The Chinese University of Hong Kong
Campus Master Plan

REPORT

JANUARY 2010

Aedas

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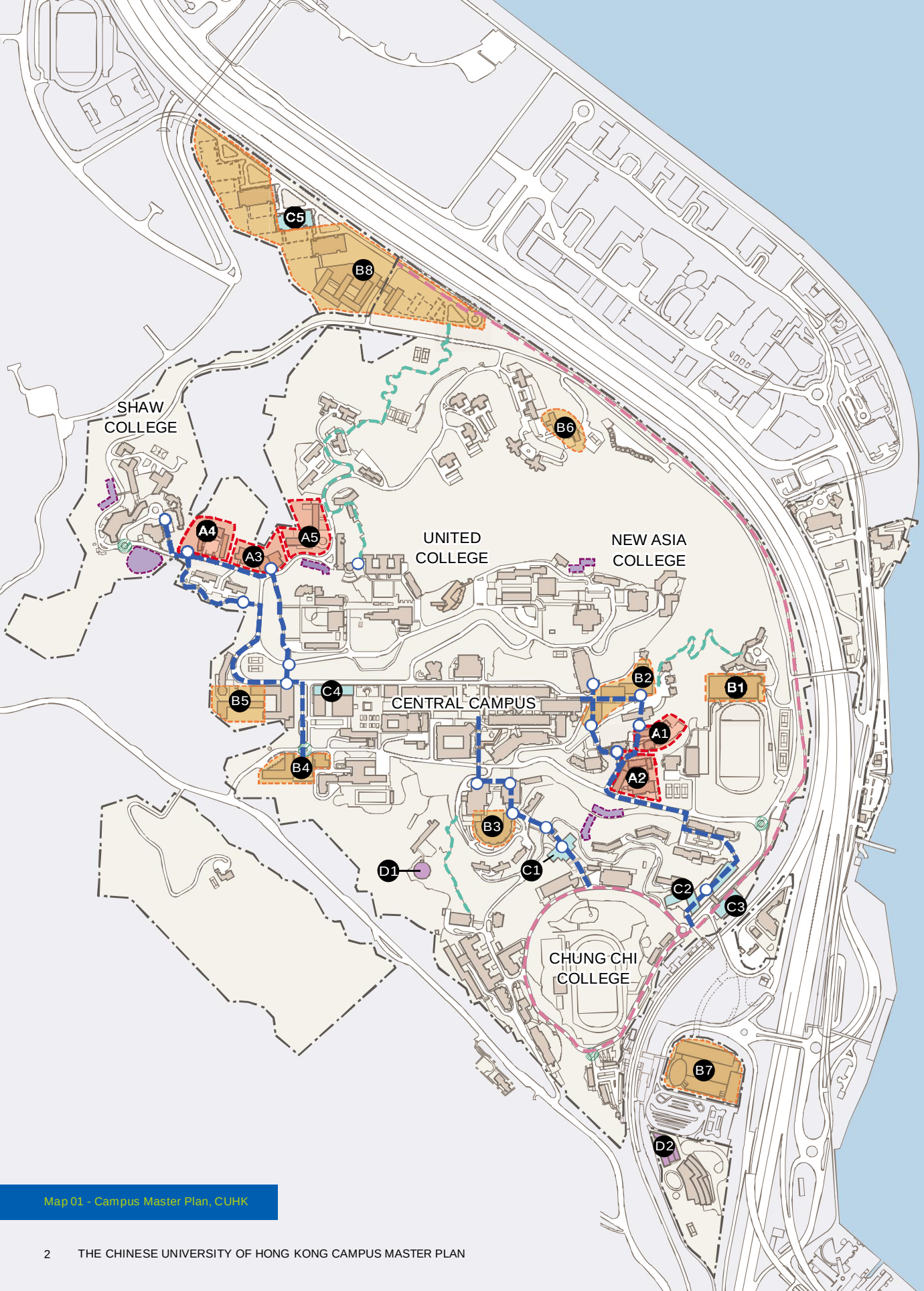

Map 01 - Campus Master Plan, CUHK

THE CHINESE UNIVERSITY OF HONG KONG

Campus Master Plan

N

New Colleges to be Completed in 2012

A1 - Morningside College
A2 - S. H. Ho College
A3 - C. W. Chu College
A4 - Wu Yee Sun College
A5 - Lee Woo Sing College

Potential New Development Sites proposed in the Master Plan

B1 - Site A
B2 - Site B
B3 - Site C
B4 - Site D
B5 - Site E
B6 - Site F
B7 - Site G
B8 - Site H

Potential New Facilities for Colleges proposed in the Master Plan

Projects to be Completed in 2012

C1 - Student Amenity Centre
C2 - Two Integrated Teaching Buildings
C3 - Third Integrated Teaching Building
C4 - University Library Extension
C5 - Centralized General Research Lab Complex (Block 1)

Projects under Construction

D1 - New Chapel at Theology Building
D2 - Teaching Building at Chak Cheung Street

Major Pedestrian Routes

Cycle Route

Express Lifts

Nature Trails

New Road Junctions

Site Boundary

Fig 01 - Campus model with the Master Plan proposals

THE MASTER PLANNING TEAM

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EXECUTIVE SUMMARY

1. The Master Planning Process

The Master Plan Report describes the consultative process and the resulting proposals to deliver an overall planning framework for the University campus. It has been formulated to provide planning guidance for the future development of the campus through to 2021 and beyond. The master planning process was carried out in response to the University's desire to accommodate its strategic objectives within the context of the increased undergraduate population and the changing requirements of the academic disciplines.

The Master Plan has been conducted as a process of extensive engagement, consultation and briefing with groups representing the entire University community; it has addressed the historic development of the campus and taken account of the opportunities and challenges to present recommendations to guide the future development of the campus.

The Master Plan Approach

A multi-disciplinary team of planning, engineering, transport and landscape consultants worked closely with the University's Steering Committee on Campus Master Planning and the Campus Development Office. In addition, the views and priorities of the University community were gathered through a wide range of events and activities.

This planning process was conducted over a period of 18 months in four separate stages beginning with information gathering leading to the conceptual formulation and specific proposals and culminating in the finalization of the Master Plan proposals.

2. CUHK Campus: Challenges and Opportunities

Specific objectives of the Master Plan are:

- To reinforce the unique character of the campus
- To assess and define opportunities for providing potential sites for academic, social and recreational activity
- To assess and define opportunities within the college areas to enhance the experience of students
- To define places of high ecological, landscape and cultural heritage value for conservation, protection and enhancement
- To assess circulation and travel modes and define opportunities to improve connections and movement for pedestrians
- To assess and define opportunities within the outdoor environment to enhance experience of the landscape
- To formulate an urban design, conservation and landscape framework based on sustainable principles
- To formulate an implementation strategy for the planning framework and identify necessary follow-up actions

The response to the objectives of the Master Plan and the views solicited in the stakeholder engagements was the identification of the principal challenges posed by the campus site and the proposals with which they would be addressed.

The Challenges of the CUHK Campus

- Dispersal of campus facilities and buildings

  Since the University's foundation, its development has been determined by the transformation of the natural hillside topography into three distinct levels:

The campus's organization into the three precincts impedes both social and academic interaction which is further exacerbated by the increased reliance on vehicle use to connect and traverse the levels. While this dispersal helps to distinguish the University's collegiate system, the isolated nature of some college buildings can also serve as a disadvantage.

- Hilly topography

  The original plan of the University was derived with reference to the best-planned universities in the United States and the United Kingdom which were built during the great tertiary education boom of the 1950's and 1960's. The campus plan of the University should be prepared to suit the hilly site, in which access to the Central Campus and to the colleges is mainly by car or bus on graded roads, winding lengthily up and down the slopes. This road system caters only for low density development, being constrained by the topography, utilities and adjacent developments. The topography of the campus exacerbates the issue of diminishing availability of development sites. Available land is either too steep or within mature woodland, or is used to provide valuable amenity space.

- Lack of communal space

  Up to now, some of the existing buildings on the hillside campus may require more open amenity places between and beside them that are suitable for informal social interaction or gathering.

Opportunities within the CUHK Campus

- The site's outstanding natural beauty and ecological diversity demands a sensitive approach, and since land suitable for building is limited, it needs to be used as effectively as possible.

- A network of stepped pedestrian paths should improve connections across the campus – between individual colleges, the Mall and new colleges. Introducing cascading developments or express lifts will further reduce the inconvenience of vertical distances.

- Improved connections between the various elements of the University would add to its academic and social potential. Consolidation of college precincts into clusters of developments will encourage: increased academic interaction; sharing of facilities; a stronger identity for particular places and a greater sense of community; and shorter walking distances.

- New academic facilities on the main campus should continue to relate primarily to the Mall, conforming to the original model for development.

- Communal life is integral to the University and the collegiate structure has fostered a sense of community. Provision of more communal spaces allowing for academic discussion and informal social gatherings is therefore important in maintaining and developing the campus.

- The spatial organization of the campus should be reinforced with a strategic network of connected open spaces, such as plazas and courtyards. In addition, the design of new buildings should include open terraces or enclosed courtyards.

3. The Master Plan Vision

The Vision

The Campus Master Plan composes a vision for the CUHK campus of 2021, together with a planning framework and detailed proposals to enable its implementation.

This vision will crystallize over time, as the Master Plan is used to help guide the detailed proposals for the design of each specific project within the campus.

Aspects of the Vision

The vision comprises three components:

- To build most sustainably on existing developments in order to strengthen the academic core and surrounding colleges as distinct places, and connect the whole composition within a lattice of pathways

- To maintain the campus as an environment ideal for study and to enhance quality of life for the entire university community by improving integration of learning, working, living and socialising

- To formulate a planning framework to enable evolution of the campus that balances future growth with preservation of its green and serene setting.

Interpretation of the Vision

The Master Plan is conceived to serve as a continually evolving document and six interdependent planning precepts are vital to delivering the fullest benefits as the campus is developed:

- Places for education and research activities
- Enhancing college life
- A pedestrian-friendly campus
- Conserving places of value
- A landscape of vital importance
- Making a sustainable campus.

4. The Master Plan Proposals

4.1 Places for Education and Research Activities

A central proposal of the Master Plan is the concept of clustered and zoned development, to enable the efficient use of resources and convenience of access, optimize land use and enhance social and academic interactions. Within this concept, a series of potential development sites are identified with proposals outlined to accommodate the projected future needs of the campus.

4.2 Enhancing College Life

Forming distinct college neighbourhoods is an important principle for strengthening the University's unique college system to enhance communication, the sharing of amenity facilities and pedestrian connections between the colleges and the Central Campus. Two new college sites in the northern campus and options for enhancing each of the existing colleges with new student hostels and landscape improvements are proposed.

4.3 A Pedestrian-Friendly Campus

The Master Plan has a key aim to improve connectivity within the campus by prioritising walking to minimize reliance on the motor vehicle, and by optimizing the performance of all campus transport facilities including the pedestrian network, internal road enhancements and management, park-and-ride, cycle tracks and shuttle bus services. The proposed new developments shall, where appropriate, accommodate within their design vertical access devices to further enhance the campus connectivity for pedestrians.

4.4 Conserving Places of Value

Various places and buildings of value within the campus were collected from consultations during engagement events. They have informed the Master Plan's selection of appropriate sites for potential development. In order to identify places with unique values that should be conserved in future, a methodology is proposed to establish a "List of Places with Cultural Significance". Assessment of the significance of a place can be made with reference to its historical value, identity value, memorial value and / or architectural value.

4.5 A Landscape of Vital Importance

A Landscape Strategy Plan is proposed for identifying the treatment of the different types of landscape zones in the campus and creating a

network of open spaces that relate directly with the existing and proposed university buildings. This proposed network, together with potential new nature trails, will enhance the green campus environment and landscape experience.

4.6 Making a Sustainable Campus

The Master Plan aims at establishing the principles for a sustainable campus with a reduced dependency on the earth's natural resources and a reduction in greenhouse gases emissions (per capita), so as to develop a campus with cleaner air, producing less waste, with less reliance on motor vehicles. It sets an environmental target, which is higher than that of Hong Kong government's, by committing to reduce its total energy consumption (per capita) by 25% by 2025. This target reduction should be subject to continual review so as to remain responsive to change within the environmental parameters and the progressive development within the Chinese University campus.

5. Provision for Growth – Potential Development Sites

Potential development sites were identified during stakeholder consultation, within the context of the overall planning framework and the six planning precepts.

5.1 Sites of Immediate Potential

Immediate developments are considered a priority in order to meet the current shortfall in accommodation resulting from an increased student population and enhanced research facilities.

5.1.1 New colleges on Residence Lane 1(site I)
5.1.2 Area 39 – Northside Research Campus (site H)
5.1.3 Arts and Humanities Hub (site E)
5.1.4 Staff Residences (site F)

5.2 Sites of Intermediate Potential

Intermediate developments will contribute towards improved connections within the campus and provision of a pedestrian-friendly environment.

5.2.1 Academic Building 1 – Southside Outlook (site C)
5.2.2 University Station – Station Court (site G)

5.3 Sites of Long-Term Potential

Long-term developments will provide accommodation beyond the University's planned requirements for 2021.

5.3.1 Romney Stores – Eastside Sports Hub (site A)
5.3.2 Open car park outside John Fulton Centre – Westside Belvedere (site D)
5.3.3 Village Path – Eastside Outlook (site B)

The Master Plan describes each development through a comprehensive planning analysis.

6. Recommendations and Implementation Strategies

The Master Plan describes strategies for responding effectively to the University's needs. It is not intended to provide definitive solutions for individual developments but rather design guidelines and planning parameters for architects and engineers.

To ensure sustainable development, it is recommended that the Master Plan be overseen by a steering group, appointed by the university, and updated periodically to reflect new developments and changing conditions.

INTRODUCTION

On the Strategic Objectives of the University

The Chinese University of Hong Kong (CUHK) is blessed with a campus on a natural site as stunning and varied as one can imagine for a seat of learning anywhere in the world. Panoramic views of distant mountains, hills of green overlooking the sea, rushing streams and quiet pathways all combine to form a setting that has inspired the love, loyalty and imagination of students and scholars for nearly five decades.

In looking ahead, an excerpt from Vice Chancellor Lawrence J. Lau's Open Letter in 2006 on the University's Strategic Plan describes its ambitions for the future:

"What will the Chinese University look like in ten years time? We see a world-famous comprehensive research university steeped in its bilingual and bi-cultural heritage, one that gives equal emphasis to teaching and research, and to both general and specialist education. It takes upon itself to promulgate Chinese culture and to achieve the synthesis of Chinese and western intellectual traditions. We see a university that attracts the best students and the top scholars from around the world, one that offers flexible degree structures and programmes of the best quality not only in Hong Kong, but in Asia-Pacific and internationally. Several academic areas will have attained exceptional distinction and world-class impact, bringing enormous benefits to humanity through landmark achievements in scholarship. These will include Chinese studies, biomedical sciences, information sciences, economics and finance, and geo-information and earth sciences."

The University's objective to grow into a world-class institution of excellence, and the re-establishment of the four-year undergraduate curriculum in 2012, require its physical campus to be optimized to meet the needs of an increased undergraduate population whilst aiming to maintain its lush, green and serene environment which is ideal for scholarly pursuit. This challenge will be guided by a master plan for developing the campus which takes into account the existing environment and looks to future needs and opportunities.

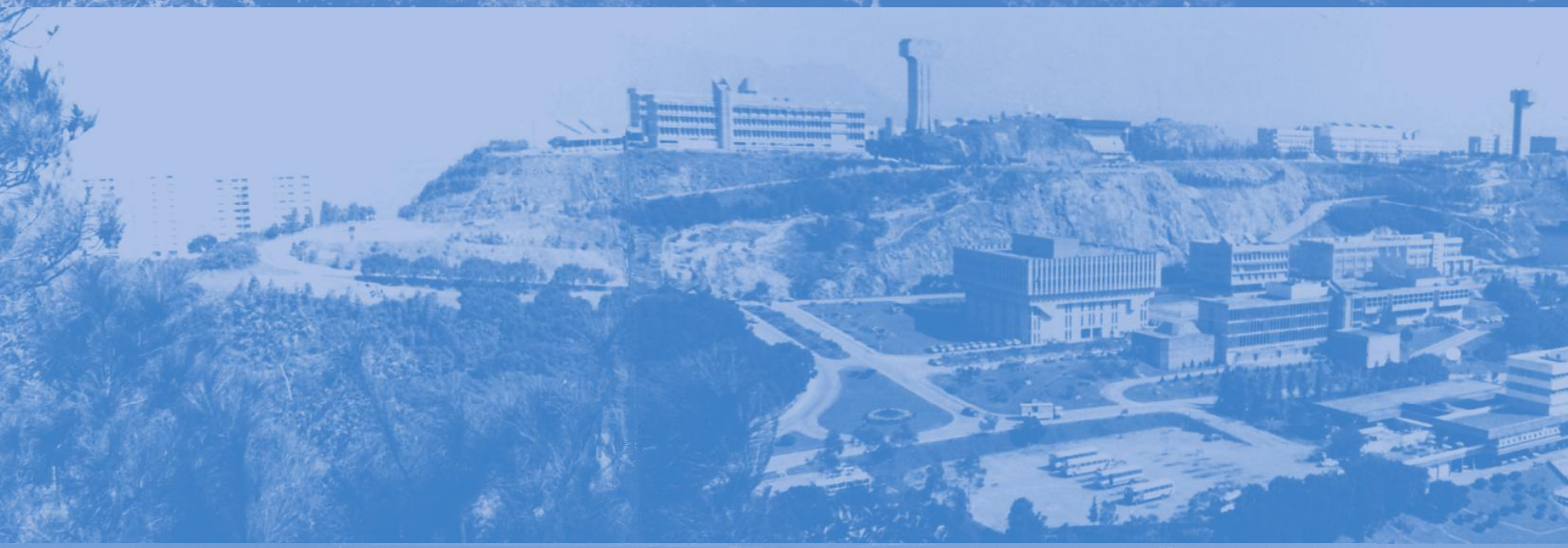
The development of the campus should be approached with regard for the great potential to enhance the quality of experience of the entire University community. The increased student population will see many more faces from different cultures and backgrounds contributing to the vitality and diversity on campus and adding dynamism to the academic, cultural and social life of the University.

With more students, new constituent colleges have been established and, together with the existing colleges, will complement the University's efforts in providing all-round education and pastoral care. New academic and recreational facilities will be needed and they should be integrated gracefully within the treasured campus landscape with new or enhanced places for social gathering or quiet contemplation. More pedestrian movement should be encouraged by making walking easier and enjoyable.

The University's sense of community can be strengthened through closer integration of teaching, learning, working, living and recreation. Advances in the tools and practice of teaching and research will bring new ideas about discovery, exchange and application of knowledge which the University can support by enhancing its campus environment to offer a variety of settings and locations for different ways of teaching and learning.

The Master Plan will provide the planning framework to guide this sustainable development of the University, balancing the needs of growth with the conservation of its unique setting so beloved by the students and scholars.

Fig 02 - Aerial view of CUHK campus from west to east, Circa 2006



2000

1

THE MASTER PLANNING PROCESS

This section reviews the development of the Chinese University campus throughout the decades. It also identifies the challenges and opportunities and describes the process of the development of the Master Plan.

The master planning process involved a series of engagement meetings, consultations and briefings with groups representing the entire University community. It was carried out in response to the University's desire to accommodate its strategic objectives within the context of an increasing undergraduate population and the changing requirements of academic disciplines. Results of the process provided a guide for elaborating the needs of the Master Plan.

THE MASTER PLANNING PROCESS

1.1 DEVELOPMENT OF THE CAMPUS

The Chinese University of Hong Kong was established in 1963 by The Chinese University of Hong Kong Ordinance (Cap. 1109 1965 Ed.) as a University with a federal constitution. The founding constituent colleges of the University are Ching Chi College, New Asia College, and United College.

Since its foundation 45 years ago, the campus has evolved through several phases of developments to accommodate the demands of an increasing university population and advancement of the university programmes.

Fig 03 - Aerial photo of CUHK campus in 1963

The Founding Phase (1963 – 1969)

Following the development plan by W. Szeto & Partners
Student population: About 3,000

Established in 1963, the initial development of the University was based on a federal model which expressed the social and academic structure of the University. It highlighted the satellite arrangement of the colleges for preserving their self-identities and the clustered academic buildings with shared facilities, most of which were planned at the central campus as the focus of the University campus layout. This model has long been the characteristic of the Chinese University Campus.

The campus planning at this early stage was focused around the Weiyuan Lake area and the previously established Chung Chi College, which completed its first phase of development in 1956. In the foundation phase the development of the master plan shifted the focal emphasis to the University Mall with the three original colleges, Chung Chi, New Asia and United, composed as satellites to the University's core administrative complex. Shared facilities were located at Central Campus, which became established as the major venue for campus activities.

As a principal axis in the campus layout, the University Mall was flanked by two rows of buildings, including the Institute of Chinese Studies, Business Administration Building, Education Building, Social Science and the Humanities Building, producing a monumental expression in terms of site planning and architectural design. The University Library and the Science Building mark the western and eastern ends of this axis.

Fig 04 - Aerial photo of CUHK campus in 1976

The Growth Phase (1970 – 1986)

Based on the development plan by W. Szeto & Partners
Student population: About 6,000

Extensive building developments took place on campus during this period, adhering to the basic layout and planning strategy of the founding phase. New teaching blocks were built, such as the Science Centre Extension and Choh-Ming Li Building (the Basic Medical Science Building), Fung King Hey Building and Li Dak Sum Building. The multi-purpose auditorium Sir Run Run Shaw Hall was also constructed, adding vitality to and thus enhancing the University Mall. Additionally, extensions to existing buildings and the conversion of the facilities provided for the increased student capacity evenly among the colleges. Examples included the art gallery extension to the Institute of Chinese Studies and the conversion of the old Chung Chi library into the Department of Music and the dining hall into an indoor sports centre in the Chung Chi Campus. The campus landscape was well preserved in that all of these developments were integrated with the original levelled sites of the campus.

Fig 05 - Aerial photo of CUHK campus in 1983

The Rapid Expansion Phase (1987 – 1996)

Student population: About 11,000

In response to the government's policy to substantially increase tertiary education places, the original composition of the founding Colleges and the University core was augmented with the addition of a fourth college, Shaw College, in the western part of the mid-level precinct of the campus. The ongoing developments continued to follow the strategy of the original master plan, maintaining the quality of the surrounding landscape by expanding the eastern campus to the newly-reclaimed land. The old teaching blocks on the Chung Chi campus were also redeveloped. While an area in the eastern part of the Campus was allocated for research facilities, Chung Chi College's old teaching blocks and administration buildings were redeveloped into three large modern buildings in five stages. Other new developments completed in this phase include Leung Kau Kui Building, John Fulton Centre, Lady Shaw Building and Kwok Sports Building.

Taking into account the rapid expansion, the University began to adopt a more strategic approach to development planning. A planning study, namely the Campus Master Development Plan for Year 2000, was conducted in 1991 and 1995 by the Ad Hoc Working Group on Campus Master Development. The Working Group set up a Design Committee to vet new developments and issued the Preliminary Report on Campus Planning Study and Campus Planning Study Maps. An Open Space Preservation Plan was also published during this period.

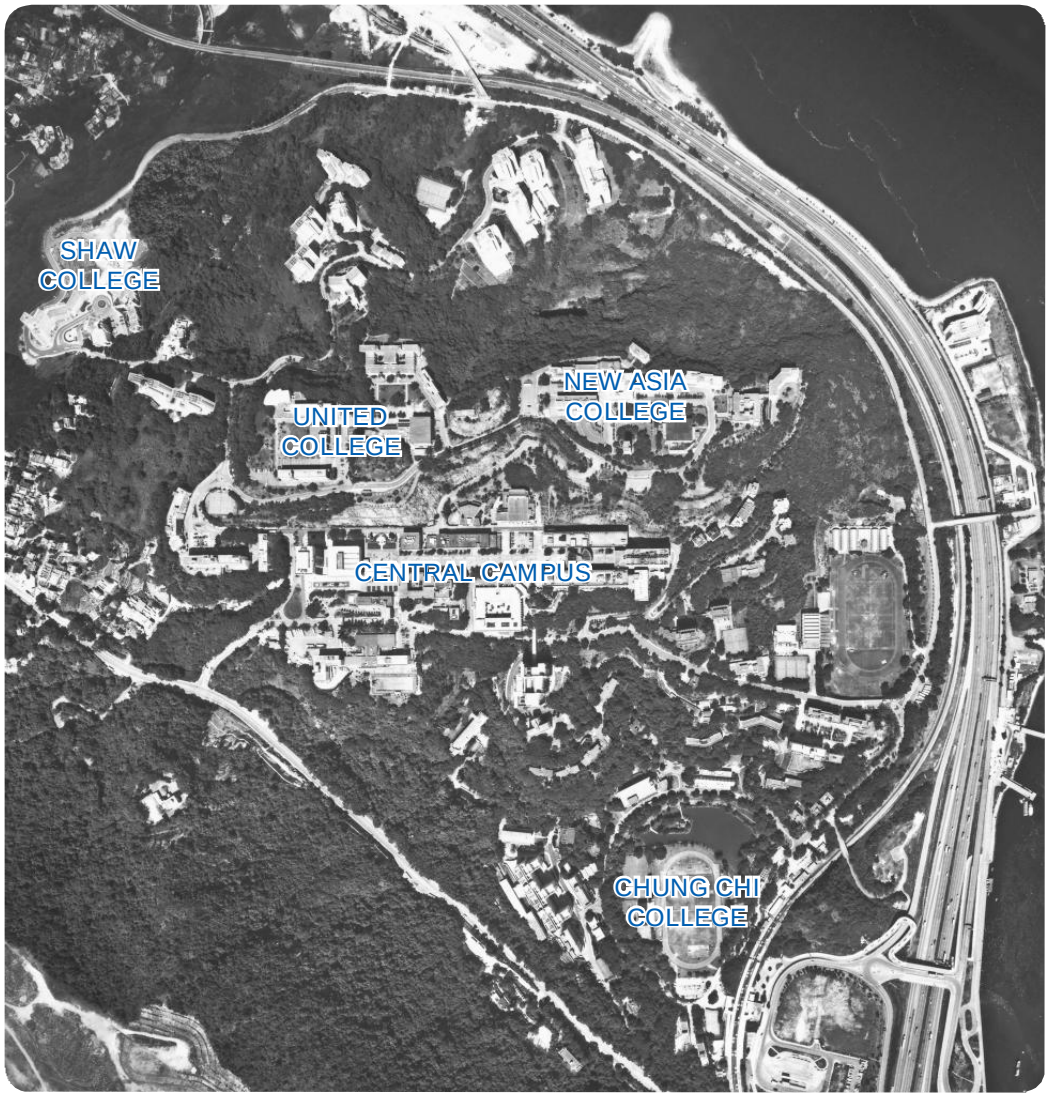


Fig 06 - Aerial photo of CUHK campus in 1994

The Consolidation Phase (1997 – 2007)

Student population (including postgraduates) grew to about 13,500

Compared with the Rapid Expansion Phase, the consolidation did not see many new developments completed. New buildings in this phase included East Wing of the Art Museum and the Centralized Science Laboratories Building in the Central Campus.

During 1998 and 2000, the Campus Planning and Design Study Group led by Prof. Jack Sidener of the Department of Architecture conducted a Campus Planning and Design Study and published two reports, namely, Campus Planning and Design – Studies and Opportunities (1998) and Campus Planning and Design – Master Plan and Design Studies (2000).

A strong consensus emerged in the University that the existing natural landscape and the university campus should complement each other and that all new developments should conform to this doctrine. In view of the need for space across the campus, a series of campus development studies were conducted. These studies helped direct the future campus development, in particular making preparation for the reversion of the four-year normative curriculum in 2012 and the subsequent rise in student population.

Taking up from the Campus Planning and Design Study Group, the Architectural Project Unit (APU), formerly known as Design Research Unit (DRU), the Department of Architecture, completed another study: Campus Master Planning 2003, between 2002 and 2004. This study explored the potential of the three inherent complementary qualities “Rustic, Monastic and Urbane”.

Fig 07 - Aerial photo of CUHK campus in 2008

Current Phase (2008 – 2012)

Projected student population (including postgraduates): About 17,000

Strategic campus planning has continued with the institution of a master plan framework. This Campus Master Plan Study commenced in early 2008, aiming at setting out the vision of a plan that would ensure a balanced and sustainable development of the University campus. The following issues were dealt with:

- The planning needs of the University as a comprehensive research university.
  A consultation paper in 2003 quoted that the student and staff numbers of the University are less than optimal compared with the size of renowned international universities. With the University's vision to grow into a world-class institution of excellence, as expressed in the University's Strategic Plan (2006)[1], an increase in student population and space shortfall can be foreseen. As a result of an increase in research emphasis, there was a demand for research accommodation in parallel with the related residential and amenity needs.

- The growth needed to provide for the space shortfall and meet the requirements of the normative 3-3-4 curriculum.
  Under government policy, the three-year undergraduate curriculum for all local government-funded universities will revert to a four-year program[2] in 2012. A 30% increase of the current undergraduate student population, about 3,000, is expected by 2012.

1 http://www.cuhk.edu.hk/v6/en/cuhk/strategicplan/ourtenyearvision.html

2 Details of the government's education reform policy can be found in Chapter 8 of Reform Proposal for the Education System in Hong Kong (2000) on the website of the Education Bureau: http://www.edb.gov.hk/index.aspx?nodeID=88&langno=1

Fig 08 - Diagrammatic illustration of campus with the Master Plan proposals

To cater for the increasing student population, as well as maintain the provision of quality pastoral care and whole-person education for the students, the following projects have been planned and targeted for completion by 2012 [3] (Map 01):

- Student Amenity Centre at Pond Crescent Road
- Two integrated teaching buildings at the junction of Pond Crescent and Station Road
- A third integrated teaching building on Station Road opposite the two Integrated Teaching Buildings
- University Library extension adjacent to the existing library building
- A Centralized General Research Laboratory complex (Block 1) at Area 39
- Five new colleges with undergraduate hostels and amenity facilities (Section 4.2 refers).

Future Phase (2013 – 2021)

Projected student population (including postgraduates): About 20,000

With the potential increase in the postgraduate figures, the total student population is projected to be around 20,000. This will bring the total student and staff population to approximately 27,000 by 2021.

The following sections will describe the Master Plan approach and the process of formulating the overall planning framework, concluding with the planning guidelines for the development of the Campus through 2021 and beyond which aims to balance the growth and development of the campus with the University's vision to excel as a comprehensive research university.

3 http://www.cuhk.edu.hk/cdo/projects/2012/2012.htm

1.2 THE MASTER PLAN APPROACH

The Master Plan was developed in four stages (Diag 01) through an integrated approach led by a multi-disciplinary team of planning, engineering, transport and landscape consultants, working in close collaboration with the University's Steering Committee (Appendix A) on Campus Master Planning and the Campus Development Office. It also took into account the diverse views and priorities of the University community, which were expressed in a series of stakeholder engagement events, including workshops, meetings and view collection forms.

The Integrated Planning Approach

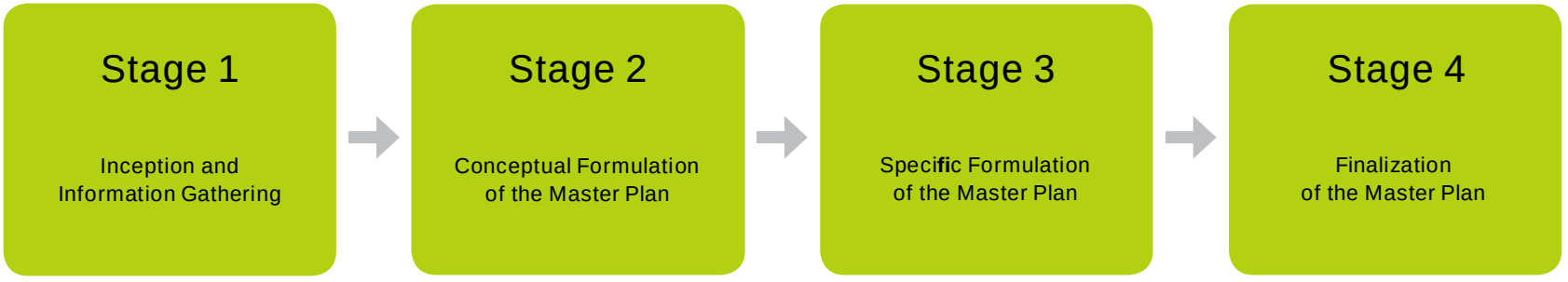
The Steering Committee and the consultant team had strived to reach out to members of the University community throughout the Master Planning process. Various engagement events were organized at different stages of the study and took the form of:

- Briefing session
- Engagement meetings
- Workshops
- Forums
- Alumni sharing sessions, including teleconferencing sessions with overseas alumni
- Seminars
- Guided tours
- Informal gatherings
- Exhibitions

To collect views from those unable to attend the engagement events, on-line view collection surveys were conducted for Stage 1, 2 and 3, while individual views expressed directly to the Steering Committee via emails and letters were also accommodated. In addition to the dedicated website announcing the progress and news of the Campus Master Planning, University members remained informed about the Master Plan via open letters and university, student and alumni publications. Regular dialogue with overseas alumni was also set up during the study.

With the active participation and support from the University members, the views collected contributed significantly to the formulation of the Master Plan, which provides a framework for the campus development for the years leading up to 2021 and beyond.

The Four-stage Master Plan Development



Diag 01 - Four-stage collaborative process of the Master Plan development

Fig 09 - Stage 1 briefing session

Fig 10 - Stage 2 engagement meeting

Fig 12 - Stage 3 seminar

Fig 11 - Stage 2 engagement workshop

Fig 13 - Stage 3 guided tour

Fig 14 - Stage 3 specific proposals display boards and model exhibition

Stage 1: Inception and Information Gathering
(February 2008 – May 2008)

The key task in Stage 1 included reviewing the views collected from students, alumni and staff since September 2007 and initiating information gathering events such as briefing sessions, engagement meetings, workshops, online surveys, a forum and an alumni sharing session. The views and information contributed to the establishment of primary principles as the grounds for the development of the Master Plan.

The six planning principles were introduced as guidance for discussions in the engagement events. Views from the stakeholders were collected, reviewed and evolved as the planning precepts for the final Master Plan. (Section 4 refers)

After the exercise, the Stage 1 Stakeholder Engagement Report[4] was issued to record the details of the engagement events and summarize the views collected. The Report also presented initial proposals. At the same time, the consultant team began technical and planning evaluation to prepare for the conceptual Master Plan.

4 The Stage 1 Stakeholder Engagement Report can be downloaded from http://www.cuhk.edu.hk/cmp/en/stage1_report.pdf

Stage 2: Conceptual Formulation of the Master Plan
(June 2008 – October 2008)

The objectives of Stage 2 included the formulation of a Concept Master Plan as well as developing preliminary planning concepts and options in response to the views and information collected and assessed in Stage 1.

To collect views from the University community, a series of Stakeholder Engagement events were arranged in September and October 2008, including roving exhibitions of conceptual proposals, engagement meetings, workshops, an alumni sharing session, a concluding forum, and continuing online consultation with all stakeholders. Pamphlets were also prepared for the participants in these events. Stakeholders could download the publication from the Campus Master Plan website.

