

**For information on
20 November 2017**

**LanDAC SD SC
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**LANTAU DEVELOPMENT ADVISORY COMMITTEE
SUSTAINABLE DEVELOPMENT SUBCOMMITTEE**

**Sustainability Initiatives under
Tung Chung New Town Extension**

PURPOSE

This paper aims to brief Members on the proposed sustainability initiatives under the Tung Chung New Town Extension.

BACKGROUND

2. It was proposed under the Sustainable Lantau Blueprint that the planning vision for Lantau should be “balancing development and conservation”, with a view to developing Lantau into a smart and low-carbon community for living, work, business, leisure and study. The Tung Chung New Town Extension project is the highlight of North Lantau developments. In addition to housing and business developments, we attach utmost importance to conservation of existing natural ecology and sustainable developments.

**CONSTRUCTING RIVER PARK AND REVITALISING MANMADE
WATERWAYS OF TUNG CHUNG STREAM**

3. The Policy Address 2015 advocated that water-friendly cultures and activities should be promoted, and the concept of revitalising water bodies should be adopted in large-scale drainage improvement works and planning drainage networks for New Development Areas (NDAs) so as to build a better environment for the public. Such being the case, we propose that a section of the channelised Tung Chung Stream should be revitalised to restore the natural setting, with a view to improving the ecological connection between the upper and lower streams of Tung Chung Stream. In addition, we propose that the land of the riverbank along part of the revitalised waterway (about 415m in length) and the natural waterway in the upper stream (about 360m in length) should be converted into a river park.

(Translated Version)

4. There will be three areas in the proposed river park (**Appendix 1**):
- (1) Passive recreation and conservation area – the area includes the natural waterway of the upper stream of Tung Chung Stream. Given its dense vegetation and high ecological value, the area will only be designated for passive recreation and conservation purposes. We propose that only simple facilities such as observation decks, bird-watching houses and hiking trails will be built for public appreciation of the nature, while reducing the environmental impacts caused by such facilities.
 - (2) Active recreation area – the area includes the channelised waterway of Tung Chung Stream after revitalisation (about 140m in length) next to Shek Lau Po. Both the proposed footpaths along and across the river can be used by the public for water-friendly activities. In addition, a tourist centre will be built in the area for ecological education purposes.
 - (3) Revitalised waterway area – the area includes the channelised waterway of the lower stream of Tung Chung Stream. The existing concrete riverbed will be replaced with natural materials, and water plants will be introduced to improve the ecological environment.

SUSTAINABLE URBAN DRAINAGE SYSTEM (SUDS)

5. To protect the environment of Tung Chung Stream in a more effective manner, we propose to construct a series of SUDS, including stormwater attenuation and treatment ponds, bioswales, porous pavements, etc., to control the amount and water quality of the surface runoff discharged into Tung Chung Stream from NDAs and their adjoining roads (**Appendices 2 and 3**).

6. Different from their conventional counterparts, the SUDS such as bioswales and porous pavements serve to collect and filter the surface runoff. While part of the runoff will infiltrate into the ground, the rest will be discharged into the drainage systems, and enter the primary sedimentation tanks of the attenuation and treatment ponds, where water flow will be reduced for sedimentation of soil particles. The runoff will then enter the treatment zone cultivated with wetland plants for removal of floating debris and allowing nutrient uptake by plants and microorganisms in the wetland to achieve water purification. The treated flows will finally enter the attenuation ponds which serve as buffers prior to discharging into the Tung Chung Stream. According to relevant overseas experience, the SUDS can effectively remove pollutants in

(Translated Version)

the runoff, including nutrients, metals and bacteria, etc. The plants within the SUDS may serve as habitats for living species, promote biodiversity and beautify the surrounding areas.

DISTRICT COOLING SYSTEM

7. It was proposed in the Policy Agenda of Policy Address 2017 that the Government should consider the provision of district cooling systems in NDAs, including the Tung Chung New Town Extension Project, as part of its measures to combat climate change and conserve energy. District cooling systems are low-carbon and energy-saving infrastructures, which may promote energy conservation and enhance energy efficiency. The provision of the proposed district cooling system will dovetail with the development of the Tung Chung East reclamation area, providing cooling facilities for the non-residential developments in the Tung Chung East reclamation area (**Appendix 4**).

