AGREEMENT NO. CE 25/2019(TP)

STUDY ON ACTIVE DESIGN FOR HEALTHIER LIFESTYLE

-FEASIBILITY STUDY

CONSULTANCY REPORT

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Abbreviations

Abbreviation	Full Title
ADG	Active Design Guidelines
BEAM	Building Environmental Assessment Method
CUHK	The Chinese University of Hong Kong
GFA	gross floor area
Hong Kong 2030+	Hong Kong 2030+: Towards a Planning Vision and Strategy Transcending 2030
LUSH	Landscaping for Urban Spaces and High Rises
M&E	mechanical and electrical
MTR	Mass Transit Railway
NCD	Non-communicable disease
NDA	New Development Areas
PolyU	The Hong Kong Polytechnic University
SE	stakeholder engagement
WHO	World Health Organization

1. Introduction

1.1 Background

1.1.1 "Enhancing liveability in a compact high-density city" is at the forefront of 'Hong Kong 2030+: Towards a Planning Vision and Strategy Transcending 2030' (Hong Kong 2030+). One of the strategic directions to build a liveable Hong Kong is to embrace the concept of active design in the planning and design of the built environment to promote active city and active people.

1.1.2 Urban landscape and built environment play important roles in contributing to a healthy city and promoting healthy lifestyle of the people. "Active design" is both an approach to and an ethos of promoting physical activity and health through design interventions in natural, urban and built environment that encourage walking, exercising, cycling and recreational pursuits. Through incorporating active design in urban landscape and built environment, it is aimed to integrate physical activity into individual's daily routine.

1.2 Need of Physical Activity

1.2.1 Physical inactivity is one of the leading risk factors for non-communicable diseases (NCDs) (including obesity, heart diseases, cerebrovascular disease, diabetes, hypertension and some types of cancers) mortality. According to the World Health Organization (WHO), NCDs are responsible for 74% of all deaths worldwide[1]. In Hong Kong, about 55% of all registered deaths were related to NCDs in 2016[2].

1.2.2 The WHO defines physical activity as any form of bodily movement that uses energy. It includes exercises and other activities that can be done as part of work, sports and leisure or travel (walking and cycling), as well as every day and household tasks. Regular physical activity or being active is not only associated with improved physical, mental and social well-being. It also saves public health costs of an ageing society, manage the risk of NCDs and contributes to sustainable development in the community (such as energy saving, cleaner air and alleviating the effects of climate change).

[1] *World Health Organization (2023): Noncommunicable diseases*
https://www.who.int/health-topics/noncommunicable-diseases#tab=tab_1

[2] *The then Food & Health Bureau & Department of Health (2018): Towards 2025: Strategy and Action Plan to Prevent and Control Non-communicable Diseases in Hong Kong*
https://www.chp.gov.hk/files/pdf/saptowards2025_summaryreport_en.pdf

1.3 The Study

1.3.1 The Study on Active Design for Healthier Lifestyle – Feasibility Study (the Study) is to take forward the advocacy under Hong Kong 2030+ to mainstreaming active design in the planning and development process thus fostering a built environment conducive to active and healthy lifestyle. It is aimed to embrace active design considerations in shaping the urban landscape and built environment through responsive urban design and building design to promote physical activity and healthy lifestyle of Hong Kong people.

1.3.2 Specifically, the Study has:

- conducted desktop literature review to identify specific needs and opportunities to stimulate active lifestyle in the context of the design of public realm and built environment;
- conducted a two-stage stakeholder engagement to solicit views to assist the formulation of the Active Design Guidelines (ADG) and explore implementation mechanisms for the ADG;
- formulated a set of ADG for Hong Kong;
- developed pilot case studies highlighting the feasibility and benefits of application of the proposed ADG in real-life projects, in collaboration with project proponents and the relevant stakeholders; and
- proposed measures and mechanisms to embrace active design considerations in the planning and development process to promote physical activity and healthy lifestyle of Hong Kong people.

1.3.3 Stakeholders including individual /organisations that had substantial knowledge in different user groups, practitioners and potential project proponents that could play a role in implementing the ADG were engaged in this Study.

2. Needs and Opportunities for Active Design in Hong Kong

As the first step of this Study, the need for active design in Hong Kong has been established through literature review. For the study of active design interventions, an analysis was undertaken on the key barriers encountered by different demographic user groups and activity-based user groups at major activity locations. Findings are generalised to a list of barriers and opportunities to promote physical activities in Hong Kong.

2.1 Identified Key Barriers

2.1.1 For major demographic user groups, including children, youth adolescent, working population, elderly, persons with disabilities and ethnic minorities, it was found that lack of time, space, universal access, undesirable outdoor thermal comfort and quality of the pedestrian realm, and sedentary behaviour are key barriers to a more active lifestyle. For major activity-based user groups, including joggers, runners and swimmers, lack of space, undesirable outdoor thermal comfort and quality of the pedestrian realm were identified as common barriers for more physical activities. Some of the key barriers are highlighted in the following. They help identify potential issues to be addressed in the ADG and develop desired outcomes of the ADG.

Lack of Space

2.1.2 It affects all user groups, especially cyclists, runners and pedestrians whose activities require specific spatial requirements, such as designated cycle/jogging tracks and spacious walkways. This barrier is indirectly relevant to this Study as more open spaces generate more opportunities for physical exercise.

Extreme Weather and Environment Pollution

2.1.3 Outdoor thermal comfort mainly affects children, runners, and hikers. Roadside air pollution may affect the willingness to walk/jog for pedestrians and joggers. The lack of shade and shelters make exercising under extreme weather particularly challenging. Design guidelines at both neighbourhood and building levels can both play a role in improving air quality and outdoor thermal comfort such as advocating more tree shades and physical shelters.

