9.4.6 Works, services and infrastructure code

9.4.6.1 Application

This code applies to accepted development subject to requirements and assessable development identified as requiring assessment against the Works, service and infrastructure code by the tables of assessment in **Part 5 (Tables of assessment)**.

9.4.6.2 Purpose and overall outcomes

(1) The purpose of the Works, services and infrastructure code is to ensure that development works and the provision of infrastructure and services meets the needs of the development, and is undertaken in a sustainable manner in accordance with best practice.

(2) The purpose of the Works, services and infrastructure code will be achieved through the following overall outcomes:-

(a) works are undertaken such that environmental harm and nuisance resulting from construction activities is avoided or minimised and the environmental values of water are protected;

(b) development is designed and constructed to a standard that meets community expectations, maintains public health and safety, prevents unacceptable off-site impacts and minimises whole of life cycle costs;

(c) physical and human infrastructure networks that provide basic and essential services and facilities to local communities are able to meet the planned increase in demand resulting from a planned increase in development density;

(d) development is provided with an appropriate level of water, wastewater treatment and disposal, drainage, energy and communications infrastructure and other services;

(e) infrastructure is designed, constructed and provided in a manner which maximises resource efficiency and achieves acceptable maintenance, renewal and adaptation costs;

(f) infrastructure is integrated with surrounding networks;

(g) development over or near infrastructure does not compromise or interfere with the integrity of the infrastructure; and

(h) filling or excavating does not adversely or unreasonably impact on the natural environment, drainage conditions or adjacent properties.

9.4.6.3 Assessment benchmarks and requirements

Table 9.4.6.3.1 Assessment benchmarks for assessable development and requirements for accepted development subject to requirements – if involving excavating or filling

Performance outcomes		Acceptable outcomes	
Excavating or filling			
PO1	Excavating or filling:- (a) does not cause environmental harm; (b) does not impact adversely on visual amenity or privacy; (c) maintain natural landforms as	**AO1.1**	Development provides that:- (a) on sites with a slope of 15% or more, or otherwise included in the Rural zone, the extent of excavation (cut) and fill does not involve a total change of more than 1.5m relative to the natural ground

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Performance outcomes		Acceptable outcomes	
	far as possible; and (d) is stable in both the short and long term.		level at any point; or (b) on sites with a slope of less than 15%, or not otherwise included in the Rural zone, the extent of excavation (cut) and fill does not involve a total change of more than 1.0m relative to the natural ground level at any point; (c) no part of any cut or fill batter is within 1.5m of any property boundary except cut and fill involving a change in ground level of less than 200mm that does not necessitate the removal of any vegetation; (d) retaining walls are no greater than 1.5m high; (e) all stored material is:- (i) contained wholly within the site; (ii) located in a single manageable area that does not exceed 50m^2; and (iii) located at least 10m from any property boundary; and (f) any batter or retaining wall is structurally adequate. Note—retaining walls that are not works for reconfiguring a lot are defined as building work under the Act. They are not operational work and must be assessed under the provisions of the *Building Act 1975*.
		AO1.2	Excavating or filling is carried out in accordance with the standards specified in *AS3798-2007: Guidelines on Earthworks for Commercial and Residential Developments.*
PO2	Excavating or filling does not interfere with natural stormwater flows	**AO2**	Any excavating or filling does not restrict or interfere with overland flow.
PO3	Excavating or filling does not directly, indirectly or cumulatively change flood characteristics which may cause adverse impacts external to the development site.	**AO3.1**	Development does not change flood flows, velocities or levels external to the development site. **OR** Development directs flows to a legal point of discharge that has a downstream system with sufficient capacity to convey the additional flows.
		AO3.2	For a retaining wall, stormwater flows are intercepted prior to flowing over the wall and directed to a legal point of discharge.
		AO3.3	Dams are constructed a minimum distance of 20m from the toe of the dam wall or water's edge to the boundary of the property.
PO4	Excavating or filling does not result in any contamination of land or water, or pose a health or safety risk to users and neighbours of the site.	**AO4**	Development provides that:- (a) no contaminated material is used as fill; (b) for excavation, no contaminated material is excavated or contaminant disturbed; and (c) waste materials are not used as fill, including:- (i) commercial waste; (ii) construction/demolition waste; (iii) domestic waste;

