CITY OF GOLDCOAST.

Local Government Infrastructure Plan

Extrinsic Material Report
Stormwater Quality Network

Date: July 2019

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1 Background

Council of the City of Gold Coast (Council) has prepared a Local Government Infrastructure Plan (LGIP) in accordance with the Planning Act 2016 and associated guidelines. The LGIP identifies the type, scale, location and timing of development within the local government area for the period 2016-2031 and the realistic extent of development anticipated to be achieved when the area is fully developed. The LGIP also identifies trunk infrastructure to service growth in the period 2016-2031 at the desired standard of service.

The following trunk infrastructure networks are included in the LGIP:

(a) Water supply network
(b) Sewerage network
(c) Transport network
(d) Stormwater quality network
(e) Parks and land for community facilities network.

Council's LGIP is Part 4 and Schedule 3 of the City of Gold Coast Planning Scheme (City Plan, commenced 2 February 2016).

1.1 Purpose of report

This extrinsic material report has been prepared to assist in the interpretation of Council's LGIP. The report summarises the methodology used to prepare the stormwater quality network component of the LGIP and references all background studies and reports relevant to its preparation.

2 Stormwater Quality

2.1 Network planning overview

The trunk stormwater quality network planning undertaken by the City for the LGIP represents an improved approach to stormwater quality management within the City. Historically, the approach to post construction phase stormwater quality management has relied on individual developments complying with the stormwater management design objectives equivalent to the stormwater quality objectives (operational phase) now in City Plan Policy SC6.11 - Land Development Guidelines (LDG), section 4.5.4.2 (**Design Objectives**) as providing acceptable outcomes within the City. The new approach seeks to define trunk stormwater quality infrastructure and set the desired standards of service in a way that will further improve the post construction phase pollutant reduction outcomes achieved after development has complied with the Design Objectives. The infrastructure required to achieve these further improvements provides the basis of the approach for setting the DSS and identifying stormwater quality trunk infrastructure.

The Environmental Protection Policy (Water) (EPP) nominates Water Quality Objectives (WQO's) for all receiving waterways which are considered representative of the desired healthy condition. The State Planning Policy July 2017 (SPP) sets the design objectives for urban development to remove a portion of the pollutant loads they generate in order to mitigate subsequent environmental impacts, and give rise to achieving the WQO's. The Design Objectives are called up by City Plan through the development codes and section 4.5.4.2 of the LDG.

The Design Objectives state post construction phase pollutant load removal targets for the following pollutants:

- Total suspended solids (TSS)
- Total phosphorous (TP)
- Total nitrogen (TN)
- Gross pollutants >5mm

The Design Objectives are set as percentage reductions of the total load that is generated by the subject development. An example of this is sediment pollutant, or TSS. For new developments, an 80% reduction in TSS needs to be demonstrated. That is, treatment measures need to be put in place that remove 80% of the sediment load generated by the development. The Design Objectives pollutant load removal targets are as follows:

- 80% removal of TSS
- 60% removal of TP
- 45% removal of TN
- 90% Gross Pollutants >5mm

The Design Objectives do not take into account the pollutant load that was coming from the land before it was developed (i.e. it only focusses on the load generated by the future land use). This may mean a development meeting the Design Objectives pollutant load removal requirements still increase the pollutant load the subject site contributes to its receiving waters, compared to the pre-developed condition. Where this occurs it will lead to an increase in overall service catchment pollutant loads. Addressing this increase of pre-development loads, to the desired standards of service, is the function of the proposed trunk stormwater quality infrastructure network.

The first of the above scenarios is best exemplified by TN which the City Plan/LDG Design Objectives requires new development to reduce post development TN loads by 45%. That means that 55% of the post development pollutant load is still being discharged from developments. Hence TN loads could increase downstream of developments where these pre-developed land uses are low polluting uses such as existing vegetation. Alternatively, where the pre-developed land-uses are high polluting uses such as agriculture, existing urban etc. downstream pollutant loads could decrease. The same can be true for the other pollutants TSS and TP, though TN is the pollutant most likely to increase as it is the most difficult to remove.