Undesirable Quality of the Pedestrian Realm

2.1.4 The quality of pedestrian environments is particularly relevant to this Study and it affects all demographic user groups. Overcrowded and narrow footpaths and streets, roads that are difficult to cross and lack of shelter and seating lower the willingness of multiple user groups to walk in the streets. Nevertheless, building setback, footpath widening and provision of shelters and seating will help improve comfort.

Lack of Time

2.1.5 It affects all demographic user groups except the elderly. It may be possible to attract busy user groups to exercise through the placing of built environment interventions at schools, at work or at home to make exercise more convenient. This barrier highlights the importance of considering both intentional and unintentional exercise in this Study.

Sedentary Behaviour

2.1.6 It affects all demographic user groups, especially the adolescents and working population. This barrier has important implications giving a direction that the design guidelines should seek to discourage sedentary behaviour. Potential interventions could include prompts in the built environment encouraging people to be more active.

Unclear Signage

2.1.7 It affects all demographic user groups except the children. Inclusive and reassuring signage can be used to encourage positive choices that result in more physical activity.

Lack of Universal Access

2.1.8 It affects persons with disabilities and the elderly. There are many benefits to increasing the physical activity levels of persons with disabilities and the elderly. Activities catering to the needs of these user groups require universal access to spaces in which they can exercise as well as to other public and community facilities.

2.2 Identified Key Opportunities at Related Locations

Having reviewed these barriers, location-specific key design opportunities are suggested below to motivate different user groups to engage in more physical activities.

Exercise Everywhere – At Workplace, School and Home

2.2.1 At-work, at-school and at-home physical activity interventions through providing access to exercise opportunities at convenient locations could help address sedentary behaviour, improve productivity and help manage stress and anxiety. Short bursts of exercise can break up long days spent behind a desk. Innovative and inter-generational design of community play areas in comprehensive residential developments can provide opportunities for more accessible and interesting play activities for children and the elderly of the development. Increasing the frequency of trips between workplace, school and home as well as the levels of activity associated by incorporating stair/ramp climbing could also increase activity levels of multiple user groups.

Encourage Outdoor and Indoor Stair/Ramp Climbing

2.2.2 Although Hong Kong's topography is cited as a barrier for certain types of physical activities such as cycling, it also presents an opportunity to increase cardio fitness levels through encouraging stair or ramp climbing at existing public steps or ramps along steep terrain. With improvements to their design appearance and visibility, indoor stairs can serve not only as fire escape routes but also convenient exercise locations.

Landscape and Greenery

2.2.3 Greening at the building and neighbourhood level can enhance outdoor comfort of the pedestrian environment by improving air quality and thermal comfort as well as providing shade. The greening of spaces could also enhance the attractiveness of potential destinations.

Shelter and Shade at Outdoor Areas

2.2.4 To address the outdoor thermal discomfort which is a barrier particularly relevant to Hong Kong, the provision of shaded areas in parks and along footpath is considered an important intervention to encourage the continued usage of these spaces during hot summer months. Shading can either be provided through structures or through tree planting.

Natural Green and Blue Assets

2.2.5 Hong Kong is endowed with lot of natural green and blue area. About 40% of land in Hong Kong has been designated as country parks and special areas[3]. According to Harbourfront Commission, upon the completion of various harbourfront projects, the total length of Victoria Harbour promenade is expected to extend to 34km by 2028[4]. Taking advantage on the proximity of these natural green and blue assets to the urban area, green and blue links should be promoted to encourage people to visit these remarkable natural assets.

Attractive Public Parks and Promenades

2.2.6 There is an opportunity to utilise waterfront promenade and public parks as an outdoor space where family members can exercise together. Parents have a significant degree of influence over the exercise habits of children. Therefore, we should ensure there are "physical activity destinations" that can cater family-based exercise.

Use of Inclusive Signage and Wayfinding Systems

2.2.7 The design of the built environment plays a role in making physical activities more enjoyable and attractive to different groups of users. Signage prompts, on the other hand, address psychological barriers such as a lack of motivation and can encourage people to "walk an extra mile" to increase daily step counts and meet physical activity targets. Multilingual signage can also make minority groups feel welcome and increase participation.

2.2.8 A key factor for people to decide whether to visit those activity venues and promenade is the ease of navigation to and within these locations. Use of inclusive signage and wayfinding systems, as well as provision of universal access, will help encourage more visits to these locations, thus more physical activities.

[3] *GovHK (2022) – Hong Kong: The Facts - Country Parks and Conservation (Page 2)*
https://www.gov.hk/en/about/abouthk/factsheets/docs/country_parks.pdf

[4] *Harbourfront Commission (2022) – Welcome Message*
https://www.hfc.org.hk/en/welcome_message/index.html

Multi-functional Spaces in Urban Parks

2.2.9 When designing the spaces in urban parks, multi-functional design and activities should be encouraged to meet the wide variety of interests of different groups of people, thus providing incentives for the public to utilise these park spaces for physical activities of their choices.

Exercising at Sitting Out Area

2.2.10 Small sized sitting out areas which are highly accessible to local residents are popular exercise areas. Engaging local community organisations or non-governmental organisations to take initiatives for management and maintenance can allow the community to take ownership of these spaces and activate them better.

Walking and Playing at Quiet Side Street

2.2.11 The concept of "Living Streets" can be introduced in Hong Kong. These streets are designed primarily with the interests of pedestrians in mind and as a social space where people can meet and children can play safely. These streets are still available for use by motor vehicles, yet their design aims to reduce both the speed and dominance of motorised transport. So far 23 countries worldwide have introduced such concepts.

