LC Paper No. PWSC192/16-17(01)

Public Works Subcommittee Meeting on 7 June 2017
Issues requiring follow-up actions by the Administration

PWP Item No. 786CL – Tung Chung New Town Extension

Reclamation and Advance Works

At the Public Works Subcommittee (PWSC) meeting on 7 June 2017, Members requested the Government to provide supplementary information (shown in *italics* below). After consulting the relevant departments, the Government's consolidated reply is set out below.

"At the request of Hon CHAN Chi-chuen, the Administration should provide supplementary information on the change of aircraft movement mode and how the Noise Exposure Forecast (NEF) 25 would be shifted away from the reclamation area at Tung Chung East (TCE) when the Three-Runway System (3RS) is put into operation."

2. Based on the Environmental Impact Assessment (EIA) Report on the Expansion of Hong Kong International Airport into a 3RS, the predicted NEF 25 contours of the 3RS would be at a distance away from the Tung Chung New Town Extension (TCNTE) upon full commissioning of the 3RS currently planned for 2023. The Airport Authority Hong Kong (HKAA) has proposed a number of mitigation measures in the EIA report to address the various environmental issues including aircraft noise. For the aircraft noise mitigation measures, please refer to paragraph 5.5.2.9 of the Executive Summary of the EIA report (AEIAR185/2014) at the following link.

http://www.epd.gov.hk/eia/register/report/eiareport/eia_2232014/html/ES_Rev%20C.htm#_Toc389563313

"At the request of Hon Tanya CHAN, the Administration should provide supplementary information:

(a) illustrate non-dredged reclamation method and deep cement mixing method with drawing; and

(b) illustrate mangrove and rocky eco-shoreline with drawing and whether the salinity of water body in the vicinity is appropriate for planting of mangrove."

Reclamation method

3. We will employ the non-dredged method for reclamation and seawall construction in implementing the TCE reclamation project, where no weak marine sediment (sea mud) will be cleared at the site. Given that such a method would make the weak sea mud remain in situ, the sea bed underneath seawalls would need to be consolidated to enhance its stability, with a view to meeting the "Port Works Design Standards".

4. In the past, non-dredged method was employed in implementing the projects of the Hong Kong Boundary Crossing Facilities (HKBCF) and Hong Kong Link Road of Hong Kong-Zhuhai-Macao Bridge (HZMB). That said, the approach for consolidating sea mud for TCE reclamation is different from the above-mentioned projects. The TCE reclamation project would adopt deep cement mixing (DCM) method for stabilising the sea mud, with the underlying principle that DCM clusters formed by means of the mechanical mixing of cement slurry and sea mud will serve to constitute the DCM formation (see **Diagram 1**) on the seabed, thereby enhancing the strength of sea mud to support the weight of the seawall and its behind landfill.

5. We have conducted land investigations in three stages and obtained the details of soil features of the reclamation area. In the detailed design stage, we have commissioned overseas experts to conduct independent technical assessments on various consolidation options of seawall foundations. Upon consolidating the latest land investigation results and expert advice, we consider the DCM method the most appropriate option to enhance the stability of the seawall foundations.

6. We understand Members' concerns over the feasibility of the different consolidation option of seawall foundations and engineering quality control. While the TCE reclamation will become the pioneer local public works project in employing the DCM method, such a method had indeed been extensively used in Asia (mainly in Japan and Korea) and the USA, and had been proved effective. HKAA had also assessed the feasibility of such a method and its potential environmental impacts, and the assessment results showed that such a method was suitable for use in Hong Kong. On the front of engineering quality control effort, we will collect samples from the DCM clusters upon formation for laboratory testing to verify that the strength of DCM clusters meets the design standards.

Eco-shoreline

7. TCE reclamation is the first public works project adopting eco-shoreline, which mangrove and rocky eco-shoreline would be provided. Design of eco-shoreline would mimic the physical properties of natural inter-tidal shoreline, in order to provide habitat for colonisation of juveniles and intertidal and subtidal epifauna.