Stormwater quality development infrastructure is defined to be trunk or non-trunk stormwater quality infrastructure under the Planning Act 2016. For the purposes of the City's approach to non-trunk and trunk stormwater quality infrastructure, this means that:

- Stormwater quality development infrastructure required by the City for removing pollutant loads generated by a subject development in order to comply with the Design Objectives is performing a non-trunk infrastructure function and is non-trunk development infrastructure.
- Stormwater quality development infrastructure required by the City for removing pollutant loads to achieve no net increase in pre-development pollutant loads from future development within the service catchment, which pollutant load removal is in addition to the removal of pollutant load generated by a development in order to comply with the Design Objectives, is performing a trunk infrastructure function and is trunk infrastructure.

This approach recognises the need for trunk stormwater quality infrastructure to address the "no net increase" desired standard of service following the removal of pollutant loads on development sites to the standards required under the City Plan/SPP to achieve the Design Objectives (see section 2.5). Trunk network demand is the increase of average annual pollutant load generated by future development after the future development has complied with the Design Objectives. This network demand is determined by subtracting the average annual pollutant load generated by existing land use from the average annual pollutant load generated by the predicted future land use. The trunk infrastructure network is directed at servicing this demand by removing this difference in pollutant load to ensure there is no net increase in pollutant loads throughout the City's catchments as a result of future development.

It follows from the above discussion that trunk demand is generated only from future development (future development is development approved after the date of commencement of this LGIP) and will be serviced only by future trunk infrastructure.

Existing development infrastructure is identified as trunk in this LGIP to clearly indicate the location of stormwater quality infrastructure that was funded by the City which services a wider catchment comprising multiple developed sites. It should be noted this infrastructure is not servicing identified trunk demand and does not meet the desired standards of service described in section 2.4 below. Existing trunk infrastructure therefore cannot be used as a basis to identify future trunk infrastructure and should not be taken to indicate it otherwise functions as future trunk infrastructure. As future trunk infrastructure is constructed it will become existing trunk infrastructure and identified as such in subsequent versions of the LGIP.

2.2 Planning Assumptions

Network planning for stormwater quality was undertaken having regard to the type, scale, location and timing of development to accommodate projected population and employment growth. The network demand models rely on a number of inputs including future land use. Future land-use inputs have been formulated by predicting land-use changes resulting from likely development within the City, in accordance with provisions of the planning scheme, to accommodate assumed population growth. A detailed explanation of these planning assumptions and processes is provided in the LGIP Extrinsic Material Report Planning Assumptions.

2.3 Network Demand Modelling

To determine the projected stormwater quality demand the City engaged BMT WBM to develop pollutant load export models to establish the average annual pollutant loads generated by existing land use and predicted future land use. The models rely on a number of inputs including: existing land use; future land use; terrain; climate data; land use pollutant generation parameters and imperviousness. The models used to determine demand (i.e. the change in pollution load between existing and future land use) were derived from SEQ based catchment models developed for Healthy Land and Water. The models are constructed in the 'Source' modelling platform (Welsh et al 2012) which is Australia's National Hydrologic Modelling Platform. The models account for runoff and pollutant loads for a range of land uses and are typically used to run scenarios around existing and future land use changes. Within SEQ, these models have been used for the last 20 years in various versions to assist in predicting impacts from land use change and best management practice implementation, and to inform state agencies at various times for regional plan assessments, objective setting, report card inputs and environmental infrastructure requirements.

The methodology, models and results from the models have been peer reviewed by Alluvium Consulting. This peer review confirmed the overall process is consistent with SEQ regional modelling currently being applied by Healthy Land and Water, load based reduction objectives within the SPP and the City's current standards for determining water quality infrastructure requirements for new developments under City Plan and the LDG's.

Reference documentation for the network demand modelling is provided in Table 2.3-1.

Table 2.3-1 Stormwater Quality Model Reference

Title	Date	Author
Catchment modelling to support City of Gold Coast's LGIP submission	August 2017	BMT WBM
Peer Review and Assistance with LGIP Water Quality Demand Modelling	August 2017	Alluvium Consulting
Stormwater Quality Infrastructure Planning Report	December 2017	DesignFlow

The City determined that the most accurate and efficient way of measuring and modelling trunk stormwater quality infrastructure demand is in the same units used to assess the water quality of receiving waters. Stormwater quality demand is therefore measured in the average annual kilograms of pollutant loads of: Total Nitrogen (TN); Total Phosphorous (TP); and Total Suspended Solids (TSS). Measuring pollutant loads in this way is consistent with the requirements under City Plan, the SPP and industry best practice. Although gross pollutant load increases from future development also constitute network demand these are not specifically quantified due to limitations for modelling these loads, the comparative significants of TSS, TP and TN on influencing receiving water quality, and subsequent co-treatment of gross pollutants by measures employed to target TSS, TP and TN removal.