ECO-SHORELINE

8. The reclamation and advance works of the Tung Chung New Town Extension will commence in end 2017, which is the first public works project adopting eco-shoreline, with the primary objective of mimicking the physical properties of natural inter-tidal zones as far as practicable, in a bid to provide a more suitable habitat, namely a tidal eco-system, for colonisation of marine species. We would provide eco-shoreline along the proposed sloping and vertical seawalls under the Tung Chung New Town Extension project.

9. We would provide either mangrove eco-shoreline or rocky eco-shoreline (**Appendices 5 and 6**) in the light of actual circumstances of each section of the sloping seawalls, with oyster baskets to be installed near the toes for provision of a suitable habitat for marine life, in a bid to enhance the biodiversity of the seabed.

10. We would provide mangrove shoreline at inter-tidal zone along the seashore less susceptible to sea waves and lay seawall blocks along the seaward side to reduce the wave action which may affect the mangroves. Furthermore, mangrove eco-shoreline would be provided near the drainage box culvert outfall and outlet of Tai Ho Bay such that water from the drainage catchment and Tai Ho River would bring along nutrients to mudflat and reduce the salinity of water body, which promotes the growth of mangroves. For sloping shoreline more susceptible to wave action or lack of sufficient sunlight, we would provide rocky eco-shoreline. Rocky eco-shoreline mainly composes of bio-blocks with its various levels and size of cavities for retaining sea water

(Translated Version)

during low tide condition. Furthermore, bio-blocks would be designed of its pH valve near sea water, for promoting the establishment and growth of inter-tidal species and enhancing the bio-diversity.

11. For vertical eco-shoreline, we would provide cavities and pots (**Appendix 7**) at vertical seawall, mainly for protection of and provision of habitats for marine species and plants. In addition, eco-tiles would also be installed on the surface of vertical seawall, providing uneven surfaces for easy attachment and growth of tiny species.

CONCLUSION

12. Members are invited to note the proposed sustainability initiatives under Tung Chung New Town Extension.

Civil and Engineering Development Department
November 2017

河畔公園 River Park

河道活化區
River Revitalisation Zone

遊客中心
Visitor Centre

動態康樂區
Active Zone

靜態康樂及保育區
Passive Recreation & Conservation Zone

逸東邨 Yat Tung Estate

石樓埔 Shek Lau Po

東涌路
Tung Chung Road

石門甲 Shek Mun Kap

魚梯 Fish Ladder

蝴蝶花園 Butterfly Garden

四季林蔭道 Flowering Avenue

遠足徑 Hiking Trail

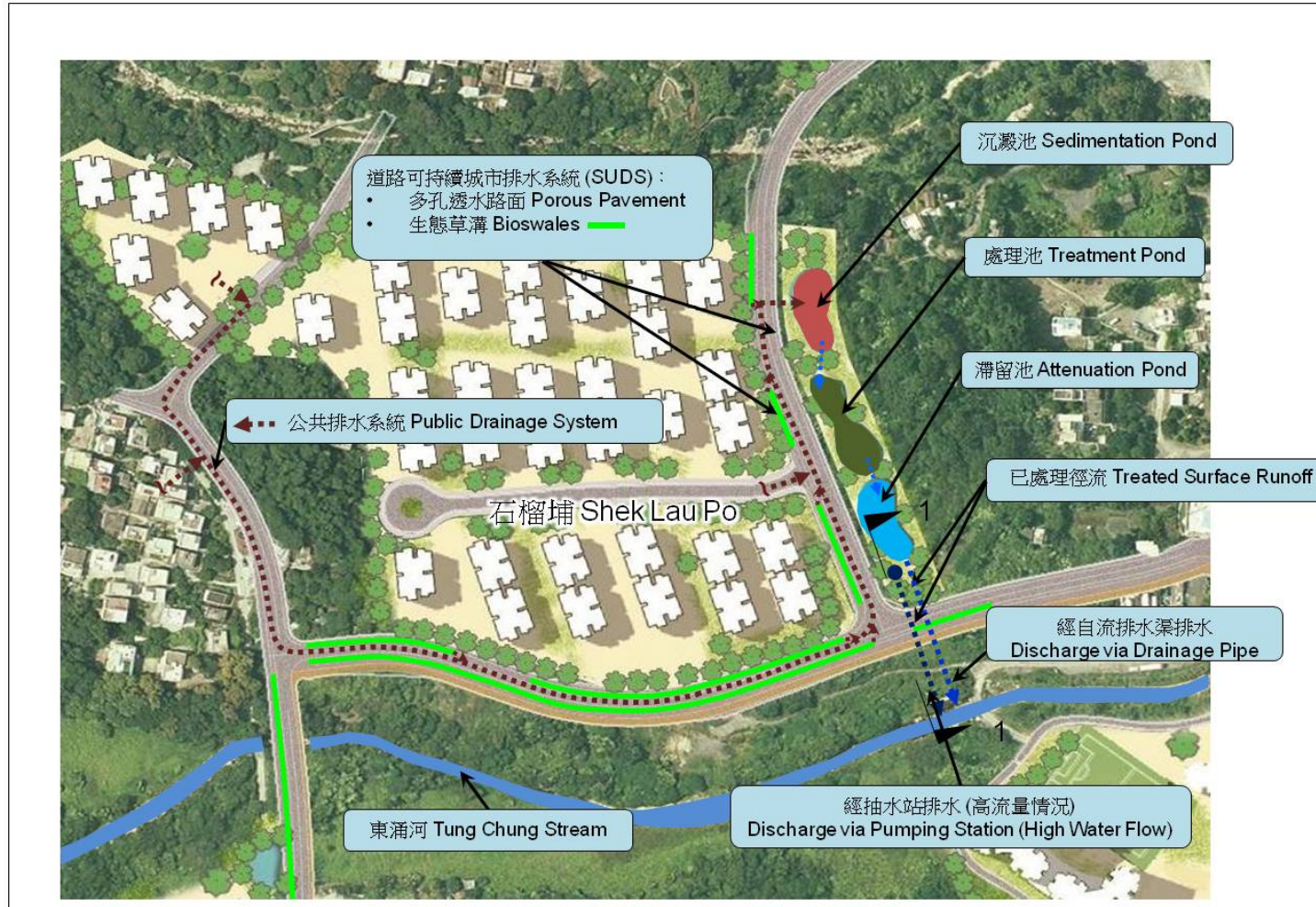
雨水滯留及處理池
Attenuation and Treatment Ponds

