

9.4.6 Infrastructure works code

9.4.6.1 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.

9.4.6.2 Purpose

- (1) The purpose of the Infrastructure works code is to ensure that development is safely and efficiently serviced by and connected to infrastructure.
- (2) The purpose of the code will be achieved through the following overall outcomes:
 - (a) the standards of water supply, waste water treatment and disposal, stormwater drainage, local electricity supply, telecommunications, footpaths and road construction meet the needs of development and are safe and efficient;
 - (b) development maintains high environmental standards;
 - (c) 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;
 - (d) the integrity of existing infrastructure is maintained;
 - (e) development does not detract from environmental values or the desired character and amenity of an area.

9.4.6.3 Criteria for assessment

Part A - Criteria for self-assessable and assessable development

Table 9.4.6.3.a – Infrastructure works code – self-assessable and assessable development

Performance outcomes	Acceptable outcomes
For self-assessable and assessable development	
Works on a local government road	
<p>PO1 Works on a local government road do not adversely impact on footpaths or existing infrastructure within the road verge and maintain the flow, safety and efficiency of pedestrians, cyclists and vehicles.</p>	<p>AO1.1 Footpaths/Pathways are located in the road verge and are provided for the hierarchy of road and located, designed and constructed in accordance with Planning scheme policy – FNQROC Regional Development Manual.</p>
	<p>AO1.2 Kerb ramp crossovers are constructed in accordance with Planning scheme policy – FNQROC Regional Development Manual.</p>
	<p>AO1.3 New pipes, cables, conduits or other required to cross existing footpaths; (a) are installed via trenchless methods; or (b) where footpath is removed to install infrastructure, the new section of footpath is installed to the standard detailed in the Planning scheme policy – FNQROC Regional Development Manual and is not less than a 1.2 metre section.</p>

Performance outcomes	Acceptable outcomes
	<p>AO1.4 Where existing footpaths are damaged as a result of development, footpaths are reinstated ensuring:</p> <ul style="list-style-type: none"> (a) similar surface finishes are used; (b) there is no change in level at joins of new and existing sections; (c) new sections are matched to existing in terms of dimension and reinforcement. <p>Note – Figure 9.4.6.3.a provides guidance on meeting the outcomes.</p> <p>AO1.5 Decks, verandahs stairs, posts and other structures located in the road reserve do not restrict or impede pedestrian movement on footpaths or change the level of the road verges.</p>
Accessibility structures	
<p>PO2 Development is designed to ensure they are accessible for people of all abilities and accessibility features do not impact on efficient and safe use of footpaths.</p>	<p>AO2.1 Accessibility structures are not located within the road reserve.</p> <p>AO2.2 Accessibility structures are designed in accordance with Australian Standard AS1428.3.</p> <p>AO2.3 When retrofitting accessibility features in existing buildings, all structures and changes of grade are contained within the boundaries of the lot and not within the road reserve.</p> <p>Note – Accessibility features are those features required to ensure access to premises is provided for people of all abilities and include ramps and lifting devices.</p>
Water supply	
<p>PO3 An adequate, safe and reliable supply of potable, fire fighting and general use water is provided.</p>	<p>AO3.1 The premises is connected to Council's reticulated water supply system in accordance with the Design Guidelines set out in Section D6 of the Planning scheme policy – FNQROC Regional Development Manual;</p> <p>or</p> <p>AO3.2 Where a reticulated water supply system is not available to the premises, 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 house or other development. Tank/s are to be fitted with a 50mm ball valve with a camlock fitting and installed and connected prior to occupation of the house and sited to be visually unobtrusive.</p>
Treatment and disposal of effluent	

Performance outcomes	Acceptable outcomes
<p>PO4 Provision is made for the treatment and disposal of effluent to ensure that there are no adverse impacts on water quality and no adverse ecological impacts as a result of the system or as a result of increasing the cumulative effect of systems in the locality.</p>	<p>AO4.1 The site is connected to Council's sewerage system and the extension of or connection to the sewerage system is designed and constructed in accordance with the Design Guidelines set out in Section D7 of the Planning scheme policy – FNQROC Regional Development Manual;</p> <p>or</p> <p>AO4.2 Where not in a sewerage scheme area, the proposed disposal system meets the requirements of Section 33 of the Environmental Protection Policy (Water) 1997 and the proposed on site effluent disposal system is designed in accordance with the Plumbing and Drainage Act (2002).</p>
Stormwater quality	
<p>PO5 Development is planned, designed, constructed and operated to avoid or minimise adverse impacts on stormwater quality in natural and developed catchments by:</p> <ul style="list-style-type: none"> (a) achieving stormwater quality objectives; (b) protecting water environmental values; (c) maintaining waterway hydrology. 	<p>AO5.1 A connection is provided from the premises to Council's drainage system;</p> <p>or</p> <p>AO5.2 An underground drainage system is constructed to convey stormwater from the premises to Council's drainage system in accordance with the Design Guidelines set out in Sections D4 and D5 of the Planning scheme policy – FNQROC Regional Development Manual.</p> <p>AO5.3 A stormwater quality management plan is prepared, and provides for achievable stormwater quality treatment measures meeting design objectives listed in Table 9.4.6.3.b and Table 9.4.6.3.c, reflecting land use constraints, such as:</p> <ul style="list-style-type: none"> (a) erosive, dispersive and/or saline soil types; (b) landscape features (including landform); (c) acid sulfate soil and management of nutrients of concern; (d) rainfall erosivity. <p>AO5.4 An erosion and sediment control plan demonstrates that release of sediment-laden stormwater is avoided for the nominated design storm, and minimised when the it is exceeded by addressing design objectives listed in Table 9.4.3.3.b for:</p> <ul style="list-style-type: none"> (a) drainage control; (b) erosion controls; (c) sediment control; (d) water quality outcomes. <p>AO5.5 Erosion and sediment control practices are</p>

