Consultancy Study for Enhancement of the Accessibility of Physical Environment in Hong Kong

FINAL REPORT

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AD+RG

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1.0 BACKGROUND

1.1 Purpose of the Study

The extent of universal accessibility in Hong Kong is improving. Further to the “Code of Practice : Access for the Disabled to Buildings” issued by the then Public Works Department in 1976, the “Design Manual: Access for the Disabled 1984” was the first set of guidelines incorporating obligatory and recommended design requirements on the provision of access and facilities to private buildings for persons with disabilities. This Design Manual was revised in 1997 (i.e., “Design Manual: Barrier Free Access 1997”) following with the enactment of the Disability Discrimination Ordinance (Cap. 487) in 1995 and the design requirements helped towards greater independence of a broader spectrum of the community including the elderly and pregnant women. The Design Manual was further updated in 2008, i.e. “Design Manual: Barrier Free Access 2008” (DM:BFA2008), including introduction of design considerations and recommended design requirements aiming to facilitate greater independence of not only persons with disabilities and the elderly but also people with other forms of physical infirmities or limitations such as pregnant women and families with young children. The obligatory requirements in the Design Manual had been incorporated into the Building (Planning) Regulations (B(P)R) (Cap. 123F). DM:BFA2008 has been kept under regular review by the Technical Committee on Design Manual: Barrier-free Access set up by the Buildings Department (BD). This committee comprises representatives from relevant government bureau and departments, building professional institutions, the academia and the rehabilitation sector including persons with visual impairment, hearing impairment or physical disabilities. A series of amendments to DM:BFA2008 have been issued by BD in November 2012, September 2015, April 2017, June 2019, October 2020 and December 2021 respectively.

The Transport Department (TD) has published a chapter “Facilities for People with Disabilities” in the Transport Planning and Design Manual (TPDM) to provide general guidelines on the design and provision of facilities for the designers to follow. The Architectural Services Department (ArchSD) has also published the “Universal Accessibility – Best Practices and Guidelines” aiming to provide best practices and design guidelines towards universal accessibility. These guidelines have reflected the “Travel Chain” approach in the design of built environment and facilities for persons with disabilities.

The Equal Opportunities Commission (EOC) announced in 2010 the findings of the “Formal Investigation on Accessibility in Publicly Accessible Premises” which examined 60 publicly accessible premises owned or managed by the Housing Authority (HA), Hong Kong Housing Society, The Link

Management Ltd and various Government departments. In response, the Government convened a Task Force (comprising representatives of stakeholders within the Government) to examine the government and HA premises identified by EOC as well as about 3 900 premises and facilities under the management of Government departments and HA having a frequent public interface. A consolidated retrofitting programme was subsequently formulated for upgrading the barrier-free facilities in existing government premises and facilities on the basis of DM:BFA2008, having regard to technical requirements and technical feasibility. The Housing Department and Highways Department (HyD) also devised specific retrofitting programmes to improve the accessibility of the properties / facilities under their management.

The 2017 Policy Address announced that the Government had tasked the Rehabilitation Advisory Committee (RAC) to formulate a new Persons with Disabilities and Rehabilitation Programme Plan (RPP) (formerly known as “Hong Kong Rehabilitation Programme Plan”) to set out the strategic directions and recommendations for responding to the service needs of persons with disabilities. RAC set up a Review Working Group and five Task Forces, including the Task Force on Accessibility, to take forward the task. RAC submitted the new RPP to the Government in June 2020. The Government formally released the new RPP in July 2020, accepting in principle the strategic directions and recommendations therein.

The Task Force on Accessibility (the Task Force) is responsible for examining accessibility matters relating to persons with disabilities, and making recommendations on strategic directions and measures for inclusion in RPP. Specifically for accessibility of community environment and services, the relevant RPP recommendation is “conduct research on the international standards / best practices / guidelines on universal design, and taking full account of the constraints and opportunities in Hong Kong, formulate feasible, achievable and practical strategies and recommendations; adopt the methodology of ‘Travel Chain Analysis’ to identify various barriers and propose measures to eliminate the barriers, with a view to creating an accessible community and living environment”.

The subject Consultancy Study for Enhancement of the Accessibility of Physical Environment in Hong Kong (the Study) has therefore been commenced to support the work of the Task Force in formulating a strategy and practical recommendations for enhancing the accessibility of the physical environment in Hong Kong.

Figure 1 - Development of Universal Accessibility in Hong Kong

Specifically, areas that the Study has examined include the “hardware” and “software” of accessibility; implementation and possible improvements of existing design requirements to facilitate the access of persons with disabilities in the built environment; incentive schemes to improve accessibility of premises; application of information and communications technology (ICT) and provision of assistive devices to enhance the access of different types of persons with disabilities to facilities and services; targeted training programmes and public education on "universal accessibility"; and advisory service to Government departments, non-governmental organisations (NGOs) and persons with disabilities on issues related to the provision of barrier-free access.

1.2 Methodology

A combination of research methods including desktop research, benchmarking exercise and stakeholder engagements were applied to examine the extent of universal accessibility in Hong Kong and to identify room for improvement. The findings provided the basis for formulating a strategy and practical recommendations (Figure 2).

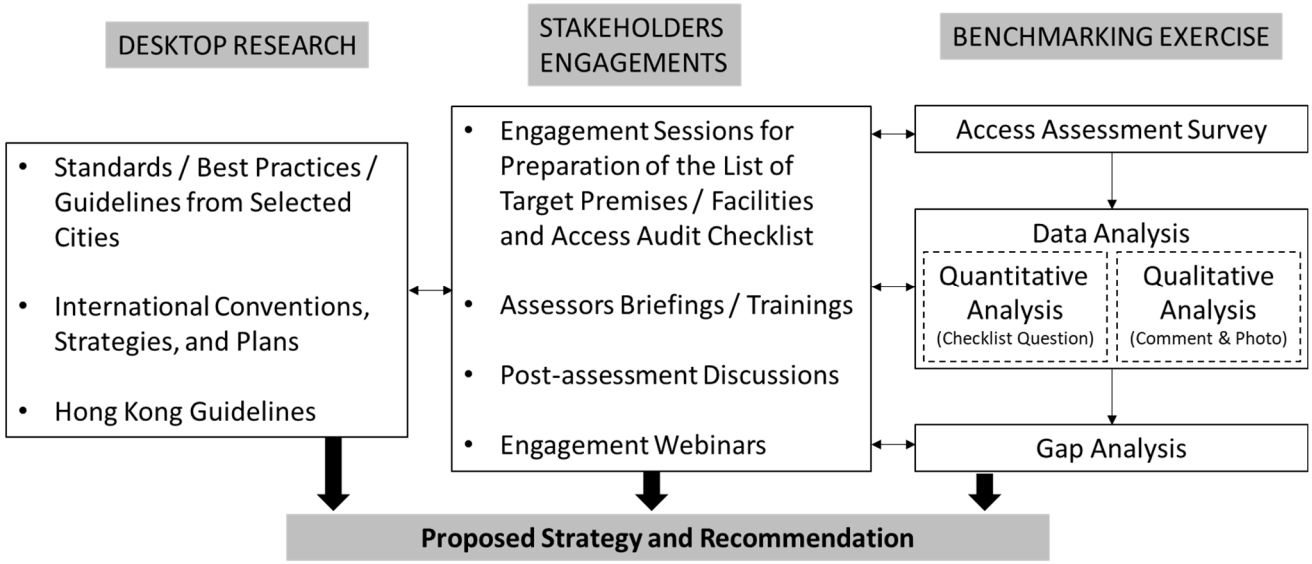


Figure 2 - Methodology

The Study firstly identified principles and standards of universal accessibility, making reference to the "United Nations Convention on the Rights of Persons with Disabilities" (UNCRPD); "Beijing Declaration and Action Plan"; "Incheon Strategy Goal"; and Principles of "Universal Design". These principles formed the backbone of "universal accessibility". The Study then conducted desktop research on the standards / best practices / guidelines of universal accessibility in six selected cities, including London, Osaka, Shanghai, Sydney, Vancouver and Singapore, to compare with the Hong Kong context and derived the access assessment survey checklist for use in the benchmarking exercise. In addition, it examined various good practices of these cities including accessibility assessment schemes; incentive schemes to improve accessibility of premises; training programmes and public education on universal accessibility; application of ICT to supplement the accessibility references in the context of Hong Kong.

The benchmarking exercise was then conducted to examine the prevailing extent of universal accessibility in Hong Kong. Around 80 assessors being persons with disabilities were recruited to conduct access assessment; the total number of assessed premises is 160. Due to the outbreak of

COVID-19, the assessment of 128 premises were completed by assessors being persons with disabilities, while the assessment of 32 premises were completed by other trained assessors not being persons with disabilities. By using the Travel Chain Analysis method, the assessors began their journeys from their places of residence and completed each stage of the travel chain to answer questions from the access assessment survey checklist. Since accessibility complaints about premises or facilities which are not in compliance with the standards are not uncommon, this access assessment survey measured the level of accessibility based on the user experience and level of satisfaction of the assessors. Assessors were also required to participate in a post-assessment discussion to summarise their responses in their checklists while giving additional comments to reflect their respective needs. It was a human-based approach to reflect the actual needs for improvement of a particular premises or facility.

Throughout the Study, key stakeholders including assessors, persons with disabilities, NGO representatives, professionals as well as interested members of the public were consulted in various stakeholder engagement activities and the benchmarking exercise. They provided significant inputs and supplements for the formulation of a strategy and practical recommendations.

The gap analysis was then conducted to examine the shortfalls on accessibility issues identified in the benchmarking exercise in comparison with the standards / best practices / guidelines of universal accessibility collated in the desktop research. The analysis would identify aspects in need of improvement in Hong Kong and recommend practicable actions.

1.3 Summary of Desktop Research

The desktop research examined the development of accessibility in six selected cities (including Singapore, London, Osaka, Shanghai, Sydney and Vancouver) and summarised the guiding principles, standards and good practices of universal accessibility and barrier-free access that could be considered for adoption in Hong Kong as appropriate, having regard to the current statutory requirements in these cities, cost implications and views of other stakeholders, etc.

1.3.1 Principles and Standards of Universal Accessibility

The desktop research identified principles of universal accessibility, making reference to the UNCRPD; "Beijing Declaration and Action Plan", "Incheon Strategy Goal"; and Principles of "Universal Design". Key guiding principles are highlighted as follows:

- Dignified access as universal human rights – A core value and commitment of non-discrimination and equality to full accessibility;
- Legal standard of accessibility – Laws and regulations to promote universal design and accessibility;
- Principles of Universal Design – A universally accessible standard for the widest spectrum of people in the communities.

These references also suggest the general standards and directional measures:

- Develop, adopt and implement law, regulations and technical standards based on universal design and in line with international standards, for rendering the built environment, transportation system, information and communication technology ecosystem and other facilities and services accessible. Where suited for individual local contexts, accessibility requirements may be included for approving permits concerned;
- Establish enforcement and coordinating bodies with sustained budgets, that have the authority to oversee multi-ministerial implementation of accessibility and enforce punitive measures for non-compliance;
- Provide training programmes on universal design for policymakers, building inspectors and contractors, and include topics on universal design and accessibility in education particularly programmes related to architecture, urban planning, transport, civil engineering and other relevant academic branches;
- Devise and implement a system to ensure compliance with mandatory accessibility requirements

at all processes of planning, design, construction, maintenance, monitoring and evaluation;

- Establish technical standards on seamless connectivity between destinations.

Gap Analysis

Extract from the Report on Research Studies on Development of Accessibility

Singapore

Singapore's ***Code on Barrier-Free Accessibility in Buildings*** (now known as ***Code on Accessibility in the Built Environment***) was first released by the Building and Construction Authority (BCA) in 1990. It was drawn up in response to the Building Control Regulations 1989 by providing detail guidelines in planning and designing facilities in buildings to cater to the needs of the elderly and persons with disabilities. Since then, the Code on Accessibility has been reviewed and updated in 1995, 2002, 2007, and most recently by the Code Review Committee (established in 2010) in 2013. Up until its 2002 update, the Code was written to cater to the needs of wheelchair users, but the 2002 update expanded provisions and technical requirements to include persons with other forms of physical limitations. The update in 2007 had also made additions of mandatory requirements for elderly-friendly features, and expanded from provisions in buildings to cover the whole built-environment.

In 2007, BCA has laid down the first ***Barrier-free Accessibility Master Plan*** with four strategic goals: 1) tackle future challenges, 2) mitigate existing challenges, 3) maintain accessibility features, and 4) building capabilities of the industry stakeholders. The initiative was rebranded as ***Accessibility Master Plan*** in 2009, shifting the focus of the strategies from barrier-free access to "Accessibility" and towards Universal Design. This was spearheaded by the 2007 update of ***Universal Design Guide*** which was released a year prior in 2006 (as the ***Universal Design Guidelines for Commercial Buildings***). The 2006 guidelines initially promoted the optional adoption of Universal Design in commercial buildings but expanded to include other building types (e.g. residential buildings, public and community facilities). Additionally, buildings could apply for the ***UD Award*** for excellent implementation of Universal Design concepts in their designs. BCA Academy offers a ***Certification Course on Universal Design Assessor*** for architects, building owners, facility managers, project managers, town council executives, academics, interior designers, and other professionals. A staff that has completed the course is a requirement for architectural consultancy firms or project management consultancy firms to be registered in BCA's Public Sector Panels of Consultants, which in turn would allow these firms to participate in public sector tenders.

In 2012, Singapore signed the **UNCRPD**, and ratified it in 2013. The concept of Universal Design

was determined as a more advanced concept over Accessibility in 2012, and became the prevailing term in the subject matter. In 2013, the updated ***Code on Accessibility in the Built Environment*** emphasised on Universal Design concepts which would benefit a wider spectrum of the population, including persons with disabilities, the elderly, and families. The UD Award was rebranded as the ***UD Mark Certification Scheme*** so building owners can perform quantitative checks before applying for the Award, which is based on Accessibility Rating System checklist. The Universal Design Guide (2007) from was updated to contain more examples of good practice as the ***Universal Design Guide for Public Places*** in 2016.

The **3rd Enabling Master Plan (2017-2021)**, published by Ministry of Community Development, Youth and Sports, has recommended to include persons with disabilities in all settings to create a more inclusive society. The four factors to meet such recommendation are to: 1) develop an inclusion index for persons with disabilities, 2) adopt the principles of universal design in the built environment to improve accessibility, 3) improve physical, information and communication access for persons with disabilities, and 4) promote social interactions and inclusion in physical settings and activities, including sports and cultural activities.

Until 2021, BCA administers ***Accessibility Fund*** for buildings in the private sector to incentivise owners of buildings built before the 1990 to improve their accessibility. Almost all government buildings have completely upgraded to meet the universal design standards.

Sydney

The discrimination on disability was made illegal with the ***Disability Discrimination Act (DDA) 1992.*** With recent increasing awareness and recognition of their human rights, persons with disabilities can enjoy a more inclusive environment. With the introduction of DDA, there has been an increasing demand for the Local, State and Commonwealth Governments, the building industry, and owners of premises to seek for professional expertise in accessibility. As a result, the ***Association Consultants in Access Australia (ACAA)*** emerged from a national forum at Australian Council for Rehabilitation of Disabled (ACROD House) in Canberra in 1995 and was established in 2000 to realize such profession during a consultation with key stakeholder individuals and groups related to disabilities and the building industry.

In 2008, the Government of Australia committed to the implementation of the **UNCRPD**. Subsequently, an ***Australian National Disability Strategy*** was set out in 2010 as a 10-year national plan for creating a better life for Australians with disabilities, their families, and their carers. The purpose of this plan is ensuring that the principles of the UNCRPD are incorporated into the

national policies and measures in Australia. Meanwhile, the ***Disability (Access to Premises – Buildings) Standards 2010*** was published in May 2011. The aim of these standards is to ensure those new buildings or any new parts of buildings possess the proper levels of accessibility according to the law. In 2015, Australia has become one of the 193 countries committing to the United Nation's ***Sustainable Development Goals***. To align with the Tenth Goal of reducing inequality, an action plan named ***A City for All: Inclusion (Disability) action plan 2017 – 2021***, was set to build the social inclusion.

As one of the states of Australia, the New South Wales (NSW) Government announced the ***National Disability Strategy NSW Implementation Plan 2012 – 2014***, which was enhanced by the ***Disability Inclusion Act 2014***. This Act required the NSW Government to establish an ***NSW Disability Inclusion Plan*** as a framework for the development and implementation of disability action plans in NSW. To meet its legislative obligations under the *NSW Disability Inclusion Act 2014*, the City of Sydney establishes a framework, the ***Inclusion (Disability) Action Plan 2017 – 2021***, with priorities for moving towards a truly inclusive city. It is the City's fourth plan being developed in consultation with the City's ***Inclusion (Disability) Advisory Panel***, improving the accessibility of the City's public spaces as well as accessible information across the City's services. The Inclusion (Disability) Advisory Panel provides strategic, expert and impartial advice to the City on the development and implementation.

Australian Building Codes Board is currently developing an Options Paper on accessible housing. The ***Accessible Housing Options Paper*** was announced for public consultation from September to November 2018 to refine the details.

Public transport services in NSW are constantly being improved to help residents and visitors have a smooth and safe journey. For buses, accessible buses in Sydney display the international wheelchair symbol. These buses include ramps and kerb side kneeling technology to provide easier boarding. Priority seating and extra room inside allow for a more comfortable journey. All ferries are accessible, but some wharves have stairs which restrict access. Accessible wharves have level or ramped access to allow passengers of all abilities to board easier.

London

The **Centre for Accessible Environments** (CAE), founded in 1969, is the UK's leading authority on inclusive design and management aiming to deliver inclusive environments via consultancy, training, and guidance services to developers, designers, construction organizations, and relevant professionals.

The UK government has recognized the importance of planning in providing access and facilities for people with disabilities since the ***International Year of Disabled Persons*** proclaimed by the United Nations in 1981. The ***Disability Discrimination Act 1995*** was introduced in phases to terminate the discrimination that persons with disability faced.

In 2000, the ***Disabled Person's Transport Advisory Committee*** (DPTAC) started to play a role in recommending the improvement in an accessible built environment for people with disabilities. DPTAC aims at working for a fully inclusive transport system and built environment. DPTAC's Inclusive Projects suggested developers to appoint an Access Champion as one of the project team advisors. At the same time, The ***Royal Association of Disability and Rehabilitation*** conducted a survey in 2000 on the 32 London boroughs in the City of London, acknowledging that 23 boroughs were employing access officers and one borough was using an external consultant.

Meanwhile, the Government supported the establishment of ***National Register of Access Consultants*** (NRAC) to ensure, recognize, and accredit experienced and appropriately skilled access consultants. NRAC is the only UK formal accreditation for experts in such field providing a register of competent professionals for clients. It was originally founded in 1999 as a project of CAE with support from Department for Communities and Local Government, Department for Work and Pensions and the Disability Rights Commission.

In addition, the **Office of the Deputy Prime Minister** (ODPM) published a good practice guideline, named ***Planning and Access for Disabled People*** (2003), which provided detailed recommendation on the role of the planning system in providing an inclusive and accessible built environment. Replacing this practice guideline, a ***National Planning Policy Framework (NPFF)*** was released in 2012 and amended in 2018 by ODPM. It sets out the government's planning policies for England and puts emphasis on the importance of inclusive design.

The UK government joined the **UNCRPD** in July 2009. As a legal framework, the ***Equality Act 2010*** aims to protect the human rights of persons with disabilities. This Act sets out the Public Sector Equality Duty to eliminate unlawful discrimination.

The ***Planning and Compulsory Purchase Act 2004*** brought about the concept of the design and access statement under which the developers should address explicitly how the projects facilitate broad access and inclusive design. In 2006, a clear definition of the ***principles of inclusive design*** in the corresponding document entitled "the Principles of Inclusive Design They Include You" was

released by the ***Commission for Architecture and the Built Environment***. All of these have been incorporated into the ***London Plan Policy 7.2. – An Inclusive Environment (2016).***

The ***Part M of the Building Regulations 2010*** has required reasonable provision for people with disabilities accessing a building and its facilities. With reference to the ***Equity Act 2010***, the ***Approved Document M*** of the Building Regulations was modified in 2013.

Vancouver

Canada ratified the **UNCRPD** in 2010. The Convention entered into force for Canada in April 2010. The Federal government, in June 2018, proposed the Bill C-81: ***Accessible Canada Act*** (the Act) with a focus on eliminating barriers to accessibility and discrimination. The Act outlined how the Canadian Government would enforce organizations to identify, prevent, and eliminate any barriers to accessibility in the built environment, including buildings and public spaces, transportation and in the field of information and communications technologies, etc. The Act also sets up the ***Canadian Accessibility Standards Development Organization***, which would be the first-ever development of Canada's standards regarding accessibility and would be led by persons with disabilities.

In autumn 2017, the Government of British Columbia (B.C.) released a three-year plan, ***Diversity and Inclusion Action Plan*** to remove barriers to employment for British Columbians in seeking a career in the Public Service, and to ensure an inclusive and respectful working environment. Additionally, the B.C. Government held a comprehensive public consultation between December 2013 and March 2014 to seek views from people with disabilities and other stakeholders on the subjects of reducing barriers and increasing accessibility for people with disabilities. As a result, the ***Accessibility 2024 Action Plan*** was released. It outlined the initial actions that the government would be able to commit to make B.C. a truly inclusive province by 2024. One of the actions was creating a government ***Accessibility Secretariat***. As for the accessible built environment, the Action Plan had set out a goal for all government-owned and leased customer service building stock to be fully accessible by 2020. Guidelines for accessibility would be developed to incorporate into the Official Community Plans. The building code would be updated. Also, the B.C. Government proclaimed an ***AccessAbility Week*** between 27 May and 2 June 2018 in order to celebrate the contributions of British Columbians with disabilities.

At the City of Vancouver level, there is still no current overarching City strategy regarding accessibility. Nonetheless, there are a number of City policies mentioning accessibility for persons with disabilities. One of them is the **Health City Strategy (2014)** which is a broad plan for improving the lives for people in Vancouver with initiatives that are both universal for all citizens and specific

populations who are vulnerable to health inequities. The ***Transportation 2040*** (2012) aims to address accessibility for all people by promoting accessible streets, supporting a universally accessible transit system and safe use of taxis, and providing accessible parking for persons with disabilities. More recently, in May 2018, the development of an ***Accessibility City Strategy*** for the City of Vancouver has been passed by the Vancouver City Council. Staff has collaborated with representatives of the Persons with Disabilities Advisory Committee, the Senior Advisory Committee and the People with Lived Experience Advisory to determine a recommended scope for ***Phase I of the Accessibility Strategy***. There are twelve main themes as focus: Inclusive Government, Accessible Service Delivery, Accessible Internet, Accessible Built Environment, Accessible Housing, Accessible Transportation, Income Support, Employment, Financial Security, Inclusive Communities, Emergency Preparedness, and Accessible Consumer Experience. For accessible housing, the **Right Fit Pilot Project** is a three-year, multi-partner initiative that gather housing and disability service providers to address the difficulties facing wheelchair users that need accessible and affordable homes.

Facilities Planning and Development (FEFM) produced a number of guidelines to address the special needs and requirements for different facility types, for example, ***Public Washroom Design and Technical Guidelines***, ***Recreational Facility Technical Guidelines***, and ***Social Facility Technical Guidelines***, etc. These guidelines take reference to ***Building a Path to Parks and Recreation for All: Reducing Barriers for Trans and Gender Variant Community Members*** regarding accessibility requirements for washrooms, changing rooms and shower facilities. In particular, FEFM is undergoing a program to improve universal design and inclusive by continuously upgrading City-owned facilities, including City Hall, Civic Theatre, Community Centers, Libraries, and so on. As part of ***2019 – 2022 Capital Plan***, there is priority for the enhancement of City faculties which is underway for better inclusive environment. Besides, with ***Accessible Street Design Guidelines***, the City strives for making sidewalks and streets fully accessible for people with disabilities.

There is a comprehensive field assessment of all government-owned buildings, which were mostly offices. The first phase of the government's Barrier-free Accessibility Program has finished. 89 government-owned buildings have been assessed to determine their level of meaningful accessibility and to identify areas for improvements such as providing automatic door openers, accessibly pathways, and improved signage. 88 buildings now satisfy basic barrier-free access. In Phase 2, there are roughly 80 more buildings that are undergoing assessments throughout the province, the results of which will inform accessibility planning and improvements.

Osaka

Laws on accessible public facilities and communications were initially outlined, respectively, in Sections 18 and 19 of the ***Basic Law for Persons with Disabilities*** (1970). In 1994, the ***Law for Buildings Accessible to and Usable by the Elderly and Physically Disabled Persons*** (高齢者、身體障害者等が円滑に利用できる特定建築物の建築の促進に関する法律), also known as the ***Heartful Building Law*** (ハートビル法), was established for the construction of public buildings that would meet the needs of persons with disabilities. The ***Law for Promoting Easily Accessible Public Transportation Infrastructure for the Elderly and Disabled Persons*** (高齢者、身體障害者等の公共交通機関を利用した移動の円滑化の促進に関する法律), also known as the ***Traffic Barrier-free Law*** (交通バリアフリー法), was enacted in 2000 to enable the elderly and persons with disabilities to make use of public transportation. The Ministry of Land, Infrastructure, Transport and Tourism (then known as "Ministry of Land, Infrastructure and Transport") had established the Universal Design Policy Promotion Headquarters in 2004 and the ***General Principles of Universal Design Policy*** to establish measures to promote Universal Design and accessibility in the country in 2005.

