HEALTHY WATERS PARTNERSHIP
dry tropics

Townsville Dry Tropics
Waterways Report Card

Urban Water Stewardship Framework

2025 REPORT

AUGUST 2025 | Written by Adam Shand,
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1 URBAN WATER STEWARDSHIP FRAMEWORK (UWSF)

1.1 Acknowledgements

This report was compiled by Adam Shand for the Healthy Waters Partnership for the Dry Tropics with significant input from PES Consulting, Jamie Corfield (Department of Environment, Tourism, Science and Innovation), the Local Government Authorities of the Dry Tropics Region, and the Regional Report Cards Technical Working Group.

1.2 Executive Summary

1.2.1 Background

Nutrients, sediments, and pesticides are pollutants that affect the resilience of coral reefs and are also key contaminants derived from urban areas. Understanding and addressing the loads of these contaminants from urban landscapes to the GBR lagoon may contribute to achieving water quality improvement targets set out in the Reef 2050 Water Quality Improvement Plan 2022. Environmental stewardship is demonstrated through investment in technology or practices that meet or exceed standards for minimising or avoiding environmental harm or may potentially enhance the receiving environment.

The Urban Water Stewardship Framework (UWSF, or 'the framework') builds on existing knowledge and aligns with the Agricultural Water Quality Risk Framework used in the Paddock to Reef Paddock Integrated Monitoring, Modelling and Reporting Program. The framework aims to assess urban management activities that have a link to water quality improvement outcomes. The framework enables reporting against water quality improvement targets set out in the Reef 2050 WQIP non-agricultural sector objectives:

- The management of urban land use for water quality shows an improving trend.
- Active engagement of communities and land managers in programs to improve urban water quality is improved.

This report summarises the results of UWSF workshops held with the Local Government Area (LGA) in the Dry Tropics. The workshops involved facilitated discussion around key management activities undertaken by councils, developers, and contractors. The framework applies to activities associated with:

- Urban development (construction phase), i.e., **Developing Urban.**
- Stormwater and catchment management in already developed urban areas (post-construction phase), i.e., **Established Urban.**
- Sewage wastewater management, i.e., **Point Source.**

Each activity was assessed, and practice level performance was assigned an ABCD rating, whereby:

- "A" denoted innovative and/or aspirational practices (lowest risk to water quality).
- "B" denoted current best practices (low to moderate risk to water quality).
- "C" denoted minimum standard practices (moderate risk to water quality).
- "D" denoted outdated practices (highest risk to water quality).

The third round of Urban Water Stewardship Framework assessment was conducted in the Dry Tropics in 2024-25 and was applied to the same LGA as the first two rounds of assessment completed in 2020-2021, and 2022-23.

1.2.2 Executive Summary: Results

Overall, UWSF results show that the Dry Tropics Region received a grade of "B" for urban water stewardship performance in 2024-25, indicating that, on average, best practice management is in

place. This represents a low to moderate risk to water quality in the region from urban landuse. There was an increase in overall urban water management score between the previous assessment in 2022-23 and the current assessment in 2024-25, from 12.92 to 13.49. While this did not improve the overall grade, it does continue the trend established since the very first UWSF assessment in 2020-21. The scores and grades for the 2024-25 assessment increased from those recorded in 2022-23 for two of the three UWSF management components: Established Urban and Point Source. The score for Developing Urban decreased slightly, and there were no grade changes across any component.

In developing urban areas, the grade for the Dry Tropics LGA was a "B", indicating that management activities related to urban land development met current best practice. In established urban areas, the grade for the Dry Tropics LGA was a "C" indicating that activities associated with established urban areas were the minimum standard. For point source urban water management, the grade for the Dry Tropics LGA was a "B", indicating that management activities related to point source water management met current best practice (Table 1).

Table 1. Urban Water Stewardship Framework, current and historical scores and grades.

