



Hong Kong Wetlands Conservation Association Comments on “Strategic Feasibility Study on the Development of Wetland Conservation Parks System under the Northern Metropolis Development Strategy”

Hong Kong Wetlands Conservation Association fully supports the establishment of a multi-functional Wetland Conservation Parks (WCPs) System covering wetlands and fishponds around Tsim Bei Tsui, Nam Sang Wai, Fung Lok Wai, Tai Sang Wai, Sam Po Shue, Hoo Hok Wai and Sha Ling/Nam Hang. We would like to raise the following comments based on the information in the consultation pdf so as make the WCPs System to realize its full potential in creating environmental capacity and to achieve co-existence of development and conservation.

1. Flooding risk alleviation function served by the WCPs System

In addition to the four major functions stated in the consultation pdf, the function of Deep Bay wetlands in **increasing the climate resilience** of the planned Northern Metropolis (NM) should be recognized and utilized. The extensive fish ponds, *gei wais* and marshes in the area function as natural buffers absorbing and storing vast volume of storm water, thus protecting the buildings and roads in the area from flooding. These ‘**natural detention tanks**’ **can and should be used to lessen the flooding risk** to the NM. As pointed out in the South China Morning Post opinion piece published on 18 November by fourteen wetland researchers and conservationists¹, these wetlands offer nature-based solutions to many of Hong Kong’s environmental concerns and will not require money and time to build. For comparison purpose, an engineering approach such as the Happy Valley Underground Stormwater Storage Tank has a capacity of 60,000 cubic metres and costs HK\$ 1.07 billion.

The NM encompasses a large area of floodplain where flood risk is a major concern. This is particularly true after Hong Kong experienced the record-breaking rainfalls and widespread flooding in Sept 2023. To fully capture the flood alleviation service provided by these wetlands in the Northwest New Territories, **Civil Engineering and Development Department and Drainage Services Department should**

¹ <https://www.scmp.com/comment/opinion/article/3241552/wetlands-are-key-securing-climate-resilient-northern-metropolis>



incorporate them in the design of drainage and flood storage systems for the NM including the WCPs. San Tin Technopole, the forthcoming NM iconic project, is on flood prone areas and should use this approach for the western creek. Such approach, increasingly adopted by developed areas such as the Room for the River Programme in the Netherlands, would not only minimize the number of creeks and area of wetlands that would be impacted by engineering works, but also recreate riverine wetlands, a long-lost habitat type of high biodiversity value locally.

2. Holistic planning to fully achieve the key functions served by the WCPs System

Not a lot of details have been provided in the consultation pdf on how to fully utilize the large areas of wetlands under the WCPs System to achieve the major functions. The WCPs System and the adjacent wetlands in Deep Bay together form one complex ecosystem and span some 2,000ha. How best to conserve, manage and restore them for the benefits of biodiversity, society and climate should be carefully explored. There are also many stakeholders with diverse interests. **An open and participatory process in which the experts and key stakeholders can work with the Agriculture, Fisheries and Conservation Department (AFCD) and other Government departments should be organized as soon as possible** to formulate a strategy and plans that will be embraced by all.

To facilitate the above process and to ensure the strategy and plans are solidly-based, existing information on the present situation (biodiversity, hydrology, management, different uses and values), the historical changes, and future trends (including climate, rainfall and drainage needs, regional land use, threatened species and habitats) should be gathered. **These should be shared and reviewed with the experts and key stakeholders** so that everyone is on the same starting point. This information will form the basis for the planning and management not only for the WCPs System but also for the entire Deep Bay wetland ecosystem.

3. Wetland Trust – a New Management Option for the WCPs System

Acquiring large areas of wetlands and effectively managing them long-term would require substantial resources sustained through time. In view of the uncertain economic outlook globally and for Hong Kong, new mechanisms should also be seriously explored. The pros and cons of different options should be compared and



the best one for the WCPs System identified. **Setting up a statutory Wetland Trust in accordance with a respective ordinance and supervised by a board with wide representation** has been raised in the past. This has received a lot of support in the society. This allows much greater flexibility in securing adequate funding for the future management and running of the WCPs because a statutory trust can raise funds, receive donations and charge for services at market rate. Such a set-up also facilitates discussions, collaboration, knowledge sharing and co-learning among the key stakeholders in the Deep Bay wetlands. A partnership spirit will facilitate the formulation of a common vision and the associated goals, reaching consensus on the plan and actions, and achieving continual improvement in conserving and managing these valuable wetlands for wildlife and people.

Developments in the Deep Bay Wetland Conservation Area and Wetland Buffer Area requires mitigation and compensation measures for the loss of wetlands. This has resulted in a number of individually-run, small and fragmented wetlands that have higher running cost per unit area but lower ecological value relative to large connected wetlands. Having a Wetland Trust would open the options of off-site mitigation and mitigation banking so that future developments would have less constraints while the conservation outcome would be much better.

4. New Approach in Public-Private-Partnership (PPP) as a Management Option

Within the Study Area of the WCPs System, there are large areas of private fish ponds which are zoned as Other Specified Uses (Comprehensive Development and Wetland Enhancement Areas), i.e. OU(CDWEA) in the Outline Zoning Plans. Some of the areas have been proposed for residential developments using the PPP approach in which a small proportion of fishponds/wetlands would be developed while the remaining would be conserved and actively managed. In the case of Fung Lok Wai, both the EIA and planning application for the development have already been approved. However, these would mean certain areas fish ponds/wetlands would be destroyed if the developments under the current PPP go ahead.