In 2006, the ***Act on Promotion of Smooth Transportation, etc. of Elderly Persons, Disabled Persons, etc.*** (高齢者、障害者等の移動等の円滑化の促進に関する法律) was enacted, superseding the Heartful Building Law and Traffic Barrier-free Law. Contrary to what the name may suggest, the Act sets out that there should be requirements for buildings, transportation facilities, and public roads. The Act has also established that there are requirements for the accessibility in two categories of buildings: public buildings that are used by the general population, and public buildings that would be commonly used by the elderly and persons with disabilities. The Act was updated by supplementary materials in 2007, 2011, 2013, 2014, 2017 and 2018.

Japan signed the UNCRPD in September 2007, and the country became the 140th country to ratify the UNCRPD in 2014. Before the ratification in 2014, the Committee for Disability Policy Reform was established, leading to the publication of the ***Standards on construction design with consideration to usage by the elderly, physically disabled persons, etc.*** (高齢者、障害者等の円滑な移動等に配慮した建築設計標準; 2012) as well as the revision of the "Basic Law for Persons with Disabilities" in 2013.

More recently in February 2017, in preparation of the 2020 Tokyo Olympics and Paralympics, the national "Universal Design 2020 Action Plan" was approved during the first meeting of the Ministerial Council on Universal Design 2020. The Osaka Prefecture would also participate in the World Masters Games 2021 Kansai and host the upcoming World Expo 2025. The upcoming international events would lead to an influx of foreign visitors, necessitating provisions for people of different abilities and putting accessibility in Osaka, and by extension Japan, under international scrutiny. In preparation of such, the Osaka Prefecture has published the Osaka Universal Design Promotion Guidelines in 2018 to better implement universal design and accessibility of the city.

Shanghai

The beginning of accessibility in Shanghai followed the central government of China. In 1989, the Ministry of Housing and Urban-Rural Development (住房和城鄉建設部; formerly known as Ministry of Construction, 中華人民共和國建設部), the Ministry of Civil Affairs (中華人民共和國民政部), and China Disabled Persons' Federation co-operated to publish the ***Design Specifications of Urban Roads and Buildings for People with Disabilities*** (JGJ 50-88 城市道路和建築無障礙設計規範). New roads and buildings in urban areas, especially of national level, provincial level, and municipal level, were required to follow the standards. Existing roads and buildings would be modified gradually to follow the standards. The design standard was later superseded by the ***Codes for Design on Accessibility of Urban Roads and Buildings*** (JGJ 50-2001 城市道路和建築物無障礙設計規範) in 2001. The main revisions include updates to the dimension specifications for accessible facilities (e.g. ramps, tactile paths, accessible toilets, etc.), facilities specific to certain building types, and expansion for existing provisions (i.e. urban roads, building interiors, and accessible facilities).

In 2003, as supported by the Shanghai Construction and Management Committee and as a response to the ***Management Methods for the Construction and Use of Barrier-free Facilities in Shanghai*** (上海市無障礙設施建設和使用管理辦法), the ***Standard for Design on Accessibility of Building and Facilities*** (DGJ 08-103-2003 無障礙設施設計標準) was published. The design standards were intended to set an international standard and spearhead accessibility in China. It contained specifications for a wider spectrum of building types and barrier-free facilities.

China signed the **UNCRPD** in 2007, then ratified it in the year after. An initial report by the state was submitted in 2010, and a second report was submitted in 2018.

In 2008, the ***Shanghai Municipality's Outline of the 600-Day Action Plan for Strengthening the Construction and Management of City Environment*** (上海市迎世博加強市容環境建設和管理 600 天行動計畫綱要) was published for preparation of the World Expo 2010. An enhancement of the barrier-free environment was listed as one of the goals for improving citizen lives. Accessibility hardware and software were raised as factors that should be improved, especially in the more important districts, areas, and occupations.

In 2012, the National Standard of ***Codes for Accessibility Design*** (GB 50763-2012 無障礙設計規範) was published, replacing the code set previously in 2001. As required by the ***2009 Plan for Formulation and Revision of Construction Standard Specifications*** (2009 年工程建設標準規範制訂、修訂計畫), the 2012 codes have expanded their application to additional building types, and have also explained reasons behind provisions. The 2019 update of the ***Management Methods for the Construction and Use of Barrier-free Facilities in Shanghai*** has further enforced the application of the Code on Shanghai.

Based on the above gap analysis, universal design though not a statutory requirement in all the six selected cities has been widely considered and practised through numerous design guidelines and standards.

Most of these principles, standards and measures have at various extents been reflected in the measures in Hong Kong. Based on relevant legislation (e.g. the obligatory requirements of Design Manual: Barrier-free Access based on B(P)R under the Buildings Ordinance (Cap.123)), codes of practice and guidelines, Hong Kong has already established statutory requirements and advisory guidelines on accessibility, summarised as follow:

- Further to the “Code of Practice : Access for the Disabled to Buildings” issued in 1976, the first “Design Manual: Access for the Disabled 1984” was introduced in 1984. The second was published in 1997 which also helped towards greater independence of a broader spectrum of the community including the elderly and pregnant women. Furthermore, DM:BFA2008 has introduced the Best Practice Sections comprising design considerations and recommended design requirements aiming to facilitate greater independence of not only persons with disabilities and the elderly but also people with other forms of physical infirmities or limitations

such as pregnant women and families with young children. It includes a mandatory section to stipulate obligatory design requirements for the design and construction of new buildings or alteration and addition works in existing buildings concerning the provision of barrier-free access. The Best Practice Sections are for the reference of professionals and building owners who intend to improve and / or provide better and more convenient access and facilities for the use by all intended users of the buildings.

- The TPDM introduced a chapter (Volume 6 Chapter 8) on the detail design of barrier-free highways and transport facilities for persons with disabilities in 2001. The manual aims to provide a barrier-free environment for all people in the community. It also adopts the design principle of providing accessible facilities along a barrier-free route which is similar to the "Travel Chain" concept.
- The Code of Practice for Fire Safety in Buildings 2011 and Codes of Practice for Minimum Fire Service Installations and Equipment and Inspection, Testing and Maintenance of Installations and Equipment have mandated the required fire safety provisions for persons with disabilities in buildings.
- The Code of Practice for the Lighting, Signing and Guarding of Road Works provides a standard of mitigation measures for road works from the safety perspective.
- The Hong Kong Planning Standards and Guidelines (HKPSG) have made reference to DM:BFA2008 and included general planning and design guidelines on accessibility in respective chapters. Technical details of internal transport facilities are excluded in the HKPSG but may, if necessary, be referred to in the TPDM.
- The "Universal Accessibility – Best Practices and Guidelines" and "Universal Accessibility for External Areas, Open Spaces and Green Spaces" published in 2004 and 2007 respectively provide best practice standards of universal accessibility for professionals and architectural practitioners.

While the development of universal accessibility in Hong Kong has followed the principles in general and kept in pace with international standards, the benchmarking exercise (Section 1.4 below) showed that the accessibility of Hong Kong could be improved by making reference to the latest developments of universal accessibility, statutory requirements and international studies in other countries and addressing the needs of the local stakeholders.

The current DM:BFA2008, TPDM and relevant Practice Notes to Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers (PNAPs) set out design requirements of providing barrier-free access and facilities for persons with disabilities. With the advancement of technologies and higher public expectation on accessibility, these existing measures should be regularly updated and enhanced where practicable. In particular, innovative communications

technologies, building technologies and operation ideas for overcoming physical constraints, and achieving a universally accessible environment based on a connection with different standards / codes may be adopted to better respond to the needs of persons with disabilities.

DM:BFA2008 is applicable to new buildings, and the specific parts of existing buildings for which alteration or addition works are to be undertaken.

While the HKPSG make mention of accessible facilities, a general consideration of accessibility for large scale developments at the planning stage is important. For new development areas, public housing developments, urban renewal projects, etc., consideration could be given to incorporating the concept of universal accessibility, especially to cater for direct and convenient connection points between lots, buildings, stations and other major destinations.

Safety of persons with disabilities has been covered by various codes of practices such as the implementation of visual fire alarm, temporary refuge space, etc. Additional aspects may be covered, including evacuation information, alternative access routes during road works, etc.

1.3.2 Building Management

Good practices of building / premises management on accessibility could mitigate the physical constraints caused by building design and physical structures that could not be modified. They could also resolve other operational and attitudinal issues.

- Property Management Services Authority

In Hong Kong, the Property Management Services Authority (PMSA) is the statutory body established under the Property Management Services Ordinance (Cap. 626) to regulate the provision of property management services by companies and practitioners through a statutory licensing regime and other complementary measures that suit the situation in Hong Kong. PMSA encourages and assists the property management industry and its practitioners in striving for enhancement in service quality and professionalism for fostering a better living environment. Collaboration with PMSA could be explored to enhance the understanding of the property management industry of universal accessibility and barrier-free access.

- Access Co-ordinator and Access Office Scheme

The Government has established an Access Co-ordinator and Access Officer Scheme in 2011 to enhance the accessibility of government premises, facilities, and services. Under the Scheme, all Government bureaux and departments (B/Ds) have appointed Access Co-ordinators and Access Officers. An Access Co-ordinator is responsible for co-ordinating accessibility issues within an

individual bureau or department, whereas an Access Officer is responsible for aiding persons with disabilities in accessing the venue and using the services and facilities. There is room for better utilising the Scheme for assisting persons with disabilities, such as providing additional training on accessibility and disability-related knowledge to these coordinators and officers.

Gap Analysis

Accessibility Courses

Cities	**Availability**		**Items**
	Y	N	
London	✓		• Built Environment Professional Education (BEPE)
Osaka			*Not Available*
Shanghai			*Not Available*
Singapore	✓		• BCA Academy Universal Design Assessor
Sydney			*Not Available*
Vancouver	✓		• Rick Hansen Foundation Accessibility Training Course

With reference to the examples of the selected cities, it has been found that there are various accessibility courses offered to enhance the knowledge and skills in achieving an inclusive environment, whereas there is no accessibility course offered to building management practitioners in Hong Kong. In light of this, consideration can be given to offering such courses on the operation and maintenance of accessibility facilities.

1.3.3 Incentive Accessibility Assessment

The selected cities adopt various accessibility assessment and accreditation tools to ensure the standard of accessibility. Key components observed are as follows:

- Accreditation Body: The accessibility accreditation bodies in London (National Register of Access Consultants), Sydney (Association of Consultants in Access Australia) and Vancouver (Rick Hansen Foundation (RHF) Accessibility Certification) are independent and supported by the government, professional bodies, disability service providers, and representatives of persons with disabilities. An accreditation body would generally ensure, recognise, and accredit experienced and appropriate built environment practitioners to provide accessibility consultancy services.

- Accessibility Rating: A rating system to assess the accessibility of a built environment would inform the public of the accessibility level of the premises. It is also a kind of incentive to encourage developers, premises owners, property managers, etc. to enhance accessibility. Its development commonly reflects cross-sectoral collaboration involving the government, NGOs and relevant professionals. Examples are the RHF Accessibility Certification programme in Vancouver and the Universal Design Mark Certification Scheme administered by BCA in Singapore. As a part of the RHF Accessibility Certification programme, RHF offers accessibility training courses for practitioners to become RHF Accessibility Certification Professionals.

In Hong Kong, incentive schemes with accessibility rating include the Hong Kong Council of Social Service (HKCSS)'s "Inclusive Environment Recognition Scheme" (「共融環境嘉許計劃」) and "Inclusive Shops Charter Scheme" (「共融商舖約章計劃」) as a recognition of the commendable efforts of the participants to enhance accessibility. Such may be further supported and expanded to sustain the incentive elements, taking suitable reference from the practices adopted in the cities studied. For example, we can learn from cities like Vancouver, Singapore, and London to provide accessibility training courses supported by the government and to enhance the professional standard of accessibility consultancy services for the built environment practitioners.

1.3.4 Public Education

Education is the fundamental means to change attitude and arouse public awareness on accessibility issues. It is important to facilitate the general public to understand the needs of persons of disabilities and the concepts of universal accessibility and barrier-free access. For professionals and practitioners concerned, the provision of suitable education or professional training programmes on universal accessibility and barrier-free access would enhance their knowledge and expertise.

The desktop research has showed different education means as follows:

- Disability simulation education

  Disability simulation as a form of experiential learning has been a popular way for people without disability to learn what it is like to have a disability. It has been a common tool to invoking empathy for disability or accessibility-related issues. Some studies observed that disability simulation would increase awareness on accessibility issues, encourage positive attitudes of acceptance and integration into peer relationships. However, foreign studies have debated about the possibility of negative results that might promote negative stereotypes of helplessness. Simulation programme may be an education tool for students at schools or the general public if such activities are facilitated by persons with disabilities thoughtfully and sensitively. Some also

suggest that direct personal sharing and more social interaction with persons with disabilities are considered as alternatives of simulation activities. Some organisations provide disability simulation programmes in Hong Kong aiming to arouse public awareness on the needs of persons with disabilities.

- Primary, secondary and tertiary education in Hong Kong

  Certain subjects at primary schools, secondary schools and tertiary education institutions (e.g. General Studies) may provide flexibility for conveying to students ideas about “universal accessibility”, “Universal design”, “Travel Chain”, “ICT on accessibility facilities”, and inclusive culture. We have noticed that teachers in schools might have little experience in teaching accessibility. Therefore, accessibility activities such as rehabilitation organizations-assisted sessions, workshops and talks are suggested to encourage teachers to acquire the related knowledge on the topic.

- Professional programmes for practitioners and professionals

  Apart from accessibility professional training, other professional programmes such as those on design and construction, and property management for enhancing the expertise of practitioners and professionals concerned are common. As an example, in London, the government led a joint project “Built Environment Professional Education Project” (BEPE Project) with the Paralympic Legacy Advisory Group aiming to build the London 2012 Olympic and Paralympic Game the most accessible Games ever. The key success of the BEPE Project was to make inclusive design as a key part of built environment training and education for built environment professionals. The Construction Industry Council of the construction industry then continues the BEPE Project. The council helps the transition from a government driven project to an industry owned and led project.

  In Hong Kong, while there is no specific professional programme on universal accessibility, professional bodies have organised periodic training courses or Continuing Professional Development programmes on accessibility for their members. Faculties / schools of architecture and design of individual tertiary institutions have included universal design elements into their programmes.

- Promotional activities

  Promotional activities as part of public education are common practice to increase public awareness of the needs of persons with disabilities. In Osaka, the expo Barrier-free 2019 / Post-Acute Medicine Fair 2020 / Nursing Next 2020 / Home Medical Care 2020 featured exhibitions of barrier-free facilities, services and products. Participating exhibitors (including government departments, persons with disabilities groups, welfare associations, etc.) could register to have

their services and products showcased. In Shanghai, the annual Persons with Disabilities Aid Week takes place in the same week as the Chinese National Persons With Disabilities Aid Day (全國助殘日). Activities are organised to raise public awareness on the needs of persons with disabilities.

In Hong Kong, HKCSS has organised many promotional programmes and activities on accessibility such as "Inclusive Environment Recognition Scheme" (「共融環境嘉許計劃」), "Tugging Rehabus Charity Challenge" (「拉動復康巴士」慈善挑戰賽), "Inclusive Shops Charter Scheme" (「共融商舖約章計劃」), etc.

- Incubation of IT and research centres

  There are various incubation schemes and research centres for the application of IT on universal design and universal accessibility. The Centre for Accessible Environment is the leading authority on inclusive design in London, providing consultancy, training, research, and publications on building design and management to meet user needs, especially for persons with disabilities and the elderly. The Centre for Universal Design in Sydney is a charity organisation conducting an annual Australian Universal Design Conference where professionals in Australia and New Zealand share their research and experience in universal design.

  In Hong Kong, apart from the architectural and design research units in tertiary institutions and the private sector, technology institutions nurturing ICT start-ups and entrepreneurs, driving collaboration and business opportunities, and accelerating ICT adoption can provide support to connect stakeholders, facilitate knowledge transfer and nurture talents to accelerate technological innovation and commercialisation. Their roles and missions are essential to provide innovative solutions for enhancing accessibility in Hong Kong.

1.3.5 Application of Technologies

Evolution of technologies has not only enhanced persons with disabilities' physical movability but also encouraged their more active participation in community activities. The desktop research identified major innovative and practical applications of technologies to enhance accessibility:

- Web mapping services: The functions of typical web mapping services (e.g., Google Map / 高德地圖) have been improving to allow users to preview the conditions of a particular site through satellite imagery, aerial photography, street maps, 360° panoramic views of street, and 3D floor plans of different levels of commercial premises. The function of route planning for traveling by

foot, car and public transportation also helps users to plan point-to-point routes. These functions however have yet to indicate physical barriers between destinations such as obstacles, steps, steep slopes, uneven road surfaces, and other available facilities for persons with disabilities. For persons with visual impairment, the voice guidance function can help them to navigate the streets with more ease and confidence. Good web mapping services should provide essential and accurate information to people with different needs. The interface should be user-friendly to provide the most appropriate travel arrangement solutions for the widest spectrum of users.

In Hong Kong, an all-in-one mobile APP "HKeMobility" provides accessibility information more than other typical web mapping services. The target users include persons with disabilities, elderly persons, drivers and other members of the public.

The Government is also developing the Common Spatial Data Infrastructure (CSDI) to pave the roadmaps for the application of geospatial data, such as 3D Pedestrian Network / Indoor Map for Buildings. There should be room for improving CSDI, such as collaborating with other private web mapping services and service providers like public transport operators where practicable.

- Mobile APP: "Be My Eyes – Helping the blind" is a volunteer seeking APP for persons with visual impairment. Users can request help from a sighted volunteer through this APP and a live audio-video connection will be set up between two parties when the volunteer accepts the request. The volunteer then can assist the user through the video connection to lend his / her eyes to the user, so that the user can "see" the surrounding environment and complete daily tasks, such as route guiding in a new environment, reading manuals or instructions, etc. Meanwhile, delivery services APPs allows users to shop for groceries online and have their items delivered to their residence. The services should be helpful to persons with disabilities.

- QR code for positioning: While the Global Positional System (GPS) tracker helps to position the users, its ability and accuracy is subject to the strength of GPS signal, number of base stations available and other technical reasons. The display of QR code label at a facility where persons with disabilities usually need assistance would be an alternative to position the user. It helps to identify the location of persons with disabilities when they scan the QR codes at the facilities (such as wheelchair user escalators, staircases, accessible sanitary facilities etc.).

- Radio-frequency Identification (RFID) Blind Cane Navigation System: The Logistics and Supply Chain MultiTech R&D Centre in Hong Kong has developed a Blind Cane Navigation System with RFID technology and audio navigation for persons with visual impairment. The system provides guidance to users and leads them to their destinations with the aid of Blind Community Cloud

Platform to obtain the latest updates on the map.

- Mobile APP: Smart City Walk: The Hong Kong Blind Union has developed this mobile APP which allows those with visual impairment to navigate and travel independently. The APP provides visual, audio and text navigation instructions to users in both indoor and outdoor environments. By applying different navigating technologies such as beacon and Wi-Fi, the APP shows the current location of users and provides navigation to their destinations. It also provides information on floor plans and other important information of indoor venues.

In order to facilitate the development and sustainability of wayfinding technology, measures may be taken to assist the integration of technologies currently used by persons with disabilities, enhance existing incubation programmes, advocate public-private partnerships, and increase availability / quality of open data from the Government.

For example, the NSW government invested $35 million to develop the Sydney Startup Hub – an innovation centre for small and medium enterprises, corporate companies, start-ups, and a range of industry sectors. Notably, the Future Transport Digital Accelerator facilitates innovators and start-ups to directly collaborate with Transport for NSW, to develop initiatives for improving the state's services and infrastructures.

The Japanese government is currently promoting an Open Data initiative by providing public data in various forms, including machine-readable formats. Notably, they have provided data on the pedestrian space network, represented by the spatial arrangements of various walking paths. The data also include steps, widths, slopes, and the state of the paths. The data was first published in 2014, and is still being updated today.

As shown by the existing "Smart City Walk" APP and RFID Blind Cane Navigation System in Hong Kong mentioned above, if provided with financial and technical support, projects may be sustained and further developed with evolving technologies for the benefit of persons with disabilities and progress beyond the initial phase.

From a more specific perspective, the Government has set up the Public Sector Information (PSI) Portal (http://data.gov.hk) since 2011 to serve as a one-stop portal for open data. Different Government departments and public / private organizations have released data for free public use via the Portal to facilitate innovation and research, bringing benefits to the public and promote economic development. It is noted that open data such as lamp post location data, public facility data, and public open space data are already available on the Portal. However, open data related to accessibility

facilities and wayfinding are still relatively limited.

Additional data which may be considered for provision by the Government include those on the situation of roads such as road closure, road construction, information of traffic lights and traffic jam, and also map data including digitalized indoor 3D map data. With those data, application developers especially those of map and traffic applications (KMB, Google Map, etc.) could make use of the open data and provide more accurate estimated time of arrival for the benefit of users including persons with disabilities.

In light of that, the Government could encourage private companies to open and share their relevant data with the Government on the basis of public-private partnership. With the access to such data, at a further stage the Government could consider sharing the raw data with the public and APP developers. This could facilitate application development by third parties, and lead to a win-win situation that all the stakeholders could benefit.

In the future, the Government should provide technical support for application developers and mapping partners. The target is to facilitate third parties to develop more advanced mapping techniques and feedback systems for adoption by persons with disabilities and other interested groups. While the required skills and qualifications could be lower, other stakeholders especially NGOs and persons with disabilities could then be involved in collecting, accessing and updating the map data. This may help to create new job opportunities for them to engage better with the society, and establish an inclusive economy.

1.3.6 Incentive Schemes

Examples of incentive schemes to encourage accessibility enhancement are as follows.

- Incentive schemes for improvement works

  Old buildings constructed before the introduction of respective Design Manuals may not be required to provide relevant barrier-free facilities. Such situation is similar in London, Osaka, Singapore and Vancouver. These cities have introduced incentive schemes to encourage owners to carry out improvement works on accessibility enhancement. For example, the local councils in London, the Ministry of Land, Infrastructure, Transport and Tourism in Osaka, and BCA in Singapore provide financial support to eligible property owners or tenants for this purpose.

  In Hong Kong, there are building rehabilitation assistance schemes such as “Common Area Repair Works Subsidy”, “Operation Building Bright 2.0”, “Lift Modernisation Subsidy Scheme”, “Smart Tender - Building Rehabilitation Facilitating Services”, “Home Renovation Interest-free

Loan", and "Building Maintenance Grant Scheme for Needy Owners". The Urban Renewal Authority has launched an all-in-one "Integrated Building Rehabilitation Assistance Scheme", providing financial assistance and technical support to building owners. These assistance schemes may cover improvement works on enhancing accessibility of buildings.

- Tuition on enhancing accessibility

  As mentioned in Section 1.3.3 above, RHF in Vancouver offers accessibility training courses for practitioners. In Hong Kong, the Continuing Education Fund subsidises adults to pursue continuing education and training. Courses cover areas of architecture and town planning, property management, etc. which may include accessibility elements.

- Funding for accessibility projects

  Funded by Tote Board and administered by SG Enable in Singapore, the Enabling Lives Initiative Grant aims to bring the technical and domain expertise of voluntary welfare organisations, social enterprises and other organisations to support new, innovative, and evidence-based projects for persons with disabilities by combining the areas of data and technology, caregiving and natural support, and transition management.

  In Hong Kong, many funding schemes that can cater for similar purposes are being implemented. Examples are the Innovation and Technology Fund for Application in Elderly and Rehabilitation Care, Community Investment and Inclusion Fund, Innovation and Technology Fund for Better Living and other charitable funds.

1.3.7 Achievements of Universal Accessibility Programme

The Government has been installing barrier-free access facilities for footbridges, elevated walkways and subways maintained by HyD. In 2012, the Government launched a new "Universal Accessibility Programme" to retrofit barrier-free access facilities, striving to create a "universally accessible" environment in the community to facilitate access to public walkways. Under this programme, if site conditions permit, the Government will consider retrofitting lifts at walkways where there is already a standard ramp installed. The existing ramp will be kept or demolished for more spacious pavement or making way for roadside greening subject to evaluation. The scope of the programme has been expanding to cover most of the public walkways maintained by HyD. More than 300 retrofitting project items are included under the programme.

1.4 Summary of Benchmarking Exercise

The benchmarking exercise identified major aspects in need of improvement regarding the accessibility of the physical environment in Hong Kong, by using the Travel Chain Analysis method and basing on the satisfaction rating given by assessors being persons with different disabilities. The obligatory requirements of barrier-free access prevailing at the time of construction of the target buildings had not been the prime concern in this benchmarking exercise for such buildings.