The agenda for the engagement events and the view collection form were designed according to the six proposed planning precepts. Preliminary planning concepts were presented to stakeholders for discussion and feedback encouraged. A Stage 2 Stakeholder Engagement Report[5] was issued to record the events undertaken and the views collected.

It was found that the planning visions and the conceptual ideas were generally accepted and supported by the University community. At the same time, diverse views were taken into account together with findings and proposals from respective professional consultants in the formulation of the Specific Proposal in Stage 3.

5 The Stage 2 Stakeholder Engagement Report can be downloaded from http://www.cuhk.edu.hk/cmp/en/pdf/stage2_report.pdf

Stage 3: Specific Formulation of the Master Plan (November 2008 – February 2009)

Stage 3 included a number of seminars, exhibitions and on-line surveys, forming an integral part of the research and planning process in Stage 3. To better illustrate how the planning visions were translated into the campus development recommendations, two guided tours[6] were organized.

The planning concepts provided the basis for the formulation of a campus planning framework comprising of six planning precepts:

- Places for education and research activities
- Enhancing college life
- A pedestrian-friendly campus
- Conserving places of value
- A landscape of vital importance
- Making a sustainable campus

A Stage 3 Stakeholder Engagement Report[7] was issued to record the events undertaken and the views collected.

6 Details of the guided tours, including the route and feedback from the participants, can be found at http://www.cuhk.edu.hk/cmp/en/

7 The Stage 3 Stakeholder Engagement Report can be downloaded from http://www.cuhk.edu.hk/cmp/en/pdf/stage3_report.pdf

Stage 4: Finalisation of the Master Plan (March 2009 – April 2009)

With reference to the views collected in the previous stages, several consultation workshops were held[8], the Master Plan documented and then adopted by the University as the framework for the future development of its campus in Stage 4. This Final Report and a Synoptic Report[9] were prepared to describe the whole consultative process and the resulting proposals of the Master Plan. To introduce the final Master Plan to the University community, an informal gathering with a guided tour was arranged in May 2009.

8 Details of the workshops can be found at http://www.cuhk.edu.hk/cmp/en/

9 The Synoptic Report can be downloaded from http://www.cuhk.edu.hk/cmp/en/pdf/stage4_synoptic_report.pdf

2

CHALLENGES AND OPPORTUNITIES

To formulate a Master Plan that would ensure a balanced and sustainable development of the University campus in the coming decades, a thorough understanding of the existing campus setting and an appreciation of its potential and challenges are essential.

This section gives an overview of the campus today. It also identifies the challenges and opportunities and explains the objectives for formulating the Master Plan.

CHALLENGES AND OPPORTUNTIES

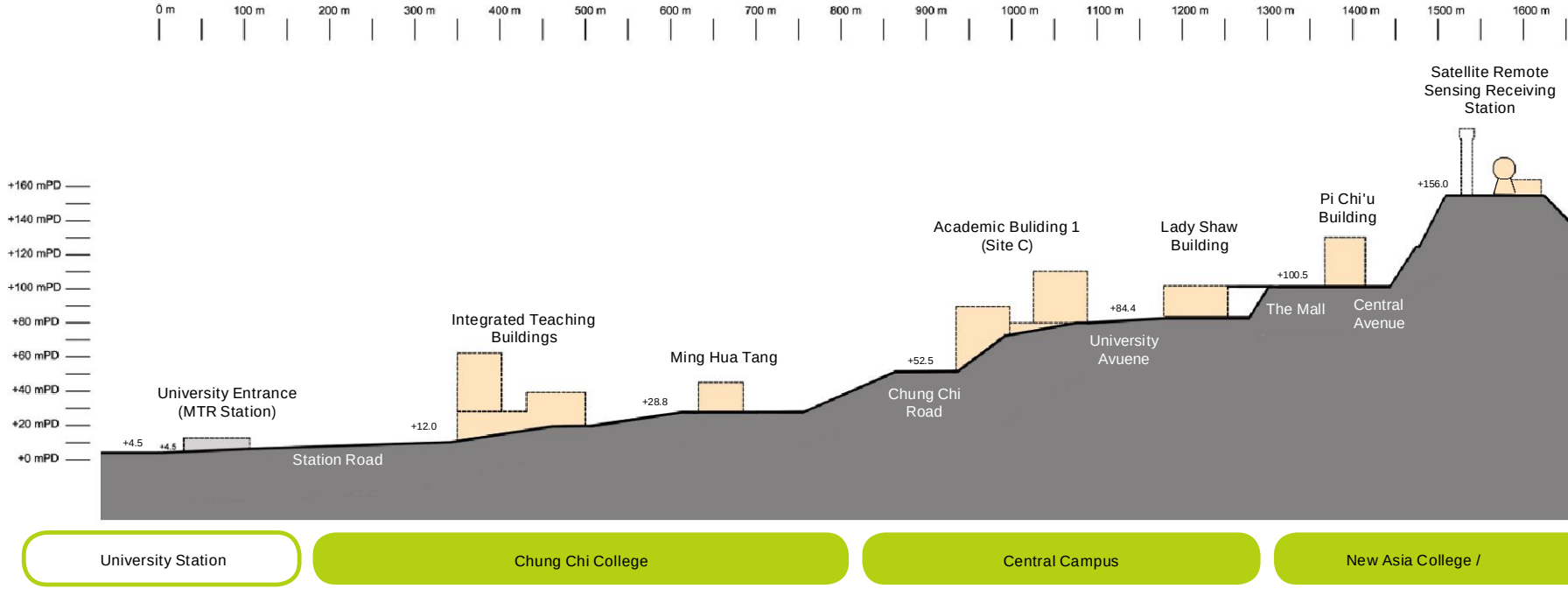
2.1 THE CAMPUS TODAY

The University campus, overlooking the scenic Tolo Harbour, occupying 134 hectares in Shatin of the New Territories, is the largest university campus and the greenest in Hong Kong today. While the green and lush setting is considered by many as an ideal environment for scholarly pursuit, the hilly terrain with steep slopes (Diag 02) also poses various challenges to campus development, including limited buildable land for new developments and inconvenient vehicular and pedestrian accessibility. The steeply contoured site has resulted in the dispersal of buildings. Details of the identified planning challenges and opportunities are described in Section 2.2.

With the need for campus expansion, a review of the existing education and research venues together with the exploration of potential development sites for additional facilities is necessary. Section 4.1 illustrates the proposed planning strategies for places for education and research activities.

The University offers Hong Kong's only collegiate experience. Each college preserves its self-identity and traditions at different locations in the campus. This unique college system was highly valued in the campus planning process as it ensured the whole-person education and pastoral care, as well as enhancing a sense of community by reinforcing the colleges' identities. More details of the proposed strategies in enhancing college life are covered in Section 4.2.

The present campus layout comprises a central campus, with satellite precincts and colleges in a green setting, which was modeled in the founding phase. From the studies of some of the best-planned university campuses in other countries, it was found that the traditional courtyard model would offer qualities that suited the inherent culture of the Chinese University. Incorporating the merits of the courtyard model, the buildings on campus have integrated their physical layouts with their respective sites. On the hilly campus, however, reliance on bus services has created problems of long waiting time, pollution and road safety. For a sustainable campus development, a pedestrian-friendly environment should be encouraged. This is elaborated in Section 4.3.



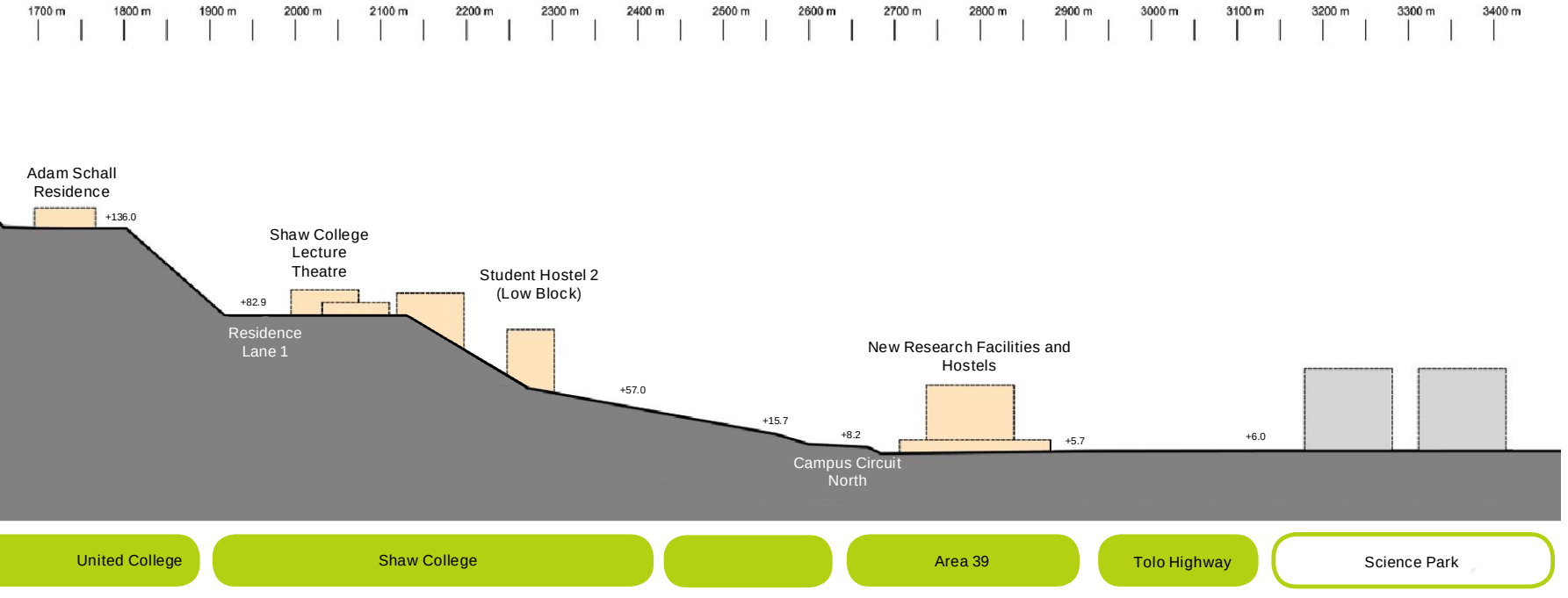
In addition to the University Mall, the campus axis, there are other distinguished landmarks which contribute to the University's identity; these include the University entrances, the water towers, Weiyuan Lake, etc.. In this Master Plan, various places, buildings and landscapes with cultural significance within the campus had been identified. It was proposed that these landmarks should be conserved. To maintain the welcoming impression at the arrival points, the significance of the existing four main entrances (i.e. University entrance at Tai Po Road, Chung Chi entrance at Tai Po Road, entrance at Science Park Road and entrance at the University Station) should be maintained, preserved and enhanced. Detail recommendations are described in Section 4.4.

With a high greening ratio of more than 70%, the landscape of the campus has long been a treasured heritage of the University. Apart from being rich in natural flora and fauna, the natural environment interlaced with streams and trails provides the University members with a pleasant experience in their day-to-day journeys on campus. The importance of the landscape has been recognized in the six planning precepts of the Master Plan. Section 4.5 illustrates the recommendations of a landscape framework for future campus development.

As the first local institute to conduct a campus environment assessment, the University has made sustainable development its pledge and the major challenge. The Master Plan recognized the importance of maintaining a balance between campus development and environmental conservation. Recommendations are discussed in Section 4.6.

Taking into consideration the existing campus setting and its challenges, planning visions and precepts were realized as the basis of the master planning framework. This will be further discussed in Sections 3 & 4.

Refer to Appendix B for more information about the University and its campus.



Diag 02 - Level changes of the hilly campus

2.2 KNOWING THE CAMPUS

This section elaborates the proposed approaches to turn the challenges mentioned previously into opportunities and planning potentials for future campus development.

2.2.1 HILLY TOPOGRAPHY

Challenge:

The hilly topography provides the University with a site of stunning natural beauty and diverse ecological character. A sensitive approach to any development is necessary in order to maintain the micro-environment, the rich fauna and flora. It is equally important that the limited land suitable for construction on campus is used most effectively. Such distinct natural topography has significant effects on the development planning of the campus, apart from posing difficulties for people to move around.

Almost 45% of the 134-hectare campus feature steep slopes (Map 02). Areas suitable for developments are limited to 47% of the campus area, after deducting the designated open spaces and sports grounds. The average level change in the hilly areas is over 150 meters, equivalent to the height of a 50-storey building, imposing major challenges to the development planning.

As mentioned in Section 1, the original plan of the University was evolved on a hilly topography with shared academic facilities surrounded by college developments. With references to well-established and successful models of collegiate universities, new strategies are required to continue to develop the courtyard models and the hilly sites. On this mountainous campus, access to the central part and the colleges is mainly by car or bus on graded roads. This road system came into existence at the same time as the original master plan and caters only for low density development, as it is constrained by the topography, utilities and adjacent developments.

Opportunity:

Establishing a network of much more direct or stepped pedestrian paths between the various parts of the University should enhance the connectivity throughout the campus – between individual college precincts, as well as between the University Mall and the new colleges. The inconvenience that vertical distances impose on pedestrian movement can be reduced with the provision of express lifts and cascading developments strategically placed to link the various levels directly.

Map 02 - Hilly topography of the campus

2.2.2 DISPERSAL OF CAMPUS FACILITIES AND BUILDINGS

Challenge:

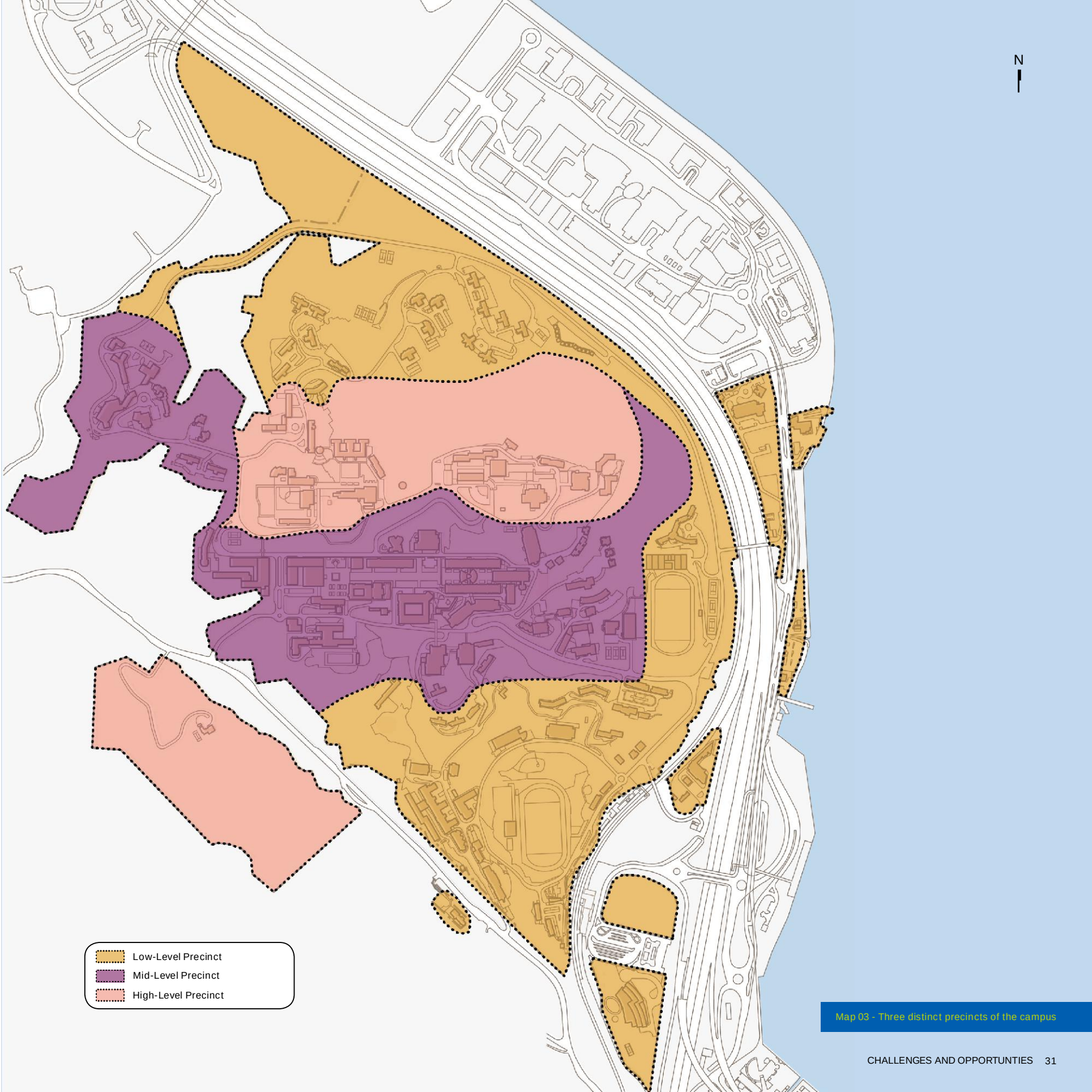
Since the University's founding in 1963, its development has largely been determined by the transformation of the natural hillside topography into three distinct levels (Map 03):

- The low-level precinct, closest to the University Station, was developed first with Chung Chi College. It is the location of one of the main entrances to the University.
- The mid-level precinct was then levelled to make the formal extended courtyard place – Central Campus – which accommodates the academic and administrative core and expresses the symbolic identity of the University. Shaw College was later built in this precinct at west of the campus.
- The high-level precinct were developed into New Asia College and United College.

While the founding model of the campus setting aims to express the social and academic structure of the University, the campus' division into the three precincts results in dispersal of facilities (Map 04) and also restricts interaction. The situation is exacerbated by the increased reliance on vehicle use to connect and traverse the levels. This arrangement nevertheless helps to distinguish the University's collegiate system and preserve the individual identity of each college though the isolated nature of some college buildings may also be a disadvantage.

Opportunity:

Improving the connection and interaction between the dispersed constituent elements of the campus can increase the academic and social potential of the University. The precincts should be consolidated into clusters of developments, in a way that the benefit of academic interactions can be enhanced, economies of shared facilities encouraged, and movement between developments optimized. This would, in turn, support more effective sharing of facilities and allow stronger identity of particular places. It also promotes a greater sense of community in formulating design for colleges, and enables shorter walking distance within each neighbourhood. Following the founding campus development model, new academic facilities on the main campus should predominantly relate to the University Mall, which has long been the icon of the University. Apart from shared facilities, the individual development plan of each college should not be confined to physical expansion but also include the development for quality programmes for the students.



Map 03 - Three distinct precincts of the campus

2.2.3 IMPORTANCE OF COMMUNAL SPACE

Challenge:

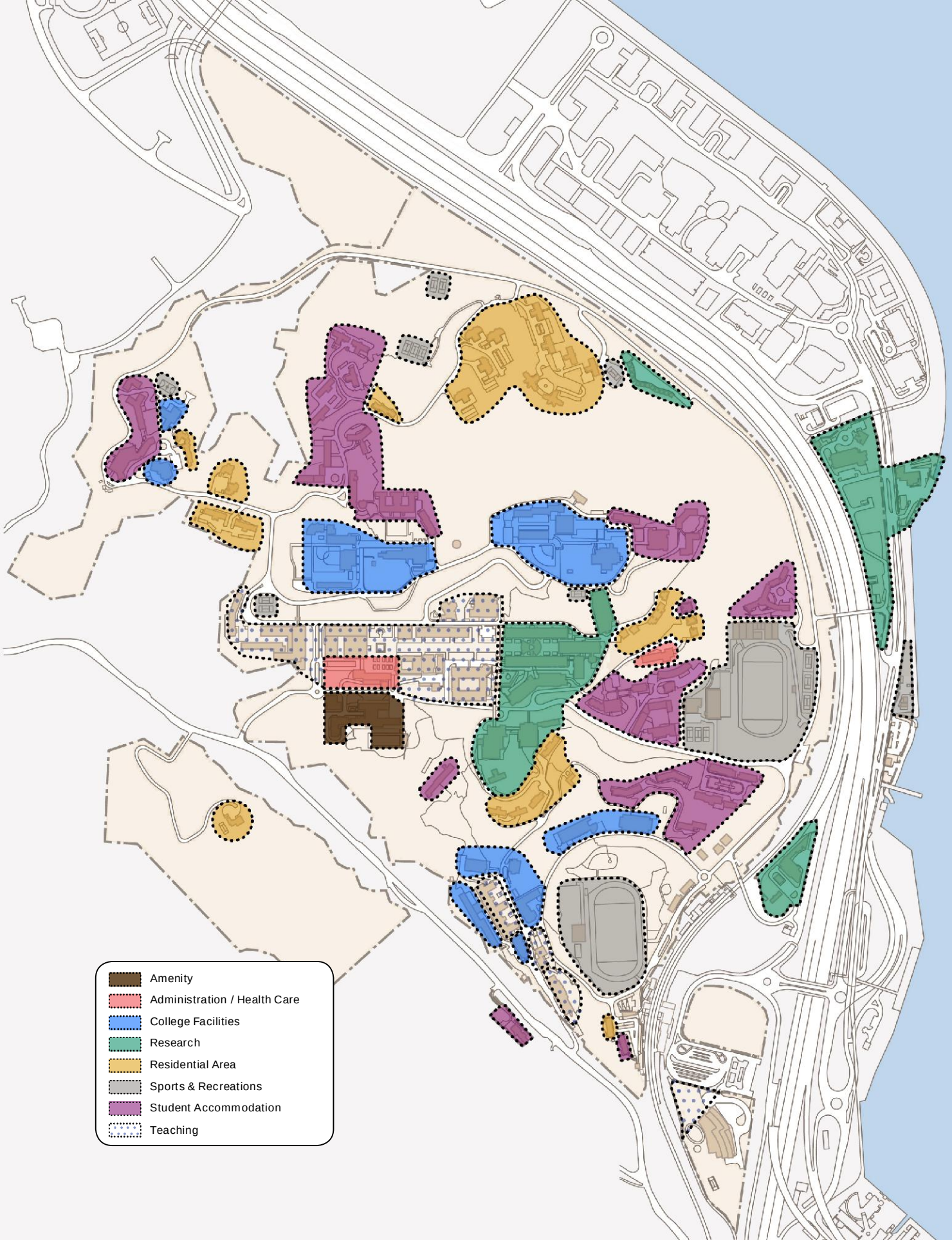
Up to now, some of the existing buildings on the hillside campus may require more amenity places around them that are suitable for informal social interactions or gatherings.

It has always been the University's intention to implement innovative approaches to inter-disciplinary studies, and encourage more sound and academic interactions. Enhancement of communal gathering and learning spaces beyond the extent of those as part of departmental facilities are proposed to be provided. In fact, the collegiate structure of the University has long cultivated a deep sense of community life and attachment to places of historical and communal life on the campus. This is an integral and special aspect of the Chinese University which lies at the root of what gives a special identity and quality to the entire campus as well as the many particular places within it. Besides the University's encouragement for innovative approaches to studying, students themselves have developed a study culture of gathering for discussions and communications. The necessity and importance of more communal spaces are therefore explicitly confirmed. As a result, the strong sense of space on the campus has been and must continue to be the primary guiding consideration in maintaining the campus and planning any new developments on it.

Opportunity:

To enhance the provision of social gathering and amenity spaces, the spatial organization of the campus should be reinforced with a strategic open space network to create more plazas and courtyards with enhanced inter-connections.

New buildings should be designed with open terraces or enclosed courtyards, which, as gathering places, will seem all the more evocative in contrast to the steep wooded hillside. The courtyard setting also echoes with the University's mission 'To combine tradition with modernity, To bring together China and the West'.



Map 04 - Present campus setting

2.3 OBJECTIVES OF THE MASTER PLAN

The main objective of the Master Plan is to provide the University with a planning framework to serve the University's vision for the academic and physical development up to 2021 and beyond.

The Master Plan would address the additional space requirements anticipated under the impending normative 3-3-4 curriculum reform and respond to the necessity to enhance the current transportation issues. It would also establish guidelines to ensure the recognition of all existing cultural heritage and strengthen the organization of the entire campus. In all, further developments would be accommodated into a comprehensive research university.

The Specific Objectives of the Master Plan are:

(a) To reinforce the unique character of the campus, with the University Mall and low-level precinct to remain the academic core of central teaching and learning facilities embraced by colleges.

A unified campus setting with a distinct neighbourhood character for specific campus activities is proposed, not only to respect the original campus planning framework, but also to foster the identity of a particular place as well as sharing of facilities. Central Campus, particularly along the University Mall, as well as the low-level precinct, has long been planned with teaching and learning facilities. It is recommended that their characters should be maintained (Section 4.1 refers).

(b) To assess and define development opportunities within the campus to provide potential sites for academic, social and recreational activities.

During the process of identifying potential development sites, the convenient access, proximity to other cognate functions, and minimum disturbance to existing natural landscape should also be considered and respected.

(c) To assess and define development opportunities within the college areas to enhance the experience of students.

The colleges play an important role in providing whole-person education and pastoral care to all students. In order to enhance students' college lives, the Master Plan also recommends possible development opportunities in the existing colleges (Section 4.2 refers).

(d) To define places of high ecological, landscape and cultural heritage value within the campus for conservation, protection and enhancement.

The University takes pride in its beautiful landscape, natural environment and the cultural heritage of the campus. The Master Plan acknowledges them and proposes for conservation or enhancement so as to enhance the University's identity and campus' unity (Section 4.4 refers).

(e) To assess circulation and travel modes within the campus and define development opportunities to improve connections and movement for pedestrians.

A pedestrian-friendly campus will be an ideal and forward-looking strategy for long-term sustainable development. The Master Plan aims at improving the connectivity within the campus by making it comfortable, convenient and enjoyable to walk through, so as to prioritize walking within the campus. Existing circulation and travel modes are analyzed and recommendations on improvements made in the Master Plan (Section 4.3 refers).

(f) To assess and define development opportunities within the campus outdoor environment to enhance the landscape experience.

The Master Plan acknowledges the need for preserving and improving the existing landscape. In order to promote the enjoyment of the landscape, allow active experience in the natural campus context and to encourage social interaction, the Master Plan proposes a landscape framework which recommends a strategic landscape composition, an open space network and possible new nature trails (Section 4.5 refers).

(g) To formulate an urban design, conservation and landscape framework based on sustainable principles.

For a sustainable and coherent campus development, strategic and long-term planning is essential. As the population is expected to increase in coming decades, additional facilities will be required. One of the major objectives of the Master Plan is to identify possible development sites for academic, social and recreational activities (Section 5 refers).

A framework on design, conservation and landscape will be required as a guideline for future engaged architects or engineers to refer to. For a long-term development, the framework is formulated on the basis of various sustainable principles (Section 4.4, 4.5, 4.6 and 5 refer).

(h) To formulate an implementation strategy for the planning framework and identify the necessary follow-up actions.

Other than recommending various planning frameworks, the Master Plan also proposes the implementation strategies and time frame subject to demand and acquisition of funding (Section 6 refers).

Fig 15 - University Mall on Orientation Day


Group. / TABLE 2.
1. Book shop.
2. Centrifuge / Distributed.
4.

3

THE MASTER PLAN VISION

The detailed formulation of the Master Plan is based on its vision. This section describes the different aspects of the Master Plan Vision and their interpretations which give rise to the six guiding precepts.

THE MASTER PLAN VISION

3.1 THE VISION

The vision of the Master Plan is to enable the University to be an exemplar of sustainable development by balancing the enhancement of its campus environment with the conservation of its natural heritage.

3.2 ASPECTS OF THE VISION

There are three aspects of the Master Plan Vision:

1 To build most sustainably on the existing developments in order to strengthen the academic core and the surrounding colleges as palpable places in a fine hillside landscape and to connect the whole composition with a lattice of pathways.

2 To maintain the University campus as an ideal place for scholarly pursuits and to enhance the quality of life of the entire community by improving the integration of learning, working, living and social interaction; and creating a neighbourhood of colleges to strengthen the overall sense of community and identity while accommodating new possibilities.

3 To formulate a planning framework to enable the evolution of the campus that balances the need for future growth with preserving the lush, green and serene setting.

3.3 INTERPRETATION OF THE VISION

The Master Plan is to be conceived as a living and continually developing document, setting out the vision of campus development for reference by architects and engineers who would be engaged in implementing the plan in the future.

In the discussions that took place during the early stages of the Master Plan, a consensus was evolved within the six planning precepts that were agreed to be vital to the Master Plan. The precepts provide a planning framework for the entire campus development for the years leading up to 2021. Each precept will rely on the collective contribution of the other precepts to bring about the full benefits of sustainable growth of the University campus.

1 Places for Education and Research Activities

Places for academic and other activities should be clearly defined by:

- Planning most of the teaching facilities near Central Campus and University Station, while some of the research facilities can be planned at Area 39.
- Identifying potential development sites for education, research and amenity facilities, including postgraduate hostels at Area 39.

2 Enhancing College Life

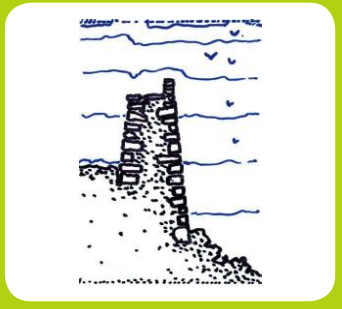
We should build up the colleges to enhance student life by:

- Providing more convenient facilities and gathering spaces.
- Arranging new undergraduate hostels closer to teaching facilities.
- Enhancing accessibility among the colleges.

3 A Pedestrian-Friendly Campus

The campus should be made pedestrian-friendly by:

- Promoting walking with improved accessibility by express lifts and cascading building design.
- Improving certain existing pedestrian links for safety and security.



4 Conserving Places of Value

We should conserve places that are highly valued and are of historical importance by:

- Conserving built heritage which contributes to the University's image and identity or which has special architectural or memorial value.
- Exploring adaptive reuse of built heritage.

5 A Landscape of Vital Importance

The landscape of the campus is of vital importance and should be enhanced by:

- Conserving existing natural water streams and trails.
- Introducing new nature trails and enhancing the green experience.
- Minimising tree felling.
- Implementing landscape design to enhance college identity.

6 Making a Sustainable Campus

We should be aiming to build a sustainable campus by:

- Harmonising new developments with the existing natural setting.
- Designing for a low carbon campus.
- Encouraging green building design.

4

THE MASTER PLAN PROPOSALS

The planning framework derived from the six precepts which guide the development of the Master Plan. This section elaborates each of the planning precepts and the recommendations for campus development leading to year 2021.

THE MASTER PLAN PROPOSALS

4.1 PLACES FOR EDUCATION AND RESEARCH ACTIVITIES

In order to make the University an ideal place for scholarly pursuit, the Master Plan aims at strengthening the presence of academic and amenity buildings as one of the planning precepts.

The Master Plan recommends that educational / research buildings adopt a clustered approach of the facilities to enhance the identity of the academic disciplines and to improve accessibility for students and staff, enabling a more fluid interdisciplinary collaboration and the potential for facility sharing. To follow through with a sustainable campus development, it is proposed that existing academic facilities should preserve their identities and have their functions enhanced.

Connectivity among academic buildings is also important to the creating of a comfortable learning environment as it shortens students' travelling time between classes on the hilly campus. A pedestrian-friendly campus can promote an atmosphere of self-reflection as well as interactions among students. The Master Plan proposes to improve accessibility by promoting new pedestrian links on campus, including provision of vertical transportation devices at places where the gradients are steep. Express lifts within buildings and cascading developments are examples of the links among the various levels. In addition, a safe and pleasant walking experience will be beneficial for the creation of an amiable learning environment. It is recommended that priority should be given to pedestrians over vehicles at some strategic locations near academic facilities.

Learning can be extended from lecture rooms to outdoor areas. This will provide not only more pleasant experiences, but also an ideal place for interactive studying and social gatherings. The Master Plan, proposes that the landscape on campus should be enhanced and the spaces between buildings should be as important as the buildings themselves. A strategic open space network is proposed to reinforce the overall campus organization, which allows staff and students to relax in a more spacious environment.

THE PLANNING MEASURES

4.1.1 CAMPUS SETTING

To overcome the various challenges posed by the existing campus organization, as discussed in Section 2, the Master Plan proposes a unified campus setting with a distinct neighbourhood character for specific campus activities. Such strategic clustering of the developments plays an important role in fostering the identity of a particular place. It also promotes the sense of community and facilities sharing while at the same time improving accessibility within the neighbourhood.

In response to the need to address the demands for additional teaching, research, administration and amenity facilities, the Master Plan proposes the following campus setting (Map 05):

- The Central Campus as the principal district of teaching and administration facilities:

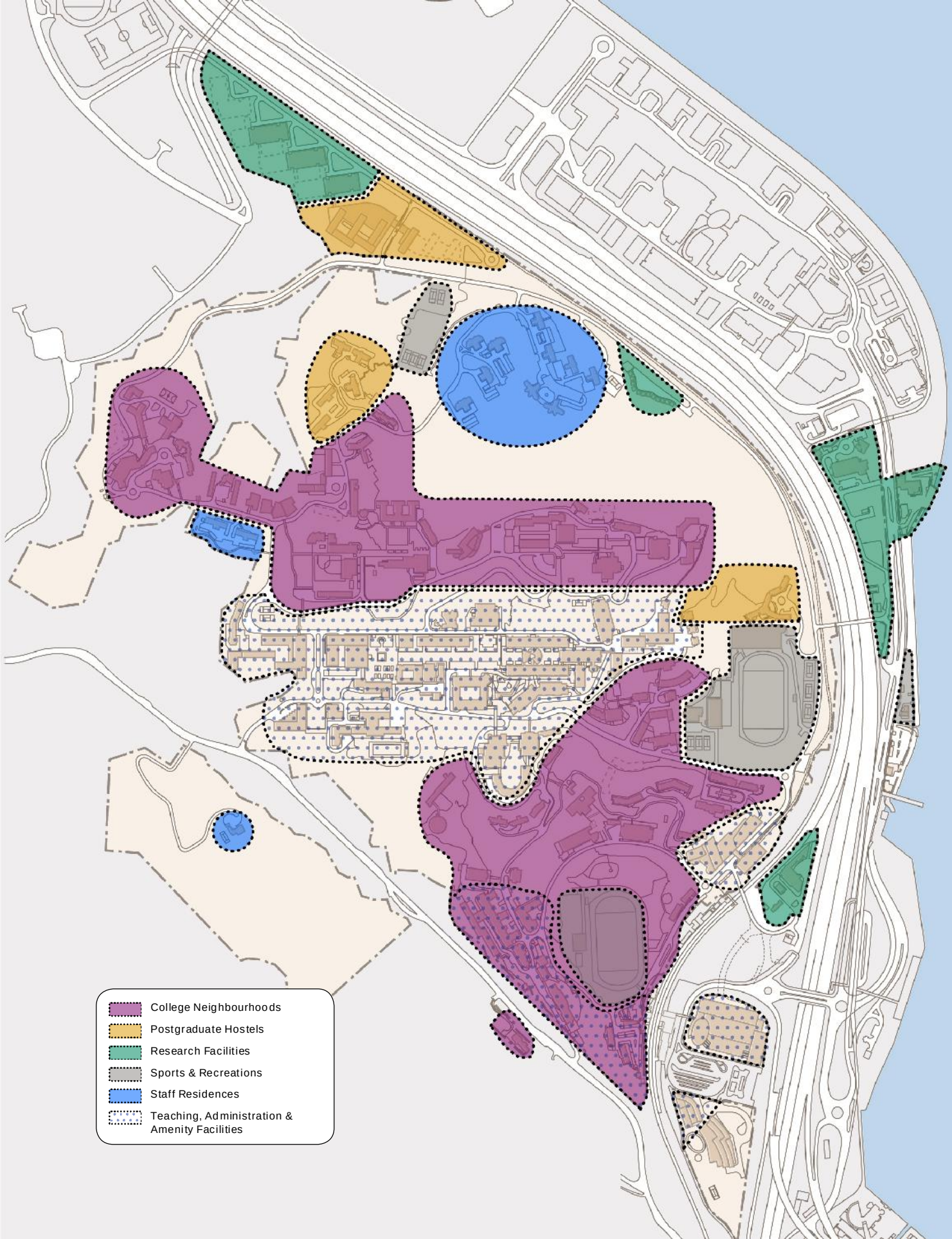
  The Central Campus has remained largely unchanged since its establishment as the axis of the University's physical layout. The Master Plan proposes that this area should continue to function as the centre of University's teaching and administration facilities.

