Appendices

A1 Case Study 1 A Rehabilitation Complex in Aberdeen

A1.0 The Context

This complex is presently the largest rehabilitation complex in Hong Kong (A1.0a). Situated adjacent to the Wong Chuk Hang Estate in Aberdeen, the Complex consists of 5 main blocks with a total floor area of over 40,000 square metres. A full spectrum of training, care, rehabilitation and boarding services are provided for people with disabilities so as to develop their potentials and facilitate those people to further participate in the community. There is a wide range of the boarders aged 15 and above with various disabilities (mental impairment, physical impairment, visual impairment, and multiple disabilities) from low, moderate, to severe levels.

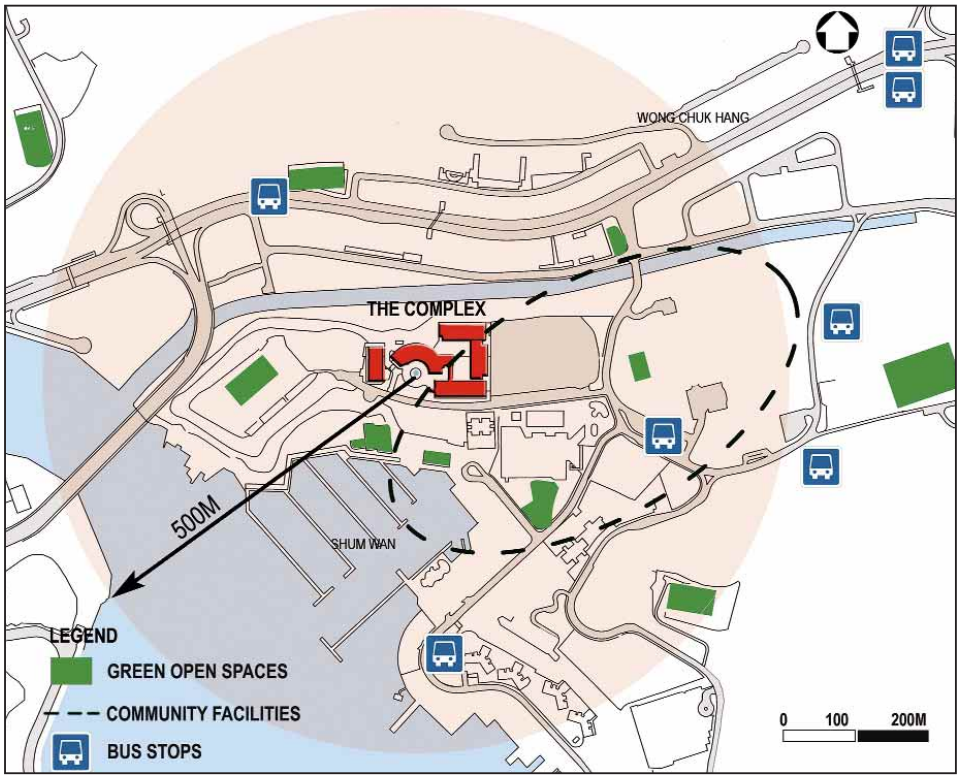
In this case study, we will examine how those people with different abilities/disabilities access and use the communal external areas both within and outside the complex. A more detail analysis will be carried out in *Section A1.2* regarding the possibilities of using different detectable elements with multiple sensory qualities to facilitate independent mobility in the external areas.

A1.0a Rehabilitation Complex in Aberdeen

A1.1 Connectivity Between the Complex and Surrounding Facilities

Within a 500-metre radius of the complex, there are clusters of pocket green spaces as well as different types of public recreational facilities. Each facility is well served by public transportation network. The bus stops at Wong Chuk Hang Estate and an array of mini-bus stops at Shum Wan Road, Welfare Road and Nam Long Shan Road provide access between the complex and the nearby facilities (A1.1a to A1.1g).

Nevertheless, the boarders do not truly benefit from this comprehensive transportation network and infrastructure in the neighbourhood due to various site constraints and their own physical disabilities. Unfavourable site conditions and difficult natural topography hinder access for the disabled users, hence limiting their enjoyment of the neighbouring amenities and recreational facilities (A1.1h).



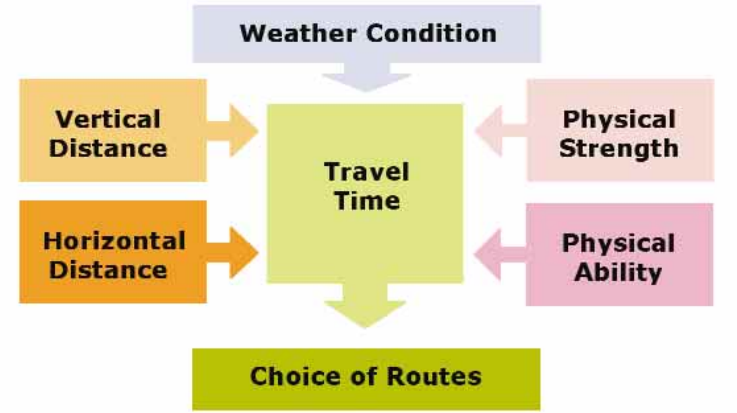
A1.1a Network of public open spaces, community facilities and transportation system