The level of satisfaction from each subsection of the access assessment survey consists of several levels.

At the top level, there are six sections, each representing a major part of the Travel Chain Analysis:

1. Accessible Information on the Premises
2. Transport / Walking to the Premises
3. Approach to the Premises
4. Within the Premises
5. Accessible Facilities
6. Emergency Evacuation

Under each section, there are subsections for different facilities (e.g. lifts, escalators, counters) and services (e.g. technologies, counter services, trains, buses). Each subsection consists of questions on various aspects of the aforementioned facilities / services. Different aspects were assessed (where “1” = “Highly disagree” and “4” = “Highly agree”) based on their provision, sufficiency, appropriateness, ease of use, and level of satisfaction. The resulting scores were then summed into an overall score (in percentage), and converted into a satisfaction rating (where “1” = “Very Unsatisfied” and “4” = “Very Satisfied”) which reflected the facility / service’s level of accessibility for the assessors as they perceived.

The framework analysis has been adopted to analyse the qualitative data obtained from the access assessment survey and the summary reports, which includes the personal comments recorded in the access assessment survey checklist and suggestions summarised in the summary reports by the coordinators. The process of qualitative analysis consists of several stages including familiarisation, identification of a thematic framework, coding and charting, as well as mapping and interpretation.

In particular, the findings would provide useful reference for updating / reviewing where appropriate

relevant design manuals / standards / guidelines / codes of practices. Major findings are grouped in categories with comments quoted from assessors. Comprehensive results from the benchmarking exercise are available.

1.4.1 Information for Route Planning

Before heading out to a destination, it is essential for persons with disabilities to obtain sufficient information to plan their trip. Having access to this information allows them to visit unfamiliar places with confidence. With the advancement of technologies, web mapping services provide basic routing planning suggestions to general users. However, as reflected in the benchmarking exercise, some websites and APPs were not able to provide sufficient and clear accessible information for route planning for persons with disabilities thus discouraging them from commuting in and exploring the community.

- Screen reader could not read and speak the information as the websites / APPs provide graphical information or photos of the premises without clear textual illustration
- Insufficient accessible route information provided on the websites / APPs
- Insufficient and unclear accessible information on site

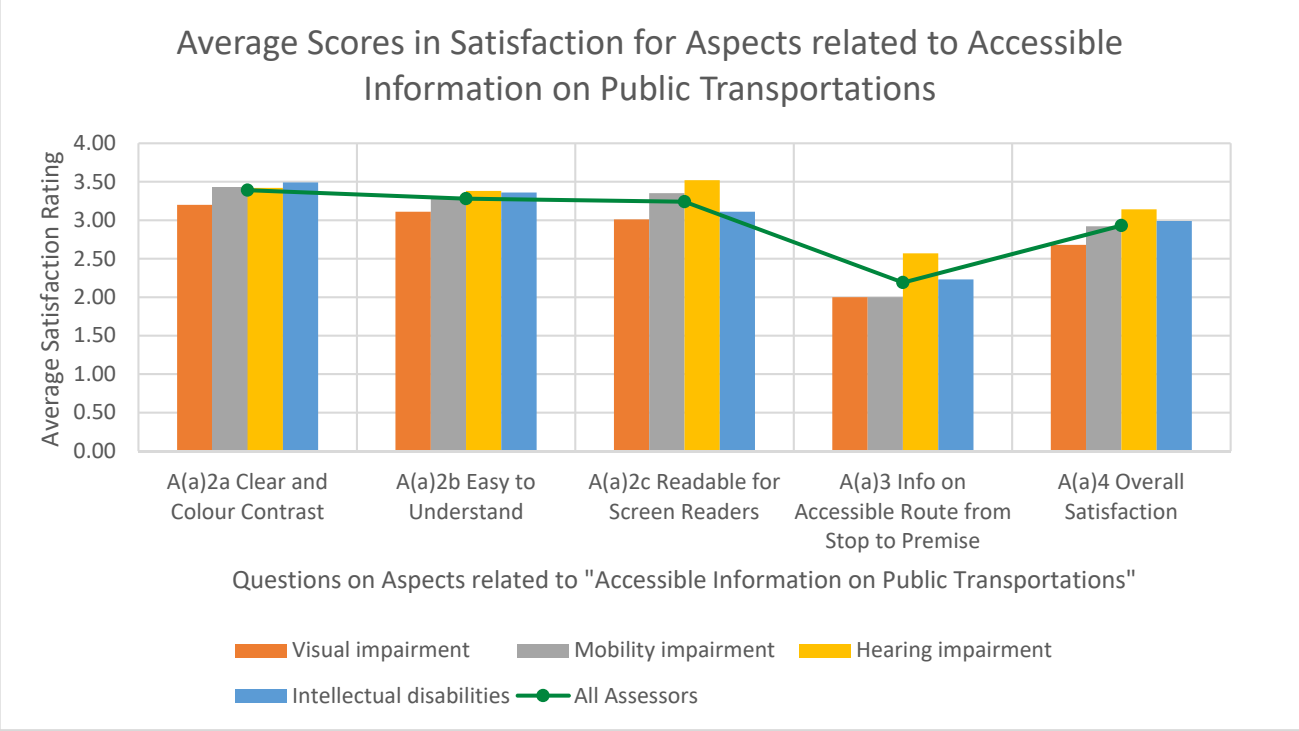


Figure 1: Average Scores in Satisfaction for Aspects related to Accessible Information on Public Transportations

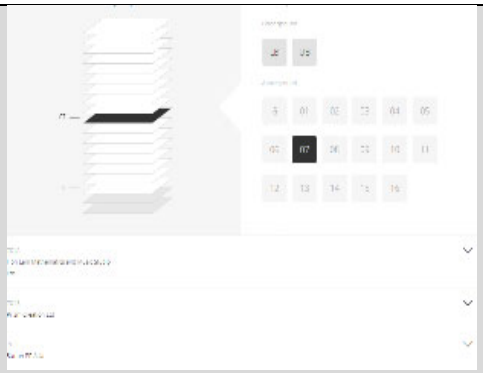
Assessor Categories	A(a)2a Clear and Colour Contrast	A(a)2b Easy to Understand	A(a)2c Readable for Screen Readers	A(a)3 Info on Accessible Route from Stop to Premise	A(a)4 Overall Satisfaction
Visual impairment	3.20	3.11	3.01	2.00	2.68
Mobility impairment	3.43	3.29	3.35	2.00	2.92
Hearing impairment	3.42	3.38	3.52	2.57	3.14
Intellectual disabilities	3.49	3.36	3.11	2.23	2.99
All Assessors	3.39	3.28	3.24	2.19	2.93

Table 1: Breakdown of average scores in satisfaction for every assessor category in every aspect under Checklist Subsection A(a) Information on Public Transport. Red cells indicate the lowest average scores for the aspect, whilst green cells indicate the highest average scores for the aspect.

Highest Lowest

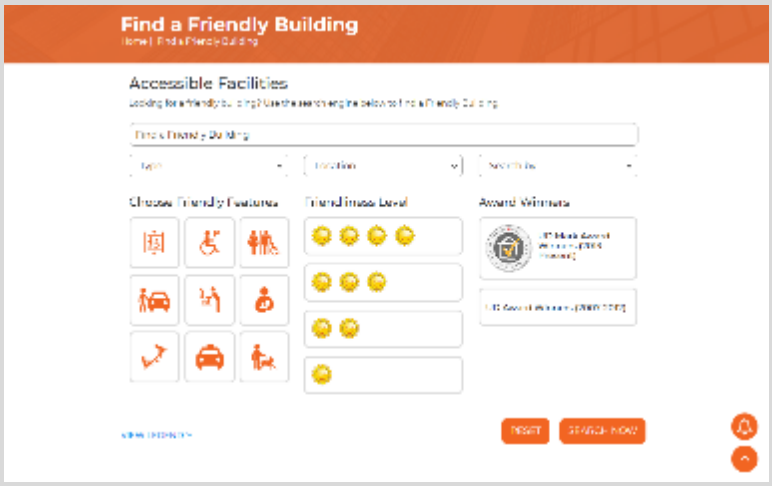
As shown in Figure 1 and Table 1, further breakdown of the questions within the subsection has revealed the observation that assessors with visual impairment were least satisfied who had the lowest average satisfaction in all aspects. At 2.00 for A(a)3 Info on Accessible Route from Stop to Premise, the satisfaction rating from assessors with visual impairment and mobility impairment was the lowest across all aspects and assessors, suggesting an overall trend towards low satisfaction with the information on the journey between existing transportation modes and the premise entrance.

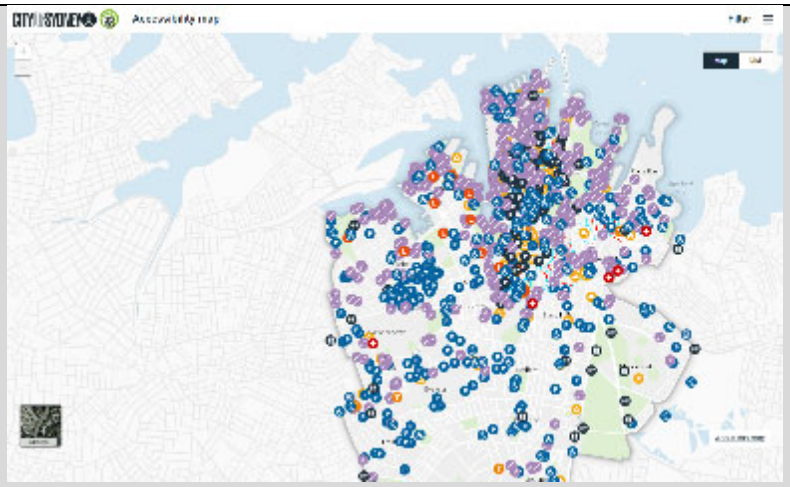
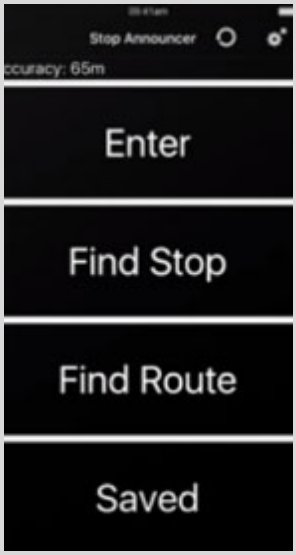
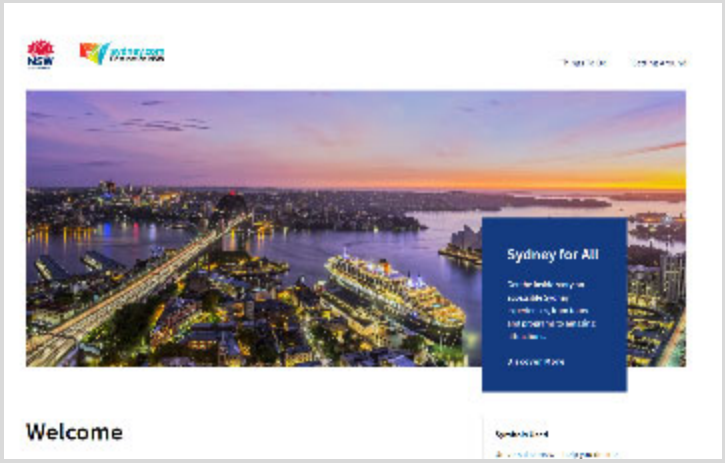
Aspects for Improvement	Assessors' Onsite Comments	
Insufficient information for route planning	 "只有顯示可到達的途徑。但沒有無障礙途徑" "No accessible route available" **Observation**: Online map can only provide information through street view and pictures. Persons with disabilities have difficulties in understanding the route without detailed written descriptions on accessible route. **Suggestion**: Online maps should regularly update the website based on Web Content Accessibility Guidelines (WCAG). Facilitating the development and sustainability of wayfinding technology is an alternative way.	 "網頁上只有顯示可到達目的地的交通工具但沒有顯示上落車的位置" "Only showing available transportation but not drop-off point" **Observation**: The lack in font size, colour contrast and ease of navigation has hindered the users' ability to travel freely. **Suggestion**: Online maps should regularly update the website based on WCAG. Facilitating the development and sustainability of wayfinding technology is an alternative way.

Insufficient and unclear accessible information on site	 “沒有顯示無障礙設計和升降機位置” “Not showing location of accessible facilities and lifts” **Observation**: Persons with disabilities have difficulties in finding adequate and efficient accessible route to their destinations. **Suggestion**: Standardized barrier-free information based on WCAG can help persons with disabilities access essential information. Sufficient accessibility management / review is suggested for updating the facilities.	 “網上平面圖的標示不正統，亦沒有顯示無障礙設施” “Uncommon symbols on plan, not showing accessible facilities” **Observation**: Online map can only provide information through street view and pictures. Persons with disabilities have difficulties in understanding the route without detailed written descriptions on accessible route. **Suggestion**: Standardized barrier-free information based on WCAG can help persons with disabilities access essential information. Sufficient accessibility management / review is suggested for updating the facilities.

Gap Analysis

Application of Wayfinding ICT **Pedestrian Map**			
Cities	**Availability**		**Items**
	Y	N	
London	✓		• Inclusive London Website / APP • AccessAble Website • Cities Unlocked (Pilot Project)
Osaka	✓		• Barrier-free Map and Information on Public Facilities Website • Barrier-free Map • Japan Accessible Tourism Center

			
Shanghai	✓		• AutoNavi Map Website and App (高德地圖) 
Singapore	✓		• Find a Friendly Building Websites  • SmartBFA *(under development)*
Sydney	✓		• Accessibility Map

			 • Stop Announcer  • Sydney for All 

In view of the comments given by assessors and examples from selected cities, there will be a need to further enhance accessible information on all aspects based on the Travel Chain Analysis. Given

the rising trend of ICT and Smart City development, there would be a beneficial potential to promote the use of ICT for persons with disabilities.

1.4.2 Public Transportation Facilities

In general, facilities such as signage, information panels, doors, etc. could not provide adequate information and warning to persons with different disabilities. Persons with disabilities had difficulties to access or use accessible lifts and toilets due to maintenance or improvement works.

- Inadequate seating in trains and bus compartments, and stations
- No / inadequate accessible lifts
- No flashing door warning lights or signals
- Insufficient information about current position and moving direction during the journey
- No shelters and seats in transport stations
- Insufficient low-platform vehicles or wheelchair accessible vehicles

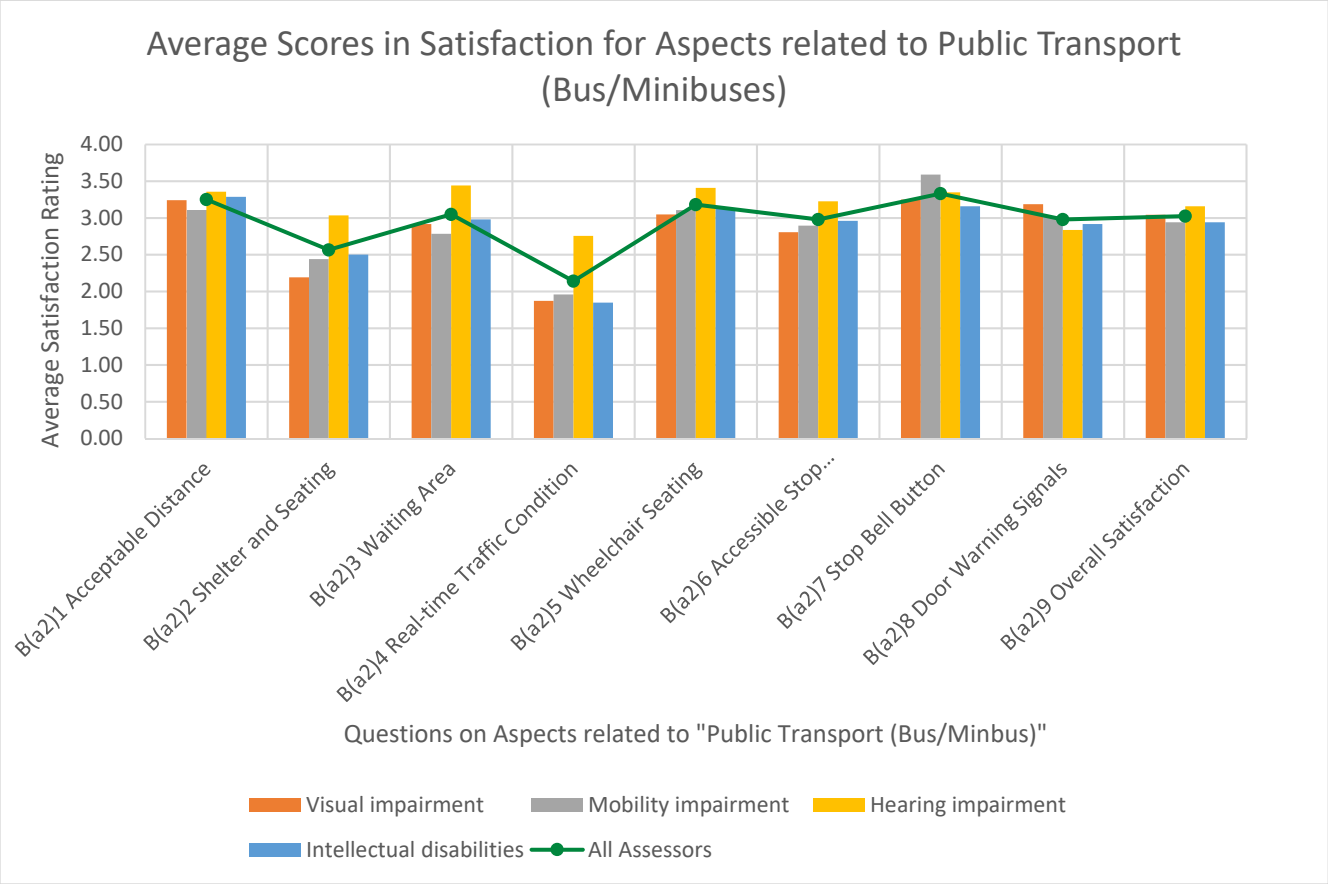


Figure 2: Average Scores in Satisfaction for Aspects related to Public Transport (Bus/Minibus)

Assessor Categories	B(a2)1 Acceptable Distance	B(a2)2 Shelter and Seating	B(a2)3 Waiting Area	B(a2)4 Real-time Traffic Condition	B(a2)5 Wheelchair Seating
Visual impairment	3.24	2.19	2.92	1.87	3.05
Mobility impairment	3.10	2.44	2.78	1.96	3.11
Hearing impairment	3.36	3.03	3.44	2.75	3.41
Intellectual disabilities	3.29	2.50	2.98	1.85	3.12
All Assessors	3.25	2.57	3.05	2.14	3.18

Assessor Categories	B(a2)6 Accessible Stop Announcements	B(a2)7 Stop Bell Button	B(a2)8 Door Warning Signals	B(a2)9 Overall Satisfaction
Visual impairment	2.80	3.25	3.19	3.04
Mobility impairment	2.89	3.59	3.02	2.94
Hearing impairment	3.23	3.35	2.84	3.16
Intellectual disabilities	2.96	3.16	2.92	2.94
All Assessors	2.98	3.33	2.98	3.02

Table 2: Breakdown of average scores in satisfaction for every assessor category in every aspect under Checklist Subsection B(a2) Public Transport (Bus/Minibus). Red cells indicate the lowest average scores for the aspect, whilst green cells indicate the highest average scores for the aspect.

Highest Lowest

As shown in Figure 2 and Table 2, further analysis has indicated that assessors were generally not satisfied with “Real-Time Traffic Condition (B(a2)4)” at 2.14 and “Shelter and Seating (B(a2)2)” at 2.57, while assessors were usually satisfied with other aspects related to Public Transport by Bus / Minibus, with the highest being “Stop Bell Buttons (B(a2)7)” at 3.33

Assessors with visual impairment expressed the lowest level of satisfaction in most aspects, namely “Shelter and Seating (B(a2)2)”, “Wheelchair Seating (B(a2)2)” and “Accessible Stop Announcements (B(a2)5)” at 2.19, 3.05 and 2.80 respectively. Assessors with mobility impairment had the lowest level of satisfaction in 2 of 8 aspects, “Acceptable Distance (B(a2)1)” at 3.10 and “Waiting Area (B(a2)2)” at 2.78, whilst assessors with intellectual disabilities (or their caregivers) expressed the lowest satisfaction score in “Real-Time Traffic Conditions (B(a2)4 at 1.85. Meanwhile, assessors with hearing impairment expressed the highest level of satisfaction in 6 out of 8 aspects.

Aspects for Improvement	Assessors' Onsite Comments	
Insufficient accessible lifts	 "沒有廣播升降機維修" "No notice of lift under maintenance" **Observation**: Lack of immediate noticeable information in MTR stations provided for persons with disabilities. **Suggestion**: Requiring public transport operators to upgrade their information dissemination to let persons with disabilities know where they should be heading.	 "唯一的升降機維修中" "The only lift is under maintenance" **Observation**: With only one lift in station, persons with disabilities can only go to the platform through staff's lift. **Suggestion**: Requiring public transport operators to upgrade their information dissemination to let persons with disabilities know where they should be heading.
Insufficient information	 "巴士上層有顯示將到達的車站但位置太低，後排的乘客基本上看不到" "Upper level of bus has display indicating coming stops but is obstructed due to its low position" **Observation**: The position of the display does not cater for the vision of passengers at the back. **Suggestion**: The display indicating coming stops should be positioned in the centre when possible.	 "小巴及巴士車站指示亦不清晰" "Unclear signages at bus and minibus stops" **Observation**: The existing size of the signages is not clear and large enough for persons with disabilities to see. They need to walk through the whole terminal in order to find the right location. **Suggestion**: Existing signages should be replaced by larger signages to provide clear indication of stops location.

	 “輕鐵上地圖沒有顯示乘客的位置和行車方向” “Map on light rail not showing position of cart and direction of travel” **Observation**: Persons with disabilities have difficulties in locating themselves and knowing where / when they should get off the light rail. **Suggestion**: Should install new display on light rail for better immediate information for passengers, especially persons with disabilities. Facilitating the development and sustainability of wayfinding technology is an alternative way.	 “左手邊的小巴站沒有在此位置有標示” “Minibus stop does not have signages” **Observation**: The existing signages are not clear and large enough for persons with disabilities to see. Signages often lack good maintenance. **Suggestion**: Standardizing the characters, symbol size, and colour contrast of signages in terminal to facilitate persons with disabilities’ easy reading in a distance and access to their stops.
Insufficient warning lights or signals	 “車廂開關門時無閃燈” “Lighting indicators not working when doors are closing” **Observation**: Assessors with hearing impairment considered that the warning was not sufficient due to the absence of the flashing warning light when the doors were closing, hence putting them in a dangerous situation. **Suggestion**: Should install and maintain new flashing light at platform doors.	 “小巴沒有任何下個站和開關門提示” “Minibus not indicating coming stops or position of doors” **Observation**: Persons with disabilities have difficulties in locating themselves and knowing where to get off the minibus. **Suggestion**: Should install new display for stops when possible. New development of mobile APP would also help to remind persons with disabilities of their location based on GPS.

Gap Analysis

Transport Facilities

Taxi or Bus Stop

- *Information at bus platforms (Osaka)*
  - **Recommended**: It is recommended that information such as destination should be provided in Braille and voice, and in characters with size and colour scheme. (Anthropometrics, Equality & Inclusion)
  - **Recommended**: It is recommended that there is information on the operation time of low-floor buses at the bus terminal. (Equality & Inclusion)
- *Information dissemination at bus stops (Shanghai)*
  - **Recommended**: If possible, Braille or audio information should be provided. The position and content of the Braille information board should be convenient for persons with visual impairment. (Anthropometrics, Equality, & Inclusion)
- *Seating at bus stops waiting areas (Sydney; AS1428.1)*
  - **Recommended**: Waiting area with seats or shelter is not mandatory. Bus stops or bus stations with waiting areas should have at least 2 seats or 5% of seats provided for people with disabilities.
- *Category-based mandatory requirements for bus shelters and seats (Vancouver; BC Transit Infrastructure Design Guidelines)*
  - **Recommended**: Bus shelters and seats are recommended for a regular bus stop.
  - **Mandatory**: Bus shelters and seats are mandatory for Rapid Transit Stops (i.e. electric railways) and Bus Exchange (i.e. interchange stations).
  - **Recommended**: *Bus terminals (Osaka; Transport Guidelines):* Bus shelters are desirable for large bus terminals.

(Image from http://ekilog.info retrieved 2019)

While DM:BFA2008 has yet to mention bus shelters provided for persons with disabilities, the Public Bus Services Ordinance has stipulated that the provision and maintenance of bus shelters is the responsibility of the franchised bus companies, whereas Sydney and Vancouver recommend and mandate shelters and seats for regular bus stops and rapid transit stops respectively as shown in the Report on Research Studies. In view of the physical constraints of the roads and high density of traffic in Hong Kong, it may not be practical to generally mandate a provision of shelters at taxi stops or bus stops. However, provision of such facilities as shelters and seating would be more feasible for transport hubs or interchanges.