Making Good Uses of Underutilised Spaces

2.2.12 There are some underutilised spaces scattered across Hong Kong such as areas under bridges and leftover spaces. Specific user group fitness equipment (such as for elderly and people with disabilities) can be placed at these locations with attractive design and improved accessibility. An expansion of the Elderly Fitness Corner programme under Leisure and Culture and Services Department including exercise equipment for wheelchair users could take advantage of the underutilised spaces.

2.3 Overseas Active Design Examples

2.3.1 There are many successful overseas examples in applying initiatives related to active design across the globe. It will prove valuable to learn from their experience and evaluate whether their success in applying active design initiatives can be applied to Hong Kong. Four cities, including Singapore, New York, London and Shenzhen, which shared similar attributes as Hong Kong, are selected for identifying relevant examples.

2.3.2 **Encouraging walking amongst the elderly through interventions in the pedestrian realm** - Given Hong Kong's ageing society, Singapore's Silver Zones[5] are considered relevant examples of how interventions at the neighbourhood and building level can improve the safety of elderly pedestrians by addressing concerns relating to thermal comfort and accidents.

[5] *Silver zones aim to increase walkability and reduce fear of falls amongst the elderly in neighbourhoods by introducing measures such as slowing down vehicular traffic with speed limits and S-shaped roads and longer green light time for pedestrians.*

2.3.3 **Active mobility as a convenient source of physical activity for busy people** - Despite Hong Kong's current limitations on cycling as a mode of transport, opportunities exist to promote cycling in the New Territories and planning for the New Development Areas (NDAs). London's Cycle Superhighways[6] presented lessons on how the city's government could invest in appropriate cycling infrastructure such as cycling network extension and attractive signage to promote cycling as a mean of transportation.

2.3.4 **Interventions requiring behaviour change should be supported by a communication strategy** – Stairs/ramp climbing is considered a physical activity that can be promoted in Hong Kong practically. Increasing physical activity levels will require behavioural change and consideration should be given to how a communication campaign can support such changes. Reference could be made with New York's Health-Promoting Stair Bill[7] which was supported by a Stair Prompt Initiative[8]. Legible London[9] is also investigated as an example that used signage to encourage walking and wayfinding. Similar signage strategies could be applied in Hong Kong, especially to highlight routes leading to parks and staircases and to help pedestrians navigate "over and under" routes.

2.3.5 **Using events to test the public support for space sharing** – One of the easiest ways of increasing physical activity spaces is to reconceptualise streets as spaces accommodating non-motorised transport. Whilst it is accepted that the role of streets primarily for vehicle usage in Hong Kong will not change overnight, events can be held to test public support for temporarily closing certain streets over the weekend. London's Car Free Day[10] serves as an example for presenting spaces in a new way to communities. Events can also help activate underutilised spaces and promote physical activity (e.g. under highways, quiet streets).

2.3.6 **Incentivising private developers to embrace new guidelines** – Given Hong Kong's high land value, consideration should be given to how private developers can be incentivised to embrace new active design guidelines into their developments. Singapore's Landscaping for Urban Spaces and High Rises (LUSH) programme provides a good example of how gross floor area (GFA) incentives could be used to encourage private sector participation[11]. This would, however, require high-level policy initiatives from the Hong Kong Government.

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[6] *London's Cycle Superhighways is an ambitious programme to promote cycling by expanding London's cycling network across the city with supporting measures such as placing colourful and attractive signage along the superhighways to provide direction and to highlight the presence of these superhighways.*

[7] *The Health-Promoting Stair Bill passed in 2014 promotes use of stairs by allowing some stair doors to be held open by magnetic devices, which close automatically in case of an emergency.*

[8] *The Stair Prompt Initiative encourages the use of stair by promoting the use of motivating stair prompts.*

[9] *Legible London is a citywide wayfinding system for London, developed to help both residents and visitors walk to their destination quickly and easily. All signs offer a consistent experience and information about distances between areas and were also integrated with other transport modes.*

[10] *About 150,000 Londoners took over the streets on 22 September 2019 between 10:30am and 5pm across 27km of traffic-free roads to promote traffic-free city centres and active travel.*

[11] *For example, under LUSH 3.0, if covered mechanical and electrical equipment is transferred away from the rooftop to one of the top three floors directly below the roof to make room for urban farming, solar panels, communal roof gardens and green roofs at rooftops, such M&E equipment could be exempted from GFA calculation.*
(Source: Urban Redevelopment Authority Singapore - An Overview of the LUSH Programme (Page 5)
https://www.ura.gov.sg/-/media/User%20Defined/URA%20Online/media-room/2017/Nov/pr17-77a.pdf)

2.3.7 **Inclusive design requires an understanding of user barriers** - Both the London's Changing Places[12] and Singapore's Silver Zones initiatives illustrate the need to consider specific requirements of user groups to encourage outdoor activities, such as setting up elderly-friendly walking environment and enhancing disabled facilities. Given Hong Kong's ageing society, initiatives addressing the specific needs of user groups should be encouraged.

2.3.8 **Embracing active design to promote a company or city's quality of life -** Singapore's aspiration to position itself from a "city in a garden" to a "city in nature" is evident in projects such as Labrador Nature and Coastal Walk[13]. Singapore has been consistently ranked as the best Asian city to live in in Quality of Life surveys, where its green spaces are always mentioned. Likewise, the quality of New York's iconic open spaces plays an important role in providing a quality life in a high-density environment. The High Line[14] is an example of interventions that can accommodate physical activity at the neighbourhood level; while the Hunter's Point Campus[15] in New York City demonstrates interventions that can accommodate physical activity at the building level.

2.3.9 As Hong Kong's working population shrinks, it will become an economic imperative to position the city as a destination able to offer a high quality of life that can attract and retain talent. To achieve this, it would be important to provide high quality and accessible recreational opportunities and spaces accommodating a range of physical activities. The Tencent Headquarters in Shenzhen[16] is a further example of how corporate identity can be shaped around a healthy employee agenda and how this can also be used to attract and retain talent. Shenzhen's Upper Hills Lofts[17] is another great example on how to create active spaces within a new typology of urban place making where indoor and outdoor public spaces of various sizes, forms and functions across different parts of the property.