Performance outcomes		Acceptable outcomes	
			(iv) garden/vegetation waste; and (v) industrial waste.
PO5	Excavating or filling does not damage, obstruct, interfere with or increase the risk of damage to Council infrastructure or a service provider's infrastructure.	**AO5**	Development provides that:- (a) infrastructure is protected from damage during construction; (b) maximum and minimum soil cover is maintained to underground infrastructure in accordance with manufacturer's specifications; (c) access for the maintenance of services not obstructed or inhibited; and (d) the capacity or function of infrastructure is not reduced.

Table 9.4.6.3.2 Assessment benchmarks for assessable development only – if involving excavating or filling

Performance outcomes		Acceptable outcomes	
PO1	The location and extent of excavating or filling is consistent with the intended use of the site.	**AO1**	The extent of excavating or filling is in accordance with an existing development approval for a material change of use, reconfiguring a lot or building work (which has not lapsed).
PO2	Excavating or filling does not prevent or create difficult access to the property.	**AO2**	Driveways are able to be constructed and maintained in accordance with the requirements of the **Planning scheme policy for development works**.
PO3	Excavating or filling does not cause significant impacts through truck movements, dust or noise, on the amenity of the locality in which the works are undertaken or along routes taken to transport the material.	**AO3**	Excavating or filling is undertaken in accordance with the requirements of the **Planning scheme policy for development works**.
PO4	The transportation of materials in association with excavating or filling activities minimises adverse impacts on the road system.	**AO4**	Material is transported in accordance with the requirements of the **Planning scheme policy for development works**.
PO5	Excavating or filling does not damage, obstruct, interfere with or increase the risk of damage to Council infrastructure or a service provider's infrastructure.	**AO5**	Existing infrastructure:- (a) is not affected by the work; (b) remains in accordance with the **Planning scheme policy for development works**; or (c) is relocated or modified to comply with the **Planning scheme policy for development works**.

Table 9.4.6.3.3 Assessment benchmarks for assessable development only – requirements for infrastructure, services and utilities

Performance outcomes		Acceptable outcomes	
General requirements for Infrastructure, services and utilities			
PO1	Development is provided with infrastructure, services and utilities appropriate to its location and setting and commensurate with its needs.	**AO1.1**	Where available, development is provided with and connected to stormwater drainage, electricity, gas and telecommunications services at no cost to the Council, including provision by way of dedicated road, public reserve or as a minimum by way of easements to ensure continued access is available to these services. Editor's note—the provision of telecommunications infrastructure is regulated in accordance with Federal Government legislation.

Performance outcomes		Acceptable outcomes	
		AO1.2	In an urban area, electricity infrastructure is provided or relocated underground where:- (a) five or more new lots are created; (b) a new road is created; or (c) there is existing underground power in the vicinity of the development site.
		AO1.3	Where applicable, development is provided with street lighting in accordance with the requirements specified in the **Planning scheme policy for development works**.
		AO1.4	The development is provided with and connected to reticulated sewerage where the development is within a sewerage service area. Where the development is not within a sewerage service area, an on-site treatment and disposal system is provided that complies with the requirements of the *Plumbing and Drainage Act 2003.* Note—the sewerage service area is shown on the Plans for Trunk Infrastructure – Wastewater.
		AO1.5	The development is provided with and connected to reticulated water where the development is within a water supply service area. Where the development is not within a water supply service area, development is provided with adequate on-site rainwater collection. Note—the water supply service area is shown on the Plans for Trunk Infrastructure – Water Supply.
PO2	Development provides for infrastructure, services and utilities that are planned, designed and constructed in a manner which:- (a) ensures appropriate capacity to meet the current and planned future needs of the development; (b) is integrated with and efficiently extends existing networks; (c) minimises risk to life and property; (d) avoids ecologically important areas; (e) minimises risk of environmental harm; (f) achieves acceptable maintenance, renewal and adaptation costs; (g) can be easily and efficiently maintained; (h) minimises potable water demand and wastewater production; and (i) ensures the ongoing construction or operation of the development is not disrupted; (j) where development is staged, each stage is fully serviced before a new stage is released; (k) ensures adequate clearance	**AO2.1**	Infrastructure is planned, designed and constructed in accordance with Council's Priority Infrastructure Plan, and the **Planning scheme policy for development works,** or where applicable, the requirements of the service provider.
		AO2.2	Existing infrastructure is relocated or modified where necessary to ensure compliance with the **Planning scheme policy for development works** or where applicable, the requirements of the service provider.
		AO2.3	Compatible public utility services are co-located in common trenching in order to minimise the land required and the costs for underground services.
		AO2.4	Infrastructure, services and utilities are located and aligned so as to:- (a) avoid disturbance of ecologically important areas; (b) minimise earthworks; and (c) avoid crossing waterways or wetlands.
		AO2.5	Where the crossing of a waterway or wetland cannot be avoided tunnel boring techniques are used to minimise disturbance and disturbed areas are reinstated and revegetated on completion of works.