The dimension of a bus stop is critical in determining the provision of shelter and seating. According to TPDM Volume 9, a passenger island must be ranging in unobstructed clear width from 1.8m to 2.7m for the movement of passengers on wheelchair. In contrast, the passenger islands in Vancouver are typically 1.5m wide with different length requirements depending on the types of bus. In addition, the regular bus stops in Hong Kong usually locate at the pedestrian pathways, whereas bus stops in Vancouver usually locate at a separate passenger landing pad next to the pedestrian pathway. In view of the physical constraints of the roads and high density of traffic in Hong Kong, it may not be practical to generally mandate a provision of shelters and seating at bus stops. However, such provision would be more feasible for transport hubs or interchanges.

Figure: Regular Bus Stops in Vancouver

Also, information such as destination should be provided in Braille and voice, and in characters with a size and colour scheme, taking reference from the practice in Osaka. With the comments on insufficient accessible information on stop announcements and real-time information on traffic condition, there is a great potential to provide easily-accessible information on public transport, both on-site and online.

Whilst the enhanced provision of tactile guide paths between transport and premises' lot boundary should be further explored, it is understood that the conditions of public paths in Hong Kong may vary between locations, and the immediate solution to such may not be as simple as just adding the provision of tactile guide paths. Therefore, a thorough review of the provision of tactile guide paths in public paths leading to different premises would be necessary. Whilst ICT could assist in providing information online and off-site, measures should be taken in major transport hubs to help persons with disabilities without access to ICT.

1.4.3 Access Route between Destinations

The conditions of access route between destinations were not desirable as revealed in the benchmarking exercise. Although TPDM requires a minimum 2m footways width and no obstruction on the passage, inappropriate street furniture, trees, lamp posts, etc. were common obstacles to wheelchair users and the general public. Uneven roads and road improvement / maintenance works were common barriers to make the route inaccessible. These might be the result of unsatisfactory design of the facilities without consultation with users; unsatisfactory management without clear responsible management parties; etc.

- Level difference between lots / buildings / destinations
- No shelter along access route
- Uneven roads
- Unsatisfactory design / maintenance / insufficient tactile guide paths
- Conflicting needs of tactile guide path users and persons with other disabilities
- Tactile guide paths covered by carpets or obstacles
- Inappropriate street furniture / lamp poles / trees blocking road access
- Temporary obstacles along circulation means
- Insufficient or inappropriate drop kerbs
- Unsatisfactory luminous contrast for stairs
- Insufficient information on provisional accessibility plans for road works

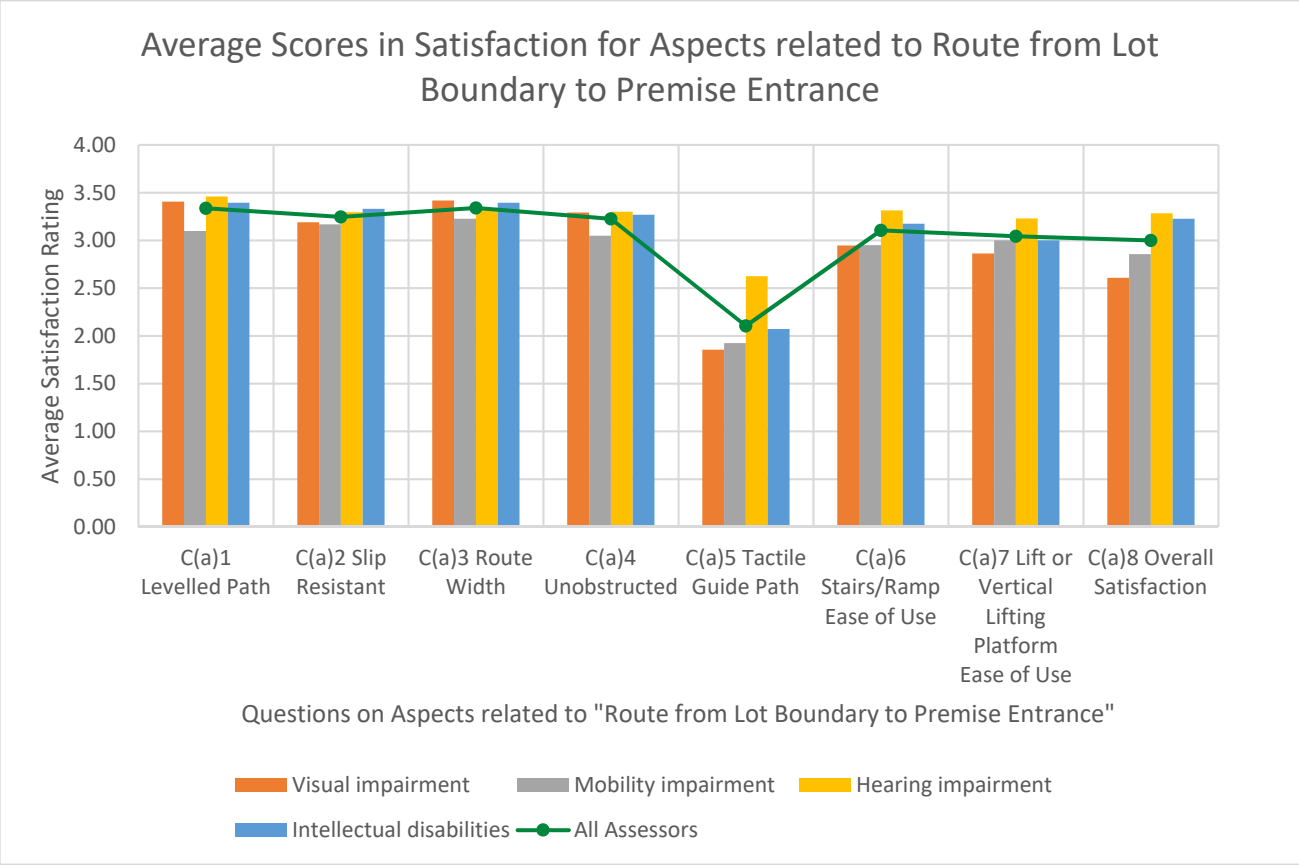


Figure 3: Average Scores in Satisfaction for Aspects related to Route from Lot Boundary to Premise Entrance.

Assessor Categories	C(a)1 Levelled Path	C(a)2 Slip Resistant	C(a)3 Route Width	C(a)4 Unobstructed
Visual impairment	3.41	3.19	3.42	3.29
Mobility impairment	3.09	3.17	3.23	3.05
Hearing impairment	3.46	3.29	3.33	3.30
Intellectual disabilities	3.39	3.33	3.39	3.27
All Assessors	3.34	3.25	3.34	3.23
Assessor Categories	**C(a)5 Tactile Guide Path**	**C(a)6 Stairs/Ramp Ease of Use**	**C(a)7 Lift or Vertical Lifting Platform Ease of Use**	**C(a)8 Overall Satisfaction**
Visual impairment	1.86	2.95	2.86	2.61
Mobility impairment	1.92	2.95	3.00	2.86
Hearing impairment	2.63	3.31	3.23	3.28
Intellectual disabilities	2.07	3.17	3.00	3.23
All Assessors	2.12	3.10	3.02	3.00

Table 3: Breakdown of average scores in satisfaction for every assessor category in every aspect under Checklist Subsection C(a) Route from Lot Boundary to Premise Entrance. Red cells indicate the lowest average scores for the aspect, whilst green cells indicate the highest average scores for the aspect.

Highest Lowest

As shown in Figure 3 and Table 3, whilst most aspects showed a similar level of satisfaction ranging from 3.34 to 3.00, the lowest aspect, “Tactile Guide Path” (C(a)5) was particularly low at 2.11,

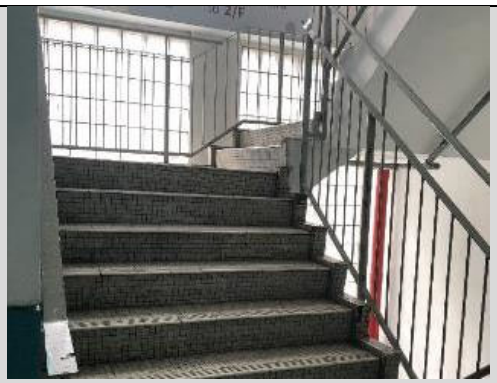
suggesting while all aspects can be further improved, tactile guide path is the one that should be given the most attention.

Assessors with visual impairment had given the lowest satisfaction cores in 3 out of 7 aspects, namely “Tactile Guide Path (C(a)5)” at 1.80, “Lift or Vertical Lifting Platform Ease of Use (C(a)7)” at 2.80 and “Stairs/Ramp Ease of Use (C(a)6)” at 2.95. Not far behind, assessors with mobility impairment had the lowest satisfaction level in 5 out of 7 aspects, notably the lowest being “Stairs/Ramp Ease of Use (C(a)6)” at 2.95. While assessors with hearing impairment and those with intellectual disabilities (or their caregivers) were generally satisfied, scoring 3.28 and 3.23 respectively.

In general, more attention should be given to assessors of both visual impairment and mobility impairment with regard to the Route from Lot Boundary to Premise Entrance.

Aspects for Improvement	**Assessors’ Onsite Comments**	
Uneven roads	 “目的地附近路面不平，導致有積水” “Stagnant water due to uneven roads” **Observation:** Persons with disabilities generally have difficulties in observing the stagnant water and the unlevelled pathway below which will put them in danger. **Suggestion**: More attention should be paid to ensuring the safety and maintenance of the roads.	 “目的地附近的行人路同時是車廠出入車的位置，令行人路有破損和凹凸現象” “Pedestrian walkways used as vehicular entrances, causing damaged roads” **Observation**: Persons with disabilities generally have difficulties in observing the unlevelled and damaged roads which will potentially cause accidents. **Suggestion**: More attention should be paid to ensuring the safety and maintenance of the roads.

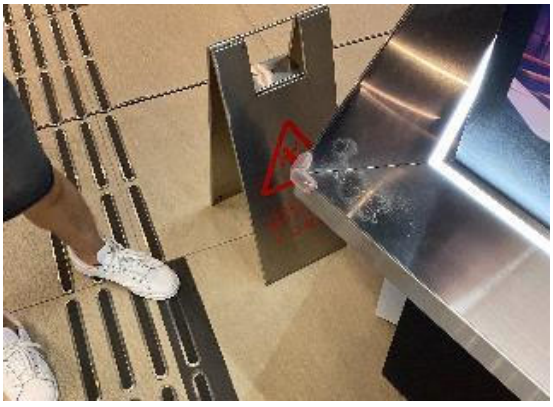
Temporary obstacles along circulation means	 “通道有工程，佔了一半以上的空間” “Pathway partially blocked due to construction” **Observation:** Some of the pathways from lot boundary to premises entrance were obstructed by street furniture / construction, affecting the accessibility of persons with disabilities, especially persons with visual / mobility impairment. **Suggestion**: Better indication of construction area should be implemented, such as using flash light signal or sound notice.	 “通道上被垃圾箱佔用了” “Pathway obstructed by trash bins” **Observation:** Some of the pathways were obstructed by trash bins near trash stations, affecting the accessibility of persons with disabilities, especially persons with visual / mobility impairment. **Suggestion**: More attention should be paid to making sure that the roads are not obstructed by trash bins or other stuffs to provide safe and clear access.
Unsatisfactory maintenance of tactile guide paths	 “引路徑有草粉，令引路徑沒有凹凸的效果” “Tactile guide paths covered, losing its tactility” **Observation:** Some of the tactile guide paths were covered, losing their effectiveness and function, and affecting the usage by persons with disabilities. **Suggestion**: More attention should be paid to making sure that tactile guide paths are maintained. Better management and education to the management staff of tactile guide paths is suggested.	 “G 樓出入口的引路徑被地毯遮蓋” “Tactile guide paths covered by floor mats” **Observation:** Some of the tactile guide paths were covered by floor mats, losing their effectiveness and function, and affecting the usage by persons with disabilities. **Suggestion**: More attention should be paid to making sure that tactile guide paths are maintained. Better management and education to the management staff of tactile guide paths is suggested.

Unsatisfactory luminous contrast of stairs	 “梯級級咀對比色不足” “Nosing of stairs lacking colour contrast” **Observation:** Persons with disabilities generally have difficulties in observing the nosing of stairs which might cause accidents. **Suggestion**: More attention should be paid to maintaining the effectiveness of nosing of stairs. Old materials should be replaced through incentive schemes of accessibility improvement for buildings.	 “樓梯對比色不足夠” “Stairs lacking colour contrast” **Observation:** Persons with disabilities generally have difficulties in observing the stairs when artworks are painted on risers. **Suggestion**: More attention should be paid to considering the use by persons with disabilities when allowing painted artworks on risers. Education to building management staff on operation and maintenance of accessibility facilities is suggested.

Good Examples in the aspect of Tactile Guide Path

“雖然有工程進行，但有在受影響路面舖上引徑”

“Temporary tactile guide path is provided even if construction is underway.”



“引路徑附近有尖銳邊緣，但有膠粒防止擦傷”

“Sharp corners are present along tactile guide path but corner guards are provided to prevent abrasion”

It has been observed that some of the pathways from lot boundary to premises entrances were obstructed by street furniture, which lowered the accessibility for all, but more particularly for people with visual / mobility impairment. Meanwhile, assessors raised the issues regarding stairs or ramps, including their steepness, lack of tactile indicators or handrails, and colour contrast. The issue

regarding levelness of the pathways from lot boundary to different premises entrances was also reported, which suggested that more attention should be paid to the issue as it would lower the connectivity between the two points.

In regard to the comments on tactile guide paths, the absence of tactile guide path was frequently reported by assessors with visual impairment despite the importance in providing directional guidance for them although the obligatory requirements prevailing at the time of construction of the target buildings might not be observed in this benchmarking exercise. As shown in the figures above, there were insufficient tactile guide paths connecting to the lot boundary, though some of them were limited by the site conditions. Understandably, the satisfaction level of assessors with other categories of impairment may be higher because they might have underestimated the need for tactile guide paths for those with visual impairment, or might have overestimated the users' abilities to navigate without tactile guide paths.

Gap Analysis

Accessible Route

- *Smart application of tactile indicator (Singapore)*
  - **Recommended**: Orientation and mobility of people with visual impairments are to be enhanced by physical cues and other sensory cues such as visual contrast in building interiors and detectable warning surface. Other than relying on tactile guide paths, buildings require a clear continuous accessible path of travel free of barriers, hazards, and obstructions. (Anthropometrics, Equality, Safety, & Inclusion)
  - **Recommended**: Application of tactile ground surface indicator must be considered in a smart and non-extensive approach. It is believed that widespread ad hoc application of tactile ground surface indicators will confuse rather than inform and will compromise the effectiveness of the specific cue being provided. (Inclusion)

With reference to the Report on Research Studies, smart application of tactile paths as well as a clear continuous accessible path of travel free of barriers, hazards and obstruction have been recommended in Singapore, whereas one of the design considerations in the current DM:BFA2008 has mentioned that an easily identifiable access route (e.g. tactile guide paths for persons with visual impairment) should be provided from the lot boundary to the entrance of building. In addition, the implementation of ICT should support the application of tactile guide paths.

Whilst enhanced provision of tactile guide paths between transport and premises' lot boundary should be explored, it is understood that conditions of public paths in Hong Kong may vary between locations, and the immediate solution to such may not be as simple as just adding the provision of tactile guide

paths. Instead, it would be more important to understand site constraints and evaluate the effectiveness of using tactile guide paths. In addition, one should explore appropriate assistive measures to enhance wayfinding for persons with visual impairment, such as via ICT.

1.4.4 Accessible Facilities

Assessors were not satisfied with the accessible facilities though they might already be compliant with the relevant requirements. Apart from unsatisfactory design or management, non-updated barrier-free standards might also be the reason, while the obligatory requirements prevailing at the time of construction of the target buildings had not been taken into account in this benchmarking exercise for such buildings.

- No accessible lift
- Accessible lifts without audio control system / broadcast or lighting system / mirror / good button design
- Insufficient information on provisional accessibility plans for lift maintenance
- No large and individual accessible toilet with automatic door
- Misused / locked accessible toilets
- Insufficient information on provisional accessibility plans for accessible toilet maintenance
- Glass doors without warning labels
- Heavy doors / no automatic doors for main entrances
- No lower information counter desk for wheelchair users
- No assistive listening system

Assessor Categories	C(d)1 Automatic Doors	C(d)2 Main Door Ease of Use	C(d)3 Safety Warning Indicators	C(d)4 Manual Door Ease of Use	C(d)5 Sufficient Door Width	C(d)6 Overall Satisfaction
Visual impairment	2.63	3.17	2.44	3.06	3.25	3.02
Mobility impairment	2.88	3.13	2.62	2.70	3.20	2.96
Hearing impairment	3.00	3.37	2.98	3.03	3.18	3.18
Intellectual disabilities	2.64	3.02	2.49	2.72	3.20	2.98
All Assessors	2.75	3.18	2.63	2.87	3.21	3.03

Table 4: Breakdown of average scores in satisfaction for every assessor category in every aspect under Checklist Subsection C(d) Accessible Entrance Doors. Red cells indicate the lowest average scores for the aspect, whilst green cells indicate the highest average scores for the aspect.

Highest Lowest

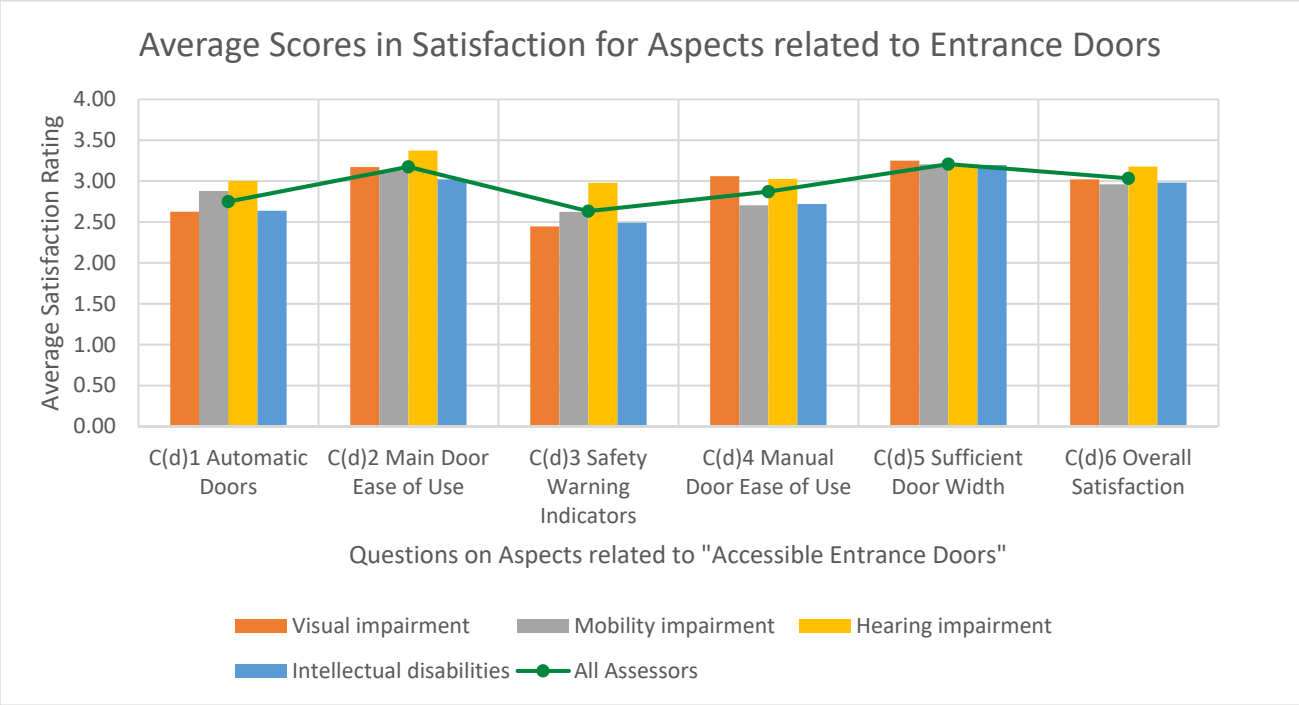


Figure 4: Average Scores in Satisfaction for Aspects related to Accessible Entrance Doors

As shown in Table 4 and Figure 4, further breakdown of the different aspects of Accessible Entrance Doors has shown that assessors were most satisfied with “Sufficient Door Width” (C(d)5) at 3.21, and least satisfied with “Safety Warning” (C(d)3) at 2.63. Whilst assessors were generally satisfied with the “Main Door Ease of Use” (C(d)2), the low average score of 2.87 for “Manual Door Ease of Use” (C(d)4) suggested that accessible entrances (not main entrances) with manual doors were not easy to use. Specifically, assessors with mobility impairment expressed the lowest satisfaction at 2.70, suggesting that manual doors were difficult to use for people with mobility impairment. Assessors with visual impairment expressed the lowest satisfaction for “Safety Warning Indicators” (C(d)3), usually in the form of marked or highlighted motifs on the door surface, at 2.44.

Aspects for Improvement	Assessors' Onsite Comments	
Size of the accessible toilet	 "各層尺寸大小不統一" "Accessible toilets varying in size on different levels" **Observation:** Accessible toilets are varying in size, of which sometimes the space might not be enough for both a person with disabilities and caregiver. **Suggestion:** Reviewing and standardising appropriate / minimum size of toilet for persons with disabilities.	 "各層尺寸大小不統一" "Accessible toilets varying in size on different levels" **Observation:** Accessible toilets are varying in size, of which sometimes the space might not be enough for both a person with disabilities and caregiver. **Suggestion:** Reviewing and standardising appropriate / minimum size of toilet for persons with disabilities.
Misused accessible toilets	 "垃圾桶，水桶，清潔用品阻礙" "Accessible toilets used to store trash bin, buckets and sanitary equipment" **Observation:** Accessible toilets are in need of improvements including the misused accessible toilets and locked accessible toilets. **Suggestion:** Educating building management staff on operation and maintenance of accessibility facilities.	 "無障礙洗手間被用作附近工程的儲物的地方" "Accessible toilets used as storage of nearby construction" **Observation:** Accessible toilets are in need of improvements including the misused accessible toilets and locked accessible toilets. **Suggestion:** Educating building management staff on operation and maintenance of accessibility facilities.

Inappropriate door design	 “開門力道較大，比較難開啟” “Doors difficult to open due to heavy weight” **Observation:** Accessible toilets are difficult to be accessed by persons with disabilities. Accessible toilet doors should be able to be opened easily by persons with disabilities. **Suggestion:** New design of accessible toilet should also consider the weight of doors for better accessibility.	 “門鎖的標示大小不足，看不清是否有人在使用” “Indicator of door lock too small to be seen clearly” **Observation:** Accessible toilets are difficult to be accessed by persons with disabilities. Accessible toilet doors should easily indicate the door lock for persons with disabilities. **Suggestion:** New design of accessible toilet should also consider the door lock for better accessibility.

Gap Analysis

Accessible Entrance

- *Access to buildings (Singapore)*
  - **Recommended**: The access shall be through main entrance of the building. If there are other main entrances, such entrances should also be made accessible. (Equality)
  - **Recommended**: At least one power-operated or automatic door should be provided at the main entrance to a building. Wherever possible and practicable, automatic doors should be provided instead of manual doors. Heavy or revolving doors should be avoided. (Anthropometrics)
- **Mandatory**: *Exterior accessible entrances of a building (Vancouver):* Power operation shall be provided for all doors in an accessible path of travel at the exterior accessible entrances to buildings such as hotels, healthcare buildings, and certain buildings more than 500m^2 in area. (Anthropometrics & Inclusion)

- **Recommended**: *Automatic Doors (Osaka)*: An audio guidance device for automatic doors at a building entrance should be located above the door. (Anthropometrics & Inclusion)



  - *Code on Accessibility in the Built Environment 2013 (Singapore)*
  - *Approved Document K: protection from falling, collision and impact (London)*
  - *Approved Document M: Access to and use of buildings (London)*

- **Recommended**: *Automatic doors in emergencies (Singapore):* Automatic doors should be capable of manual operation and should be able to remain totally open without support in the event of emergency.
- **Mandatory**: *Glass door markings (Singapore):*
  - Unframed full-height glass doors shall be prominently marked or highlighted with motifs to make them visible.
  - The markings or motifs shall consist of two horizontal bands, each at least 100 mm high and contrasting colours to assist visibility.
  - The upper band shall be affixed at a height between 1400 mm and 1600 mm and the lower band affixed at a height between 850 mm and 1000 mm above the floor level. Where each band zone consists of more than one band, the aggregate width of the bands in each zone shall be 100 mm or more as shown in Figure 23.