Stormwater quality network demand differs from other infrastructure network demands in that it comprises four individual pollutant categories representing the increase in average annual TSS, TP, TN and gross pollutant loads expressed in kilograms (kg/yr). Each of these pollutant types have unique characteristics meaning they cannot simply be added together in order to arrive at a total network demand, and are removed at varying rates for each of the different types of infrastructure employed to capture and remove them. TN dictates the size and cost of trunk infrastructure required to meet the DSS hence stormwater quality network demand is measured in units of average annual TN kg/yr.

Terrain data was used to identify watershed catchments which result from rainfall. Stormwater run-off within these watersheds captures and transports pollutants to receiving waters. Each watershed is isolated in the sense that there is no distribution of run-off to, or from, adjacent watersheds. Accordingly these watersheds have each been adopted as service catchments for which network demand has been quantified and trunk infrastructure proposed to service these demands has been determined to meet the adopted DSS of no increase of existing pollutant loads within each service catchment. The City's service catchments are as follows:

- Coolangatta
- Currumbin
- Tallebudgera
- Coomera
- Nerang
- Logan
- Upper Coomera.

Tables 2.3-2, 2.3-3, 2.3-4 provide a summary of existing and projected TSS, TP and TN pollutant loads respectively.

Table 2.3-2: Existing and projected 'Total Suspended Solids' Pollutant Load (TSS kg/yr) for service catchments (combined residential and non-residential demand)

Column 1 Service Catchment	Column 2 Existing and projected 'Total Suspended Solids' pollutant load (TSS kg/yr)				
	Existing - 2016 (base date)	2021	2026	2031	Ultimate development
Coolangatta	659326	643719	635825	630653	625174
Currumbin	3145801	3138929	3135408	3133562	3128224
Tallebudgera	5888371	5878270	5869962	5865990	5851105
Coomera	8099076	8084587	8063536	8047846	7960843
Nerang	18306885	18227746	18131728	18042770	17723033
Logan	7009311	7046345	7060180	7061141	7124093
Upper Coomera	2825495	2822641	2815351	2796523	2696554
TOTAL	**45934264**	**45842236**	**45711989**	**45578486**	**45109027**

Table 2.3-3: Existing and projected 'Total Phosphorus' Pollutant Load (TP kg/yr) for service catchments (combined residential and non-residential demand)

Column 1 Service Catchment	Column 2 Existing and projected 'Total Phosphorus' pollutant load (TP kg/yr)				
	Existing - 2016 (base date)	2021	2026	2031	Ultimate development
Coolangatta	1567	1545	1534	1526	1519
Currumbin	5252	5246	5243	5242	5237
Tallebudgera	9568	9562	9557	9555	9546
Coomera	19125	19172	19239	19289	19568
Nerang	39094	39076	39053	39033	38959
Logan	13585	13888	14002	14009	14525
Upper Coomera	6538	6535	6526	6505	6392
TOTAL	**94729**	**95023**	**95155**	**95160**	**95746**

Table 2.3-4: Existing and projected 'Total Nitrogen' Pollutant Load (TN kg/yr) for service catchments (combined residential and non-residential demand)

Column 1 Service Catchment	Column 2 Existing and projected 'Total Nitrogen' pollutant load (TN kg/yr)				
	Existing - 2016 (base date)	2021	2026	2031	Ultimate development
Coolangatta	8790	8721	8686	8663	8638
Currumbin	43560	43551	43547	43545	43539
Tallebudgera	79886	79899	79911	79916	79936
Coomera	124559	124900	125394	125763	127806
Nerang	325724	325814	325924	326026	326391
Logan	103015	104852	105538	105585	108707
Upper Coomera	98012	97997	97957	97854	97307
TOTAL	**783546**	**785734**	**786956**	**787351**	**792324**

Tables 2.3-5, 2.3-6, 2.3-7 provide a summary of projected increases from existing TSS, TP and TN pollutant loads representing the trunk stormwater quality network demands.

