

Agreement No. CE75/2021(CE)

Study on Shoreline Management Plan – Feasibility Study

Executive Summary

September 2025

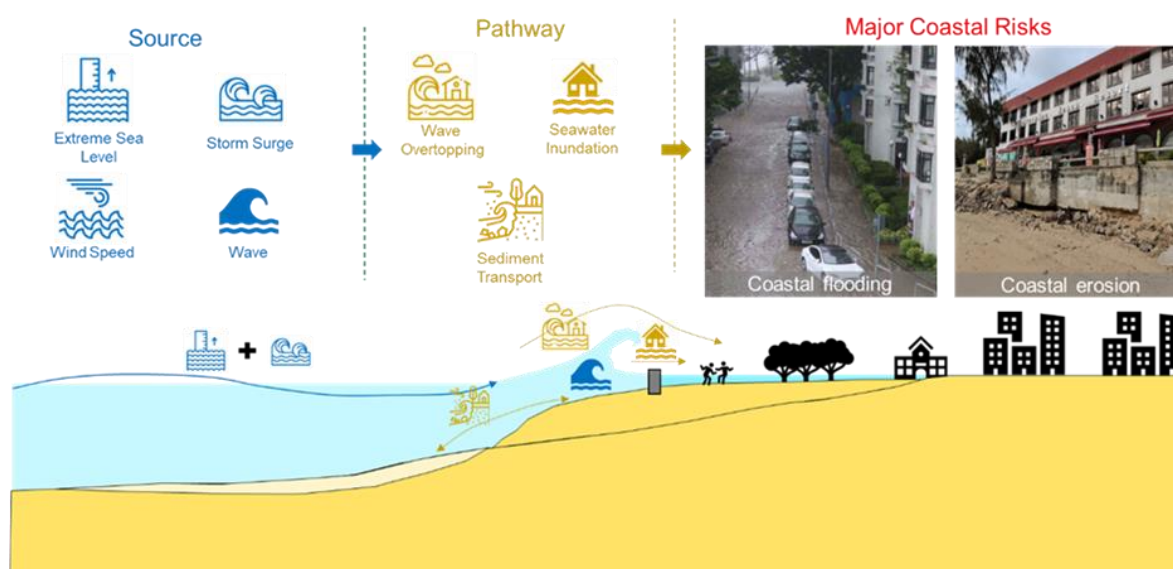
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1 Introduction

Works in Enhancing Coastal Resilience under the Effect of Climate Change So Far

Extreme weather events intensify as the climate warms. Hong Kong, like other cities, is facing problems such as rising temperatures and more extreme weather events. In particular, climate change causes **sea level rise (SLR)**, and intensification of tropical cyclones leads to **increased waves** and **storm surges**, amplifying the impact on coastal low-lying and windy areas. These local and global climate events have heightened the concern about climate resilience, especially amid the uncertainties surrounding future climate change.



For enhancing coastal protection of Hong Kong, the Civil Engineering and Development Department (CEDD) has **updated the design parameters in the Port Works Design Manual (PWDM)**¹ taking into account the data of recent super typhoons (such as Hato and Mangkhut), the Sixth Assessment Report (AR6) published by the Intergovernmental Panel on Climate Change (IPCC), and relevant research findings. This includes sea level rise, wind speed and storm surge increase.

¹ <https://www.cedd.gov.hk/eng/publications/ceo/pwdm/index.html>

To comprehensively reviewed the condition of the coastal low-lying and windy locations in Hong Kong under extreme weather and climate change, at the end of 2021, CEDD **completed the “Study of Coastal Hazards under Climate Change and Extreme Weather and Formulation of Improvement Measures – Feasibility Study” (CHS)**. The CHS adopted a risk management approach to assess the likelihood of coastal hazards and the severity of consequences, and made reference to the records of coastal damage caused by super typhoons in the past. It identified **26 coastal low-lying or windy residential areas** where are facing coastal risks as experienced from the past typhoon events. The **enhancement measures** including improvement works (such as flood walls/barriers) and management measures (such as action plans) have been progressively implemented in these areas by the Government. All of the improvement works are expected to be completed in an orderly manner by 2027.



**Glass Flood Wall
at Shek O Village**



**Demountable Flood Barrier at Nam
Wai, Sai Kung**

Furthermore, **publicity and promotional events** have been held with various stakeholders in order to enhance public awareness about coastal hazards. CEDD has also been actively **engaging with relevant parties from the Chinese Mainland and overseas** to exchange knowledge and stay updated on the latest developments in policies and technologies for combating coastal hazards in the context of climate change.



Sharing with various sectors



**Meeting with international expert of
the Intergovernmental Panel on
Climate Change**

Details and updates can be found in CEDD’s website – “Topics in Focus – Coastal Enhancement and Shoreline Management”².

² <https://www.cedd.gov.hk/eng/our-projects/topics-in-focus/index-id-39.html>

Objective of Shoreline Management Plan Study

To strategically address the potential coastal risks under the potential impact of climate change in long run, CEDD commenced a **Study on Shoreline Management Plan (the Study)**. The Study aims to provide guidelines on planning and implementing urban coastal development and protection measures and formulate the related long-term strategies and preventive measures in order to enhance the Government's and relevant stakeholders' capacities to combat climate change.

