MEDIA RELEASE

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PUB launches $125 million Coastal Protection and Flood Management Research Programme to support climate adaptation efforts

The CFRP will organise and drive research and knowledge development to address the twin challenges of coastal and inland flooding

Singapore, 2 March 2023 – PUB has launched Singapore's first research programme dedicated to strengthening coastal protection and inland flood management capabilities. The $125 million Coastal Protection and Flood Management Research Programme (CFRP) will advance knowledge in coastal and flood resilience, as well as spur the growth of a vibrant research and development ecosystem for coastal and flood resilience in Singapore. It will be funded under the Research, Innovation and Enterprise 2025 Plan.

2 With climate change, sea levels around Singapore are projected to rise by up to 1 metre[1] by 2100. More extreme storms with higher rainfall intensities could become more frequent, resulting in increased flood risks. As a low-lying island surrounded by the sea, enhancing our nation's overall coastal and flood resilience is a critical long-term endeavour that will require new capabilities and technologies.

Multi-disciplinary research agenda

3 As Singapore's coastal protection agency, PUB seeks to develop effective climate adaptation measures to protect our coastline against sea level rise, supported by robust climate science and deep understanding of climate change impact. The CFRP consists of four research verticals[2] to develop innovative, sustainable, and smart solutions tailored for Singapore's urban and land-squeezed environment – a challenge which many other coastal cities also face. The verticals will be supported by three cross-cutting research horizontals:

- Advance coastal science research to deepen understanding of extremities and changes in coastal processes affected by climate change;

[1] Compounded by transient effects such as high tides and storm surges, sea levels could rise to 4m or 5m.
[2] The four research verticals are (1) Innovative Engineering Solutions for Coastal Protection and Flood Management, (2) Integrated Nature-based Solutions for Coastal Protection, (3) Sustainable Infrastructure Solutions for Coastal Protection and Flood Management, and (4) Smart Management Solutions for Coastal Protection and Flood Management.

- Enhance capabilities in monitoring, prediction, and digitalisation of Singapore's coastal environment;

- Develop an effective framework to support integrated and adaptive planning, to strengthen risk management and decision-making processes when prioritising investments made in coastal and flood protection infrastructure.

4 Ms Hazel Khoo, Director of PUB's Coastal Protection Department said, "Coastal protection is a long-term challenge. The CFRP will catalyse coastal science and technological advancement that will support the Singapore's multi-decadal agenda to enhance flood resilience in the face of climate change. The CFRP will form a key platform for expert knowledge development and exchange, through driving multi-disciplinary research and forging strong partnerships."

5 A new multi-institutional **Centre of Excellence (CoE)** will be set up to conduct research in the above areas. The CoE will be hosted at the National University of Singapore, with The Nanyang Technological University (NTU), Singapore University of Technology and Design (SUTD), Singapore Institute of Technology (SIT) and Agency for Science, Technology and Research (A*STAR) as partner institutes . With collaboration at the core of the CoE, the research community will grow to include international institutions as well as industry partners.

6 The CoE will anchor in-house research with the aim of growing the local talent base of research scientists and engineers. Institutes of Higher Learning can capitalise on the synergies with research work to enrich education and professional training in coastal engineering and flood management. These are in line with PUB's objective to develop long-term capability in coastal protection and flood management and groom a sustained pipeline of local professionals for coastal protection and flood management work.

7 The translation and commercialisation of coastal protection and flood management solutions will be achieved via two of the CFRP's components – **Applied Research** and a **Living Lab**. Applied Research projects can be executed through Request for Proposals (RFP) or direct award (*administered by PUB*), while the Living Lab will provide a platform for promising research projects that have a higher technology readiness level to be proven and accelerate their adoption. Developed solutions that are successfully test-bedded will eventually be implemented locally, with the potential to be exported overseas.

Building on coastal protection efforts

8 The CFRP will build on the existing research on coastal protection and flood management knowledge and expertise. In the longer term, PUB will consolidate and coordinate all future research initiatives related to coastal protection and flood management under the CFRP to support the national agenda.

9 The CFRP will also support PUB's ongoing coastal protection and flood management efforts. These include:

- Modelling, testing, and validating new coastal protection solutions identified through PUB's site-specific studies, which commenced in 2021, at various sections of the coastline;

- Enabling future enhancements of the national Coastal-Inland Flood Model[3], using artificial intelligence and machine learning to improve forecasting capabilities;

- Supporting policy formulation, strategy development and implementation plans for coastal protection infrastructure;

- Supporting development of the Code of Practice, tailored for local conditions, to guide industry in the detailed design of coastal and flood protection infrastructure.

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About PUB, Singapore's National Water Agency

PUB is a statutory board under the Ministry of Sustainability and the Environment (MSE). It is the national water agency, which manages Singapore's water supply, water catchment, and used water in an integrated way. From April 2020, PUB also took on the responsibility of protecting Singapore's coastline from sea-level rise as the national coastal protection agency.

PUB has ensured a diversified and sustainable supply of water for Singapore with the *Four National Taps* (local catchment water, imported water, NEWater, desalinated water). PUB leads and coordinates whole-of-government efforts to protect Singapore from the threat of rising seas and the holistic management of inland and coastal flood risks.

PUB calls on everyone to play a part in conserving water, in keeping our waterways clean, and in caring for Singapore's precious water resources. If we all do our little bit, there will be enough water for all our needs – for commerce and industry, for living, for life.

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[3] Development of the Coastal-Inland Flood Model commenced in 2021. More info: https://www.pub.gov.sg/news/pressreleases/2021pr001