Table 2.3-5: Projected 'Total Suspended Solids' Demand (TSS kg/yr) for service catchments (combined residential and non-residential demand)

Column 1 Service Catchment	Column 2 Projected 'Total Suspended Solids' demand (TSS kg/yr)			
	2021	2026	2031	Ultimate development
Coolangatta	0	0	0	0
Currumbin	0	0	0	0
Tallebudgera	0	0	0	0
Coomera	0	0	0	0
Nerang	0	0	0	0
Logan	37034	50869	51830	114782
Upper Coomera	0	0	0	0
TOTAL	**37034**	**50869**	**51830**	**114782**

Table 2.3-6: Projected 'Phosphorus' Demand (TP kg/yr) for service catchments (combined residential and non-residential demand)

Column 1 Service Catchment	Column 2 Projected 'Total Phosphorus' demand (TP kg/yr)			
	2021	2026	2031	Ultimate development
Coolangatta	0	0	0	0
Currumbin	0	0	0	0
Tallebudgera	0	0	0	0
Coomera	46	113	163	442
Nerang	0	0	0	0
Logan	303	416	424	940
Upper Coomera	0	0	0	0
TOTAL	**350**	**531**	**589**	**1384**

Table 2.3-7: Projected 'Nitrogen' Demand (TN kg/yr) for service catchments (combined residential and non-residential demand)

Column 1 Service Catchment	Column 2 Projected 'Total Nitrogen' demand (TN kg/yr)			
	2021	2026	2031	Ultimate development
Coolangatta	0	0	0	0
Currumbin	0	0	0	0
Tallebudgera	14	25	30	50
Coomera	340	834	1202	3245
Nerang	90	200	302	667
Logan	1836	2522	2570	5692
Upper Coomera	0	0	0	0
TOTAL	**2280**	**3581**	**4104**	**9654**

Further to above values, it is noted that some pollutant loads are reducing in some of the City's service catchments as a result of predicted future development which means these service catchments have nil network demand. This is because the model inputs include existing and future land uses which mean each assumed development site has a unique combination of land uses. Generally, development will result in demand being generated; however some existing and future development land use combinations result in a reduction of pollutant loads discharging from the site. This reduction comes about where larger pollutant loads are generated by the existing land-use (which were often approved without a requirement to comply with the Design Objectives or equivalent requirements under the SPP) than pollutant loads generated by the future development land-use (which will be required to comply with the Design Objectives and are modelled to incorporate pollutant load removal based on the Design Objectives). The gap (demand) between existing land use load and future land use load therefore varies according to the mix of existing and future land uses, not simply due to an increase in impervious area as a result of the future development. This is reflected in the Upper Coomera, Currumbin and Coolangatta service catchments where it is predicted future development will not result in an increase in pollutant loads after the future development has complied with the Design Objectives. For this reason there is no trunk demand in these catchments.

The absence of trunk demand in a particular catchment does not mean that the 'prescribed amount' under the Planning Regulation 2017 for a particular use should not be levied within those catchments. The approach taken by the City for infrastructure charging, as it relates to stormwater trunk infrastructure, is a City wide approach, rather than a catchment based approach. An important aspect of trunk stormwater quality infrastructure is that residents throughout the City will benefit from the trunk stormwater quality infrastructure even where external to the catchment in which it is provided. For example, a resident external to the Nerang catchment will still benefit from the water quality improvements and the consequential ecosystem protection functions that the trunk infrastructure will provide.

2.4 Desired standards of service

The DSS for stormwater quality is to achieve 'no net increase' to existing pollutant loads within the City's service catchments, and therefore receiving waterways, as a result of future development after the future development has complied with the Design Objectives. This is to be achieved by removing pollutant loads from within the subject service catchment to offset any net increase of the pollutant loads which arise from development after compliance with the Design Objectives. Figure 1 below provides a conceptual quantification of the DSS, depicting also the corresponding network demand to be catered for in order to achieve the DSS.

