

State Planning Policy 2017

State Interest Water Quality

Supplementary Implementation Guideline

February 2021

Prepared by: Environmental Policy and Programs, Department of Environment and Science

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Contents

1. Introduction	4
2. SPP State interest water quality, Policy 5 (b)—off-site stormwater quality management..	5
2.1 Planning Schemes considerations for off-site solutions	7
2.1.1 Local Government policy and planning instruments	8
2.1.2 Off-site solutions – legislative requirements and best practice approaches	9
2.1.3 Off-site solutions informed by Living Waterways or other frameworks for regional or precinct solutions.....	10
2.3 Monitoring, evaluation, and reporting	15
2.4 Applicant consideration of off-site solutions for adoption by a Local Government	15
3. Maintenance of stormwater treatment facilities	16
3.1 Maintenance Guidance for Asset Managers.....	16
3.2 Maintenance Guidance for Local Governments	16
4. Glossary	17
5. Appendix.....	18
Off-site solution case studies	18
5.1 Port of Brisbane Pty Ltd	18
5.1.1 Laidley Creek	18
5.1.2 Downfall Creek - Offsite Stormwater Management.....	20
5.2 Mackay Regional Council	21
5.2.1 Little McCreedys Creek	21
5.3 Ipswich City Council.....	23
5.4 Logan City Council	26

1. Introduction

This Supplementary Implementation Guideline (Guideline) is intended to assist local governments in plan-making and applying assessment benchmarks.

The Guideline should be read in conjunction with the State Planning Policy 2017 (SPP), relevant regional plans and *Integrating State Interests in a Planning Scheme*, Department of State Development, Infrastructure, Local Government and Planning, February 2021.

The Guideline is not statutory in its effect and does not contain any new policy.

The Guideline provides further information on the SPP state interest – water quality Policy 5b – Post Construction Phase Stormwater Management, relevant off-site urban stormwater management objectives and related water planning considerations. The Guideline informs the integration of the SPP state interest water quality into a planning scheme and the use of assessment benchmarks in development assessment.

The specific purpose of Guideline is to provide information when implementing off-site urban storm water management in accordance with Local Government policy and planning instruments, legislative requirements, best practice standards and existing frameworks.

A summary of stormwater asset maintenance considerations, for both public and private stormwater management devices, is also included in section 3.

Further information and case study examples demonstrating best practice are available in the Appendix. The case studies provided by the Port of Brisbane Pty Ltd, Mackay Regional Council, Ipswich City Council and Logan City Council are gratefully acknowledged.

2. SPP State interest water quality, Policy 5 (b)— off-site stormwater quality management

Under the State Planning Policy 2017 (SPP) the state interest water quality is ‘the environmental values and quality of Queensland waters are protected and enhanced’ (see Section 4, Glossary).

The SPP state interest water quality includes Policy 4 which requires, at:

- a) ‘the construction phase, development achieves the applicable stormwater management design objectives in SPP Table A, Appendix 2’¹ and

Policy 5 requires ‘at the post construction phase, development:

- a) achieves the applicable (or equivalent) post-construction stormwater management design objectives as identified in SPP Table B, Appendix 2, or
- b) achieves an **alternate locally appropriate solution off-site** that achieves an equivalent or improved water quality outcome to the relevant stormwater management design objectives in SPP Table B, Appendix 2.’

Alternative locally appropriate solutions (off-site solutions), implemented in accordance with Policy 5 (b), may provide flexible options to achieve post-construction stormwater management design objectives.

Off-site solutions:

- do not remove the requirement for development to achieve SPP Policy 4, On-site construction phase requirements (see SPP Table A, Appendix 2).
- are a voluntary alternative to managing stormwater wholly on-site for the post-construction phase of development. If a developer opts for an off-site solution and the relevant Local Government agrees, then the Local Government collects an ‘in-lieu fee’ which must be used to develop stormwater solutions off-site.
- are delivered by the Local Government, not the developer, to achieve an equivalent or improved water quality outcome to the relevant stormwater management design objectives.

When adopting off-site solutions, the following matters should be noted and addressed, in accordance with the SPP:

- off-site solutions are limited to the post-construction phase of development
- off-site solutions do not remove the requirement to meet the stormwater management design objectives at the construction phase
- off-site solutions must demonstrate the achievement of equivalent or improved water quality outcomes to the relevant SPP post-construction stormwater management design objectives for water quality (percentage reduction in pollution loads) (SPP Table B, (Appendix 2)
- off-site solutions do not remove other post-construction stormwater management responsibilities at the development site; for example, flooding, achieving hydrologic objectives, landscaping requirements and litter control, and
- the adoption of off-site solutions does not permit non-compliance with, or in any way diminish the achievement of the regulatory requirements under, the SPP State interest - water quality Policy 5(b).

The in-lieu fee is provided instead of on-site non-trunk infrastructure. It cannot be used for trunk infrastructure. This means the in-lieu fee is separate, and in addition to any trunk

¹ Appendix 2 refers to State Planning Policy 2017 available at <https://dilgpprd.blob.core.windows.net/general/spp-july-2017.pdf>

infrastructure charges levied by Local Government under a Local Government Infrastructure Plan (LGIP).

More generally, off-site solutions may:

- achieve greater environmental outcomes than on-site solutions alone as they may incorporate regional or precinct solutions
- reduce the maintenance burden from multiple small-scale stormwater treatment facilities (see Section 3, Maintenance of stormwater treatment facilities)
- provide flexibility to achieve the state interest, which may be appropriate, for example, on highly constrained development sites, and
- provide multiple benefits to the community, such as enhanced liveability and lifestyles, and to the environment.