A1.1b Nearby residential neighbourhood with grocery store

A1.1c Nearby Restaurant

A1.1d Pao Yue Kong Swimming Pool

A1.1e Sham Wan Road Public Park

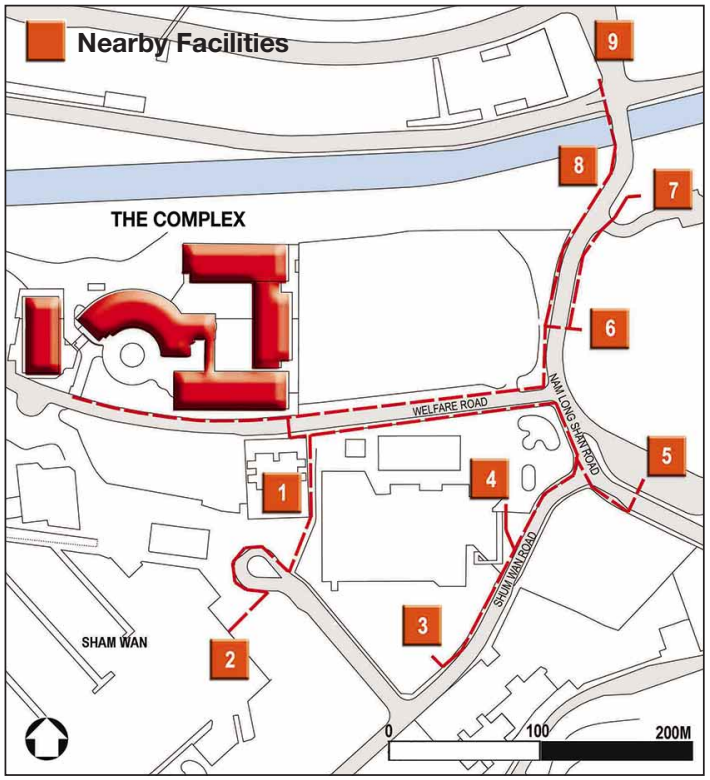


A1.1h Factors affecting travel time of a journey and choice of routes

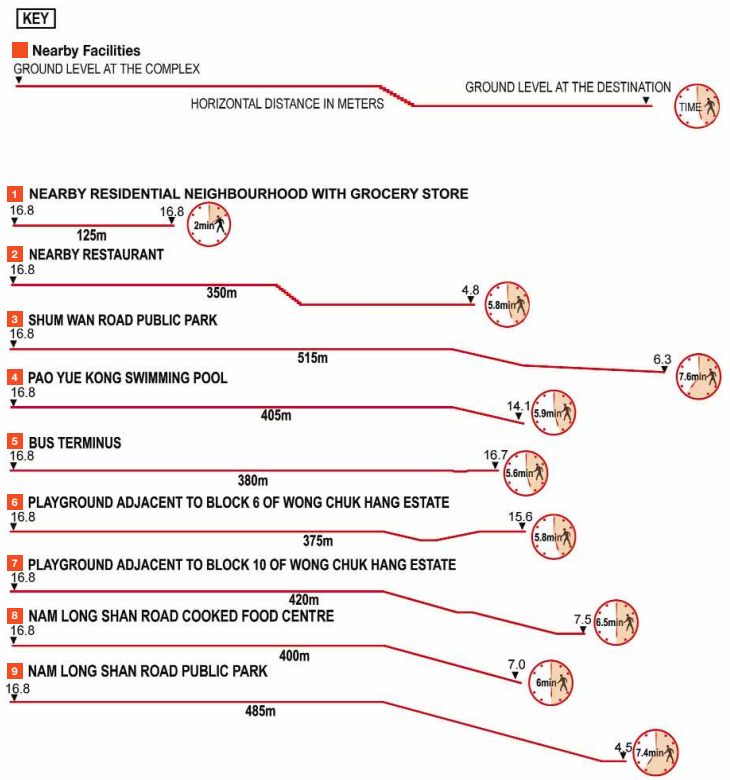
Field study on connectivity was carried out for this research exercise (A1.1i). The profile of routes from the main entrance of the complex to nearby facilities is plotted and presented in Figure A1.1j. Time required to travel between two points is measured at the pace of an average adult. People who are affected by visual, mobility, hearing and/or mental impairments would require extra time and physical strength to overcome numerous challenges in order to reach the final destination. The principles of universal accessibility should be borne in mind when planning the connections between facilities.

A1.1f Nam Long Shan Road Public Park

A1.1g Nam Long Shan Road Cooked Food Market



A1.1i Pedestrian routes from the main entrance of the complex to nearby facilities



A1.1j Walking profile showing travelling time by an average person to nearby facilities

A1.2 Sensory Experience

Given that accessibility outside the complex is constrained, it is imperative that the facilities and open spaces inside the complex are accessible and enjoyable to the boarders. After all, it is the place where they spend most of their time.