It should be noted that the DSS is deliberately expressed as achieving no net worsening within a service catchment after individual developments within the service catchment have met the obligation to comply with the Design Objectives under the City Plan/SPP. There may be instances where a development which achieves compliance with the Design Objectives also achieves no net worsening for the specific development site. In these circumstances the infrastructure will not be providing a trunk infrastructure function and will not be regarded as trunk infrastructure because it is not removing pollutants in addition to those required to be removed to comply with the Design Objectives.

Compliance with the Design Objectives on future development sites will still generally tend to increase the total existing pollutant load in the subject service catchment. Addressing this increase, to the desired standards of service, is the function of the proposed trunk stormwater quality infrastructure network.

The trunk stormwater quality network DSS of no net worsening of service catchment pollutant loads as a result of future development, after future development has complied with the Design Objectives has been adopted in line with the City's aspirations to continue improving the health of its waterways with the ultimate aim of meeting the EPP WQO's. Further, as the City's waterways underpin the essence of the lifestyle generally desired by those giving rise to demand for development within the City, and the current opportunities which will allow the DSS to be delivered in a cost effective way, the DSS is considered to represent a sustainable and equitable standard for investment in trunk infrastructure within the City.

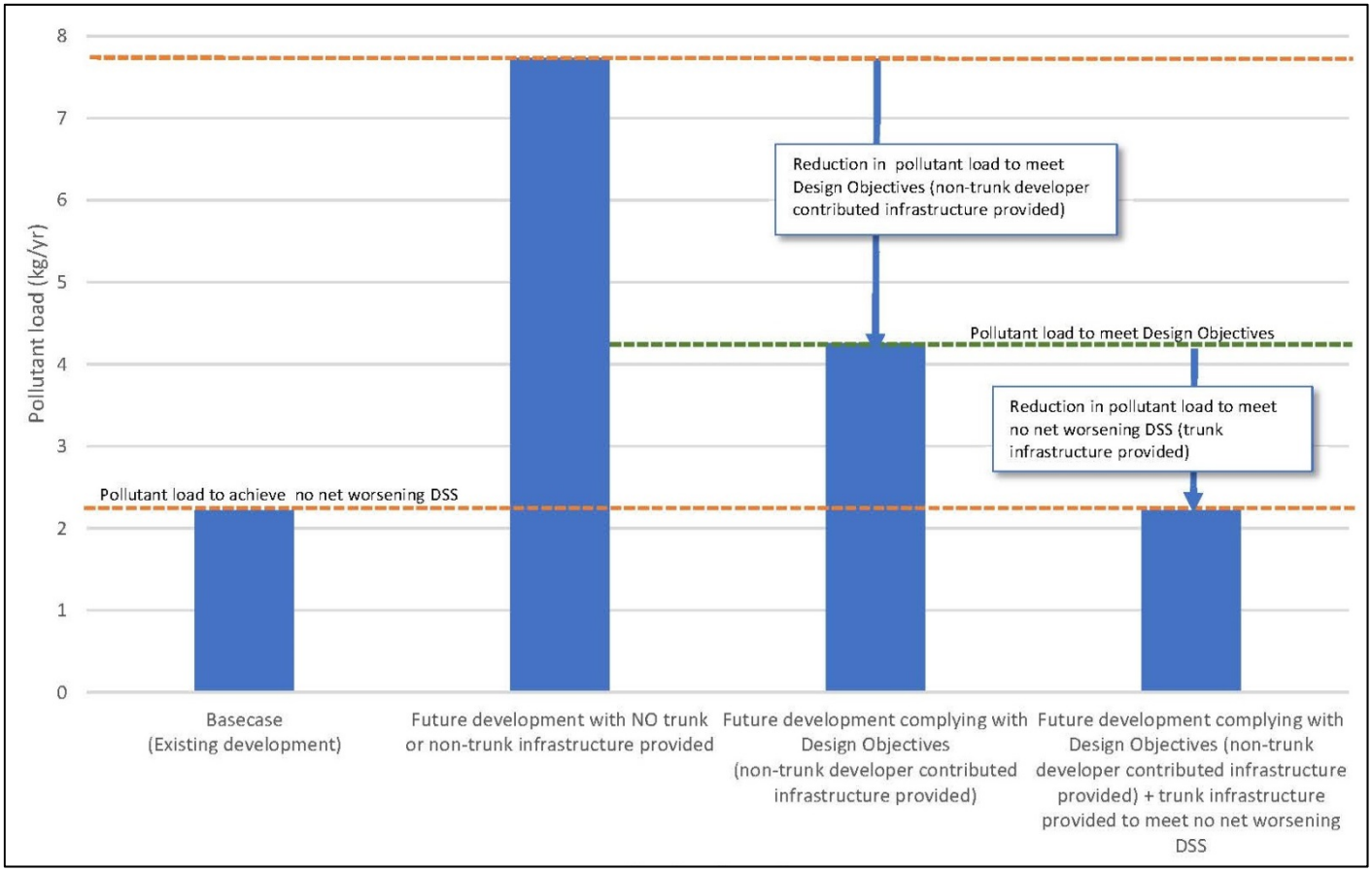

Figure 1. Conceptual quantification of the DSS

The key desired standards of service for the stormwater quality network are listed in Table 2.4-1.

Table 2.4-1: Key desired standards of service for the stormwater quality network

Measure	Desired outcome
No increase to total existing TSS pollutant load within the City's service catchments from future development after the future development[1] has complied with the stormwater quality objectives (operational phase) in section 4.5.4.2 of City Plan Policy SC6.11 – Land Development Guidelines (**Design Objectives**)	Maintain existing TSS pollutant loads within the City's service catchments as quantified in the Table 2.3-2
No increase to total existing TP pollutant load within the City's service Catchments from future development after the future development has complied with the Design Objectives	Maintain existing TP pollutant loads within the City's service catchments as quantified in the Table 2.3-3
No increase to total existing TN pollutant load within the City's service Catchments from future development after the future development has complied with the Design Objectives	Maintain existing TN pollutant loads within the City's service catchments as quantified in the Table 2.3-4

The planning, design and construction of the trunk and non-trunk network shall be in accordance with the City's adopted policies and standards.

2.5 Infrastructure Planning

