

FACTSHEET: STRENGTHENING OUR COASTAL DEFENCES

Background

1 By 2100, sea levels are expected to rise by more than 1 metre in Singapore¹ due to climate change. As a low-lying city surrounded by the sea, with about 30 per cent of the island less than 5 metres above sea level, Singapore is vulnerable to the effects of rising sea levels. Without timely action to protect our coastlines, parts of Singapore could be submerged, impacting our homes and livelihoods.

2 In April 2020, PUB was appointed the national Coastal Protection Agency and tasked to lead and coordinate whole-of-government efforts to develop long-term strategies to protect Singapore from the threat of rising sea levels. A Coastal Protection Department was set up within PUB, to address both coastal and inland flood risks holistically.

3 A Coastal and Flood Protection Fund (CFPF) was also announced by Deputy Prime Minister Heng Swee Keat at Budget 2020. The CFPF, with an initial injection of S\$5 billion, will fund coastal protection measures and drainage infrastructure to enhance Singapore's flood resilience.

Coastal protection studies for City-East Coast and Jurong Island to commence this year

4 Taking reference from the Building and Construction Authority's Coastal Adaptation Study² which was completed in 2019, Singapore's coastline has been divided into different segments. Site-specific studies and coastal protection measures for the various coastlines will be developed in phases progressively.

¹ Taking into account phenomena such as storm surges and land subsidence, sea levels could rise by more than 1 metre.

² The BCA's Coastal Adaptation Study (CAS) was commissioned in 2013 to assess the potential impacts of coastal inundation under possible climate change scenarios, and to study possible long-term adaptation measures.



5 City-East Coast and Jurong Island have been identified earlier to be more vulnerable and critical based on factors such as the potential impact of a flood event, criticality of assets (e.g. airports, economic and industrial districts) and opportunities to dovetail with upcoming developments. Site-specific studies on City-East Coast and Jurong Island will commence later this year.

6 PUB is expected to award the tender for the City-East Coast study in the coming months. The study will develop coastal adaptation pathways and measures that are adaptive to climate uncertainties, drawing on stakeholder insights as well as international best practices. The measures will complement the land use/master plan for the City-East Coast with co-location of amenities/recreational space for the community to enhance our living environment. Examples of potential measures include sea walls, earthen bunds, empoldering and nature-based enhancements such as mangroves. The City-East Coast study is expected to be completed in four years.

7 Following City-East Coast and Jurong Island, studies to protect the North-West coast, comprising Sungei Kadut and Lim Chu Kang, are next in line. These two areas include key assets such as Kranji Reservoir and the Woodlands Checkpoint, while Sungei Kadut is also home to a number of industries such as timber, construction and waste management.

New flood model to assess inland and coastal flood risks holistically

8 In addition to conducting site-specific studies along various coastlines, PUB will be developing a **Coastal-Inland Flood Model** to better equip the organisation for coastal protection planning and operations amidst climate change. The purpose-built Model will comprise a suite of tools (including Geospatial Information System-based data management

and analysis) that incorporates advancing climate science and data to enable holistic and updated flood risk assessment by analysing the combined effects of extreme sea levels and intense rainfall-induced inland floods for Singapore.

9 The development of the Model is important for PUB's coastal protection planning work, as Singapore needs to develop measures addressing conditions unique to Singapore (e.g. a densely built-up environment) and consider the impact of inland and coastal flooding holistically. The Model will be capable of simulating flood events based on projected rainfall and coastal events while evaluating the effectiveness of proposed coastal infrastructure under various climate scenarios. When completed, PUB will possess additional analytical capabilities to support various coastal protection functions such as scenario planning, development of infrastructure and operations management. A tender has been called for the development of the Model and is expected to be awarded by 1H 2021.