  The University Mall, in particular, has long been the nexus of the University and a symbol of the University's identity.

  To reinforce the role of Central Campus, four potential developments are identified that will extend the southern, eastern and western regions. These development sites are proposed for teaching and administrative facilities which will harmonize with the existing character of the original setting. The planning of these sites, including their proposed disposition and building height, will further enhance the ceremonial character of the University Mall.

- The area near the University Station as another major zone of teaching facilities:

  In addition to Central Campus, the area near the University Station is proposed as another major zone of teaching and administration facilities because of the excellent railway and road connections of the site. With the area's proximity to the University Station, the Integrated Teaching Buildings which will be completed by 2012, will provide additional teaching facilities with convenient access to meet the immediate additional space requirements anticipated under the 3-3-4 curriculum. An existing vacant lot east of the University Station is proposed for teaching facilities, study areas and community facilities.



Map 05 - Campus plan of proposed setting

- The area around Sir Philip Haddon-Cave Sports Field as a recreational and sports hub

  In the existing campus setting, a cluster of recreational and sports facilities has been developed adjacent to Sir Philip Haddon-Cave Sports Field, including the University Sports Centre and Kwok Sports Building. In addition, sports facilities are provided within the colleges.

  The area around the Sir Philip Haddon-Cave Sports Field is proposed to be maintained as a major recreational and sports hub, where a new indoor sports complex is proposed north of the Sports Field.

- Research Facilities in the eastern part of the Campus and a vacant site at Area 39

  It is recognized that some research facilities can be located at some distance from Central Campus. The site at the eastern part of the Campus will maintain its function as a research complex. However, in order to meet the increasing needs, it is proposed that Area 39 will becomes the Northside Research Campus with its own research facilities and postgraduate hostels. The complex will provide the necessary amenities and may evelntually be developed into a graduate college. The development of this area is essential for advancing the University's standings as a comprehensive research university (Section 5.1.2 refers).

- Dispersed Learning Commons in the campus

  Learning Commons can facilitate individual-paced learning in flexible spaces that respond to the spontaneity and ad-hoc use of wireless digital resources. These gathering anchors will accommodate collaborative and individual areas for a range of learning styles in a spacious, comfortable, conveniently-located and communication-friendly atmosphere.

  The Master Plan proposes that in order to encourage interaction among students and staff, the Learning Commons should be conveniently located and integrated with colleges and academic buildings.

4.1.2 ZONING

The Campus, since its Founding Phase, has evolved with a form of natural zoning due to the University's collegiate background and topographical settings. The arrangement allows a mixture of uses for teaching facilities. Without compromising the benefits of proximity among different academic communities, the Master Plan seeks to optimize further growth where possible.

The Master Plan recommends that the concept of clustered and zoned development for disciplinary teaching and research activities should be enhanced (Map 06). The resulting concentration of associated facilities will allow resources being used efficiently and convenience of access, while optimizing the land use for social and academic interactions.

Given the current location of facilities for the various academic disciplines, it is proposed that several clusters of faculties can be formed on campus:

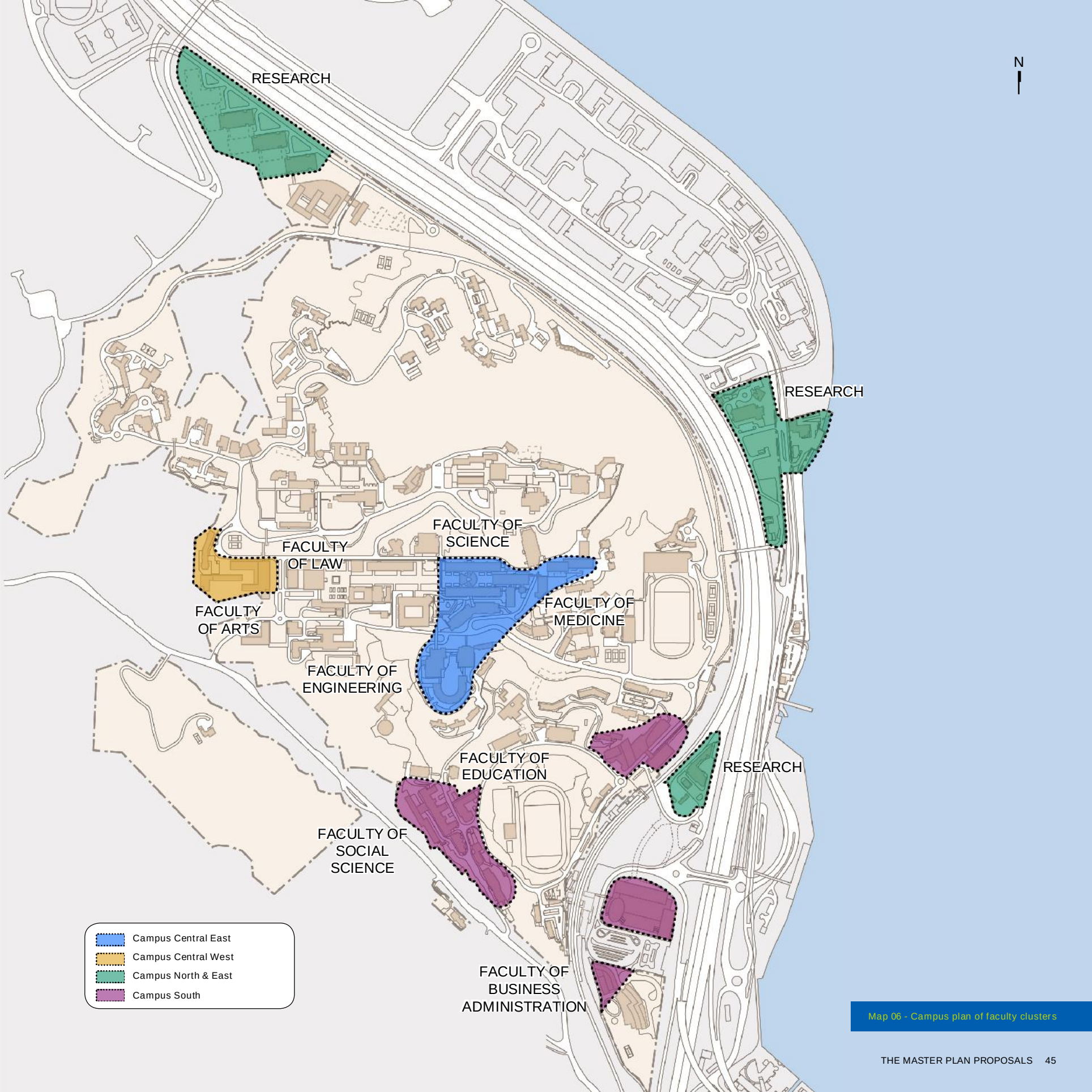
Campus Central West
- Arts and Humanities
  - Faculty of Arts
  - Faculty of Law

Campus South
- Business and Social Studies
  - Faculty of Business Administration
  - Faculty of Education
  - Faculty of Social Science

Campus Central East
- Science and Technology
  - Faculty of Engineering
  - Faculty of Medicine
  - Faculty of Science

Campus North
- Research
  - Area 39: Northside Research Campus

Campus East
- Research
  - Hong Kong Institute of Biotechnology, Academic Building No. 2, Simon F.S. Li Marine Science Laboratory and Shanghai Fraternity Association Research Services Centre



Map 06 - Campus plan of faculty clusters

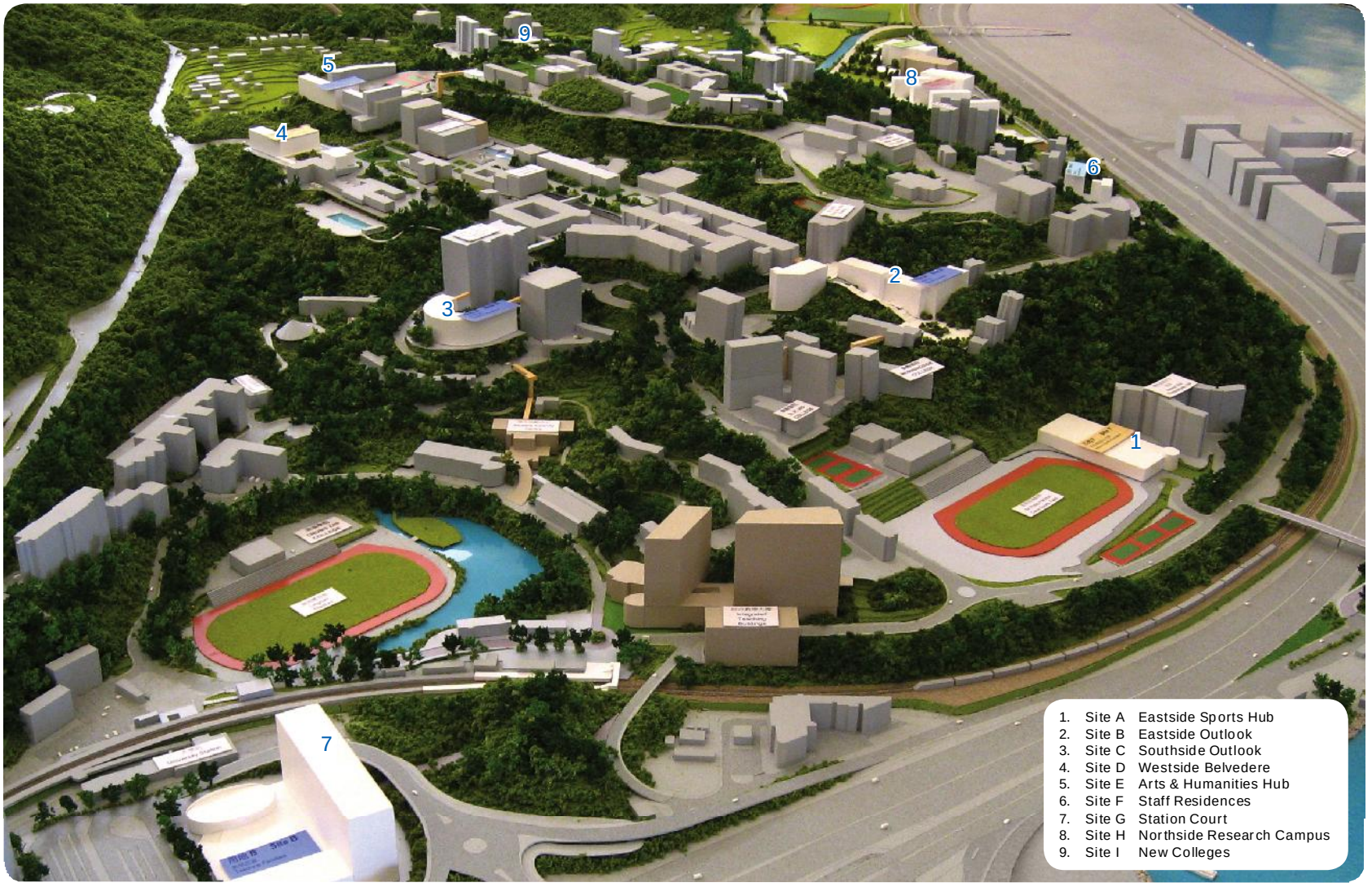


Fig 16 - Campus model showing potential development sites

4.1.3 GROWTH POTENTIAL

One of the major visions for the University is to excel in comprehensive research and quality post-graduate studies. Potential growth should take into consideration the accommodation of ample research facilities as well as the expansion of existing departments.

The Master Plan has identified eight potential development sites for academic, recreational and research facilities as well as two new colleges (Section 5 refers). These sites are recommended not merely to meet current needs but to harmonize with and strengthen the existing setting to form a coherent and integrated campus.

4.2 ENHANCING COLLEGE LIFE

College System and the Existing Colleges

The Chinese University of Hong Kong consists of four constituent colleges[1]. They are Chung Chi, New Asia, United and Shaw, with the first three being the founding constituent colleges when the University was established in 1963. Shaw College was founded in 1986 (Appendix C).

The colleges play an indispensable role in providing whole-person education and pastoral care to all students. A full-time undergraduate can apply for affiliation with one of the colleges. Each college is an intimate and congenial community where students can interact closely with teachers and peers. The colleges offer a wide range of activities, including overseas exchange, student visitor programmes, seminars, community service programmes, as well as training in languages, IT, leadership, culture, and physical fitness.

The four constituent colleges have established their individual identities and traditions throughout the years. Distinctive cultural and physical characteristics of each college contribute to the University's collegiate identity as a whole. Weiyuan Lake, for example, is recognized as a landmark of the University as well as Chung Chi. The University cherishes the role of the colleges, the importance of which has been truly reflected in the Master Plan.

New Colleges

To cater for the increased student enrolment upon the reversion to a four-year curriculum, the University has decided that new colleges shall be provided to maintain the quality of education. Five new colleges [2] have been established: Morningside College, S.H. Ho College, C.W. Chu College, Wu Yee Sun College and Lee Woo Sing College.

These new colleges will enroll 3,600 students in total, and they would be ready to receive students by 2012. They share the original collegiate vision while providing a relatively smaller community, compared with the existing constituent colleges. Although all five new colleges will share the University's educational ideals, they will have their own particular characters and missions (Appendix D).

THE PLANNING MEASURES

The traditions and identity of each college are recognized and respected to engender a sense of loyalty and belonging among students and alumni. The Master Plan recommends to enhance the college life by reinforcing the identities and distinctive features of individual colleges. Proposals are as follows:

- Preserve and enhance the existing characteristics of the colleges.
- Encourage social interactions by enhancing the landscape and valuing the places between college buildings as much as the buildings themselves.
- Strengthen pedestrian routes among colleges and the campus core.
- Establish neighbourhood settings for the existing and new colleges to obtain the benefit of shared use of new facilities.

1 More information about the college system in the University can be found at: http://www.cuhk.edu.hk/v6/en/colleges/colleges.html
2 More information about the new colleges can be found at: http://www.cuhk.edu.hk/colleges/indexe.html

4.2.1 COLLEGE NEIGHBOURHOODS

Forming distinct college neighbourhoods is considered important to the strengthening of the college system. Five new colleges are proposed to be located near the existing colleges as well as Central Campus to enable better communication between colleges. The arrangement will also facilitate the sharing of amenities and enhance pedestrian connections between the colleges and Central Campus.

Two college neighbourhoods are proposed in the Master Plan: Morningside College and S.H. Ho College can form a cluster with Chung Chi College in the southern area, while the other three new colleges can form another cluster with United College, New Asia College and Shaw College in the northern area (Map 07). In the northern neighbourhood, pedestrian accessibility to and from the University Mall will be enhanced with new connecting footways, bridges and express lifts.

4.2.2 SHARED FACILITIES

New recreational facilities and Learning Commons are proposed as shared amenities for colleges. Such facilities will be accessible as social hubs accommodating different learning styles and needs. The Master Plan proposes the development of new amenities at Campus Circuit West, which will contain Learning Commons for shared use by existing and new colleges within the mid-level precinct (Map 22).

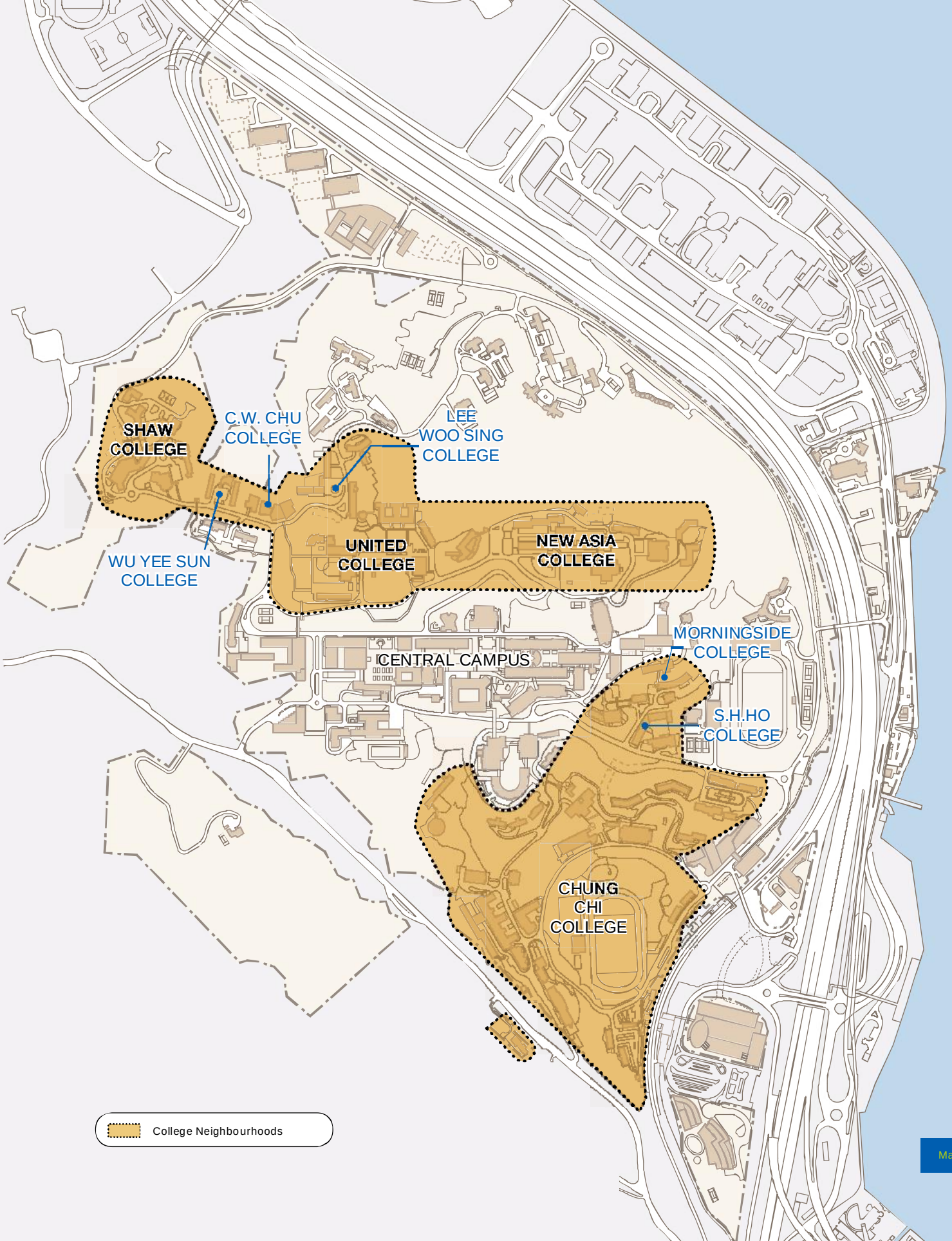
4.2.3 POSSIBLE ENHANCEMENT OF EXISTING COLLEGES

The Master Plan seeks to maintain and enhance the existing intimate and congenial college setting, which in turn will help to strengthen each college's distinct identity.

Although the existing colleges have established their own individual characters and identities at different locations on the campus, connections between colleges should also be strengthened to encourage more interaction among students.

Any new developments should fit into the existing college community and natural landscape in such a way as to make legible spaces, courtyards, and other gathering places. Where individual colleges choose to develop new hostel buildings, it is advisable that the proposed buildings are permeable at their entrance levels and contain public functions to help activate their surroundings. Convenient and comfortable access routes should be planned to allow shortest walking distance with prominent entrances. Privacy within the colleges should also be respected while intersecting of linkages may happen with the college campus area.

Although buildings of specific shapes are shown and described in the Master Plan, these are to indicate a way in which they might respond to the planning aims and to the existing college campus setting, and are not intended to predetermine the final designs. Equally, proposals describe only the potential but not a definite design for new hostels. The implementation of any new developments in the campus area of the colleges is subject to the policies and funding of individual colleges and the University.



Map 07 - Campus plan of college neighbourhoods

Fig 17 - Examples of college features (from top to bottom): Weiyuan Lake, Lingnan Stadium & Athletic Field, the College Chapel

A. Chung Chi College[3]

Chung Chi College, the first to develop in the Ma Liu Shui valley, is located at the low-level precinct of the campus, with close proximity to the railway station and the school bus terminal (Map 08). Most of the teaching and administrative facilities of the College are located in the western part of the college campus along Chung Chi Road. These buildings adjoin the entrance to the Chung Chi campus at Tai Po Road. As one of the major university entrances, the Chung Chi entrance gate is an important icon of the College that is to be respected.

The College Chapel, Lingnan Stadium, Athletic Field and Weiyuan Lake have long been the focal points and landmarks of the College. They are and will continue to be the major venue for student activities and social gatherings. The stream and nature trail along the western slopes of the Chung Chi campus are unique and important features of the College. The Master Plan respects all these icons and symbols and recommends that they should be conserved and enhanced.

Possible Campus Improvement and Future Developments

Any new devlopments within the Chung Chi campus cannot afford to ignore the connectivity between existing buildings. It is important that any prosposed buildings should integrate into the college landscape and recognisable gathering places such as courtyards.

Should additional student accommodation be required, two new hostels[4] can be provided around the existing Hua Lien Tang. This may come in the form of a new landscaped courtyard with a semi-open garden, creating a well connected but seemingly secluded community for the College.

The new developments will also improve pedestrian connectivity and the environment. A new plaza will be developed in Chung Chi College as the lowest of a three-tiered arrangement of landscapes, which also defines the journey up to University Avenue via the proposed hostels. An ornamental landscaped upper tier will separate the hostels on the highest level from University Avenue, creating a pedestrian gateway to Chung Chi College. To provide connectivity from the Pond Crescent to University Avenue, the hostels can be equipped with express lifts and stairs.

In order to reduce the overall height and apparent mass of the proposed hostel accommodation, two separate building blocks are recommended. Their principal entrance level may accommodate a communal hall for social gatherings and even study areas.

It is recommended that the depth of the buildings of future developments can allow passive ventilation and good lighting so that a better living environment is ensured.

3 More information of the Chung Chi College can be found at: http://www.cuhk.edu.hk/ccc/eng/index.htm

4 The proposed massing as shown in the Master Plan assumes a capacity of 300 beds for two hostels

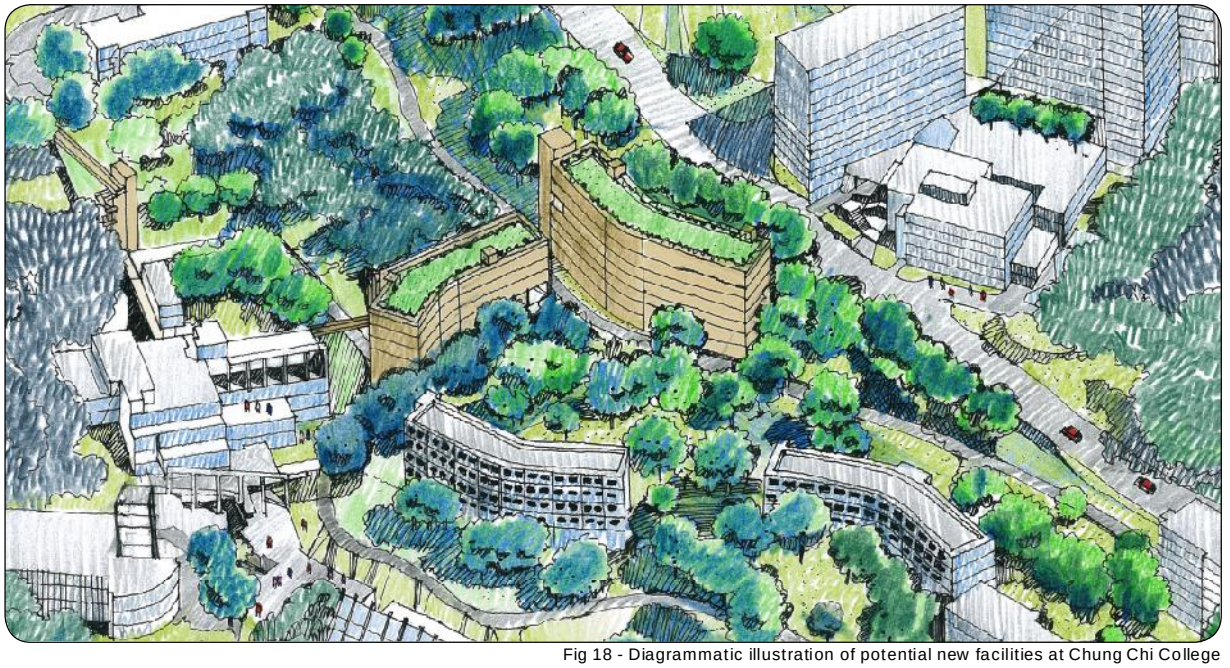
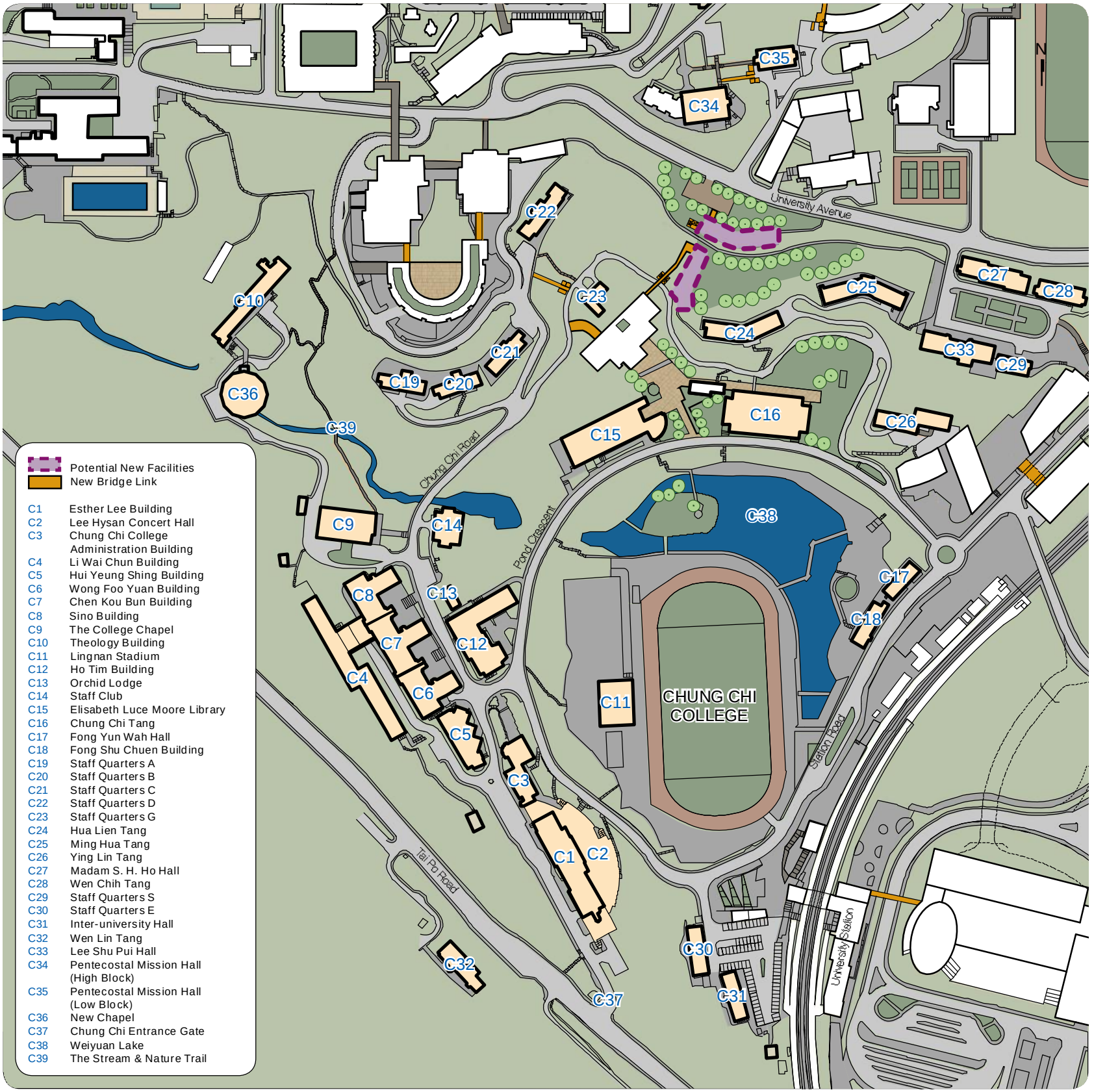
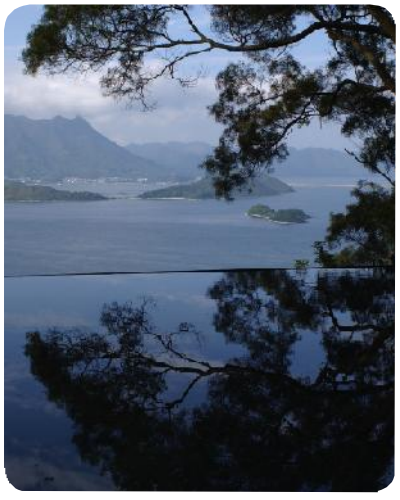


Fig 18 - Diagrammatic illustration of potential new facilities at Chung Chi College



Map 08 - Chung Chi College campus plan



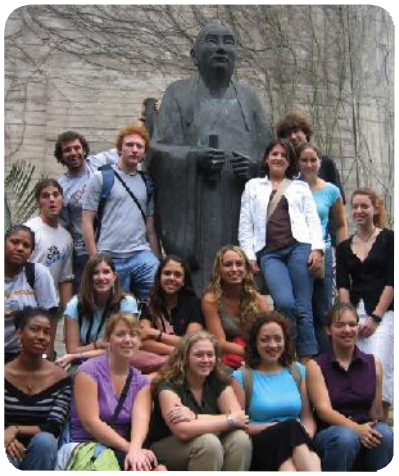


Fig 19 - Examples of college features (from top to bottom): the New Asia Amphitheatre, New Asia Pavilion, the Statue of Confucius

B. New Asia College[5]

As one of the first three constituent colleges of the University, New Asia College moved to the present campus in 1973 (Map 09). The College is located in the eastern part of the high-level precinct of the campus, enjoying some of the most spectacular views, such as the Tolo Harbour. The Master Plan recognises this and seeks to preserve this uniqueness. Currently, the New Asia College campus consists of nine buildings and four are student hostels.

New Asia College put emphasis on promoting traditional Chinese culture. There are several important features symbolizing the College, such as the New Asia Pavilion and the Statue of Confucius. The pavilion, located on a platform between two college hostels, further develops the idea of the 'union of man and nature'; while the statue reminds students of the Confucian teaching ideal.

New Asia College is also characterized by its monastic quality and its open space, embraced by a cluster of buildings of coherent style. Unique features, such as the New Asia Concourse and the Water Tower, have greatly contributed to the image of the College. The amphitheatre in the New Asia Concourse has long been a popular venue for students to relax or to hold activities, such as graduation photo taking. The 120-feet Water Tower, which is visible from Tolo Highway and even from Ma On Shan beyond, is an important landmark of the College as well as the University.

Possible Campus Improvement and Future Developments

The Master Plan proposes to conserve the above unique features and recommends a landscaping strategy to solemnize the area between the Statue of Confucius and the Ch'ien Mu Library by means of upgrading the outdoor space on the northern side. This will create a more unified garden, bringing together some of the College's disparate but adjacent green spaces. Shaded seating in this rejuvenated landscape will provide an attractive outdoor extension to the existing student amenities at Leung Hung Kee Building. To encourage vitalization beyond the confines of the building and its immediate periphery, it is worth considering setting up a café or tea room as a meeting place for interactive learning and social activities.

If the College considers a new hostel[6] necessary, the north escarpment of the College will provide a site which commands the panoramic view of the harbour. The proposed hostel can be designed to have its main entrance facing the existing road, thus completing the row of residential buildings along New Asia Circle. The landscaped central of the College will also be reinforced. The proposed north-south building orientation can also minimize solar gain.

Given the coherent styles of the existing cluster of buildings, the design of any new developments in New Asia College shall take into consideration the existing context and the monastic quality of the College.