Performance outcomes		Acceptable outcomes	
	zones are maintained between utilities and dwellings to protect residential amenity and health; and (l) minimises visual and amenity impacts.	**AO2.6** **AO2.7**	The selection of materials used in the construction of infrastructure is suitable, durable, easy to maintain and cost effective, taking into account the whole of life cycle cost, and achieves best practice environmental management and energy savings. Access easements for maintenance purposes are provided over Council infrastructure within privately owned land.
Stormwater management infrastructure			
PO3	Development provides for the effective drainage of lots and roads in a manner that:- (a) maintains where possible major natural flow paths and catchment run-off characteristics; (b) effectively manages stormwater quality and quantity; and (c) ensures no adverse impacts on receiving waters and the surrounding land.	**AO3**	Drainage systems for development comply with the standards specified in the **Planning scheme policy for development works**.
Works over or near sewerage, water and stormwater drainage infrastructure			
PO4	Development near or over the Council's stormwater infrastructure and/or sewerage and water infrastructure:- (a) protects the infrastructure from physical damage; and (b) allows ongoing necessary access for maintenance purposes.	**AO4**	Development that will involve building or operational work near or over the Council's stormwater infrastructure and/or sewerage and water infrastructure complies with the **Planning scheme policy for development works.**

Table 9.4.6.3.4 Assessment benchmarks for assessable development only – stormwater and water quality

Performance outcomes		Acceptable outcomes	
PO1	Development achieves sufficient stormwater and water quality outcomes during and after the construction phase.	**AO1**	Stormwater and water quality outcomes comply with the stormwater design objectives of **Table 9.4.6.3.6 (Construction Phase – stormwater management design objectives)** and **Table 9.4.6.3.7 (Post Construction Phase – stormwater management design objectives).**

Table 9.4.6.3.5 Assessment benchmarks for assessable development only – construction management (for operational work only)

Performance outcomes		Acceptable outcomes	
PO1	Air emissions, noise or lighting arising from construction activities and works do not adversely impact on surrounding areas.	**AO1.1** **AO1.2** **AO1.3** **AO1.4**	Dust emissions do not cause environmental nuisance beyond the boundary of the site. Air emissions, including odours, are not detectable at the boundary of the site. Noise generating equipment is enclosed, shielded or acoustically treated in a manner which ensures the equipment does not create environmental harm. Outdoor lighting complies with *AS4282-1997*