This pioneer study in Hong Kong targeted to establish an organized and sustainable plan to manage coastal risks from the following key aspects:

1. Comprehensively review the condition of the shoreline of Hong Kong to development of strategies (i.e. **Shoreline Management Strategy**) for shoreline management for mid- to end- century time horizons under various greenhouse gas emissions scenarios;
2. Assess and identify **coastal enhancement works** to plan for advance preparation to cope with the risks near the mid-century; and
3. Develop a **Shoreline Management Guideline for Coastal Development** to serve as is a systematic and strategic planning tool to manage the development along new and existing shorelines of Hong Kong.



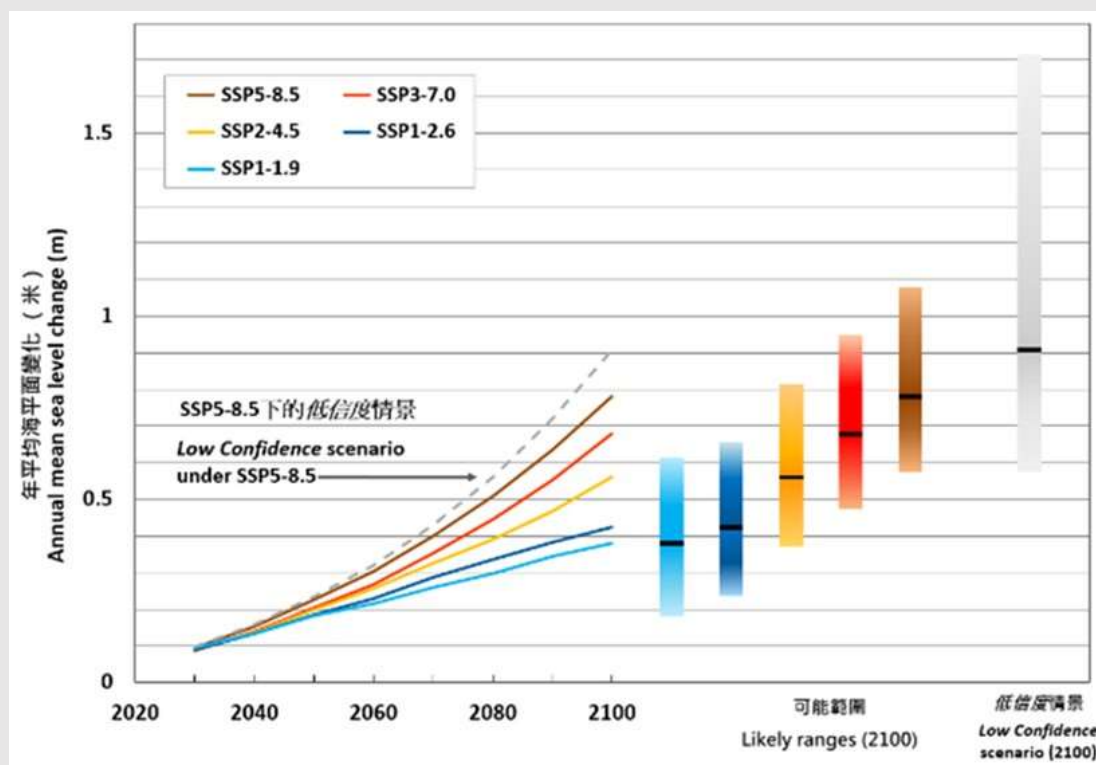
2 Strategies to Deal with Coastal Hazards Under Climate Change

Challenges associated with Climate Change

Under the Paris Agreement, 195 members of the United Nations Framework Convention on Climate Change have committed to taking actions to reduce carbon emissions and implement climate mitigation and adaptation, and an agreement to 'transition away' from fossil fuels. China has reaffirmed its commitment to achieving **carbon neutrality** before 2060. To signify Hong Kong's commitment, the HKSAR Government has announced that Hong Kong would strive to achieve carbon neutrality before 2050³. Climate change is one of the factors influencing coastal processes (e.g. storm surge, overtopping wave, etc.). SLR and intensification of waves and extreme storms exacerbate the effect of coastal hazards. While climate change has been established among the scientific community to be occurring and the trends are upward, depending on the effectiveness of decarbonisation efforts by various nations, there are considerable **uncertainties in the climate change impacts** at the end of the century.

³ <https://cnsd.gov.hk/en/climate-ready/climate-targets-of-hk/>

Diagrammatic Representation of Climate Change Projections in terms of Sea Level Rise



Source: The Hong Kong Observatory

Note:- Shared Socioeconomic Pathways (SSPs) are climate change scenarios of projected socioeconomic global changes

* The low-confidence scenarios (especially the SSP5-8.5 Low Confidence scenario) have a much larger range of projection values as compared with the core emissions scenarios. Moreover, no probability of projection under the low-confidence scenarios can be quantified, i.e. there is no likely range of projection.

In view of the uncertainties associated with climate change projections, the Study has comprehensively reviewed coastal risks under different climate change scenarios, including **intermediate⁴** and **very-high⁵ greenhouse gas (GHG) emissions scenarios** for the **mid-century (2050)** and **the end of the century (2100)**. This is generally in line with the Chinese Mainland's and overseas practices.

The assessments conducted during the Study have used the latest published data from Hong Kong Government as well as the **AR6 published by IPCC**, assessing scenarios across various time horizons.

⁴ The intermediate greenhouse gas emissions scenario (SSP2-4.5) represents carbon dioxide emissions roughly maintained at 2015 levels until the mid-century, and then reduced to about one-quarter of 2015 levels by the end of the century.

⁵ The very high greenhouse gas emissions scenario (SSP5-8.5) represents carbon dioxide emissions increasing to approximately double the 2015 levels by 2050, and then rising to about triple the 2015 levels by the end of the century.