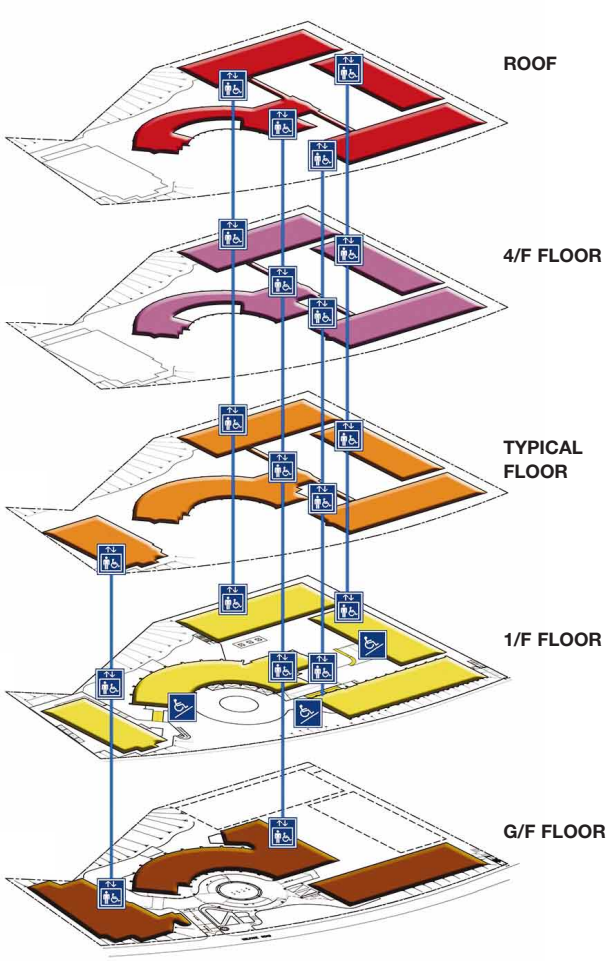
The complex is generally well planned for disabled users. For example, circulation among floors and changes in levels are thoroughly accessible by lifts and ramps; pedestrian circulation and vehicular circulation are separated to avoid potential hazards (A1.2a). This study aims to explore ways in which sensory elements may enrich the sensory experience of users in the complex.

Embracing the existing design merits and character of each open space available within the complex, the possibilities of using different elements with multiple sensory qualities to facilitate independent mobility in external areas are examined (A1.2b). By stimulating different sensory experiences through pleasingly tactile, audible and aromatic elements, the overall sense of physical and mental well-being and hopefulness may be enhanced, particularly for the disabled or aged users.

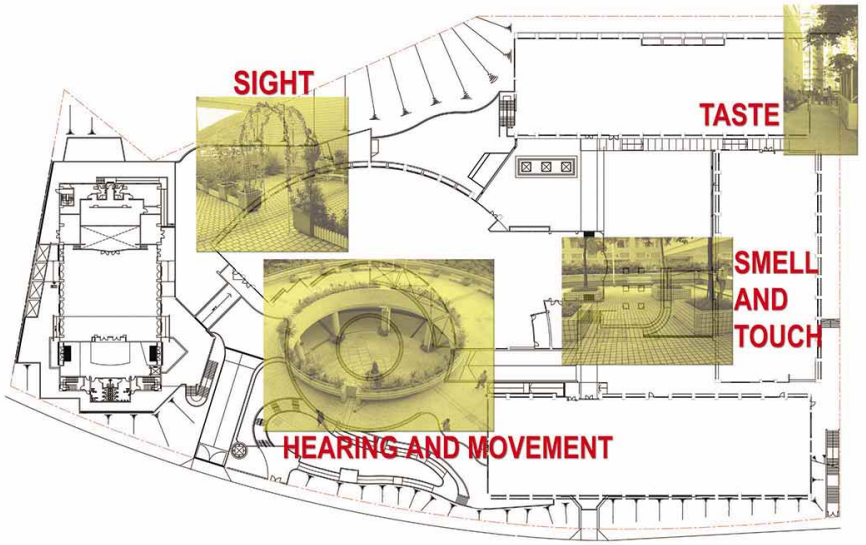
For the study, discussion sessions and personal interviews were held with some of the users individually and in groups to find out their needs, challenges, and wishes. On-site observations of some of their routines were also made. As a result, the potential sensory qualities desired for each communal external area were identified for further experimentation and analysis (A1.2b).

The following senses are examined *Sections in A1.3* to *A1.6*:

- Senses of ***Smell*** and ***Touch***: 'Six Trees Courtyard' on 1/F;
- Sense of ***Taste***: 'Backyard behind Block A' on 1/F;
- Senses of ***Hearing*** and ***Movement***: 'Circular Podium' on 1/F;
- Sense of ***Sight***: 'Open Deck' on 4/F of Block D.