5 More information about the New Asia College can be found at: http://www3.cuhk.edu.hk/na/

6 The proposed massing as shown in the Master Plan assumes a capacity of 300 beds in each hostel.

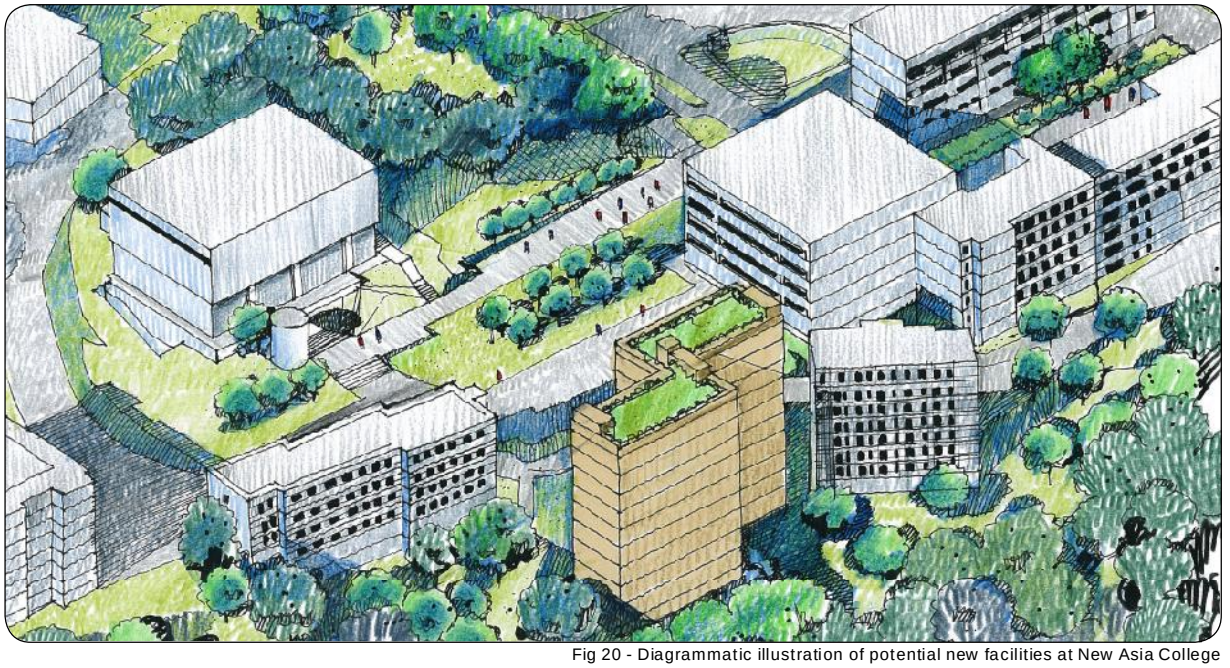
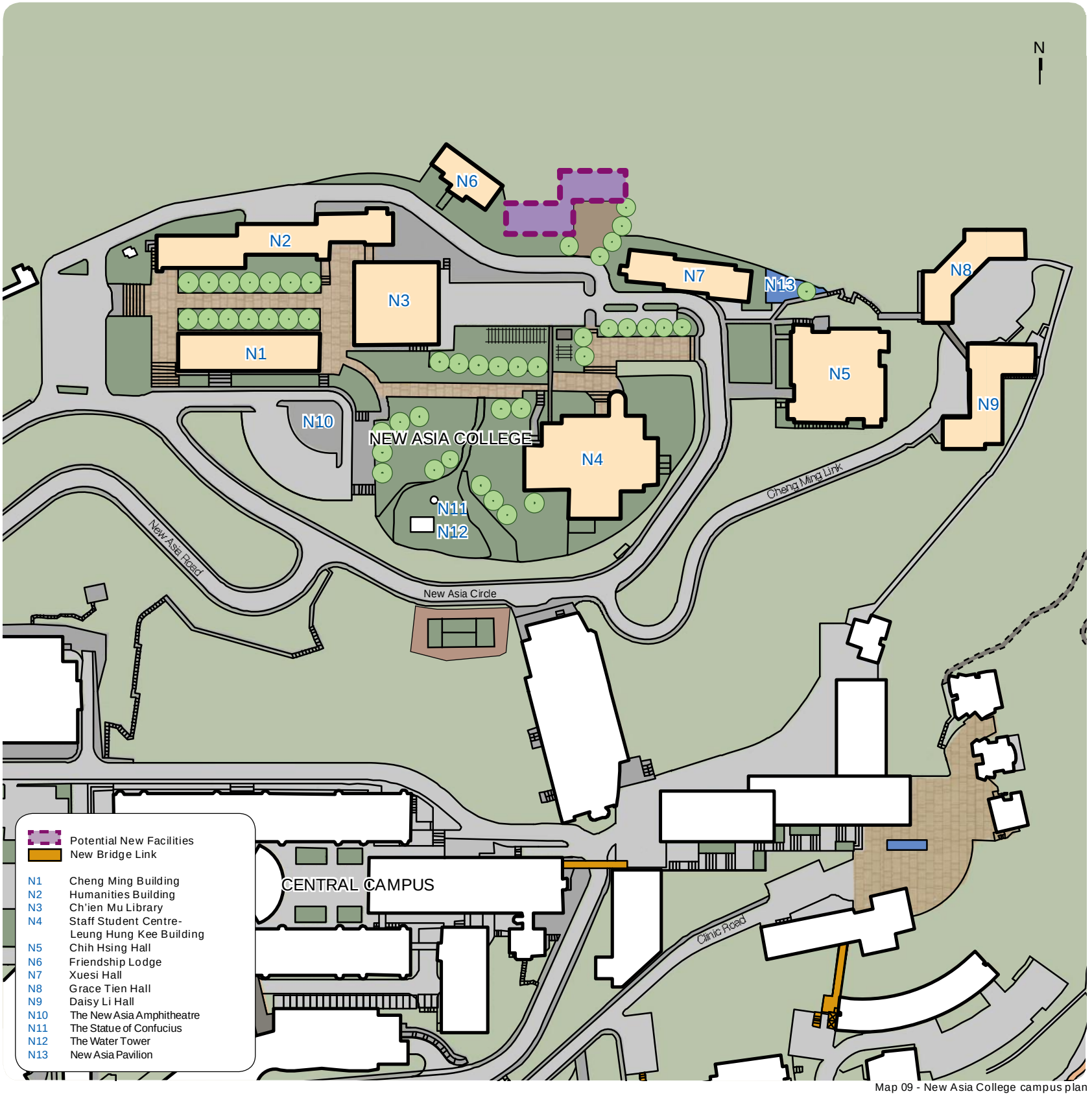


Fig 20 - Diagrammatic illustration of potential new facilities at New Asia College



Map 09 - New Asia College campus plan

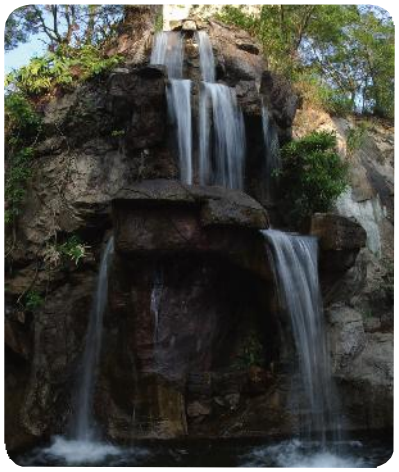


Fig 21 - Examples of college features (from top to bottom): the Water Tower, Sculpture Garden, the Cascade

C. United College[7]

United College, as one of the three founding constituent colleges of the University, moved to its present campus in 1971 (Map 10). It is located in the high-level precinct of the University campus, west of New Asia College, occupying an area of approximately 7.7 hectares. There are a cluster of teaching and administrative buildings and four student hostels on the college campus. The overall layout demonstrates a courtyard setting that provides an intimate environment.

The United College campus is characterized by a big beautiful lawn, a cascade and the sculptures around. One of the water towers of the University is located in United College, which is also a significant landmark of the College.

Possible Campus Improvement and Future Developments

Future developments should avoid affecting the existing courtyard setting and the lawn, which are unique features of the College campus. However, the area south of and below these salient features, i.e., beside Chan Chun Ha Hostel on Residence Road, provides a possible site for an additional student hostel [8], should the College choose to increase and upgrade its residential and amenity provisions.

The proposed north-south building orientation responds to the site topography, as well as minimizing solar gain. Additional express lifts can be provided to relieve the pressure on the existing lift facilities. These lifts will be linked by footbridge to the central of United College.

The Cheung Chuk Shan Amenities Building will be reinforced as the primary social hub of the College by upgrading the outdoor space on its northern side. Although the planted and seating areas current layout have been well received, these places are restricted by an adjacent paved area which is underused. The Master Plan proposes to extend and improve the landscape in this core area of United College which can support a well-defined café or tea room.

7 More information of the United College can be found at: http://www2.cuhk.edu.hk/uc/eng/

8 The proposed massing as shown in the Master Plan assumes a capacity of 300 beds in each hostel.

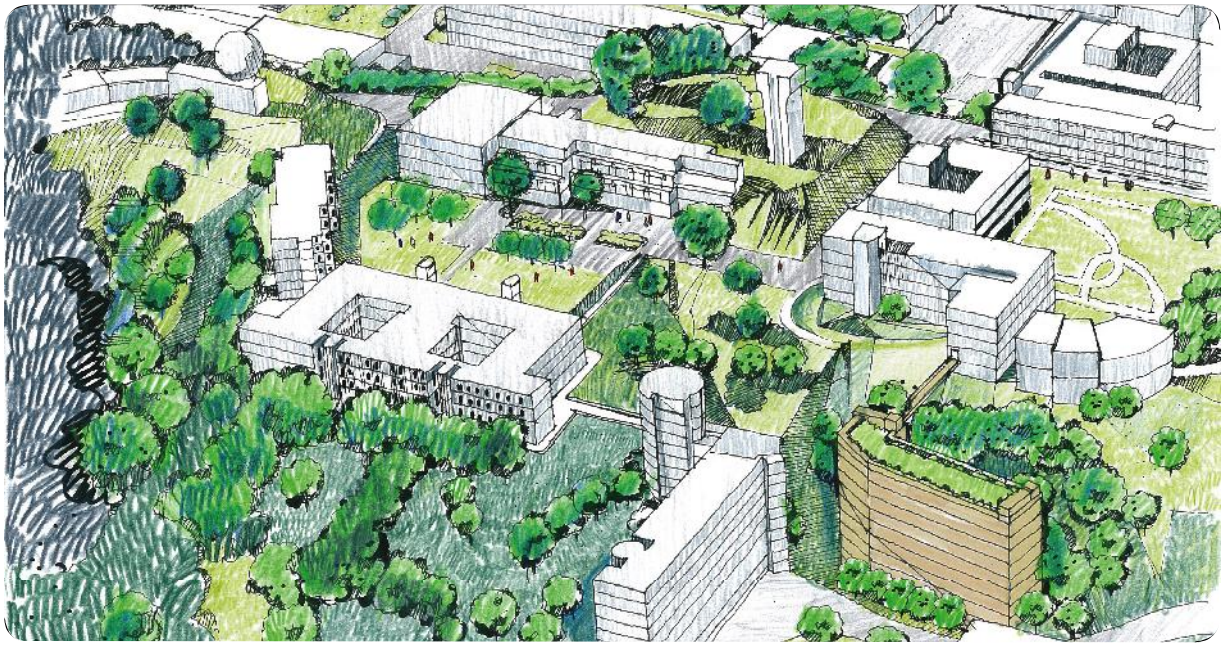
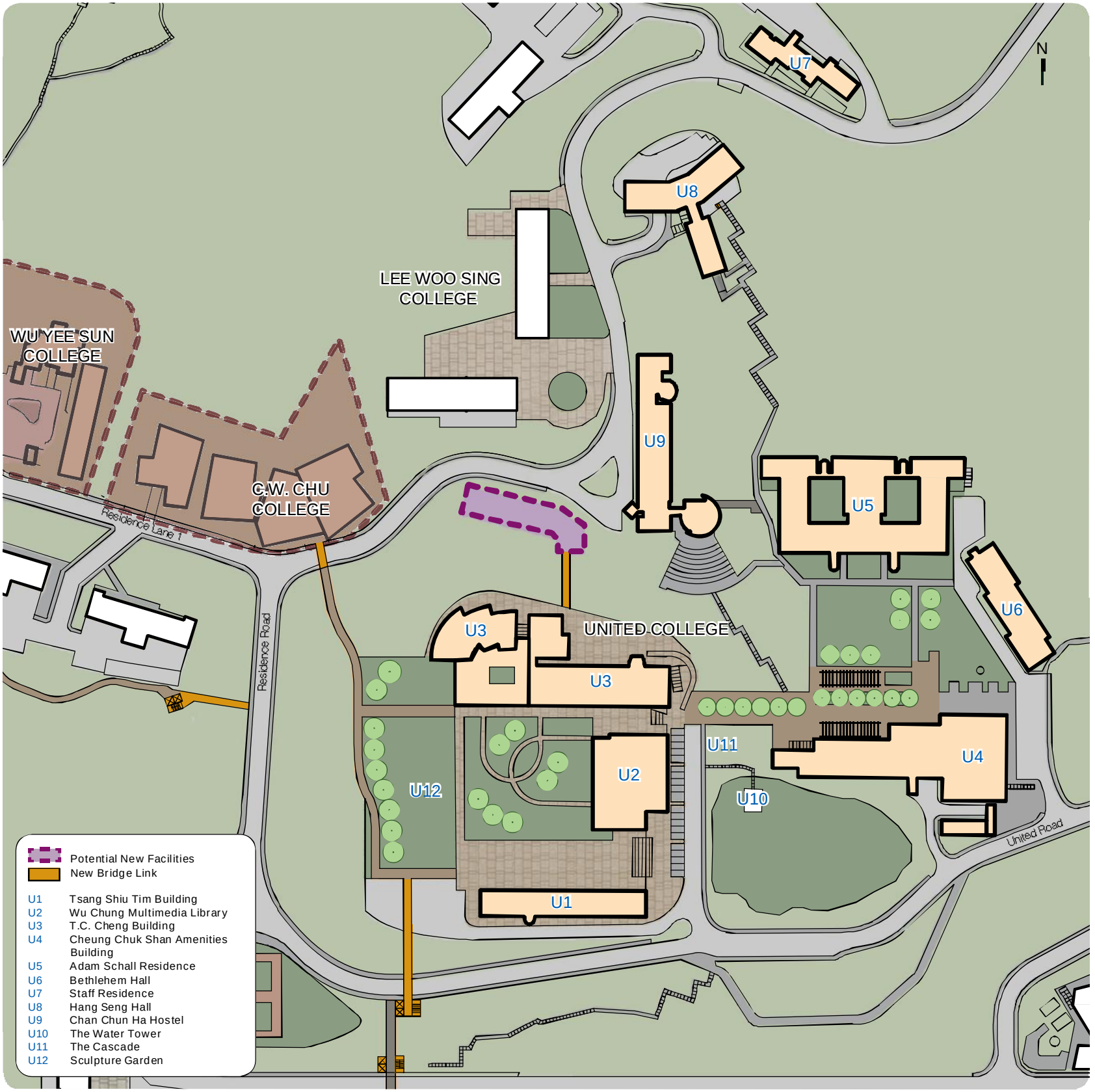


Fig 22 - Diagrammatic illustration of potential new facilities at United College



Map 10 - United College campus plan

Fig 23 - Examples of college features (from top to bottom): College Sign and Mural, Shaw Terrace, Lecture Theatre

D. Shaw College[9]

Shaw College, the fourth constituent college of the University, was officially opened in 1990 (Map 11). The College is the farthest among the four colleges from Central Campus, occupying the land at the mid-level precinct on the north-western corner of the campus. As the Shaw campus was constructed on a sloping area, the existing buildings were planned at various levels with cascading platforms to fit into the topography.

The College administrative offices and the Non-Residential Students' Hall are all located in Wen Lan Tang, which is the education and administration centre of the College. At present, there are two student hostels in the College, namely Kuo Mou Hall and Student Hostel II.

Shaw Terrace, an open platform on which the Shaw College sign stands, marks the entrance of the College and is considered as a significant landmark. This terrace is also a popular venue for major outdoor performances for students. The Master Plan recognises its significance and proposes to enhance its identity by the proposed improvements described below.

Possible Campus Improvement and Future Developments

To improve the pedestrian connections from Shaw College to the Central Campus, it is proposed that two strategic express lifts should be installed to ease vertical access, with the first rising to the level of Residence Lane 1, and the second taking pedestrians up to an elevated walkway leading to United Road.

A new hostel[10], should there be one in the future, is proposed at the bend on Campus Circuit West. To enhance pedestrian accessibility between the College and Central Campus, an express lift and a bridge connection to Student Hostel II will create a near-level pedestrian route onto Shaw Terrace, from which the express lift link onto Residence Lane 1 may be joined. The introduction of a new hostel on the western side of the Shaw College campus and an express lift route on the eastern side will make Shaw Terrace a more significant thoroughfare. Shaw Terrace should therefore be enhanced to provide a better place for students to gather. The Master Plan proposes to convert the existing roundabout and parking bays into a pedestrian zone with improved streetscape. Ya Qun Lodge, the existing staff quarters of the College, can be converted to a student amenity building. As a substitute, residential provisions for staff can be incorporated into the proposed new hostel.

9 More information of the Shaw College can be found at: http://www.cuhk.edu.hk/shaw/eng/index.html

10 The proposed massing as shown in the Master Plan assumes a capacity of 300 beds in each hostel.

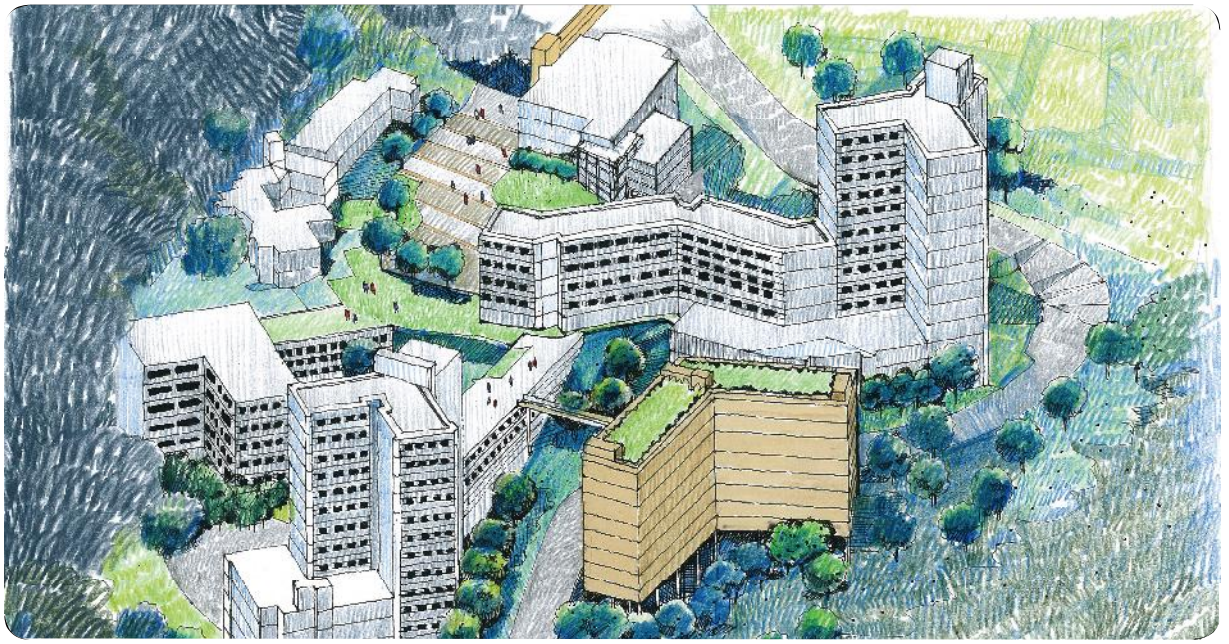
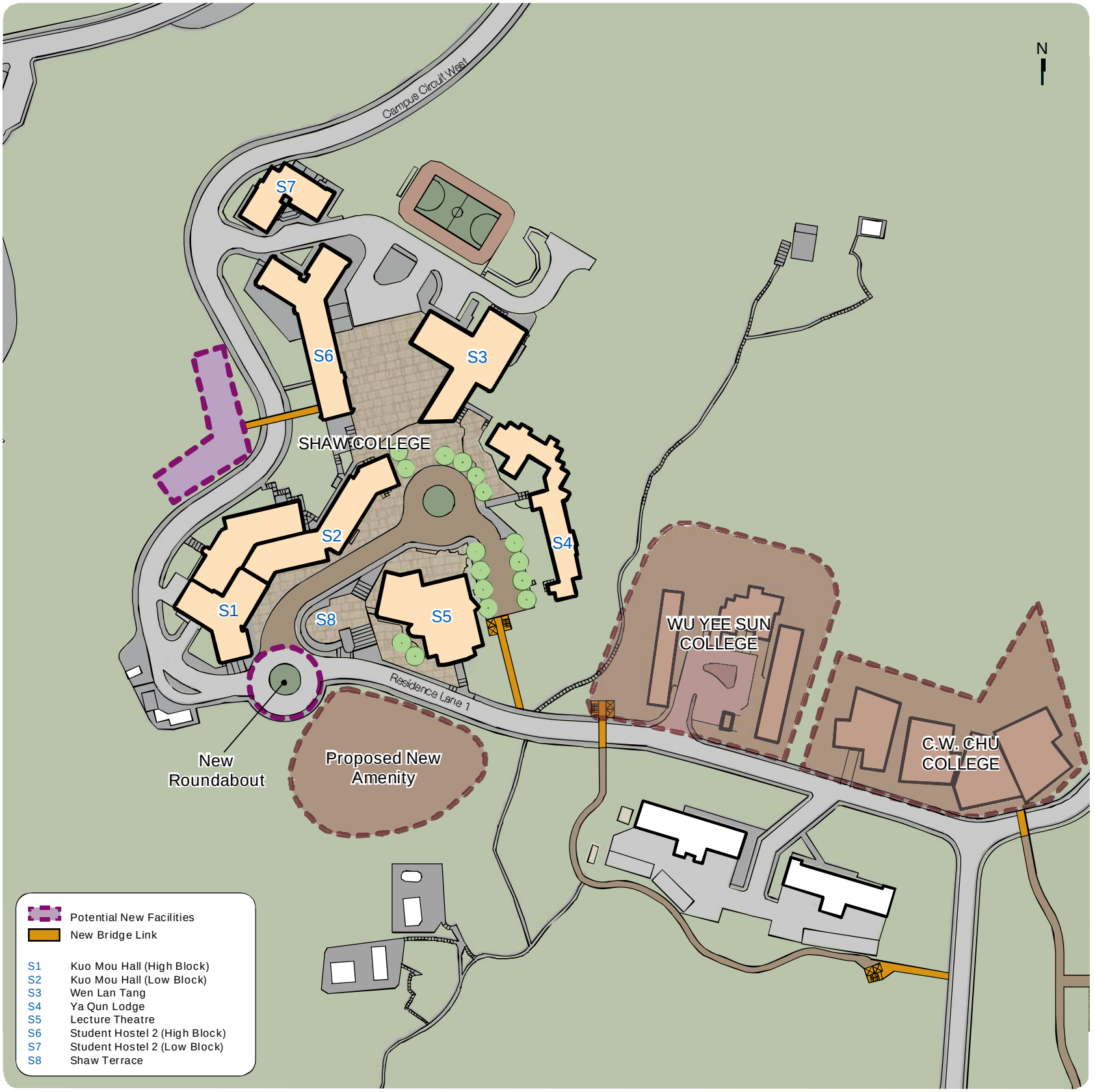


Fig 24 - Diagrammatic illustration of potential new facilities at Shaw College



Map 11 - Shaw College campus plan

4.3 A PEDESTRIAN-FRIENDLY CAMPUS

Constraints and Challenges

- Existing Traffic Network
  The road network, transport services and facilities, such as bus shelters, bus stops and footpaths on campus have been developed over time in response to the hilly topography and the needs and requests of the staff and students.

  The proposals for the traffic plan should not be just to deal with improvements, but should be strategically developed with forward looking vision to achieve sustainability in order to match the objectives of the Master Plan.

  In order to develop overall transport strategies for addressing the current problem as well as for the future campus development, a systematic approach was adopted. A transport study began in June 2008 (Appendix E). The initial stage of the study included data gathering and site visits to evaluate the existing campus setting and constraints.

- Hilly Topography and Dispersal of Buildings
  As mentioned in Section 2, the major challenge to the University's campus planning is the hilly topography which leads to inconvenient accessibility. The dispersed locations of buildings resulting from the three-precinct campus model since the establishment of the University also creates problems in providing connections among facilities.

- Deficiency of the Existing Road System
  The roads winding along the steep contours are relatively narrow, which puts constraints on increasing pedestrian and vehicular traffic flow as well as road safety. A typical example is Pond Crescent in the Chung Chi campus, where large numbers of students need to pass on their way between teaching facilities and the University Station or the bus pick-up points to their classes.

- Congested Entrance at the University Station
  As mentioned in Section 2.1, there are four main entrances to the University, namely the "Four-Pillar" entrance at Tai Po Road, Chung Chi entrance at Tai Po Road, Science Park Road entrance, and the University Station entrance. The former three are the main vehicular entrances to the campus, while the University Station one is the most popular entrance for students, staff and visitors. A large percentage of the non-residential students or staff reach the campus via the entrance at the University Station, from either the MTR or the bus terminus, causing congestion particularly during peak hours. And as this entrance is in the low-level precinct, its distance from the Central Campus is inconvenient to pedestrians.

Pedestrian-Friendly Campus

The idea of a pedestrian-friendly campus will be one of the significant and forward-looking strategies for achieving sustainable development. It will also be an ideal solution to cater for the anticipated population increase by 2012 and up to 2021, as it can reduce the reliance on vehicular transport and create a more environmentally friendly environment.

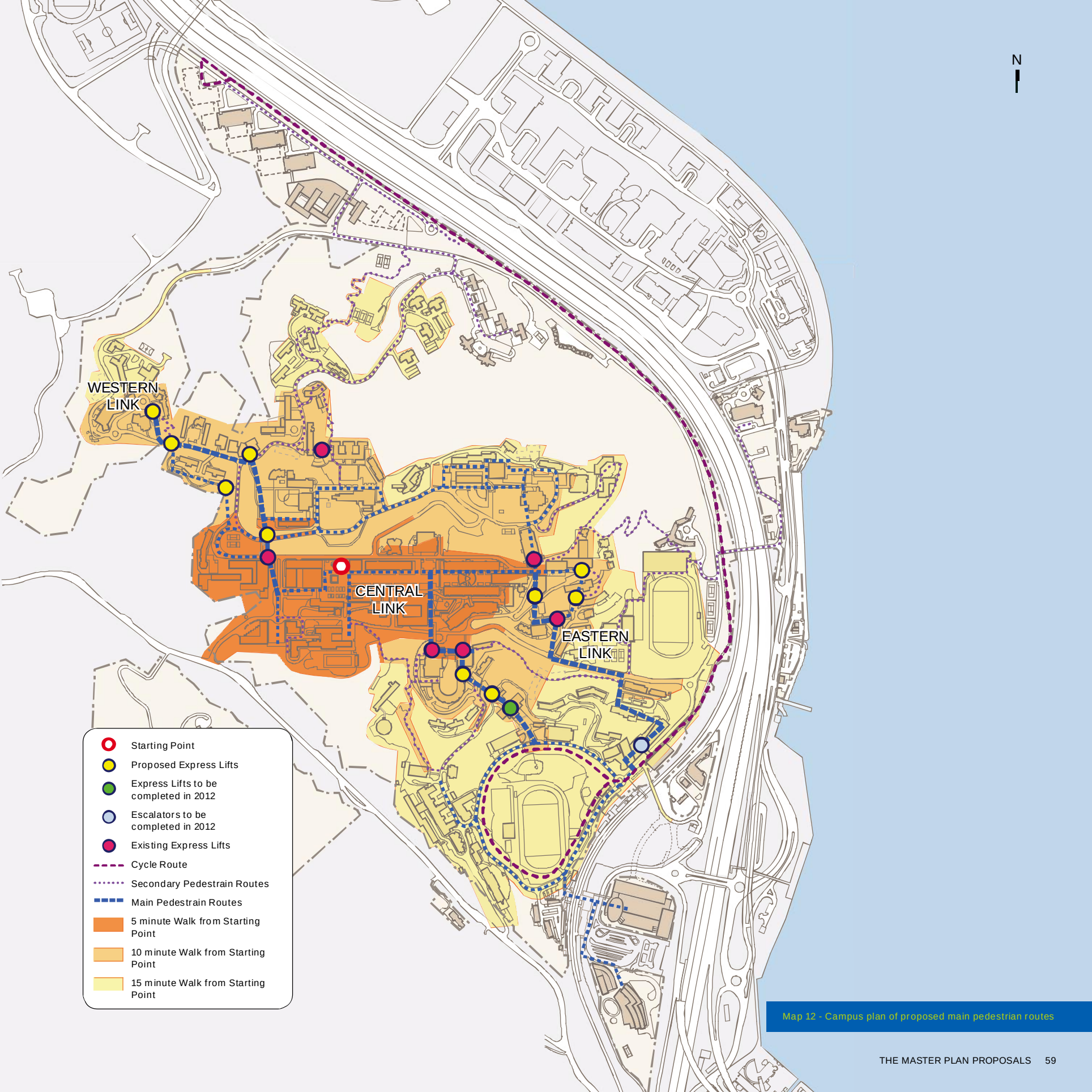
Specific data about detailed traffic and pedestrian flows and bus service were collected through surveys conducted in September and October 2008. Results of these surveys are summarized in Appendix E.

The collected data were combined with inputs from the Stakeholder Engagement exercises and advice from the University to develop a set of strategies covering all aspects of the current situation as well as the development for 2012 and 2021. These aspects included pedestrians, traffic, bus service, parking and cycling.

In fact, as the campus population has been on the rise over the past two decades, the idea of a pedestrian-friendly campus has never ceased to gain its momentum. One example is the installation of expressed lifts in new developments, such as Mong Man Wai Building, to provide convenient vertical pedestrian access.

The Master Plan's key aim is to improve the connectivity within the campus by making it comfortable, convenient and enjoyable to walk around. By prioritizing walking with some cycling on the campus, it will rationalise the shuttle bus usage and minimise the reliance on vehicular transport. This strategy is based on transport analysis of the existing situation and the immediate needs on campus, with a forecast of the demand for 2012 and 2021.

The Master Plan's approach is to optimize the performance of the various transport facilities including pedestrian linkage, internal road system management and shuttle bus services. It proposes to reinforce the major pedestrian



Map 12 - Campus plan of proposed main pedestrian routes

route on campus by creating a complete and desirable network. Existing link bridges should be enhanced with the addition of covered walkways and communal gathering spaces at strategic locations.

THE PLANNING MEASURES

The recommendation of the Master Plan is to establish long-term implementation strategies to achieve a pedestrian-friendly campus with the following proposals:

4.3.1 PEDESTRIAN NETWORK

A series of detailed pedestrian surveys were conducted to find out the current pedestrian travel patterns and identify the locations of peak pedestrian traffic demand on campus. Estimation of the future situation according to the anticipated population between 2012 and 2021 was also made (Appendix E2).

Based on the results of the survey, the Master Plan proposes an expansion of the pedestrian network, which will begin at the University Station, pass through the low-level precinct and go to Central Campus. From the Central Campus, the network will extend to the colleges in the high-level precinct via separate linkages with existing and new vertical components.

With the existing and proposed facilities, the following main pedestrian routes are promoted in the Master Plan (Map 12):

- Eastern Link
  As the main arrival point of the campus, the University Station area is full of students waiting for shuttle buses during peak hours. By encouraging students to walk up the hill, it helps to reduce the reliance on shuttle bus services and relieve the congestion around the Station. The Master Plan, therefore, proposes a new pedestrian route that will link the University Station with the Central Campus by escalators in the new Integrated Teaching Buildings and by express lifts in the new developments on the Village Path site (Site B). This principal link will divert pedestrian traffic to the east of Pond Crescent and provide a sheltered route from the station to Central Campus. It is highly recommended that the University explore with MTRC on the possibility of a new northern exit at the University Station (Map 13), which should be most helpful in diverting pedestrian traffic in 2012.

- Central Link
  A new pedestrian route will connect Pond Crescent in the low-level precinct to the Central Campus. Express lifts in the new Student Amenity Centre and on Chung Chi Road will provide access to the Academic Building 1 site.

  Another express lifts will then provide access to a high-level bridge linking with William M W Mong Engineering Building. The route will end at the University Mall.

- Western Link
  This link will connect the northern colleges with the Central Campus.

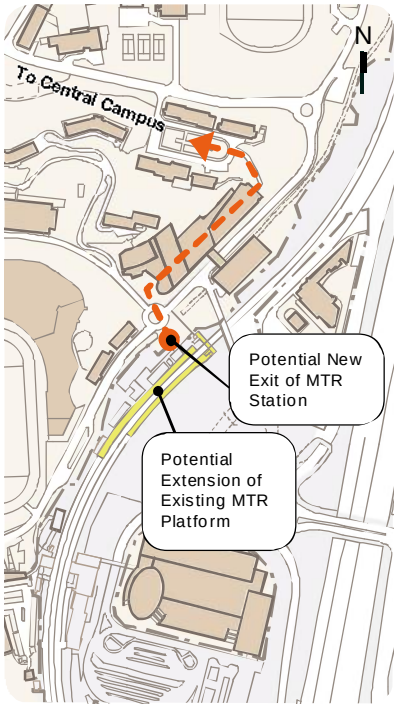
  New express lifts at Shaw College and Campus Circuit West will lead to a new trail south of the Residence Blocks 3 and 4. A further lift will provide access up to the Residence Road and a direct downhill connection to the Central Avenue. To reverse the journey, new express lifts connecting the Teaching Complex footbridge to United Road and further to the western court of United College are proposed.

  With the establishing of the new colleges, a bridge link and integrated express lifts will complete the connection loop for the northern colleges and the Central Campus.

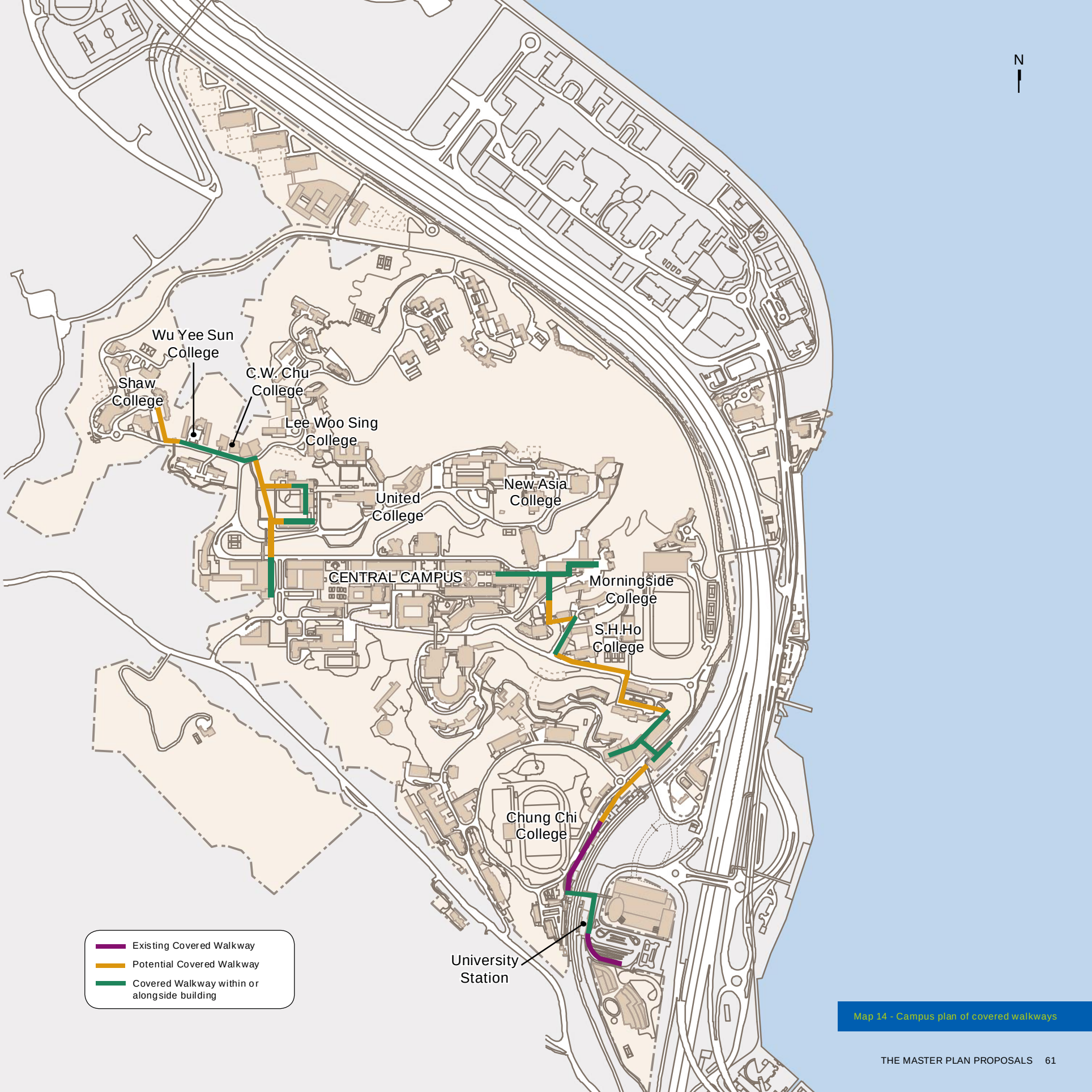
It is recommended that all the new vertical connections are served by express lifts. Additionally, alternative routes in the form of steps to complement the lifts are necessary.

