Executive Summary

Victoria Harbour is one of best-known icons and the most precious public assets in Hong Kong. The vision of the Harbourfront Commission (HC) and the Government to enhance Victoria Harbour and its Harbourfront Areas is to make it as an attractive, vibrant, accessible and sustainable world-class asset: a harbour for the people and a harbour of vitality. However, as the development along much of the Victoria harbourfront area is already dense with congested roads and pavements, enhancements of pedestrian linkages between the harbourfront and its hinterland as an entity require detailed studies. Within dense compact cities like Hong Kong, an integrated pedestrian network often comprises three dimensions: ground level connections (most convenient for pedestrian access), elevated connections, and underground connections. Yet, many opportunities of providing better pedestrian connections remain untapped, especially those involving connections through private developments. There is a need to flip the mechanism of planning and enhancement of pedestrian network along the Victoria Harbour from using the "forecast" pedestrian volume as the primary consideration to a holistic measurement of improved walkability and quality of life in Hong Kong. With the Government's determination to improve walkability along the harbourfront, it is expected that more initiatives for building new links of the elevated/ underground (E/U) pedestrian network in the harbourfront area will come from the private sector. In this connection, the findings in this study could also form a basis assisting the Government to consider and evaluate objectively the justifications to facilitate the provisions of pedestrian links by the private sector.

2. This study first reviews the concept and application of walkability in pedestrian planning and the prerequisites for creating a "walkable" environment. A comprehensive international literature review on both the theoretical concepts and empirical studies related to walkability in Hong Kong and in different parts of the world including Australia, Belgium, Brazil, Canada, China, Columbia, Ireland, Japan, Malaysia, Scotland, Singapore, South Korea, Spain, Sweden, Turkey, the UK, and the USA has been conducted based on two most comprehensive and latest databases of journal articles, and major research reports. Using a people-centred approach, relevant case studies on the older population, children and the physically challenged, and for E/U walkway systems (EWS) are considered. The literature review on the general concept of "walkability" reveals a certain degree of variations among

practitioners and scholars. Yet, though the emphasis differs, they are generally consistent and are evolved around the three key dimensions of safety, comfort and convenience, whether the focus was put on the "means", "outcomes" or "proxies". Essentially, the general concept of "walkability" is about building a safe, comfortable environment (with amenities) which pedestrians can travel conveniently to other places and enjoy a pleasant experience. Through adopting a people-centred and place-based approach, other elements such as street connectivity and all relevant design (and non-design) elements, can be identified and incorporated holistically. In relation, the values of walking are also highlighted.

3. This study then applies the core concepts of walkability in the context of urban planning and land administration in Hong Kong. With walkability largely defined as a pleasant pedestrian experience, finding ways of measuring and evaluating walkability is necessary for systematic and holistic enhancements. Therefore, we have identified six dimensions of a pedestrian network that relevant. They are (i) pavements, (ii) crossing facilities, (iii) vehicular road, (iv) design, (v) perceptions, and (vi) destinations/activities. When combined, they enable us to build a systematic codification framework on walkability, which reflects the key components of walkability- safety, comfort and convenience. This framework can be used to review current policies on facilitating the provision of public pedestrian links by the private sector.

4. Third, the study identifies key issues associated with the adoption of walkability in the provision of comprehensive three-dimensional pedestrian networks and suggest possible solutions. To do so, the spatial scale is adjusted to the local community/neighbourhood level to understand key factors like land use and people's travel characteristics. As the ultimate goal is to enhance walkability along the Victoria Harbourfront Areas in Hong Kong, we have selected three pilot areas as case studies to examine the relevant local context for identifying opportunities and constraints of enhancing the pedestrian experience. Each pilot area will be studied based on their landuse, existing conditions, access to Victoria Harbourfront attractions and views of pedestrians (through an online survey). In all three pilot areas, most survey respondents preferred to use the EWS than the at-grade pedestrian network when given a choice. Nonetheless, this preference is an indication for all trip purposes and activities in general. When and where the conditions are right (e.g. in Tsim Sha Tsui East for leisure/recreation with nice weather), the preferences may be different. In all three pilot areas, we found that

public transport facilities are key locations for improving walkability via the EWS. To evaluate a proposal to enhance an EWS, a General Evaluation mechanism (GEM) of EWS is developed. The aim is to suggest a decision-making process that is not only informed by the latest state-of-art knowledge and methods about walkability to evaluate the building or extension of a grade-separated pedestrian network system scientifically, but also designed to be highly flexible and practical to incorporate specific local context. The eventual outcome is a recommendation to the Government based on well-established robust principles, quantifiable variables, and specific geographical circumstances when considering applications or proposals from private sector for constructing EWS. When an application or a proposal is made, the process can be triggered. One should recognize that building an elevated pedestrian connection is going to be very expensive, especially if it involves retrofitting of existing buildings rather than incorporated in the building plans with new buildings. In comparison with walkability improvement measures at ground level, an E/U pedestrian link means unnecessary/undesirable level changes for pedestrians (some of them may have difficulties in walking up and down stairs, etc.) and creates a more artificial walking environment (versus pedestrians walking at-grade in open area). Hence, it is proposed that an application should be considered critically from four major perspectives, each with its key principles, quantifiable variables, and specific geographical circumstances. The four perspectives are: (i) street walkability perspective, (ii) area-wide perspective, (iii) network perspective and, (iv) people's perspective.

5. Last but not least, this study recommends a mechanism for identifying and evaluating potential locations for pilot projects of the three-dimensional pedestrian networks within the Harbourfront Areas and the wider urban surroundings. Hong Kong's Harbourfront Areas have different characteristics when compared either to the rest of the city or to other overseas cities. Hence, it is important that we gain some insights into the patterns and dynamics of pedestrian flows within the three pilot areas. Through a pedestrian count survey, this study finds that the hourly pedestrian flows differed noticeably for the morning, afternoon and evening periods, and on weekdays versus weekends, though the extent and pattern of variability do vary across different sample points. It is worth highlighting that the pedestrian flow at the sample point near Polytechnic University and the cross-harbour bus stops in Tsim Sha Tsui-Hung Hom was extremely high at 12,354 pph. It was very much higher than pedestrian flows that we have seen in overseas studies, including large cities like London and Melbourne, in the typical range of 3,500 to 5,500 pph.

Moreover, at each pilot area, we have built a web-based Harbourfront Pedestrian Wayfinding System (HPWS) prototype for people to search for the shortest walking paths to the Harbourfront to/from major buildings and locations within the pilot areas. There is an option for pedestrians to choose to visit a convenience store before going to the Harbourfront. To support the implementation of GEM of EWS, this study also develops a set of generic tools for evaluating new links on the E/U pedestrian network system. These include a Detour Programme (based on Google Map) and a Graph Programme (based on Java) for generating core statistics. It is hoped that the proposed evaluation framework (GEM of EWS) can become an imperative tool assisting Government's decision making process in respect of facilitating provision of pedestrian links by the private sector. The evaluation framework is envisaged to become an integral part of the initiatives of the Hong Kong Special Administrative Region Government in enhancing walkability in the city, in particular in the harbourfront areas.