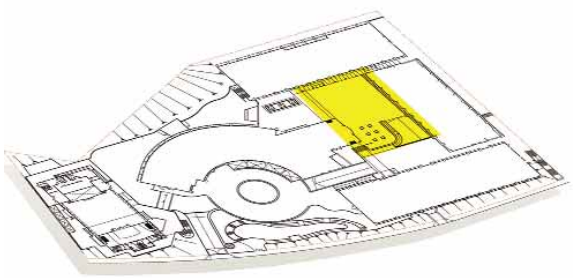
A1.2a Pedestrian and vehicular circulation within the complex



A1.2b Potential sensory qualities for communal external areas

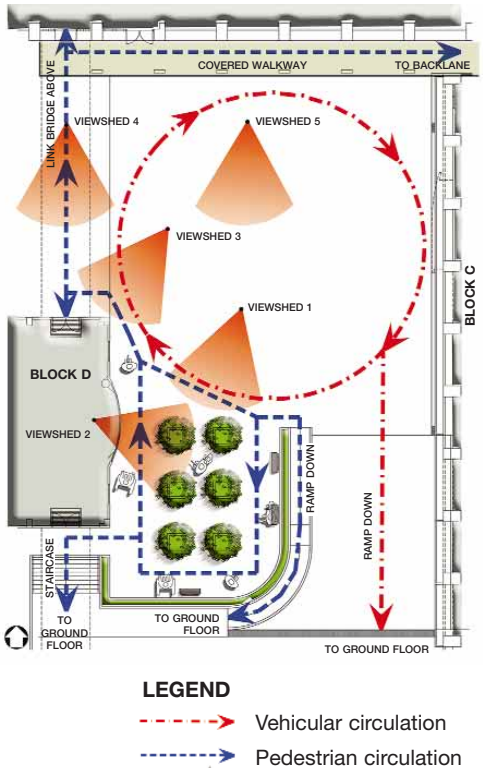
A1.3 Senses of Smell and Touch

A1.3.1 Six Trees Courtyard on 1/F



A1.3.1a Location plan of 'Six Trees Courtyard' on 1/F

The 'Six Trees Courtyard', which measures about 221 square meters, is a rectangular open space immediately adjacent to the reception area of Block D (day activity centre and hostel) and bounded by Block A (day activity centre and hostel) to the north, Block C (day care and attention home) to the west and Block B (sheltered workshop and hostel) to the south (A1.3.1a). It serves both as a frontcourt for the complex and as a place for relaxation and meditation (A1.3.1b to A1.3.1g). It is also a convenient place for all users including boarders, visitors and staff to socialize or to spend time on their own. The enhancement idea is to ignite the senses of ***SMELL*** and ***TOUCH*** through a variety of plants and textured materials.



A1.3.1b Existing condition at 'Six Trees Courtyard' on 1/F

A1.3.1c **Viewshed 1** Existing layout of 'Six Trees Courtyard'

A1.3.1d **Viewshed 2** Looking out from the reception area of Block D

A1.3.1e **Viewshed 3** Entrance of 'Six Trees Courtyard'

A1.3.1f **Viewshed 4** Ramp at the entrance of Block D

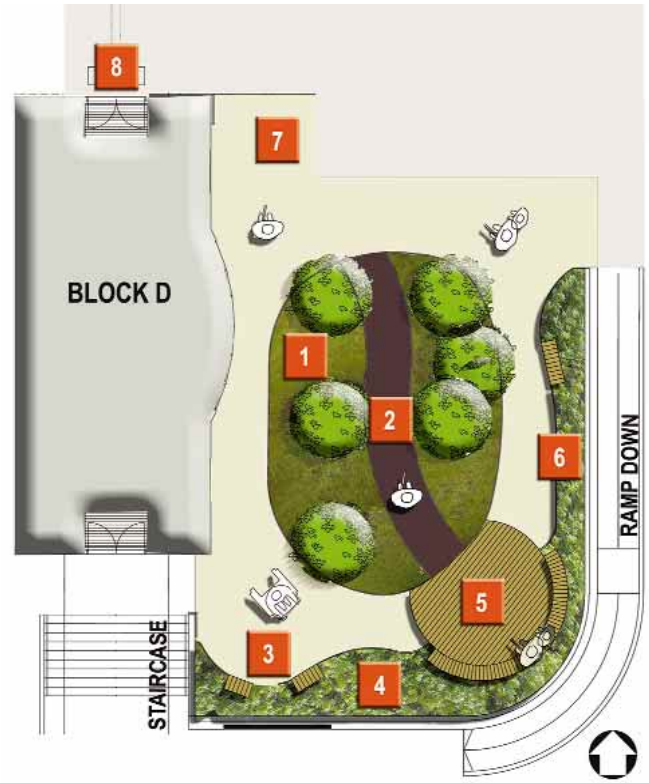
A1.3.1g **Viewshed 5** Boundary of 'Six Trees Courtyard' is defined by potted plants

A1.3.1.1 Opportunities and Strengths in this Area

- Eye-catching location — it is the first green space encountered when approaching the building blocks.
- Visual link from the lift lobby of the dormitory block — it has excellent visual accessibility to outdoor surroundings for boarders who are in weak physical state or during rainy days.
- Fragrant shrubs readily existed in this courtyard.