2.3.10 **Celebrating flexible, water-side spaces -** Promenades serve as spaces that can accommodate a range of physical activities. The popularity of Shenzhen's Shekou Coastal Promenade is partly attributed to its accommodation of various activities. Although Hong Kong has existing examples of water-side spaces incorporating active design initiatives (specifically promenades), lessons from elsewhere could be applied to further celebrate Hong Kong's extensive coastline and introduce active

[12] *London supports increased levels of activity and mobility for the disabled community with the 'Changing Places' initiative which involve better accessible toilets with enhanced features, encouraging the disabled to spend more time outdoors.*

[13] *Labrador Nature and Coastal Walk is part of the National Parks Board of Singapore's aim to transform Singapore from a "city in a garden" to a "city in nature". Visitors can enter barrier-free mangrove and coastal areas, which were previously not accessible to pedestrians despite being in walking distance from the railway stations.*

[14] *The High Line, a 2.33km long defunct elevated railway structure into an elevated linear park, uses inventive design to encourage stair climbing, walking, and relaxation.*

[15] *The Hunter's Point campus was specifically designed to cultivate physical activity both inside and outside the building. Frequently visited locations were strategically positioned within the building to encourage walking and taking the stairs, for example the cafeteria is located at the top of the building.*

[16] *The Tencent Headquarters featured a running track, gym, full-sized basketball court, a stadium and even swimming pool at the top, all accompanied by healthy food options.*

[17] *The Shum Yip Upper Hills Lofts is a commercial-residential complex with offices, hotels and business apartments, located between two large parks in Shenzhen, featuring a variety of open spaces. Its design encloses a quiet space, by connecting the 3-4 level high-density office through sidewalks, creating a small town with rich spatial variation. Every household has a private courtyard, where neighbours can interact and socialize, while having their own private space. An inner garden is also located between the hotel and office blocks for building users' enjoyment.*

design interventions at urban beaches that are easily accessible and under-utilised promenades.

2.4 Local Active Design Examples

Other than the overseas examples mentioned above, four local examples have also been selected to demonstrate the successful experiences in applying active design concepts in Hong Kong. They are the Western District Promenade, West Kowloon Government Offices, Skypark, Mong Kok, and West Kowloon Railway Station.

2.4.1 **Weatherproof and shaded seating is an important prerequisite for certain user groups** - Many "physical activity locations", such as parks and promenades, in Hong Kong were found to lack weather proofing and shaded seating. The provision of such types of seating in outdoor areas are particularly important in context of Hong Kong's hot and humid summers. The Western District Promenade demonstrates how weather proofing, shade and seating can be provided in various ways to cater to the needs of users.

2.4.2 **Multi-functionality and flexibility of spaces** - Many "physical activity locations" in Hong Kong were found to miss out on opportunities for accommodating more user groups and activities. The Western District Promenade demonstrates how the flexible and multifunctional activity spaces together with seating areas can serve the needs of various user groups. There are also engaging playgrounds for children of different ages and spaces that are not restricted in terms of permitted activities (e.g. children are allowed to use bikes, skateboards).

2.4.3 **Utilising unconventional spaces through provision of active uses** - A more creative approach may be required to repurpose unconventional spaces into functional open spaces in Hong Kong that can attract users and meet their needs. The rooftop open space at West Kowloon Railway Station Bus Terminus shows a good example of full integration between a Mass Transit Railway (MTR) station with open space that provided direct pedestrian connections in between. The Sky Park in Mong Kok demonstrates how the rooftop space is utilised through activities and facilities (e.g. kitchen, library, bar, gym, swimming pool, picnic area, garden). It is also a good example of how active design is used to encourage stair climbing.

2.4.4 **Careful design of building layout also encourages physical activity** - West Kowloon Government Office has demonstrated active design principles at the building scale. Stairwells with windows oriented towards a good view outside of the building are highly visible from the lift lobbies. They provide an attractive active alternative to users to travel between floors. Sky gardens at the lift transfer floors and roof landscape help lowering heat absorption and indoor temperature, creating ideal space to visit and engage in a variety of activities.

2.5 Desired Outcomes of Active Design

2.5.1 Based on the above findings, together with the findings obtained from the Stage 1 Stakeholder Engagement (which are detailed in **Chapter 3**), the barriers and opportunities for active lifestyle were generalised and translated into the desired outcomes below [highlighted in **bold**] that formed the basis for development of the ADG.

2.5.2 In terms of **active mobility**, walking is encouraged as it can be done anywhere at anytime, allowing greater levels of activity as part of a daily commute. Existing mechanisms such as the Hong Kong Planning Standards and Guidelines (HKPSG) has covered various aspects related to pedestrians such as safety, comfort, experience and location-specific advice. The Transport Planning and Design Manual (TPDM) of TD has recently been updated to incorporate the overall walkability strategy for Hong Kong, including the four pillars of walkability (i.e. to make walking connected, safe, enjoyable and smart). Various Building Environmental Assessment Method (BEAM) Plus assessment tools including Neighbourhood, New Buildings and Existing Buildings have provided incentives that facilitate pedestrians and improve walkability. Apart from walking, other means of non-motorised mode of transport such as cycling and riding scooters and skateboards could be beneficial to physical health as well. Several initiatives have been taken forward by the Government who is actively promoting cycling in some areas. These initiatives include extending the cycling path network, providing bicycle parking spaces, developing a "bicycle friendly environment" and promoting the use of bicycles as a form of green transport. The ADG therefore should make reference of these initiatives and incorporate them on a neighbourhood or building level, as appropriate.