UWSF Management Component	Score (Grade)		
	2024-25	2022-23	2020-21
Developing Urban	14.33 (B)	14.50 (B)	9.46 (C)
Established Urban	12.15 (C)	10.35 (C)	10.45 (C)
Point Source	14.00 (B)	13.90 (B)	12.0 (C)
Overall	**13.49 (B)**	**12.92 (B)**	**10.64 (C)**

Scoring range: ■ = High risk (<5.00) | ■ = Moderate risk (5.00 to 12.40) | ■ = Moderate-low risk (12.50 to 17.40) | ■ = Lowest risk (>17.50) | ■ = No data available.

1.3 UWSF: Introduction

Nutrients, sediments, and pesticides are pollutants that affect the resilience of coral reefs and are also key contaminants derived from urban areas. Understanding and addressing the loads of these contaminants from urban landscapes to the GBR lagoon may contribute to achieving water quality improvement targets set out in the Reef 2050 Water Quality Improvement Plan 2022.

The Urban Water Stewardship Framework (UWSF) builds on existing knowledge and aligns with the Agricultural Water Quality Risk Framework used in the Paddock to Reef Paddock Integrated Monitoring, Modelling and Reporting Program. The framework aims to assess urban management activities that have a link to water quality improvement outcomes (Office of Great Barrier Reef, 2021). It assesses practices employed by local governments, the development sector, and construction industry to manage sediment and nutrient loads during construction and post-construction phases, as well as wastewater treatment plant releases. The framework also covers water management in greenfield and brownfield developments, as well as sewerage networks (Office of Great Barrier Reef, 2021). Sediment and nutrient loads are grouped into three primary components by their association with; erosion during the construction phase (categorized as **developing urban**), stormwater runoff during the post-construction phase (**established urban**), and sewage wastewater treatment plant releases (**point source**). These activities contribute to sediment and nutrient loads entering the Great Barrier Reef (GBR) lagoon.

Although nutrient and sediment inputs from urban areas are smaller compared to agricultural run-off, they can still have a significant local impact if not properly managed. Therefore, it is crucial to monitor and assess these activities using the UWSF, which provides a metric for tracking management practices and the extent of land under effective management within the GBR catchment (Office of Great Barrier Reef, 2021). This information helps determine if management practices contribute to long-term water quality improvement, aligning with the objectives of the Reef 2050 Water Quality Improvement Plan (Australian Government, 2023).

1.4 UWSF: Methods

1.4.1 Data Collections

As per the UWSF Implementation Manual version 2.1 (Department of Environment and Science 2022), workshops were attended by a diverse range of personnel from within the LGA council, including water coordinators, stormwater engineers, technical officers, land use planners, process engineers, development and assessment engineers, environmental health coordinators, asset engineers, and field officers. Workshops were facilitated by PES consulting, with data collected by the Healthy Waters Partnership using the UWSF scoring spreadsheet (Queensland Government, 2023). Urban water management activities were assessed across three primary components based on activities that may contribute to:

- Diffuse pollution associated with Developing Urban areas.
- Diffuse pollution associated with Established Urban areas.
- Point Source pollution (associated with sewage treatment and management).

Each of these activities and their management activity groups are described in detail below.

1.4.2 Water Management in Developing Urban Areas

Nutrient and sediment loads can potentially emanate from urban areas under development for residential, commercial, or industrial purposes and are frequently associated with the mobilisation of soils. The Developing Urban (DU) component and MAGs were designed to assess management performance relating to construction phase activities relating to erosion and sediment control and the design and installation of stormwater treatment systems.

1.4.3 Water Management in Established Urban Areas

Nutrient and sediment loads from established residential, commercial, or industrial areas are often associated with nutrient and sediment pollution linked to stormwater runoff. The established urban (EU) management activity groups (MAGs) were designed to assess management performance relating to operational goals linked to stormwater asset planning & maintenance and catchment protection in established urban areas.

1.4.4 Point Source Urban Water Management

Point sources are considered to be those that emanate from wastewater treatment facilities, and, within the GBR catchment, these are operated by councils. The UWSF does not cover point source activities for particular industries (though has activities linked to the management of licensed trade waste discharges to the sewer network). It excludes privately owned wastewater treatment facilities and also only covers municipal sewage treatment. The Point Source (PS) management components and MAGs were designed to assess management performance for municipal wastewater treatment facilities and their linked sewer networks.