Shoreline Management and Coastal Resilience Practices in Chinese Mainland and Overseas Places

The National Development and Reform Commission of the People's Republic of China has issued the National Climate Change Adaptation Strategy (國家適應氣候變化戰略) and updates, which promulgates the overall management directives for climate change adaptation and provides strategic guidance for carrying out and developing climate change adaptation works in key areas and regions, such as the Greater Bay Area. Resilience to climate change should be enhanced to reduce the impact arising from climate change and extreme weather events on society, including coastal areas. The requirement promoted is for the inclusion of climate change mitigation and adaptation in both social and economic aspects to effectively respond to adverse impacts from climate change and reduce losses as a consequence of extreme weather and climate events.

Practices in overseas countries such as the United Kingdom, Australia, United States of America, New Zealand, and Denmark have also been reviewed. As seen from the shoreline management in other places, strategies generally take a proactive approach for long-term development. The implementation of the strategies is to be designed as **adaptable** and **flexible** to reflect changing conditions and the incorporation of new information. The locations reviewed have established systematic guidelines for the preparation of shoreline management, developing integrated and adaptive management pathways. Implementation considers not only engineering **adaptation** and **resilience measures** to reduce coastal risks but also **management measures** to enhance the adaptive capacity against future climate change.

The principles and key messages observed from the Chinese Mainland and overseas approaches are to be adopted in the approach taken in Hong Kong, including the **development of Shoreline Management Strategies**, adoption of **Adaptation, Resilience and Management measures to mitigate coastal risks**, and the further inclusion of **Progressive Adaptive Approach** in design of shorelines to cope with climate change uncertainties, which are further discussed in this Executive Summary.

Hong Kong's Shoreline



Natural Shoreline

Due to Hong Kong's hilly terrain, it has limited usable land to be developed. There was a need for reclamation to create usable land for development, which resulted in the formation of a lot of artificial shorelines. Though many coastal areas in Hong Kong are protected by coastal structures, they are experiencing range of coastal risks caused by continuous climate change.



Artificial Shoreline

The existing shorelines of Hong Kong were developed some time ago. In the beginning of the period of development, the issue of climate change might not fully envisaged in some of the shoreline. In addition, due to limited land supply, the land area near the shoreline was usually occupied by some infrastructure. This has created a constraint and increased the cost for future large-scale enhancement measures.



Adaptation Measure

Therefore, if enhancement or significant upgrade of coastal defence is required, the feasibility of doing so may be limited, or technically challenging, or not cost-effective. As such, the enhancement measures for these existing shorelines need a strategic selection and design process. This can be made possible with a Progressive Adaptive Approach and utilising adaptation, resilience and management measures to mitigate coastal risks.

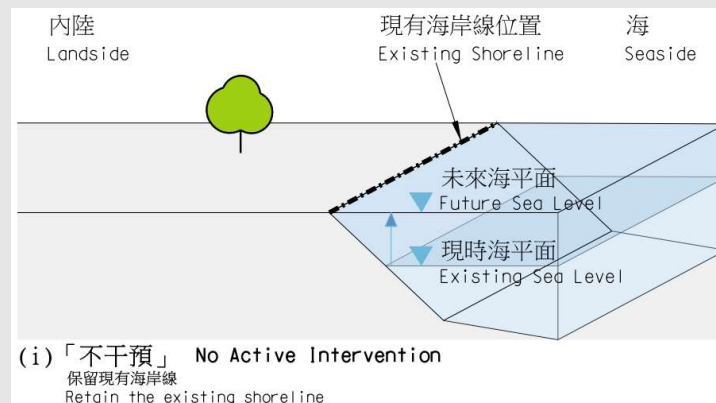


Resilience Measure

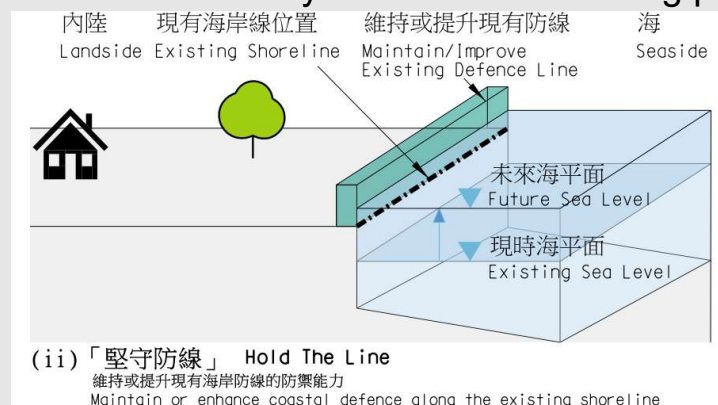
Shoreline Management Strategies

Drawing from the experience of Chinese Mainland and overseas, there are four major types of strategies for shoreline management as outlined below:

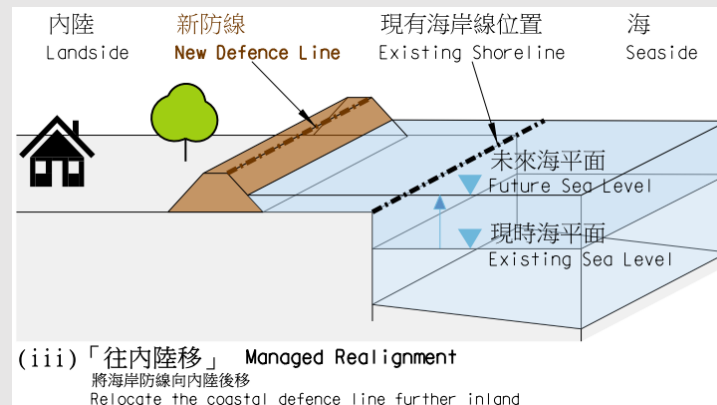
- **No Active Intervention (NAI)** – Retain the existing shoreline, natural processes are allowed to continue to create an evolving coastline, no investment in providing/maintaining shorelines (e.g. natural shoreline or undeveloped shoreline with low consequence from coastal process). By allowing the natural processes to occur, the beauty of the natural environment of Hong Kong's shorelines could be maintained.