8. Mangrove eco-shoreline (see **Diagram 2)** would be provided at inter-tidal zone and seawall blocks would be laid along the seaward side to reduce the wave action which may affect the mangroves. Furthermore, mangrove eco-shoreline would be located near the drainage box culvert outfall and outlet of Tai Ho Bay such that water from drainage catchment of Lantau North Country Park and Tai Ho River would bring along nutrients to mudflat and reduce the salinity of water body, which promotes the growth of mangroves.

9. For the inter-tidal shorelines susceptible to wave action or lack of sufficient sunlight, rocky eco-shoreline would be provided (see **Diagram 3**). Rocky eco-shoreline mainly composed of bio-blocks with its various levels and size of cavities for retaining sea water 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.

"At the request of Hon LAU Siu-lai, the Administration should provide supplementary information:

(a) the plan on expanding the specialist services in North Lantau Hospital (NLTH) (including the implementation timetable of the services); and

(b) beside the Phase 2 development plan, will the Administration consider Phase 3 development of NLTH to cope with the population increase arising from the future Tung Chung New Town project?"

10. NLTH is currently providing 24-hour accident and emergency (A&E) services and in-patient services with 40 beds. It also provides ambulatory care services including specialist outpatient services (Medicine & Geriatrics, Psychiatry, Surgery and Orthopaedics & Traumatology), community health centre, ambulatory surgery centre, day rehabilitation centre, allied health services (physiotherapy, occupational therapy, speech therapy, podiatry, dietetics and medical social service) and community care services (community nursing service, community geriatric assessment service and psychiatric outreach service). Supporting services like pharmacy, diagnostic radiology and pathology services are also provided in NLTH.

11. NLTH will, having regard to the service needs and manpower availability, further roll out the services by introducing more specialties to the specialist outpatient clinics (Paediatrics and Gynaecology), provision of endoscopy service and opening additional beds (140 beds) in phases.

12. A site adjacent to NLTH has been reserved for the Phase 2 development of NLTH. The Hospital Authority (HA) takes into account various factors when planning and developing public healthcare services and facilities. Such factors include the healthcare service estimates based on population growth and demographic changes, distribution of service target groups, mode of healthcare services delivery, growth of services of individual specialties, supply of healthcare services in the district /hospital cluster concerned, etc. HA will continue enhancing its service capacity, undertaking hospital development projects and implementing other suitable measures to ensure that public healthcare services can meet the public needs.

"At the request of Hon LAM Cheuk-ting, the Administration should provide supplementary information:

(a) whether the number of berthing space is sufficient for over 9700 Class IV licensed vessels (including auxiliary powered yacht, cruiser and open cruiser) under normal weather conditions and typhoon, the number of berthing spaces and its distributions (including typhoon shelters, marinas and other areas); and

(b) the waiting situation of marina berthing space."

13. Berthing space for local vessels (including Class IV vessels) is mainly provided at typhoon shelters, sheltered anchorages, private mooring areas and privately-operated marinas. Under normal weather conditions, local vessels are also allowed to be moored at any suitable areas in Hong Kong except some restriction areas (e.g. fairways). From time to time, the Marine Department (MD) conducts assessment on the supply and demand of typhoon sheltered space for local vessels to ensure there is sufficient sheltered space within the Hong Kong waters suitable for local vessels to take refuge during the passage of typhoons. 2014 was adopted as the base year in the new round of assessment. The demand and supply of sheltered space for Class IV vessels are as follows:

	2014	2020	2025	2030
	(Actual)	(Forecast)		
Demand (ha)	**514.9**	**568.7**	**602.4**	**629.7**
Including : Class IV vessels	*195.5*	*250.3*	*282.7*	*306.4*
Other local vessels	*319.5*	*318.4*	*319.6*	*323.3*
Supply (ha)	**589.3**	**629.5**	**633.1**	**636.4**
Differences (ha)	74.4	60.8	30.7	6.7

14. According to the above assessment, there is sufficient berthing space area for local vessels (including Class IV vessels) to take refuge during passage of typhoons up to 2030.

15. Nevertheless, as for cruisers and yachts (belonged to Class IV vessels), the designated berthing spaces are mainly provided by private mooring areas and privately-operated marinas. In addition to berthing spaces, marinas also provide ancillary facilities such as boat repairing and other related services.