A total of 66 activity indicators were assessed across 16 Management Activity Groups (MAG), with each MAG having a desired management practice outcome. MAGs were then grouped by the type of management practice (AKA element) they represent. The number of activities rated, their corresponding MAGs, management type, and what primary category they belong to are outline in Table 2 below.

Table 2. UWSF primary reporting components, management activity groups (MAG), their associated type of management practice, and a brief description of each MAG.

Component	Element	MAG	MAG Description
Developing Urban (DU)	Planning and governance	1	Stormwater infrastructure planning and design is continually improving to support more effective total water cycle management.
		2	The development assessment process promotes and supports improved water quality in terms of reducing sediment loads.
		3	Site based stormwater management planning can deliver water quality improvement.
	Infrastructure management and maintenance	4	Continuous improvement in stormwater management practices on development and construction sites and reduced sediment loads reaching receiving waters.
	Social approaches	5	Increased capacity to apply best practice ESC principles to deliver effective ESC measures on site and as part of ESC compliance auditing.
	Monitoring, evaluation, reporting and improvement	6	Risk of severe erosion impacts reduced through site inspections at appropriate times and the monitoring and reporting of stormwater runoff treatment.
Established Urban (EU)	Planning and governance	1	Continuous improvement in catchment management through integrated total water cycle planning and design.
		2	Continuous improvement in stormwater system management through integrated total water cycle planning.
	Infrastructure management and maintenance	3	Reduction in water quality pollutants leaving established urban areas.
	Social approaches	4	Increased capacity to implement catchment based total water cycle management and landscape restoration through collaboration with industry and the community.
	Monitoring, evaluation, reporting and improvement	5	Greater knowledge base to improve the way catchment and water management activities are implemented to achieve the desired outcomes.
Point Source (PS)	Planning and governance	1	Fewer license exceedances and reduced nutrient loads released to water because of WSP actively pursuing strategies for reducing discharge, including managing issues associated ageing STP infrastructure before they get critical; and maximising the use of recycling and beneficial reuse options.
	Infrastructure management and maintenance	2	Potential for failure reduced through effective planning of sewerage network asset management and maintenance activities.
		3	Capacity of wastewater treatment plant assets with respect to expected population increases is managed through effective collaboration between the WSP with other parts of council and State Planning and additional wet weather overflow nutrient loads linked to Infiltration and Illegal Connection (I&I) issues are well understood and mitigated.
	Social approaches	4	Innovative approaches and whole of catchment total water cycle management solutions to reduce nutrient loads achieved through effective networks and collaborations. Reduced frequency of unplanned releases achieved through effective staff capacity building and training. Further nutrient emission reductions are achieved through customer education and improved influent quality.
	Monitoring, evaluation, reporting and improvement	5	Environmental impacts of releases reduced through effective monitoring, early detection and ongoing reporting, review and improvement.

1.4.5 Score Aggregation

Activities were rated using unique assessment criteria, accompanied by guidance notes to explain the intended basis for activity evaluation. All activities were rated on a four-point 'ABCD' scale, with score ranges given for each rating category. The same scale was used to score and grade practice level when individual activities were aggregated to the level of management activity groups (MAGs), components, overall LGAs and the overall region. The process of aggregating scores to each MAG level was as per (Department of Environment, Tourism, Science and Innovation, 2022) and involved averaging across relevant activities and/or activity groups (Table 3).

Table 3. Rating categories and colour coding for the UWSF results.