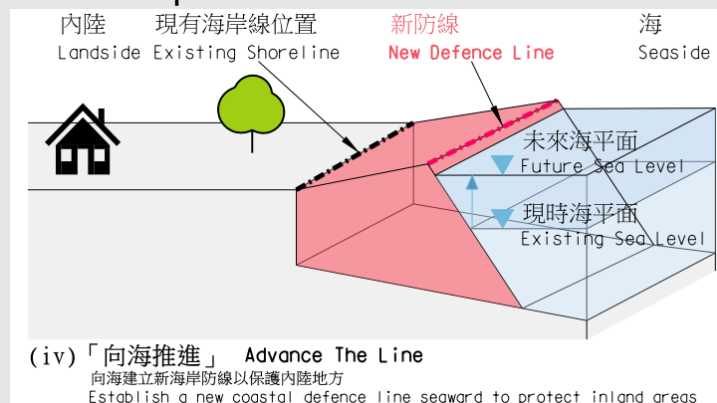
- **Hold the Line (HTL)** – Maintaining (e.g. routine maintenance or minor repairing works for existing seawall) or enhance coastal defence along the existing shoreline location. This can be a cost-effective solution if applicable for protection of the existing artificial shorelines by making small interventions and usually could last over a long period of time.



- **Managed Realignment (MR)** – Relocate the coastal defence line further inland with management to control or limit the movement. The advantage of MR is in creating a new defensible position that can be designed for long-term use. That said, part of the land will be inevitably forfeited as a trade-off.



- **Advance the Line (ATL)** – Establish a new coastal defence line seaward to protect inland areas. The benefit of utilising ATL is in providing new land for development while having greater control over the land use planning of the shoreline design. However, it is more costly initially and may have potential implications to the environment.



Integrated Strategy – Adaptation, Resilience and Management

To mitigate coastal risks or flooding impacts and enhance rapid recovery of society afterwards, the strategy of “**Adaptation**”, “**Resilience**” and “**Management**” (ARM) is to be adopted when undertaking planning and design. This integrated strategy has been developed in conjunction with the Drainage Services Department "Flood Management Strategy Planning Study in Response to Sea Level Rise and Extreme Rainfall".



- **Adaptation** – Continue to systematically implement various types of coastal enhancement infrastructure, such as wave walls, or flood walls, to mitigate flooding risk;



Wave Wall



Flood Wall

- **Resilience** – Deploy temporary or non-structural measures to control flood risk or minimize the flood impacts with a view to enhancing rapid recovery of the society after flood events, such as demountable flood barriers and swing gates; and



Demountable Flood Barrier



Swing Gate

- **Management** – Strengthen emergency preparedness, utilize innovative technologies, and enhance public awareness of flood prevention through improved information dissemination, drills, reviews and timely updates to guidelines/standards.



Updated Port Works Design Manual



Action Plan



Water Level Monitoring Sensor



Dedicated Website



Drill for Typhoon Event

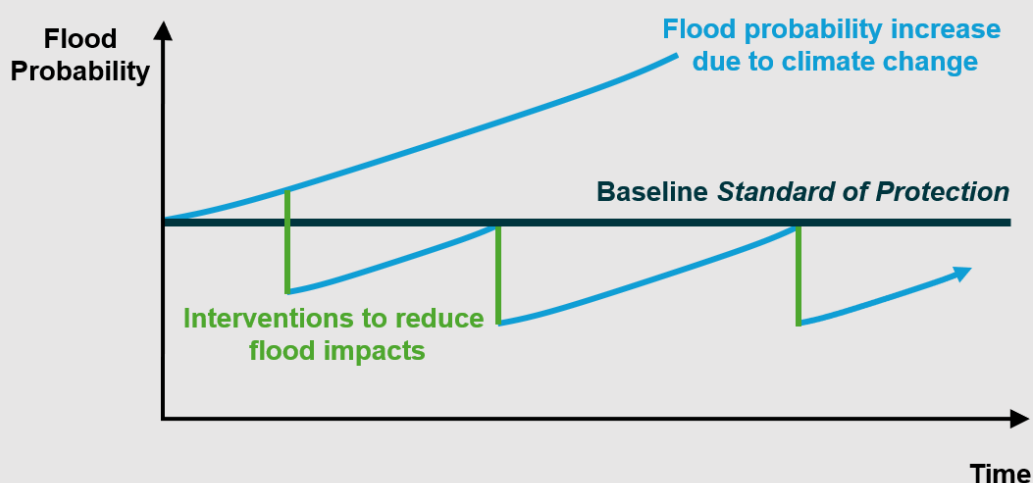


Publicity

Progressive Adaptive Approach

Considering the uncertainties in the range of potential future climate change development and global actions among nations on reducing carbon emissions, it is recommended to adopt a progressive adaptive approach (PAA) to formulate climate adaptation measures for both existing and new shorelines.