2.5.3 Hong Kong is a society with an ageing population, thus the need to promote **active ageing**. The ADG should be devised to address the barriers faced by the elderly as solicited through engagement exercises (to be discussed in Chapter 3) as far as practicable. Walking will become an important form of activity for the elderly. Specific walkability needs of the elderly need to be considered.

2.5.4 **Stairs/ramp climbing** and its associated health benefits may serve as an opportunity. Stairs climbing is part of most people's daily routine and represent opportunities for both intentional and unintentional physical activities. Stairs can also be an integrated aspect of many individual opportunities, such as active ageing, children's play or active mobility.

2.5.5 Play is recognised as a fundamental right for every child. Current guidelines are geared towards spaces for younger children, nevertheless the needs of **engaged youth** including teenagers and adolescents should also be considered. It is generally accepted that the needs of teenagers and adolescents are more dynamic, diversified and playful, whereas children's play needs are perhaps more.

2.5.6 Studies show there is a link between health outcomes and green spaces. People living in areas with more green spaces are observed to have higher level of physical activity. **Green and blue spaces** shall be utilised in attracting more physical activities. In particular, Hong Kong's coastline of 1,178km long presents numerous opportunities for creating iconic promenades.

2.5.7 **Outdoor thermal discomfort** in urban areas during summer months presents a challenge for outdoor activity and exercise and is identified as a barrier. Quality landscape and greenery are fundamental to improved outdoor thermal comfort that can facilitate more outdoor physical activity. Shaded spaces generally create conditions that are conducive to walking and outdoor activities by protecting users from inclement weather.

2.5.8 Lack of space is identified as a barrier. With such scarcity, competition over designation and the use of public spaces is unavoidable. Consideration could be given to **sharing spaces** or creating flexible spaces that are able to react to changing circumstances and can be repurposed if needed.

2.5.9 Importance of **universal access** is demonstrated by the commitment to the United Nations Convention on the rights of Persons with Disabilities. Guidelines and best practice notes have been issued by various departments and have already been mainstreamed. Core ideas of universal access will be integrated into the ADG.

2.5.10 **Wayfinding** can increase activity levels among different user groups. One of the challenges for wayfinding in Hong Kong is the limited available space in the pedestrian environment. This requires adopting an approach to wayfinding in ADG that will not result in additional obstructions or visual clutter. It could be enhanced with the aid of technology, such as the use of smartphone apps with navigation functions.

2.5.11 To combat sedentary behaviour, opportunities related to "**Quantified Self**" interventions (e.g. health tracking smart watches that count daily steps and provide prompts to move more) should be explored to see if there are synergies between this trend and the built environment.

2.6 Concluding Remarks

The Need for Active Design in Hong Kong

2.6.1 Active design can raise physical activity levels which result in numerous physical and mental health benefits. Active design does not only improve the liveability of cities but can also play an important role in managing public health.

2.6.2 In Hong Kong, there is a need to increase people's physical activity levels to counter sedentary behaviour associated with long working hours. The analysis on demographic groups in Hong Kong shows that all ages could benefit from increased physical activity. As an ageing society, Hong Kong can benefit specifically from encouraging active ageing. Active mobility is also seen as a key opportunity for incorporating increased activity levels in the lives of busy Hong Kong people.

2.6.3 The lack of developable land in Hong Kong requires existing open spaces and physical activity locations to be used optimally and in a flexible manner.

Active Design across Scales and Disciplines

2.6.4 This Study focuses on active design interventions at the building and neighbourhood level. Although town planners, architects, urban designers and landscape architects typically work and design at these scales, it is important to note that the principles of active design transcend scale and discipline-specific boundaries.

2.6.5 Whilst active design can be introduced through tangible interventions, the encouragement of active lifestyles requires both tangible and intangible interventions. In this regard, consideration should be given to how active design interventions can be supported through events and communication campaigns as well as leveraging new technologies.

Collaborative Success

2.6.6 Mainstreaming of the concept of active design in planning and development will require co-operation and collaboration with a wide range of professional allies such as transport planners, traffic engineers, town planners, architects, landscape architects, private developers and government departments. Active design interventions also require buy-in at the community level. International examples have illustrated that visionary projects had public / institutional champions.

Next Steps

2.6.7 With the knowledge of the identified key barriers and opportunities and desired outcomes in a more active lifestyle and mainstreaming the concepts of active design, we moved on to the next chapter which the Study Team engaged stakeholders to acquire more insights and confirm the findings of this section for the formulation of ADG.

3. Stakeholder Engagement

3.1 The Process

3.1.1 Two stages of stakeholder engagement (SE) were carried out for this Study. The Stage 1 SE covered government bureaux and departments and organisations with extensive experiences in serving different demographic groups to collect views on possible input before the formulation of the ADG. The Stage 2 SE focused on the professional institutes and other organisations that were key players in the implementation of the ADG. The views obtained during the engagement process helped develop and refine the draft ADG.

3.2 Purpose, Format and Timing

3.2.1 The purpose of Stage 1 SE was to introduce stakeholders the concept of active design and the Study objectives, and to discuss barriers to and opportunities for promoting the concept in Hong Kong. A total of 19 interview meetings were held with individual stakeholders between July and October 2020. Stage 1 SE provided an opportunity for sharing ideas on both active design opportunities and potential implementation mechanisms.

3.2.2 The purpose of Stage 2 SE was to seek view of professional practitioners and potential project proponents on the preliminary draft of the ADG and to discuss potential implementation issues. A total of three engagement events were held for the Stage 2 SE in May and June 2021. The inputs from the stakeholders provided valuable insight on the opportunities to motivate and challenges to discourage future potential implementation of the ADG and helped to improve the appeal of active design.