The number of Class IV vessels (9 748 in 2016) and the number of wet berths and private moorings in privately-operated marinas (2 286 in 2015) has been set out in the supplementary information (LC Paper No. PWSC190/16-17(01)) submitted to PWSC on 6 June 2017. As for other cruisers and yachts without designated berthing spaces, they could share use the existing typhoon shelters and sheltered anchorages with other local vessels, or to be moored at any suitable areas outside the restriction areas when weather permits. Based on our understanding, berthing spaces in the marinas are generally fully occupied with waiting lists. However, we have no information on the detailed waiting information on these privately-operated marinas.

"At the request of Hon LEUNG Che-cheung, the Administration should provide supplementary information on the mitigation measures for the potential impacts to Chinese White Dolphins by reclamation works, including the number and time limit of works vessels for reclamation and other type of vessels such as pleasure vessel."

16. The proposed reclamation is located at the area with lowest use of Chinese While Dolphins (CWD) within North Lantau Waters. Nonetheless, we would implement the mitigation measures stipulated in the Environmental Permit to reduce the potential impact to CWD -

(i) we would submit Dolphin Watching Plan to the Director of Environmental Protection for approval before commencement of reclamation works. The Plan shall include a response plan to cope with any unpredicted incidents such as sighting of CWD in the vicinity of reclamation area;

(ii) for protection of marine wildlife (including CWD), silt curtains surrounding the reclamation area would be deployed to avoid the potential impact to water quality;

(iii) dolphin exclusion zone of 250m shall be implemented around the reclamation site at TCE during the installation of the perimeter silt curtains and any re-deployment of the perimeter silt curtains. Prior to the start of the reclamation works, Qualified Ecologist(s) with dolphin monitoring experience shall scan the exclusion zone for at least 30 minutes;

(iv) we would submit Works Vessel Travel Route Plan to the Director of Environmental Protection for approval before commencement of reclamation works. The purpose of Works Vessel Travel Route Plan is to minimise trips of the construction works vessels to and from the Brothers Marine Park. For example, the uses of large barges to reduce the trips;

(v) we have optimised the works arrangement of reclamation that there would be maximum 32 daily trips of works vessels to and from the works site, which is below the limit set in Environmental Permit (56 daily trips); and

(vi) we would limit the speed limit of works vessels to 8 knots per hours in contract documents, which is lower than the mandatory requirement of the Brothers Marine Park (10 knots).

"At the request of Hon Nathan LAW Kwun-chung, the Administration should provide supplementary information to justify the need of providing more than 800 000m^2 commercial floor area in TCE reclamation area, despite the future abundant commercial land supply in Hong Kong (e.g. North Commercial District (NCD), the Topside Development of HKBCF Island of HZMB)."

17. The proposed commercial development of TCE has taken into account the development opportunities brought by the "bridgehead economy" upon completion of existing and future infrastructures, including the Airport Three Runway System, HZMB and Tuen Mun – Chek Lap Kok Link (TM-CLKL), as well as the synergy effect bought by the existing and planned development projects in the surrounding areas such as AsiaWorld-Expo, NCD and the Topside Development at HKBCF of HZMB. According to the information from the Airport Authority Hong Kong, the Phase 1 development of NCD is mainly for hotel and retail use, whilst the land use of the Topside Development at HKBCF of HZMB is currently under study and the public will be consulted at appropriate time. Given the strategic location of Tung Chung and to achieve better agglomeration and synergy effect, we have adjusted the planning of commercial land use in TCE[(1)] by increasing the proposed office gross floor area

[(1)] The total commercial GFA of TCNTE will be 877 000m^2, which includes 827 000m^2 and 50 000m^2 in TCE and TCW respectively.

(GFA) (500 000m^2) to create a large office node, slightly reducing the GFA of regional retail facilities (163 000m^2) and proposing a hotel of 1 000 rooms (50 000m^2) to capitalise on the development opportunities of North Lantau. Besides, local retail facilities (114 000m^2) will also be provided to serve local residents.