Notes:

1. For guidance on integrating the water quality state interest into planning schemes, refer to *Integrating State Interests in a Planning Scheme*, Department of State Development, Infrastructure, Local Government and Planning, February 2021.
2. The following sections of the *Planning Act 2016* may be relevant in considering off-site solutions for the post construction phase of stormwater management:
 - **‘Section 65 Permitted development conditions**
(1) A development condition imposed on a development approval must—
(c) require compliance with an infrastructure agreement for the premises; or ...’
 - **‘Section 66 Prohibited development conditions**
(1) A development condition must not—
(b) require a person to enter into an infrastructure agreement; or ...’
 - **‘Section 67 Agreements about development conditions**
An applicant for a development application may make an agreement with an assessment manager, referral agency or other person to establish the responsibilities, or secure the performance, of a party to the agreement about a development condition.’
 - **Chapter 4 Division 5 Non-trunk infrastructure, Part 4 Infrastructure agreements**
Sections 150 to 156—see detailed requirements, and
‘Section 158 Agreement for infrastructure partnerships
(1) A person may enter into an agreement with a public sector entity about—
(a) providing or funding infrastructure, or ...’

For additional information, please refer to the *Planning Act 2016* Explanatory Notes.

2.1 Planning Schemes considerations for off-site solutions

In accordance with the SPP state interest water quality, policies are expressed as outcomes encouraging innovative solutions and providing flexibility in implementation. This enables Local Governments to adopt locally appropriate solutions that meet community needs and expectations.

When considering an off-site solution under the SPP state interest - water quality Policy 5(b), Local Governments should also consider the following matters:

- Local Government policy and planning instruments
- considerations for industry and developers
- ensuring compliance and identifying best practice management examples, and
- alternative approaches to achieving off-site solutions.

Off-site solutions may be used either fully or partially (i.e. in combination with on-site solutions) to meet the required post-construction stormwater quality design objectives for development (see Figure 1).

The allowable mix of on-site and off-site solutions will depend on the Local Government policy and the characteristics of a site within the catchment.

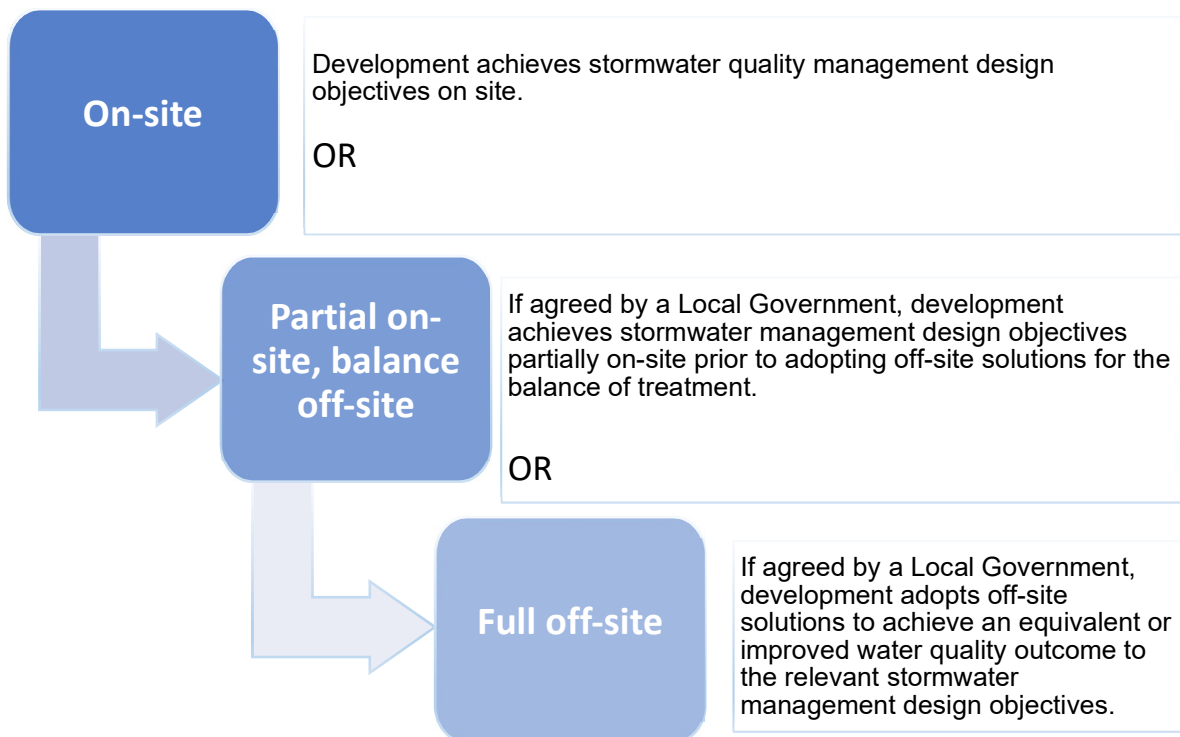


Figure 1: Post-construction phase development options under SPP State interest - water quality Policy 5(b).

See Section 5, Appendix, for the Mackay Regional Council partial on-site and balance off-site case study.

2.1.1 Local Government policy and planning instruments

If a Local Government determines that it will adopt off-site solutions, on a case-by-case basis, relevant policy and planning instruments that may be considered to provide the formal framework include:

- planning scheme policies
- council/local government policies, and
- local urban stormwater management plans.