Coastal structures and enhancement measures should adequately plan and design for various greenhouse gas emissions scenarios towards the end of this century and beyond, allowing for provision (e.g. larger footing and/or buffer area) of PAA in advance and with flexibility to enhance the infrastructure as required. This approach could avoid implementation of large-scale mitigation measures prematurely at unnecessary construction and operation cost, while maintaining capability for future generations to upgrade as required. This progressive adaptive approach is designed to be **flexible** and **adaptive** enough so that the structure can be modified with reference to the latest development in climate change.

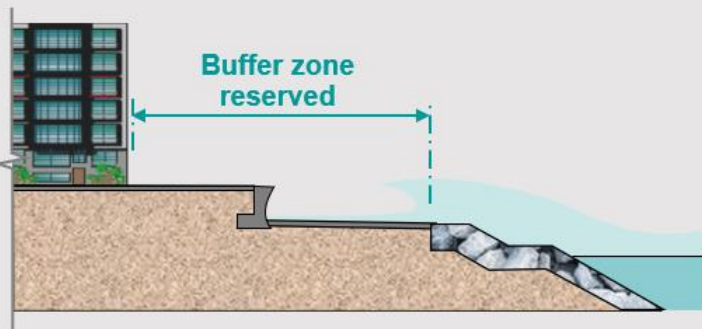


Under the progressive adaptive approach, the Study recommends enhancement measures with PAA to mitigate coastal risks at identified **existing shorelines** up to mid-century (2050), and closely monitoring climate change development. Planning and management of the implications of climate change on coastal hazards should therefore be carefully considered to appropriately account for the uncertainty. Continuous monitoring of climate change data publication and developments is recommended to review the measures proposed to cope with coastal risks in a timely manner.

For large scale site formation works (e.g. reclamation project), longer time horizon should be considered to protect the **new shorelines**. Illustrative examples of the application of Progressive Adaptive Approach for new shorelines to be applied in future are shown below.

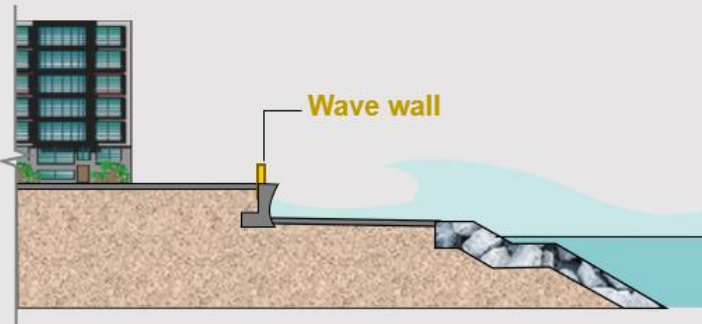
Base Case:

- Designed for **year-2100**
- Buffer zone reserved for **progressive upgrades** and use by public (e.g. public open space) in **normal weather condition**



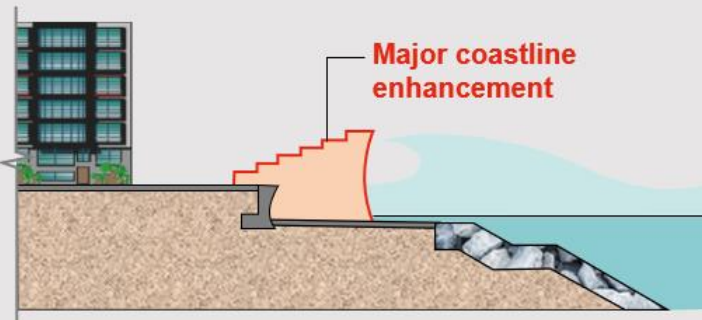
Progressive Enhancement 1

- **Increase protection level**
- **Continue** use of buffer zone in **normal weather condition**



Progressive Enhancement 2

- Major enhancement works to cater for **year-2150**, to be implemented by **year-2100**
- Buffer zone **reduced** and **no longer usable** in **extreme weather condition**



3 Study Findings and Recommendations

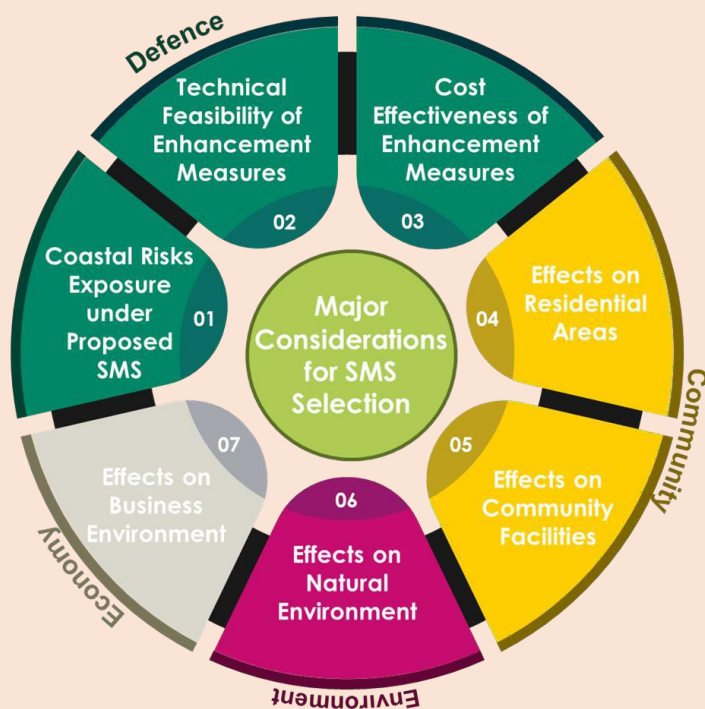
Analytical Assessment

Hong Kong's existing shoreline comprises a variety of different coastline settings. Considering Hong Kong's geographic position, different topography, bathymetry, and relevant coastal defence structures, etc. some coastal areas are exposed to coastal hazards in different extent under extreme weather and climate change. By adopting a **risk management approach**, which was used in CHS before, identifying those coastal areas susceptible to higher risks is primarily based on **likelihood of coastal hazards** and **severity of consequence**.