There will be covered walkways along the Eastern and Western Links to protect pedestrians from the weather (Map 14). Sufficient lighting and a properly paved footpath can also be assured along all the major routes. Provision of sufficient signage and directories in the campus is also recommended to enable pedestrian to identify the buildings and to facilitate way-finding easily. It is proposed that the existing walkways should be extended and enhanced to make for a comfortable walking time of 15 minutes between the periphery and the core of the campus.

In addition to the proposed three main pedestrian routes, the Master Plan also encourages the use of nature trails as shortcuts or leisure walks on the Campus. Two nature trails are proposed and described in Section 4.5.3.



Map 13 - Plan of potential new exit of MTR station



Map 14 - Campus plan of covered walkways

4.3.2 ROAD ENHANCEMENTS

A series of pedestrian and vehicular traffic studies, including interviews, demand surveys and traffic flow studies were conducted to acquire data. A summary of these surveys can be found in Appendix E2 (Pedestrian Assessments), Appendix E3 (Observed Traffic Flow in 2008) and Appendix E4 (Traffic Assessments).

These data were then analyzed to determine the views of the population traveling in the Campus and to identify the busiest periods at key footpath locations and road junctions. Based on the results of these studies, a series of road enhancement work is proposed (Map 15).

Review of Road Capacity

In order to project the performance of the road network in 2012 and 2021, the sufficiency of road capacity was assessed with the consideration of possible population growth in the future year. Generally, the road network is anticipated to perform adequately with improvements recommended at certain locations.

- Pond Crescent
  The survey on pedestrian traffic identified Pond Crescent as the busiest location in the campus (Appendix E2). Due to the importance of the location of Pond Crescent, Chung Chi College will be closely consulted on any future proposals. It is recommended that the traffic on Pond Crescent should be one-way and anti-clockwise, thereby releasing the road area for widened footways and cycling paths. This proposal will simplify traffic movements between the University Station and Chung Chi Road and provide safer pedestrian crossings and enhance the pedestrian environment (Fig 25).

- Central Avenue
  Results of the vehicular traffic assessment (Appendices E3 & E4) show that the traffic flow at the Central Avenue will soon approach its maximum capacity. The Master Plan, therefore, proposes to reduce the traffic flow along the Central Avenue by changing the traffic to one-way in anti-clockwise direction.

- Junction at the University Avenue and Library Boulevard
  Similar to the situation of the Central Avenue, it is recommended that the existing junction at the University Avenue and Library Boulevard should be upgraded to a roundabout to increase traffic capacity and improve circulation.

- Pedestrian Crossing
  Based on traffic surveys (Appendices E2-E4), formal pedestrian crossings are proposed in the following areas to avoid conflict between pedestrian and vehicular traffic during peak hours (Map 15):

  - Junction of Pond Crescent and Chung Chi Road
  - Chung Chi Road outside Chen Kou Bun Building
  - University Avenue outside S.H.Ho College
  - University Avenue outside William M W Mong Engineering Building

Enhancements on Road Configuration

Traffic capacity is not the only reason to justify road improvements. Other factors such as improving the pedestrian environment, circulation and bus facilities have also been taken into consideration in the Master Plan (Map 15).

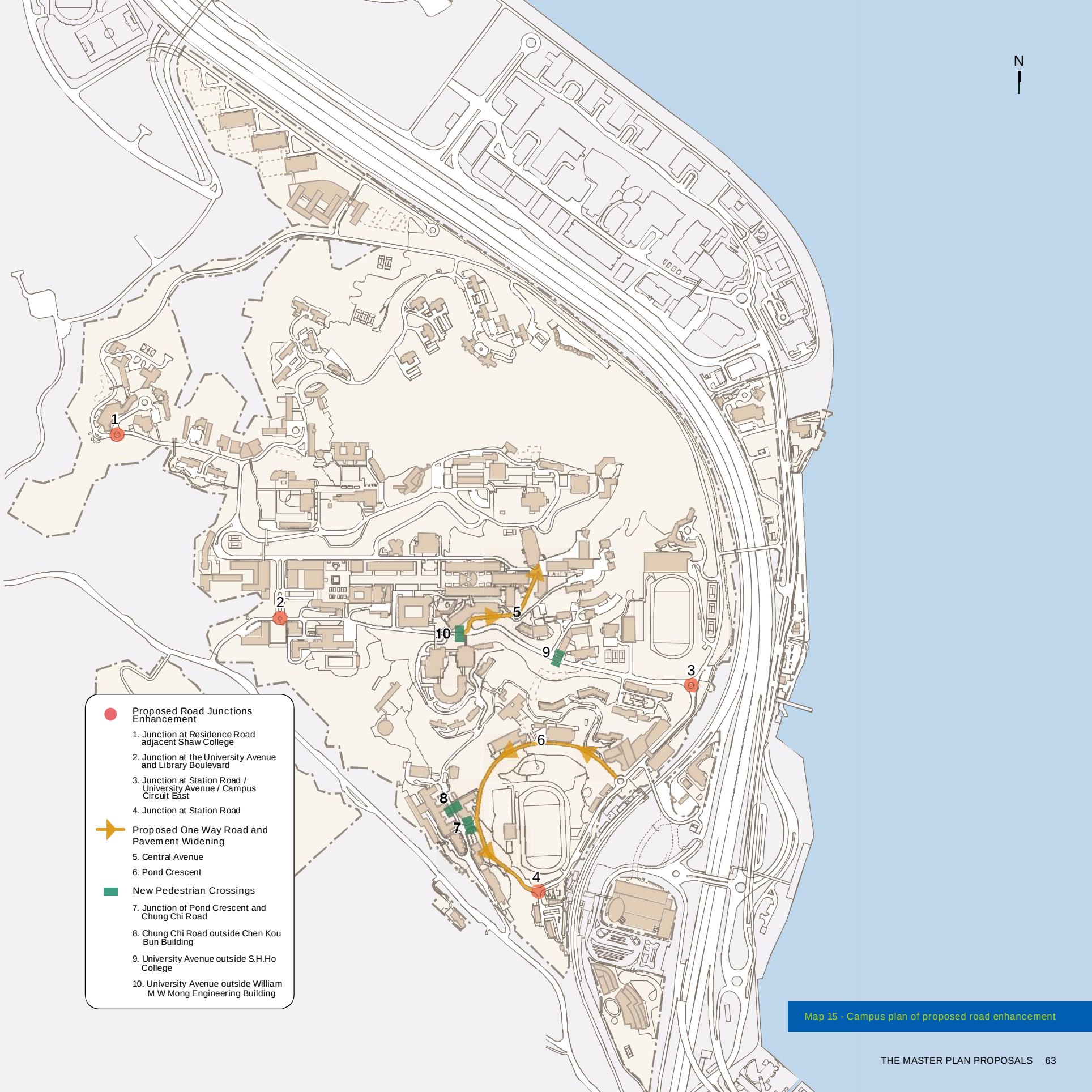
- Junction at Station Road/ University Avenue/ Campus Circuit East
  The existing junction will be upgraded to a roundabout to allow for the increased traffic flow to Area 39 and to enhance road safety there.

- Junction at Residence Road adjacent Shaw College
  The existing priority junction should be re-configured into a new roundabout. Access to the College should be closed. Space will be provided for a turning area for buses and to improve circulation outside the confines of the College. This proposal will also enable any expansion of the Shaw Terrace.

- Station Road
  The roundabout will be relocated nearer to the University Station to provide additional space for new bus bays to increase bus pick-up capacity and overall bus efficiency so as to reduce the waiting time and queuing for passengers.

Enhancements of Traffic Signs

Apart from road enhancement, it is also proposed to provide sufficient traffic signs in the campus to facilitate drivers' way-finding.



Map 15 - Campus plan of proposed road enhancement

4.3.3 PARK-AND-RIDE

To further enhance the pedestrian-friendly nature of the campus, the Master Plan proposes to reduce private vehicle use and the associated fuel emissions within the campus. New car parks will be located near to the existing main university entrances, at the periphery of the campus, at the University Station in the south (Site G), adjacent to John Fulton Centre in the west (Site D), and, in addition, within Area 39 in the north (Site H). Students and visitors will be required to park their cars at these peripheral locations and either walk or take the shuttle bus within the campus. Although staff and other campus residents are proposed not to be affected by this arrangement in its first stage of implementation, extension of such restrictions to them may be required upon University's review.

For future planning purpose, this centralized parking approach is intended to allow some of the scattered roadside parking areas to be used as pedestrian areas or for landscaping.

4.3.4 SHUTTLE BUS SERVICE

The Master Plan's aim at optimizing the performance of the various transport facilities on the campus is a critical component in the proposals for the campus shuttle bus service. Should there be no significant advancement in the pedestrian-friendly campus scenario, the projected bus frequency will be increased from 78 to 100 per hour by 2012 and 115 per hour by 2021 (Table 01). Such increases could result in the failure to deliver a sustainable and environmentally friendly campus.

Existing Shuttle Bus Services

Existing shuttle bus routes currently provide three main types of services:

- The standard shuttle bus service which mainly serves the students every 15-20 minutes around the campus.
- The second type is the 'meet class' services, which only operates between classes at limited frequency.
- The last one is the shuttle light bus, which operates on a regular basis but travels mainly to residential blocks in the campus.

The existing shuttle bus service comprises five main routes, which change at different times during the day. Extra locations are served at designated times, applicable also to the six meet-class routes and the shuttle light bus service.

Surveys were also conducted on the bus services including boarding and alighting surveys, bus occupancy and interview surveys. Sample outputs of the bus usage survey are shown in Appendix E5.

Reconfiguration of Shuttle Bus Services

The Master Plan proposes to rearrange existing shuttle bus services for better utilization of resources. Based on the collected data and site observations, two strategies have been developed with differing philosophies:

- Bus and Walk Strategy

  This strategy (Map 16) proposes to strengthen connections to the Central Campus while weakening links to Shaw, United and New Asia Colleges to promote walking between these colleges and the Central Campus. Also proposed are: an expansion to allow for connection to Area 39 with limited service via the Central Campus from 2012 and a new express service from the Station via Campus Circuit by 2021.

  This approach will reduce duplication of routing especially on University Avenue and Station Road. The Master Plan proposes to divide the campus into upper and lower parts. The connection between the Station and Central Campus will become the core route and serve the lower part of the campus. Students who need to go to United, New Asia and Shaw Colleges will have to use this core service to get to Central Campus and either walk to their corresponding destinations or interchange for the upper route coach service. However, meet-class shuttle bus will be retained to cope with the demand during the class changing period.

  The frequency of the lower route service will be enhanced to cope with the increased number of students in 2012 and beyond. But the upper route coach services will be reduced to promote walking between these colleges and Central Campus. By doing so, we are expecting 30% of the passengers will change their travel pattern to walking

BUS MOVEMENTS AT THE UNIVERSITY STATION			
	Bus Movements per hour (2-way)		
	2008	2012	2021
Forecast 1: Existing style of operation maintained (no enhancement)	78	100	115
Forecast 2: Existing bus service with improved pedestrian network	-	95	109
Forecast 3: Comprehensive bus network and 10% shift to walking	-	90	104
Forecast 4: Bus & walk network and 30% shift to walking	-	82	94
TOTAL BUS NUMBERS (INCLUDING MEET-CLASS)			
	Number of Buses		
	2008	2012	2021
Forecast 1: Existing style of operation maintained (no enhancement)	24	31	35
Forecast 2: Existing bus service with improved pedestrian network	-	29	34
Forecast 3: Comprehensive bus network and 10% shift to walking	-	28	32
Forecast 4: Bus & walk network and 30% shift to walking	-	24	27

Table 01 - Estimation of bus mobility at the University Station and total bus number

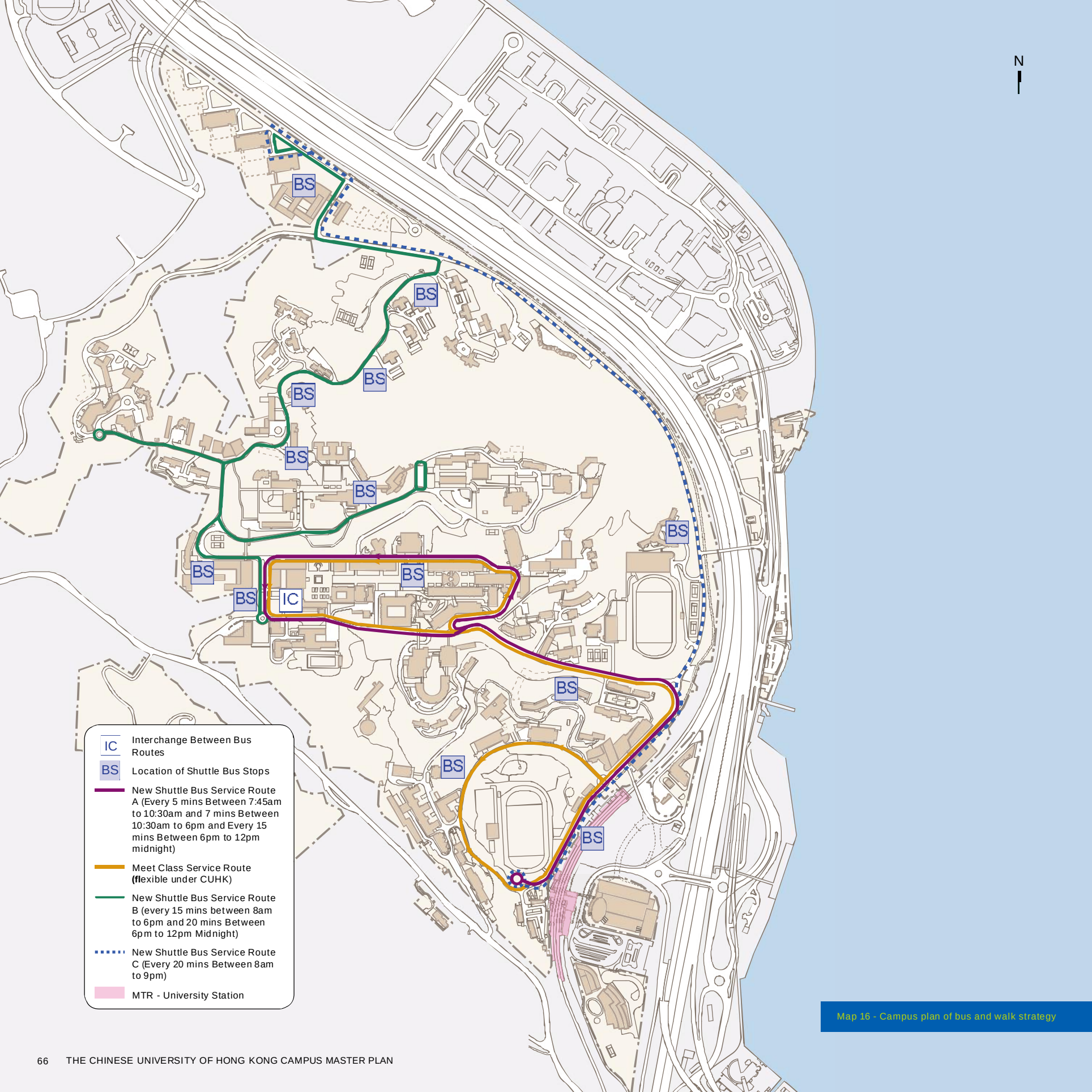
and the number of buses required in 2012 will be kept at what is currently provided, and the number of bus movements will be similar to that in 2008.

- Comprehensive Bus Strategy

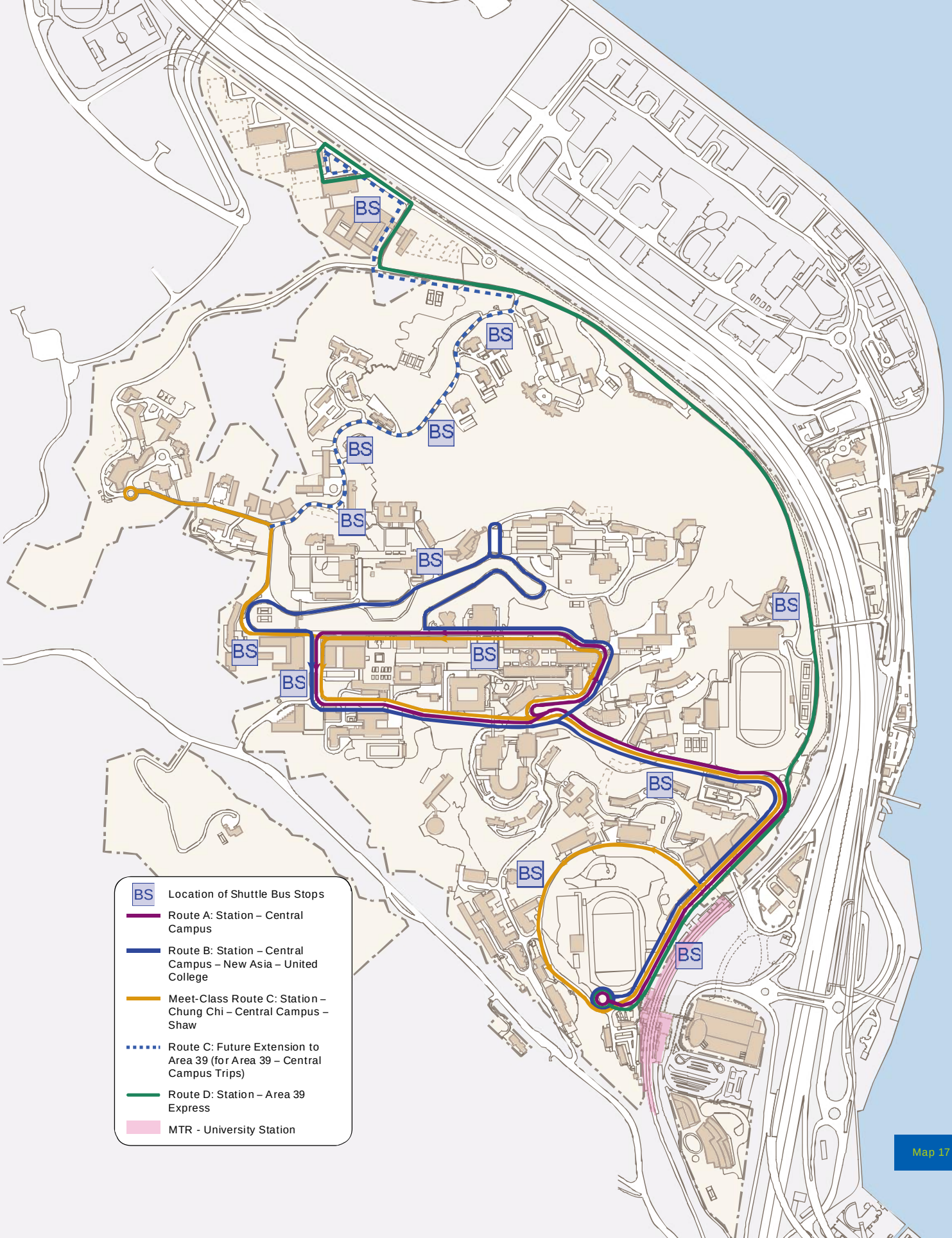
This strategy (Map 17) based on existing services, simplifies but maintains the overall coverage of the existing services. The frequency will remain similar to what is currently provided with some bus stops, especially in downhill direction, being cancelled to encourage more walking. For example, an existing bus stop between the top hillside to Benjamin Franklin Centre may be cancelled. By doing so, it is assumed that 10% of the passengers will change their travel pattern to walking but there will still be a 15% increase in the number of buses required and bus movements in 2012 compared with 2008.

In both strategies a simpler shuttle light bus service is maintained with frequencies adjusted over time to meet demand.

Table 01 shows the estimation of bus movements at the University Station and the total number of buses required for bus services by 2012 & 2021. Preliminary assumptions based on the survey indicate that 30% of pedestrians may choose to walk if good facilities, with limited uphill walking, are provided. This would mean that by 2012 the bus service would remain similar to today's with the adoption of Bus and Walk strategy.



Map 16 - Campus plan of bus and walk strategy



Map 17 - Campus plan of comprehensive bus strategy

An assessment has been also made of the likely future demand for the number of buses. As shown in the table, the best possible scenario is that the number of buses will remain the same in 2012, under Forecast 4, if bus and walk network is used. Therefore, it is considered that every effort must be made to encourage students and staff to walk thereby developing a walking campus. If a walking culture is successfully developed in the University, the future demand on bus services in 2021 may be even less than the predicted figure.

In conclusion, the Master Plan recommends the following proposals for shuttle bus services:

- The shuttle bus routes will be simplified to adopt a bus and walk strategy, to promote more walking in the campus.
- An Area 39 express service will be provided.
- Bus stop locations will be aligned with the new pedestrian routes to reduce the number of bus stops, particularly in the downhill direction.
- Existing bus fleet will be replaced in phases with hybrid electric or Euro V, low emission diesel buses by 2021.

4.3.5 CYCLE TRACKS

To promote an alternative mode of transport and help develop a cycling culture on campus, the Master Plan proposes the construction of a dedicated cycle track connecting the University Station to Area 39. The proposed track will complement with the provisions for cycling around the Pond Crescent area (Fig25).

Cycling is becoming more popular in Hong Kong as a healthy and sustainable form of transport. This has been reflected in the views of the students. However, there are safety concerns with cycling. So it is proposed that while cycling should be encouraged, it should also be separated as much as possible from road traffic.

If the use of cycles is to be actively promoted, the followings proposals could be considered:

- Cycle Track along Campus Circuit East and North – provide cycle track along Campus Circuit East and North and connect to the University Avenue, Station Road, and Pond Crescent.
- Cyclist facilities – provide storage areas at potential route termination points.
- Changing area, showers, and lockers – provide these facilities in new buildings where possible.

Development of comprehensive cycling network for the entire campus depends on the use of the proposed cycle tracks and the growth of a cycling culture on the campus. If the students and staff support cycling and demand for better facilities grow, there is scope for more facilities in the long term. However, this is highly dependant on the use of and support for the proposed cycle tracks.

Fig 25 - Proposed enhancement at Pond Crescent: One-way vehicular traffic for widened footways and new cycling paths

Fig 26 - Examples of Places of Value (from top to bottom): the University Mall, Weiyuan Lake, Sculpture Garden, the New Asia Amphitheatre, College Sign of Shaw

4.4 CONSERVING PLACES OF VALUE

The Master Plan acknowledges existing buildings, landscape and places on campus that are culturally significant, or may have been conferred upon historical meaning and association by the University community. They stand to convey identity to the University and help to give unity to the campus – a unity which the Master Plan proposes to enhance and extend.

To achieve the objective, the Master Plan seeks to:

- Conserve places that are valued
- Explore adaptive reuse of built heritage
- Preserve the existing intimate and congenial college identities

THE PLANNING MEASURES

4.4.1 CONSERVE PLACES THAT ARE VALUED

The following places of value were collected from consultations during engagement events:

Central Campus:
The University Mall and adjacent buildings (including University Library, Science Centre and University Emblem, Institute of Chinese Studies, University Administration Building, the Gate, and the Beacon), the four Chinese Pillars at University Main Entrance.

Chung Chi Campus:
The College Chapel, Chung Chi Tang, Ying Lin Tang, Hua Lien Tang, Ming Hua Tang, Weiyuan Lake, Lingnan Stadium & Athletic Field.

New Asia Campus:
New Asia College Water Tower, the Statue of Confucius, New Asia Pavilion, the New Asia Amphitheatre and Ch'ien Mu Building.

United Campus:
United College Water Tower, Adam Schall Residence and lawn area in front of the building and Sculpture Garden.

Shaw Campus:
College Sign and Mural

These places and buildings that communicate cultural significance within the campus have informed the Master Plan's selection of appropriate sites for potential development. The development of College communities over four decades has formed a core part of the University's historic legacy and image and has therefore been conserved in the Master Plan.

For example, the University Mall has long been considered an important icon of the University. The Master Plan recognizes not only its unique setting as a central axis of the campus, but also its role in those major University activities, such as graduation ceremony and orientation day. The University Mall, including the adjacent buildings, the distinctive paving pattern and landscape, is therefore proposed to be conserved as an integral place.

For the conservation of valued buildings, appropriate and regular maintenance is recommended to maintain their original design intent, including the correct use of colour and materials.

Taking into consideration the value of each of these sites, it has been ensured in the Master Plan that the campus will not relinquish any of its important places or spaces to the proposed developments. By designing with sensitivity and by using materials that augment their context rather than compete against them, the campus will gain both valuable building space as well as spaces in between.

In order to identify places with unique values that should be conserved, methodology is proposed and elaborated at the end of this Section 4.4.

4.4.2 ADAPTIVE REUSE OF BUILT HERITAGE

For a sustainable campus development, adaptive reuse of an old building is an ideal alternative of redevelopment. While the historic feature of an old building can be retained, new use for the building can give a new life and add dynamics to the heritage (Fig 27).

4.4.3 PRESERVATION OF EXISTING INTIMATE AND CONGENIAL COLLEGE IDENTITIES

In the development of the Master Plan, not only the tangible "Places of Value" are considered for conservation, but the intangible identities of the University and the colleges are also preserved.

As mentioned in Section 4.2, the traditions and identity of each college are respected and the Master Plan aims at enhancing college life by reinforcing the existing intimate and congenial college identities. For example, the intimate spatial quality and identity can be found at the New Asia Pavilion and the nature trail at Chung Chi College, which the Master Plan has proposed to preserve (Section 4.2 refers).

Fig 27 - New learning commons converted from the existing University Health Centre: Proposed adaptive reuse of the existing building and the adjacent open space as a new Learning Commons

Establish a "List of Places with Cultural Significance"

In addition to the identified places of value listed in Section 4.4.1, the Master Plan also recommends the establishment of a methodology for identifying places with unique values that should be conserved. The methodology should include two key procedures:

A. Procedure to identify places with unique valued fabric, use and associations

This procedure involves the establishment of 'List of Places with Cultural Significance' with the following steps:

Step 1: Identification and Investigation

The places for investigation may include architecture (such as a building, infrastructure or monument) and cultural landscape (such as a garden, plaza or landscape feature) on the campus. A draft list for further discussion will be prepared following preliminary consultation with stakeholders and experts. The results of earlier consultations at engagement events should be referred to.

Step 2: Assessment of the Significance

Following the preliminary investigation conducted in Step 1, assessment of the significance of a place shall be made with reference to the following values:

(i) Historical Value
Places with significant past owners or occupants, traces of important historic events, or special social significance

(ii) Identity Value
Places related to the image or identity of the University or colleges

(iii) Memorial Value
Places contributing to the memory of special people, events or association, including places for commemoration of significant event, tradition and religious practices.

(iv) Architectural Value
Places with unique architectural style that reflect the cultural value of a specific period; assessment criteria include consideration of form, scale, colour, texture and material of a place associated with the context and its use.

Step 3: Consultation with the Community

The draft list will then be open to the University community for reviewing. Consultation activities can be arranged for detailed discussion with stakeholders and experts.

Step 4: Assessment of Class of Significance

Based on the feedback from experts and stakeholders received in Step 3, the class of significance of the valued places will be assessed and finalized.

Step 5: Recommendation for Listing

The finalized cultural significance of each valued place will be documented. This final list will be available to University members. This list will be reviewed periodically and updated if necessary.

The implementation of the described procedure can be carried out by a task group which reports to the University. The task group may consist of a wide range of representatives, including University members experienced in conservation and stakeholders significantly associated with the University's conservation efforts. The task group will set a timetable for the assessment procedure.

B. Procedure to assess the implication of any intervention to Places with Cultural Significance

An assessment procedure is proposed for all interventions to ensure that places with cultural and historical significance will be respected and conserved as part of the long-term development of the campus.

The implementation of this assessment procedure can be carried out on an individual basis by a separate team of specialists from different disciplines. International guidelines can also be referred to in this assessment procedure, for example, the Burra Charter by the Australia ICOMOS Charter for Places of Cultural Significance and the Principles for the Conservation of Heritage Sites in China by the State Administration of Cultural Heritage (SACH).

Fig 28 - Examples of campus landscape (from top to bottom): shaded pavement along Weiyyuan Lake, nature trail at Chung Chi College, landscapes on both sides of the University Mall

4.5 A LANDSCAPE OF VITAL IMPORTANCE

The beauty of the campus is an asset which many members of the University take pride in and treasure. Many staff and students, and even the public, enjoy walking in the University campus to admire the natural scenery. Pond Crescent, for example, as the major road in Chung Chi Campus, is one of the favourite places for a leisure walk. The pavement is naturally shaded by a continuous row of trees and with its view direct to the Weiyuan Lake, where a pavilion and two bridges, namely the Crooked Bridge and the Arched Bridge, provides a pleasant landscaped environment with an exceptional ambience for the University members to enjoy.

University members enjoy walking along the rustic footpaths rather than the pavements at major roads. The nature trail in the western part of the Chung Chi Campus is one example. The stream, densely grown trees and wandering path provide a serene environment for relaxation.

The University Mall, although not heavily planted, is also one of the most famous walkways in the campus. Lined with bauhinia trees on both sides and characterized by the unique paving pattern as well as sculpture such as the Gate, the University Mall provides a formal and distinguished landscape.

Other than walkways, several courtyard spaces in the campus also provide an enjoyable environment for the University members to gather and relax. Examples include the courtyards at the Institute of Chinese Studies and Lady Shaw Building.

The University has put every effort in protecting and enhancing the green environment. For a long-term campus planning, the Master Plan acknowledges the significance of preserving and improving the existing landscape and aims at proposing a landscape framework to:

- Promote the enjoyment of the landscape and visual amenity of the surroundings
- Enable active experience of the natural campus context
- Encourage social interaction by providing quality landscape for gathering, studying and knowledge sharing
- Strengthen the sense of belonging and community

THE PLANNING MEASURES

In the Master Plan, it is proposed to preserve and enhance the surrounding natural resources whilst creating strong connections between places, to encourage walking, and at local scale, to make quality distinct plazas and courtyards. The following proposals are recommended for maintaining and developing a green and humanistic campus landscape.

4.5.1 COMPOSITION OF CAMPUS LANDSCAPE

The campus is situated on the eastern side of the Tai Po Kau Nature Reserve, which is well known for its varied natural flora and fauna. As the backdrop to the campus, the Nature Reserve comprising indigenous woodlands provides a rich visual pleasure.

Besides, the greening ratio of the Chinese University campus at 70% is higher than that of other tertiary institutes in Hong Kong, and provides a valuable landscape and visual resources to the University members as well as the public.

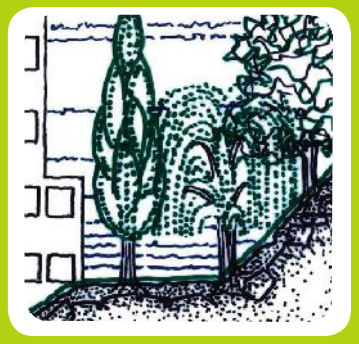
The composition of greenery can be outlined as different soft landscape areas according to the location, pattern and species of vegetation. The Master Plan proposes a Landscape Zoning Plan (Map 18) which identifies and recommends the treatment of different types of landscape zones in the campus to enhance the greenery and to supplement hard landscape works.

There are four soft landscape areas identified, namely Indigenous Woodland, Screening / Buffer Plantation Woodland, Amenity Plantation Woodland and Ornamental Planting.

Indigenous Woodland

Indigenous Woodland refers to native woodland with a varied woodland structure. Species include those trees, shrubs and ground flora that are indigenous to Hong Kong's coastal and hillside locations.

The ecological and amenity value of indigenous woodland planting is the highest and contributes in significant ways to the visual and scenic quality of the campus. Therefore, this planting zone should be properly protected with only limited development recommended. If development is unavoidable, the landscape, visual and ecological impacts should be carefully studied.



Screening / Buffer Plantation Woodland

Screening / Buffer Plantation Woodland consists mainly of fast-growing and exotic species, like Acacia spp., and Eucalyptus spp. It is commonly used for visual mitigation requirements, to screen incompatible land uses and unsightly utility areas as well as for slope stabilization.

The mitigation effect of buffer plantation becomes pronounced as vegetation matures in later years with the planting to the slopes being more extensive than the existing woodland but develops a less coherent and ecologically loosened structure than the existing woodland / shrub vegetation. Dominant species like Acacia confusa and Eucalyptus spp. are fast growing with a short lifespan and weak wood texture. They are susceptible to typhoons and replacement planting should be considered during new development. More natural species like Celtis sinensis, Cinnamomum camphora, Sterculia lanceolata etc., can be considered to introduce an ecologically friendly structure into the existing plant community.

Amenity Plantation Woodland

Amenity Plantation Woodland refers to that woodland which contributes to the visual and scenic quality of the core campus area and is enjoyed by the local users and visitors. Species composition of amenity plantation woodland is mainly indigenous to Hong Kong coastal and hillside locations, similar to those of indigenous woodland, but with more ornamental plant species.

It is also observed that the Amenity Plantation Woodland in the campus comprises most species which are suitable for avian habitat, by providing food and shelter. Similar to Indigenous Woodland, Amenity Plantation Woodland provides important visual and scenic amenity to local users and visitors. More importantly, it is enjoyed by the University members through their day-to-day usage. Therefore, it should be properly protected, with only limited development.

Ornamental Planting

The major function of Ornamental Planting is to contribute in modest ways to the scenic and visual quality of the campus. It is composed of a combination of native and non-native trees, shrubs, lawns and groundcover.

The selection of plants is mainly based on aesthetic considerations. The ecological value of ornamental plantation is relatively low when compared with woodland plantings.

Areas of feature ornamental planting can be included at significant places such as landmarks and nodes, the large plazas to accentuate certain areas, and within prestigious squares or courtyards. Thematic and ornamental plantings can be introduced into the Colleges and the new landscape formed by the potential development for enhancing or creating identity of place. Expanses of lawn shall also be encouraged within ornamental planting areas to enable social interactions.

Map 18 - Campus plan of landscape zones and nature trails

4.5.2 NETWORK OF CAMPUS OPEN SPACES

The Master Plan proposes to enhance the landscape experience by creating a comprehensive open space network on the campus (Map 19). The open space network refers to the overall network of landscape on the campus, including all open spaces, such as courtyards and plazas, and other roadside and trail landscapes that are fully accessible to University members and visitors.