In order to meet the DSS, trunk infrastructure must remove an equivalent pollutant load to those generated, though not removed, by future development conditioned to comply with the Design Objectives under City Plan.

The identification of trunk stormwater quality infrastructure permits a significant amount of flexibility in terms of the final design and location of the infrastructure. That is because trunk stormwater quality infrastructure must be located in the relevant service catchment but does not otherwise require connectivity to other items of trunk infrastructure. There are also a variety of devices that can be used to treat the pollutant loads.

With the cost per unit of pollutant load removed generally increasing as the portion of total pollutant load to be removed increases, the least cost solution is generally achieved by capturing the highest pollutant load concentrations for treatment. As such, stormwater quality trunk infrastructure is generally most effectively located where pollutant load generation is highest (e.g. in areas with high polluting land-uses such as commercial, industrial etc., and /or where pollutant removal infrastructure does not exist or is limited).Typically, ideal locations are within older parts of the City's service catchments.

Trunk Stormwater Quality infrastructure under the LGIP is detailed in Table 2.5-1

Table 5.1 provides the list of projects planned for the stormwater quality network to meet the DSS within each of the City's service catchments, servicing demand in each time cohort up to 2031.

[1] Future development is development approved after the date of commencement of this LGIP

Table 2.5-1: Trunk Stormwater Quality infrastructure under the LGIP

Trunk Stormwater Quality infrastructure	Exclusions
The following stormwater quality treatment devices provided to achieve no increase of existing pollutant loads within a service catchment following reduction of pollutant loads by future development within the service catchment to meet the Design Objectives: • Bio retention basins • Sediment basins • Riparian revegetation • Swales • Wetlands • Water harvesting and reuse • Gross pollutant traps.	The following is not trunk stormwater quality infrastructure: • Privately owned/controlled on-site stormwater quality treatment devices • Stormwater quality infrastructure provided under a development approval required to achieve compliance with the Design Objectives • Stormwater quantity infrastructure including underground network pipes, pits, inlets, outlets and overland channels, flowpaths, detention and retention devices • Development infrastructure provided under a condition of a development approval for a primary purpose other than for meeting the DSS for stormwater quality management. This includes, for example: land or works required to revegetate a riparian zone for ecological or conservation purposes; infrastructure constructed prior to the commencement of this LGIP; and stormwater infrastructure provided to comply with a non-trunk infrastructure condition • Stormwater quality infrastructure which services only the premises the subject of the development approval under which it is required