A1.3.1.2 Ideas for Stimulating Sensory Experience (A1.3.1h)

1 Amenity planting with fragrant and colourful flowers within the sightlines of main entrance points in a distinctive, recognizable and welcoming way may make the space more inviting (A1.3.1i).



A1.3.1h Indicative layout showing potential sensory quality at 'Six Trees Courtyard' on 1/F

A1.3.1i Plant material palette for smell, colour and texture

2 Inclined exercise ramps with clear space may allow wheelchair access and to serve as walking practice (A1.3.1j).

3 Stepped planters alongside wooden benches would facilitate and encourage users to touch or smell the flowers without bending down (A1.3.1k).

4 Tilted or raised flowerbeds can allow flowers and greenery be viewed from wheelchairs (A1.3.1m).

5 Wooden platform and benches for rest can add a warm touch. The rest area may also serve as a central gathering space (A1.3.1n).

6 Audible sculptures can sometimes stimulate users' sensory experience (A1.3.1p).

7 Defining the courtyard area with clear orientation and sensible change in paving materials could discourage crossover with vehicular traffic.

8 Levelled entryway could further encourage independent mobility for active use of outdoor spaces (A1.3.1q).

A1.3.1j Rubberised exercise ramp can cushion falls and is also firm enough for wheelchairs

A1.3.1m Seasonal flowers with bright colours

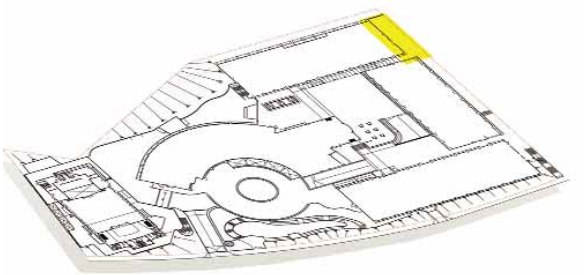
A1.3.1p Audio installation simulates hearing sense by percussion or mechanical chimes

A1.3.1k Wooden benches placed strategically next to planter beds to maximize access to the plants

A1.3.1n Circular wooden benches and platform serves as a gathering point for users and visitors

A1.3.1q Levelled entryway with tactile path

A1.4 Sense of Taste



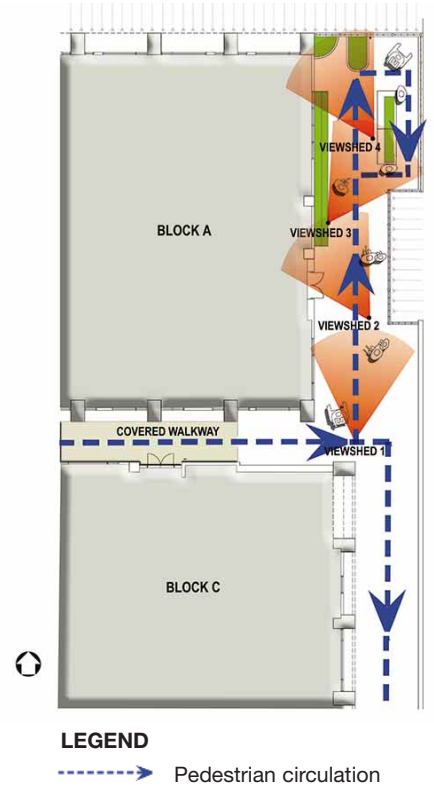
A1.4.1a Location plan of 'Backyard behind Block A' on 1/F

A1.4.1 Backyard Behind Block A on 1/F

This 22-meter long outdoor space has been designed as a venue for teaching, socializing, healing and horticultural workshops (A1.4.1a). It is located next to Block A (day activity centre and hostel) and serves as a private backyard of this rehabilitation complex (A1.4.1b to A1.4.1f). The enhancement idea is to strengthen the sense of ***TASTE*** and encourage direct interaction with plants through growing various kinds of edible fruits, herbs, vegetables and spices. New types of accessible facilities can also be provided to promote positive usage.

A1.4.1.1 Opportunities and Strengths in this Area

- It is a comfortable and relaxing outdoor space with excellent shade.
- Currently used as a vegetable garden or herbal garden; such facilities can be further improved.
- Ideal potential of integrating this area as part of a strolling experience within a safe and protected environment for boarders with dementia.



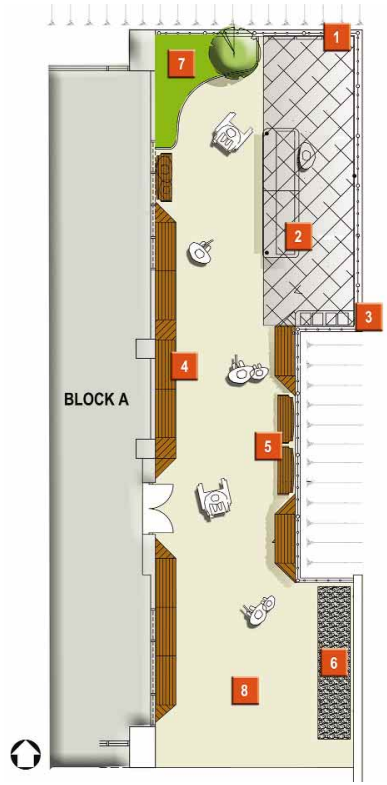
A1.4.1b Existing condition of the 'Backyard behind Block A' on 1/F