The open space network is proposed to be an integral part of the master planning, respond to the overall form of the campus and to form one of the elements for achieving a sustainable campus.

The open space network shall connect new and existing open spaces, which can be further integrated with semi-outdoor / indoor spaces to form a larger network for social interactions. Open spaces such as plazas or courtyards will contribute to the "genus loci" of a building group with similar character, reinforcing local distinctiveness with distinct open character and thematic planting. Besides, the character of open spaces will also respond to the adjacent academic uses and adapt to any changes within the adjacent land use.

The following strategies are recommended in creating the open space network. These strategies have been applied to planning the open spaces of potential development sites:

- Open spaces as destinations which are framed by buildings and activated by new pedestrian paths passing through them.
  Example: University Plaza at Site D (open carpark outside John Fulton Centre) (Fig 29)

Fig 29 - Proposed University Plaza at Site D as the termination of the Library Boulevard

- Open spaces located around viewpoints that look out towards the harbour or wooded hills.
  Example: Eastside Outlook at Site B (Village Path)

- Shaded courtyards created between buildings as cooling retreats.
  Example: Courtyards between buildings at Site H (Area 39)

- Attractive planted roofs which have shading devices and ponds for rainwater storage.
  Example: Rooftop garden of Eastern Sports Hub at Site A (Romney Stores)

- Open spaces connected with wider footpaths and shared road surfaces where possible.
  Example: Entrance courtyard of Arts and Humanities Hub at Site E

- New footpaths created and existing ones improved through the wooded hillsides for convenience and aesthetic pleasure.
  Example: Cascading path along the teaching facilities at Site B (Village Path)

- Thematic landscaping provided to identify significant places.
  Example: Podium garden at the Station Court at Site G (University Station)

- The planting kept as natural as possible for ecological and aesthetic reasons, and water and energy used in maintenance reduced.
  Example: Water reservoir at Site H (Area 39)

- Recycled, recyclable or sustainable paving and materials used wherever possible.

The open spaces network of the University should thus encompass the entire landscape of the campus, and must be considered a single interconnected entity that forms the foundation of a pedestrian-friendly environment.

Map 19 - Campus plan of open space network

4.5.3 LANDSCAPE EXPERIENCES

The open space network plan has considered two distinct landscape experiences: the day-to-day journey through ornamental and paved main routes and piazzas; or the occasional, more intimate experience of walking through nature trails.

The proposed landscape experiences for potential development sites will be described in Section 5. These proposals are worked examples of integrated design process and technical landscape design considerations, as applied to typical scenarios for soft and hard landscape features in different landscape zones. They are intended to illustrate how relevant landscape and visual issues can be dealt with in the Master Plan, but are not intended as a proforma for the generation of design options. To enhance the day-to-day walking experience, it is proposed to improve the signage system in the campus to facilitate easy way-finding.

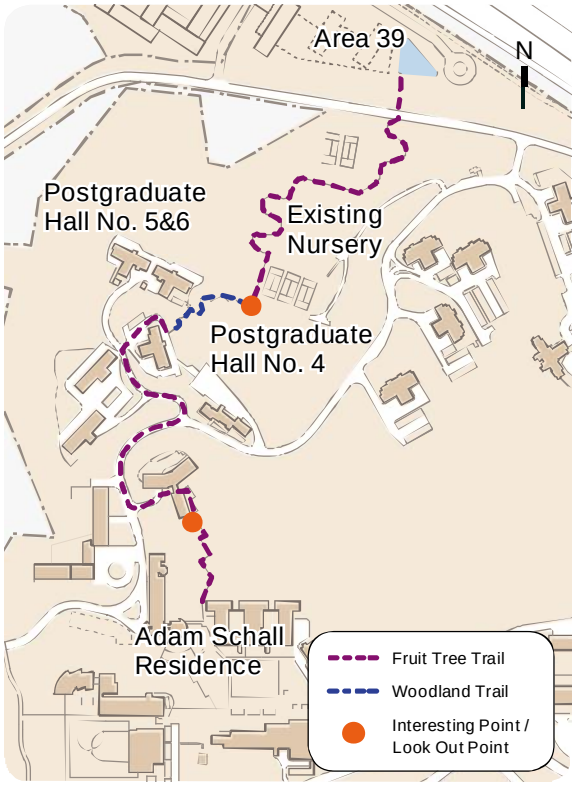
The Master Plan also proposes two additional nature trails to promote the enjoyment of the natural campus context:

Nature Trail 1: Between United College and Area 39

This nature trail is composed of two sections: the first one connects the United College to Postgraduate Hall No. 4 while the second one connects the Hall to Area 39 (Map 20).

The first section is modified from the existing staircase with stepped soil terraces on both sides. Potential viewing platforms with expansive views of Tolo Harbour are modified from the existing soil terraces. Proper renovation works with lighting, garden furniture and railings can be introduced to the viewing platforms. The vegetation on the soil slopes is dominated by the exotic plantation woodland species, i.e. Acacia spp., and Eucalyptus spp. The health conditions and form of these trees are generally poor.

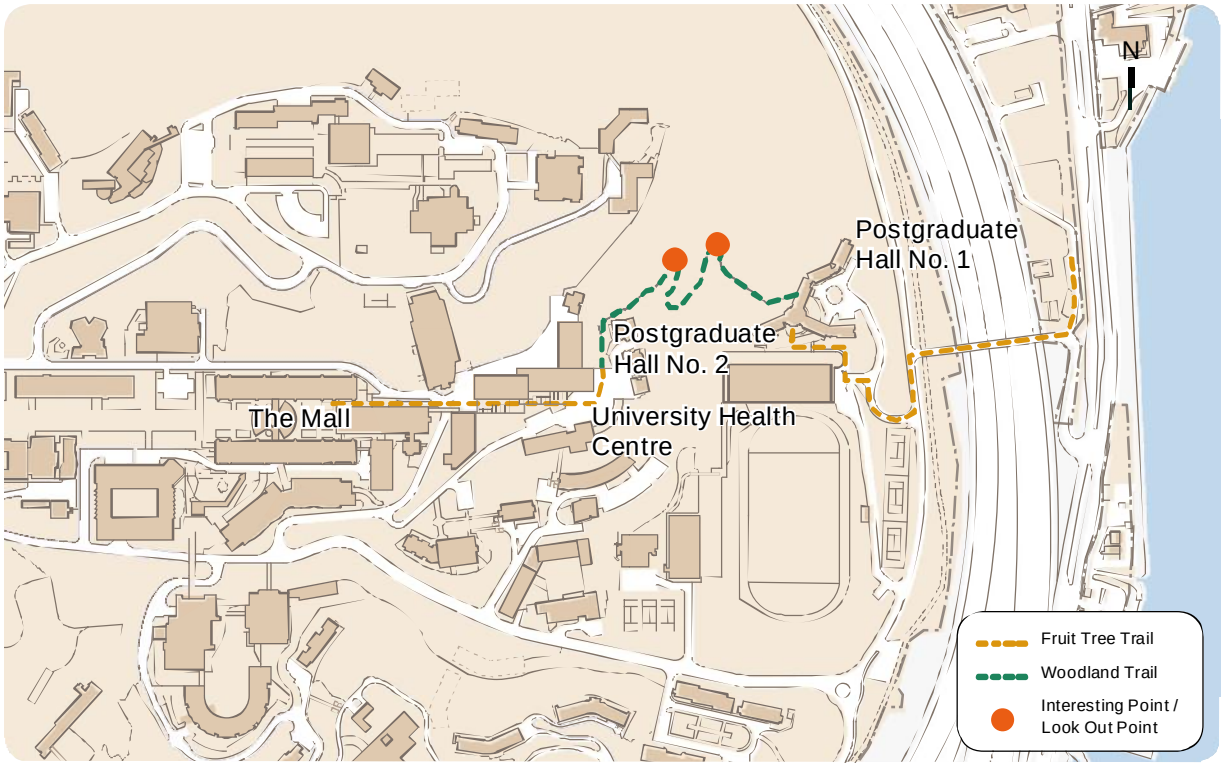
This section of Trail 1 is proposed to enhance the connectivity between United College and the new development at Area



Map 20 - Plan of nature trail 1

39, which will also provide a panoramic view of the Tolo Harbour. Native plant species with a composition of fruit trees are proposed at the stepped terrace to apply the specific theme to this trail. They shall generally be informal in layout, with fluid, organic edges and allow filtered views to the surroundings, while protecting their privacy.

The second section, a newly created nature trail, falls within the indigenous woodland zone. The vegetation is generally semi-mature while some mature specimens are also identified. At the higher portion of this trail, users can also enjoy a grand view of Tolo Harbour. Similar to the trail at the United College, some of the interesting points can be further developed as sitting areas, with the addition of native ornamental plantings.



Map 21 - Plan of nature trail 2

Nature Trail 2: Between Eastern Outlook and the Jockey Club Postgraduate Hall

This is a new trail at the buffer / screening plantation woodland zone. The intention of this trail is to improve the connectivity between the Central Campus and Eastern Campus (Map 21). Due to the steep topography of this site, the path should be curvilinear in nature with addition of native ornamental plantings on both sides. Besides, it is suggested that thematic planting species with seasonal color changes can be introduced in the nature trails.

4.6 MAKING A SUSTAINABLE CAMPUS

The University has pledged its commitment to continually improve the environmental quality of the campus, putting the principles of sustainable design at the heart of campus development, and has been acclaimed for the efforts made to enhance sustainability, including measures for recycling, use of renewable energy, energy conservation, waste management, tree and ecology preservation, and carbon audit on existing buildings.

A campus sustainable development structure has been established that includes policy-making and implementation, including the Campus Tree Preservation Policy, Guidelines for Contractors, Energy Conservation Programme and Recycling.

The University has already made significant progress in developing a sustainable campus. The achievements are as follows:

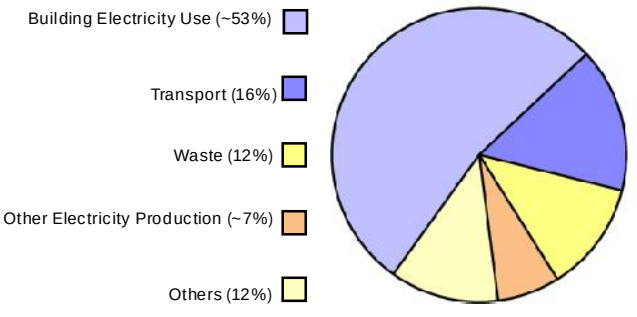
- Building electricity use fell by approximately 10% from 2000-2005 to 260kWh/m^2
- New building projects follow HK BEAM & Building Energy Code
- Annual carbon audits and sustainability monitoring record progress
- Substantial recycling and waste reduction programs (ISO 14000)
- Use of recycled materials in paving (Eco-Glass blocks)
- Rainwater storage at Wei Yuen Lake
- Low energy appliance and sensor controls installed
- Environment-friendly bio-pesticides
- Reduced waste building practices
- Preservation of biodiversity (particularly bird & butterfly species)

Winning a silver award of the 2008 Hong Kong Awards for Environmental Excellence Sectoral Awards under the category of Public Sector and Non-Government Organizations (NGOs) is a good testimonial to the existing effort for comprehensive environmental management. In recognition of the University's commitment, the Master Plan aims to create a model for a sustainable campus that reduces energy use, minimizes waste and reduces dependency on vehicular transport. The sustainability framework proposed in the Master Plan refers to formulation of design guidelines for the sustainable development of individual buildings, as well as overall reductions in and benchmarks for energy consumption across the campus.

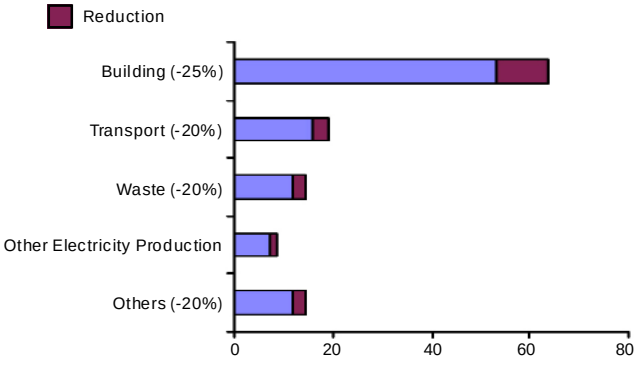
New developments are proposed to harmonize with the existing natural setting, so as to enhance the beauty of the campus landscape. Land being a precious resource, the ecological footprint of the new buildings should seek to use sites efficiently to sustain human activities, and conserve natural ecologies, flora and fauna.

The Master Plan also proposes a low carbon campus, with a reduced dependency on the earth's finite natural resources and a reduction in the total emissions of greenhouse gases – a campus with cleaner air, producing less waste, with less reliance on the motor vehicle, and which sets a target to reduce energy consumption of 25% (per capita) in 2025 from the campus-base figure of 2005. This is in line with Hong Kong SAR's commitment to reduce total energy consumption by 25% by 2030.

Of the greenhouse gas (GHG) emitted by Hong Kong, 60% comes from electricity use, of which 89% is attributable to buildings, with transport, waste and other sources producing the remainder.



Diag 03 - Hong Kong green house gas emissions



Diag 04 - Proposed reduction in energy use and green house gas emissions

THE PLANNING MEASURES

Aiming to achieve a low carbon campus, the Master Plan recommends to establish guidelines to develop a practically achievable model for a sustainable campus with a 25% cut in energy use (per capita) and a 20% cut in GHG emissions (per capita). These will require significant changes in building design methods:

- Apply design performance codes to all new campus developments. All new buildings shall aim to achieve the higher performance target such as "Excellent" rating of HK-BEAM or 5 stars of the Australian Green Star™ System
- Implement all feasible measures for energy conservation and energy efficiency within the existing campus development
- Recommend the following environmental design principles to be considered in all developments

4.6.1 BUILDING SOLAR SHADING

- Buildings planned with north and south aspects
- Deep eaves and balconies
- Vegetation for shading and evaporative cooling
- Covered walkways and colonnades

4.6.2 NATURAL BUILDING VENTILATION

Natural ventilation has the potential to reduce reliance on air-conditioning for thermal comfort. Where possible, buildings should have breezeways through principal floors to improve evaporative cooling.

Design features to consider:

- Breezeways, atria and courtyards
- Large openings for cross-ventilation
- High ceilings for good air circulation
- Double skin facades for stack effect cooling
- Shallow floor plates

4.6.3 PLANTED ROOFS

All developments should have green roofs to provide the following benefits:

- Biodiversity
- Rainwater attenuation
- Solar insulation
- Reduction in heat island effect
- An attractive 'fifth elevation'

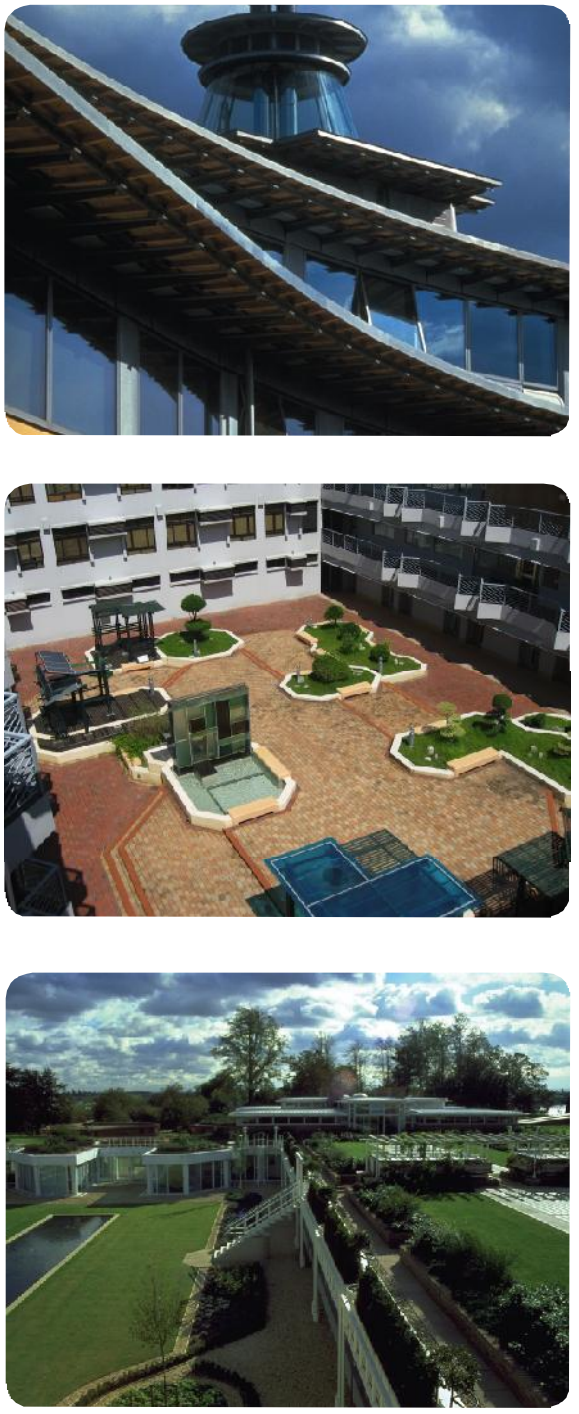


Fig 30 - Examples of environmental friendly building designs (from top to bottom): solar shading, building courtyard, planted roof

4.6.4 MATERIALS

Materials with low embodied energy should be used. Demolition and reconstruction are inherently wasteful of materials and energy; therefore, design for longevity is paramount.

Design measures to consider:

- Lightweight structures and materials
- Design for longevity and conserve buildings where possible
- Buildings using recycled / recyclable / low embodied energy materials
- Conserve, adapt and upgrade valuable existing structures

4.6.5 ENERGY AND CO_2

Design measures to consider:

- Energy efficient appliances to minimize energy demands
- Plentiful day lighting to reduce artificial lighting loads
- Rooftop photovoltaics, solar water heaters and wind turbines may supplement the University's energy demands through micro-generation
- Sea or lake source heat exchange pumps to stabilize internal temperatures
- 'Mixed-mode' services strategy to combine air conditioning with natural ventilation to provide comfort cooling
- Improved building management to increase efficiency
- Movement / daylight sensors to reduce demand on artificial lighting
- Integrate vernacular, tropical climate ideas for low carbon strategies

4.6.6 TRANSPORT

A principal recommendation of the Master Plan is the implementation of a comprehensive pedestrian movement framework within the campus to provide comfortable access throughout the campus and give precedence to pedestrians over vehicles. Improved connectivity will reduce the reliance on motor vehicles, bringing improved air quality and reduced environmental impact and noise levels. Hybrid and fuel-efficient vehicles will reduce emissions still further, with the proposed park-and-ride scheme reducing number of private cars in the campus.

Measures to reduce emissions:

- Pedestrian-friendly campus to encourage walking as the principal means of transport
- Phased upgrading of existing campus buses to hybrid vehicles
- Simplified bus network to reduce total bus numbers
- Park-and-ride facilities to reduce private car use in the campus
- Cycle tracks and secure cycle parking areas and facilities

Fig 31 - Examples of renewable energy devices (from top to bottom): wind turbine, rooftop photovoltaic

4.6.7 WATER

The University currently collects rainwater from the Weiyuan Lake for future use in landscape irrigation. This sustainable measure should be enhanced with further recommendations for water management within the campus development design:

- Reservoirs to gather drainage from natural hill streams
- Recycling to use grey water in toilets
- Attenuation to reduce storm-water surges
- Conservation through efficient and aerated fittings

Development at Area 39 site presents an opportunity for a reservoir to capture the natural stream run-off from the main campus and manage the natural water systems with sustainable water management.

4.6.8 WASTE AND ENERGY SOURCES

The conversion factor from fuel to power at a large power station is around 25%. Site generated power is a proposal which should be considered in the long-term power provision for the campus. Combined cooling, heating and power (CCHP) plant can provide significant reductions in carbon emissions when fuel is provided from local sources.

The Master Plan recommends a feasibility study be conducted to assess viability of alternative forms of centralised energy production in the campus, and consider low or zero carbon technologies such as on-site micro-generation, biogas production from waste and CCHP.

Measures to reduce emissions:

- Reduce construction waste
- Source building materials responsibly and locally
- Solar powered absorption chillers may reduce operating costs by utilizing low grade heat
- Sea or lake source heat pumps to provide natural cooling
- Wind power to generate electricity
- Photovoltaic panels to generate electricity
- Solar collectors for water heating

It is recommended that the above design measures should be implemented in future campus developments, and also in the current capital projects that are under planning.

Fig 32 - Use of rainwater stored for irrigation at the Weiyuan Lake

5

PROVISION FOR GROWTH — POTENTIAL DEVELOPMENT SITES

One of the major objectives of the Master Plan is to address the anticipated additional space requirements to accommodate further development into a comprehensive research university and to strengthen the overall organization of the campus layout. The Master Plan aims at assessing and defining development opportunities on the campus within the overall planning framework as well as the six planning precepts as elaborated in Section 4 for the University's consideration when additional space is needed. This section describes the proposals for the potential development sites.

PROVISION FOR GROWTH — POTENTIAL DEVELOPMENT SITES

During the Stage 1 stakeholder engagement exercise, a consensus was reached with the University community to support development of certain areas of the campus to accommodate further growth of the University.

During Stage 2, all the possible sites identified in the previous stage were assessed and their suitability and potential agreed upon in further stakeholder engagement sessions.

During Stage 3, specific proposals were developed for these sites and confirmed with the stakeholders for inclusion in the Master Plan. Collectively, these sites will provide comprehensive accommodation for the future growth of the University up to and beyond 2021.

In order to meet the needs of educational development and space, a number of new development sites have been identified in the following categories with due consideration to their cultural values as well as geotechnical and ecological concerns.

- Immediate developments are considered a priority to cope with the shortfall in student accommodation resulting from the four-year undergraduate curriculum and the establishment of enhanced research facilities.

  - New Colleges on Residence Lane 1 (Site I)
  - Area 39 - Northside Research Campus (Site H)
  - Arts and Humanities Hub (Site E)
  - Staff Residences (Site F)

- Intermediate developments will contribute to the enhancement of connectivity on the campus and the provision of a pedestrian-friendly campus.

  - Academic Building 1 - Southside Outlook (Site C)
  - University Station - Station Court (Site G)

- Long-term developments will provide accommodation beyond the University's planned requirements for 2021.

  - Romney Stores - Eastside Sports Hub (Site A)
  - Open carpark outside John Fulton Centre - Westside Belvedere (Site D)
  - Village Path - Eastside Outlook (Site B)

Besides fulfilling the space requirements, new developments will harmonize with and even strengthen the existing campus setting to form a coherent and integrated campus. To meet these needs, design guidelines as well as development potential are recommended for each identified site for reference by architects and engineers who would be engaged in implementing the Master Plan in the future. As a living and continually developing document, the recommendations made in the Master Plan may be reviewed periodically by the Univerisity.

Fig 33 - Potential development sites in the campus

5.1 SITES OF IMMEDIATE POTENTIAL

5.1.1 NEW COLLEGES ON RESIDENCE LANE 1 (SITE I)

As mentioned in Section 4.2, five new colleges have been established to cater for the increasing student enrolment. To realize the vision of an integrated campus and to encourage interactions among students of all colleges, a neighbourhood approach was considered for these new colleges, each forming semi-independent clusters within the University campus.

The two college neighbourhoods proposed are:

- Morningside College and S. H. Ho College will form one cluster with Chung Chi College in the southern campus;
- Lee Woo Sing College and the other two new colleges will form three distinct but semi-inter-reliant clusters, with United College, New Asia College and Shaw College in the northern campus.

This section elaborates the recommendations of the potential development site for the two new colleges: Wu Yee Sun College and C.W. Chu College.

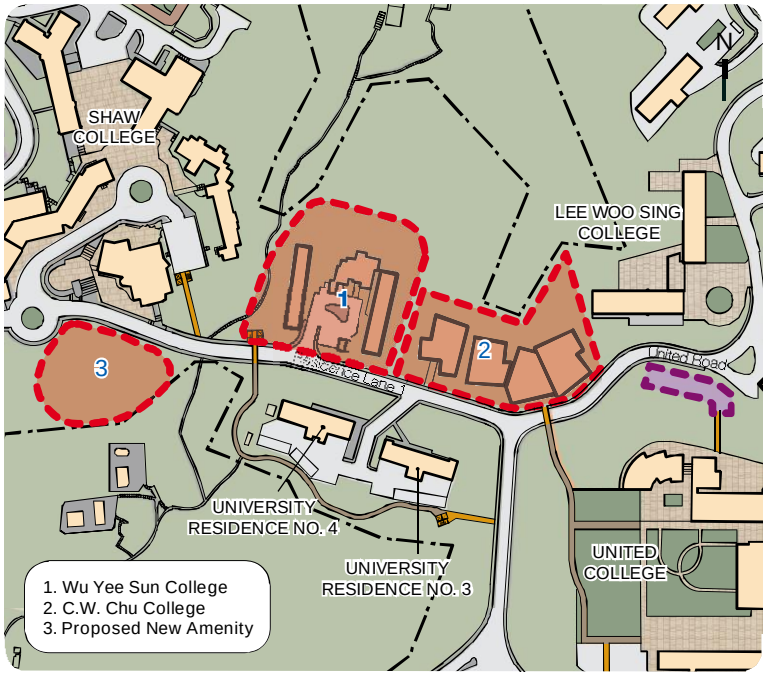
Site Context

The site (Map 22) with steep slopes lies opposite University Residence No. 3 and 4 on Residence Lane 1 between Shaw College, United College and Lee Woo Sing College. The existing Staff Common Room needs to be relocated to a more central place for ease of access by stakeholders. It is also recommended that the relocated Common Room should still command a nice view.

Planning Concept

The two proposed new colleges will establish the northern college neighbourhood with Shaw College, United College and Lee Woo Sing College.

- Orientation and Height
  The height of the two new colleges can be comparable with the surrounding buildings.



Map 22 - Location plan of new colleges

- Connectivity and Movement
  The new colleges will connect to the Central Campus along Residence Lane 1 to the new bridge of Teaching Complex at Western Campus across the Central Avenue.

- Facilities
  The design of Wu Yee Sun College may incorporate one or both of the buildings on the site. This new collegiate space will provide additional accommodation for 600 residential students and space for other facilities for 600 non-residential students.

  East of this new complex is C.W. Chu College providing accommodation for 300 students on a fully residential and communal dining basis.

  A new amenity is proposed in this northern college neighbourhood along the Campus Circuit West. This amenity will provide Learning Commons and recreational facilities for shared use by the nearby colleges.

Landscape Design Concept

Given the topographical condition around the new colleges, the landscape design is encouraged to be in a cascading manner so it can be compatible with the existing slope. Both hard and soft landscapes can be used to permit

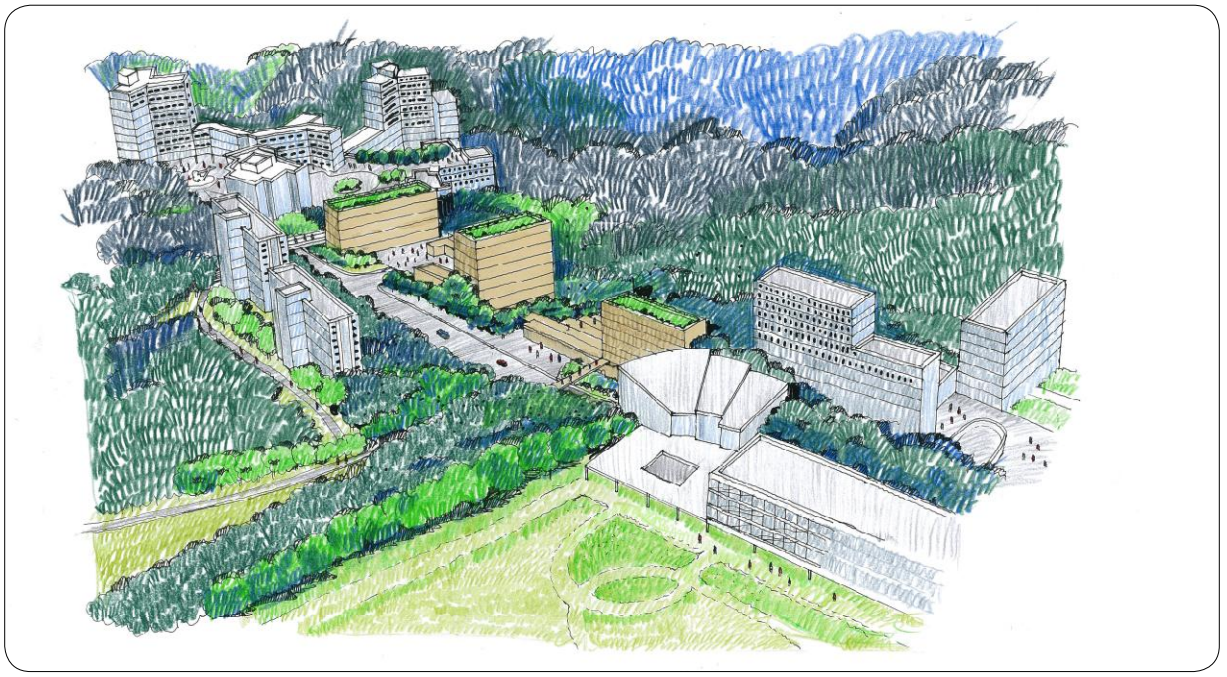


Fig 34 - Diagrammatic illustration of new colleges

pedestrian access on the steep slope, and provide connections to the adjacent buildings.

Appearance and Design Guidelines

The design of the residential blocks of these two new colleges should be harmonious with the neighbourhood and avoid blocking the view of nearby buildings.

To enjoy the beautiful view of the site, the design of new colleges may further consider using a low-rise terrace and cluster approach.

Sustainability and Conservation

Building design must minimise energy use through careful orientation, solar control, overall thermal performance and good levels of daylight where possible. Roof-mounted renewable energy generation (e.g. photovoltaics) should be considered to offset the energy requirements of what should be highly efficient plant equipment and low energy lighting. Rooftop planting (green roofing) is also an important requirement in order to attenuate rainwater run-off, support biodiversity and reduce the "heat island effect."

The buildings are to be designed in accordance with the Master Plan Sustainability Proposal, which highlights the following critical areas:

- Shaded courts and breezeways
- Interior cool 'pools' (water cooling)
- Night time cooling
- Thermal mass
- Double skin facades
- Roof gardens / water evaporation
- Energy efficient building services
- Natural lighting
- Shading external spaces (strategic trees and landscaping)
- Waste minimisation
- Design for longevity

Development Potential

Wu Yee Sun College: 600 beds
C.W. Chu College: 300 beds

5.1.2 AREA 39 - NORTHSIDE RESEARCH CAMPUS (SITE H)

As mentioned in Section 4.1, proposed sites for some new research facilities are recommended to be away from Central Campus. At present, most of the research facilities congregated on the eastern part of the Campus. In order to provide sufficient space for research activities and postgraduate education, Area 39, a large piece of vacant flat land north of the campus, is proposed as the site for a new Northside Research Campus. This site has the advantage of being in close proximity to the Hong Kong Science Park and the University's Hong Kong Institute of Biotechnology, both of which are important to downstream technological development.

As a new development complex on a vacant site, comprehensive planning and energy saving initiatives are recommended, such as centralized plant for air conditioning and centralized irrigation system.

Site Context

The site (Map 23) lies between Campus Circuit Road and Tolo Highway, occupying a relatively level parcel of land. It is currently sparsely covered by low bushes and some trees.

Planning Concept

The Northside Research Campus will grow in phases to become a substantial research hub to facilitate the University's increasing need to provide support for its scientific and developmental ambitions. It is recommended that a postgraduate hostel complex should be provided in the eastern area of the site with associated amenities on the ground level to serve all users. The density of the developments is governed by the plot ratios specified by the Authority.

- Orientation and Height
  The research buildings will have their main elevations facing north-south to maximise solar control. The hostels will be orientated at right angles to Tolo Highway to minimize the noise impact. The height of the tallest building is 40 m, comparable with the heights of the adjacent Science Park.

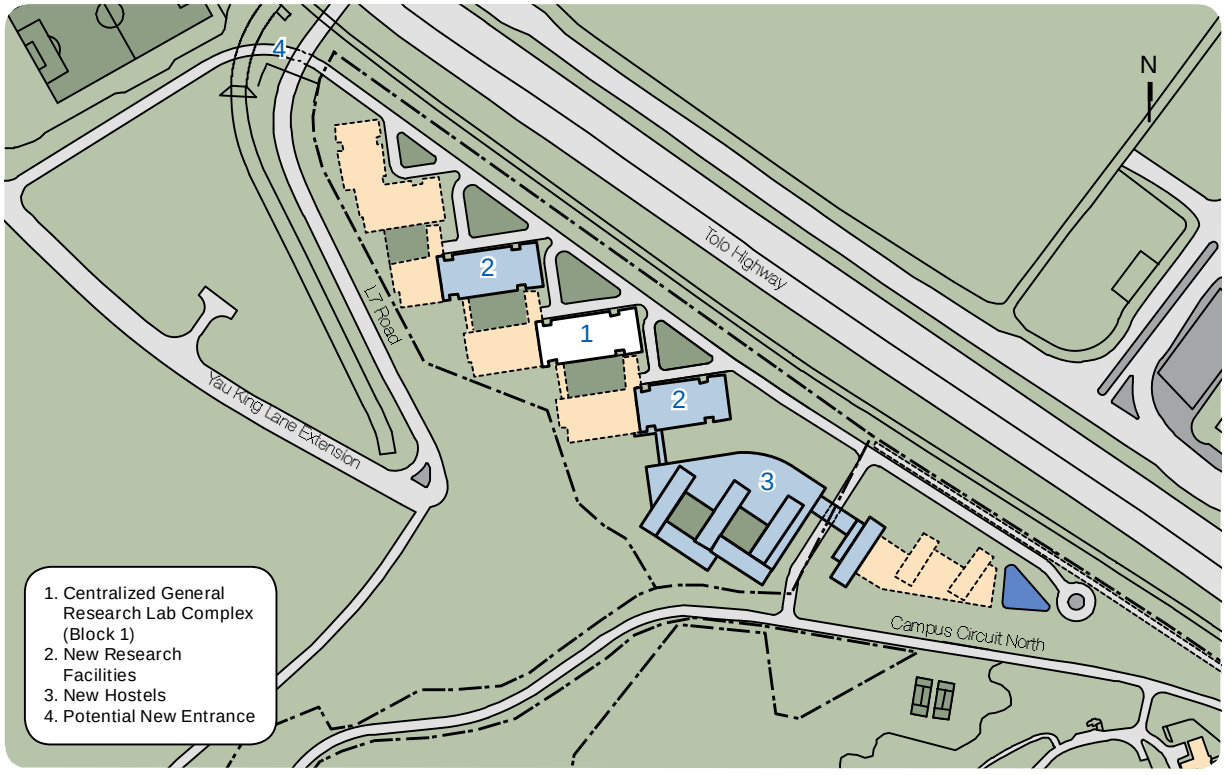
- Connectivity and Movement
  Although relatively distant from the Central Campus, the site should be well-linked by vehicle, shuttle bus and bicycle, with an option of a footpath descended from United College. Car and bicycle access will be via the Campus Circuit Road which will be upgraded to include cycle tracks. Extra carparking spaces will be available on site to support a park-and-ride facility, with regular shuttle bus services connecting it with the University Station and the Central Campus.