These instruments can:

- contain planning guidance
- provide information about financial contributions, in-lieu of on-site compliance, and
- identify the location and type of off-site solutions to achieve equivalent or improved water quality outcomes.

For example, Local Government total water cycle management plans, local catchment plans, urban stormwater management plans and local government infrastructure plans for stormwater may assist in strategic location planning for off-site solutions and inform subsequent implementation.

See Section 5, Appendix, for case studies of different approaches to off-site solutions adopted by Local Governments.

If off-site solutions are given effect through a Local Government planning scheme, it may include assessment benchmarks and planning scheme provisions subject to specific circumstances. For example, a requirement that development is in an area that Local Government has previously identified as suitable for the implementation of off-site solutions.

The specific assessment benchmark or planning scheme provisions can link to relevant Local Government policies to provide additional details that may be required (e.g. planning scheme policy).

In considering off-site solutions, Local Government should address:

- assessment of the **availability of off-site delivery sites**. These sites may be published on a Local Government website as locations within a Local Government area where off-site solutions will be considered. Pre-planning off-site solution delivery sites saves time when a development is proposed by having potential delivery sites available for consideration and allows strategic coordination of off-site areas. The location of off-site delivery sites may be informed by Local Government total water cycle management planning, local catchment planning or stormwater quality infrastructure planning.
- **developing a metric** (which can include an in-lieu financial calculator and contribution amounts) that outlines developer contributions that transfer responsibility from the developer to a Local Government through in-lieu fees. This metric should address:
 - cost recovery to achieve regulatory compliance consistent with the on-site solution it replaces—in accordance with SPP Policy 5(b)—and to address Local Government administration, planning, implementation, and maintenance costs, and
 - other matters as decided by a Local Government, such as achieving multiple environmental benefits from implementation and supporting ongoing monitoring.

- supporting off-site solutions proposals with an **implementation plan** that addresses relevant matters; for example, planning, regulatory compliance, scheduling, and timing for construction of the off-site solution relative to the receipt of in-lieu fees, monitoring and evaluation, and the management of constructed assets
- the requirements for **monitoring, evaluation, and reporting**, and
- in accordance with a Local Government policy, the **public reporting** of implemented off-site solutions through, for example, website publication.

2.1.2 Off-site solutions – legislative requirements and best practice approaches

Off-site solutions must meet the SPP and Planning Act **legislative requirements**, including:

- equivalent or improved water quality outcomes to the relevant SPP stormwater management design objectives in Table B Appendix 2
- under an infrastructure agreement, in-lieu fees must be used to address SPP State interest - water quality Policy 5(b) if the regulatory responsibility transfers from a developer to a Local Government
- off-site solutions should address the same contaminants (sediments and nutrients) that are included in the stormwater management design objectives, and
- post-construction stormwater management responsibilities at the development site, for example, flooding, achieving hydrologic objectives, landscaping requirements and litter control.

In addition to the SPP and Planning Act requirements, planning for off-site solutions should consider **best practice approaches** including, for example, management hierarchy, spatial location, onset timing, technical measures, future off-site delivery sites assessment, sustainability, public consultation and monitoring, evaluation, and reporting.

- **Management hierarchy**—impacts to surface waters must be first avoided, using prevention measures, mitigated to the extent possible through re-use/recycle measures before consideration of off-site solutions.
- **Spatial location**—the location of off-site solutions should align with local and regional catchment management priorities. Locations should be consistent with planning priorities, for example, under regional planning frameworks, total water cycle management plans and relevant Local Government plans. The location of off-site solutions should benefit the same receiving waters that the development site impacts.
- **Onset timing**—the implementation of off-site solutions should preferably offset the impact of development from commencement and for the period the impact occurs. Where onset time is delayed, offsets should be calculated to balance any initial shortfall over the life cycle (i.e., demonstrate regulatory compliance for the duration of the impact, through modelling/calculation to deliver x kg nutrients/sediments to be offset over the life cycle).
- **Technical measures**— when designing an off-site solution, the use of technical measures, including off-site calculations and the offset ratios (delivery and equivalence) listed in the Department of Environment and Science’s Point Source Water Quality Offsets Policy 2019 and Guideline 2019 under the *Environmental Protection Act 1994* (see the [department’s website](#)) may be considered.

Where relevant to the type of off-site solution being considered, design and construction of the off-site solution should be approved by a Registered Professional Engineer of Queensland (RPEQ).

- **Assessment of future off-site delivery sites**—assessment of potential off-site delivery locations for future applications should be undertaken by a Local Government to provide assurance ahead of collecting in-lieu fees (e.g. via local catchment plans or total water cycle management plans).
- **Sustainability**—off-site solutions should be designed for whole of life cycle; including being designed to withstand or bypass inundation from major flood events (1 in 100 year ARI) in order to remain durable and to continue to deliver the off-site reductions in sediment and nutrient loads required to achieve the SPP stormwater management design objectives.

Where maintenance is required to restore design function post major flood events, the work should be completed at the earliest possible time that safe site access is available.

- **Monitoring, evaluation, and reporting**—in considering the need for transparent decision-making in the planning and implementation for off-site solutions, a Local Government should consider reporting to their local communities, including funds collected and expended on an annual basis as part of the regular community communication via website or newsletters.

Off-site solutions should not be considered for development sites:

- impacting on receiving waterways that are identified as high ecological value under the Environmental Protection (Water and Wetland Biodiversity) Policy 2019
- within areas identified as a water supply buffer area, or
- where prescribed environmental matters under the *Environmental Offsets Act 2014* may be adversely impacted. Map layers for matters of National, State or Local environmental significance are published on [QSpatial](#).