Performance outcomes	Acceptable outcomes
	<p>designed, installed, constructed, monitored, maintained, and carried out in accordance with the erosion and sediment control plan.</p> <p>AO5.6 Development incorporates stormwater flow control measures to achieve the design objectives set out in Table 9.4.3.3.b and Table 9.4.3.3.c, including management of frequent flows, peak flows, and construction phase hydrological impacts.</p> <p>Note – Planning scheme policy - FNQROC Regional Development Manual provides guidance on soil and water control measures to meet the requirements of the Environmental Protection Act 1994.</p> <p>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.</p>
Non-tidal artificial waterways	
<p>PO6 Development involving non-tidal artificial waterways is planned, designed, constructed and operated to:</p> <ul style="list-style-type: none"> (a) protect water environmental values; (b) be compatible with the land use constraints for the site for protecting water environmental values; (b) be compatible with existing tidal and non-tidal waterways; (c) perform a function in addition to stormwater management; (d) achieve water quality objectives. 	<p>AO6.1 Development involving non-tidal artificial waterways ensures:</p> <ul style="list-style-type: none"> (a) environmental values in downstream waterways are protected; (b) any groundwater recharge areas are not affected; (c) the location of the waterway incorporates low lying areas of the catchment connected to an existing waterway; (d) existing areas of ponded water are included. <p>AO6.2 Non-tidal artificial waterways are located:</p> <ul style="list-style-type: none"> (a) outside natural wetlands and any associated buffer areas; (b) to minimise disturbing soils or sediments; (c) to avoid altering the natural hydrologic regime in acid sulphate soil and nutrient hazardous areas. <p>AO6.3 Non-tidal artificial waterways located adjacent to, or connected to a tidal waterway by means of a weir, lock, pumping system or similar ensures:</p> <ul style="list-style-type: none"> (a) there is sufficient flushing or a tidal range of >0.3m; or (b) any tidal flow alteration does not adversely impact on the tidal waterway; or (c) there is no introduction of salt water into freshwater environments. <p>AO6.4 Non-tidal artificial waterways are designed and managed for any of the following end-use purposes:</p> <ul style="list-style-type: none"> (a) amenity (including aesthetics), landscaping or recreation; or (b) flood management, in accordance with a drainage catchment management plan; or

Performance outcomes	Acceptable outcomes
	<p>(c) stormwater harvesting plan as part of an integrated water cycle management plan; or</p> <p>(d) aquatic habitat.</p> <p>AO6.5 The end-use purpose of the non-tidal artificial waterway is designed and operated in a way that protects water environmental values.</p> <p>AO6.6 Monitoring and maintenance programs adaptively manage water quality to achieve relevant water quality objectives downstream of the waterway.</p> <p>AO6.7 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.</p>
Wastewater discharge	
<p>PO7 Discharge of wastewater to waterways, or off site:</p> <p>(a) meets best practice environmental management;</p> <p>(b) is treated to:</p> <p>(i) meet water quality objectives for its receiving waters;</p> <p>(ii) avoid adverse impact on ecosystem health or waterway health;</p> <p>(iii) maintain ecological processes, riparian vegetation and waterway integrity;</p> <p>(iv) offset impacts on high ecological value waters.</p>	<p>AO7.1 A wastewater management plan is prepared and addresses:</p> <p>(a) wastewater type;</p> <p>(b) climatic conditions;</p> <p>(c) water quality objectives;</p> <p>(d) best practice environmental management.</p> <p>AO7.2 The wastewater management plan is managed in accordance with a waste management hierarchy that:</p> <p>(a) avoids wastewater discharge to waterways; or</p> <p>(b) if wastewater discharge to waterways cannot practicably be avoided, minimises wastewater discharge to waterways by re-use, recycling, recovery and treatment for disposal to sewer, surface water and groundwater.</p> <p>AO7.3 Wastewater discharge is managed to avoid or minimise the release of nutrients of concern so as to minimise the occurrence, frequency and intensity of algal blooms.</p>