During the analytical process, the Study has applied computer models to simulate the sea water level, storm surge and wave height of extreme weather events with climate change projections **up to years 2050 and 2100 under different GHG emissions scenarios**. Reference to the records of damage posed by coastal flooding in past super typhoon attacks has also been considered. Overtopping waves and coastal flood inundation analysis by means of computer modelling has been conducted. This facilitates assessment of the potential impact and severity of consequences for coastal areas exposed to the coastal hazards.

Identification of Shoreline Management Strategies (SMS)

With reference to overseas' practice, the following four core themes have been considered, including “**Defence**”, “**Community**”, “**Environment**” and “**Economy**” in recommending SMS for every shoreline section of Hong Kong in 2050 and 2100. The four core themes are then subdivided into seven major considerations as shown below.



Coastal Risks in Medium Term

Following the assessment process of the Study, the management approach for Hong Kong's shorelines has been determined. Based on the flood analysis for 2050 under both intermediate and very high GHG emissions scenarios, **the flood risks posed by climate change to coastal areas are considered manageable**. Considering factors such as existing ground levels, the defensive capacity of current facilities, technical feasibility, cost-effectiveness, and impacts on the surrounding environment, the Study concludes that, by mid-century, the '**No Active Intervention**' and '**Hold the Line**' strategies are the most suitable for **Hong Kong's natural and artificial coastlines** respectively. These strategies not only effectively manage risks in accordance with Hong Kong's coastal conditions but also minimize impacts on valuable land or marine resources.

Advance Preparation

Under normal weather conditions, existing coastal structures along the shoreline of Hong Kong are generally adequate to safeguard coastal areas from coastal flooding at least up to 2050 with proper maintenance on the structures by following the recommended strategy. Nonetheless, **some of the shorelines will need to be upgraded** through ARM measures under the “**Hold the Line**” under extreme weather conditions. Monitoring of the situation will be continued to ensure suitability of the recommended strategy.

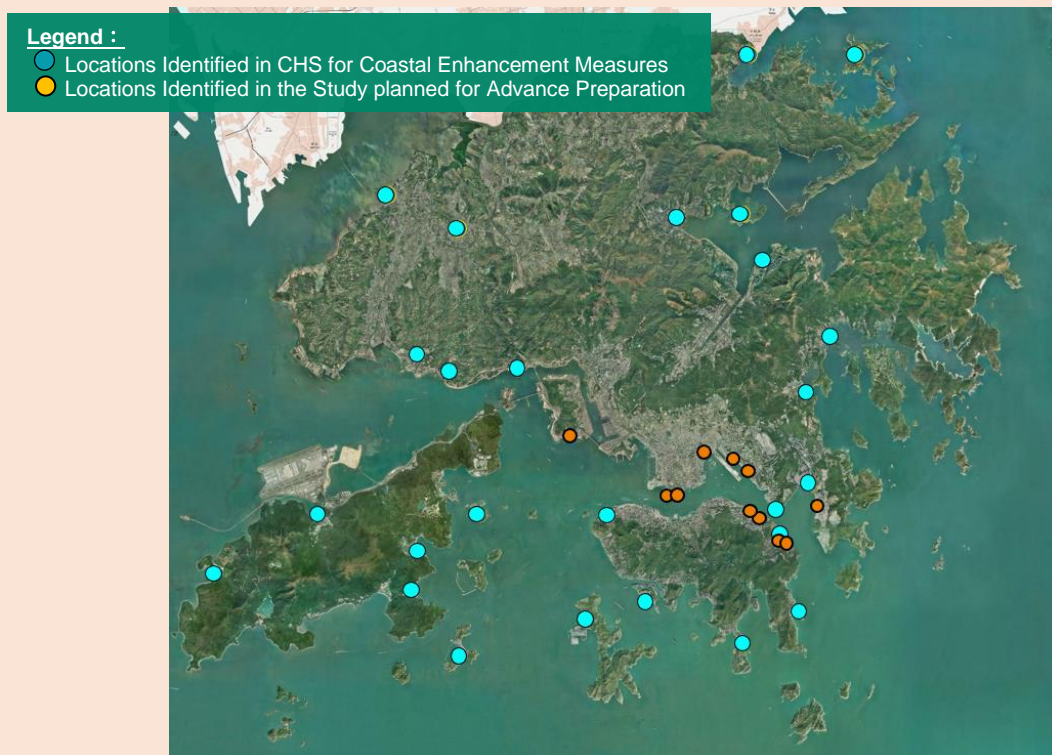
For all coastal areas in Hong Kong⁶, the Study continue to adopt a risk management approach to assess the likelihood and consequences⁷ of seawater inundation, and **identified 11 coastal areas planned for advance preparation to cope with the coastal risks near the mid-century**. In collaboration with relevant departments and stakeholders, we will plan improvement measures involving public spaces and private properties through the “Hold The Line” strategy.