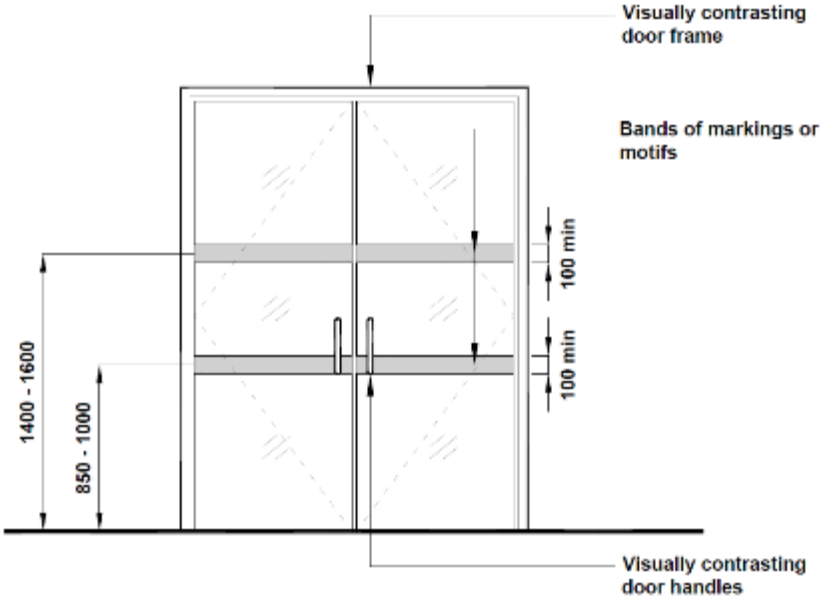


Figure 23
Markings on Glass Doors

- **Mandatory**: *Glazed Doors (London):* Provide glass doors and glazed screen (including glazed screens alongside a corridor) with all of the following:
  - Manifestation at two levels, as shown in Diagram 7.2
  - Manifestation that will contrast visually with the background seen through the glass, both from inside and outside, all lighting conditions
  - Manifestation in the form of a logo or sign, a minimum of 150mm high (repeated if on a glazed screen), or a decotrative feature such as broken lines or continuous bands, a minimum of 50mm high.
  - Where glazed doors are beside or part of a glazed screen, they are clearly marked with a high-contrast strip at the topa and on both sides.
  - Where glass doors may be held open, they are protected with gurading to prevent people collding with the leading edge.

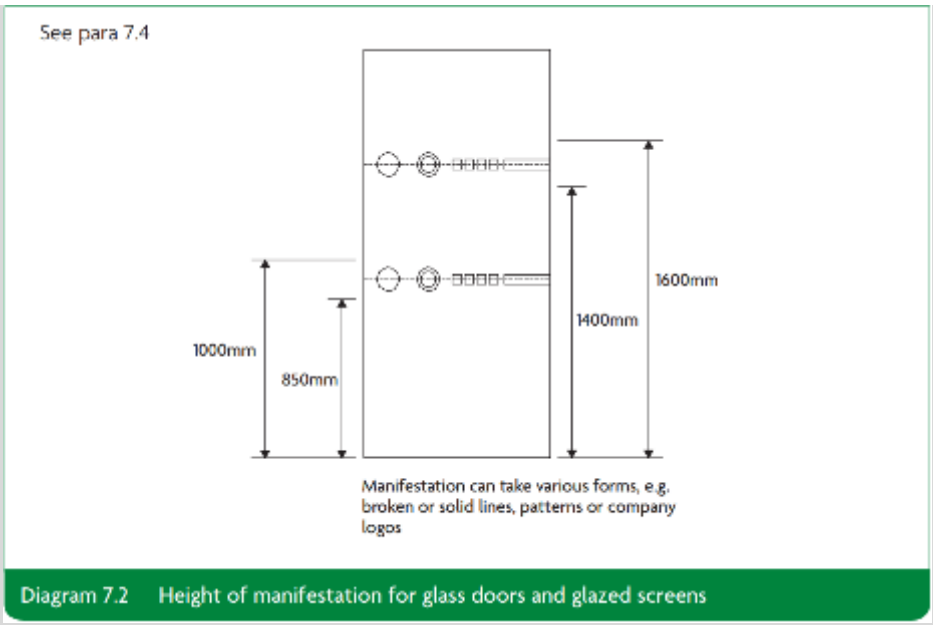


Diagram 7.2 Height of manifestation for glass doors and glazed screens

- **Mandatory**: *Frameless Glass Doors (Hong Kong):* If frameless glass door is used, it shall be prominently marked so as to make it visible. Markings shall be placed across on the glass door such that the markings are placed between 900 mm and 1500 mm above the finished floor. The colour marking shall also be provided to glass panel adjacent to the glass door.

There is a need to further explore the requirements for accessible entrance, such as improving automatic door design standards and considering additional requirements of markings on glass doors. Existing design standards, though established, are unable to fully meet the needs of persons with disabilities, suggesting that these standards may require additional improvements, although the obligatory requirements prevailing at the time of construction of the target buildings had not been observed in this benchmarking exercise.

Enhance the Requirements of DM:BFA2008

In view of issues found with the visited premises in the benchmarking exercise, DM:BFA2008 for new private buildings or alteration / addition works in existing private buildings and the design standards under its coverage should be reviewed.

Given that DM:BFA2008 is the only manual including obligatory / recommended design requirements and design considerations, etc. strengthening awareness on the concept and principles of accessibility or universal design is recommended. With the holistic coverage of requirements to cater for the needs of persons with different types of disabilities, the textual context of DM:BFA2008 might affect its readability to some extent. Also, though there are a number of reviews in the past years, the Design Manual was first published in 2008. It is a good opportunity to review and upgrade the existing

Design Manual, and possibly add universal design and inclusive design elements into the upgraded version. With reference to the case of Singapore, the Universal Design Guideline for Public Places covers guidelines on the use of texts and graphics concurrently while providing clear explanations. In this way, there is a potential to enhance the requirements stipulated in the existing DM:BFA2008 so as to raise awareness and initiate innovative knowledge and design ideas towards universal design.

Several initial recommendations for the revision of existing DM:BFA2008 could be given based on this benchmarking exercise. Firstly, wider lift shafts should be explored so that the mobility of people with disabilities could be increased. Certain features should also be explored for the accessible lift. One feature is to add mirror to the wall of one-opening lift which is facing the door so that people with disabilities especially wheelchair users could estimate the distance while leaving the lift. Another feature is to add window on the lift doors so that a better visual connection could be provided apart from the CCTV. Adding indication light for lift buttons would also be another suggested feature.

Further study on the provision of emergency evacuation is also recommended. Horizontal evacuation should be explored for the people with disabilities especially in hospitals and nursing homes. As a result, they could move to a safer place on the same floor as it could be difficult for them to use exit stairs to get outside. In light of that, fire compartment zone should also be built on each floor as refuge area for the people with disabilities for the provision of the required safe places and additional evacuation option. In addition, fire evacuation plan should be provided for people with disabilities subject to the local evacuation and rescue strategies adopted by the Fire Services Department (FSD).

System for signage requirements should be established under DM:BFA2008. It should include the height of characters, size of symbols, colour and luminous contrast, and adaptation of size-to-distance approach. Other recommendations for DM:BFA2008 regarding other accessible facilities to be explored may include the requirement of providing ambulant toilets for persons with ambulant disabilities and children, installing auto sliding doors for accessible toilets, installing two level handrails for stairs and ramps, and provision of shelters and seating in public open spaces.

1.4.5 Signage

The assessors commented that proper design of navigating signages was crucial as well for the navigation of persons with disabilities en route and within premises. However, photos and comments on the premises assessed during the benchmarking exercise reflected insufficient consideration of the contrast, character size and height of signages, suggesting the need for a better design approach.

- Unsatisfactory signages (confusing symbols / poor colour contrast, size, distance, position, lighting, material consideration, etc.)
- Complicated braille maps

- Faded maps

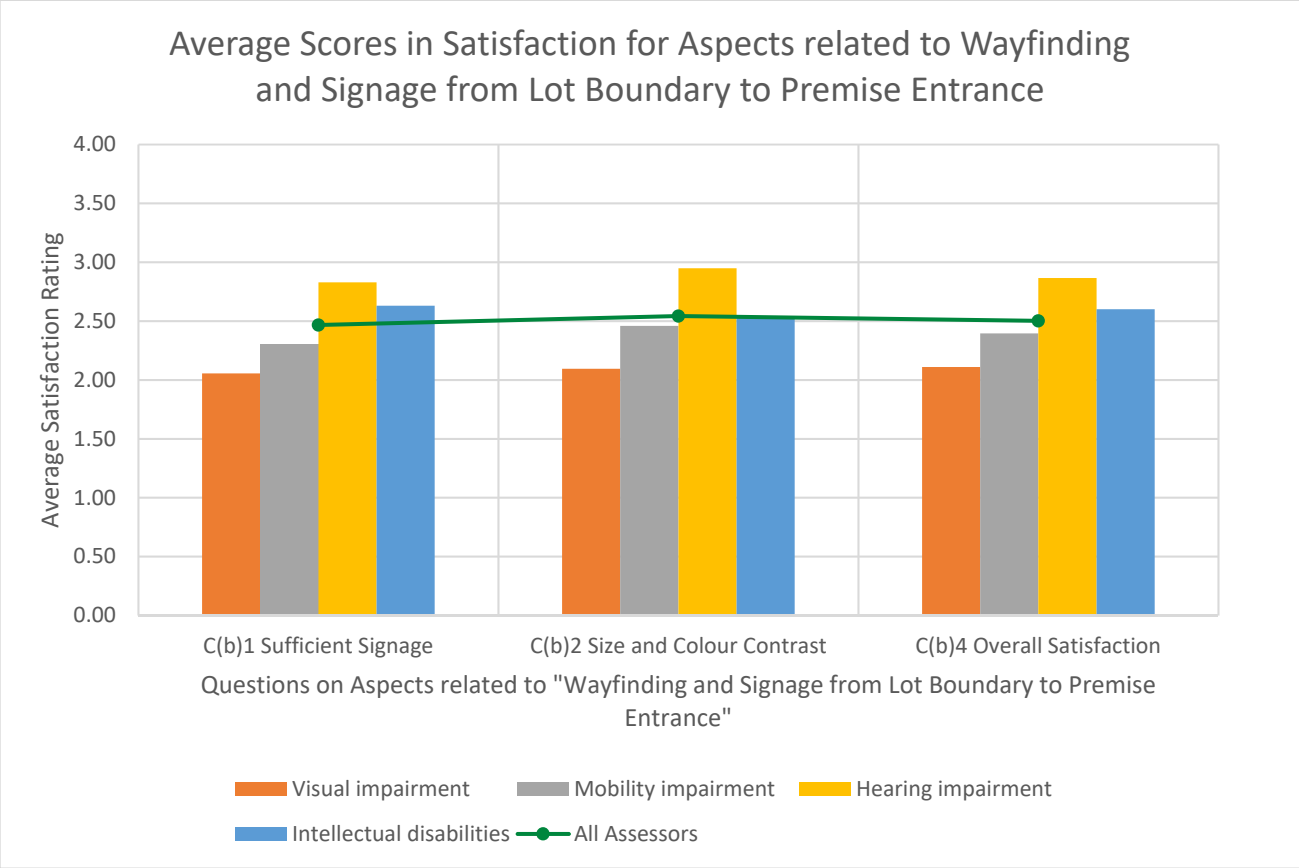


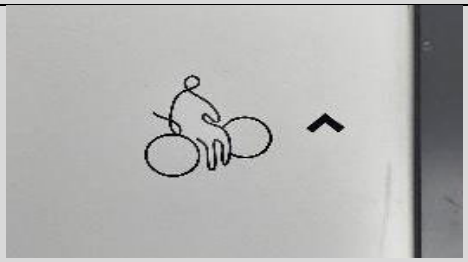
Figure 5: Average Scores in Satisfaction for Aspects related to Wayfinding and Signage from Lot Boundary to Premise Entrance

Assessor Categories	C(b)1 Sufficient Signage	C(b)2 Size and Colour Contrast	C(b)4 Overall Satisfaction
Visual impairment	2.05	2.09	2.11
Mobility impairment	2.30	2.46	2.40
Hearing impairment	2.83	2.95	2.87
Intellectual disabilities	2.63	2.53	2.60
All Assessors	2.47	2.54	2.50

Table 5: Breakdown of average scores in satisfaction for every assessor category in every aspect under Checklist Subsection C(b) Wayfinding and Signage from Lot Boundary to Premise Entrance. Red cells indicate the lowest average scores for the aspect, whilst green cells indicate the highest average scores for the aspect.

Highest Lowest

As shown in Figure 5, further breakdown on each aspect under the subsection has shown that assessors were generally dissatisfied with the wayfinding from the lot boundaries to the premises. The average for both aspects, “Sufficient Signage” (E(a)1) and “Size and Colour Contrast” (E(a)2), were 2.47 and 2.54 respectively, suggesting unsatisfactory ratings from a sizable number of assessors. Assessors with visual impairment expressed particularly low satisfaction with both “Sufficient Signage” (E(a)1) and “Size and Colour Contrast” (E(a)2) at 2.05 and 2.09.

Aspects for Improvement	Assessors' Onsite Comments	
Unsatisfactory signages	 "無障礙洗手間的標示不正統" "Use of uncommon signages" **Observation**: The existing signages are not clear for persons with disabilities to see. Signages are often lack of well-design effort. **Suggestion**: Standardizing the characters, symbol size, and colour contrast of signages in buildings to facilitate persons with disabilities' easy reading in a distance.	 "臨近目的地都沒有指示牌" "Lack of navigating signages when approaching premises" **Observation**: The lack of signages for persons with disabilities to access the building's programmes, creating confusion for users being persons with disabilities. **Suggestion**: Building management could be enhanced to ensure the signages are placed appropriately.
	 "標誌上的文字字體太小" "Texts on signages too small to read" **Observation**: The existing signages are not clear for persons with disabilities to see. Signages are often lack of persons with disabilities' consideration when being designed. **Suggestion**: Standardizing the characters, symbol size, and colour contrast of signages in buildings to facilitate persons with disabilities' easy reading in a distance.	 "指示牌上的中文字體線條太粗，弱視人士只能看到一團黑色" "Texts on signages too thick for persons with visual impairment" **Observation**: The existing signages are not clear for persons with disabilities to see. Signages are often lack of persons with disabilities' consideration when being designed. **Suggestion**: Standardizing the characters, symbol size, and colour contrast of signages in buildings to facilitate persons with disabilities' easy reading in a distance.

	 “公園內的標示顏色跟背後的植物太相近” “Colour of signages too close to the plants in the background” **Observation**: The existing signages are not clear for persons with disabilities to see. Signages should be well maintained for clear vision. **Suggestion**: Management could be enhanced to ensure the signages are not blocked by obstacles.	 “公園內的標示顏色跟背後的植物太相近” “Colour of signages too close to the plants in the background” **Observation**: The existing signages are not clear for persons with disabilities to see. Signages should be well maintained and designed for clear vision. **Suggestion**: Standardizing the characters, symbol size, and colour contrast of signages in buildings to facilitate persons with disabilities’ easy reading in a distance.
Faded and complicated braille maps	 “摸讀地圖內容十分複雜，難以清晰理解” “Braille map complicated to understand” **Observation**: The existing braille maps are not clear for persons with disabilities to use. Braille maps should be well maintained or updated for clear and easy usage. **Suggestion**: Better management and education of the management staff on the need of upgrading the facilities for persons with disabilities is suggested.	 “圖像和字體太細，地圖對比色不足夠” “Map lacking colour contrast; text and images too small” **Observation**: The existing braille maps are not clear for persons with disabilities to use. Braille maps should be well maintained or updated for clear and easy usage. **Suggestion:** Better management and education of the management staff on the need of upgrading the facilities for persons with disabilities is suggested.

Good Examples of Clear Layout Plan and Signage

"巴士總站入口附近有巴士站位佈局圖"
"Bus terminus has layout plan nearby"

" 大而且清晰的指路牌"
"Clear and prominent signage"

"巴士站主要出入口有屏幕清楚顯示下班車時間"
"Entrance of bus terminus has display indicating bus schedule"

"交匯處有標示清楚顯示升降機位置"
"Interchange has indicated clearly position of elevator"

The provision of larger signage on public roads with larger font sizes will benefit persons with disabilities' viewing from a distance. A standard font size based on viewing distance should be promoted which can mostly help persons with disabilities and ensure universal accessibility. However, the provision of larger signage on public roads / footpaths with larger font sizes will require a larger support and foundation and be more visually intrusive. Such larger signs would likely reduce the effective widths of footpaths and cause obstruction to pedestrian flow if they are sited on footpaths. Nevertheless, installation of such larger signage may be feasible on the walls of subways which would not affect the pedestrian circulation. Besides, a lower headroom of the signage will obstruct the passage of pedestrians under it. Therefore, it is also necessary to balance the needs of all road users

in the walking environment. Information on destinations and routing through ICT would be another way to address this issue.

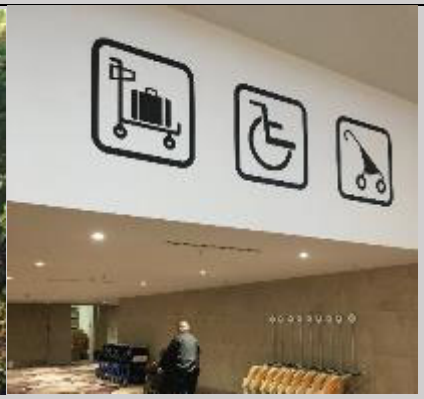
Gap Analysis

Character Heights in relation to Viewing Distance

Based on initial findings, the lack of a completely standardised system for signage in Hong Kong has given designers multiple choices to express their creativity. However, there have been cases where artistic freedom may cause confusion among building occupants. In order to preserve artistic freedom among designers, the Study ***would not recommend a standardised signage system****. However, it would be* ***worthwhile to pursue a system in which the height of characters and symbols in signage are provided for on the basis of the viewing distance****, as it would be considered more realistic and appropriate according to the prevailing trend in oversea examples. DM:BFA2008 should also specify what is meant by "viewing distance", whether it is the closest distance a viewer could be, or an anticipated viewpoint. There may be a sliding scale system akin to the one used in the Vancouver TransLink facilities, where there is* ***an incremental increase in character sizes with every set amount of distance****, or a simpler system where there is a* ***set minimal height at a specific viewing distance****. Similar to the Japanese standards, there may be a need to further study* ***if there is a need to differentiate the minimal Chinese character size and the minimal English letter size****.*

Symbol Sizes in relation to Viewing Distance

Similar to a potential adoption of different symbol sizes at different viewing distances, it would be beneficial to ***adopt a similar system for signage symbols****.*



With a common issue concerning the use of characters / symbol sizes for the barrier-free facilities in Hong Kong and the prevailing trend of guidelines for signage sizes in the selected cities, it would be worthwhile to pursue a system in which the height of characters, symbol size, and colour contrast in signage are provided for on the basis of the viewing distance. As well, building management could be enhanced to ensure the signage is in good condition and undertake essential repair when necessary.

With reference to the standards of the selected cities including Singapore, Vancouver, Osaka, and Sydney, the height of characters and symbols and symbol sizes in signage have been specified in relation to the viewing distance whereas only minimal requirements on the heights of signs have been stipulated in DM:BFA2008 . Vancouver's TransLink Facilities guideline has established different ranges for different character heights, and has specified that a viewing distance is the "horizontal distance between the character and an obstruction preventing further approach to the sign".

In view of above observations / suggestions for font sizes and colour contrasts, there may be a need to make reference to the practices adopted in other cities in exploring a common and measurable standard on the requirements of signage, thus providing a clear guideline for all designers although the obligatory requirements prevailing at the time of construction of the target buildings had not been observed in this benchmarking exercise.

1.4.6 Emergency Evacuation

Assessors with mobility or visual impairment were concerned about the design and requirements for emergency evacuation facilities.

- Insufficient colour contrast
- Emergency exits blocked
- No braille signs for obtaining evacuation information
- Evacuation signs not visible on the main route
- Obstructions near fire alarm
- Obstructions on evacuation route
- Evacuation stairs not having enough contrast for persons with visual impairment
- Evacuation stairs not having proper railing i.e., no braille indicator, not two-levelled

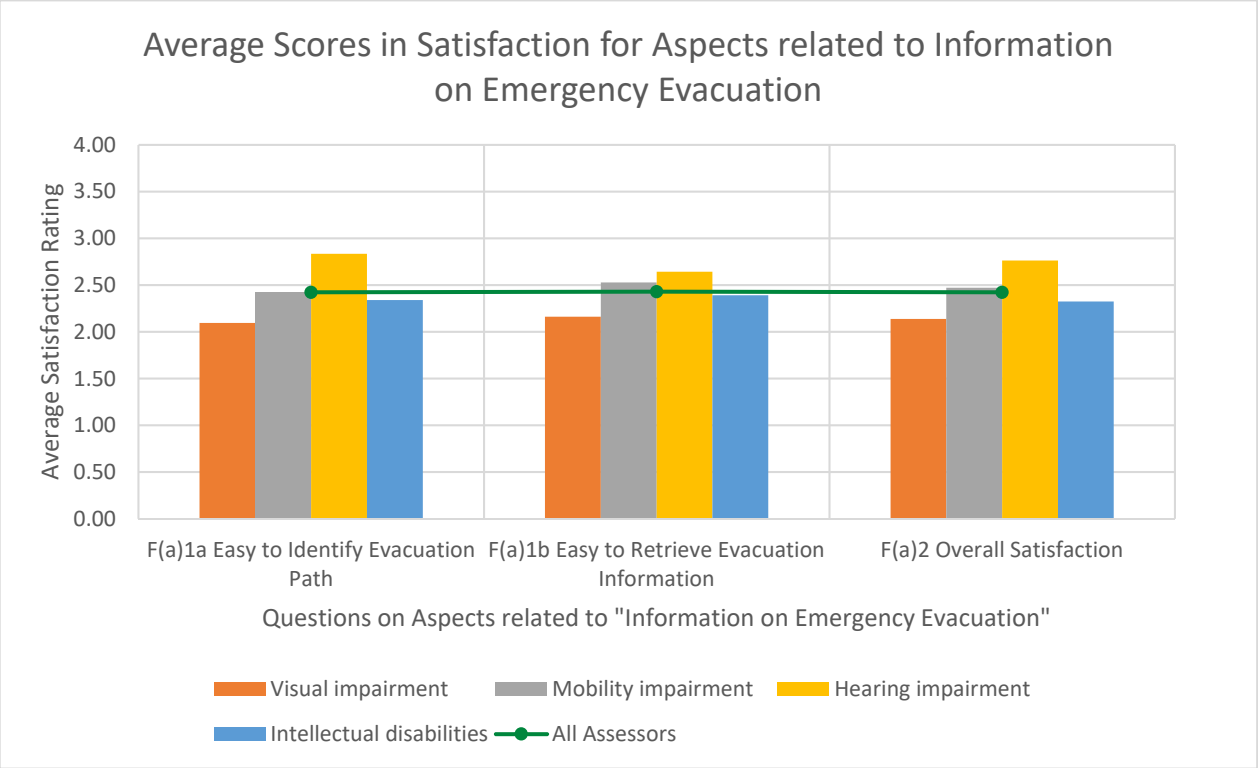
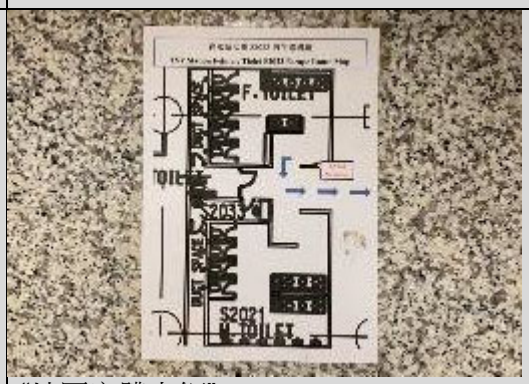
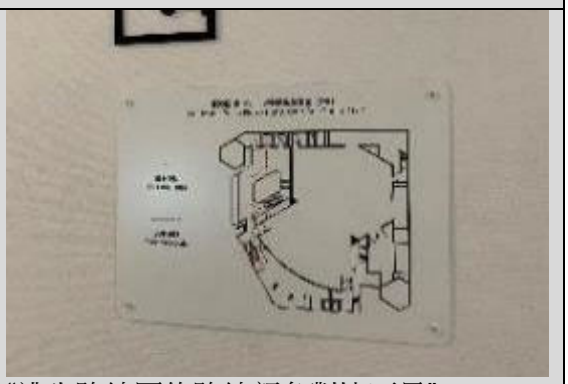
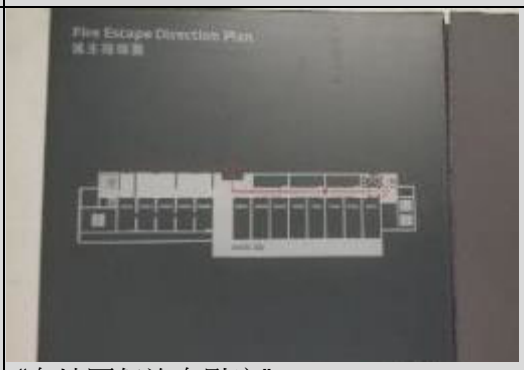
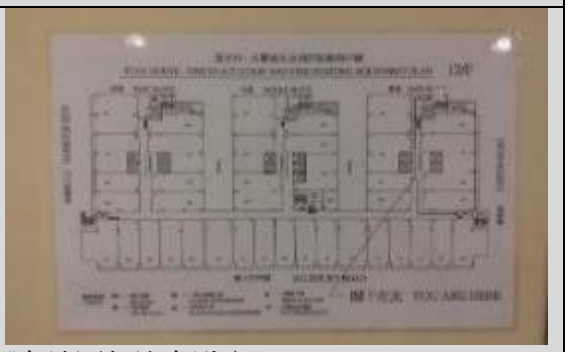


Figure 6: Average satisfaction for aspects related to Information on Emergency Evacuation.

