

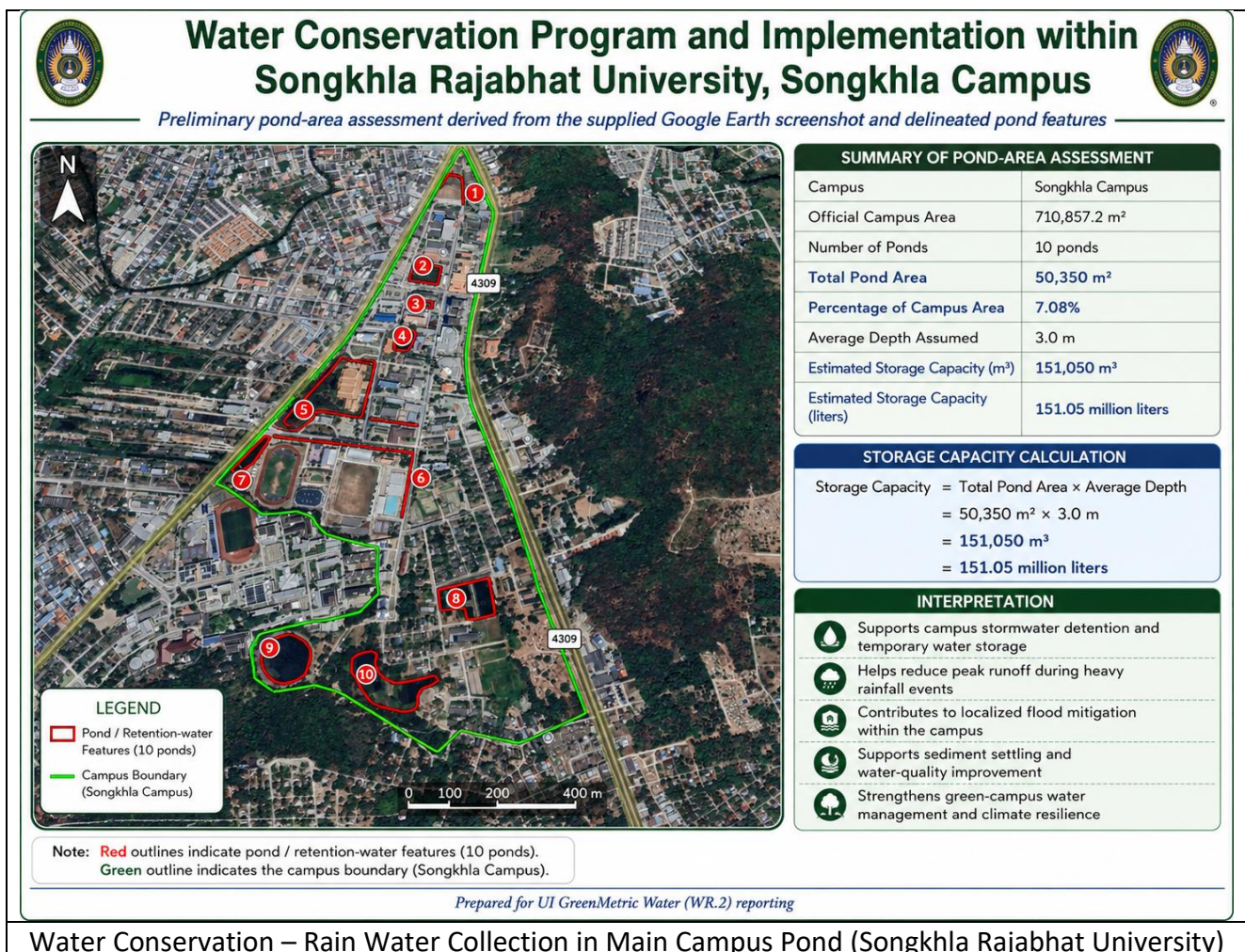


UI GreenMetric Questionnaire

University : Songkhla Rajabhat University
Country : Thailand
Web Address : www.skru.ac.th

[4] Water (WR)

[4.2] Water Conservation Program Implementation (WR.2)



Water Conservation – Rain Water Collection in Main Campus Pond (Songkhla Rajabhat University)