Terminology	Practice Standard			
Practice Level Rating	A	B	C	D
Practice Level Performance	Innovative and/or Aspiration	Current Best Practice	Minimum Standard	Outdated Practices
Water Quality Risk Framework	Lowest Risk	Low-Moderate Risk	Moderate Risk	High Risk
Score Range	>17.5	12.5-17.4	5.0-12.4	<5.0

1.4.6 Deriving Results

To provide information of more direct relevance to participating local governments, MAG-level group ratings were derived. This is because the framework assigns local government operational goals to each MAG so local governments can use them to evaluate their performance with respect to achieving those goals. For public reporting, report card region-level results are to be used and can be presented in coaster form. MAG-level result summaries are not likely to be relevant to the broader community readership. Results are to be summarised using the following activity groupings:

- Elements (analogous to indicators)
- Components (analogous to indicator categories)
- Overall Urban Stewardship (analogous to overall grade)

Element-level groupings relate to the following four elements, which are common to each component:

- **Policy, planning and governance** (relates to policy setting, along with planning document and procedure document content)
- **Infrastructure management and maintenance** (relates to on-ground management activities)
- **Social approaches** (relates to capacity, training, collaboration, and research & development)
- **MERI** (relates to monitoring & evaluation and how information is used to improve aspects of the above three elements)

Three of these are part of the 'classic' planning and implementation cycle. The fourth, social approaches, is an enabling element that is integrated within and supports the planning and implementation cycle. The steps involved to produce these results are as follows.

- Element-level summary results for individual local government areas are derived by averaging across relevant MAGs.
- Averaging common element scores across local government areas.
- Averaging common component scores across local government areas.
- Averaging overall urban water management scores across local government areas.

See Table 4 below for elements and corresponding MAGs for each component (referring to Table 2 for the number of MAG descriptions). A coaster with element level of reporting is presented in Figure 1, and coaster with MAG level reporting is presented in Table 4.

Table 4. Management activity groups (MAG) linked to elements for each framework component.

Element	Relevant Developing Urban MAGs	Relevant Established Urban MAGs	Relevant Point Source MAGs
Policy, planning and governance	1,2, and 3	1 and 2	1
Infrastructure management and maintenance	4	3	2 and 3
Social approaches	5	4	4
MERI	6	5	5

Figure 1. Coaster showing the 2024-25 Healthy Waters Partnership UWSF results

1.5 UWSF: Results

Overall scores and grades for the Dry Tropics LGA are presented for 2024-25 in Table 5. The scores and grades for each of the MAG elements with the three primary components are presented in Table 6.

The overall regional score for 2024-25 was 13.49 (B), which was an improvement from the regional score for both 2022-23 (12.92, B) and 2020-21 (10.64, C). Developing Urban was the highest scoring component (14.33) with a grade of B, while Established Urban was the lowest scoring component (12.15) with a grade of C. The Point Source component received a score of 14.00 and a grade of B. Both the Established Urban and Point Source components showed an improvement in score and grade from the previous assessment in 2022-23. However, the Developing Urban component showed a slight decrease to its score, but with no change in grade (Table 5). It is possible that the decline in score was the result of a more focussed self-assessment conducted at the workshop than was the case for previous assessments. This is because participants (and delivery partners) are likely more experienced and familiar with the technical and specific nature of the assessments.

Table 5. Urban Water Stewardship Framework, current and historical scores and grades.

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	2024-25	2022-23	2020-21
Developing Urban	14.33 (B)	14.50 (B)	9.46 (C)
Established Urban	12.15 (C)	10.35 (C)	10.45 (C)
Point Source	14.00 (B)	13.90 (B)	12.0 (C)
Overall	**13.49 (B)**	**12.92 (B)**	**10.64 (C)**

Scoring range: ■ = High risk (<5.00) | ■ = Moderate risk (5.00 to 12.40) | ■ = Moderate-low risk (12.50 to 17.40) | ■ = Lowest risk (>17.50) | ■ = No data available.

In the Developing Urban component of the UWSF, the scores for two of the six management activity groups (MAGs) improved from the 2022-23 assessment round, with both increasing a full grade (MAG 1 – C to B, and Mag 6 – B to A). However, four of the six MAGs declined, one an entire grade. Notably this is a significant change from the previous comparison which saw five of six MAGs improve.

For the Established Urban component, the scores for three of five MAGs increased from the 2022-23 report, with the remaining two MAGs receiving identical scores compared to the previous assessment. There was no change in grade for any MAG, nor for the overall component.