2.1.3 Off-site solutions informed by Living Waterways or other frameworks for regional or precinct solutions

The Living Waterways Framework Version 3 (the Framework) developed by Healthy Land and Water Ltd (an independent environmental management organisation) is one example of a regional solution that may inform a Local Government when considering the type of off-site solution relevant to local waterways in public open spaces.

The Framework seeks to incorporate community liveability benefits and provide flexibility within a quantitative framework that a Local Government can consider as an off-site solution in compliance with the SPP stormwater management design objectives.

The Framework recognises and credits the multiple benefits associated with avoidance techniques, including for example, minimising impervious surfaces. It also recognises activities that increase waterway value, for example, habitat restoration and community stewardship. These matters are not usually accounted for in Model of Urban Stormwater Improvement Conceptualisation (MUSIC) modelling.²

See the [Water by Design website](#), for further information.

See Section 5, Appendix, for other examples of regional or precinct solutions that may be equally acceptable:

- [Laidley Creek, Port of Brisbane](#) (On-site and Off-site treatment mix)
- [Downfall Creek \(ongoing\), Port of Brisbane](#) (Off-site)
- [Little McCreadys Creek, Mackay](#) (Off-site)
- [Small Creek, Ipswich](#) (Off-site)
- [Blackwell Street, Logan](#). (Off-site)

² MUSIC or Model of Urban Stormwater Improvement Conceptualisation modelling is a tool that allows for the evaluation of conceptual stormwater management systems commonly used in the planning and design of urban land development.

2.1.3.1 Quantitative assessment using the Living Waterways Framework Version 3

Under the Framework, design proposals should address a range of outcomes within the elements in Table 1.

Table 1: Living Waterways Key Design Elements

Element	WATERWAY CONDITION ASSESSMENT	Determined by
Living Water	<p>Protect and enhance our water systems and their environments</p> <p>To ensure development incorporates total water cycle practices that protect the environment</p> <p>Stormwater quality, erosion and sediment control, natural hydrology, pervious surfaces, water harvesting</p>	Local Government
Living Environment	<p>Protect and enhance natural areas adjacent to waterways</p> <p>To encourage community acceptance of good waterway management practices</p>	Local Government
Living Communities	<p>Create versatile places that enable safe, healthy, inclusive and resilient communities</p> <p>To encourage innovative, safe, and versatile design that delivers enduring benefits for communities</p>	Local Government
Living Local Economies	<p>Provide affordable, enduring solutions that are viable to build, use and maintain</p> <p>To ensure that community receive maximum value from blue/green infrastructure</p>	Local Government

As a quantitative example for planning consideration, off-site solution design elements should address run-off pollution, waterway health, community wellbeing and economic benefit from waterways.

In the Framework context, achieving at least the minimum quantitative score related to the key design elements achieves a high proportion of the stormwater quality requirements, as well as achieving significant and quantifiable contributions to waterway health, place-making, and community wellbeing, as shown in Table 2.

Table 2: Living Waterways Safeguard Thresholds

Element	Minimum Points Required	Notes
Stormwater Quality (LW1)	2 points	equivalent to achieving 80% of the stormwater management design objectives (Table B of the State Planning Policy, Water Quality) in the relevant climatic zone
Waterway Health (LW+LE)	20 points	in addition to meeting the minimum standards for stormwater quality above
Overall Score (LW+LE+LC+LLE)	40 points	Minimum score required to achieve compliance

The Living Waterways Framework may be considered by a Local Government as complying with the SPP stormwater management design objectives. Local Government may also consider other planning and design approaches that equally address stormwater and waterway health matters (and achieve compliance with the SPP stormwater management design objectives) within innovative place design concepts.



Figure 2: Living Waterways Framework - off-site solution example. Photo courtesy of Healthy Land and Water Ltd.

2.1.3.2 Street trees within the Living Waterways Framework

Street trees may be considered within the Living Waterways Framework.

Complementing end of the line systems, developers may wish to propose for Local Government consideration at source treatment such as 'Water Wise Street Trees'.

The technology may be considered by a Local Government as capable of contributing to the achievement the SPP stormwater quality design objectives, as well as providing other benefits including:

- healthy trees (e.g. increased growth rate, canopy, and lifespan)
- reduced reliance on potable water
- positive stormwater quality and quantity impacts
- improved microclimate and adjacent property values, and
- lower maintenance costs (e.g. road, footpath, and tree renewals).
- protect receiving environments (i.e. waterways, estuaries, oceans) by providing at-source detention, treatment, and reuse of stormwater
- reduce demands on existing stormwater networks and delay future augmentation
- reduce need for active irrigation and associated costs (i.e. pipes, pumps, sprinklers, energy, maintenance), and
- provide an alternative stormwater treatment solution to bioretention basins, constructed wetlands and proprietary filters.



Figure 3: Street tree examples. Photos courtesy of Citygreen (left) and Townsville City Council (right).



Dec 2015

Dec 2016

Jun 2017

Mar 2018

Figure 4: Street tree examples – Wynnum Road Progression. Photos courtesy of Brisbane City Council

See the [Water by Design website](#), for further information.