As shown in Figure 6, the average satisfaction scores for assessors with visual impairment were significantly lower compared to the other categories of assessors, with assessors with hearing impairment expressing higher satisfaction compared to assessors with mobility impairment or intellectual disabilities (or their caregivers).

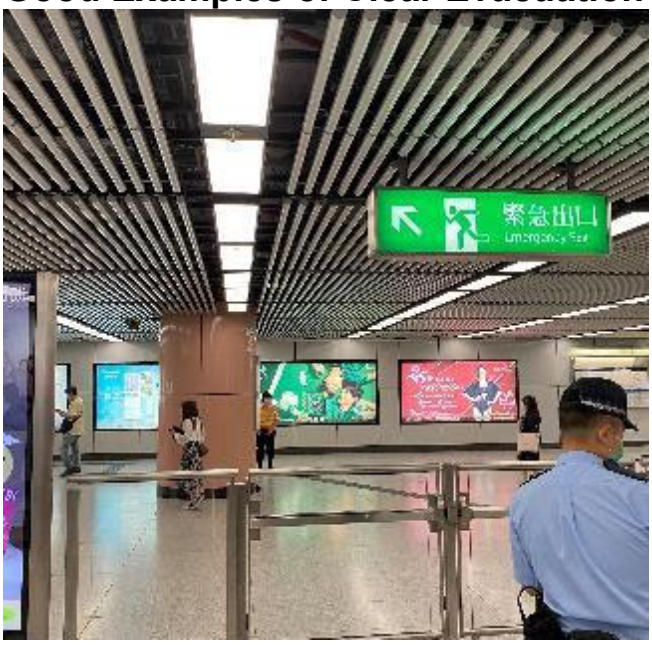
Aspects for Improvement	**Assessors' Onsite Comments**	
Insufficient colour contrast	 "地圖字體太細" "Texts on map too small" **Observation**: The existing emergency evacuation maps are not clear for person with disabilities to use. Emergency evacuation maps should be well maintained or updated for clear	 "逃生路線圖的路線顏色對比不足" "Evacuation route on map lack colour contrast" **Observation**: The existing emergency evacuation maps are not clear for person with disabilities to use. Emergency evacuation maps should be well

	and easy usage. **Suggestion**: Standardizing the characters, symbol size, and colour contrast of signages in buildings to facilitate person with disabilities' easy reading in a distance.	maintained or updated for clear and easy usage. **Suggestion**: Standardizing the characters, symbol size, and colour contrast of signages in buildings to facilitate person with disabilities' easy reading in a distance.
No braille signs for obtaining evacuation information	 "有地圖但沒有點字" "Absence of braille text on map" **Observation**: The existing emergency evacuation maps have no braille text for person with disabilities to use. Emergency evacuation maps should be well maintained or updated for their clear and easy usage. **Suggestion**: Standardizing the evacuation map by adding braille text for person with disabilities to use.	 "有地圖但沒有點字" "Absence of braille text on map" **Observation**: The existing emergency evacuation maps have no braille text for person with disabilities to use. Emergency evacuation maps should be well maintained or updated for their clear and easy usage. **Suggestion**: Standardizing the evacuation map by adding braille text for person with disabilities to use.
Evacuation signs not visible on the main route	 "逃生路線牌太細，對比亦不足夠" "Insufficient size and lack of contrast of evacuation sign" **Observation**: The existing emergency evacuation signs are not clear for person with disabilities to use. Evacuation signs' design should be updated for persons with disabilities' usage. **Suggestion**: Standardizing the characters, symbol size, and colour contrast of signages in buildings to	 "逃生路線牌沒有亮光" "Evacuation sign not lighting up" **Observation**: The existing emergency evacuation signs are not are not well maintained such that persons with disabilities have difficulties in noticing the evacuation signs. **Suggestion**: Better management and education of the management staff on the need of maintaining evacuation facilities is suggested.

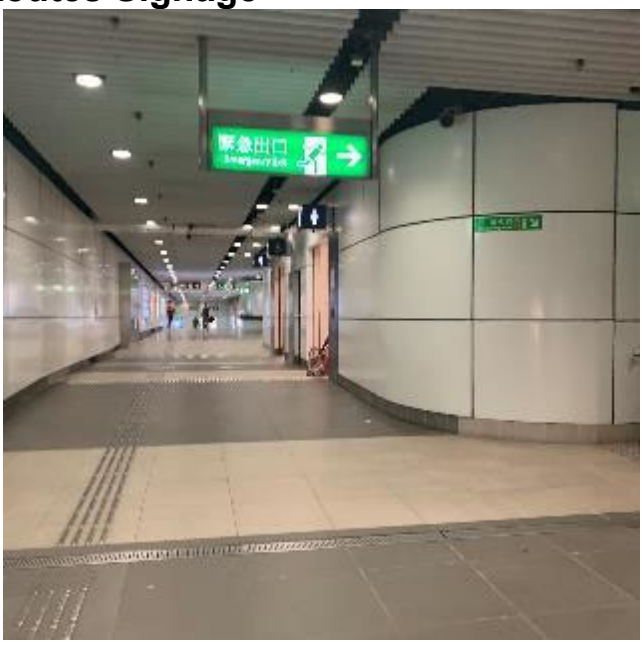
	facilitate person with disabilities' easy reading in a distance.	

It indicates the need to enhance the wayfinding efficiency and provision under emergency conditions and a potential to develop the Buddy System for persons with disabilities who require additional assistance under emergency situations.

Good Examples of Clear Evacuation Routes Signage



"逃生路線牌清晰"
"Evacuation signage is clearly positioned"



"逃生路線牌清晰"
"Evacuation signage is clearly positioned"

Good Examples of Fire Alarm

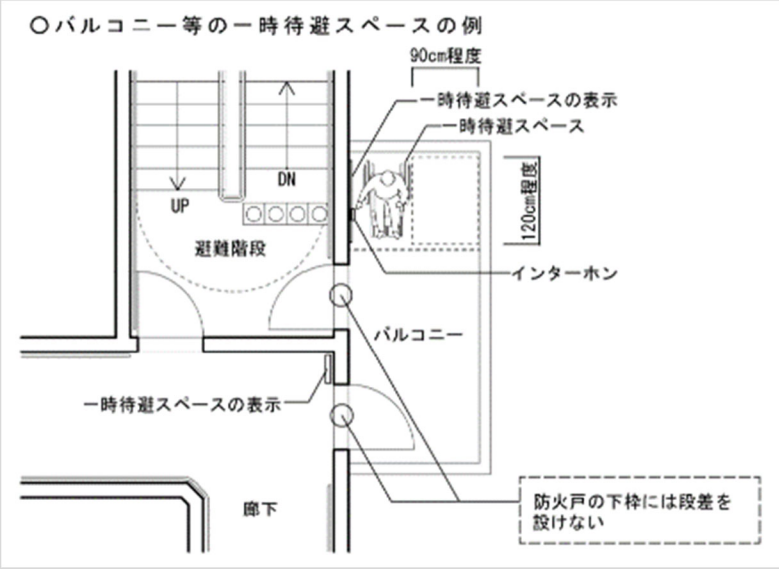
"巴士站有助樓宇管理的火警鐘明顯，而且有顯示不同位置的狀況"
"Fire alarms for buildings management and fire fighting in bus terminus are prominent; they indicate status of different areas"

"巴士附近有多個火警鐘在顯眼位置"
"Fire alarms near bus stop are clearly visible"

Gap Analysis

Evacuation and Refuge

- *Refuge for person with disabilities (London)*:
  - **Recommended**: Refuge for persons with disabilities should be provided for each protected stairway. (Connectivity, Equality, Safety, & Inclusion)
- *Temporary holding point (Singapore)*:
  - **Mandatory**: There shall be at least two designated persons with disabilities holding points remotely positioned on every storey of a building. (Connectivity, Equality, Safety, & Inclusion)
- *Evacuation lift (Singapore):*
  - **Mandatory**: Evacuation lifts shall be provided for evacuation of occupants requiring assistance during an emergency. The requirements shall be applicable to all non-residential buildings exceeding 24m in habitable height or accessible to persons with disabilities. (Equality, Safety & Inclusion)
  - **Mandatory**: A switching device, similar to the fire lift switch, shall be installed next to each evacuation lift landing door on the designated floor (and the alternate designated floor, if provided) for persons authorized by the building owner or firefighters to activate the evacuation mode of the lift. (Anthropometrics, Equality, Safety, & Inclusion)
- *Separate temporary refuge room attached to the staircase (Osaka):*
  - **Recommended**: Temporary refuge space may be in a separate room with fire resistance performance attached to the staircase. (Connectivity, Equality, Safety, & Inclusion)
  - **Recommended**: Intercommunication system is recommended in the refuge room. (Safety)
  - **Recommended**: Audible and visual information is recommended in wayfinding. (Connectivity, Equality, Safety)



- *Evacuation (Vancouver):*
  - **Mandatory**: Every floor area that is not sprinklered throughout and that is required to be accessible shall be divided into at least 2 zones by fire separations. (Safety)
- *Temporary refuge (Vancouver)*:
  - **Mandatory**: An accessible balcony of not less than 2 sq. m. shall be provided for each accessible sleeping room. Such space is intended to provide temporary refuge for persons with disabilities. (Safety)
- *Emergency egress (Vancouver, Universal Accessibility Guidelines)*
  - **Mandatory**: Accessible routes serving any accessible space or element shall also serve as a means of egress for emergencies. (Safety)
  - **Mandatory**: At least one accessible means of egress shall be provided from every accessible including elevated transit platforms.
- *Temporary refuge space (Hong Kong):*
  - **Mandatory**: The Code of Practice for Fire Safety 2011 has mandated at least one temporary refuge space with an area of not less than 1.5m x 1.5m should be provided within the protected exit or fireman's lift lobby of every fire compartment at every floor of a building.
  - **Mandatory**: Alternatively, two temporary refuge spaces (with area of 0.75m x 1.5m) in visible location to each other, could be provided instead. Securely fixed directional signs in the form with an international symbol of accessibility and words and characters not less than 50mm high should be displayed at conspicuous locations in the common parts of every storey provided with temporary refuge space for guiding persons with a disability to the location of such space. A closed-circuit television and direct intercom link, both backed up by emergency power for at least 1 hour, should be provided to every temporary refuge space for communication with the management office of the building

Given the aforementioned comments given by assessors and the current practice according to the Code of Practice for Fire Safety 2011, there might be limitations for guiding persons with disabilities to evacuate during emergency in the context of Hong Kong. With respect to the case of Sydney, it is mandatory to provide for emergency evacuation for people with visual impairment. In addition to the mandatory emergency warning systems in Sydney, London has also recommended the elements of building design inclusive of good colour contrast, handrail on escape stairs, step edge markings on stairs, various floor coverings on evacuation route to aid people with visual impairment to locate the exit paths under emergency situations. In light of these, the location requirements of information on emergency evacuation could be considered whilst staff assistance, also known as a system of Personal Emergency Evacuation Plans (PEEP) would be necessary to provide additional guidance

when there is insufficient orientation or wayfinding information. PEEP would designate a guideline for personnel / duty staff to provide assistance, such as additional guidance to emergency evacuation exits, when there is insufficient orientation or wayfinding information. Also reference should be made to the local evacuation and rescue strategies adopted by FSD, in addition to making reference to PEEP provision in other cities in the Gap Analysis.

Gap Analysis

UK Northern Ireland: PEEP – Personal Emergency Egress Plans for Disabled People

- PEEP explains the method of evacuation to be used by a person with disabilities in each area of a building other than dwelling

Building Features for evacuation include:

- **Evacuation Lifts**: when evacuation lifts are used, persons with disabilities should make their way to the lift point and use the communication system to contact the person co-ordinating use of the lifts, such as security personnel, so that they are aware of the floor they are waiting on.
- **Fire Compartmentation**: buildings can be subdivided into separate fire compartments allowing possible horizontal evacuation for people through the building into another fire compartment.
- **Refuge**: to design a plan that allows resting in refuges provided along the route. And a refuge, as a temporary waiting space, is an area that separated from a fire by fire-resisting construction and provided with a safe route to a storey exit.

In conclusion, the Study has summarized in a table as below identifying the reasons of deficiencies in Hong Kong, which could be due to non-compliance with current requirements, or non-inclusion in the current regulations and codes, and improvement to be considered in future, for easy reference when comparing with the situation in overseas.

Summary of Deficiencies

Non-compliance with current requirements	Could be improved	Not within current requirements
Uneven roads	Unsatisfactory luminous contrast of stairs	Information for Route Planning
Obstacles along circulation means	Uncommon navigational signage design	Insufficient accessible lifts
Lack in colour contrast of signage	Text on navigational signage too small to read	Unsatisfactory maintenance of tactile guide paths
Lack of luminous contrast of tactile guide paths	Insufficient information on public transportation	Size of accessible toilet not standardised
	Insufficient warning lights on public transportation	Misused accessible toilets
		Faded and complicated braille maps
		Insufficient colour contrast of evacuation maps
		Lack of braille signs for evacuation information

Subject to the local evacuation and rescue strategies adopted by FSD, it indicates the need to enhance the wayfinding efficiency and provision under emergency conditions and a potential to develop a system of PEEP for persons with disabilities who require additional assistance under emergency situations. As mentioned above, PEEP would designate a guideline for personnel / duty staff to provide assistance, such as additional guidance to emergency evacuation exits, when there is insufficient orientation or wayfinding information.

1.5 Summary of Stakeholder Engagements and Other Findings

The stakeholder engagement exercises helped to solicit feedback from persons with disabilities, professionals, and interested members of the public. The Consultant Team held six stakeholder engagements, and assisted the Task Force on Accessibility in conducting three stakeholder engagement sessions, with comments collated set out in Appendix. While the participants in general acknowledged the improvement of accessibility in Hong Kong, they suggested that there was room for improvement. The following sets out their major comments.

1.5.1 Accessible Facilities and Premises

- Signage

Comments from the stakeholder engagement showed that proper signage design was crucial to the navigation of persons with disabilities, whether within or outside of the premises. Most participants expressed that the contrast, character size and height of signages needed improvement. While DM:BFA2008 has stipulated the requirements for certain signages such as symbols of accessibility and signs for persons with hearing impairment, the requirements are mostly based on a fixed dimension rather than a size-to-distance approach which would greatly affect the legibility of signages under different conditions. The Study would suggest adopting a new approach for the design of signage while still allowing flexibility and creativity.

- Tactile guide paths

People with visual impairment commented that there were insufficient tactile guide paths in open space and the guide paths were necessary for them to navigate beyond the boundaries of a building, especially along the routes between transport hubs and buildings. They also mentioned that the lack of colour contrast in tactile indicators had caused some difficulties in identifying the paths. Other practitioners in hospitals had different observations. They commented that the current design of the uneven surface of tactile guide paths had led to discomfort or even accidents. The Study would suggest addressing this issue of conflicting needs.

- Lighting systems

Persons with hearing impairment requested lighting indicators for train and bus doors to indicate the operational status to remind of the door closing time. Hence, the Study would suggest reviewing the requirements on the provision of lighting indicators at the doors of buses, train platforms as well as lifts.

- Evacuation facilities

For the provision and requirements on evacuation facilities, some participants suggested that a guided lighting system could be installed to illuminate the evacuation route in situations of emergency. They also requested wheelchair accessible evacuation routes. The Study would suggest reviewing the relevant codes of practice to explore the provision of relevant facilities.

- Other accessible facilities and premises

Some participants also suggested further improvement for accessible facilities such as drop-off points, traffic lights and accessible toilets. They also suggested the accessibility of the following premises be further improved: funeral parlours, cemeteries, churches, restaurants at street level. The Study would suggest reviewing the relevant control and management measures.

1.5.2 Information and Technology

Participants expressed that although there were accessible facilities available such as seating, lifts, toilets, and public transport facilities, they were unable to access these facilities due to insufficient information about their position, availability and the route to access these facilities. They suggested that web mapping services should provide route planning functions with sufficient seamless accessibility information. The web mapping services should facilitate people with visual impairment to navigate the premises and plan the route in advance. They also suggested developing other applications of technology to enhance accessibility, such as an integrated mobile APP to provide all practical accessibility information. The Study would suggest exploring potential new information and technology products for application in Hong Kong.

1.5.3 Property Management and Training

Operational and attitudinal barriers were also the major concerns of persons with disabilities. Participants reflected that despite the provision of accessible facilities, some of them could not be practically accessed. For examples, some accessible toilets were locked or used as storage; tactile guide paths were covered by floor mats; the only hearing aid device could not be used because it was under maintenance; etc. Low awareness of the needs of persons with disabilities and lack of prior knowledge about the proper management of accessible facilities were among the reasons of such barriers. They suggested that more training should be provided for the property management practitioners in dealing with daily operational management tasks. Participants also expressed that they had difficulties in finding alternative access route or accessible facilities when maintenance or improvement works concerned were being undertaken while practicable provisional accessibility plan was usually not available. The Study would suggest the need of considering requirements on the provision of provisional accessibility plans.

1.5.4 Accessibility Assessment

A participant suggested an accessibility assessment scheme such as “Accessibility Mark” as an incentive scheme to encourage owners or property management companies to improve the accessible environment. Some participants suggested persons with disabilities could be trained and recruited as access auditors for the accessibility scheme. The Study would suggest this be considered in conjunction with the suggestion on incentive / recognition schemes under Section 1.5.5 below.

1.5.5 Education and Incentive Schemes

Participants suggested that education (e.g. advertisements for general public education, and seminars / other activities for schools / relevant practitioners and professionals) and incentive / recognition schemes supported by appropriate accessibility assessment could be effective measures to equip people with knowledge on universal accessibility and arouse their awareness on the needs of persons with disabilities. Participants reflected that some accessible facilities were not utilised efficiently. Promotion of universal design and an inclusive society would be beneficial. Participants had also expressed their concerns that old buildings constructed before the introduction of respective Design Manuals may not be required to provide relevant barrier-free facilities. They suggested that incentive schemes could encourage improvement works for these buildings.

1.5.6 Travel Chain Analysis

Participants expressed that they had difficulties in travelling between destinations along the travel route even though the premises or facilities concerned were already in compliance with the relevant standards. They often experienced difficulties in reaching the destinations even though the buildings concerned were providing proper accessible facilities. These might be the result of level difference between land lots or buildings which were constructed by different developers or managed by different property management companies. Accessible facilities such as footbridges, subways, ramps, lifts and elevators were usually provided in compliance with TPDM but they might still be inconvenient to persons with disabilities. Some participants suggested comprehensive planning for large scale developments or urban renewal projects to avoid unnecessary retrospective accessibility mitigation measures. Enhancement of accessibility should not be confined within individual premises. The Travel Chain Analysis method should be adopted to assess user experience and level of satisfaction about the accessibility between destinations, where applicable.

2.0 STRATEGY AND RECOMMENDATIONS

The objectives of the Study are to formulate a strategy with proposed measures, with a view to creating an environment that promotes freedom of choice and independence and respects the individual's right to live in a full life with dignity, irrespective of differences in ability, age and gender, and facilitating users of different abilities to access buildings and services independently.

Based on the findings of research studies and the benchmarking exercise, the Study shall formulate a strategy and recommend practical measures for implementation within an appropriate timeframe, with a view to creating a more accessible environment in Hong Kong for different types of persons with disabilities.

Sections 1.2 and 1.3 above have set out that the Study has identified principles and standards of universal accessibility as enshrined in the "UNCRPD "; "Beijing Declaration and Action Plan", "Incheon Strategy Goal"; and principles of "Universal Design". Making reference to the identified principles and standards of universal accessibility, best practices and guidelines in selected cities, findings of the benchmarking exercise, and comments collated through stakeholder engagements, this Study puts forward recommendations along six directions:

- Control Measures
- Building / Premises Management
- Accessibility Assessment Mechanism
- Education
- Incentive Schemes
- Information Technology

As highlighted in Section 1 above, the Government has accepted in principle the new RPP formulated by RAC as the Government's principal advisory body on rehabilitation issues for persons with disabilities. RPP is a "living document" which sets out the strategic directions and recommendations for responding to the diverse service needs of persons with disabilities at different stages of their lives, including pre-school rehabilitation to higher education; vocational rehabilitation training and vocational training; employment support; community and residential care services; accessible facilities and services; participation in cultural and arts, recreational and sports activities; sustainable development of services, etc. One of the RPP strategic directions is to promote disability inclusive culture, facilitate accessible environment, transportation and access to information so that persons with disabilities can fully participate in social life.

The new RPP provides overarching strategic policy directions and actionable recommendations for implementation in the short to long term. The recommendations of this Study, which seek to enhance the accessibility of the physical environment in Hong Kong, observe the RPP directions and provide for the strategicness and flexibility for implementation in tandem or at stages as appropriate for achieving synergistic effects. With the new RPP having adopted the guiding principles of the UNCRPD, this Study has specifically adopted Article 9 of the UNCRPD, with the objective to enable persons with disabilities to live independently and participate fully in all aspects of life. The recommendations of the Study aim to ensure persons with disabilities access, on an equal basis with others, to the physical environment, public transportation, ICT and systems, and other public facilities and services provided. Reference has also been made to other principles and standards of universal accessibility as set out in Sections 1.2 and 1.3 above.

2.1 Control Measures

2.1.1 Application of universal design

The concept of “Universal Design” is considered as a more advanced concept over accessibility, which would benefit all people including persons with disabilities. It is recommended that Government units within their purview continue to apply the concept of universal design to their respective manuals, guidelines, codes, etc. It is also recommended that the control measures of respective departments be reviewed from time to time to keep abreast of social changes and expectations.

It is noted that DM:BFA2008 has been kept under regular review by the Technical Committee on Design Manual : Barrier-free Access set up by BD. The committee comprises representatives from relevant government bureau and departments, building professional institutions, the academia and the rehabilitation sector including persons with visual impairment, hearing impairment or physical disabilities. A series of amendments to DM:BFA2008 have been issued by BD in November 2012, September 2015, April 2017, June 2019, October 2020 and December 2021 respectively. In addition, the current statutory control mechanism on barrier-free design requirements for persons with disabilities as promulgated under DM:BFA2008 and stipulated under regulation 72 and the Third Schedule of B(P)R has taken into account section 84 of the Disability Discrimination Ordinance. Nevertheless, the Consultant Team has received significant requests from numerous stakeholders requesting applying the concepts of universal design and universal accessibility, by making reference to overseas experience. Cost implications and concerns of other stakeholders, etc. should be further considered taking into account all implications with thorough assessment in the next stage.

Seven Principles of Universal Design

The principles of “Universal Design” which were known to be developed by the Centre for Universal Design at North Carolina State University led by architect Ronald Mace:

- Principle 1 Equitable Use: The design is useful and marketable to people with diverse abilities.
- Principle 2: Flexibility in Use: The design accommodates a wide range of individual preferences and abilities.

- Principle 3: Simple and Intuitive Use: Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.
- Principle 4: Perceptible Information: The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities
- Principle 5: Tolerance for Error: The design minimizes hazards and the adverse consequences of accidental or unintended actions.
- Principle 6: Low Physical Effort: The design can be used efficiently and comfortably and with a minimum of fatigue.
- Principle 7: Size and Space for Approach and Use: Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

2.1.2 Review and revamp of DM:BFA2008

DM:BFA2008 was first published in 2008. Several amendments have been made by BD through the issuance of PNAP APP-41 in 2012, 2015, 2017, 2019, 2020 and 2021 respectively taking into account feedback from the building sector, rehabilitation sector and relevant stakeholder organisations arising from their practical experience. Instead of a comprehensive review, such amendments contained individual updates on certain clauses in DM:BFA2008. Hence, the Study suggests BD to carry out a review for DM:BFA2008. In particular, considering the time of issue of the current Design Manual and the demand from the stakeholders, the Study suggests revising or enhancing the current Design Manual as a new Design Manual. Where possible, the new manual may promote the universal design concept which includes the consideration of persons with different needs and their accompanying persons (e.g. accompanying seats in theatres and concert halls, places for wheelchair accompanying seats in lobbies, larger universal toilets, etc.) and provide more suggestions to resolve conflicts of different users in using accessible facilities under various aspects. At the same time, ArchSD, TD, etc. may provide input to such review and make reference to the new Design Manual on respective guidelines and manuals.

