

**BANGKOK | CHULALONGKORN  
UNIVERSITY CENTENARY PARK**

# Landscape as an Opportunity in Crisis

Faced with Bangkok's land subsidence and rising sea levels, landscape architect Kotchakorn Voraakhom and her team at Landprocess took the opportunity to design a park to address the city's urban flood crisis.



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Low-lying topography and urbanisation mean that flooding is a key issue in Bangkok.  
*Image: Braden Jarvis / Unsplash*

## The Challenge

Bangkok sits on the soft marine clay and aquifers of the Chao Phraya river delta. The city has a low lying topography averaging 1.5 m above mean sea level, with its lowest point at 0.5 m below mean sea level. Even with improved groundwater management, the city continues to sink a net 2 cm every year. Recent forecasts estimate that nearly 40% of the city may experience flooding annually by 2030, with almost the entire city at risk by 2050. With its high population density, this puts Bangkok within the top 10 city populations most exposed to flooding.

Concurrently, Bangkok's densification over the last two decades has reduced green spaces from 40% to less than 10% of the city. This is an average of 3.3 m<sup>2</sup> of green space per person, a third of the World Health Organization's recommendation. This also reduces pervious ground for stormwater infiltration, accelerating stormwater runoff and flooding.

**In contrast to the densely built environment around it, this site in the heart of the city was transformed into a public park to collect, treat and hold stormwater runoff.**

## The Solution

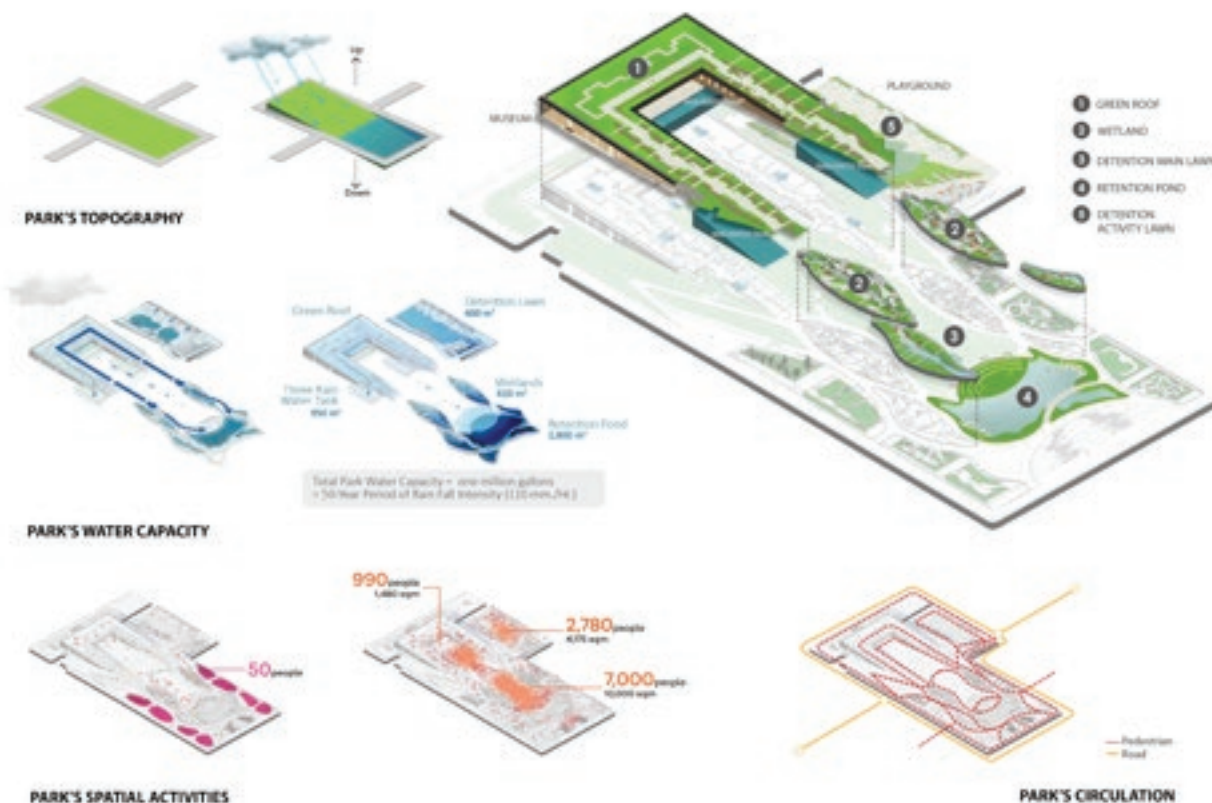
Located between commercial, education and government institutions in the Pathumwan district, the Chulalongkorn University Centenary Park was commissioned to celebrate the 100th anniversary of the university's founding, and extend the axial "green corridor" westward from the main campus. This formed the basis of the project's key objectives—to fulfil the university's vision, to connect the various zones, and to counter the tendency towards hardscape development in the city.