⁶ The Study has covered and considered the previously identified 26 coastal low-lying or windy residential areas, as well as the ongoing coastal improvement measures. After implementing the relevant measures, it is concluded that the coastal flood risks in these 26 areas are at a manageable level.

⁷ This includes the extent of coastal flooding and structural damage caused by overtopping wave during extreme weather events, low-lying area flooding due to storm surges, and public safety and community resilience that are endangered.

No.	Locations Planned for Advance Preparation
1	Sai Wan Ho (Near Sai Wan Ho Pier)
2	Aldrich Bay (Near Eastern District Cultural Square)
3	Chai Wan (Near Chai Wan Public Cargo Working Area)
4	Siu Sai Wan (Near Island East Transfer Station)
5	Tsim Sha Tsui (Near Star Ferry Pier)
6	Tsim Sha Tsui East (Near Avenue of Stars)
7	To Kwa Wan (Near Kowloon City Ferry Pier)
8	Kowloon Bay (Near Public Works Central Laboratory)
9	Kwun Tong (Near Kwun Tong Ferry Pier)
10	Tseung Kwan O (Near Industrial Area)
11	Tsing Yi South (Near Industrial Area)



The improvement measures will continue to adopt a **multi-layered protection design** to mitigate coastal flood risks and reduce the impacts of flooding. The multi-layered protection design includes:

- 1) Adopting **adaptation** measures along the coastline as the first line of defence to reduce the coastal hazards, for example, constructing or raising wave walls;
- 2) Adopting **resilience** measures in suitable locations behind the coastline to form the second line of defence, for example, demountable flood barriers to form a buffer zone to further reduce the seawater flowing towards inland areas;
- 3) Adopting contingency measures in front of important buildings as the third line of defence, for example, demountable flood boards and/or sandbags; and
- 4) Finally, in conjunction with **management** measures, such as early warning systems and action plans on emergency arrangement, installation of water gauges, pumps and warning signs, etc. to raise public alertness and strengthen preparedness.



In addition, the Study recommends to increase the number of monitoring locations to **strengthen monitoring of water level changes at different coastal locations**.

As core part of PAA, it is recommended to **continue to review the latest development of climate change** and actual location conditions such as flooding/damage records, change in land use and extreme weather records to identify further potential locations requiring enhancement works in future cycle of review of Shoreline Management Plan.

Coastal Risks in Long Term

As for shoreline management, according to current estimate, **“No Active Intervention”** and **“Hold The Line”** strategies **can generally still manage the coastal flood risks at the end of the century**. The two low-lying areas, i.e. Tai O and Lei Yue Mun, may face greater impacts when approaching the end of the century under the very high greenhouse gas emissions scenario. For these two areas, we have currently implemented resilience and management measures to mitigate coastal flood risks. We can prudently observe the long-term development of climate change after mid-century to decide long-term measures in the future, such as whether “Advance The Line” strategy⁸ should be adopted to address climate change risks at these two locations.

⁸ Both “Managed Realignment” and “Advance The Line” strategies can mitigate coastal risks. However, given the scarcity of land resources in Hong Kong, SMP preliminarily recommends considering “Advance The Line” for these two locations to address long-term coastal risks under climate change.

Shoreline Management Guideline for Coastal Developments

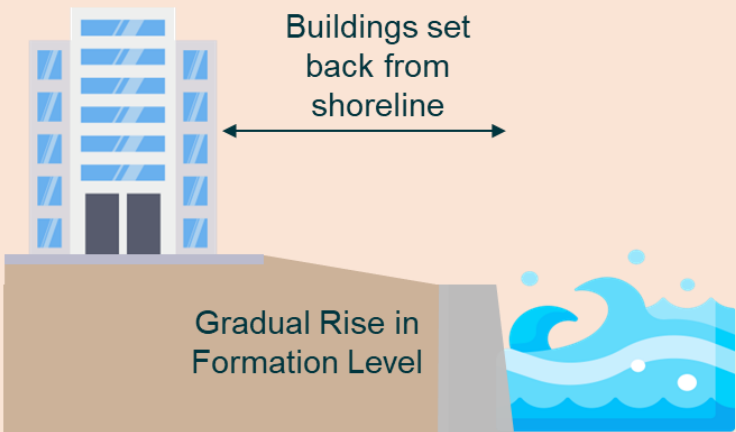
Considering the risks posed by climate change to new development projects, the Study recommends starting with **long-term planning** by incorporating the **guidelines for managing coastal risks** into the design manual (CEDD's PWDMM). These should also be appropriately included in the Hong Kong Planning Standards and Guidelines for reference. This includes introducing the concept of risk-based planning and design principles, and options and examples of measures (such as the planning of coastal buffer zones, PAA, and the mixed use of ARM measures). Stakeholders in society can also refer to these guidelines to develop suitable defense measures based on actual needs and circumstances, enhancing the capacity of these developments to respond to climate change.

The **Shoreline Management Guideline for Coastal Development (SMG)** encourages project proponents to consider the coastal risks posed by climate change so that adaptation, resilience, and management of the risks can be duly considered at the planning stage of the development. In this way, existing shorelines will have a clearly defined road map to maintain resilience and provide adaptability in future, while new shorelines will have an embedded approach for coastal and climate change resilience early in the land use and shoreline formation planning stages.