18. Commercial development in TCE mainly includes the "Metro Core Area" (Area 113) and three commercial sites (Areas 57, 129 and 130) forming a commercial belt along the North Lantau Highway. These sites, located near the proposed TCE Railway Station and the public transport interchange(s) with convenient transport connections, have the potential for high density commercial development. To take advantage of the scenic view of the waterfront, Area 128 is planned for hotel development with a GFA of 50 000m^2 (about 1 000 rooms) including retail, dining and tourism related facilities so as to create a vibrant waterfront. Based on the past experiences on New Town developments, day-time activities of commercial facilities would increase vibrancy of the new development areas, while over-reliance on housing development would lead to an imbalanced community. Reducing commercial development in Tung Chung will also directly reduce job opportunities to be brought by the TCNTE and the economic activities as well as district vibrancy, and it is not desirable from the planning point of view.

19. In addition, there are several major infrastructures in the close proximity of the TCE area including Hong Kong International Airport, TM-CLKL, North Lantau Highway (NLH), etc. which impose environmental constraints particularly noise impact on the developments in the area. To optimise the development potential in the area, the proposed commercial sites (Areas 57, 113, 129 and 130) are carefully planned to help alleviate the rail and traffic noise impact of Tung Chung Line (TCL) and NLH on the residential developments to the north. This will ensure a proper layout for land utilisation and strike a balance between the needs of housing and economic development. As such, it is considered inappropriate to rezone the concerned sites from commercial to residential use from the planning and environmental perspectives. In addition, the planned population and number of flats at Tung Chung are constrained by infrastructure and traffic capacities as well as the provision of supporting facilities. Deletion or reduction of commercial sites could not significantly increase the amount of residential development. On the contrary, if there is no commercial development along TCL and NLH, some residential developments near the railway and highway would have to be reduced due to

noise and air quality impacts, unless a large scale noise barrier is constructed.

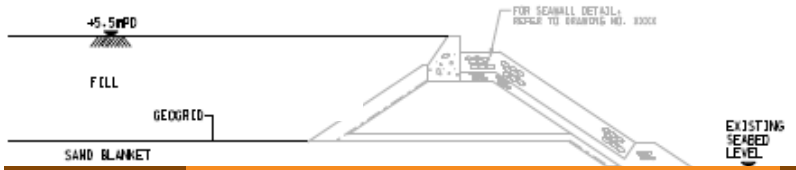
20. The commercial GFA (about 877 000m^2) provided for the TCNTE project will create more than 40 000 job opportunities, which will balance the needs for housing, social development and economic activities, thereby promoting a well-planned community for Tung Chung. In fact, the proposed number of flats and public-private housing mix (63:37) are in line with the overall recommendation of the Long Term Housing Strategy and match the needs of Tung Chung. Should there be reduction in commercial GFA, the public aspiration for balanced development of Tung Chung New Town cannot be met and diverse job opportunities for local employment cannot be provided.

Development Bureau
Planning Department
Civil Engineering and Development Department
June 2017

深層水泥拌合法
Deep Cement Mixing (DCM)