2.6 Plans for trunk infrastructure

The Plans for Trunk Infrastructure identify future trunk infrastructure planned for the stormwater quality network to meet the DSS within each of the City's service catchments, servicing demand in each time cohort up to 2031 along with existing development infrastructure

Existing development infrastructure is identified as trunk in this LGIP to clearly indicate the location of stormwater quality infrastructure that was funded by the City which services a wider catchment comprising multiple developed sites. It should be noted this infrastructure is not servicing identified trunk demand and would not meet the desired standards of service described in Section 2.4. The existing trunk infrastructure therefore cannot be used as a basis to identify future trunk infrastructure and should not be taken to indicate it functions as future trunk infrastructure or is otherwise compatible with the DSS. Further, much of this existing trunk infrastructure was provided over the past two decades and as such is not representative of the current best practices of primarily targeting the removal of TN along with TSS, TP and gross pollutants.

As noted above, the approach to defining trunk stormwater quality infrastructure and the DSS represents a new direction for the management of stormwater quality in the City. Since circa 2000 the approach to stormwater quality management has predominantly relied on development complying with the equivalent of the Design Objectives found in the City Plan, such that development has only provided infrastructure necessary to service the subject development to the required non-trunk standard.

The consequence of the historical approach is that existing development has not been conditioned to provide stormwater quality infrastructure which meets the DSS and function of trunk stormwater quality infrastructure of the new approach.

Importantly, Section 2.3 of the Statutory Guideline 03/14 Local Government Infrastructure Plans (LGIP Guideline) provides assistance to local governments by identifying matters that should be considered when identifying trunk infrastructure. Broadly speaking, section 2.3 indicates that non trunk infrastructure is that which is required to service the needs of an individual development. Conversely, trunk infrastructure is infrastructure that services multiple development sites or catchments. The proposed approach is consistent with this distinction.

As noted, developers have contributed a number of stormwater quality assets in order to satisfy development conditions imposed requiring mitigation of pollutant loads from their own developments in accordance with the

Design Objectives (or equivalent requirements which pre-dated the Design Objectives). The requirement to comply with the post construction Design Objectives in the LDG's is a requirement to partially mitigate the impact the subject development and no other development (e.g., removal of 80% TSS, 60% TP, and 45% TN generated by the subject development). As discussed above, compliance with the Design Objectives will not completely mitigate the impact of each individual development. The function of trunk infrastructure is to mitigate the combined residual impact from all future development. In doing so, trunk infrastructure will service demand generated by multiple development sites. The identification of trunk and non-trunk infrastructure under the proposed approach is therefore entirely consistent with the guidance principles stated in section 2.3 of the LGIP Guideline.

Further, the DSS define trunk demand as demand created by future development. Trunk demand is determined by modelling the pollutant load for future development and subtracting the pollutant load from existing development. Existing pollutant load is therefore the baseline from which trunk demand is determined. That necessarily means that existing demand is not trunk demand. It also means that existing developer contributed infrastructure, is not performing a trunk function. Accordingly this infrastructure has been identified as non trunk in this LGIP and is explicitly accounted for in the modelling by identifying those development sites conditioned to provide the infrastructure together with the design objectives applicable at the time these sites where developed. In all cases, these assets are developer contributed assets and assumed in the modelling to treat the impacts of only the development to which they were associated. In modelling the performance of this infrastructure it was assumed that this infrastructure is operating at its designed capacity i.e. no discounting of performance is allowed for. This approach ensures that network demand calculated is generated only from the impacts of future development and not from any lack of performance of existing infrastructure.

3 Developer offsets

Offsets and refunds will be provided for trunk stormwater quality infrastructure required under a trunk condition of a development approval in accordance with the Planning Act.

3.1 Non-trunk stormwater quality infrastructure conditions

All future development will be required to comply with the Design Objectives in the City Plan and SPP. This obligation is specific to the subject development, does not result in infrastructure servicing other development, and will be imposed as a non-trunk stormwater quality infrastructure condition under the Planning Act 2016.