觀鳥屋 Bird Hide

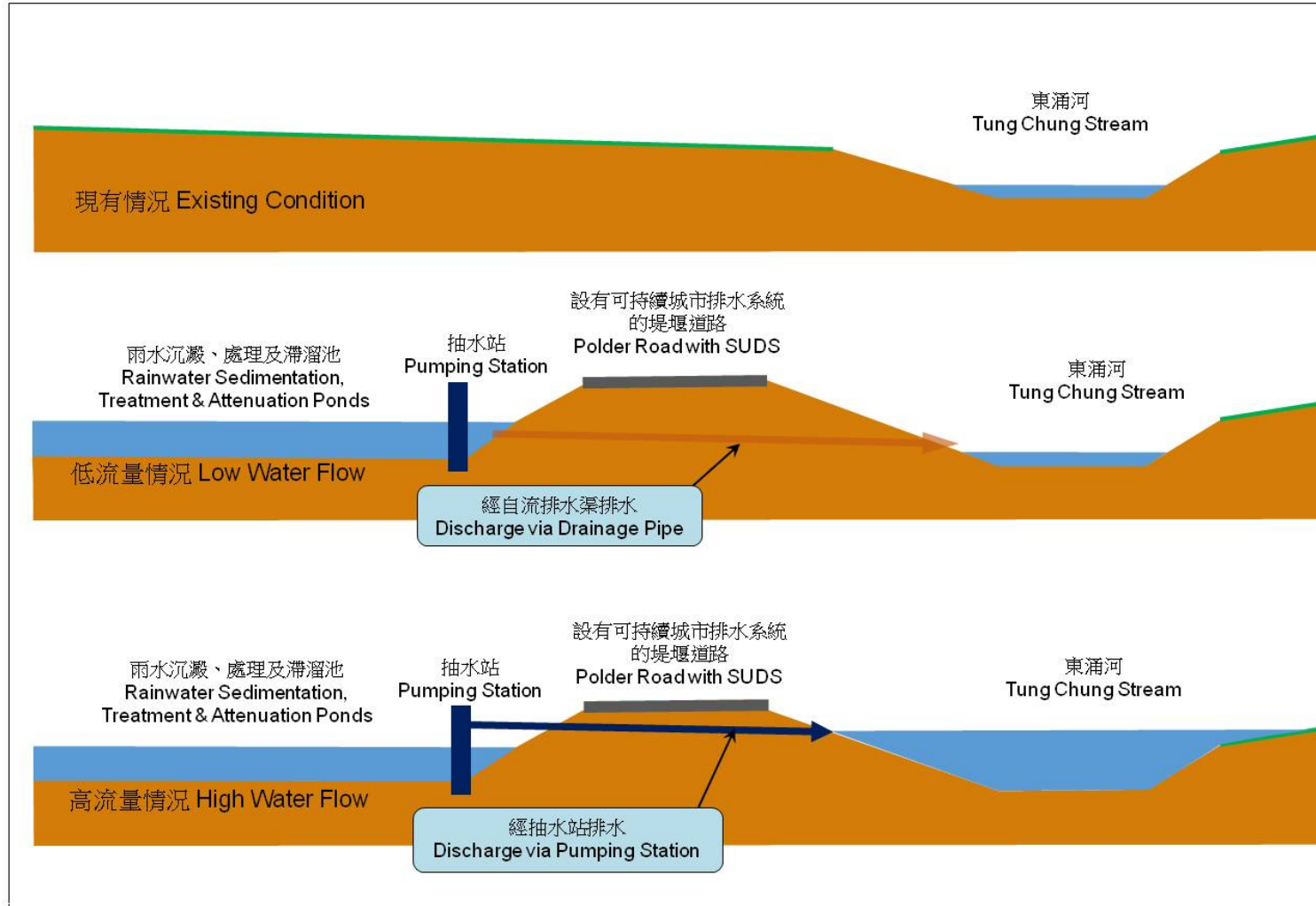
觀水活動 Active Water Play

遊客中心 Visitor Centre

