

Height-Adjustable Eco-Friendly Seawall Proposal Awarded under Coastal Protection Research Programme in Singapore

Kajima Corporation (Chairman and President: Yoshikazu Oshimi), in collaboration with the National University of Singapore (NUS), Singapore Institute of Technology (SIT), Delta Marine Consultants Singapore Pte Ltd, Samwoh Innovation Centre Pte Ltd, and Oung Construction (S) Pte Ltd, has been awarded a Living Lab research project under Singapore’s Coastal Protection and Flood Management Research Programme (CFRP) administered by PUB, Singapore’s National Water Agency. This research project is titled “Adaptive Eco-Friendly Seawalls for Coastal Protection” *1.

The CFRP was launched in 2023 with a budget of approximately JPY 15.5 billion*2, the research programme is set up to support Singapore’s long term coastal protection ecosystem. It aims to develop applied knowledge and experience in the coastal protection field, while also promoting technology translation and industry growth. The project reflects close collaboration with industry partners, universities and government agencies to support Singapore’s long-term coastal resilience efforts.

Adaptive & Eco-Friendly Seawall

Accommodating
Uncertainty

Long-Term
Durability,
Sustainability and
Circular Economy

Biodiversity
Enhancement for
“City in Nature”

Adaptive Design

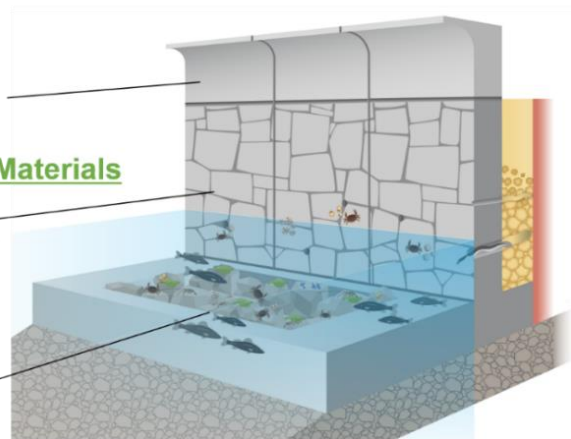
- Height-Adjustable Seawall

Sustainable & Resilient Materials

- Green Concrete
(Low carbon & Recycled materials)
- Self-Healing Concrete

Nature-Positive Design

- Based on local biodiversity
in Singapore



Under this research project, an adaptive seawall will be constructed using pre-cast concrete elements to simulate how coastal protection infrastructure can be built up progressively to respond to gradual sea level rise. In addition, the seawall panels will be fabricated using low-carbon materials, including Kajima’s low-carbon concrete technology, “ECM Concrete,”*3. The seawall will incorporate nature-positive features to enhance local marine biodiversity, building on the habitat-enhancing seawall panel concept that Kajima has applied in Japan, while taking into account Singapore’s

coastal ecosystem. To minimise maintenance costs, the seawall will be equipped with smart sensors and self-healing capabilities. The project period is scheduled to span three years, commencing on July 1, 2026.

Based on the results obtained through this research programme, Kajima and its partners will work towards the wider implementation of the eco-friendly seawall technology.

*1 The webpage link of media release on PUB Living Lab, June 17, 2026

[PUB advances coastal protection with \\$14 million funding to test\]bed five Living Lab projects | PUB, Singapore's National Water Agency](#)

*2 The webpage link of media release on Coastal Protection and Flood Management Research Programme, Mar 2, 2023

[PUB launches \\$125 million Coastal Protection and Flood Management Research Programme to support climate adaptation efforts | PUB, Singapore's National Water Agency](#)

*3 ECM Concrete was jointly developed by one university and seven companies, including Kajima, under a project by NEDO, the New Energy and Industrial Technology Development Organization, Japan.

Participating Institutions and Main Roles

Participating Institutions	Main Role
Host Institution	
Kajima Technical Research Institute Singapore Office, Kajima Corporation	Overall project management, low-carbon concrete, eco-friendly seawall design, and seawall monitoring using optical fiber sensing
Partner Institutions	
National University of Singapore (NUS)	Hydrodynamic simulation for seawall design and biodiversity consideration
Singapore Institute of Technology (SIT)	Biodiversity and ecological monitoring of seawalls, and eco-friendly seawall design
Delta Marine Consultants Singapore Pte Ltd	Seawall design and height-adjustable seawall structure
Samwoh Innovation Centre Pte Ltd	R&D testing, recycled materials, self-healing concrete and precast seawall structures
Oung Construction(S) Pte Ltd	Site arrangement and test seawall installation in the pilot demonstration