3.2.3 The list of participated stakeholders in Stage 1 and 2 SE is attached in **Appendix A**.

3.3 Stakeholders' Major Views

3.3.1 The inputs from the stakeholders filled the gap between desktop research and the reality with the practical experiences of different types of user representatives. The stakeholders' views were generally in line with the needs and opportunities as well as desired outcomes identified in Chapter 2 with more insights from the implementation perspectives. Their major views which provide valuable input to the formulation of the ADG are highlighted below.

General Design Considerations

3.3.2 Stakeholders suggested the ADG should observe several key design considerations. They emphasised the need of an ageing population, weather protection under both hot and cold weather, creating active spaces that could accommodate multiple uses and strategic positioning of frequently visit locations or complementary land uses.

Needs of Different Demographic Group

3.3.3 Stakeholders opined the definition of 'active' for different demographic groups should be different and should be reflected in the ADG. The ADG should be inclusive and contain measures that cater for the needs of people of different ages and abilities.

3.3.4 Stakeholders emphasised on taking care of the needs of the ageing population in Hong Kong and promoting the concept of **active ageing**. To encourage elderlies spend more time outside to counter their sedentary behaviours, more resting place should be introduced in public spaces instead of adding more stairs such that they have the confidence in spending time in the outdoor.

Active Mobility

3.3.5 In terms of **active mobility**, stakeholders suggested making pedestrian environment more interesting and convenient could encourage people walk more. Alleys are common features among the high-density development environment in Hong Kong, thus a network / route of alleys could be created to encourage more walking. Stakeholders also opined that creating an environment friendly towards riding bikes, rollers, skateboards etc. would also help introduce a wider variety of physical activities for various user groups. They suggested to provide examples of supporting infrastructure for cycling in ADG to facilitate implementation.

Pleasant Walking Environment

3.3.6 Stakeholders have opined that there are three barriers to jogging in urban areas: (1) narrow pavements; (2) busy traffic junctions; and (3) lack of covered walkways. The adoption of three measures/initiatives can provide a more conducive environment for joggers: (1) provision of more covered walkways; (2) creation of more pleasant street environment; and (3) incorporation of biophilic design. Making pedestrian route more interesting and convenient could also encourage more people to walk.

3.3.7 Stakeholders commented that improving **outdoor thermal comfort** was important to encourage pedestrians to walk more. Provision of tree shading instead of just canopies as well as incorporating softscape in streetscape design help to mitigate heat island effect and improve air temperature, radiant temperature and ventilation of the environment.

Creation of Active Shared Spaces

3.3.8 Stakeholders suggested the creation of active **shared spaces** that could accommodate multiple uses and strategic positioning of frequently visit locations or complementary land uses. More flexibility should be given to the type of activities allowed in specific types of location such as pocket open spaces to encourage a more active lifestyle. Stakeholders suggested when incorporating design of active facilities targeting different user groups, interferences between any of the user groups should be avoided. For example, needs of quiet and passive space for elderly and needs for active spaces for children shall be considered, while ensuring both needs would not interfere each other.

Implementation

3.3.9 Specific stakeholders suggested various mechanisms to implement the concepts of active design, such as land sales conditions, creation of special districts to pilot active design ideas, incorporation of ADG's recommendations into HKPSG, etc. There were diverse views on linking the ADG with the assessment criteria of Building Environmental Assessment Method (BEAM) Plus.

3.3.10 Government departments should take initiatives and be the role model in promoting active design. There were also concerns on potential conflict between adopting active design measures and other mission/objective of the implementing organisation (e.g. flat supply versus provision of active spaces and facilities) and the management and maintenance issues of active design measures.

Others

3.3.11 To encourage more **stairs/ramp climbing**, stakeholders commented that creating a stair with special feature would create interest among people to use it.

3.3.12 Stakeholders suggested to introduce innovative seawall design while protecting against climate change and to allow the harbourfront for public enjoyment. Stakeholders pointed out that connection with natural areas such as country parks should be emphasised.

3.3.13 To enhance pedestrians' **wayfinding** experience, some stakeholders encouraged the use of smart applications such as virtual pedestrian maps to facilitate people to walk more.

3.3.14 Stakeholders commented that more graphic elements should be used to demonstrate the key issues in the ADG to make the document more interesting to read. ADG should define the concept of 'active design' in Hong Kong context, especially in a high development density context. Tools such as checklists and scorecards could be provided to aid the use of ADG by concerned parties.

4. Active Design Guidelines

4.1 Formulation of Active Design Guidelines

4.1.1 Information collected from desktop research, together with the input from the stakeholder engagement, helped lay out a list of barriers and opportunities for physical activities, which was then translated into desired outcomes to form the basis for formulation of ADG (**Appendix B**).

4.1.2 The ADG are formulated to be outcome driven. It is recognised that there are many ways in which an active design outcome can be achieved. The ADG are not prescriptive and do not include quantitative targets but highlight design objectives to accommodate varying design environments. This allows users more design flexibility and scope to experiment new ideas and approaches without being limited to specific quantitative restrictions.

4.2 Structure of the Active Design Guidelines

4.2.1 The recommendations in the ADG have been organised in the following hierarchy:

(A) Levels: The ADG are categorised into neighbourhood level and building level. Active design at the neighbourhood level requires consideration of the provision of active destinations to accommodate both intentional and unintentional activities as well as the access to such destinations. While active design at the building level refers to interventions to a building and development. It requires consideration of the provision and positioning of active spaces and facilities together with active routes within building to encourage building users more movement throughout the day.