  The new buildings will be served by a new road leading off Campus Circuit North as well as a potential new entrance to the University that enters this research campus off L7 Road and Yau King Lane.

- Facilities
  The site will be laid out with open and enclosed courtyards, providing attractive social areas, shaded by trees and other vegetation. The east and west sides of the courtyards will be partially open to allow cooling breezes and people to flow through the landscaped area. Both developments will be shielded from traffic and railway noise by a screen of trees and landscaping along the highway and road facing the edges of the site.

  The research campus will potentially comprise seven blocks organised into four linear components with setbacks and colonnades on their ground floor perimeters and main entrances facing east. The postgraduate hostels east of the research campus are to be entered from forecourts on the buildings' eastern and western edges into internal courtyards.

  Although the Northside Research Campus will be occupied primarily by research laboratories in the



Map 23 - Plan of Northside Research Campus

western area of the site and by hostels in the eastern part, both will bring some amenity functions to the site for their mutual benefit as well as for the use by visitors to the campus. Dining areas, social areas and flexible Learning Commons can be considered in this new area, with offices and sports facilities provided where necessary.

Landscape Design Concept

There are several courtyards associated with their enclosing buildings. They connect to each other and provide linear pedestrian linkages at the east and west side of the site. Each courtyard will serve its neighbouring buildings and their design may reflect the distinctive character of Northside Research Campus.

Functions of the open spaces and landscape:

- The open spaces can be classified as courtyards or as intimate and comfortable open areas.
- Local landcaping can be generated by the site context, such as street patterns, pavements and building orientation and juxtaposition.
- The design approach in terms of patterns and materials may extend from building to building across the space.
- Fully coordinated street furniture is recommended.

Characters of open spaces and landscape:

- Open spaces may adopt a variety of forms including plazas, courtyards and outdoor cafes.
- These may be informal in character with high quality paving and subtle patterning.
- Boundary treatment can be implied rather than using physical barriers.
- Tree selection like Melaleuca leucadendron, Casuarina equisetifolia etc, is recommended to reflect the character of the Tolo Harbour waterfront and to provide noise absorption and dust tolerant properties.
- The planning for street furniture should consider appropriate arrangement, detailing and quantity.

Appearance and Design Guidelines

As Area 39 will be developed in phases, design control to give a coherent appearance to the Northside Research Campus is important.

In addition to the strategic planning of the building orientation, the east-west alignment of the research buildings in Area 39 will enable solar control by horizontal and some vertical shading elements. This may take the form of solid shading to windows set back to provide a deep façade, similar in principle to the academic buildings on the University Mall. The appearance of individual blocks, in terms of colour and tone, can be generally consistent throughout Area 39. The lower floors of the blocks may incorporate colonnades or setbacks to accommodate covered walkways integrated with the proposed courts and surrounding landscape. Consistent scale, materials and appearance of the colonnade of all blocks is recommended.

Sustainability and Conservation

Similar recommendations are made for all new buildings on the campus (Section 5.1.1 refers).

Development Potential

Research Facilities
Proposed Maximum GFA: 90,000 m^2
Proposed NOFA: 50,000 m^2

Student Hostels
6 blocks with 300 students per block

Plot Ratio: 2.5 (Research Facilities)
1.5 (Student Hostels)

Fig 35 - Diagrammatic illustration of Northside Research Campus

5.1.3 ARTS AND HUMANITIES HUB (SITE E)

As mentioned in Section 4.1, clustering of faculties is proposed in the Master Plan. The approach will facilitate the efficient use of resources and enable better accessibility. It will also promote social and academic interactions and cultivate a stronger sense of belonging among the faculties.

In view of the possibility of relocating the Faculty of Business Administration from Leung Kau Kui Building to the site east of the University Station (Section 5.2.2 refers), the existing cluster of Teaching Complex in Western Campus, Fung King Hey Building and Leung Kau Kui Building can be explored for reconfiguration into an Arts and Humanities Hub, accommodating the Faculty of Arts and Faculty of Law.

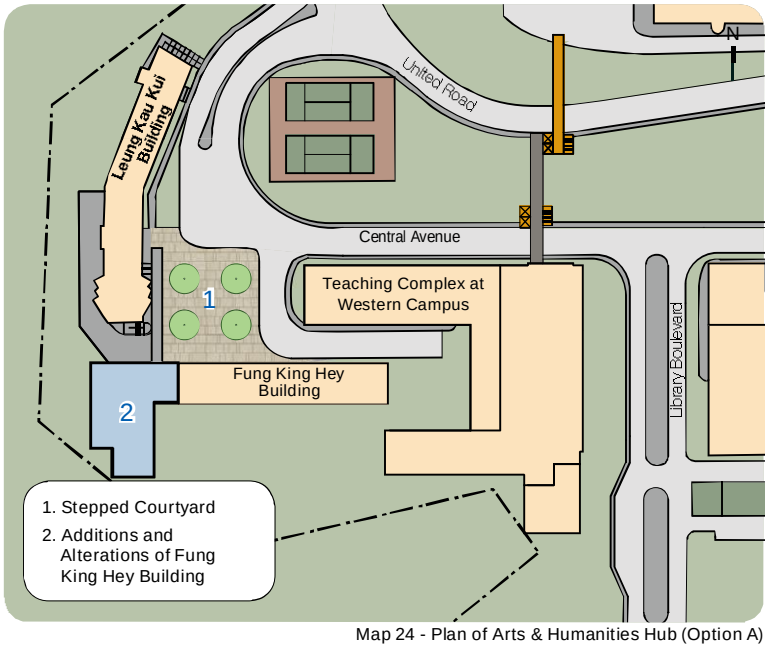
Site Context

The site is situated on the western end of Central Campus with the three existing buildings mentioned above. An existing road, Central Avenue, serves all the three buildings. The recently completed Teaching Complex on Western Campus provides a footbridge leading to the high-level precinct.

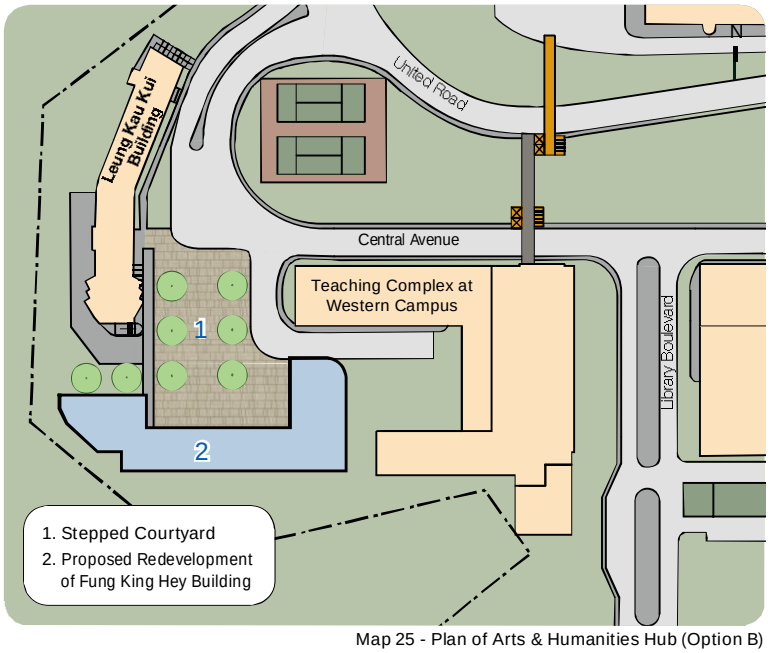
Planning Concept

In order to reconfigure this area into an Arts & Humanities Hub, two planning options are proposed in the Master Plan:
Option A: Partial demolition of Fung King Hey Building with a new western redevelopment (Map 24);
Option B: Replacing Fung King Hey Building with a new purpose-built arts facility with increased floor area for the hub (Map 25).

- Orientation and Height
  The height of both options can be comparable with the surrounding buildings.



Map 24 - Plan of Arts & Humanities Hub (Option A)



Map 25 - Plan of Arts & Humanities Hub (Option B)

Fig 36 - Diagrammatic illustration of Arts & Humanities Hub (Option B)

- Connectivity and Movement
  In option A, a minimal approach to enhance the entrance to the hub is proposed. This is to create a small formal stepped courtyard and by relocating the carpark to a lower level behind the building.

  In option B, a more generous entrance courtyard for social gathering is recommended.

- Facilities
  The redeveloped or new building will accommodate teaching labs, faculty offices and study spaces.

Landscape Design Concept

The existing courtyard within the Arts and Humanities Hub will be a powerful and attractive contrast to this hillside landscape beneath. However, its current use as a carpark fails to create a connecting space between buildings. Being on the western edge of the campus, the faculty grounds are destinations rather than thoroughfares. Planting, shade, seating and pedestrian paving rather than road surfacing will strengthen the character of the courtyard and provide an outdoor extension to the buildings.

Functions of the open spaces and landscape:
- The primary function of this courtyard is to provide sitting and gathering areas.

Characters of the open spaces and landscape:
- The design may concentrate on the historical and cultural aspects of Faculty of Arts and Faculty of Law.
- The overall character of the courtyard can be informal, but the area for gathering can be set within a formal area of high quality hard landscape.
- Interpretative facilities are recommended to be interactive in design to strengthen the identity for the Arts and Humanities Hub.
- A strong vegetation structure can form a lush green environment throughout the courtyard, and can provide an image of an oasis of the calm and tranquillity amidst the urban form. Thematic planting species are recommended. They can be ornamental, with form, texture and colour being complementary to the form and character of the Arts and Humanities Hub. For instance, banyan trees, with their historical standing on campus, can be planted in the hub to promote the distinctiveness and character of the faculties.

Appearance and Design Guidelines

For both options A and B, it is recommended that the design of the extension or the new building should complement the existing Leung Kau Kui Building and the Teaching Complex on Western Campus.

Facade design may consider including shading to windows set back to provide deep-modelled façades, similar in principle to the academic buildings along the University Mall. The appearance of the individual blocks, in terms of colour and tone, is recommended to be generally consistent throughout the western central campus.

Sustainability and Conservation

Similar recommendations are made for all new buildings on the campus (Section 5.1.1 refers).

Development Potential

<u>Option A</u>

Proposed Maximum GFA:	3,500 m^2 (for the partial redevelopment only)
Proposed NOFA:	2,000 m^2 (for the partial redevelopment only)

<u>Option B</u>

Proposed Maximum GFA:	9,000 m^2 (for the redevelopment of Fung King Hey Building)
Proposed NOFA:	5,000 m^2 (for the redevelopment of Fung King Hey Building)

5.1.4 STAFF RESIDENCES (SITE F)

With the reversion to a four-year undergraduate curriculum by 2012, both student and staff populations are expected to increase. While there will be new colleges for students, additional residences can also be provided for staff.

In the Master Plan, clustered development of similar facilities is recommended. The new staff quarters, therefore, are proposed to be located near the existing staff residences.

Site Context

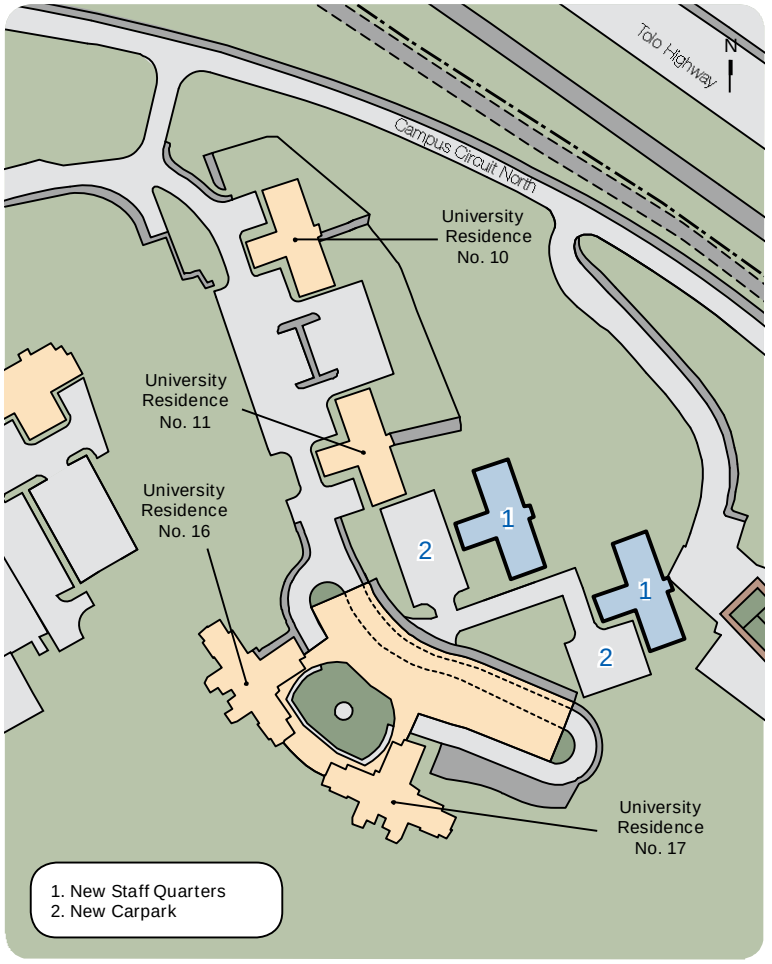
The potential site (Map 26) for new staff residences is situated on the lower wooded foothills north of the campus, and due east of the existing cluster of university residence towers overlooking the Hong Kong Science Park and Tolo Harbour.

Planning Concept

This locale is considered to be the most appropriate site for any new staff quarters, with the two proposed buildings to be designed as additions to the existing cluster of staff residences (i.e. University Residence no. 10, 11, 16 & 17).

- Orientation and Height
  The residences should be orientated to maximise views towards Tolo Harbour. The buildings will be approximately 13 storeys high which is in keeping with the existing residential towers.

- Connectivity and Movement
  This site off Residence Road will be served by regular shuttle bus services to and from the Central Campus as well as enjoying easy vehicular access from Tolo Highway. The new staff residences will be within a short stroll of the proposed Northside Research



Map 26 - Plan of Staff Residences

Campus (Site H) and will also be well connected via new cycle routes to Eastside Sports Hub (Sites A) and Station Court (Site G), and the University Station. The site is also served by a footpath linking Site H with the Central Campus.

- Facilities
  The main entrances will be located on the south-west side of the buildings, adjacent to a proposed car parking area. The proposals will include residential apartments of varying sizes with internal and external communal areas at entrance level.

Landscape Design Concept

By adjoining the cluster of buildings with a mix of footpaths and landscape, the landscape can be designed to provide pleasant walking experiences for the occupants between all the residences. The landscape design can contextualize the two additional staff quarters by providing adequate greenery and landscape elements to match the surrounding conditions.

Appearance and Design Guidelines

As a cluster of buildings, the new staff quarters are recommended to have similar appearance to the surrounding University Residence no. 10, 11, 16 & 17.

These buildings, being detached from the main campus, can have their own unique character enjoy uninterrupted views and a closer relationship with their lush context.

Open spaces at ground level will contribute to the residents' enjoyment of their surroundings, maintaining the entrance level as a shared space that will enhance the sense of community.

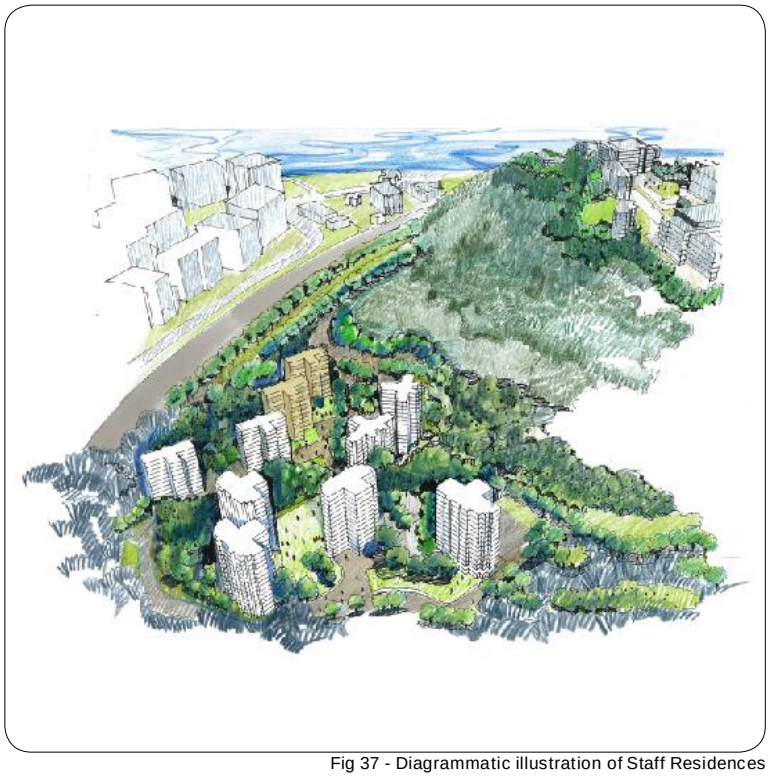


Fig 37 - Diagrammatic illustration of Staff Residences

Building blocks are recommended to consist of apartments with self-contained dining and living spaces, which may provide varying living arrangements.

Sustainability and Conservation

Similar recommendations are made for all new buildings on the campus (Section 5.1.1 refers).

Development Potential

2 blocks providing 100 residential units in total.

5.2 SITES OF INTERMEDIATE POTENTIAL

5.2.1 ACADEMIC BUILDING 1 - SOUTHSIDE OUTLOOK (SITE C)

In view of the need for additional spaces for teaching facilities, the existing Academic Building 1 in the southern part of Central Campus is proposed to be redeveloped. The existing building is under-utilized and has been found to be without significant value for conservation.

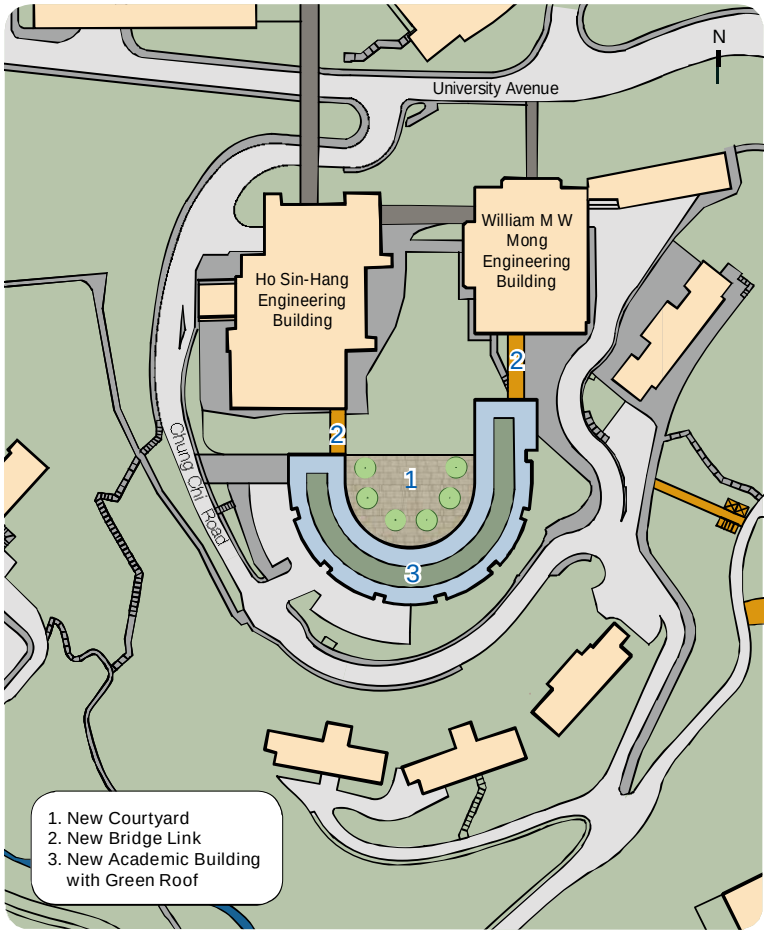
Site Context

This site (Map 27) is south of Ho Sin-Hang Engineering Building and William M W Mong Engineering Building. The existing building on the site, which is not efficient for academic functions, will be demolished. The site sits on a level outcrop that drops off on its eastern, western and southern sides. The site, with its close proximity to the Central Campus, is ideal for new teaching facilities for undergraduates, as recommended in the campus setting for the University.

Planning Concept

The new building on this site will sit outside the immediate area of the University Mall but will complete an existing southward branch off University Avenue, as a continuation of the massing of the two engineering buildings. In addition, it will be an integral part of the 2021 pedestrian movement plan, providing a crucial express lift and bridge through William M W Mong Engineering Building, leading to the University Mall buildings. The floor area lost from Academic Building 1 will be provided elsewhere within the Master Plan proposals.

- Orientation and Height
  The main building will be about six storeys high, with an express lift in its north-east corner taking users up to a pedestrian bridge linking to the 9th floor of the adjacent William M W Mong Engineering Building.



Map 27 - Plan of Southside Outlook

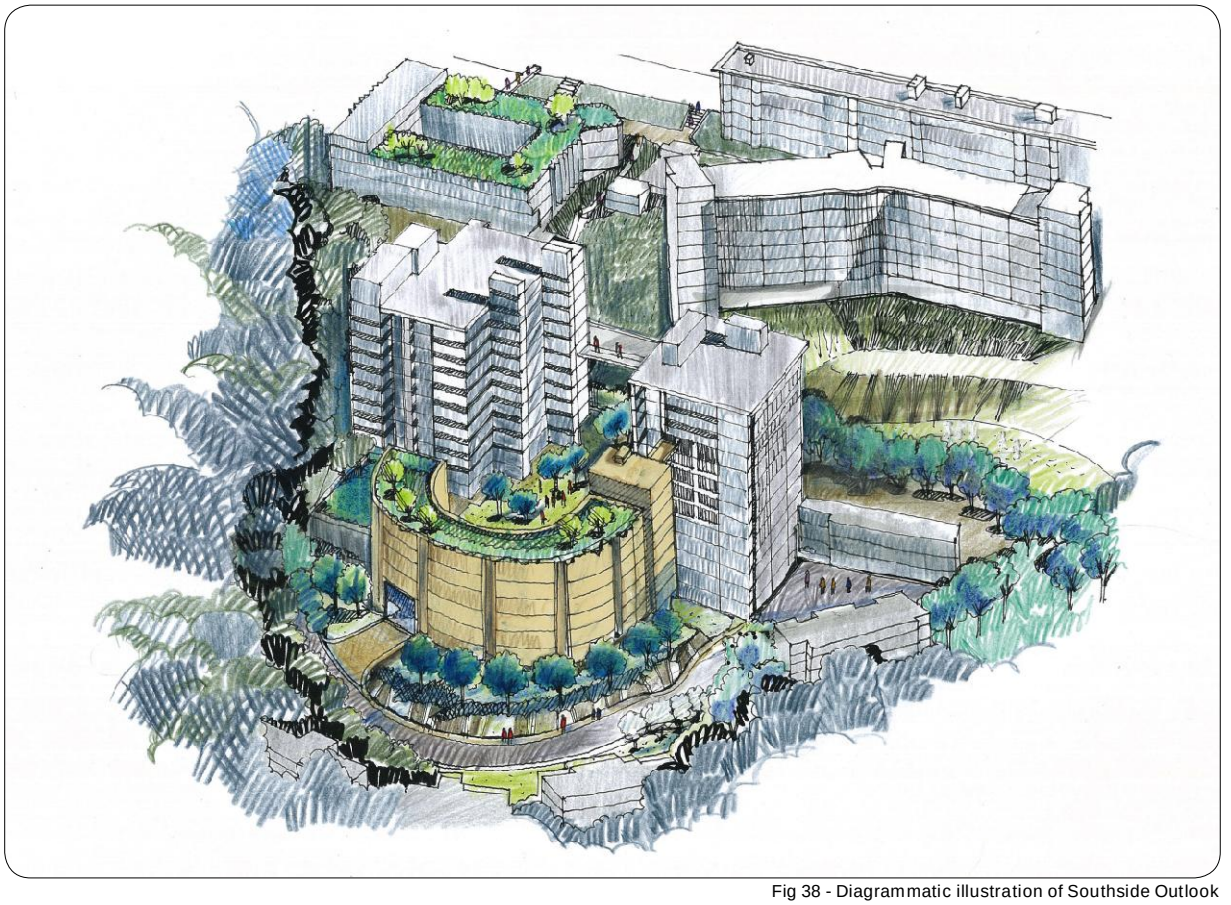


Fig 38 - Diagrammatic illustration of Southside Outlook

- Connectivity and Movement
  The building will be served by Chung Chi Road and a secondary pedestrian route which ascends from Pond Crescent. It will also support a primary pedestrian route by providing an express lift at its north-east corner linking its ground level at Chung Chi Road to a roof terrace and bridge-link level of William M W Mong Engineering Building.

- Facilities
  The main entrance to the building will be on the south-west corner, which can be accessed directly from the existing road level on Chung Chi Road. The building will accommodate teaching labs, faculty offices and study areas, and has the potential on the lower floors to provide deep plan accommodation, for example, auditorium and lecture halls. The inward facing elevation

will look upon a green-planted courtyard. The roof of the building, which is at the bridge-link level, will be landscaped as a green-sheltered garden for relaxing and enjoying views.

Landscape Design Concept

The building is a destination rather than a major open space, although it encloses a courtyard. Being on the north side of the building, this courtyard, in contrast to the more rugged green slopes it faces, will be a naturally cool outdoor seating area with trees and shrubs chosen for their shading characteristics. The scope of the landscaping intervention in this area should extend into the open "back-of-house" space between the adjacent engineering buildings so that the landscape from the Southside Outlook to the University Avenue is treated as a whole.

As the southern and western faces of the building will provide vehicular access and pedestrian areas, shading trees are crucial from the west through to the east. The roof is recommended to be landscaped and designed to be viewed from above.

Functions of the open spaces and landscape:

- The northern courtyard and the roof garden may function as resting places and meeting points for staffs and students.
- Water features can be introduced where appropriate to mask sound, provide visual interest and a favourable microclimate.

Character of the open spaces and landscape:

- The design of the courtyard may reflect the local character of the surrounding environment.
- The courtyard can be informal, with a less structured, more relaxed feel.
- The open space design can be more intricate and decorative.
- Planting is recommended to be limited to ornamental trees like Bombax malabricum, Crataeva religiosa, Elaeocarpus hainanensis etc. and shrubs like Lxora chinensis, Rhododendron pulchrum etc..
- Planting may be a mix of trees, shrubs and groundcover, including lawn areas, to form a luxuriant framework for the spaces within the area.

Appearance and Design Guidelines

The ground floor can be set back at the point of entrance relative to the upper floor levels in order to provide a distinct entrance threshold and shelter. The lobby is recommended to be a generous, double-height space with clear views west over Chung Chi Road and east into the building's internal courtyard.

Solar shading to windows and set back to provide deep-modelled façades can be considered for the façade design, similar in principle to the academic buildings along the University Mall. The appearance of the individual blocks, in terms of colour and tone, is recommended to be generally consistent throughout the southern part of the Central Campus.

Roofscape gardening for the block is of particular importance; the roof may be planted as it is at the base of higher buildings and has high visibility from within the campus.

Sustainability and Conservation

Similar recommendations are made for all new buildings on the campus (Section 5.1.1 refers). In addition to those recommendations, waste or architectural salvage (e.g. cladding) generated by the demolition of the existing Academic Building 1 may be reused in the new academic building where possible.

Development Potential

Proposed Max GFA: 10,000 m^2
Proposed NOFA: 5,500 m^2

5.2.2 UNIVERSITY STATION - STATION COURT (SITE G)

The flat site at east of the University Station offers high development potential, due to its close proximity to the major public transportation nodes.

Site Context

The site (Map 28) is situated in the lot between the University Station and Tolo Highway. The site is ringed by Chak Cheung Street and offers excellent road and rail connections.

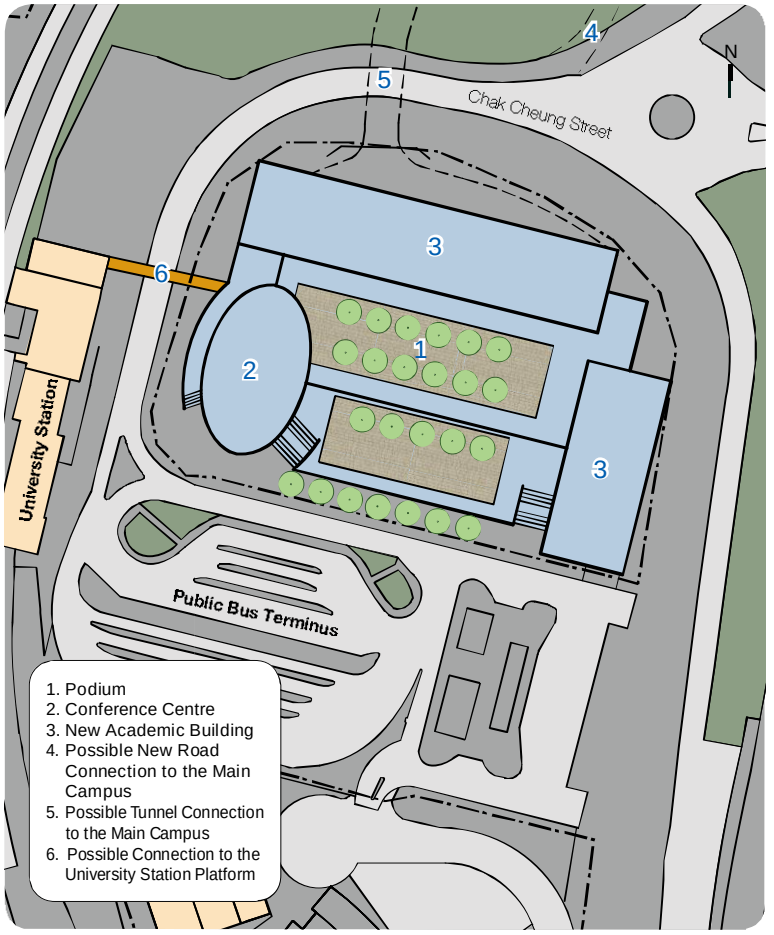
Planning Concept

The new building on the site will enclose a raised external space. Although outside of the main campus area, the site will form a transport hub and accommodate a major academic and administration building. As part of a long-term planning strategy, integration of the nearby public bus terminus with the new campus development should be considered.

- **Orientation and Height**
  The height of the development can be comparable with the surrounding buildings.

- **Connectivity and Movement**
  The new raised plaza in the centre of the proposed building will become a pedestrian hub, with the potential of relocating the school bus terminal beneath the plaza podium. A carpark for park-and-ride arrangement can also sit alongside the new university bus terminal here. A direct pedestrian connection to the station platform should also be considered.

  It is also recommended to provide vehicular connection to the main campus which may be at grade level or a tunnel connecting to the existing bridge.



Map 28 - Plan of Station Court

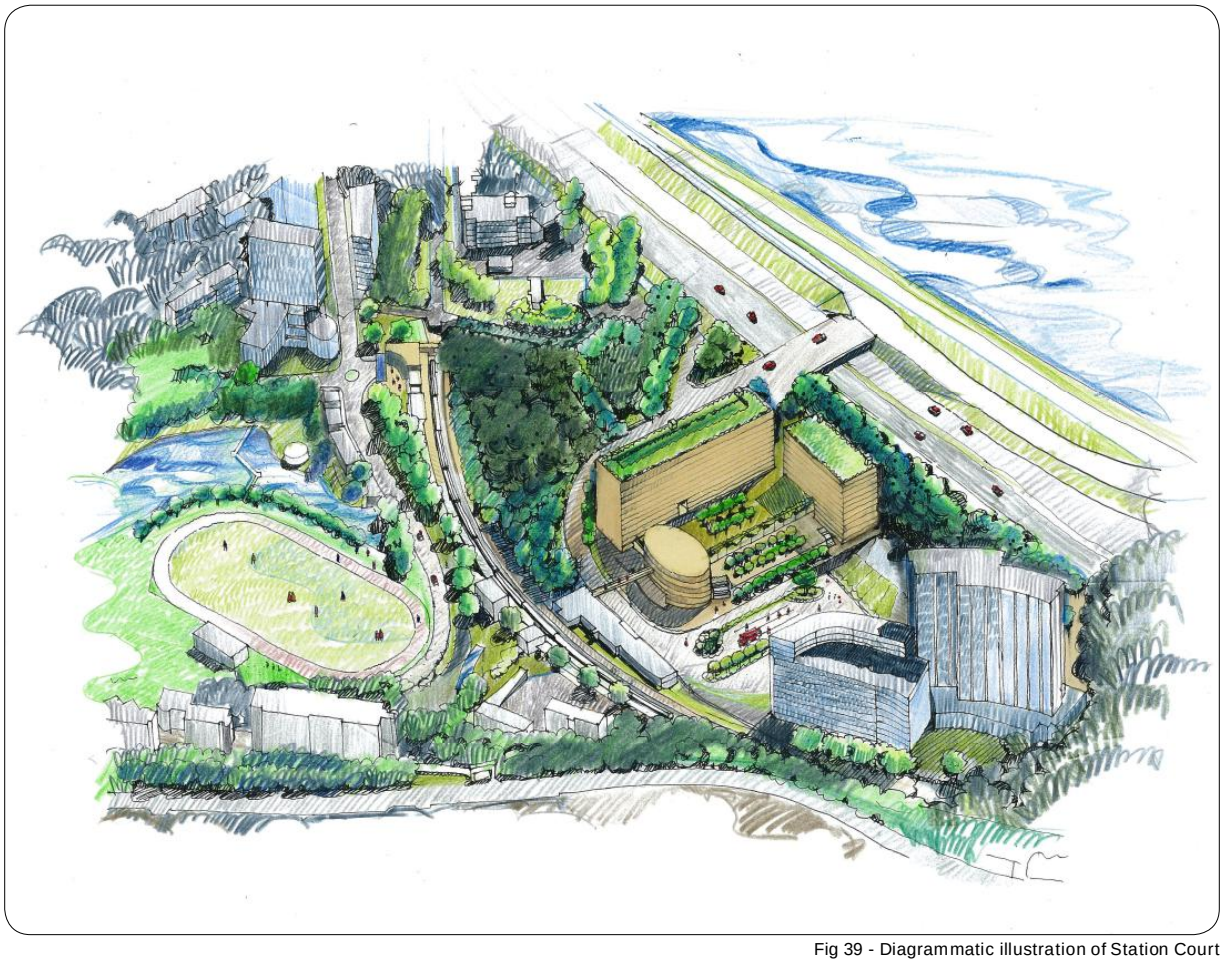


Fig 39 - Diagrammatic illustration of Station Court

- Facilities

  The main entrances to the building accommodation will be via the raised podium level facing the open space. Access up to the podium will be via a generous stair and lift arrangement located on the south-western corner of the site, which will also provide access down to the school bus terminal and park-and-ride carpark. This will be a significant visual entrance that provides easy access for pedestrians coming from the University Station, the public bus terminal and taxi ranks, as well as the existing subway connection to the University campus.

