Centurion University
Shaping Lives... Empowering Communities...

SDG 14: LIFE BELOW WATER

Watershed Management Strategy Based on Location-Specific Aquatic Biodiversity

3	4	35	1,512 mm
watershed ponds managed by species and use	native fish species bred on the Aquaculture Research Farm	farmers trained in two NABARD-sponsored sessions, 2025	average annual rainfall on the campus catchment

1. Overview

CUTM's watershed management strategy covers four parts: capturing rainfall across the campus catchment and retaining it in a year-round wetland and ponds; managing three watershed ponds according to their species composition and use; breeding native fish species of the region; and training local farmers in location-specific species selection and water management. In 2025 the three watershed ponds were assessed and in two ponds fish were stocked with on 21 March 2025.

2. Campus Catchment and Water Retention

The Paralakhemundi campus spans about 104 acres of gently rolling terrain in a region with an average annual rainfall of 1,512.3 mm. Rainwater is captured from a rooftop catchment of 879,556 sq. ft, a pavement area of 76,170 sq. ft and a road area of 152,340 sq. ft, and is channelled into collection tanks and recharge pits that replenish groundwater and reduce surface runoff. At the centre of the campus is a wetland ecosystem, replenished mainly by rainwater, which stays active throughout the year and provides habitat for aquatic plants and animals. All campus wastewater is treated in four sewage treatment plants and reused, so no effluent enters the ponds or wetland untreated. The University's Sustainability Policy requires the campus green landscape to include water bodies for biodiversity.

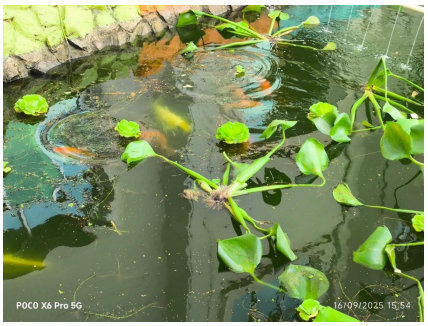


Figure 1. Campus pond with fish and aquatic plants, Paralakhemundi, 16 September 2025

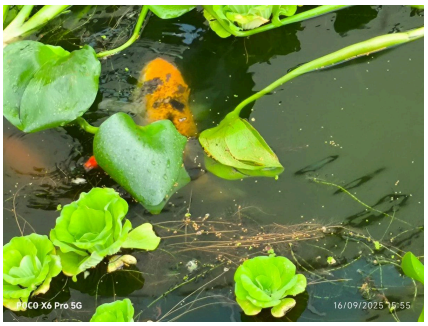


Figure 2. Fish in a campus pond, Paralakhemundi, 16 September 2025

Source: Environmental Audit Report 2024–25, CUTM Paralakhemundi (audit of 17–18 June 2025); CUTM Sustainability Policy, Version 2 (2024)