A1.4.1c **Viewshed 1** Provide visual clue to invite people to enter this quiet backyard of Block A

A1.4.1d **Viewshed 2** Potted herbs and spices on existing brickwork terrace

A1.4.1e **Viewshed 3** Users gather around this potting table for horticultural workshops, wider space is desirable for wheelchair access

A1.4.1f **Viewshed 4** Existing fish pond and planter could be revitalized for future use



A1.4.1g Indicative layout showing potential sensory quality at 'Backyard behind Block A' on 1/F

A1.4.1.2 Ideas for Stimulating Sensory Experience (A1.4.1g)

1. Optimized seating opportunity with provision of removable chairs or foldable seats would be beneficial to the users. Side space can also be considered for wheelchair companions to promote social interaction (A1.4.1h).
2. Potting tables with different depths and heights with knee and/or toe space will facilitate wheelchair users and the elderly (A1.4.1i).
3. A multi-level washbasin would cater the different needs of a wide spectrum of users(A1.4.1j).
4. Planter boxes at different heights could allow the boarders to enjoy the plantings when standing or sitting in different positions (A1.4.1k).
5. Hanging flower baskets on trellises may encourage visitors to approach the plantings without bending down (A1.4.1m).
6. The use of pebble walk with handrails for foot reflexology may be considered (A1.4.1n).
7. Amenity plantings can further enhance a space with their merits of taste and fragrance. Vegetation can sometimes be utilized to stimulate memory, conversation, and activity (A1.4.1p).
8. Seating pockets at a tranquil corner would be welcome as a retreat.

1

A1.4.1h Foldable chairs suitable for tight corridors, with sufficient space for pedestrian and wheelchair passage

2

A1.4.1i Potting table designed with leg room and drop height for different users

3

A1.4.1j Washing basin with drop height to suit a wide range of users

4

A1.4.1k Planter boxes with varied height combinations

5

A1.4.1m Trellises for hanging baskets

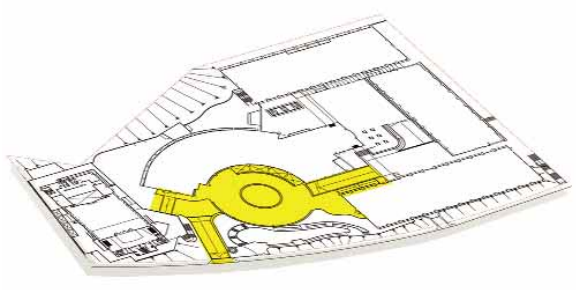
6

A1.4.1n Pebble path with handrails

7 **PLANTS FOR TASTE**

A1.4.1p Planting palette for taste and smell

A1.5 Senses of Hearing and Movement



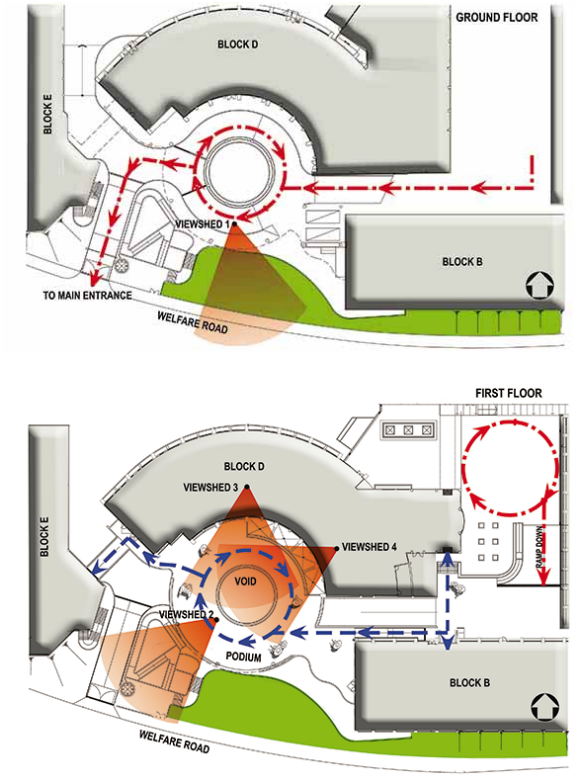
A1.5.1a Location plan of 'Circular Podium' on 1/F

A1.5.1 Circular Podium on 1/F

The space is a large circular podium connecting Block D (day activity centre and hostel) and Block E (assembly hall) (A1.5.1a and A1.5.1b). It offers an unobstructed view to Sham Wan and a landscaped area on ground floor (A1.5.1c to A1.5.1f). The enhancement idea is to strengthen the sense of ***MOVEMENT*** and to rationalise the sense of spatial scale by dividing up different zones through manipulation of sun and shade, soft and hard materials, passive and active use of space. The sense of ***HEARING*** and aided orientation can be enhanced by use of water features.