Notes:

1. The Living Waterways Framework is included as an example of the type of off-site solutions that may be considered by a Local Government.
2. The adoption of off-site solutions does not permit non-compliance with, or in any way diminish the achievement of the regulatory requirements under, the SPP State interest - water quality Policy 5(b).
3. An advantage of the Living Waterways Framework is that it recognises and credits the multiple benefits associated with avoidance techniques that are not usually accounted for in [MUSIC modelling](#). This quantitative approach may assist a Local Government considering off-site solutions involving rehabilitating local waterways in public open spaces.

2.3 Monitoring, evaluation, and reporting

For best practice, implemented off-site solutions should be monitored, evaluated, and reported as required by a Local Government.

The results of monitoring and evaluation should be used to inform future decision-making.

Website reporting of implemented off-site solutions may be considered by a Local Government.

2.4 Applicant consideration of off-site solutions for adoption by a Local Government

If off-site solutions are permitted by a Local Government, an applicant may propose potential off-site solutions in a development application for consideration by a Local Government.

Pre-lodgement discussions with a Local Government are encouraged to discuss possible off-site solutions prior to a development application being lodged.

3. Maintenance of stormwater treatment facilities

Stormwater quality assets are implemented to protect the health of Queensland's waterways and their associated economic, aesthetic, ecological, and cultural values. The function and associated stormwater management benefits of stormwater quality assets are highly dependent on these assets being appropriately maintained.

In the absence of appropriate inspection and maintenance activities, the benefits of stormwater quality assets, particularly decreased pollutant loads to downstream waterways, are significantly reduced. Where this occurs, the assets are unlikely to provide the benefits which justified their implementation, resulting in the decline of waterway health, a lost return on investment and an increase in their lifecycle costs. It may also lead to non-compliance with development approvals.

The frequency and type of maintenance should be considered in the design of any stormwater treatment measure. It also needs to be reported at the design stage alongside the predicted performance, so that asset managers can appropriately plan and fund maintenance activities to ensure assets perform as predicted.

3.1 Maintenance Guidance for Asset Managers

Stormwater quality asset managers are generally responsible for ensuring that:

- the details of asset(s) (e.g. location, type, specifications) are recorded
- appropriate resources (e.g. equipment, funding) are available to satisfy the inspection and maintenance requirements of each asset
- personnel undertaking inspection and maintenance activities are suitably qualified and if possible, have current certified training
- ensuring that assets are inspected at appropriate frequencies to evaluate their condition, function, and risk of failure. This should be informed by appropriate monitoring. 'Practice Note 5' published by Institute for Public Works Australasia provides a useful approach for performance evaluation and asset management
- ensuring assets are appropriately maintained in accordance with industry-accredited guidelines / requirements and / or asset operation and maintenance procedures / specifications, and
- ensuring that records of inspection and maintenance activities are appropriately collated for the purposes of analysing and using data to answer important operation and maintenance questions (e.g. what is the optimal frequency of inspections and cleaning activities?).

Preparation of a Water Asset Management Plan (WAMP) may assist in ensuring that the status and maintenance schedule of assets is maintained and budgeted for correctly.

3.2 Maintenance Guidance for Local Governments

Local Governments should ensure that both public and privately-owned stormwater quality assets are appropriately inspected and maintained, in accordance with development approval conditions (or other specified policy requirements, as appropriate).

An audit of both public and privately-owned stormwater quality assets should be undertaken by Local Governments on a regular basis (at least annually) with follow up inspections for non-compliant assets. For privately-owned assets, authorities should specify requirements for asset inspection and maintenance within development approval conditions and/or other suitable policy instruments.

4. Glossary

- **Basin/catchment** means where water flows and drains across the landscape. For the mapping of Queensland drainage divisions, major hydrological river basins and contained catchments.
See the Geoscience Australia website, <http://www.ga.gov.au/>.
- **Environmental values** means the environmental values for a body of water stated under Schedule 1 of the Environmental Protection Policy (Water and Wetland Biodiversity) 2019.
- **Management hierarchy** means the management hierarchy stated under Part 5, section 14 of the Environmental Protection (Water and Wetland Biodiversity) Policy 2019.
- **Queensland waters** means the waters that are within the limits of the State, including coastal/marine waters to three nautical miles from the coastline.
- **SPP stormwater management design objectives** means the post-construction phase stormwater management design objectives, for a climatic region, as stated in the State Planning Policy 2017 State interest - water quality Appendix 2.

5. Appendix

Off-site solution case studies

Disclaimer

The examples provided below demonstrate different approaches to the implementation of off-site solutions. They do not necessarily represent best practice approaches for off-site solutions in Local Government policy or planning schemes as expressed by this Guideline but are intended to provide examples of what has been implemented.

5.1 Port of Brisbane Pty Ltd

5.1.1 Laidley Creek

The Port of Brisbane Pty Ltd (PBPL) is undertaking a pilot project to offset impacts to stormwater from low impact development activities on the port site. The project involves remediating degraded creek banks in the catchments upstream of the Brisbane River to reduce sediments and nutrients entering Laidley Creek and making their way down to the port and Moreton Bay.

The first stage of the pilot project was completed in June 2016 and involved:

- stabilising a 750m section of badly eroded creek bank at Laidley Creek (100km upstream)
- installing two cross-stream bed erosion control structures, including an additional 200m of bank stabilisation, and
- replanting more than 4,000 native trees and grasses.

The pilot project is preventing 4,800 tonnes per year of sediment (and contained nutrients) entering Laidley Creek. Over time and as the vegetation matures, the bank's resilience to erosion will continue to increase. The project has resulted in other benefits, including a reduction in soil erosion, and weed infestation, improved flora and fauna habitats, and flood mitigation for adjacent horticultural lands.

