Low-lying Singapore:
Reimagining our coastal landscape for sea-level rise adaptation

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The design studio uses the extreme challenge of planning for the next 100 years in anticipation of a 3-metres sealevel rise to elicit bold, imaginative and innovative ideas that would, hopefully and in turn, catalyse new approaches in the industry.

Rising sea level in singapore

Singapore, as a coastal city-state, is especially susceptible to the effects of climate change and, in particular, rising sea levels. The National Climate Change Secretariat has projected the mean sea level to rise by up to 1 meter by 2100 (NCCS[1]). Any additional increase caused by heavier and more frequent rains would be an immediate threat to a third of the city sitting less than 5m above sea level. At the same time, coastal areas can be expected to be more intensively utilized as mixed-use developments, as gazetted in Singapore’s 2030 Master (URA[2]). From previous trends, it can be estimated that by 2030, up to 86% of coastal protection will employ man-made infrastructures (Samantha, 2014[3]), thus increasing coastal erosion and negatively impacting the natural environment. Singapore’s coastal ecosystem has also been drastically altered over the past few decades with a significant loss of natural coastal habitats - 83% of the total shoreline have been transformed from mangrove forests, natural sandy shores, and mudflats into seawalls or artificial beaches (WildSingapore[4]). This trend towards a mono-functional, static and disconnected sea-land interface must not be ignored.

Ongoing efforts on sea level rise adaptation

The government has made sea-level rise adaptation a vital agenda to Singapore’s existence. Their plans include port relocation, flood mitigation and inclusive large-scale coastal development planning strategies. Port operations will be consolidated to Tuas by 2040, freeing up land for future coastal development. The Public Utilities Board (PUB) has been encouraging the implementation of flood-mitigation structures and strategies, including flood-proof buildings, elevated buildings, elevated roads, flood gates, and water sensitive urban design (WSUD). The Greater Southern Waterfront, Northern agri-tech and food corridor, and the Greater Rustic Coast along the northern shoreline are URA’s coastal development masterplans geared towards sea level rise adaptation. On the eastern shoreline, coastal protection plans include the use of polders, dykes, a series of reclaimed islands, barrages and a coastal reservoir as buffers against inundation.