In order to maintain the Design Manual moving with the time, regular review of DM:BFA2008 in a timely manner with a work plan is needed, such as reviews corresponding to the local anthropometrics standards, mode of urban development in Hong Kong, and the composite mode of building developments with multi-purpose uses (e.g. workshops and exhibitions in factory buildings). Such work plan should be formulated and executed systematically under a coordinating Government unit with the participation of relevant Government B/Ds. The review process should also get the stakeholders involved. Relevant B/Ds should have the responsibility to raise the publicity of the Design Manual, which should be included as part of their work plans to promote good urban accessibility.

Particular suggestions to be considered under the review exercise are as follow:

- Provision of new Design Manual on barrier-free access

The benchmarking exercise showed that users were not satisfied with the accessibility of premises or facilities even if they had already been in compliance with the standard requirements. This is usually the result from conflicting demands for the accessible facilities, obsolete measures with the advancement of technology, and higher public expectations on accessibility. A new Design Manual would suggest new measures to be adopted for better alternatives, as for example, provision of lifts / elevators as a convenient and efficient measure to replace ramps which occupy a large area of land, etc. Specific enhancement requirements for different uses or venues based on respective considerations of anthropometrics, equality, safety and inclusion can also be added in the new Design Manual. The new Design Manual should cover suitable measures to cater for possible social changes (e.g. those caused by COVID-19), public areas and measures motivating owners and management of old buildings (built before 1984) to improve accessibility.

- Design Manual review – provision of additional lift at major transport facilities, public facilities, and buildings

In the benchmarking exercise, there were comments reflecting that the only accessible lift connecting the concourse and platform, and connecting concourse and ground exit respectively inside an MTR station was closed for maintenance or improvement works. Some persons with disabilities would need to use other MTR stations or other transport means. Similar situation was found for public access facilities such as footbridges and subways. Most premises in Hong Kong are in multi-storey buildings and lift is an important vertical circulation means, particularly for wheelchair users and the elderly. It will bring much inconvenience to the users if the only lift in premises is out of service. Hence, despite not being a mandatory requirement in the countries / cities under the desktop study, the Study suggests to review DM:BFA2008 by exploring the provision of additional accessible lift at major transport facilities, public facilities and other buildings. However, particularly for public facilities, provision of additional lift(s) to cater for maintenance will involve significant implications on the capital and recurrent / maintenance costs from the Government, which may not be fully justifiable from the traffic or cost-effectiveness point of view. One possibility is to provide real-time open data on temporary and planned suspension / maintenance of public lifts apart from on-site notices for alerting persons with disabilities through web mapping services. Liaison with maintenance agents of lifts on more effective dissemination of information through ICT may be a way to enhance maintenance notifications.

Moreover, the following major comments from the benchmarking exercise and stakeholder engagements may be considered during the Design Manual review:

- Overall illumination of lift interior
- Illumination and colour contrast for lift control buttons for easy recognition before and after activation
- Enhancement of the touch lift button to facilitate the use by persons with visual impairment
- Location of lifts should be easily accessible

- Design Manual review – suggested guideline for signage design

According to the benchmarking exercise, character size, colour contrast and symbols of signage were among the main concerns of the assessors being persons with disabilities. The comments covered both indoor and outdoor signage. Making reference to desktop study on Singapore, the Study suggests exploring the following signage provisions during the Design Manual review:

- Implementation of size-to-distance approach when reviewing the existing Design Manual regarding the signage requirements
- Illumination for all signs in addition to signs for accessibility facilities
- Guidelines for signage symbols of accessible facilities and toilets in public premises, etc.
- Guidelines for directional signs providing estimated travel distance and time
- Visual display board at the carpark entrance to reflect the availability of the accessible carparks
- Provision of sufficient location map showing the location of passengers inside transportation terminals (e.g. railway)
- Adding visual door signs (flash light) for the railway platforms

- Design Manual review – inclusion of public open space and public passage consideration

There were major concerns found in the benchmarking exercise relating to surrounding area of a building. Apart from the accessibility standard of indoor space, the Study proposes to improve the accessibility standard of public open space and public passage (e.g. playgrounds, parks, transport stations and interchange, passenger terminals, restaurants and food courts) when reviewing DM:BFA2008. Specific considerations such as provision of sheltered seating in public open area / common area, wheelchair space near ordinary seating area in open space, provision of sheltered public passage with continuous connection to adjacent premises, signage, provision of tactile indicators, etc. should be taken into account. Such recommendation would be consistent with applicable standards stipulated under TPDM.

- Design Manual review – provision of automatic and power-operated doors for main entrance

Despite the obligatory and recommended design requirements relating to main entrance door in DM:BFA2008, the access to premises through the main entrance door is not satisfactory. Though DM:BFA2008 has stipulated the maximum force required to open a door, many assessors in the benchmarking exercise commented that doors in the premises, particularly main entrance doors, were not easy to use and required high strength. Recently, it is not uncommon to see automatic or mechanical doors being installed in buildings such as shopping centres and office buildings in Hong Kong. Premises owners and operators are used to providing and maintaining such facilities. Therefore, the Study suggests that the Design Manual review to consider the following:

- To provide at least one automatic door in each instead of just one main entrance in order to enhance the accessibility in all main entrances
- To consolidate the design criteria on the operation of automatic door, which can meet the means of escape requirement for opening in the direction of exit, in order to promote the application of automatic entrance doors
- To provide power operated doors in facilities such as toilets, accessible toilets, family facilities and changing facilities to further improve the accessibility within buildings
- To provide audio notice at the door to facilitate use by persons with visual impairment

- Design Manual review – provision for emergency evacuation

The comments in the “emergency evacuation” section of the benchmarking exercise revealed that the provisions related to emergency evacuation may be improved to provide better evacuation information and enhance safety during emergency. Therefore, the Study proposes to consider the following in the design manual evaluation:

- To require the provision of exit route map to public buildings
- To enhance the requirements for braille and tactile sign exit route map
- To provide guidelines for exit route map design including size, colour contrast, location, etc.
- Horizontal evacuation for people with disabilities especially in social/ community/ family/ elderly service buildings, special schools, hospitals and nursing homes subject to the local evacuation and rescue strategies adopted by FSD.
- Provision of evacuation system for persons with hearing impairment such as illuminating or vibrating alarms.
- To add visual video display system to the areas and facilities covered by the audio alarm system to ensure persons with hearing impairment can notice all the latest conditions of the place and react instantly.
- To require provision of Emergency Plunger Switch to Fire Protected Lift Lobby of buildings

- To expand the provision on coverage of visual display board to department store, shopping complex, school, college, university, library, sports complex, public swimming pool complex and indoor market and supermarket.

Gap Analysis

UK Northern Ireland: Horizontal Evacuation

- **Fire Compartmentation**: buildings can be subdivided into separate fire compartments allowing possible horizontal evacuation for people through the building into another fire compartment

Gap Analysis

Accessible Features or Equipment

- *Emergency Alarm System in Public Use Areas (Vancouver)*
  - **Mandatory**: Where an emergency alarm system is provided to serve public use areas, the system shall have permanently installed audible and visible alarm devices.

- Design Manual review – provision of guidelines on guide dogs

Some stakeholders of visual impairment have expressed the difficulties when travelling with guide dogs. Despite newer premises having complied with the requirements stipulated in DM:BFA2008, they do not necessarily take into account the needs of those commuting with guide dogs such as providing additional space for the dogs to lie down and travel in public transport, shops and other facilities like accessible toilets. Such provision could be explored with considerations of feasibility, financial and social implications. It is also important to ensure building management staff are equipped with the knowledge to deal with such situations like establishing effective communication with persons assisted by guide dogs.

Gap Analysis

Policy and guidelines on guide dogs in the UK

- *Guidance for bus staff*
  - If assisting a guide dog owner, do not interfere with the dog and only give instructions to its owner.
  - Please note, a guide dog owner is likely to require a priority seat to ensure the dog has enough space to lie down away from the footfall of other passengers (e.g. not in the aisle). In the event of a pet owner and an assistance dog owner both wanting to travel, their dogs should be kept apart, ideally with the pet dog accommodated towards the back of the bus.

When helping guide dog owners to get around, some guide dog owners will prefer you to go ahead (their dog will be able to follow you) whereas others may prefer to go in front with you giving them directions from behind. As with other vision impaired passengers, just ask them what they would prefer.

- *Guidance for rail staff*
  - This might include any changes to entrances or exits, relocation of the taxi rank, any one-way systems brought in to regulate passenger flow, queuing systems at the ticket office, and the location of the passenger assistance desk. This is especially important for customers who are familiar with the station but may be disorientated by changes to layout routes in and around it.
  - Ensure that your passenger assist booking system captures as much information as possible in advance to minimise the amount of time needed to communicate with the passenger on the day
- *Guidance for taxi staff*
  - If the passenger is a guide dog owner, ask them if they would like their dog in the footwell next to them or in the back of the vehicle if suitable (for example if the vehicle is an estate car or hatchback with removable parcel shelf). Guide dogs are trained to sit with their owner at all times, not to bother other people and not to climb on seats. If the passenger wants their dog in the footwell, you may need to pull the front passenger seat forwards to increase space in the footwell.
- *Guidance for shops*
  - Brief staff and security guards on the different types of assistance dogs to expect and different mobility canes

- Design Manual review – emergency evacuation facilities for persons with hearing impairment

It is important to consider the ways of emergency evacuation (possibly with the latest ICT facilities) for persons with hearing impairment. Emergency Calling System can assist persons with visual impairment in emergency escape and allow communication with outsiders especially when being alone in the lift. Visual video display system at the areas and facilities covered by the audio alarm system can also ensure that persons with hearing impairment can notice all the latest conditions of the place and react instantly.

2.1.3 Reflection of universal design in town planning

Chapter 11 “Urban Design Guidelines” of HKPSG already sets out the general requirements on ease of access for persons with disabilities. Consistent with Section 2.1.1 above, it is suggested that Government units within their purview consider reflecting the concept of “Universal Design” and “Travel Chain Analysis” from town planning level including HKPSG, the explanatory statement of Outline Zoning Plans and planning briefs, etc. while determining the scale, location, site requirements, supporting facilities, etc. of various developments. Comprehensive planning and design for universally accessible environment at the planning stage could enhance land use efficiency and enable effective provision of accessible facilities adequately catering for the needs of persons with disabilities. Provision of convenient accessible routes between lots and buildings should be considered. Under the “single site, multiple uses” approach, appropriate mix of uses under an individual development should be considered to facilitate users (including persons with disabilities) to accomplish their daily tasks efficiently within a complex and minimise travel trips. The provision of inclusive transport (e.g. taxi, bus and mini-bus services) should be sustained under the efforts of TD in engaging public transport operators in enhancing public transport facilities and promoting the concept of “Transport for ALL”.

2.2 Building / Premises Management

Proper management of the property facilities (including ICT facilities) is essential to good building management, covering a wide range of issues to which universal accessibility is important, including shopping, ticket sales, location system, communication system, restaurant booking and queue system, as well as electronic map etc. Therefore, relevant trainings are important to the successful implementation of good practices in building / premises management. Engagement of persons with disabilities' views would be important to ensuring that their needs are considered and catered for. In order to ensure the best performance of the below recommendations, the formulation and execution of systematic training should be well thought out by relevant Government B/Ds under a coordinating team.

2.2.1 Set up best practice building management guidance for universal accessibility

PMSA is a statutory body to implement a licensing regime on property management industry. While the management services prescribed under the licensing regime do not specifically include the provision of universally accessible environment, it is suggested collaboration with PMSA be explored to strengthen the scope of services of the industry by including universal accessibility elements and developing best practice building management guidance for property owners and managers for achieving universal accessibility:

- This guidance would provide in particular practical measures for the old buildings and government buildings that were constructed before the Disability Discrimination Ordinance took effect in 1996 or the building design and physical structures of which could not be modified.
- This guidance would recommend the owners and managers to conduct regular checking of their own premises and devise an action plan for timely improvement works to meet the standards of the latest Design Manual and relevant guidelines.
- This guidance would suggest practical measures for the frontline staff on their operational tasks. It would suggest case studies for the frontline staff in response to different situations regarding accessibility issues and customer services.
- This guidance would provide appropriate guideline and procedures for emergency evacuation of persons with disabilities, best practices and requirements such as provision and design of evacuation plan, and regular staff training with persons with disabilities in fire drill exercises.

2.2.2 Training of building management practitioners

With the requirements on the provision of barrier-free facilities stipulated in DM:BFA2008, management and maintenance of these facilities to ensure their proper operation and usage is important. With PMSA as the regulatory authority of the professional development of property management services, it is recommended that collaboration with PMSA be explored to enhance the understanding of the property management industry of universal accessibility and universal design, and hence the importance of proper management and maintenance of barrier-free facilities. The management companies could also be encouraged to provide training on practical measures on promoting a universally accessible environment, and customer service skills in dealing with different situations. In addition, consideration could be given by management companies to drawing up a level training system. The fundamental level is about training frontliners (e.g. building cleaners) on how to take care of accessible facilities; and the highest level is about training senior building managers on how to manage accessible facilities in the buildings as a whole. Consideration could further be given to exploring collaboration between management companies and the accessibility accreditation body (recommended in Section 2.3.1 below) for improving (including accrediting) the training.

From both the benchmarking exercise and stakeholder engagements, some persons with disabilities have reflected that the lack of expertise on accessible facilities and relevant guidelines among practitioners has led to unexpectedly undesirable experiences when accessing some of the premises, namely the lack of management of accessible facilities and customer services. Thus, it is recommended that building management could consider setting up a division of staff that specialises in dealing with matters related to accessibility of the premises, ensuring accessible facilities are in proper working conditions and providing adequate support to persons with disabilities in need. In addition, incentive schemes (recommended in Section 2.5.2 below) may also help to increase the building management's awareness of universal accessibility.

2.2.3 Improvement of Access Co-ordinator and Access Officer Scheme

With the introduction of Access Co-ordinator / Access Officer Scheme in December 2010, all Government B/Ds are required to appoint Access Co-ordinators and Access Officers to provide assistance to persons with disabilities in accessing premises under their ownership and management as well as services and facilities that they provide. In light of the operational experience of the Scheme and the feedback of persons with disabilities, each Access Co-ordinator is required to review the operational practices and procedures on accessibility annually. Arrangements are made for B/Ds to share experience and good practices. It is recommended that the Government improve the operation of the Scheme on a sustained or regular basis to keep abreast of the social changes and expectations. In addition, the Government should take account of persons with disabilities' the first-hand experiences and adopt feasible suggestions.

2.3 Accessibility Assessment Mechanism

The establishment of accessibility assessment standard, based on DM:BFA2008 (or updated versions in future) is essential to ensure the effectiveness and successful implementation of an accessible physical environment. An accessibility accreditation body and its associated accessibility assessment programme are the key components to establish professional standards and assessment systems. The development of this framework should be incremental according to the following recommendations under a comprehensive work plan formulated and executed systematically under a coordinating Government unit with consideration to setting up a dedicated a task force / project team. The development process should also feature stakeholder engagement with relevant professional bodies and persons with disabilities to take account of their views.

2.3.1 Establishment of an accessibility accreditation body

Subject to consideration by and discussion with relevant Government departments, it can be explored that the tertiary and professional institutions could establish an accessibility accreditation body that could comprise certified professional industry of access consultants including members of tertiary and professional institutions, representatives of persons with disabilities and NGOs, representatives of relevant Government works departments, representatives of relevant industries and services sectors, and representatives of ICT experts on universal design etc. and determine the scope and functions of the accreditation body, the standard of the accredited accessibility assessment programme, the rating standard of a certified built environment. The establishment of access consultant guidelines would be crucial to the sustainable promotion of access consultant practices. Such guidelines would act as a good reference and role model for professionals and the public in the development of an inclusive city. The formulation of an independent supervision unit to monitor the mechanism of such establishment and a central reporting and penalty system is suggested.

With reference to the practices of other countries, an access consultant is professionally trained to identify potential accessibility issues within premises and advise its building manager or building owner of their legal obligations. An access consultant will review an existing building or available drawings of a building to be built to ensure they comply with accessibility regulations. Relevant licenses and permits of a building could not be approved without the certification of an access

consultant. They will assist from planning and design to construction. To be a qualified access consultant, applicants will have to go through an assessment and examination process before they could be certified.

2.3.2 Development of a standard for accredited accessibility assessment programme

While it may take time to establish an accessibility accreditation body, it can be explored that the tertiary and professional institutions in Hong Kong could agree on a standard for accessibility assessment programme as an interim measure towards professional development of the industry. A certified accessibility assessment professional would be recognised by the relevant institution if the practitioner fulfils the standard of the accessibility assessment programme.

The institutions could request the Hong Kong Council for Accreditation of Academic and Vocational Qualifications to accredit the accessibility assessment programme in accordance with the Hong Kong Qualifications Framework. Some examples of professional accreditations and access consultants in other cities include NRAC in London, ACAA in Sydney, and RHF Accessibility Certification in Vancouver.

2.4 Education

Education is the fundamental means to change people attitude and arouse public awareness on accessibility. It is essential to facilitate the general public to understand the needs of persons of disabilities and the concepts of universal accessibility and universal design, which in turn can help address possible conflicting needs between persons with disabilities and members of the general public. For professionals and practitioners concerned, the provision of suitable education or professional training programme on universal accessibility design and ICT with universal design would enhance their knowledge and expertise.

2.4.1 Promotion of universal accessibility design and ICT with universal design through public education and publicity

It is recommended that the concepts and practical elements of inclusive design, universal accessibility design, Travel Chain Analysis and ICT with universal design be promoted through suitable public education and publicity. Diverse means could be considered, including cross-sector collaborative activities, disability simulation workshops, seminars, design competitions and other innovative publicity initiatives. Views of persons with disabilities should be invited as appropriate.

2.4.2 Introduction of universal accessibility design and ICT with universal design to schools

To gradually develop more extensive understanding and knowledge of inclusive design, universal accessibility design, Travel Chain Analysis and ICT with universal design, it is recommended that consideration be given to introducing the concepts and practical elements of inclusive design, universal accessibility design, ICT with universal design and accessibility guidelines to primary school / secondary school / tertiary education institution teachers or students through practicable means (such as leveraging on suitable teacher training programmes, school learning activities / programmes / extra-curricular activities / technology applications lessons in the areas of science and technology as well as biology and economics, workshops, inclusive activities, and talks). Other new concepts such as “inclusive design” and “universal design”, “Travel Chain”, and ”ICT on accessibility facilities” may be introduced to help students to learn how to address the needs of people with different abilities. Schools may also invite professionals, rehabilitation organisations and /or persons with disabilities to provide sharing sessions and talks to students, as well as to co-organize training sessions or workshops for teachers. Subject to discussions with schools, it could be explored whether

fundamental elements of universal accessibility and inclusive design could be included in relevant teaching training.

Arrangements can also be made for students to experience gerontech and rehabilitation technology (e.g. visiting the Gerontech and Innovation Expo cum Summit) for enhancing their awareness and knowledge of universal accessibility design, ICT with universal design, inclusive culture, etc.

Future improvements could include providing training to onsite school social workers as well as teachers of “Citizenship and Social Development” (Liberal Studies) since their schedules may cover organizing school activities on disability inclusion and universal access; and encouraging schools to develop universally accessible campus to take due account of the needs of persons with disabilities.

2.4.3 Raising awareness of practitioners and professionals on universal accessibility design and ICT with universal design

Professional bodies in Hong Kong have organised periodic training courses or Continuing Professional Development programmes on accessibility for their members. It is recommended that these professional bodies be encouraged to promote access consultant guidelines (when developed) and to continue to arrange for education or professional training programmes on inclusive design, universal accessibility design and ICT with universal design for respective practitioners / professional personnel (of urban planning, architecture, building surveying, design, engineering, etc) to enhance knowledge and expertise for future application, usage, management, and maintenance. Specifically, building professionals especially Authorized Persons (architects / engineers / surveyors) responsible for designing building projects also need to attend training, so as to produce inclusive and accessible designs for people with disabilities.

2.5 Incentive Schemes

Incentive schemes can encourage stakeholders, including service and facility providers, building management practitioners, professionals concerned, etc. to sustain efforts to enhance accessibility.

2.5.1 Increasing awareness of funding schemes for universal accessibility improvement

Various building rehabilitation funding schemes as mentioned in Section 1.3.6 above are in place to assist owners to undertake repair, maintenance and improvement of their residential properties, including enhancing the accessibility thereof. It is recommended that awareness of such funding support be increased, especially for persons with disabilities being residents of properties in need of improvement of accessibility. Relevant promotion may cover suggestions for applicants to include inclusive design features and innovative design methods in their funding applications. It is also recommended that other funding schemes (e.g. Innovation and Technology Fund for Application in Elderly and Rehabilitation Care, and Rehabilitation Care and Innovation and Technology Fund for Better Living) that can cater for accessibility enhancement be continuously promoted.

2.5.2 Incentive schemes for universal accessibility improvement works

An additional one-off building rehabilitation assistance scheme in particular for universal accessibility enhancement (including buildings constructed before 2008) may be considered, taking account of the implementation of the existing relevant funding schemes as mentioned in Section 1.3.6 above. A new funding scheme may also be explored for buildings built before 2008. For the owners, ownership committees and building management managers who wish to improve barrier-free access and facilities, they may apply under the scheme with the submission of accessibility improvement plan or accessible facility item list.

2.5.3 Supporting incentive schemes with voluntary accessibility rating

As mentioned in Section 1.3.3 above, HKCSS has launched the “Inclusive Environment Recognition Scheme” (「共融環境嘉許計劃」) and “Inclusive Shops Charter Scheme” (「共融商舖約章計劃」) as a recognition of the commendable efforts and best practices of the participants (including property management and owners, service and facility providers, etc.) to enhance accessibility. These incentive schemes are supported by voluntary accessibility rating conducted by a good mix of persons with the required knowledge / expertise from the Government, tertiary and professional institutions as

well as persons with disabilities, thus encouraging the scheme participants to improve the accessible services and facilities under their purview on a sustained basis. It is recommended that the implementation of these incentive schemes be continuously supported. To further enhance the effectiveness of these incentive schemes, recognition and professional qualification could be awarded to these voluntary accessors, increasing the overall awareness and reputation of relevant schemes on accessible services and facilities. In the long run, consideration may be given to taking reference from the accessibility rating of these schemes, with the relevant systems and arrangements implemented by the Government taken account of, for the purpose of ensuring compliance with prevailing requirements on universal accessibility and facilitating the further improvement of the accessibility of the physical environment. The building accessibility rating involved as a voluntary arrangement may be developed as a norm in the long run drawing reference to the BEAM accreditation for buildings.

2.6 Information Technology

Technology assists in overcoming accessibility barriers. Application of information technology to enhance barrier-free access and universal accessibility should be facilitated and encouraged.

2.6.1 Financial support for innovative accessible solution and service providers

Funding sources in support of innovative accessible solutions are available for service providers concerned to conduct the necessary development and / or enhancement work. Funding schemes include the Innovation and Technology Fund for Better Living, Social Innovation and Entrepreneurship Development Fund and Innovation and Technology Fund for Application in Elderly and Rehabilitation Care. It is recommended that the use of such funding be promoted.

2.6.2 Development of technological solutions

Innovative solutions to respond to the needs of persons with disabilities and promotion of inclusive and universal accessibility design depend on the suitable application of the latest technologies and a good understanding of the requirements of persons with disabilities. Means and channels are currently available for solution service providers to collaborate with persons with disabilities groups and NGOs for developing innovative solutions. Examples are:

- Wayfinding APPs – provide barrier-free route as alternative or supplement solution to the provision of tactile guide path.
- Emergency calling APPs/system - assist persons with visual impairment in emergency escape and allow communication with the outside especially when being alone in the lift.
- Improvements for mobile APPs - taking into account the needs of persons with disabilities, adding barrier-free elements and optimizing mobile APPs for their use by persons with disabilities in areas such as on-line shopping, dining, banking, leisure and recreation, etc. under evolving social developments. Respective parties are encouraged to continue to improve the usability of the APPs taking into account feedbacks from different user communities.
- Access consultant guidelines – provide inclusive and accessible reading experience suited for different devices.
- GPS tracker and QR code for positioning – allow location of users to be tracked for timely support.

- Central coordination solution – coordinate instant assistance for persons with disabilities seeking help.
- Delivery services APPs – support requirements specific to persons with disabilities.
- Smart tactile guide paths – apply RFID technology to provide instant vibration pulses feedback to users equipped with sensor on cane or shoe.
- Building management solution – provide indoor navigation and accessibility information of the premises to persons with disabilities.
- Enhanced electronic Audible Traffic Signal (eATS) – enhance the walkability for persons with visual impairment by providing new tactile, visual and audible features of eATS.
- Real-time navigation system - comprehensive and real-time data about a building and people which can be gathered by embedding sensors in different parts of the building and collecting information about evacuees through their phones.
- Collaborative wayfinding - occupants rate a suggested egress route after taking it. These feedbacks could be reflected in future wayfinding processes for a specific user or similar users. Particularly, it is suggested that a dynamic evacuation route could be provided to its users during an emergency evacuation; such a plan must navigate each evacuee from his / her current location based on the physical capabilities, personal preferences and accessibility of the entire route to the real-time human traffic, blockages, and power outages in different parts of the building. The evacuation route should be dynamic in the sense that it could be updated and rerouted rapidly.