The results of this pilot can be used to inform and improve off-site stormwater solutions for future development that propose to adopt an off-site stormwater solution.



Figure 5.

Top: site before works.

Bottom: bank contouring



Figure 6.

Top: Mulgowie Off-site Stormwater Treatment Pilot on Laidley Creek showing the result of earthworks to rehabilitate.

Bottom: The site immediately prior to the March 2017 flood showing high vegetation cover on rehabilitated bank. The work demonstrated a high degree of resilience to the Ex-Tropical Cyclone Debbie



Summary video

View a video summarising the Laidley Creek off-site works [here](#).

Compliance information

On-site treatment for the initial development included:

- large trapezoidal drain (over 2m deep at points), geo-fabric lining, use of existing treatments and vegetation planting – 4km
- HumeCeptors (sediment and litter) and spill capture devices
- grass swale only (39%)
- grass swale & existing ponds (27%)
- grass swale & existing grass basin (22%)
- extended existing tidal drain only (12%), and
- litter baskets (100%) and spill capture devices.

Off-site treatment—Laidley Creek streambank stabilisation:

- Stage 1: Determination of sediment erosion avoided through restoration (Alluvium Consulting using hydraulic and bank erosion modelling)—sediment erosion avoided = 4800 tonne/year (including contained nutrients).
- Stage 2: Determination of benefit of sediment erosion avoided in Laidley Creek at Mt Crosby Water Treatment Plant and at the port (WBM BMT Source and Receiving Water Quality Modelling)—enhancement in receiving water quality equivalent to a sediment reduction of 105 tonne/year at Mt Crosby Water Treatment Plant, which over a six-month period translates into:
 - 25 tonne reduction in sediments retained in the estuary
 - 7 tonne reduction in sediments retained in the Port Dredge Zone
 - 70 tonne reduction in sediments entering inner Moreton Bay.

This equates to a modelled 77 tonne/year (including contained nutrients) enhancement in water quality in the receiving water quality at the port (compared with MUSIC modelling of unmitigated sediment loss from the Port Development Lands of 28 tonnes/yr).

5.1.2 Downfall Creek - Offsite Stormwater Management

PBPL has partnered with Brisbane City Council (BCC) to deliver the Downfall Creek Restoration Project at 7th Brigade Park in Chermside (North Brisbane), continuing work to deliver innovative stormwater management solutions at the Port.

PBPL and BCC are co-funding the project, with planning and design completed and approvals in progress. A date for commencement of on-ground works is to be finalised. BCC is leading the project's delivery including stakeholder and local community engagement.

The project aims to improve overall waterway health by reducing erosion and sediment pollution and stabilising the creek landscape. It will also improve the natural habitat, water quality, and add to the overall 'natural' visual and recreational amenity and community connection. The project will involve rehabilitation across the identified area of degraded waterway using 100% native vegetation.

This is the second major offsite stormwater project for PBPL; the first project in the Lockyer Valley (Laidley Creek above) was delivered in partnership with Healthy Land & Water and Mulgowie Farming Company.

The Downfall Creek Restoration Project supports PBPL's broader objective of working with stakeholders to encourage the adoption of offsite stormwater management solutions more widely across South East Queensland. Over the long-term, reduced sediment pollution will improve the health of regional and local waterways and the Brisbane River while reducing the maintenance dredging task for Port of Brisbane.

5.2 Mackay Regional Council

Mackay Regional Council (MRC) has established a voluntary mechanism for stormwater quality management (voluntary mechanism). The previous on-site stormwater quality management approach to achieve water quality targets was proving to be unfeasible and prompted council to look at an alternative. The voluntary mechanism has been developed to improve the efficiencies of a development's stormwater management requirements through cost-effective solutions. It is considered a locally appropriate and innovative approach that reflects the objectives of the SPP.

The MRC endorsed the 'Voluntary Mechanism for Stormwater Quality Management' policy in August 2014. Key drivers for the policy were poor design, construction, establishment and maintenance of on-site Water Sensitive Urban Design treatment devices, and changes in state policy regarding mandatory rainwater tanks.

The Voluntary Mechanism spatially identifies three scenarios for urban development:

On-site (no mechanism)

No mechanism will be considered where the local receiving waterway is highly valued for ecosystem or social value (e.g. High Ecological Value (HEV) waters). In this case, Mackay Regional Council requires stormwater management to occur on site in accordance with the planning scheme and the SPP (to the extent the SPP has not been appropriately integrated in the local planning scheme).

Partial on-site (Level 1)

Level 1 applies where the local receiving waterway has been determined by council to be resilient to nutrient loading. In this case, treatment of stormwater from the development is required to achieve the applicable stormwater management design objective for total suspended solids (i.e. 75% removal of annual average TSS load) prior to discharge from the development site.

Full off-site (Level 2)

Level 2 applies where the local receiving waterway is disturbed or where the development area is <0.5 ha.

The voluntary mechanism gives developers the option to make a payment to MRC in lieu of providing on-site stormwater quality treatment. Payments made to MRC fund the delivery of regional stormwater quality and waterway improvement projects, including rehabilitating waterways, constructing regional wetlands and water quality monitoring.

Industrial and commercial developments must still treat litter and coarse sediment on site. Waterway condition mapping undertaken by MRC identifies where off-site options can be considered.

MRC has identified five regional pilot projects that developer stormwater contributions will fund, and is in the process of developing these projects, including one at Little McCreadys Creek.