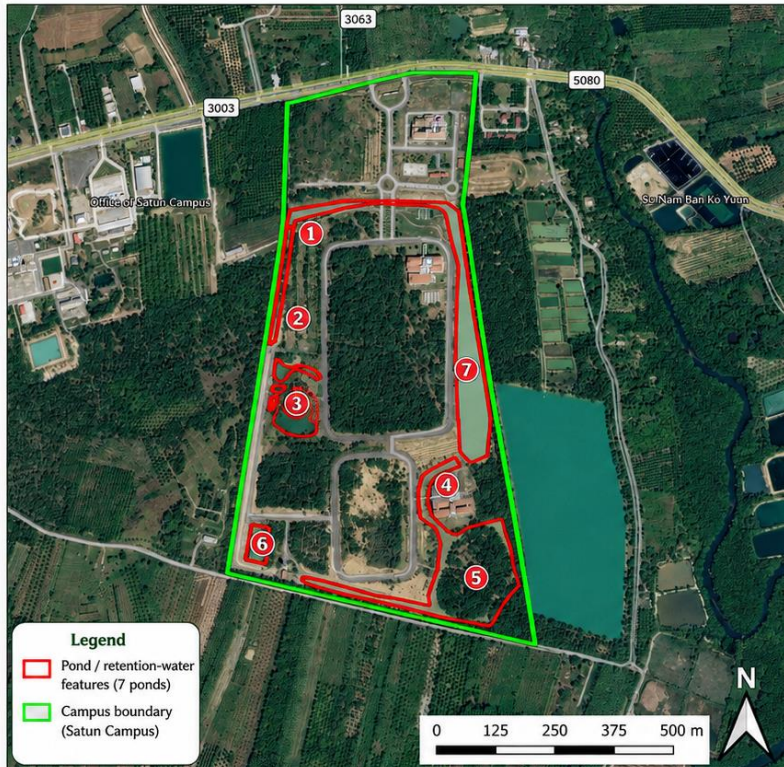
The Songkhla Campus contains **10 ponds** with a total pond area of approximately **50,350 m²**, representing **7.08%** of its total campus area of **710,857.2 m²**.



The retention ponds and stormwater storage areas within Songkhla Rajabhat University Main Campus



Water Conservation Program and Implementation within Songkhla Rajabhat University, Satun Campus



Summary of Pond-Area Assessment

Campus:	Satun Campus
Official Campus Area:	543,740 m ²
Number of Ponds:	7 ponds
Total Pond Area:	89,717 m ²
Percentage of Campus Area:	16.50%
Average Depth Assumed:	3.0 m
Estimated Storage Capacity (m ³):	269,151 m ³
Estimated Storage Capacity (liters):	269.15 million liters
Open soil / grass-covered / permeable area:	134,155 m ²

Storage Capacity Calculation

$$\begin{aligned}\text{Storage Capacity} &= \text{Total Pond Area} \times \text{Average Depth} \\ &= 89,717 \text{ m}^2 \times 3.0 \text{ m} \\ &= 269,151 \text{ m}^3 \\ &= 269.15 \text{ million liters}\end{aligned}$$

Interpretation

- Supports campus stormwater detention and temporary water storage.
- Reduces peak runoff during heavy rainfall events.
- Improves flood mitigation and delayed discharge within the campus.
- Enhances sediment settling and supports water-quality improvement.
- Works together with 134,155 m² of open soil, grass-covered, and permeable areas to increase rainfall absorption and reduce runoff.
- Strengthens green-campus water management and climate resilience.



Note: Red outlines indicate pond / retention-water features. Green outline indicates the Satun Campus boundary. Assessment derived from the supplied Google Earth screenshot and delineated pond features.

Preliminary estimation of red-framed pond areas at Songkhla Rajabhat University, Satun Campus
The Satun Campus contains **7 ponds** with a total pond area of approximately **89,717 m²**, representing **16.50%** of its total campus area of **543,740 m²**.



The Thung Yai Saraphi Model at Songkhla Rajabhat University, Satun Campus

Campus	Official Campus Area (m ²)	Number of Ponds	Total Pond Area (m ²)	Percentage of Campus Area	Average Depth	Estimated Storage Capacity (m ³)	Estimated Storage Capacity (Million Liters)
Songkhla Campus	710,857.2	10	50,350	7.08%	3 m	151,050	151.05
Satun Campus	543,740.0	7	89,717	16.50%	3 m	269,151	269.15
Combined Total	1,254,597.2	17	140,067	11.17%	3 m	420,201	420.20

Description:

Songkhla Rajabhat University implements an integrated water conservation program across the Songkhla Campus and Satun Campus through the management of retention ponds, stormwater-storage areas, drainage corridors, permeable landscapes, vegetated buffers, and other green-blue infrastructure. The program is designed to retain rainfall within the university, reduce surface runoff, delay discharge to public drainage systems, mitigate localized flooding, support sediment retention, and strengthen the university's climate resilience.

Based on preliminary geospatial assessment from delineated pond and retention-water features within the campus boundaries, the Songkhla Campus has a total area of 710,857.2 square metres and contains 10 ponds with a combined surface area of approximately 50,350 square metres. The pond area represents 7.08% of the total Songkhla Campus area. The Satun Campus has a total area of 543,740 square metres and contains 7 ponds with a combined surface area of approximately 89,717 square metres, representing 16.50% of the campus area. Across



both campuses, ***the university therefore manages 17 ponds with a combined surface area of 140,067 square metres, equivalent to 11.17% of the combined campus area of 1,254,597.2 square metres.***

Using an assumed average operational depth of 3 metres, the estimated water-storage capacity of the Songkhla Campus ponds is approximately 151,050 cubic metres, or 151.05 million litres. The Satun Campus ponds have an estimated storage capacity of approximately 269,151 cubic metres, or 269.15 million litres. The combined estimated storage capacity of the university is therefore approximately 420,201 cubic metres, equivalent to 420.20 million litres. This estimate is derived from the total pond surface area multiplied by the assumed average depth. The actual operational capacity may vary according to seasonal water levels, sediment accumulation, pond geometry, outlet structures, maintenance conditions, and available freeboard; therefore, periodic field measurement should be conducted to verify the usable storage volume.