A1.5.1.1 Opportunities and Strengths in this Area

- Excellent vista to Shum Wan.
- Accessible from all directions.
- It is the largest outdoor space inside the complex.



A1.5.1b Existing condition of 'Circular Podium' on G/F and 1/F

A1.5.1c **Viewshed 1** Landscaped area on ground floor

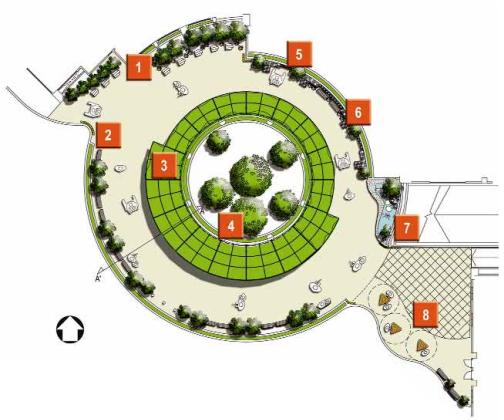
A1.5.1d **Viewshed 2** View to Shum Wan

A1.5.1e **Viewshed 3** Circular configuration disorientating of open podium

A1.5.1f **Viewshed 4** Podium area immediately adjacent to Block D

A1.5.1.2 Ideas for Stimulating Sensory Experience (A1.5.1g)

1. Benches with sturdy handles can help wheelchair users transfer from their wheelchairs (A1.5.1h). Additional seating adjacent to the bench may be provided for parents or staff to look after the users.
2. Difference in paving material may interact as a tactile clue (A1.5.1i).
3. Pergola with climbers as sunscreen may be considered to alleviate the harsh effect of the sun, while leaving pockets of sunny areas for people with varying tolerance to light exposure (A1.5.1j).
4. Use of stories on relief tiles for sensory stimulation and for detectable clues can be explored to help visually impaired users to orientate themselves (A1.5.1k).
5. Trellises with climbers can create a buffer with a pleasant sense of enclosure (A1.5.1m).
6. Hanging flower baskets on trellises can encourage visitors to approach the flowers without bending down (A1.5.1n).
7. A small water feature with raised water surface may allow wheelchair users to touch or splash the water, while the sound produced by the water may serve as a way finding clue.
8. Outdoor exercise equipments with different modes will perhaps enhance the users' enjoyment in this spacious area.



A1.5.1g Indicative layout and cross-section showing potential sensory quality at 'Circular Podium' on 1/F

A1.5.1h Wooden benches with handrails

A1.5.1i Tactile cues to improve sense of orientation for the visually impaired

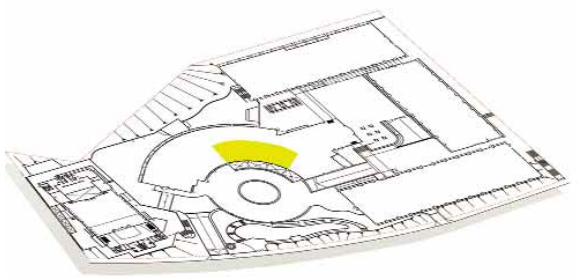
A1.5.1j Pergola with climbers provides additional shading

A1.5.1k Images on relief tiles

A1.5.1m Climbers on trellises to screen unwanted views

A1.5.1n Hanging flower baskets on trellises at accessible height to facilitate appreciation

A1.6 Sense of Sight



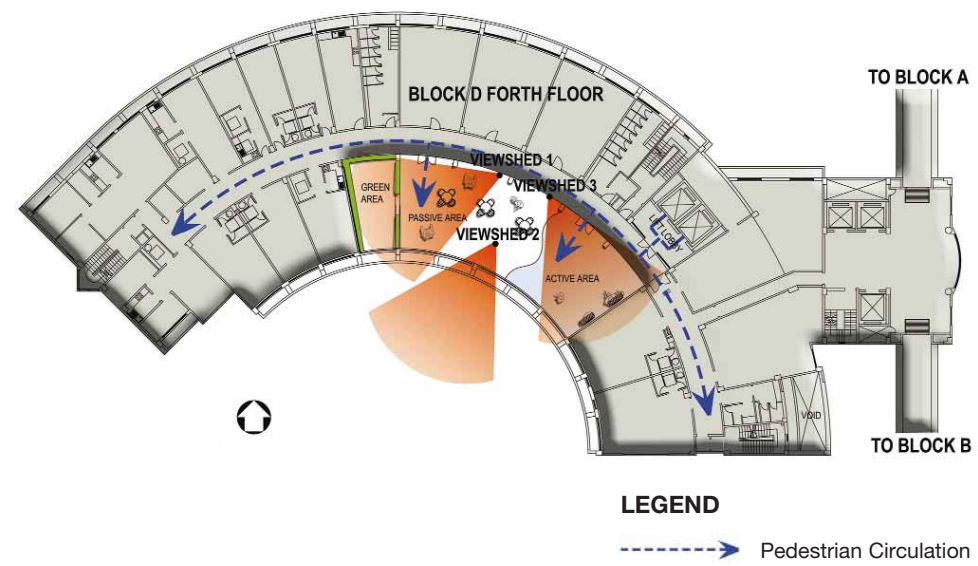
A1.6.1a Location plan of 'Open Deck' on 4/F of Block D

A1.6.1 Open Deck on 4/F of Block D

The open deck on 4/F of Block D (day activity centre and hostel) offers unobstructed views to the Sham Wan, which also inspires the improvement idea for the sense of sight in this pleasant outdoor space (A1.6.1a to A1.6.1e). The space is divided into 3 zones: active area, passive area and green area catering to different needs of users. The enhancement idea for this outdoor space is to strengthen the quality of ***SIGHT*** by making use of the outdoor landscape and reinforcing the indoor visual elements.