3. Watershed Ponds Managed by Species and Use

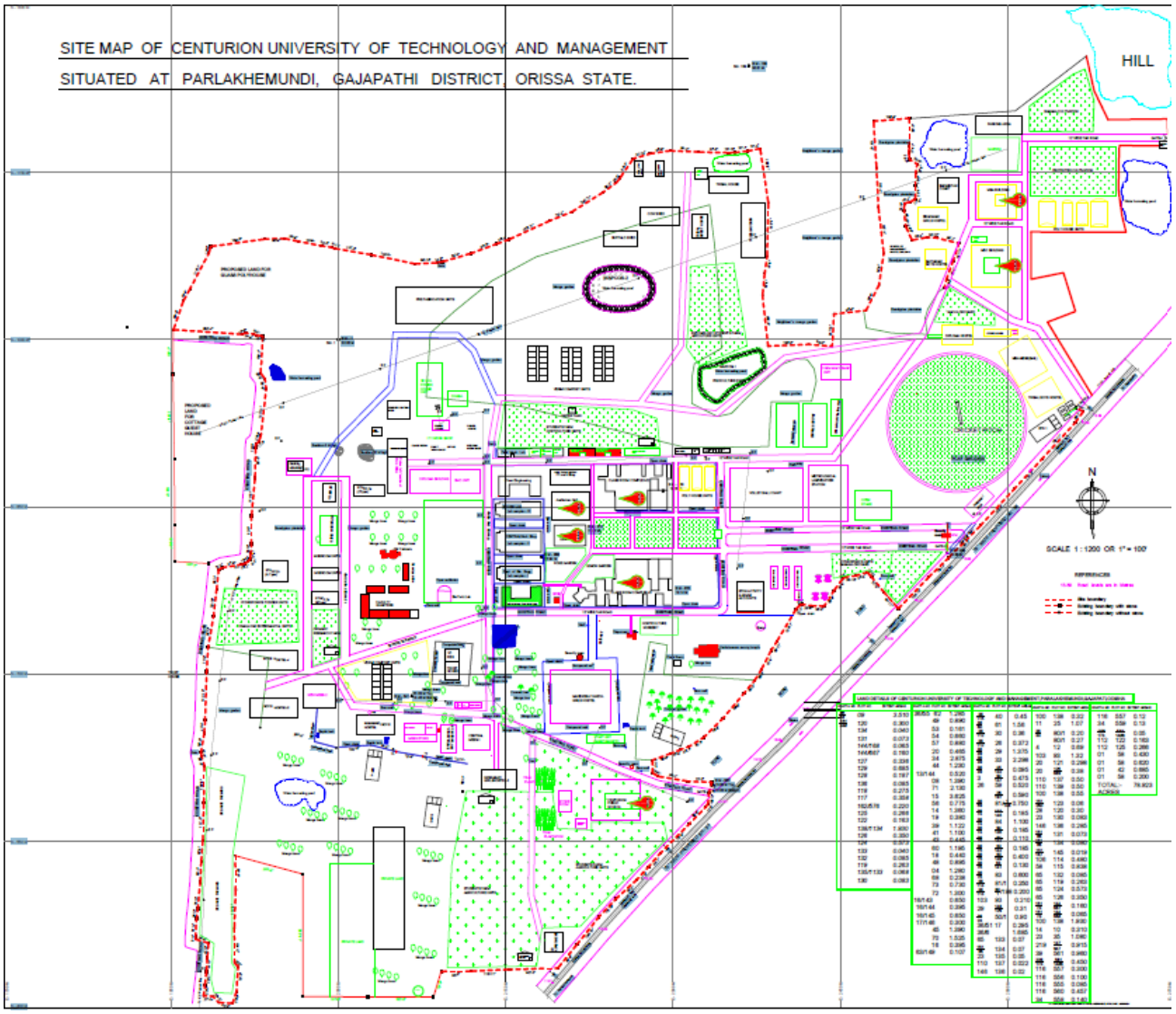
The School manages three ponds as distinct watershed units, each with its own species composition and objective. All three were assessed and fish were stocked on 21 March 2025; the Triangle Pond stocking trial was carried out by four students of the Field Experiential Learning Programme (FELP).

Table 1. Watershed ponds and their location-specific management

Pond	Management objective	Species	Biodiversity consideration	2025 activity
Triangle Pond	Intensive aquaculture; research on stocking densities matched to pond carrying capacity	Indian major carps: rohu, catla, mrigal	Stocking density and species chosen to suit local water chemistry, temperature and nutrient levels	Stocking trial, 21 March 2025 (4 FELP students)
WAPCOS Pond	Polyculture; comparison of native and introduced species	Indian major carps with pacu (*Piaractus brachypomus*) in controlled numbers	Pacu, an exotic species, is kept under containment and its interactions with native carps are monitored	Species-diversity assessment and restocking, 21 March 2025
Tribal Village Pond	Community use and water conservation for tribal communities	Native species chosen with local tribal communities	Native biodiversity, water retention and traditional knowledge of the community	Community stocking and consultation, 21 March 2025



Figure 3. In-pond cage system at Paralakhemundi Campus, part of the watershed pond infrastructure



4. Native Species Breeding

The Aquaculture Research Farm breeds native fish species of Odisha's rivers, ponds and seasonal water bodies, so that stocking in the watershed ponds and on farmers' ponds uses locally adapted species.

Table 2. Native species bred on the Aquaculture Research Farm

Species	Common name	Role in the local aquatic ecosystem
Labeo rohita	Rohu	Dominant native carp of Odisha's inland waters and fisheries
Catla catla	Catla	Surface feeder; key species in traditional polyculture
Cirrhinus mrigala	Mrigal	Bottom feeder; supports nutrient cycling in ponds
Heteropneustes fossilis	Singhi (stinging catfish)	Native air-breathing catfish of rainfed and seasonal ponds

Exotic species such as pacu are cultured only in contained systems, including the WAPCOS Pond and the Recirculating Aquaculture System (RAS) unit, and the introduction of exotic species into open or shared water bodies is actively discouraged.

5. Farmer Training on Location-Specific Watershed Management

Under a NABARD-sponsored project, the School of Fisheries trained 35 farmers in two watershed training sessions on managing the different types of water bodies found in and around Gajapati District.

Table 3. NABARD-sponsored watershed training

Date	Format	Farmers trained
26 August	Training programme	20
23 November	Three-day training	15
Total		35

Ecosystems covered: rainfed ponds (seasonal water availability, stocking densities and drought-resilient species); hill streams (species ecology, flow and riparian vegetation); village tanks and community ponds (traditional management combined with water-quality monitoring); and water-use efficiency in integrated farming and fish-culture systems.

Practices taught: choosing species suited to the local ecology, pond type and seasonal water; biosecurity and disease surveillance; reducing runoff and conserving water in pond catchments; and stocking rates based on pond area and carrying capacity.



Figure 4. Farmers and faculty at the NABARD-sponsored training, 2025