Performance outcomes	Acceptable outcomes
	<p>AO7.4 Development in coastal catchments avoids or minimises and appropriately manages soil disturbance or altering natural hydrology and:</p> <ul style="list-style-type: none"> (a) avoids lowering groundwater levels where potential or actual acid sulphate soils are present; (b) manages wastewaters so that: <ul style="list-style-type: none"> (i) the pH of any wastewater discharges is maintained between 6.5 and 8.5 to avoid mobilisation of acid, iron, aluminium and metals; (ii) holding times of neutralised wastewaters ensures the flocculation and removal of any dissolved iron prior to release; (iii) visible iron floc is not present in any discharge; (iv) precipitated iron floc is contained and disposed of; (v) wastewater and precipitates that cannot be contained and treated for discharge on site are removed and disposed of through trade waste or another lawful method.
Electricity supply	
<p>PO8 Development is provided with a source of power that will meet its energy needs.</p>	<p>AO8.1 A connection is provided from the premises to the electricity distribution network;</p> <p>or</p> <p>AO8.2 The premises is connected to the electricity distribution network in accordance with the Design Guidelines set out in Section D8 of the Planning scheme policy – FNQROC Regional Development Manual.</p>
<p>PO9 Development incorporating padmount electricity infrastructure does not cause an adverse impact on amenity.</p>	<p>AO9.1 Padmount electricity infrastructure is:</p> <ul style="list-style-type: none"> (a) not located on land for open space or sport and recreation purposes; (b) screened from view by landscaping or fencing; (c) accessible for maintenance. <p>AO9.2 Padmount electricity infrastructure within a building in an activity centre and is designed and located to enable an active street frontage.</p> <p>Note – Padmounts in buildings in activity centres should not be located on the street frontage.</p>
Telecommunications	
<p>PO10 Development is connected to a</p>	<p>AO10.1 The development is connected to</p>

Performance outcomes	Acceptable outcomes
telecommunications service approved by the relevant telecommunication regulatory authority.	telecommunications infrastructure in accordance with the standards of the relevant regulatory authority.
<p>PO11 Provision is made for future telecommunications services (e.g. fibre optic cable).</p>	<p>AO11.1 Conduits are provided in accordance with Planning scheme policy – FNQROC Regional Development Manual.</p>
Road construction	
<p>PO12 The road to the frontage of the premises is constructed to provide for the safe and efficient movement of:</p> <ul style="list-style-type: none"> (a) pedestrians and cyclists to and from the site; (b) pedestrians and cyclists adjacent to the site; (c) vehicles on the road adjacent to the site; (d) vehicles to and from the site. (e) emergency vehicles. 	<p>AO12.1 The road to the frontage of the site is constructed in accordance with the Design Guidelines set out in Sections D1 and D3 of the Planning scheme policy – FNQROC Regional Development Manual, for the particular hierarchy of road.</p> <p>AO12.2 There is existing road, kerb and channel for the full road frontage of the site.</p> <p>AO12.3 Road access minimum clearances of 3.5 metres wide and 4.8 metres high are provided for safe passage of emergency vehicles.</p>
Alternations and repairs to public utility services	
<p>PO13 Infrastructure is integrated with and efficiently extends existing networks.</p>	<p>AO13.1 Development is designed to allow for efficient connection to existing infrastructure networks.</p>
<p>PO14 Development and works do not affect the efficient functioning of public utility mains, services or installations.</p>	<p>AO14.1 Public utility mains, services and installations are not required to be altered or repaired as a result of the development;</p> <p>or</p> <p>AO14.2 Public utility mains, services and installations are altered or repaired in association with the works so that they continue to function and satisfy the relevant Design Guidelines set out in Section D8 of the Planning scheme policy – FNQROC Regional Development Manual.</p>
Construction management	
<p>PO15 Work is undertaken in a manner which minimises adverse impacts on vegetation that is to be retained.</p>	<p>AO15.1 Works include, at a minimum:</p> <ul style="list-style-type: none"> (a) installation of protective fencing around retained vegetation during construction; (b) erection of advisory signage; (c) no disturbance, due to earthworks or storage of plant, materials and equipment, of ground level and soils below the canopy of any retained vegetation; (d) removal from the site of all declared noxious weeds.