For the Point Source component, two of the five MAGs improved, two remained consistent, and one of five MAGs declined from the 2022-23 report. The grade increased for MAG 5 from B to A, however no other grade changes occurred for any MAG, nor the overall component (Table 6).

Table 6. Scores and grades for components and their management activity goals for the Dry Tropics LGA for 2024-25.

Component	Element	MAG	Score (Grade) 2024-25	2022-23	2020-21
Developing Urban	Policy, planning and governance	1	14.25 (B)	12.25 (C)	10.00 (C)
		2	16.25 (B)	16.50 (B)	6.75 (C)
		3	13.00 (B)	14.50 (B)	7.00 (C)
	Infrastructure management and maintenance	4	10.00 (C)	15.00 (B)	8.00 (C)
	Social approaches	5	14.50 (B)	15.00 (B)	8.00 (C)
	MERI	6	18.00 (A)	13.75 (B)	17.00 (B)
	Overall	**Overall**	**14.33 (B)**	**14.50 (B)**	**9.46 (C)**
Established Urban	Policy, planning and governance	1	11.00 (C)	9.00 (C)	10.00 (C)
		2	9.00 (C)	9.00 (C)	9.50 (C)
	Infrastructure management and maintenance	3	12.00 (C)	8.00 (C)	6.00 (C)
	Social approaches	4	18.25 (A)	18.25 (A)	18.75 (A)
	MERI	5	10.5 (C)	7.50 (C)	8.00 (C)
	Overall	**Overall**	**12.15 (C)**	**10.35 (C)**	**10.45 (C)**
Point Source	Policy, planning and governance	1	15.00 (B)	14.00 (B)	12.00 (C)
	Infrastructure management and maintenance	2	14.00 (B)	14.00 (B)	10.00 (C)
		3	10.00 (C)	10.00 (C)	13.00 (B)
	Social approaches	4	14.00 (B)	16.00 (B)	13.00 (B)
	MERI	5	19.00 (A)	16.00 (B)	12.00 (C)
	Overall	**Overall**	**14.00 (B)**	**14.00 (B)**	**12.00 (C)**

Scoring range: ■ = High risk (<5.00) | ■ = Moderate risk (5.00 to 12.40) | ■ = Moderate-low risk (12.50 to 17.40) | ■ = Lowest risk (>17.50) | ■ = No data available.

1.5.1 Key messages

- This was the third full assessment of urban water stewardship undertaken in the Dry Tropics Region using the Urban Water Stewardship Framework.
- The Dry Tropics LGA's overall urban water management rating indicates the LGA is, on average, is applying current industry 'Best practice' stewardship.
- The Developing Urban and Point Source components both received an overall grade of B, indicating these components are currently associated with "best practice" stewardship.
- The Established Urban component received an overall grade of C, indicating this component is currently associated with minimum industry standard practices, which fall short of stewardship.
- The overall score for the Dry Tropics LGA improved from the 2022-23 report, however the grade of "best practice" stewardship remained the same.

1.6 Confidence Score

The assessment of Urban Water Stewardship includes a measure of the confidence surrounding the data and analysis used in the UWSF. Assessment of confidence is based upon five criteria covering the maturity of the method (stage of development), level of data validation, representativeness (spatial and temporal factors, and sample size), directness of measurements, and measured error. The confidence rank is based on the score of the summed criteria. Confidence scores (1 – 3) for each criterion were weighted and then summed to provide the final score and rank Table 7.

Table 7. Confidence scores for the Urban Water Stewardship Framework.

Indicator Category	Maturity (x0.4)	Validation (x0.7)	Representativeness (x4)	Directness (x0.7)	Measured error (x0.7)	Score (Rank)
UWSF	1	1	2.6	1	1	12.9 (3)

2 REFERENCES

Australian Government. (2023). *Reef Water Quality Report Card*. Retrieved from Reef 2050 Water Quality Improvement Plan: https://reportcard.reefplan.qld.gov.au/home?report=overview&year=611f443aba3074128316eb07

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