If the effect of imposing the obligation to comply with the Design Objectives is that the subject development does not cause an increase of pollutant load within the subject service catchment this will not alter the designation of the condition as a non-trunk condition. In these circumstances the infrastructure will not be providing a trunk infrastructure function and will not be regarded as trunk infrastructure because it is not removing pollutants in addition to those required to be removed under the City Plan to meet the Design Objectives and the no net worsening is at a site specific level rather than a service catchment level. Removing the additional pollutant load at a site specific level rather than a service catchment level will not provide a cost effective option for achieving the DSS.

3.2 Trunk stormwater quality infrastructure conditions

A condition requiring stormwater quality development infrastructure will be imposed as a trunk infrastructure condition only if the primary purpose of the condition is to mitigate or reduce the pollutant load impact of other future development within the subject service catchment by removing pollutant loads from the service catchment in addition to pollutant load removal required by the subject development to comply with the Design Objectives. Any separate obligation to achieve no net increase of pollutant load within the service catchment, from the base date, (i.e. mitigate or reduce the pollutant load impact from other future development within the service

catchment), will be imposed under a separate condition to the requirement to comply with the Design Objectives under a non-trunk condition.

3.3 Conversion applications

Applications to convert non-trunk stormwater quality infrastructure conditions to trunk conditions will be assessed and decided in accordance with the *Planning Act 2016* and applicable Charges Resolution. The criteria relevantly include an assessment of the purpose of the non-trunk condition.

As noted above, a non-trunk infrastructure condition which requires compliance only with the Design Objectives will not be consistent with the purpose of trunk infrastructure, irrespective of whether it also achieves no increase to pollutant load within the development site and will not be converted to a trunk infrastructure condition. For example, where a medium density residential development meeting the Design Objectives, by providing appropriate development infrastructure to do so, is replacing a higher polluting existing land-use such as low impact industry, a net reduction in pollutant loads may result, and therefore no network demand may be generated. The development infrastructure provided in this example is required to meet the Design Objectives for the development site and therefore constitutes non trunk infrastructure, despite any resulting overall reduction of service catchment pollutant loads.

4 Stormwater Quantity

4.1 Stormwater quantity infrastructure is not trunk infrastructure

Under this LGIP, Stormwater quantity infrastructure is excluded from the trunk stormwater network. Future versions of the LGIP may incorporate stormwater quantity infrastructure into the trunk stormwater network.

5 Stormwater Quality Schedule of Works

The following table provides a list of projects planned for the stormwater quality network and identified in the LGIP.

Table 5-1: Stormwater quality projects identified in the LGIP – Quality Measures

Map Reference	Trunk Infrastructure	Planning Horizon	Establishment Cost
TB_Wet_001	Constructed Wetland	2021	$1,419,600
CO_Bio_001	Bioretention Basin	2021	$1,074,528
CO_Bio_002	Bioretention Basin	2026	$98,280
CO_Bio_003	Bioretention Basin	2026	$98,280
CO_Bio_004	Bioretention Basin	2026	$98,280
CO_Bio_005	Bioretention Basin	2026	$131,040
CO_Bio_006	Bioretention Basin	2026	$163,800
CO_Bio_007	Bioretention Basin	2026	$229,320
CO_Bio_008	Bioretention Basin	2026	$353,808
CO_Bio_009	Bioretention Basin	2026	$655,200
CO_Bio_010	Bioretention Basin	2031	$1,048,320
CO_Sed_001	Sedimentation Basin	2031	$40,934
CO_Wet_001	Constructed Wetland	2031	$811,200
CO_Wet_002	Constructed Wetland	2031	$243,360
NR_Bio_001	Bioretention Basin	2021	$786,240
NR_Bio_002	Bioretention Basin	2026	$235,872
LO_Bio_001	Bioretention Basin	2021	$262,080
LO_Bio_002	Bioretention Basin	2026	$327,600
LO_Wet_001	Constructed Wetland	2021	$531,336
LO_Wet_002	Constructed Wetland	2021	$13,843,200
LO_Wet_003	Constructed Wetland	2026	$243,360
LO_Wet_004	Constructed Wetland	2026	$2,612,064
Grand Total			**$25,307,702**

CITY OF GOLDCOAST.

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