Performance outcomes	Acceptable outcomes
<p>PO16 Existing infrastructure is not damaged by construction activities.</p>	<p>AO16.1 Construction, alterations and any repairs to infrastructure is undertaken in accordance with the Planning scheme policy – FNQROC Regional Development Manual.</p> <p>Note - Construction, alterations and any repairs to State-controlled roads and rail corridors are undertaken in accordance with the <i>Transport Infrastructure Act 1994</i>.</p>
For assessable development	
High speed telecommunication infrastructure	
<p>PO17 Development provides infrastructure to facilitate the roll out of high speed telecommunications infrastructure.</p>	<p>AO17.1 No acceptable outcomes are provided.</p>
Trade waste	
<p>PO18 Where relevant, the development is capable of providing for the storage, collection treatment and disposal of trade waste such that:</p> <ul style="list-style-type: none"> (a) off-site releases of contaminants do not occur; (b) the health and safety of people and the environment are protected; (c) the performance of the wastewater system is not put at risk. 	<p>AO18.1 No acceptable outcomes are provided.</p>
Fire services in developments accessed by common private title	
<p>PO19 Hydrants are located in positions that will enable fire services to access water safely, effectively and efficiently.</p>	<p>AO19.1 Residential streets and common access ways within a common private title should have hydrants placed at intervals of no more than 120 metres and at each intersection. Hydrants may have a single outlet and be situated above or below ground.</p>
	<p>AO19.2 Commercial and industrial streets and access ways within streets serving commercial properties such as factories, warehouses and offices should be provided with above or below ground fire hydrants at not more than 90 metre intervals and at each street intersection. Above ground fire hydrants should have dual valved outlets.</p>
<p>PO20 Hydrants are suitably identified so that fire services can locate them at all hours.</p> <p>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'.</p>	<p>AO20.1 No acceptable outcomes are provided.</p>

Table 9.4.6.3.b – Stormwater management design objectives (Construction phase)

Issue	Design objectives
<p>Drainage control (Temporary drainage works)</p>	<ul style="list-style-type: none"> (1) Design life and design storm for temporary drainage works: <ul style="list-style-type: none"> (a) Disturbed area open for <12 months—1 in 2-year ARI event; (b) Disturbed area open for 12–24 months—1 in 5-year ARI event; (c) Disturbed area open for > 24 months—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.
<p>Erosion control (Erosion control measures)</p>	<ul style="list-style-type: none"> (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.
<p>Sediment control (Sediment control measures, Design storm for sediment control basins, Sediment basin dewatering)</p>	<ul style="list-style-type: none"> (1) Determine appropriate sediment control measures using: <ul style="list-style-type: none"> (a) potential soil loss rate; or (b) monthly erosivity; or (c) average monthly rainfall. (2) Collect and drain stormwater from disturbed soils to sediment basin for design storm event: <ul style="list-style-type: none"> (a) design storm for sediment basin sizing is 80th% five-day event or similar. (3) Site discharge during sediment basin dewatering: <ul style="list-style-type: none"> (a) TSS < 50 mg/L TSS; (b) Turbidity not >10% receiving waters turbidity; (c) pH 6.5–8.5.
<p>Water quality (Litter and other waste, hydrocarbons and other contaminants)</p>	<ul style="list-style-type: none"> (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.
<p>Waterway stability and flood flow management (Changes to the natural waterway hydraulics and hydrology)</p>	<ul style="list-style-type: none"> (1) For peak flow for the 100% AEP event and 1% AEP event, use constructed sediment basins to attenuate the discharge rate of stormwater from the site

Table 9.4.6.3.c – Stormwater management design objectives (post-construction phase)

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

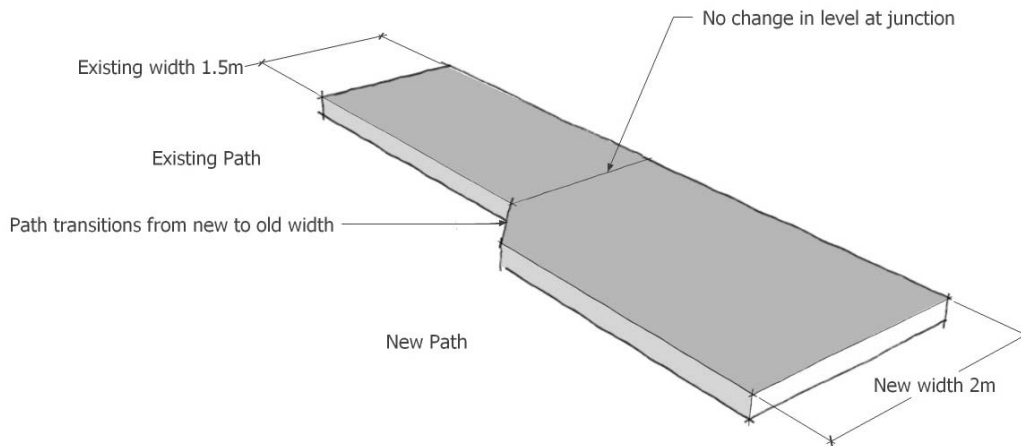


Figure 9.4.6.3.a – New footpath sections