With the NM, there are plenty of new development areas on the landward side of the fish ponds/wetlands. **A new PPP approach of enabling the landowners to shift their planned development from the fish ponds/wetlands to the development**



areas within NM would generate a positive conservation gain because all the private fish ponds/wetlands concerned can be put under the WCPs System. Having developments shifted from the ecologically sensitive wetlands to the NM development areas would also make these developments less sensitive, easier to implement and more cost-effective because a lot less supporting infrastructures such as roads, drains and pipes would be needed. This new approach would provide additional incentives for landowners to surrender their private fish ponds/wetlands for the WCPs and prevent loss of private fish ponds/wetlands to residential development.

5. Achieving win-win for conservation and aquaculture in WCPs

The vast majority of the active fish ponds in the Study Area are used for raising freshwater fish and predation by Cormorants has caused substantial loss of the harvest, thus affecting the income of the fishermen and causing conflicts between conservation and aquaculture. AFCD has conducted consultancy studies to look into the matter and found out putting wires over fish ponds is an effective way to prevent cormorant predation. However, this measure also limits other water birds from using fish ponds which offer prime foraging for the egrets, herons and Black-faced Spoonbills when the ponds are being drained for harvest. One way to resolve the dilemma is to **take down the wires during the harvest time and reinstall them when the ponds are refilled for raising fish**. This new management measure should be implemented in all the WCPs fish ponds so as to increase the fish production, improve income to the fishermen, at the same time allowing egrets, herons and Black-faced Spoonbills to feed during the pond drain-down and waders to use the drained ponds.

6. Converting fish ponds into modernized *gei wais* to optimize high quality seafood production, biodiversity, blue carbon and flood alleviation

One of the main challenges faced by local fishermen is that the price of freshwater fish is kept low due to plenty of imports from mainland China where the production and manpower costs are considerably lower. Even with modernized techniques to increase the production or to raise higher-price species, this challenge will remain and the cultivated products will need to compete with those from mainland China in price.



The vast majority of the fish ponds in Deep Bay were actually tidal *gei wais* in 1950's and 1960's. Taking advantage of the high productivity and rich fishery resources of the estuary, *gei wais* can produce good harvest of shrimps, mud crabs and a diversity of sea fish. These are carried into the *gei wais* as fries and larvae by the incoming water through the sluice gate during high tides. They grow naturally inside the *gei wais* without the need of adding artificial feed. That is, they are wild seafood. To harvest the shrimps, water is let out through the sluice gate during the low tides. Hence a modified tidal cycle is formed inside the *gei wais* which is attractive to many waterbirds and other wildlife, as demonstrated by those in Mai Po Nature Reserve. The middle part of the *gei wais* is shallow and favourable to mangroves which are efficient in capturing and storing carbon. A recent Chinese University research shows that 30 tons of carbon dioxide can be absorbed by one ha. of Deep Bay mangroves annually.² The *gei wais* also have excess water storage capacity as the water level never reaches the top of the bunds under normal condition. In 2017 Super Typhoon Hato caused a storm surge of over 2.4m at Tsim Bei Tsai and flooded all the *gei wais* in Mai Po. The *gei wais* stored a vast amount of water and protected the developments further inland. This flood water alleviation function can be further enhanced by installing sensors and modern, quick-to-operate sluice gate. Water can then be discharged from these modern *gei wais* in anticipation of heavy rainstorms and typhoons.

Reverting inactive and active fish ponds back to modern *gei wais* would greatly increase market value of the products and fishermen income, enrich the biodiversity, facilitate carbon sequestration, and even elevate the climate adaptation potential. The blue carbon generated can contribute towards Hong Kong's carbon neutral goal or can be sold as carbon credit to businesses to support the running of the WCPs.

7. Compensating for ecological and fisheries impacts arising from development of San Tin Technopole at Sam Po Shue WCP

The San Tin Technopole would result in a loss of some 90 ha. of fish ponds and the

² Liu, J., & Lai, D.Y.F. (2019). Subtropical mangrove wetland is a stronger carbon dioxide sink in the dry than wet seasons. *Agricultural and Forest Meteorology*, 278, 107644, doi: [10.1016/j.agrformet.2019.107644](https://doi.org/10.1016/j.agrformet.2019.107644).



project would start a few years sooner than the Sam Po Shue WCP. To mitigate for the ecological and fisheries impacts in a timely manner, **the installation of wiring over all the fish ponds within the future Sam Po Shue WCP** (mentioned in 5. above) **and taking them down during fish harvesting should be implemented before the San Tin Technopole works**. This would also allow experimenting different ways to install and take down the wires from time to time so that the most efficient method can be identified for use in other WCPs.

To have modernized *gei wais* to optimize the multiple benefits mentioned in 6. above, it is crucial to **launch a scientific research to determine the appropriate design, sluice gate management regime and the necessary equipment**. Government should select several inactive fish ponds on government land and allocate funding for local tertiary institution(s) to undertake this scientific study. This research would generate useful knowledge and experience for the future large-scale adoption of this system in the WCPs. This research can be launched to mitigate some of the ecological and fisheries impacts arising from San Tin Technopole.

8. Interim measures required to ensure the integrity of the Deep Bay wetlands before the establishment of WCPs

There have been many media reports of unauthorized developments damaging the Deep Bay wetlands. Relevant government departments such as Planning Department and Lands Department must step up the enforcement against these illegal activities in order to maintain the ecological value and integrity of the Deep Bay wetlands before the WCPs are established. The use of technology such as drones, aerial photos and AI can greatly help in detecting suspected pond/land filling over such a vast and remote area. Surveillance cameras installed at key road junctions can also detect unusual dump trucks activities that warrant further investigation. Adequate manpower should also be allocated to the departments concerned so that timely investigation and enforcement can be undertaken.

We believe our suggestions above, if adopted, will greatly enhance the ecological, social and climate resilience values of the WCPs System.

- *By Hong Kong Wetlands Conservation Association (20 Jan 2024)*