Diagram 1

機械攪拌器



深層水泥拌合法地層
DCM Treatment Area

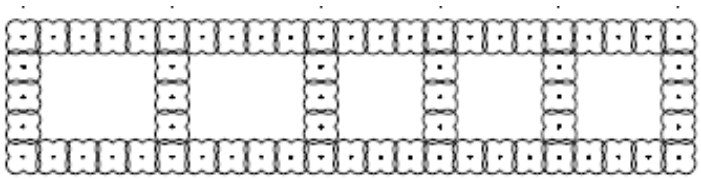
海洋沉積土
Marine Deposit

約10
~20米

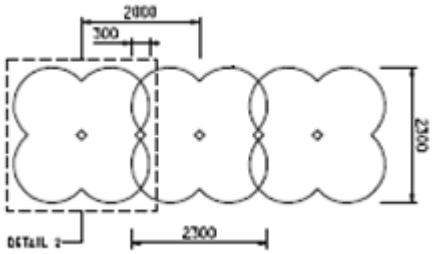
堅固土層

堅固土層

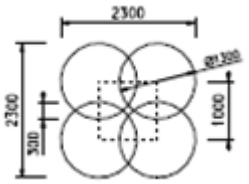
海堤



水泥拌合牆平面圖



水泥拌合柱



水泥拌合柱羣

紅樹林生態海岸線
Mangrove Eco-shoreline

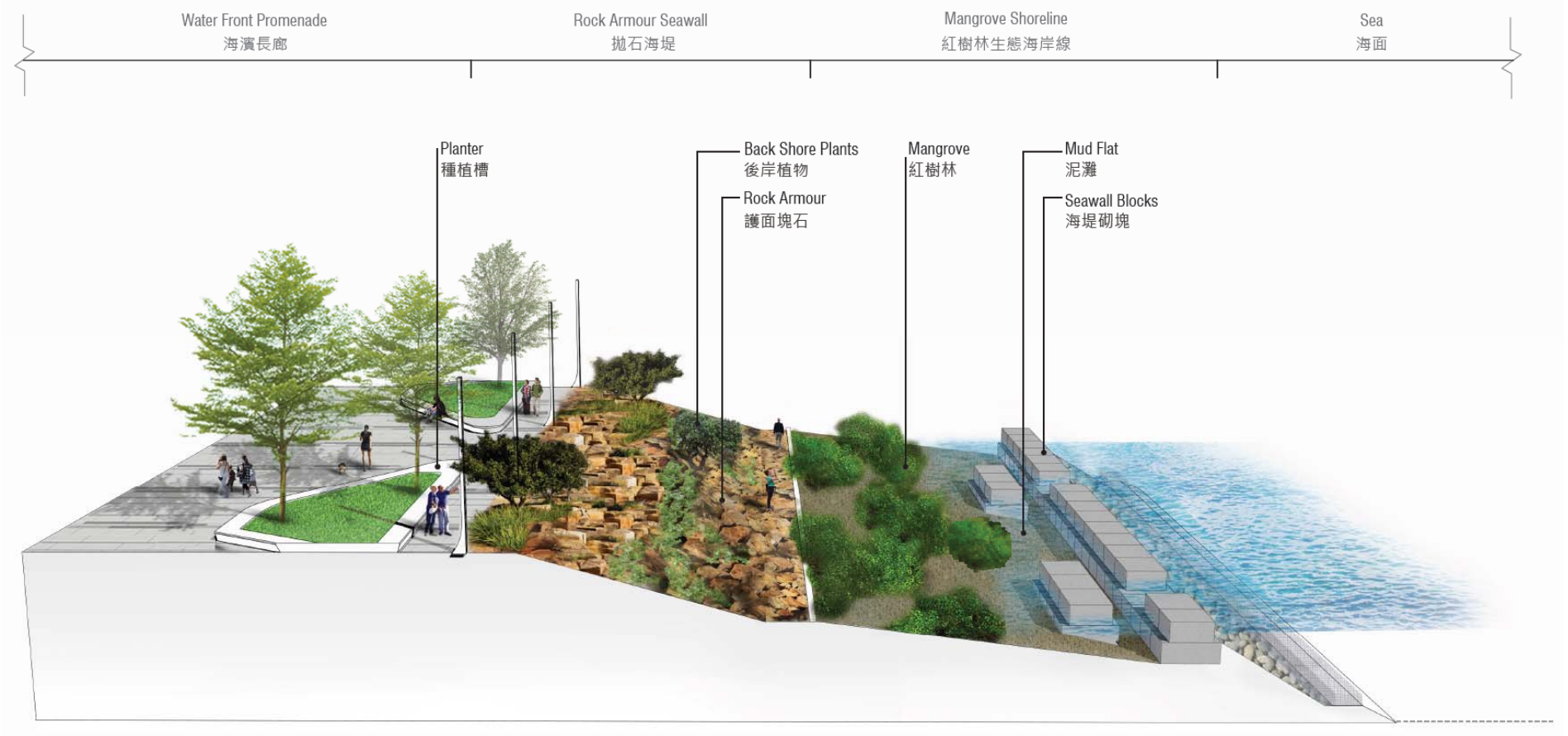
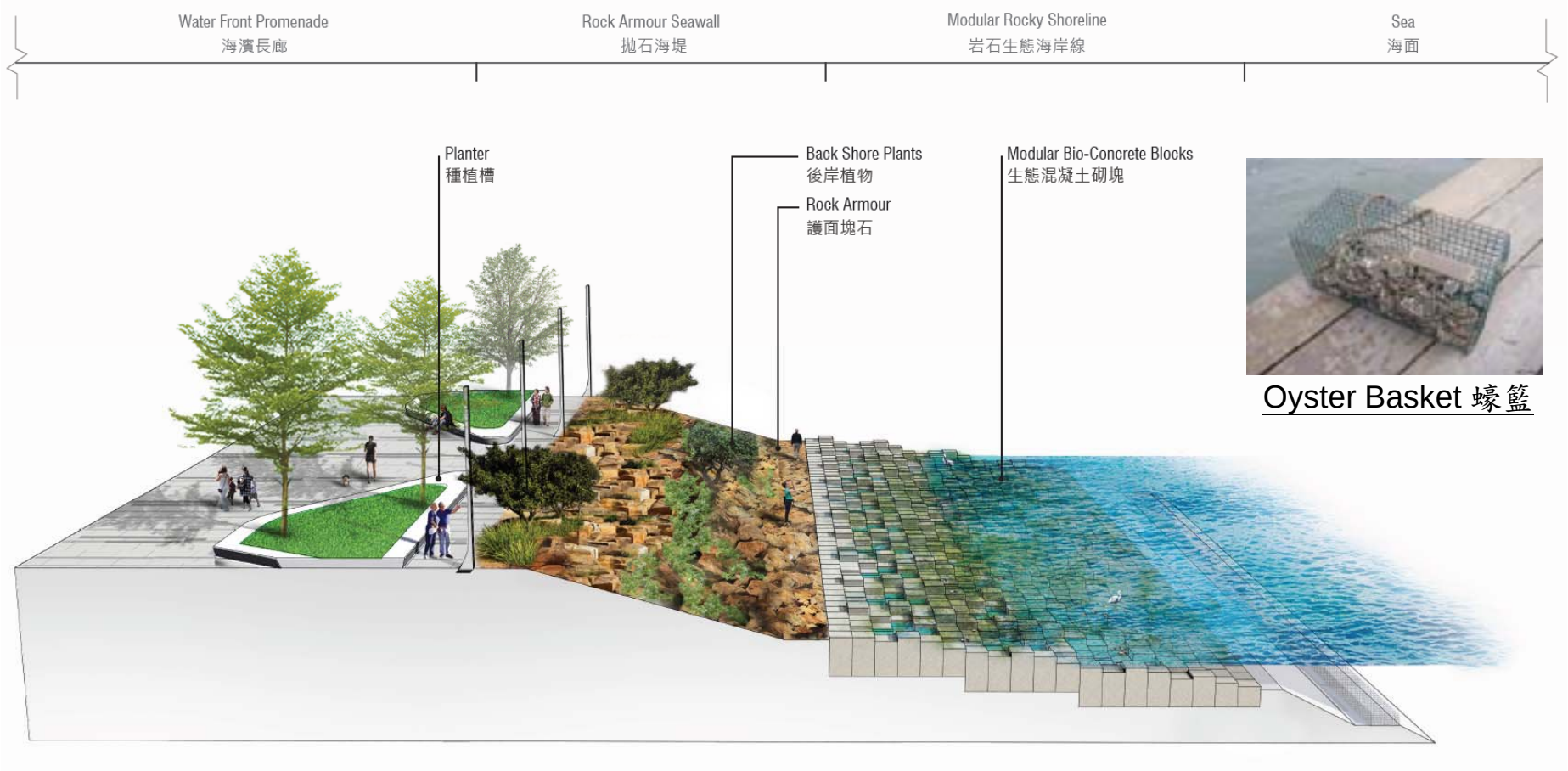


Diagram 3

岩石生態海岸線
Rocky Eco-shoreline



Oyster Basket 蠔籃