There is flexibility for collaboration among persons with disabilities groups, NGOs and solution service providers to define and develop new solutions taking account of the evolving needs and requirements of persons with disabilities and the latest technologies. It is recommended that the use of available means and channels be encouraged for developing new technology solutions catering for the needs of persons with disabilities.

2.6.3 Cross-sector collaboration for innovative accessible solutions

Cross-sector collaboration is important for the development of innovative accessible solutions for persons with disabilities. The Public Sector Information (PSI) portal (https://data.gov.hk) has been providing an open and flexible platform for the required collaboration in disseminating datasets of Government departments and public organisations. Service providers of innovative solutions for persons with disabilities could make use of this PSI portal. It is recommended that the use of the PSI portal be facilitated by introducing a channel for persons with disabilities groups, NGOs and solution service providers to make requests for the data they need. The relevant Government department(s) could facilitate in coordinating and supporting such channels.

2.6.4 Development and implementation of Common Spatial Data Infrastructure

The Government is developing CSDI to provide a map-based digital infrastructure where spatial data from different parties arranged according to agreed standards can be stored, shared and assimilated in a composite manner, and where the Government, businesses, academia and the public can explore, search, view and download such spatial data through a CSDI portal accessible from the internet. CSDI provides a platform for mobile application developers and other parties to obtain spatial data for developing mobile applications, including those for enhancing accessibility for persons with disabilities. The improved access to high-quality and up-to-date spatial data and services through the CSDI portal can also increase the capacity to perform more sophisticated data analysis, understand social needs and trends, and deliver more responsive services to the public including persons with disabilities. It is recommended that more parties be encouraged to share spatial data to CSDI.

2.6.5 Standardisation of digital maps, websites, and mobile APPs development

The benchmarking exercise has shown that online and digital maps of some premises are not easily accessible to the persons with disabilities. It is commonly found that the lack in font size, colour contrast and ease of navigation has hindered the users' ability to travel freely in between and within premises. It is suggested that the regularly updating WCAG (www.w3.org/WAI/standards-guidelines/wcag/) promulgated by the World Wide Web Consortium, which contains guidelines on colour contrast, use of colour, consistent navigation, etc., should be referred to when designing digital maps / websites / mobile APPs accessible to persons with disabilities. In addition, applying knowledge of UI / UX design, big data analysis, is another way to easily standardise the design of accessible information technologies for people with disabilities. Some examples include e-guide, audible map, etc.

2.6.6 Management and maintenance of digital information

While it is important to introduce technological information to better the lives of persons with disabilities, these technologies should be constantly monitored and maintained by respective responsible parties to ensure the information provided is accurate and up-to-date with the existing conditions of the premises. While it is inevitable that construction works and other unexpected events will occur, software such as those mentioned above should be swiftly updated to reduce the change in routine of its users.

3.0 ACTION PLAN AND TIMELINE

Action Plan and Timeline

To achieve a more accessible environment, the Study formulates the above strategies and recommendations based on the findings in research studies, stakeholder engagements and benchmarking exercise. The proposed measures may be implemented in the short, medium or long term as illustrated in the following chart.

As mentioned in the overarching paragraphs under Section 2 above, the new RPP sets out strategic directions and actionable recommendations for implementation in the short to long term. The recommendations of this Study observe the RPP directions and provide for the strategicness and flexibility for implementation in tandem or at stages as appropriate for achieving synergistic effects. Apart from adopting the guiding principles of the UNCRPD, the new RPP is also guided by the consideration of facilitating cross-sectoral and inter-departmental collaboration to establish an inclusive society. Therefore, it follows that the effective implementation of the recommendations of this Study, which cover a wide array of initiatives to be undertaken, would require close collaboration among relevant Government B/Ds with suitable prioritisation and work plans as well as engagement of stakeholders (including persons with disabilities). As revealed by stakeholders' comments collated for this Study, the recommendation on "Review and revamp of DM:BFA2008" should be accorded priority.

STRATEGY AND RECOMMENDATIONS

	SHORT-TERM	MEDIUM-TERM	LONG-TERM
Control Measures			
2.1.1	Application of Universal Design		
2.1.2	Review and Revamp of DM:BFA 2008	NEW DM:UA202X	
2.1.3		Reflection of Universal Design in Town Planning	
Building/ Premises Management			
2.2.1	Set Up Best Practice Building Management Guidance for Universal Accessibility		
2.2.2	Training of Building Management Practitioners		
2.2.3	Improvement of Access Co-ordinator and Access Officer Scheme		
Accessibility Assessment Mechanism			
2.3.1		Establishment of an Accessiblity Accreditation Body	
2.3.2		Development of a Standard for Accredited Accessibility Assessment Programme	
Education			
2.4.1	Promotion of Universal Accessibility Design and ICT with Universal Design through Public Education and Publicity		
2.4.2			Introduction of Universal Accessibility Design and ICT with Universal Design to Schools
2.4.3		Raising Awareness of Practitioners and Professionals on Universal Accessibility Design and ICT with Universal Design	
Incentive Scheme			
2.5.1		Increasing Awareness of Funding Schemes for Universal Accessibility Improvement	
2.5.2		Incentive Schemes for Universal Accessibility Improvement Works	
2.5.3	Supporting Incentive Schemes with Voluntary Accessibility Rating		
Information Technology			
2.6.1		Financial Support for Innovative Accessible Solution and Service Providers	
2.6.2	Development of Technological Solutions		
2.6.3		Cross-sector Collaboration for Innovative Accessible Solutions	
2.6.4	Development and Implementation of Common Spatial Data Infrastructure (CSDI)		
2.6.5		Standardisation of Digital Maps, Websites, and Mobile Apps Development	
2.6.6	Management and Maintenance of Digital Information		

4.0 ABBREVIATIONS AND REFERENCES

Abbreviation	Full Version	Page
ACAA	Association of Consultants in Access Australia	P.10, P.83
ArchSD	The Architectural Services Department	P.3, P.73
BCA	Building and Construction Authority	P.9, P.10, P.20, P.21, P.26
BD	The Buildings Department	P.3, P.72, P.73
BEPE	Built Environment Professional Education	P.20, P.22
BEPE Project	Built Environment Professional Education Project	P.22
B/Ds	Government bureaux / departments	P.19, P.73, P.80, P.81, P.91
B(P)R	Building (Planning) Regulations	P.3, P.17, P.72
CAE	Centre for Accessible Environments	P.11, P.12
CSDI	Common Spatial Data Infrastructure	P.24, P.90
DM:BFA2008	Design Manual: Barrier Free Access 2008	P.3, P.4, P.17, P.18, P.19, P.39, P.45, P.52, P.53, P.58, P.59, P.67, P.72, P.73, P.74, P.75, P.76, P.77, P.81, P.82, P.91
eATS	Electronic Audible Traffic Signal	P.89
EOC	The Equal Opportunities Commission	P.3, P.4
FSD	The Fire Services Department	P.53, P.65, P.66, P.76
GPS	Global Positioning System	P.24, P.37, P.88
HA	The Housing Authority	P.3
HKCSS	The Hong Kong Council of Social Service	P.21, P.23, P.86
HyD	The Highways Department	P.4, P.27
HKPSG	The Hong Kong Planning Standards and Guidelines	P.18, P.19, P.79
ICT	Information and Communications	P.5, P.6, P.22,

	Technology	P.23, P.31, P.34, P.40, P.45, P.46, P.58, P.71, P.74, P.78, P.80, P.82, P.84, P.85
NGOs	Non-governmental organisations	P.5, P.7, P.21, P.26, P.82, P.88, P.89
NRAC	National Register of Access Consultants	P.12, P.83
PEEP	Personal Emergency Evacuation Plans	P.64, P.65, P.66
PNAP	Practice Notes to Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers	P.18, P.73
PMSA	The Property Management Services Authority	P.19, P.80, P.81
RPP	Rehabilitation Programme Plan	P.4, P.70, P.71, P.91
PSI	The Public Sector Information	P.25, P.89
RAC	The Rehabilitation Advisory Committee	P.4, P.70
RFID	Radio-frequency identification	P.24, P.25, P.89
RHF	Rick Hansen Foundation	P.20, P.21, P.27, P.83
TD	The Transport Department	P.3, P.73, P.79
TPDM	Transport Planning and Design Manual	P.3, P.18, P.39, P.40, P.69, P.75
the Study	Consultancy Study for Enhancement of the Accessibility of Physical Environment in Hong Kong	P.3, P.4, P.5, P.6, P.7, P.58, P.65, P.67, P.68, P.69, P.70, P.71, P.73, P.74, P.75, P.76, P.91
UNCRPD	United Nations Convention on the Rights of Persons with Disabilities	P.6, P.8, P.9, P.10, P.12, P.13, P.15, P.16, P.70, P.71, P.91
WCAG	Web Content Accessibility Guidelines	P.30, P.31, P.90

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Appendix

Summary of Comments from Stakeholder Engagements

Date	Comments
16 August 2019	Accessible Facilities • Poor signage design affects the navigation of persons with disabilities – (persons with disabilities groups) • Toilet signages should be standardised – (persons with disabilities groups) • Visual fire alarms should be added as options to housing – (persons with disabilities groups) • Flashing lights should be installed on platforms to alert passengers of closing doors – (persons with disabilities groups) Information and Technology • Application of smart traffic lights with adjustable signal volumes according to surrounding sounds and provision of Wi-Fi signals for navigational APPs, should be explored – (persons with disabilities groups) • Audio description equipment should be provided for persons with hearing impairment in public premises – (persons with disabilities groups) • A QR code system should be implemented in public premises so that persons with disabilities could easily find out barrier-free facilities in cultural centres – (persons with disabilities groups) Management • Guide dogs should be allowed to enter premises – (persons with disabilities groups) Education and Training • Universal design and inclusiveness should be promoted – (persons with disabilities groups) Others • Accessibility in urban context should be considered – (persons with disabilities groups) • Legal framework should be formulated to support accessible physical environment – (persons with disabilities groups)
12 September 2019	Accessible Facilities • Museum exhibits often print text in locations that are too high for wheelchair users – (persons with disabilities groups) • Automatic doors should be installed in accessible toilets – (persons with disabilities groups) • Public transport, especially buses, should have at least two wheelchair spaces – (persons with disabilities groups)

	• Tactile guide paths should not lead users to low service counters as they are for wheelchair users – (persons with disabilities groups) Management • Good property management is required to ensure the proper use and maintenance of accessible facilities – (persons with disabilities groups) • An alternative accessible route should be provided for wheelchair users when the lifts in the MTR stations are under repair or maintenance – (persons with disabilities groups) Education and Training • Public education to increase the awareness of accessible facilities/transportations/services should be encouraged – (persons with disabilities groups) Incentive Schemes • An incentive scheme should be promoted in the private shopping areas – (persons with disabilities groups)
16 September 2019	Accessible Facilities • There is room for improvement in signage design, such as providing information on travel distance and travel time – (public groups) • Tactile guide paths in hospitals cause discomfort to patients when they are moved around on their beds – (professional groups) • Evacuation routes for wheelchair users should be freely accessible without obstruction, and alternate methods for lifts in emergency situations should be offered – (persons with disabilities groups) • The current design of tactile guide paths has led to discomfort or even accidents due to the uneven surface of the tactile guide paths – (professional)
18 September 2019	Accessibility Facilities • Horizontal evacuation routes in hospitals for persons with physical disabilities should be explored – (professional) Incentive Schemes • Incentive schemes should be launched to promote and support accessibility in private properties – (professional)
22 December 2020	Accessible Facilities • Braille maps in parks are not informative since they are divided into separate pieces due to the large size of the park – (persons with disabilities groups) • Reference can be made to accessible facilities of other countries when buildings are to be retrofitted and requirements on accessible facilities should be updated regularly – (professional) • Persons with disabilities should be consulted at the planning and design stages of accessible facilities – (persons with disabilities groups)

	Management • Barrier-free access should include guidelines on IT and information access – (persons with disabilities groups) Education and Training • Inclusive society should be promoted through schools, public education and publicity – (persons with disabilities groups) Incentive Scheme • Incentive schemes should be organised to encourage developers to install up-to-date accessible facilities when buildings are under renovation. Regular inspections should be enforced – (persons with disabilities groups)
23 December 2020	Accessible Facilities • Guided lighting systems should be installed in buildings to facilitate persons with hearing impairment in evacuation during emergencies – (persons with disabilities groups) • Accessible lifts should have colour-contrasting buttons to facilitate persons with visual impairment who do not know braille markings in using the buttons – (persons with disabilities groups) • Accessible facilities should be provided for funeral parlour, cemeteries and churches – (persons with disabilities groups) Information and Technology • Indoor and outdoor mapping system should be developed to allow persons with visual impairment to easily navigate within premises – (persons with disabilities groups) • Web mapping services should be provided to facilitate users to plan their trip between destinations – (public groups) Management • Property management staff should be trained to operate the hearing aid systems - (persons with disabilities groups) • Tour guides in museums should be well-trained to help persons with visual impairment to have a better understanding of each exhibit - (persons with disabilities groups) Education and Training • Inclusiveness and universal accessibility should be promoted in schools for students to understand the needs of persons with disabilities – (public, professional, persons with disabilities groups) • One tertiary institution plans to introduce programmes related to universal accessibility and conduct training programmes with lower entry requirements – (tertiary institution)
22 November 2021 (Stakeholder	Management / Control Measures • The DM:BFA 2008 should be timely reviewed and an all-rounded review exercise schedule should be developed – (persons with disabilities groups)

Engagement Session 1 conducted by Task Force on Accessibility)	• Insufficient publicity of DM:BFA 2008 and other related information – (persons with disabilities groups) • Lack of professionalism of Access Co-ordinators and Access Officers – (persons with disabilities groups) • Should review the practice of concurrent post of Access Co-ordinators and Access Officers – (persons with disabilities groups) • The proposed accessibility assessment should include all stakeholder parties in respect of participation and regular review – (persons with disabilities groups) • Specific team / mechanism and more financial support is needed to formulate action plan for persons with disabilities groups – (persons with disabilities groups) Education • Should enhance accessibility education and public awareness – (persons with disabilities groups) Information Technology • More IT development targeted to persons with disabilities groups should be invested – (persons with disabilities groups) Others • The Study should make more external reference to the anti-discrimination ordinance, Canadian Human Rights Act and etc – (professional groups)
26 November 2021 (Stakeholder Engagement Session 2 conducted by Task Force on Accessibility)	Management / Control Measures • The proposed Access Consultant should be trained to guide the universal design for the building projects • The review and renewal of DM:BFA 2008 should be prioritised in action – (professional groups) • A new version of Design Manual on Barrier-free Access is required – (persons with disabilities groups) • Reiterate the importance of Accessibility Assessment Structure and Mechanism – (professional groups) • High level government policy is required to lead and liaise with different parties while planning, promoting and executing accessibility development strategies – (professional groups) • Persons with disabilities groups should be included for the training and certification of the proposed Access Consultant / Co-ordinator/ Officer – (persons with disabilities groups) • A permanent consultant team of persons with disabilities groups should be set up – (persons with disabilities groups) • Training on accessibility should be enhanced for the properties management practitioners – (professional groups) • Reforming the requirements and certification of Access Co-ordinators and Officers should be considered to improve and standardise the services – (professional groups) • Apart from Architectural Services Department, Lands Department, Housing Department and Buildings Department, Education Bureau

	and Home Affairs Department should take part in accessibility development to improve the education and management work – (professional groups) Education • Inclusiveness of accessibility should be promoted – (persons with disabilities groups) • Should enhance resources for public education – (persons with disabilities groups) • More practical education on accessibility is required for primary / secondary school students – (professional groups) • Public awareness on accessibility should be improved – (professional groups) Information Technology • Accessibility considerations should be included in the public mobile application for persons with disabilities groups, such as "LeaveHomeSafe" (安心出行) – (professional groups) Incentive Scheme • Incentive scheme should be strengthened for small scale building projects, such as pilot design competition etc. – (professional groups) Others • Different format of the Study is required for different parties for example an audible report.– (persons with disabilities groups) • Target groups of the Design Manual should be enlarged to persons with uncommon types of disability - (professional groups)
27 November 2021 (Stakeholder Engagement Session 3 conducted by Task Force on Accessibility)	Accessible Facilities • Electronic screen display panels should be added in the elevator – (persons with disabilities groups) • The design of Electric Audible Traffic Signals should be optimised – (persons with disabilities groups) • There is room to improve the accessible designs and devices for persons with disabilities' living convenience – (persons with disabilities groups) • Emergency Plunger Switch with emergency lighting and antismoke mask should be installed and provided in the buildings – (persons with disabilities groups) • The coverage and use of electronic display panels should be enlarged to include shopping malls, institutions, colleges, libraries, sports centres, natatoriums, indoor markets and supermarkets as well as restaurants, food courts, chain stores and canteens – (persons with disabilities groups) • Suggest to replace the entrance notice boards by electronic display panels in public car parks to show availability in real time – (persons with disabilities groups)

	• Suggest to enlarge the coverage and use of assistive listening systems to shopping malls, sports centres, natatoriums, indoor markets, supermarkets, elderly homes and welfare centres – (persons with disabilities groups) • The applications of barrier-free facilities should be reviewed in response to social development – (persons with disabilities groups) • The reference data of Anthropometrics should be updated in barrier-free access guideline and design manual – (persons with disabilities groups) • Suggest the Study to include advice on design, installation, application and management standard of elevators – (persons with disabilities groups) Management / Control Measures • The role of the proposed Access Consultant / Auditor should be included in the proposed Assessment Mechanism to examine the accessibility standard and they need to be well-trained and possess relevant qualifications – (persons with disabilities groups) • Lack of training for Access Co-ordinators and Officers, especially on the property management/ building service in estates – (persons with disabilities groups) • All professional and international standards should comply with UNCRPD and apply especially Article 33 on inclusion and full accessibility – (persons with disabilities groups) • All design professionals should be equipped to have full understanding of disability and to be updated with latest disability rights movement - (persons with disabilities groups) • Every person with disabilities counts in developing and updating standards because disability is an evolving concept – (persons with disabilities groups) • Independent mechanism and structure are required to monitor the development of accessibility – (persons with disabilities groups) • The content of Design Manual and other materials should be reviewed and updated to improve the compatibility and fit with the current needs of persons with disabilities and situation – (persons with disabilities groups) • The practice of concurrent post of Access Co-ordinators and Access Officers should be reviewed – (persons with disabilities groups) • Participation of persons with disabilities groups including providing advices and inspection should be improved before buildings design and construction stage – (persons with disabilities groups) • Reference to overseas cases, high authoritative, high management level and independent department should be formed to supervise accessibility development – (persons with disabilities groups) • Code should be unified and standardised by different government departments - (persons with disabilities groups) • Persons with disabilities groups should be included in policies formulation – (persons with disabilities groups) • Fire Services Department and Architectural Services Department should review and work on improving the safety of buffer floor / refuge floor – (persons with disabilities groups)

	Education • School education and publicity should be promoted including training for teachers and students – (persons with disabilities groups) Information Technology • The Common Spatial Data Infrastructure (CSDI) is beneficial to planning the accessibility of physical environment in Hong Kong and should support software or applications which facilitate persons with disabilities' convenient travel – (persons with disabilities groups) Others • Study should also consider the situation under COVID-19 – (persons with disabilities groups)
November 2021 (Written comments)	Accessible Facilities • The accessibility of transportation in Hong Kong should be improved – (persons with disabilities groups) • Information on the elevators and other barrier-free facilities should be more precise and provide detailed instruction – (persons with disabilities groups) • Covered area should be built at transport stations, outdoor playgrounds and other recreation areas for wheelchair users – (persons with disabilities groups) • The government should strive for improving and redeveloping the footpaths in the old districts and industrial zones such as Kwun Tong, Wan Chai, Sheung Wan and etc – (persons with disabilities groups) • Video-communication should be installed at elevators to allow persons with hearing impairment to communicate with external parties during emergency - (persons with disabilities groups) • Evacuation system should be enhanced in providing lighting or vibrating devices to help persons with hearing impairment during emergency – (persons with disabilities groups) • Electronic display panels should be installed in all transport with broadcasting systems – (persons with disabilities groups) • Touch-screen design for buttons in elevators should be avoided – (persons with disabilities groups) • Automatic door / switch for toilets or other public facilities should implement with audio system and unify the design standard – (persons with disabilities groups) Management / Control Measures • The laws and regulations for old buildings should be revised to improve and manage the accessible facilities; especially for the buildings constructed before 1997 – (persons with disabilities groups) • The government has the responsibility to solve the accessibility problems in old estate buildings such as the single elevator access for one flat – (persons with disabilities groups) • There are limitations of DM:BFA2008 which cannot regulate the following types of venues to ensure accessibility: (a) Revitalized

	factories for new purposes, such as those serving as art galleries, handcraft workshops, and exhibitions. (b) Complex buildings with integrated land uses. (c) Buildings with several main entrances at different levels, such as Tsz Wan Shan Shopping Centre, Yue Man Square; and (d) Old buildings built before 1984, years before the first standard was published. An example is the Melbourne Plaza, which houses a large concentration of medical doctors and related laboratories, and not a single accessible toilet is available in the building for patients with disabilities. This concern was raised by the Chairperson of the Equal Opportunities Commission on 27 October 2021 – (professional groups) • Accessibility certification should be included in licensing regime and requirements for the property management – (persons with disabilities groups) • There are several limitations of Access Coordinator and Access Officer Scheme after its implementation in 2011: (a) The appointed staff hold a concurrent post of access coordinator or access officer, together with their original position. No new staff is recruited. (b) No extra training on accessibility and disability-related knowledge have been provided to these coordinators and officers; and (c) Many coordinators and officers do not know that they are appointed, and have little understanding of their roles and responsibilities; recommend the government to (a) Provide additional training to new staff. (b) Provide clear guidelines to staff. (c) Recruit people with disabilities for the posts of access coordinators and access officers. (d) Conduct regular reviews of the performance of the Scheme; and (e) Improve the promotion of the Scheme to the public – (professional groups) Education • Suggested to invite qualified and experienced professionals, persons with disabilities groups and barrier-free facilities users as trainers to educate the property management practitioners, government employees and related parties for improving the performance of Access Co-ordinators and Officers – (persons with disabilities groups) • Education on accessibility should be promoted to the public, and also the architects, engineers and designers – (persons with disabilities groups) • In the syllabus of primary and secondary education, it is difficult to include accessibility and universal design in the teaching materials apart from a brief mention. Thus, there is a big difference between the wish of the consultancy study and real life – (professional groups) • Teachers at primary and secondary schools have little experience in teaching accessibility, universal design, and the inclusive culture. They need experience-sharing sessions with rehabilitation organizations, workshops, inclusive activities, and talks. These arrangements need to be mandatory rather than dependent on the decisions of individual schools or teachers – (professional groups) • Architects responsible for building projects also need to attend training, so as to produce inclusive and accessible designs for people with disabilities – (professional groups) Information Technology

	• Long-term strategic directions beyond the current practice are largely missing from the consultancy report. Only a few mentions are found in Section 1.3.5 (Application of Technologies), Section 2.6.2 (Development of technological solutions), and Section 2.6.3 (Cross-sector collaboration for innovative accessible solutions). Even then, the consultancy report stresses that "Means and channels are currently available" (page 89). In other words, it has not looked into long-term innovative directions, possibly for the next 20 years – (professional groups) Incentive Scheme • Incentive scheme is good to enhance accessibility development, but penalty scheme should also be established – (professional groups) • The consultancy study cited "Common Area Repair Works Subsidy", "Operation Building Bright 2.0", "Fire Safety Improvement Works, Subsidy Scheme", and "Lift Modernization Subsidy Scheme" as examples to illustrate that the Government has provided incentive schemes for accessibility enhancement. In fact, these schemes are for repair and maintenance, such as restoring broken handrails and improving the lighting system. They do not support even the addition of simple accessibility facilities like ramps or lifts – (professional groups) Others • The consultancy report has not touched on local resistance to barrier-free access. For example, publicity and education for business enterprises have not been covered. The word "cost" cannot be found in the consultancy report. Potential subsidies to small and medium-sized enterprises have not been discussed – (professional groups) • The consultancy study highly focuses on our DM:BFA2008, but ignores important design manuals from other departments, such as the Architectural Services Department and the Transport Department. It is unfair to various Government departments that work hard to achieve excellent standards – (professional groups) • In general, Hong Kong is not doing well in user participation by people with disabilities. Designers and architects tend to give a short period of consultation to rehabilitation agencies just before finalization. Documents are treated as strictly confidential. Comments are usually not taken into consideration. The consultancy study would make recommendations to the Government to rectify this situation – (professional groups) • Some of the figures and charts are rendered as graphics without alt text. People with visual impairment cannot understand the figures through screen readers – (professional groups)