可持續城市排水系統 – 概念設計 Sustainable Urban Drainage System (SUDS) – Conceptual Design



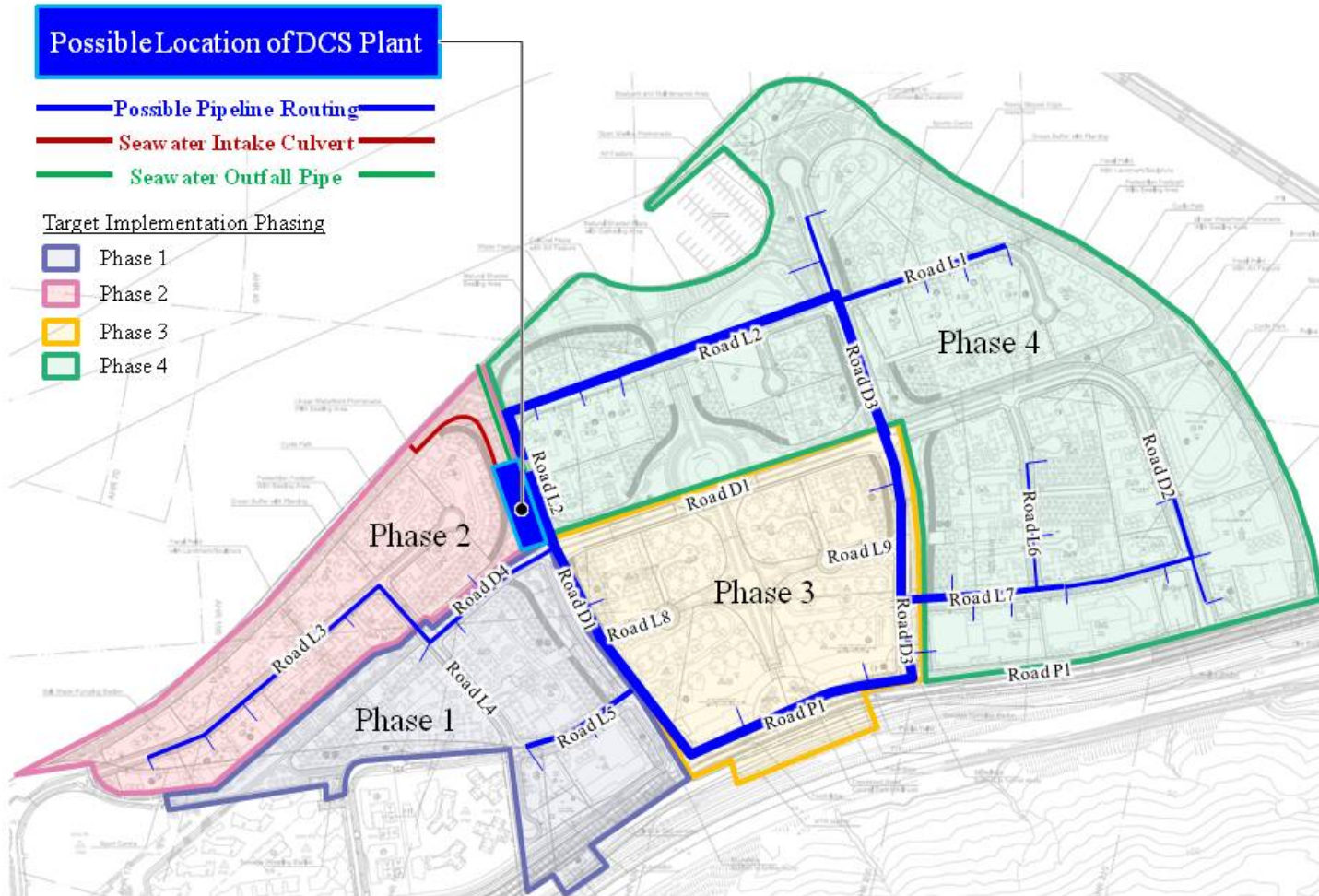