5.2.1 Little McCreadys Creek

Little McCreadys Creek at Rural View has been chosen as a site suitable for developing and showcasing best practice methods for improving stormwater quality, rehabilitating waterways, enhancing aquatic habitat, improving ecological corridors, and improving visual amenity and community benefit. Little McCreadys Creek and the adjoining open space have been substantially altered, but retained many environmental values including native fauna, fish, frogs, and native vegetation.

A Catchment Management Plan has been developed for Little McCreadys Creek that identifies priorities for improving water quality through stormwater management measures and an ongoing process of maintaining and improving riparian vegetation. Design planning for the creek identifies stormwater and water quality improvement treatments such as rock pools, bed and bank controls, fish passageways, benched wetlands, and revegetation. Contributions from MRC's voluntary stormwater program go towards funding this project.



Figure 7. Site location (above) and finished works (right)

5.3 Ipswich City Council

Ipswich City Council (ICC) developed Implementation Guideline No. 24, which guides development in addressing the stormwater management requirements of the planning scheme.

The Implementation Guideline No. 24 provides a standard approach for development when implementing the relevant stormwater management aspects of the Ipswich planning scheme. It includes an option for voluntary offset payments in lieu of providing on-site stormwater treatment for nutrients.

On-site stormwater treatment is still required for all other pollutants in stormwater, as well as hydrological requirements.

A map identifies areas that are eligible and potentially eligible for applying off-site solutions.

To inform [Implementation Guideline No. 24](#), ICC developed a Stormwater Quality Offsets Implementation Plan.

Note 3.2 under the Ipswich Planning Scheme Guideline states:

- 1) Voluntary payments in lieu of on-site provision of stormwater quality treatment devices are intended to provide cost savings for development, including forgoing construction costs, reduced impact on the development footprint and reduced costs for on-going maintenance.
- 2) Where a voluntary payment is elected to be made, developments must achieve the following outcomes on-site in accordance with this guideline and relevant legislation and other statutory guidance:
 - a) stormwater quantity management requirements
 - b) construction phase pollutants management and best practice erosion and sediment control
 - c) management of gross pollutants, and
 - d) other stormwater quality requirements (e.g. hydrocarbons, metals, pathogens) as required by the *Environmental Protection Act 1994*.

The ICC is delivering off-site solutions projects including:

- Jim Donald Parklands stormwater harvesting project, and
- Small Creek redevelopment, which involved direct community engagement through 'Design your Creek Week'.

More information is available at the [ICC website](#).



Small Creek Redevelopment Stage One

Small Creek was once a meandering natural stream that flowed into Deebing Creek. Today, it's a straight concrete channel in Raceview that offers very little value to the community or environment.

That's about to change. Small Creek is currently undergoing construction through a Council project and Stage One has begun.

Key benefits of the project:

- Improved aesthetics, with the creek appearing as a naturally occurring waterway over time.
- Cooler water in waterways, a vital requirement for native fish species.
- Reduction in air temperatures by up to two degrees around the creek corridor.
- Improved environmental outcomes and better water and habitat quality for animals and plants.
- Increased value of surrounding property, as evidenced by recent research of similar projects.
- Provision of improved active transport connections for residents.



Overhead image of current site



Perspective illustration of future Small Creek

Stage One fast facts



During construction over 30,000m³ of soil will be removed.



40 trash baskets will be installed in the surrounding streets stormwater pits to prevent litter from ending up in the creek.



Stage one will be completed in mid 2018, with favourable weather conditions.



There has been a comprehensive assessment to ensure any change in water level does not adversely affect any users or adjacent landholders. Based on this, Council will ensure flow velocities are adequately reduced to allow vegetation establishment.



Over 5,000 new trees will be planted and up to 200,000 new plants including ground covers and aquatic macrophytes (species that grow in the water).



Water quality will be improved through a reduction in total suspended solids, a reduction in total phosphorus and a reduction in total nitrogen.

What to expect from Small Creek

Ecosystems aren't built in a day and large shade producing trees don't grow overnight. Restoring Small Creek will take time and it will continuously evolve over the course of decades. It will be a legacy left by the current generations gifted to the future residents of Ipswich.

For more information

You can view the plans and more at ipswich.qld.gov.au/smallcreek or contact Ben Walker - Waterway Improvement Officer on (07) 3810 6726 or email ben.walker@ipswich.qld.gov.au

Join us online:



5.4 Logan City Council

Source: https://www.logan.qld.gov.au/__data/assets/pdf_file/0004/282415/2013_Blackwell-St-Wetland_Fact-Sheet_web.pdf

Blackwell Street Wetland Project

The Blackwell Street Wetland Project is an exciting and innovative environmental project that will improve flood protection for the Hillcrest area by integrating a natural wetland and water treatment design with landscaped pathways and picnic areas. The project forms part of an integrated solution to reduce flooding effects for the local community and will help to improve water quality and reduce pollution of our local creeks, the Logan River and Moreton Bay.



Images of the pre-existing drainage in the Blackwell Street area

The wetland and water treatment systems have been designed to integrate into the local landscape, and to maximise flood protection and when completed, the project area will offer habitat for native fauna, recreational opportunities and connectivity for the local community.

The resultant open space areas will form part of important ecological corridors which can extend into backyards to connect habitats across the region.