Performance outcomes		Acceptable outcomes	
			Control of the Obtrusive Effects of Outdoor Lighting.
PO2	Construction activities and works provide for:- (a) the protection of the aesthetic and ecological values of retained vegetation; and (b) impacts on fauna to be minimised.	**AO2.1**	The health and stability of retained vegetation is maintained or enhanced during construction activities by:- (b) clearly marking vegetation to be retained with temporary fencing and flagging tape; (c) installing secure barrier fencing around the outer drip line and critical root zone of the vegetation; (d) preventing any filling, excavation, stockpiling, storage of chemicals, fuel or machinery within the fenced protection area; (e) using low impact construction techniques in the vicinity of vegetation to minimise interference with the vegetation; and (f) removing all declared noxious weeds and environmental weeds from the site.
		AO2.2	All works carried out in the vicinity of retained vegetation comply with *AS4970 Protection of Trees on Development Sites* and *AS4687 Temporary Fencing and Hoarding*.
		AO2.3	Where construction activities will result in adverse impacts upon fauna and/or the clearing and/or removal of fauna habitat:- (b) all vacant hollows and nests are relocated or rendered unusable to prohibit fauna return during clearing works; and (c) all fauna is suitably relocated or humanely dealt with during the pre-clearing inspections or during clearing.
PO3	Vegetation cleared from a site is disposed of in a manner that:- (b) maximises reuse and/or recycling; and (c) minimises impacts on public health and safety.	**AO3**	Where vegetation is cleared, vegetation waste is appropriately disposed of (other than burning) in the following order of preference:- (b) milling for commercial timber products, landscaping or firewood; (c) on-site chipping or mulching unless it is likely to cause spreading of non-indigenous species; and (d) transportation off-site and disposal in an approved green waste disposal facility.
PO4	Construction activities and works, including associated traffic and parking generation, are appropriately managed to ensure that:- (b) existing utilities, road and drainage infrastructure continue to function effectively; (c) can be accessed by the relevant authority for maintenance purposes; (d) adverse impacts on the transport network and on the amenity of the surrounding area are minimised; and (e) the environmental values of water and the functionality of stormwater infrastructure are	**AO4.1**	Existing utilities and road and drainage infrastructure are protected or relocated in accordance with the standards specified in the **Planning scheme policy for development works.**
		AO4.2	The costs of any alterations or repairs to utilities and road and drainage infrastructure are met by the developer.
		AO4.3	Traffic and parking generated by construction activities is managed in accordance with a Traffic and Parking Management Plan.
		AO4.4	Development is located, designed and constructed in accordance with an Erosion and Sediment Control Plan prepared in

Performance outcomes		Acceptable outcomes	
	protected from the adverse impacts of erosion, turbidity and sedimentation.		accordance with the requirements specified in the **Planning scheme policy for development works**.

Table 9.4.6.3.6 Construction Phase – stormwater management design objectives

Issue		Design Objectives
Drainage control	Temporary drainage works	1. Design life and design storm for temporary drainage works: • ..... Distribute area open for <12 months – 1 in 2 year ARI event; • ..... Distributed area open for 12-24 months – 1 in 5 year ARI event; • ..... Distributed area open for >24 months – 1 in 10 year ARI event; 2. Design capacity excludes minimum 150mm freeboard; and 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: • ..... Potential soil loss; or • ..... Monthly erosivity; or • ..... Average monthly rainfall; 2. Collect and drain stormwater from disturbed soils to sediment basin for design storm event: • ..... Design storm for sediment basin sizing is 80th% five-day event or similar; 3. Site discharge during sediment basin dewatering: • ..... TSS < 50 mg/L TSS; and • ..... Turbidity not >10% receiving waters turbidity; and • ..... pH 6.5-8.5.
Water quality	Litter and other waste hydrocarbons and other contaminants	1. Avoid wind-blown litter; remove grass 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 1 year and 100 year ARI event, use constructed sediment basins to attenuate the discharge rate of stormwater from the site.

Table 9.4.6.3.7 Post Construction Phase – stormwater management design objectives

Climatic region	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**	
Central Queensland (South)	85	60	45	90	Development for urban purposes within population centres greater than 3000 persons.
All	N/A	N/A	N/A	N/A	Catchments contributing to un-lined receiving waterway. Local government may not require compliance if the waterway is degraded. For peak flow for the 1 year ARI event, use co-located storages to attenuate site discharge rate of stormwater.
	Waterway stability management • Limit the peak 1 year ARI event discharge within the receiving waterway to the pre-development peak 1 year ARI event discharge.				

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