(B) Topics: Each level consists of four topics and each with an active design theme. The topics show the active design concepts at different scale of the spatial environment. While the neighbourhood level topics focus on the larger scale including the spaces between the buildings and outdoor spaces such as parks and promenades, the building level topics focus on the exterior and interior of buildings. The topics are introduced below:

Neighbourhood Level

1. **Active City** - Creating an active city is to develop a vision to achieve active design objectives during the early planning and design stage. Clustering and co-location of land uses and developments can create preconditions for walkable and cyclable neighbourhoods. Waterfront areas can be shaped as iconic features of an active city while access and exposure to natural green and blue assets should also be promoted.
2. **Active Destinations** - Active Destinations create spaces where people are attracted to carry out physical and recreational activities. Playful, safe, inter-generational and inclusive design with weather protection and outdoor thermal comfort contribute to an appealing active destination which enables people of all ages and abilities to adopt an active lifestyle.

3. **Active Walking Journey** - To further increase the likelihood of people visiting the active destination, the walking experience to and from the active destination would be equally important. It is to build on the culture of walking and encourage people to walk more often for sustained distance and along more physically challenging routes, such as via outdoor stairs. The pedestrian environment should be safe and sheltered, with good navigation for pedestrians to orientate themselves.

4. **Active Mobility** - Incorporating active modes of transport such as walking and cycling as part of daily routine can increase physical activity levels. There should be appropriate infrastructures and supporting facilities to encourage walking and cycling as part of daily commutes and to be the first / last mile journey to public transport nodes.

Building Level

5. **Active Building Frontage** - Building frontages with vibrant street activities have a high degree of impact on the quality of the pedestrian environment and pedestrian experience. There is positive impact of visually transparent façades in contributing to a vibrant and safe street environment. These elements play a role in creating preconditions for the "Active Walking Journey" as well.

6. **Active Spaces and Facilities** - Active spaces and facilities within buildings can refer to podium and sky garden, rooftop spaces, exercise and multi-purpose rooms. Provision of active spaces and supporting facilities can create preconditions for more physical activities and active commuting. Flexibility of use, thermal comfort and inter-generational design should be considered in making the spaces at the building level for various physical activities.

7. **Active Routes** - Hong Kong is a vertical city defined by high-rise buildings in which many people live or work. This presents opportunities to encourage building users to take active routes between different destinations and levels within a building or development. There should be integration of different connections to create active routes within a building in order to encourage people to walk more as part of daily intentional and unintentional physical activity.

8. **Strategic Positioning of Building Functions** - The strategic positioning of certain frequently visited or popular destinations at the building level can increase incidental activity which can cumulatively contribute to greater activity levels during the day. Complementary spatial positioning of building functions can also encourage physical activity through the use of active routes.

(C) Objectives and Guidelines: Under each topic, objectives are set to clarify which outcomes should be achieved under each theme. Guidelines are devised to specify the details and expectations and provide clarity on where and how active design should be applied. Some local or overseas examples are listed on the sides of each objective to aid readers' understanding on individual objectives and guidelines.

4.2.2 Five case studies from local and overseas contexts are selected to demonstrate how one or more of the topics in the ADG can be met in real developments. A checklist has also been attached at the end of the ADG to serve as a quick reference tool that helps designers, planners and developers to ensure that guidelines relevant to their projects are considered in the planning and development process.

5. Pilot Case Studies

5.1 Overview

5.1.1 To demonstrate the application of the ADG (**Appendix B**), two pilot case studies have been chosen to showcase how active design elements could be incorporated in neighbourhood level and building level development to promote active and healthy lifestyle.

5.2 Pilot Case Study at the Neighbourhood Level

5.2.1 The pilot case study at neighbourhood level is an Active Loop in Tung Chung New Town. Based on the characteristics of the area, a proposal has been formulated with a view to encouraging active lifestyle and increasing users' physical activity level (Figure 5.1).

5.2.2 This proposal aims to create a network of free, safe and inclusive interventions for all communities. Applying the concepts recommended in the ADG, the Active Loop is an active route proposed to connect four existing and proposed Active Destinations (namely Kickstart Square near MTR Tung Chung Station, Tat Tung Road Garden, Active Garden under Bridge and Active Promenade along Tung Chung waterfront) and some existing sports and recreational facilities with continuous route signage. The loop also provides connections to nearby hiking trails such as Islands Nature Heritage Trail and the Hong Kong Olympic Trail.

5.2.3 Along the Active Loop, there are various exercise facilities and equipment of assorted uses and difficulty level for people of different needs and mobility. Signage is also proposed to lead visitors to visit the four Active Destinations following the Active Loop.

Figure 5.1 Summary of Active Tung Chung proposal

5.3 Pilot Case Study at the Building Level

5.3.1 The pilot case study at building level is an Active Transitional Housing Project in Ho Man Tin under the management of St James' Settlement. The site contains a four-storey main building and a paved open area. The flat paved open area has great potential to be transformed into an exercise-based active space, community farm and a variety of passive activities. Based on the characteristics of the site, a proposal with reference to the ADG concepts such as active building frontage, the provision of active spaces and the active routes, and the positioning of building functions has been formulated (Figure 5.2). The proposal aims to encourage active lifestyle and increase tenants' physical activity level, more interaction with the nature, and more community events with the larger neighbourhood.

