (1) For peak flow for the 100% AEP event and 1% AEP event, use constructed sediment basins or appropriate alternatives to attenuate the discharge rate of stormwater from the site |

**Table** [**9.3.5.3**](#_bookmark0)**.c – Stormwater management design objectives (post-construction phase)**

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| --- | --- |
| **Design objectives****Minimum reductions in mean annual load from unmitigated development (%)** | **Application** |
| Total suspended solids (TSS) | Total phosphorus (TP) | Total nitrogen (TN) | Gross pollutants>5 mm |
| 80 | 60 | 40 | 90 | Development for urban purposesExcludes development that is less than 25% impervious.In lieu of modelling, the default bio-retention treatment area to comply with load reduction targets of 1.5% of the contributing catchment area. |
| Waterway stability management(1) Limit the peak 100% AEP event discharge within the receiving waterway to the pre-development peak 100% AEP event discharge. | Catchments contributing to un-lined receiving waterway. Degraded waterways may seek alternative discharge management objectives to achieve waterway stability.For peak flow for the 100% AEP event, use collocated storages to attenuate site discharge rate of stormwater. |