截面 1-1 Section 1-1



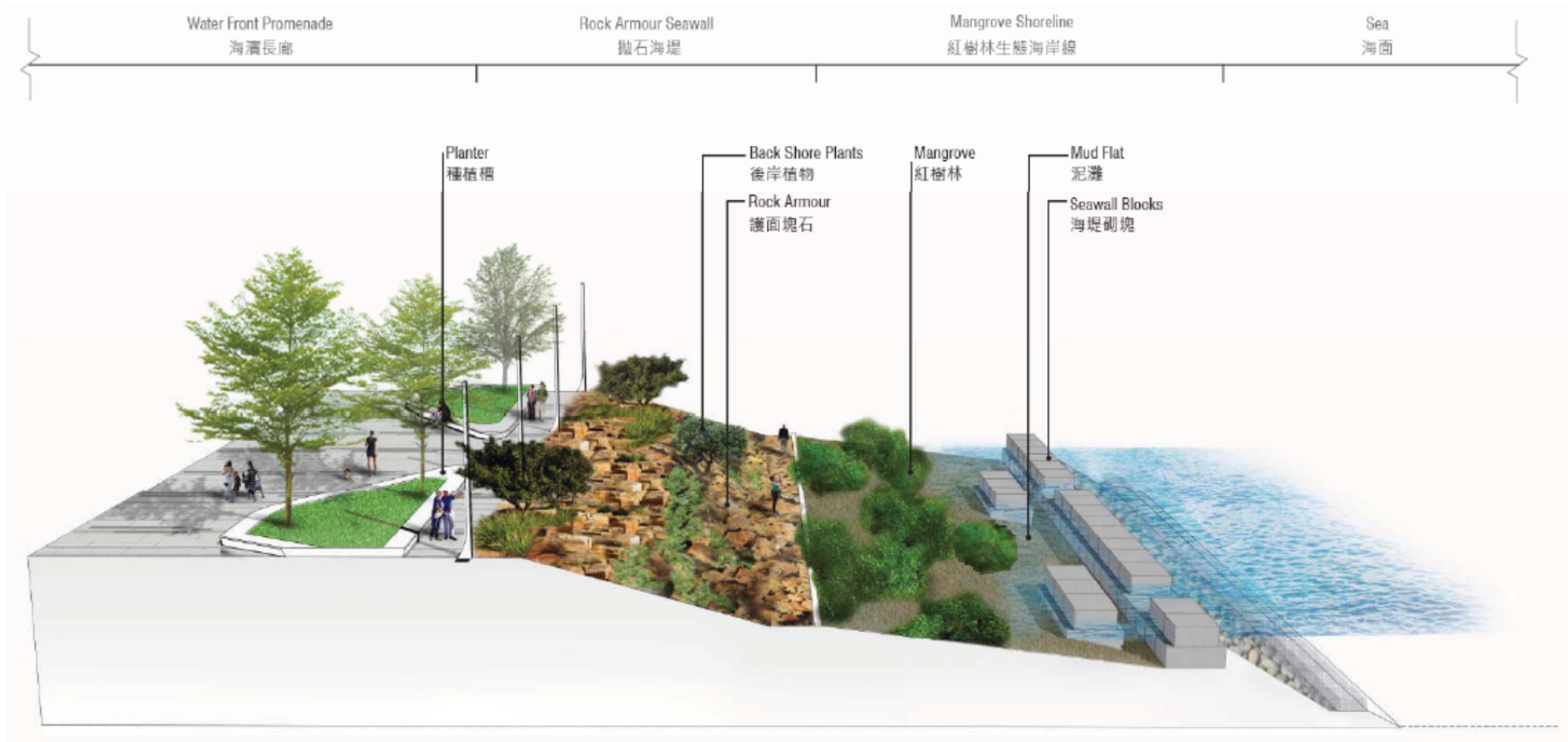
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Appendix 4