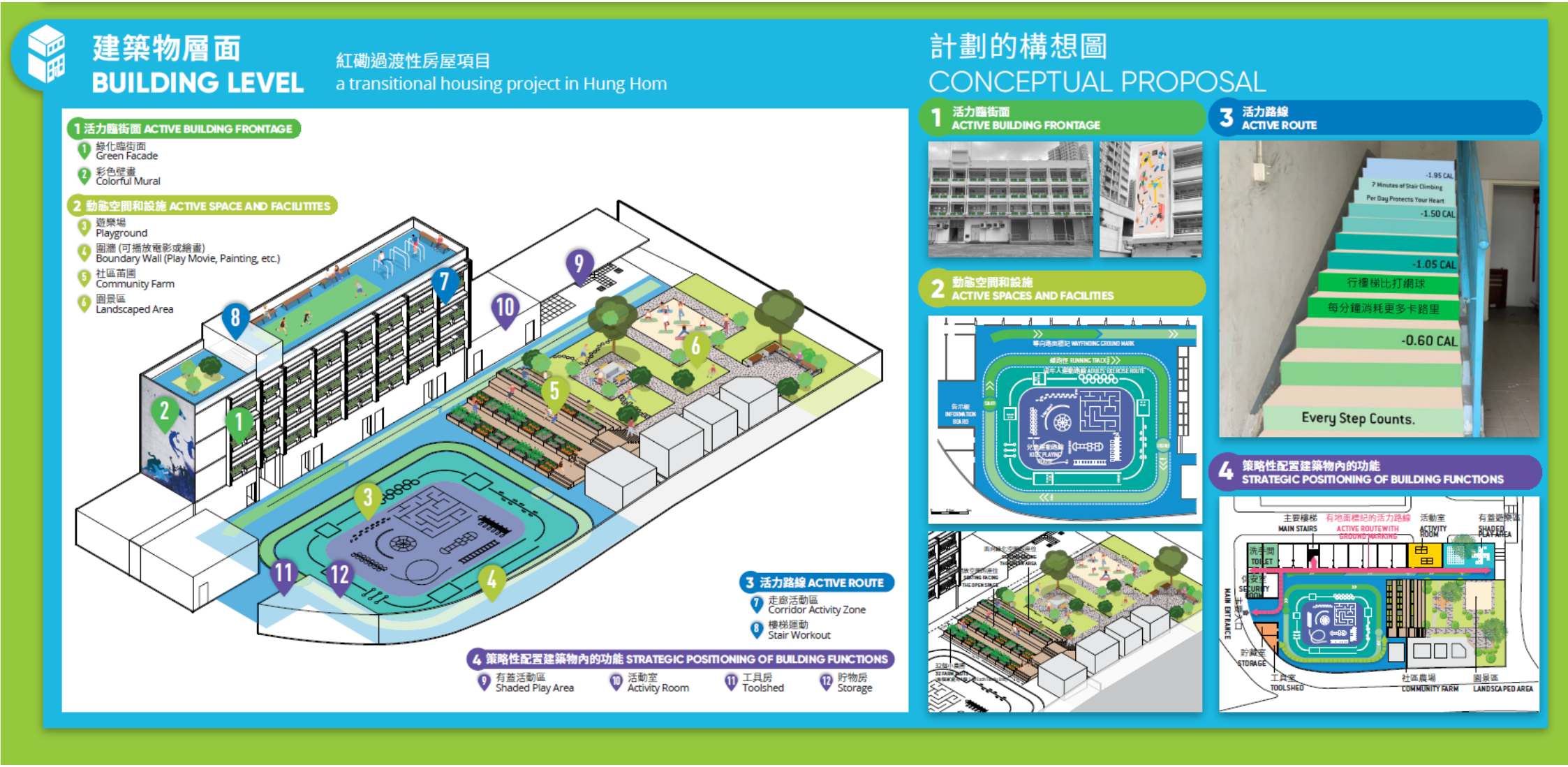

Figure 5.2 Summary of Active Transitional Housing proposal

6. Implementation

6.1 An incremental approach in mainstreaming the concept of active design in the planning and development process shall be considered. First of all, the concept of active design is introduced to a wide audience by publication of the ADG as an advisory document. The document can provide room for discussion and serve as inspiration to designers. The two pilot case studies, if implemented, together with the incorporation of such consideration in more public projects to come, will help visualise the concept and catch the attention of the general public on the benefits and importance associated with the active design. With this incremental approach, it is anticipated that the general public will gradually become familiar with the concept and may lend their support to its application which in turn could drive more built environment professionals to invest more efforts and resources in incorporating active design measures into their projects. A further step to incorporating ADG into HKPSG and BEAM Plus assessment tool may also be considered when opportunity arises.

7. Conclusion

7.1 This Study aims to instigate the introduction of active design concept to improve health and wellbeing of citizens, improve environmental outcomes and improve general liveability in Hong Kong. Throughout this Study, the current and future needs for active design in Hong Kong have been established. The analysis on the user groups of physical activities in Hong Kong provides a deeper understanding of the key barriers and opportunities related to implementation of active design concepts in Hong Kong. Local and relevant international experiences are reflected on. These knowledge collected through desktop study are used to develop desirable outcomes for active design that is suitable in the Hong Kong context.

7.2 To review study findings from desktop research, a two-stage stakeholder engagement process has been carried out to collect views from potential project proponents, professionals, government bureaux/departments and other stakeholders that were either familiar with the needs of specific user groups or potential partners of implementing ADG. Their views have been considered and incorporated in the ADG as appropriate.

7.3 The ADG are outcome driven. It is recognised that there are many ways to achieve active design outcomes. As such, the ADG are not prescriptive and do not include quantitative targets. This allows users of the guidelines to have design flexibility and scope to experiment new ideas and approaches.

7.4 The two pilot case studies showcase how active design elements could be incorporated at neighbourhood level and building level in promoting active and healthy lifestyle. With the application of the ADG in a real life context when opportunities arise, the two pilot case studies will help visualise how the relevant guidelines could be applied in transforming the spaces into an active destination, active space/facility and active route.

7.5 The findings and recommendations of this Study serve as pointers to indicate the benefits and potential mechanisms to mainstream concept of active design and creating a community with an active lifestyle. Mainstreaming of the concept of active design will require co-operation and collaboration with a wide range of professional allies to introduce the ADG to a wide audience in an engaging manner.