In 2017, the park was opened as a green facility to mitigate urban flood disaster risk. In contrast to the densely built environment around it, this 0.04 km<sup>2</sup> site in the heart of the city was transformed into a public park to collect, treat and hold stormwater runoff.

The park features a 5,200-m<sup>2</sup> green roof inclined at 3° to harness the power of gravity and direct rain and runoff to three underground tanks and four constructed wetlands. Cascading weirs and retention ponds further slow the rate of water runoff across the site.

The retained water can irrigate the park for up to a month during normal conditions, and can overflow onto the inclined lawn to hold double its usual capacity during heavy floods. Collectively, the landscape's maximum water capacity takes into account the type of intense rainfall events that are projected to recur every 50 years.

Low maintenance native grass, weeds and water plants increase water aeration, filtering the water as it flows to the lowest end of the



Water systems are integrated with mobility networks, nature, education and programming.  
Image: Landprocess





The Chulalongkorn University Centenary Park is an example of green infrastructure that tackles flood resilience.  
Image: Landprocess

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The park features eight “landscape outdoor classrooms” of differing biomes and designs, a museum and the green roof.

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park, while recreating a healthy ecosystem by attracting local birds and insects.

The park also collects wastewater from its surroundings and passes it through a series of internal wastewater filters before routing the cleaned water back to the vicinity. This helps to supplement the water supply of the Pathumwan district while gradually normalising passive rainwater collection on a daily basis.

To make the park accessible to pedestrians and cyclists, a 1.3-km road perpendicular to the park was revamped by reducing four

vehicle lanes to two. Corridors of rain gardens line both sides of the road to reduce runoff from the hardscape while providing shade to commuters.

The project team also used the park design to enhance public education about waterscapes and nature. The park features eight “landscape outdoor classrooms” of differing biomes and designs, a museum and the green roof. To encourage public interaction with the blue infrastructure, stationary water bikes along the retention pond are plugged into the park’s water aeration system.



A variety of community spaces support biophilic educational and recreational programming.  
*Images: Landprocess*





The park strives to encourage human interaction and education through design.  
Image: Landprocess

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## The Outcome

The park has introduced the people of Bangkok to new possibilities of living with water without fear, even in the face of climate change. Connected to well-established commercial areas, the park supports a variety of recreational and public uses while providing a green lung within the city, demonstrating that landscape architecture can be a lens through which the built environment is reconsidered. With an estimated 1,000 visitors per day and many notable design awards such as the World Landscape Architecture 2019 Award of Excellence under the Built-Large category, the park has encouraged other landscape architecture projects to follow suit—the Green Bangkok 2030 initiative, for example, aims to increase green spaces in the city to 10 m<sup>2</sup> per resident.

While a single park cannot control flooding across an entire city, the consistency of the park's messaging, down to its redesigned road, demonstrates the potential every project has to spur innovation for a more sustainable and resilient future amidst urbanisation and climate change. 📍