A1.6.1.1 Opportunities and Strengths in this Area

- Currently a comfortable and relaxing outdoor space with excellent shade (A1.6.1c).
- Sufficient seating and benches provided (A1.6.1e).



A1.6.1b Existing condition of 'Open Deck' on 4/F of Block D

A1.6.1c **Viewshed 1** An informal resting and gathering space for the boarders, visitors and staff

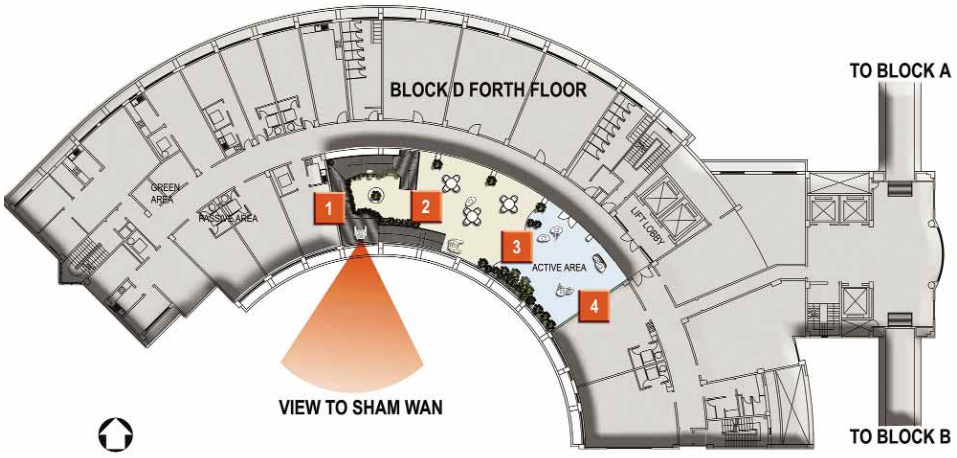
A1.6.1d **Viewshed 2** A pleasant open view towards Sham Wan

A1.6.1e **Viewshed 3** An outdoor exercise area for all

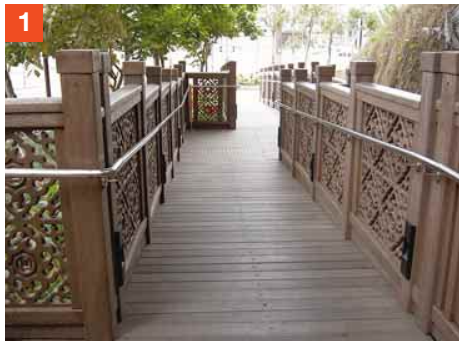
A1.6.1.2 Ideas for Stimulating Sensory Experience

(A1.6.1f)

1. A raised timber deck, as a viewing platform, may be considered to cater for the wheelchair users to enjoy the pleasant open view towards Sham Wan (A1.6.1g).
2. Trellises with climbers for additional greening opportunities may be considered (A1.6.1h).
3. An exercise station with different kinds of equipments will possibly encourage participation by a wide range of users (A1.6.1i).
4. Murals may itself be an interesting focal point for the area (A1.6.1j). The boarders of the complex may be invited to create the murals.



A1.6.1f Indicative layout showing potential sensory quality at 'Open Deck' on 4/F of Block D



A1.6.1g Timber deck as a viewing platform for wheelchair-bound boarders

A1.6.1i Exercise station

A1.6.1h Trellises with hanging baskets for vertical greening or displaying artwork created by the boarders

A1.6.1j Mural to add colour to the space and to promote a sense of belonging

A1.7 Lesson Learnt

In *Sections A1.2* to *A1.6*, the communal external areas within the complex are identified and examined with regard to the potential sensory qualities. There are many ways and alternatives in which a built external environment can be improved. Through interviews with individuals, on-site observations and idea exchange sessions with the users, our findings show that individuals with mobility impairment and/or impairment of one or more senses can greatly benefit from sensory stimulations in external spaces because they seem to have enhanced perception in other senses.

Sensory elements and detectable clues can help raise users' sensory awareness and add to their appreciation of the surroundings (A1.7a). However, the level of sensory enjoyment may vary between users depending on their physical and psychological state. Therefore, designers may wish to have a good understanding of the intended users' needs and desires. Careful considerations made in providing sensory elements can benefit a wide range of users.

A1.7a Multi-sensory elements in external areas can help raise users' sensory awareness