The pond system functions as decentralized water-conservation infrastructure. During rainfall events, runoff from roofs, roads, parking areas, open spaces, sports facilities, landscape zones, and surrounding developed areas are conveyed through drainage channels and overland flow paths to retention ponds and low-lying storage areas. These ponds temporarily store stormwater, slow runoff velocity, reduce peak discharge, and lower the likelihood that large volumes of water will be released simultaneously to downstream drainage systems. This process is particularly important during high-intensity rainfall, when conventional drains may be unable to convey runoff quickly enough.

The Songkhla Campus combines retention ponds with open soil, grass-covered areas, permeable surfaces, shaded pervious zones, drainage channels, and planted landscapes. Although the campus is characterized by a relatively high proportion of built-up land, its ponds and associated green infrastructure provide essential flood-mitigation and runoff-control functions. The pond network also supports sedimentation by allowing suspended solids, soil particles, leaves, litter, and organic debris to settle before water is released to downstream drainage routes. This reduces the pollutant load carried by stormwater and contributes to improved water quality.

The Satun Campus has a particularly strong capacity for water conservation because it contains a larger proportion of pond area, open land, grass-covered surfaces, and permeable landscapes. The campus includes 134,155 square metres of open soil, grass-covered areas, and permeable surfaces, which function together with retention ponds to promote rainfall infiltration, slow overland flow, reduce erosion, and increase temporary water storage. The wider green landscape and pond system make the Satun Campus an important example of campus-based stormwater management and nature-based water conservation.

In addition to water storage and runoff mitigation, the ponds create ecological benefits. Pond margins, aquatic vegetation, surrounding planted areas, and vegetated buffers can help stabilize soil, retain sediments, reduce nutrient transport, provide habitat for small organisms, and improve the overall ecological quality of the campus landscape. The retention ponds therefore perform multiple functions simultaneously: they conserve water, manage stormwater, support water-quality improvement, increase campus biodiversity, and provide outdoor learning opportunities for students and staff.

The university's water conservation program is supported by inspection and maintenance activities, including the cleaning of pond inlets and outlets, drainage-channel maintenance, vegetation management, sediment removal, inspection of embankments, and monitoring of water levels. To strengthen the program further, the university should maintain a systematic pond inventory, conduct periodic depth and capacity surveys, record rainfall and water-level data, assess sediment accumulation, monitor basic water-quality parameters, and prepare annual maintenance reports. This data will enhance the accuracy of the estimated storage capacity and provide stronger evidence for UI GreenMetric reporting.

The program contributes directly to SDG 6: Clean Water and Sanitation by promoting the conservation, retention, and sustainable management of rainfall as a campus water resource. It supports SDG 3: Good Health and Well-being by reducing stagnant-water problems, flood-related health risks, and poor drainage conditions. It contributes to SDG 4: Quality Education by providing practical learning facilities for environmental science, hydrology, climate adaptation, ecological restoration, and sustainable campus management. It supports SDG 8: Decent Work and Economic Growth by strengthening green-campus maintenance skills and environmental management capacity. It contributes to SDG 9: Industry, Innovation and Infrastructure using decentralized, nature-



based, and climate-resilient water infrastructure. The program supports SDG 11: Sustainable Cities and Communities by reducing runoff, mitigating flood risk, and strengthening the resilience of the university and surrounding urban or rural areas.

The water conservation system also supports SDG 12: Responsible Consumption and Production by treating rainfall as a valuable resource and encouraging responsible water management. It contributes to SDG 13: Climate Action by increasing the university's capacity to adapt to heavy rainfall, extreme weather, and climate-related water risks. It supports SDG 14: Life Below Water by reducing the transport of sediment, nutrients, litter, and contaminated runoff to downstream aquatic environments. It contributes to SDG 15: Life on Land by maintaining vegetated buffers, protecting soil functions, supporting terrestrial biodiversity, and improving landscape ecological connectivity. Finally, the program supports SDG 17: Partnerships for the Goals by encouraging cooperation among university administrators, facilities personnel, academic units, students, local authorities, and communities in the implementation and improvement of sustainable water-management practices.

Overall, the water conservation program demonstrates that Songkhla Rajabhat University manages rainfall not merely as stormwater to be removed, but as a valuable environmental resource that can be retained, delayed, filtered, stored, and integrated into a wider green-campus system. Through the combined use of ponds, permeable surfaces, drainage channels, vegetated buffers, and ecological maintenance, the university strengthens water security, reduces runoff, improves climate resilience, supports campus biodiversity, and advances sustainable development across both campuses.

Songkhla Rajabhat University has implemented water conservation measures through **17 retention ponds**, stormwater-storage areas, permeable landscapes, drainage channels, and green infrastructure across both campuses. These facilities retain rainfall, reduce runoff, delay discharge, and support sustainable campus water management. Based on the available evidence, the university is classified under **1–25% water conserved**.