The Blackwell Street Wetland Project is funded through a partnership between Logan City Council, State Government and the development industry. The project will:

- Provide increased flood detention and flood immunity to downstream properties
- Improve water quality by providing a wetland and bio-retention water quality treatment systems
- Rehabilitate and revegetate the work area to enhance biodiversity values with different habitats and vegetation types
- Undertake landscaping improvements and increasing access and amenity for surrounding residents through improved passive recreational facilities including pathways, picnic tables, and trails
- Facilitate a catchment based solution to stormwater management
- Maximise opportunities for safe public interaction with the wetlands and waterway as well as providing educational opportunities.

Blackwell Street Wetland Jimmy Phillips Park

Fact Sheet

www.logan.qld.gov.au

The recently completed Phase 1 of the Blackwell Street Wetland Project at Jimmy Phillips Park is an exciting and innovative environmental project that provides water quality improvements and improved flood protection for the Hillcrest area. The wetland system utilises an integrated natural wetland and water treatment design with landscaped pathways and picnic areas. The project uses a catchment-based approach to reduce flooding effects for the local community and will help improve water quality and reduce pollution of our local creeks, the Logan River and Moreton Bay.

The Blackwell Street Wetland Project was funded through a partnership between Logan City Council, State Government and the development industry. This wetland system provides:

- increased flood detention and flood immunity to downstream properties;
- improved water quality by providing a wetland and bio-retention water quality treatment systems;
- enhanced biodiversity values and habitat with over 65,000 native plants added to the area;

- increased access and amenity for surrounding residents through improved passive recreational facilities; and
- a catchment based solution to stormwater management

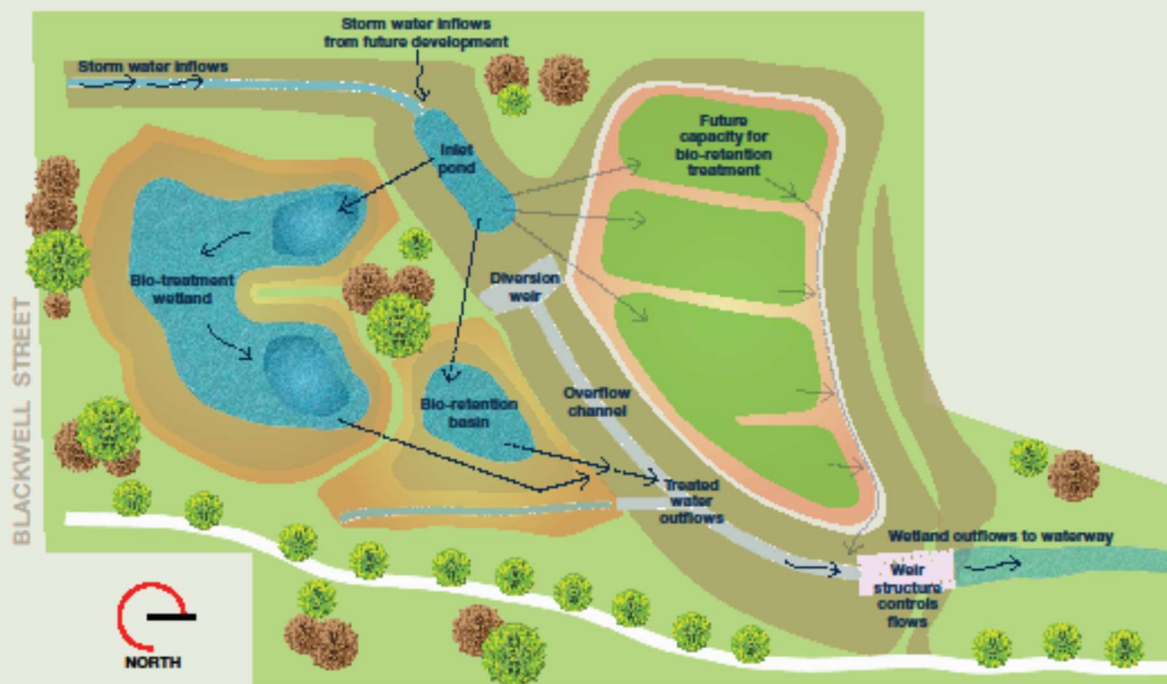
Subsequent stages will involve the establishment of additional stormwater treatment and bio-retention devices once the majority of the catchment is developed.

For more information

Phone 3412 3412

Visit www.logan.qld.gov.au

Email council@logan.qld.gov.au

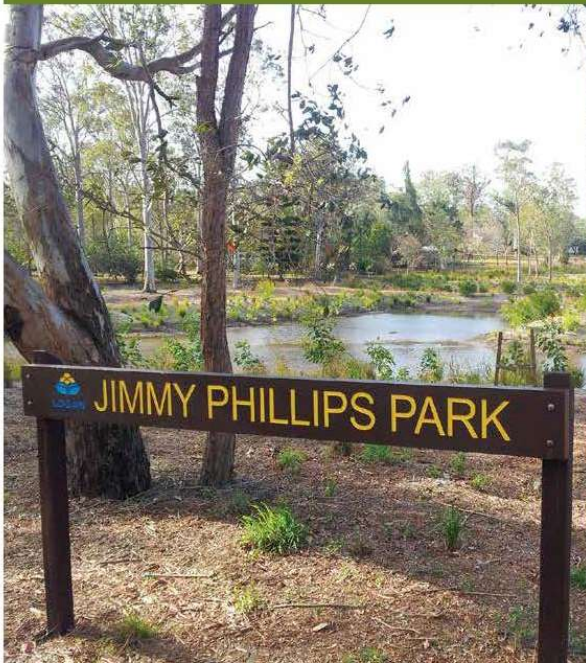


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Blackwell Street Wetland Jimmy Phillips Park



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