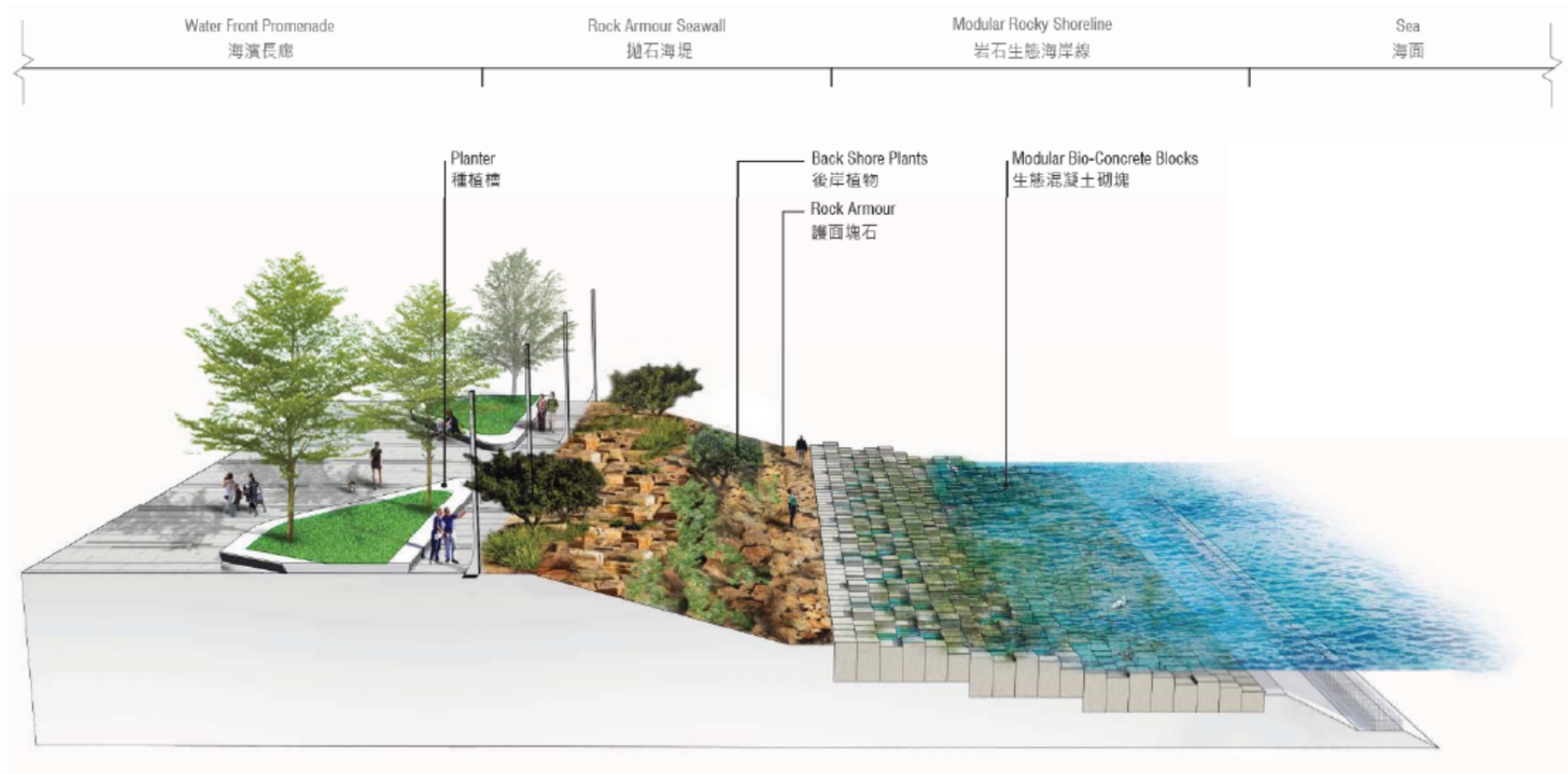
District Cooling System (DCS) Network and Implementation Phasing



紅樹林生態海岸線 Mangrove Eco-shoreline



岩石生態海岸線 Rocky Eco-shoreline



直立式生態海岸線海堤 Vertical Seawall with Eco-shoreline



Cavity 洞孔



Pots 陶盤



Eco-tiles 生態方塊