The SMG is intended for use by public and private project proponents when undertaking development of **new shorelines**, **redeveloping existing shorelines**, or where **existing shorelines** are identified as being vulnerable to climate change and coastal hazards. The SMG outlines a step-by-step process for implementing shoreline management in Hong Kong, including selecting the approach to be implemented, namely Avoid the Risk, Protect Against the Risk, and Accommodate the Risk.

Selecting the appropriate approach will depend on the intended land use for the development, site condition, likelihood of coastal hazards, severity of consequences, residual risks after the measures are in place, etc. These approaches can be used in combination along the shoreline depending on appropriateness for that particular shoreline. The aim is to reduce or limit property loss and damage from coastal hazards such as

wave overtopping and coastal flooding, tidal inundation etc., as well as promoting and fostering recognition of the importance of coastal areas and their resources and features. With many residential areas, commercial and social interests at risk along the shoreline, the SMG enable development necessary to safeguard the shoreline.

Explanation	Design Practice
<p style="text-align: center;">Avoid the Risk</p>  <ul style="list-style-type: none"> • Develop away from shoreline to avoid impact of coastal risks. • Resiliency dependent on distance to shoreline and extent of inundation. • Adopt a formation level that is high enough to avoid the impact from sea level rise and/or storm surge 	
<ul style="list-style-type: none"> • Develop away from shoreline to avoid impact of coastal risks. • Resiliency dependent on distance to shoreline and extent of inundation. • Adopt a formation level that is high enough to avoid the impact from sea level rise and/or storm surge 	<ul style="list-style-type: none"> • Establish a Buffer Zone to keep vulnerable properties away from seafront • Use formation level to create gradient and surface measures such as barriers and channels to direct flooding back to the sea

Explanation	Design Practice
<p style="text-align: center;">Protect Against the Risk</p> <div data-bbox="517 398 1134 810" data-label="Image"> </div> <div data-bbox="209 842 1386 1079" data-label="List-Group"> <ul style="list-style-type: none"> • Construct to reduce the coastal risks to negligible impact. • Allow for future upgrade as required, depending on development of climate change. • Alternatively protect up to, or beyond requirements for foreseeable future. • Raised edge structure / wave wall • Wave return included to mitigate strength of wave attack </div>	
<p style="text-align: center;">Accommodate the Risk</p> <div data-bbox="475 1182 1204 1610" data-label="Image"> </div> <div data-bbox="209 1637 1386 1778" data-label="List-Group"> <ul style="list-style-type: none"> • Implement options to manage the impact of coastal risks to a tolerable level. • Resiliency dependent on self-protection and continuous future upgrade. • Hard paving to mitigate damage from overtopping • Elevated properties / infrastructure • Elevate utilities within buildings </div>	

Examples of Possible Options for Enhancement Measures

Avoid the Risk



Coastal Buffer Zone



Higher Formation Level

Protect Against the Risk



Wave Wall



Flood Wall

Accommodate the Risk



Demountable Flood Barrier



Elevated Roads & Walkways

Collaboration with Stakeholders & Public

Successful experience in handling coastal hazards has demonstrated that mitigation of coastal hazards does not simply require the Government's effort but also require preparedness and cooperation by multiple stakeholders, including coastal residents, property owners and communities. CEDD and other Government B/Ds have continuously conducted community outreach programs, held discussion forums, etc. and improved the level of defence at the shoreline community. This has been carried out in collaboration with relevant stakeholders to ensure the needs and interests of the stakeholders are being met whilst delivering a sustainable shoreline that serves all stakeholders. It is recommended that these practices are continued going forward to build a resilient shoreline for Hong Kong by all stakeholders.

Long-Term Strategy

Hong Kong is striving to achieve carbon neutrality by 2050, but the Government must still make proactive arrangements for the long-term impacts of climate change uncertainty. Given the long-term nature of end-century scenarios, the effectiveness of global carbon reduction commitments, and the uncertainty of long-term climate change, coupled with the evolving development of land use in Hong Kong, the Government will **continuously monitor the latest trends in climate change**, timely review flood risks in various districts, and formulate appropriate measures to address flood risks as needed.





Shoreline Management Plan in Future

As the very first version of the Shoreline Management Plan in Hong Kong, the complete plan (including the Shoreline Management Strategy, the coastal enhancement works, SMG) is a **living document** subject to future updates and reviews to align with climate and societal developments. Drawing on the practices of other regions with comprehensive coastal management plans (such as the UK and Australia), the review of the Shoreline Management Plan is recommended to timely review when:





- climate change predictions are updated,
- when there are significant changes to Hong Kong's coastline or coastal land planning, or
- on a 10-year cycle.

4 Way Forward

Recommendation on Follow-up Actions

-  For the identified 11 coastal areas planned for advance preparation to cope with the coastal risks near the mid-century, it is recommended to continuously plan improvement measures involving public spaces and private properties through the “Hold The Line” strategy in collaboration with relevant departments and stakeholders.
-  Proactively share the potential improvement options with relevant stakeholders and plan improvement measures in a timely manner to mitigate coastal flood risks at mid-century and strengthen the defence capability of the shoreline.
-  Increase the number of monitoring locations to strengthen monitoring of water level changes at different coastal locations.
-  Promulgate and promote the SMG in consultation with relevant stakeholders.

Recommendation for Further Planning

-  Continuously monitor and review the development of climate change.
-  Review and update the relevant design standards, pragmatic guideline, and practices in a timely manner.
-  Timely review and/or update the Shoreline Management Strategies when there are changes arising from significant change in coastal risks, land use planning, or climate change and SLR projections.
-  Review the SMG for further optimisation/refinement/enhancement following practical use improve its functionality.