  The building will accommodate student amenities, classrooms, academic offices and study areas. Due to its close proximity to the University Station and the public bus terminus, the Station Court is suitable for use

also by part-time students and the public. Community college facilities and a conference centre with theatre facilities may therefore be provided in the complex.

Landscape Design Concept

The existing site enjoys a densely wooded perimeter, which includes some mature trees. Although it is inevitable that a significant portion of this woodland will be removed to allow for the proposed building, it is crucial that as much woodland as possible is conserved. The proposal is for a building with a podium. For climatic reasons and to encourage public enjoyment of this new podium garden as a destination in its own right, an attractive and shaded landscape strategy is essential. The podium landscape may extend into the building itself to inhabit any atrium areas. Where possible, planting shrubs and other greenery on the roof is recommended.

Function of the open spaces and landscape:

- The podium garden may take the form of a courtyard, serving the associated buildings.
- The podium garden can provide shaded passive recreational areas for university members and visitors.
- Water features can be introduced where appropriate to mask sound, provide visual interest and to help provide a favourable microclimate.
- Locations for public art works may be provided.

Character of the open spaces and landscape:

- Designs can be urban and simple in character, forming clean, uncluttered spaces.
- All materials, detailing and workmanship are recommended to be of high quality, using traditional, natural materials.
- A mix of calm and dynamic space may be provided.
- Spaces may be formal in design.
- Plant selection is recommended to be salt and wind tolerant and with low maintenance requirement. Standard trees like Hibiscus tiliaceus, Ficus benjamina etc, medium shrubs like Carmellia microphylla, Codium variegatum, Ligustrum sinense etc, and groundcover like Melastoma dodecandrum, Syngonium podophyllum 'variegatum' can be considered.

Appearance and Design Guidelines

The future development building may create a courtyard destination that encloses the area including University Station and the public bus terminus. Clear visual access is suggested to be prominent and convenient to ,allowing pedestrians to go up to the podium garden.

The overall massing on the building may be split up into three separate buildings to avoid a monolithic appearance. The configuration will allow the courtyard enclosure with views out to the main campus above the level of the University station roof line, with breaks in the massing inviting views out to the east and south.

The shading of elevations can be considered through the use of overhangs on the parts facing east-west and by brise soleils or deeply modeled facade design on the south facing elevations. Whichever shading approach is adopted, the building is recommended to be designed to create well composed courts between it and the campus buildings to the south, and between it and the railway station to the east.

Sustainability and Conservation

Similar recommendations are made for all new buildings on the campus (Section 5.1.1 refers).

Development Potential

Proposed Max GFA:	50,000 m^2
Proposed NOFA:	27,500 m^2

5.3 SITES OF LONG-TERM POTENTIAL

5.3.1 ROMNEY STORES - EASTSIDE SPORTS HUB (SITE A)

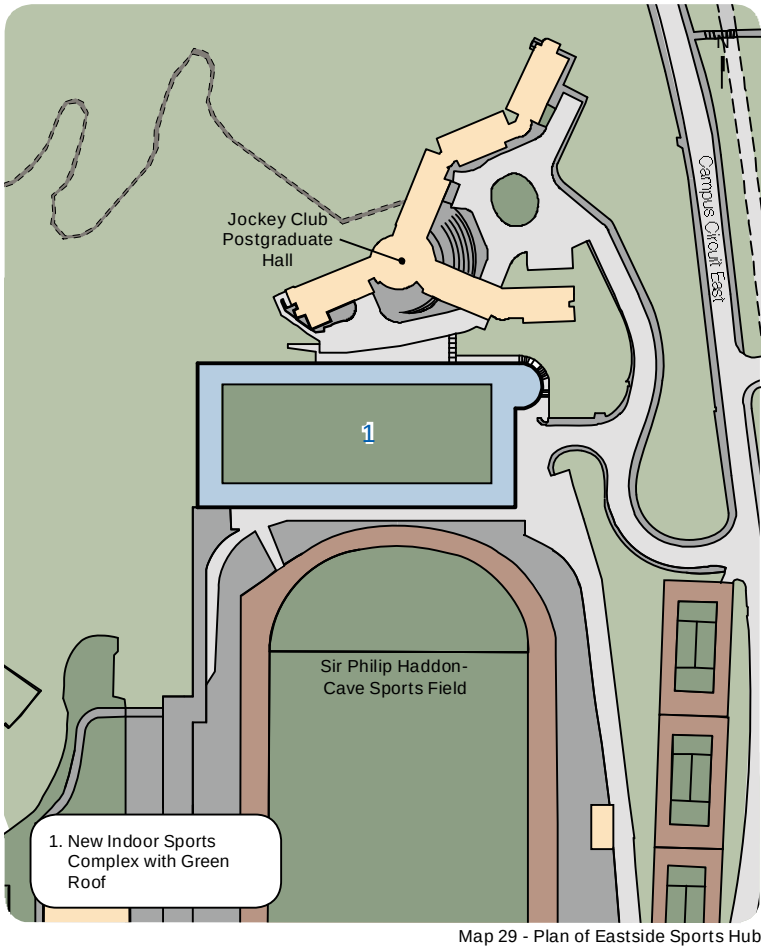
As mentioned in Section 4.1.1, it is recommended that the area around the Sir Philip Haddon-Cave Sports Field should remain as a major recreational and sports hub, as the cluster of such facilities already exists. Redevelopment of the existing collection of Nissan huts, also known as the Romney Stores, is identified to provide a new indoor sports complex and to enhance the identity of this Eastside Sports Hub.

Site Context

The site (Map 29) lies between the Sir Philip Haddon-Cave Sports Field and the Jockey Club Postgraduate Hall. The proposed development will replace the Romney Stores. The site is relatively level although a steep cliff rises west towards the Central Campus. The east of the site is wooded around the access road with a sports field and running track to the south. The adjacent Jockey Club Postgraduate Hall sits over six metres above the entrance level of the proposed building, with its service area facing the site.

Planning Concept

The proposal for Eastside Sports Hub arises from the University's requirement for an indoor swimming pool. In addition, the building is planned to accommodate a sports hall with spectator seating. The centre will complement the existing sports facility to provide the University with a single, fully equipped sports hub.



Map 29 - Plan of Eastside Sports Hub

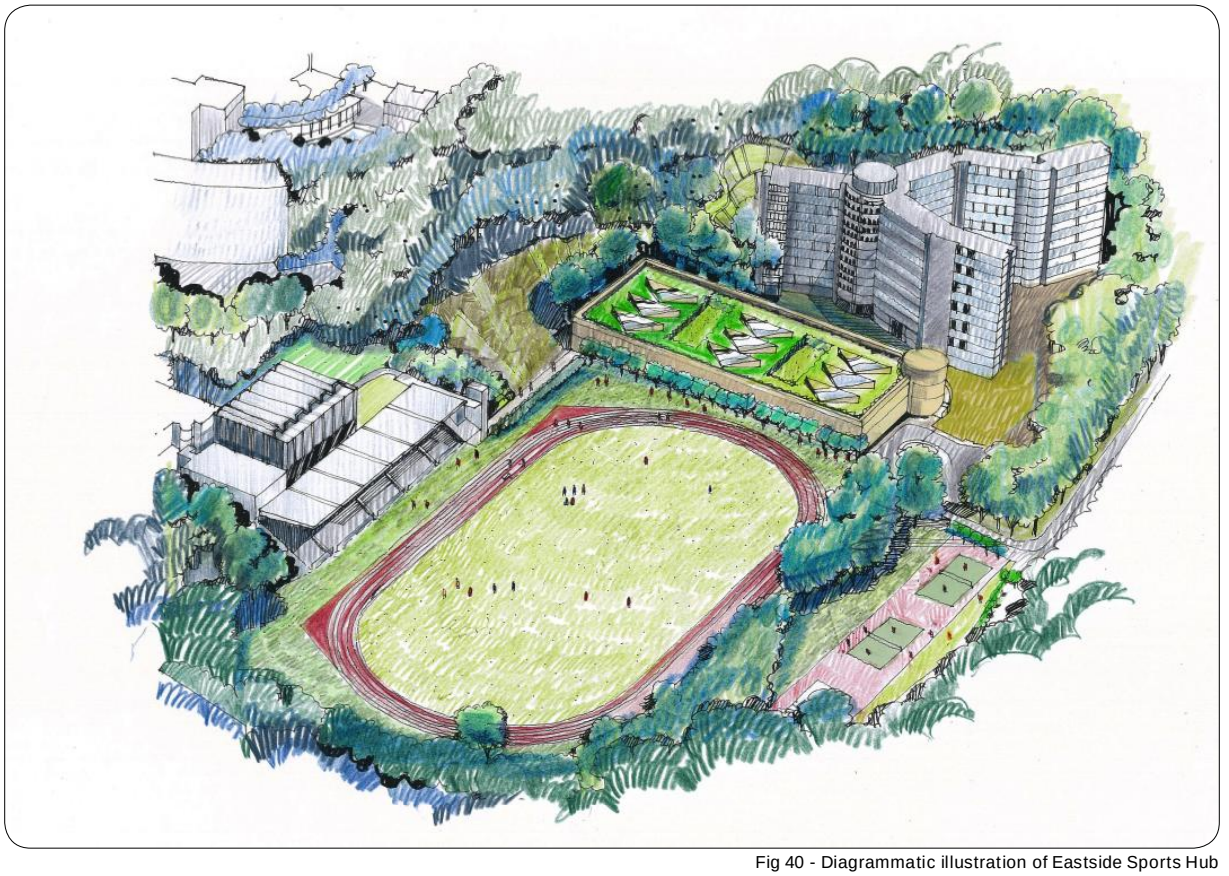


Fig 40 - Diagrammatic illustration of Eastside Sports Hub

- Orientation and Height
  The building can be two storeys high.

- Connectivity and Movement
  The site is removed from the major pedestrian thoroughfares and is served from within the University via: (a) a footpath from the proposed development at Village Path site (Site B) down the hillside; (b) a footpath leading from the Morningside College passing the existing University Sports Centre and Kwok Sports Building; and (c) the road from the east end of University Avenue to the Jockey Club Postgraduate Hall. However, the site is connected to the Campus Circuit East road by a short slip road, offering easy car and bicycle access, being on the main route connecting the University Station to the proposed research facilities in Area 39 (Site H).

- Facilities
  The main entrance will be on the eastern side of the building, adjacent to the car parking area and primary access route, leading to a multi-sports hall (with flexibility for some spectator seating), 36.5 m x 32 m with a two-metre perimeter walking area and a swimming pool of 21 m x 50 m with a three-metre perimeter area. Changing and administration facilities will be located beneath the poolside raked seating area. The building shall can have a green roof for the benefit of the overlooking buildings.

Landscape Design Concept

This sports facility will benefit from the retention of existing trees along the Campus Circuit East and the link road to the Jockey Club Postgraduate Hall. Planting and trees around the car parking area on the building's east elevation will provide an attractive entrance and shade for parked cars. Likewise, the south-facing elevation will benefit from the privacy and natural cooling provided by planting and trees between the swimming pool and the sports ground.

To its west, a bare cliff face will benefit from the introduction of new shrubs or trees, should the terrain permit.

Function of the open spaces and landscape:
- The amenity area may focus on the sizeable rooftop garden of the building.
- The garden can be an area of soft landscape that contributes to the landscape framework and forms a green connector function as appropriate.

Character of the open spaces and landscape:
- The garden can be soft, informal and natural in character, with fluid, organic edges to the planting.
- Creeping plants, like Bougainvillea glabra, Bauhinia glauca etc, with seasonal changes can be planted at the periphery of the building edge to soften the harsh lines of the building.
- Plant selection is recommended to be wind and dry tolerant and with low maintenance requirement. Standard trees like Hibiscus tiliaceus, Ficus benjamina etc, medium shrubs like Carmellia microphylla, Codium variegatum, Ligustrum sinense etc, and groundcover like Melastoma dodecandrum, Syngonium podophyllum 'variegatum' can be considered.

Appearance and Design Guidelines

It is recommended that the sports building shoud have a green planted roof due to its location on the lower plateau and its consequent visibility from many places within the campus. Besides, a planted roof will make it more efficient ecologically. However, as it serves a unique function, the appearance of its elevations may also be unique: from totally glazed and sliding open to totally enclosed and lit from above – the quality of the architectural composition, sustainability and value being the sole measures. The elevations can all be shaded, with consideration given to methods including mesh, brise soleil, bamboo screens, trees or climbing plants and so on.

Sustainability and Conservation

Similar recommendations are made for all new buildings on the campus (Section 5.1.1 refers).

Development Potential

Proposed Max GFA:	3,860 m^2
Proposed NOFA:	2,125 m^{2t}

5.3.2 OPEN CAR PARK OUTSIDE JOHN FULTON CENTRE - WESTSIDE BELVEDERE (SITE D)

In view of the increasing demand for amenities and communal spaces for students, the existing open carpark outside John Fulton Centre, which contains major student amenities at present, is identified as having high development potential for a new complex which can accommodate amenity spaces and administration facilities.

Site Context

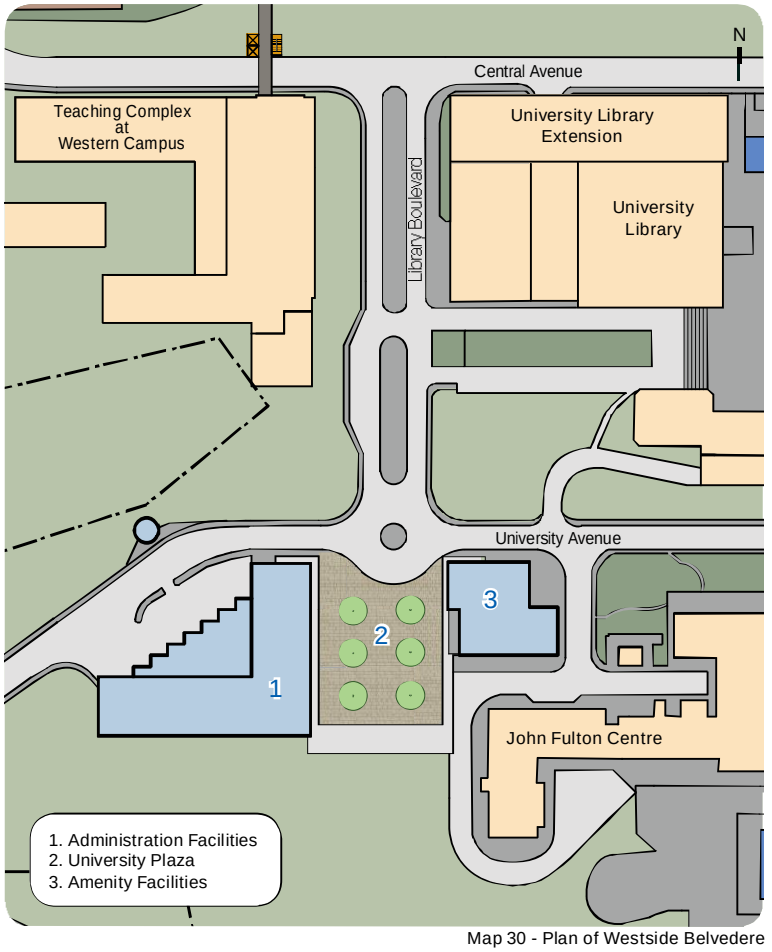
The site (Map 30)is situated due west of John Fulton Centre (i.e. the existing open carpark), south of Library Boulevard, encompassing the coach bay and Security & Transport Building. To the south the site sits at the edge of a steep drop, which is covered with historic woodland.

Planning Concept

Driven by the aspiration to extend the core of the University in a low-rise manner with new courtyard, places and clearly defined connections, a southern extension to the Library Boulevard is proposed, extending the University Mall westwards in the manner of the original master plan, with a new open space proposed adjacent to John Fulton Centre that will also terminate the boulevard. Two new buildings are proposed in this Westside Belvedere, one for amenities and the other for administration facilities.

- **Orientation and Height**
  The two proposed buildings will be six storeys high, in line with John Fulton Centre.

- **Connectivity and Movement**
  The new plaza will be framed by new buildings on its west side adjacent to the University's main entrance and on its east side alongside John Fulton Centre. This



Map 30 - Plan of Westside Belvedere

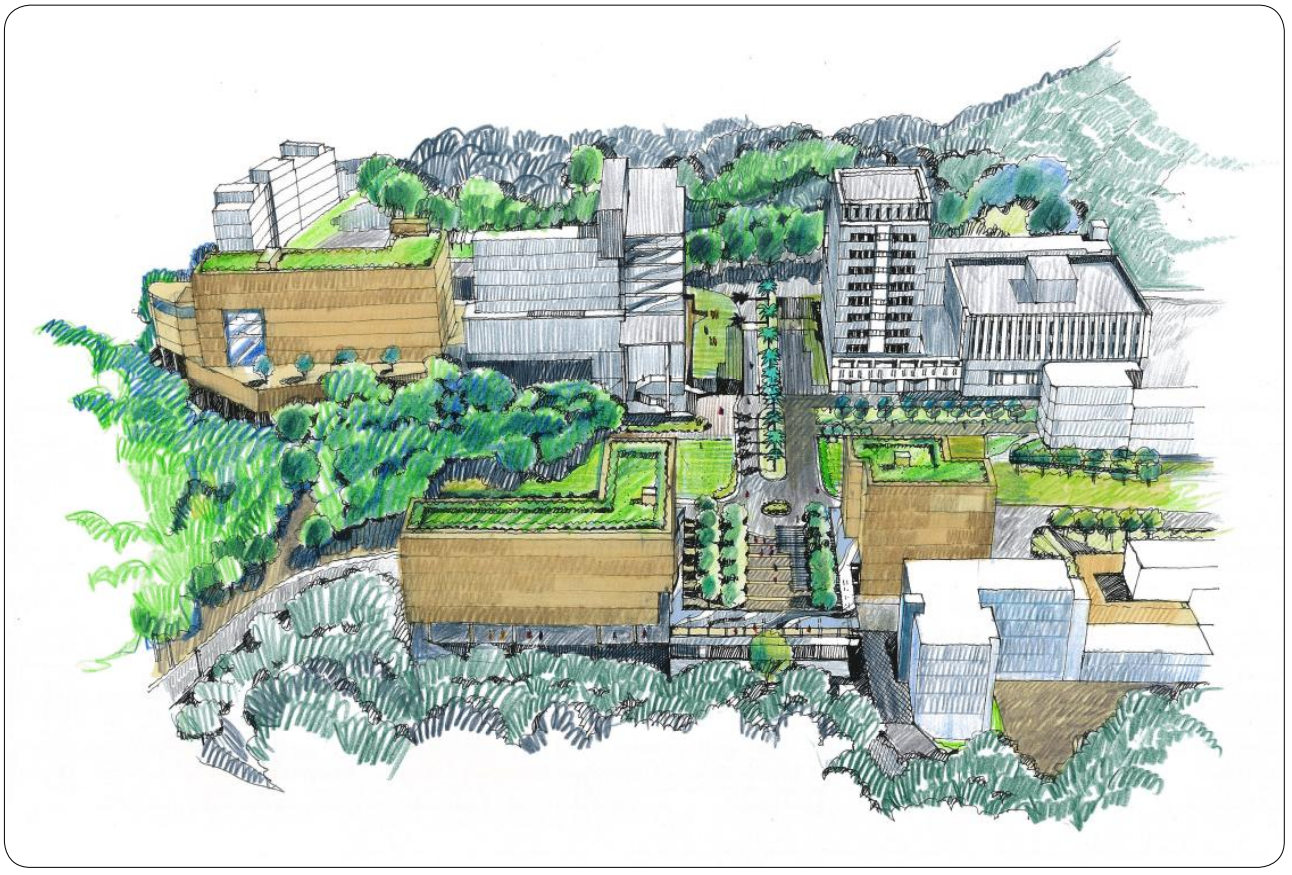


Fig 41 - Diagrammatic illustration of Westside Belvedere

plaza is envisaged as a new gathering space or “exterior room” that is intended to facilitate the exchange of ideas and interactions among members of the University community.

The resolution of the proposal will require the reconfiguration of the existing coach bay and carpark beneath the level of the new plaza and new building on the west side of the site.

- Facilities

  The focus of this site will be the new plaza with active frontages and main entrances to the new buildings to animate the open space and create a destination point. The landscaping strategy will provide substantial natural shade for pedestrians at the perimeter, with the central area remaining open for people to congregate. The buildings will accommodate administration facilities and amenity spaces.

Landscape Design Concept

The focus of the site will be the new plaza that will be the terminus of Library Boulevard. The southward facing combined with active frontages to the new buildings will energise this open site and create a destination.

The roofs of the building can be landscaped and designed to be viewed from above.

Function of the open spaces and landscape:

- The new plaza is recommended to provide shaded passive recreational areas for the university members.
- This plaza can also act as a traffic free connection between the University Mall and the main entrance.
- Locations for public exhibitions may be provided as an integral part of the design.

Character of the open spaces and landscape:

- Designs can be urban and simple in character, forming clean, uncluttered spaces.
- All materials, detailing and workmanship are recommended to be of high quality, using traditional, natural materials.
- Design is recommended to complement adjacent architecture.
- Planting layout can be informal and natural in character. However, a formal grid of palm trees like Archontophoenix alexandrea, Washingtonia robusta etc, may be set into the hard paving at grade to form a backdrop to the sitting area.

Appearance and Design Guidelines

The two new buildings perform three essential functions. They will provide a continuation of the boulevard between the library and the teaching complex. They will also frame a prospect over the historic forested valley to the south. The western building creates one side of the main entrance road (University Avenue) and accommodates coach and car parking beneath it, while the eastern building frames the lawn area on its northern flank in addition to defining the boulevard on its western side.

Both new buildings should have public facilities on the plaza level in order to provide the plaza with activity and access for visitors. The façade treatment must ensure shade to both the building and the adjacent plaza. The larger building (which sits above the coach bay) can be organised around a substantial, north-west facing atrium.

The two new buildings can be designed as a pair, ideally built at the same time. Any phased construction is recommended to incorporate common design features and facade materials. The lower floors of the blocks may incorporate colonnades or setbacks to accommodate covered walkways that can be integrated with the new plaza. The scale, materials and appearance of the colonnade can be consistent throughout.

On their northern and southern facades, there may be integral solid horizontal shading above windows, and on the eastern and western, a mixture of blank facades and windows with vertical shades or brise soleil.

Sustainability and Conservation

Similar recommendations are made for all new buildings on the campus (Section 5.1.1 refers).

As far as construction allows, all significant existing trees are to be retained. This includes the trees along the edge of University Avenue and the indigenous trees forming the southern boundary.

Development Potential

Proposed Max GFA:	8,850 m^2
Proposed NOFA:	4,850 m^2

5.3.3 VILLAGE PATH - EASTSIDE OUTLOOK (SITE B)

In line with the planning framework of centralizing major teaching and administration facilities near the Central Campus, a site at the Village Path is identified as a potential location for new academic and administrative facilities.

Site Context

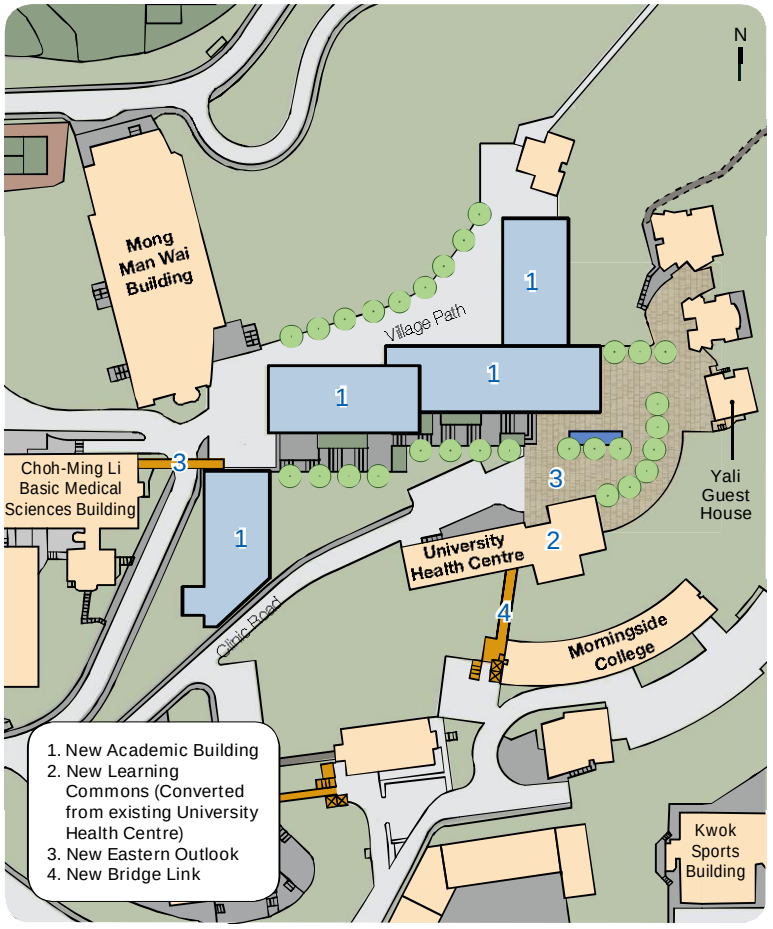
The site (Map 31) is situated due east of Choh-Ming Li Basic Medical Sciences Building between Mong Man Wai Building and Yali Guest House. The existing minor staff quarters on the site will be redeveloped and the adjacent University Health Centre will be converted into a Learning Commons. The site drops steeply onto Clinic Road through a wooded embankment. The existing University Health Centre is to be relocated to a site near the University Station for access convenience.

Planning Concept

The new academic buildings on this site will enclose two significant outdoor open spaces, activated by a network of new pedestrian routes that will connect the University Mall with the University Avenue. The development will form an extension and eastern terminus to the University Mall.

- **Orientation and Height**
  The proposed north-south orientated academic buildings will be five storeys high when approached from the University Mall and nine storeys at the lower level square, matching the heights of the buildings on the University Mall.

- **Connectivity and Movement**
  It is proposed to extend the Universiy Mall's character eastwards beyond Choh-Ming Li Basic Medical Sciences Building by converting its podium level into a pedestrian



Map 31 - Plan of Eastside Outlook

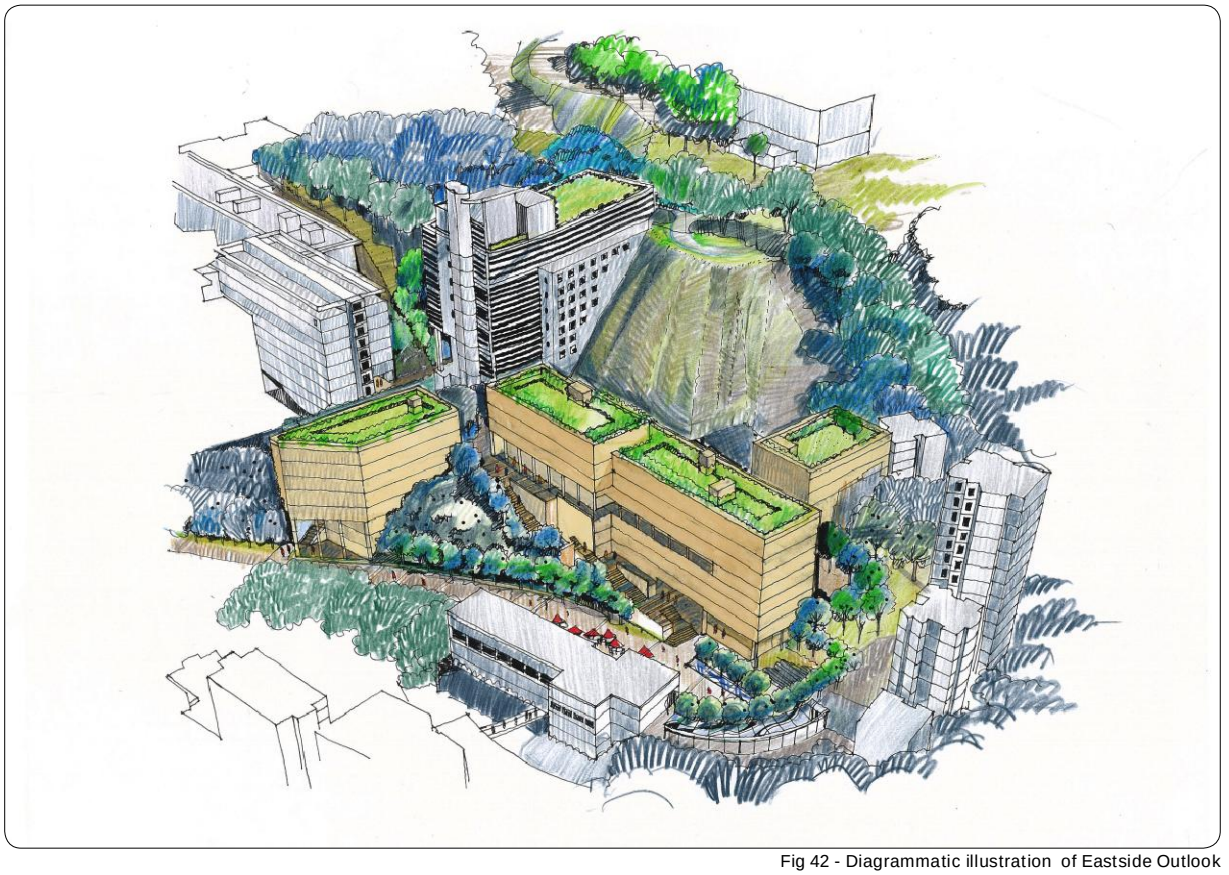


Fig 42 - Diagrammatic illustration of Eastside Outlook

route leading to a new square in front of Mong Man Wai Building. South-east of this new square, a cascade of stepped terraces will follow the natural slope of the hillside down to a new eastern outlook on Clinic Road, terminating with a sheltered belvedere looking out towards Tolo Harbour.

The new square and supporting buildings will provide a link between the University Mall and Clinic Road. Express lifts in the new buildings will enable vertical pedestrian movement between the University Mall, the new square, Clinic Road and the new eastern outlook.

Supplementing the primary pedestrian movements, footpaths and trails will connect to the proposed sports hub (Site A) to the east and Morningside College to the south.

- Facilities

  To ensure the legibility of the new site and buildings, main building entrances will be located on the new public spaces at the beginning of Village Path and the eastern outlook at the end of Clinic Road. The buildings will accommodate teaching spaces, faculty offices and Learning Commons.

Landscape Design Concept

The focus of the site will be the open plaza, which becomes a terminus of the University Mall, looking out across to Tolo Harbour. Active frontages to the new and existing buildings will activate this open site and create a destination. The landscaping strategy will provide substantial natural shade for pedestrians as well as for the limited car parking at the rear of the building.

Function of the open spaces and landscape:

- The open spaces may adopt a variety of forms including plazas, courtyards and outdoor cafes.
- The linear parks within this area may include a linear open space that can connect the University Mall to the eastern boundary. All pocket parks and local squares may provide shaded seating areas for the university members.

Character of the open spaces and landscape:

- Designs can be urban and contemporary in character, forming simple and uncluttered spaces.
- Designs may incorporate the use of innovative materials.
- A mix of calm and dynamic spaces can be provided throughout the linear open space.
- Design is recommended to complement adjacent architecture.
- Vegetation may consist of both ornamental and indigenous planting. Tree layout is recommended to have a strong, continuous linear element, interrupted by areas of group planting in geometric grids of differing density, and by rows of bisecting trees.
- Apart from the preserved trees, additional tree species with specific themes can be introduced at the newly formed open spaces along the Village Path site. For instance, peach tree planting can strengthen the structure of the gardens, tinging them with special colours and fragrance.

Appearance and Design Guidelines

Being at the confluence of the major routes and entrances, the upper entrance level will inevitably become the hub of the site. As such, all ground floor elevations that look on to this plaza are recommended to be glazed to allow users to look out and passers by to look in. The ground floors of these buildings can be open and designated as student commons to promote permeability.

The lower entrance level will host much less activity, requiring a destination public facility at this point to attract users, despite the fact that the available floor space is limited by the steep terrain and necessary vertical circulation. The re-fitting of the nearby University Health Centre as a Learning Commons will help to energise this lower portion of the site (Fig 27).

The north-facing elevation of the main building can be an inviting rear entrance although it would be off the main pedestrian routes. The south-facing areas of the building's interior can be visible from the cascading steps, access being provided from the landings where possible.

The facade design of these new buildings may consider shading to windows set back to provide deep modelled façades, similar in principle to the academic buildings on the University Mall. The appearance of the individual blocks, in terms of colour and tone, can be generally consistent throughout the Central Campus.

Roofscape gardening throughout the blocks is of particular importance. Roofs can be planted because these are located on the middle levels and the consequent visibility from higher locations on the campus.

Sustainability and Conservation

Similar recommendations are made for all new buildings on the campus (Section 5.1.1 refers).

As far as construction allows, all significant existing trees are to be retained. This is particularly important on the steep slope between the Clinic Road and the proposed cascade of steps that lead down from Mong Man Wai Building.

Development Potential

Proposed Max GFA:	20,000 m^2
Proposed NOFA:	11,000 m^2

6

RECOMMENDATIONS AND IMPLEMENTATION STRATEGIES

While the Master Plan guides the future campus development, necessary improvement works to the University campus have been continually undertaken by the Campus Development Office and the Estates Management Office of the University. Such works include renovations of old buildings, slope stabilization, landscape treatment to stabilized slopes, replacement of diseased tree, and provision of additional crossings for pedestrian safety.

For a sustainable campus development, it is recommended that the Master Plan, as a living document guiding the future campus development, should be overseen by a Steering Group to be appointed by the University. One of the Steering Group's duties will be to ensure that the Master Plan is updated periodically so as to remain relevant and appropriate in relation to any new developments on the campus. The periodic review will take into consideration the latest situation of the campus development, including the infrastructure, population, and facilities.

It is also recommended that planning and design briefs should be prepared according to the Master Plan's framework of the six planning precepts for each new development, and all related proposals should be assessed against the briefs.

This Section elaborates the recommended considerations and implementation strategies for the proposals made in the Master Plan.

As a living document, the Master Plan provides guidelines for the future campus development. It is not intended to provide definitive solutions for individual developments; instead, design guidelines with recommended planning parameters are proposed for the reference of architects and engineers engaged in future developments. It is, therefore, a document describing strategies that can respond to the University's demand. The Steering Group are responsible for ensuring the continued relevance of the Master Plan by periodically updating the document to accord with any new developments and changing conditions.

The implementation time frame of the recommendations proposed in the Master Plan is subject to demand and the availability of funding. Other considerations include development planning of individual faculties and colleges. For developments or improvement works in high demand, the University will consider them as capital works with top priority in the campus development plan.

6.1 PLACES FOR EDUCATION AND RESEARCH ACTIVITIES

The concept of clustered and zoned development for disciplinary teaching and research activities is planned to be implemented gradually over the years at appropriate times in relation to the available funding.

The proposed potential developments are listed below in order of their priority of provision within the University's development. Implementation time frames are indicative as the provision will be subject to actual demand for the facilities and the acquisition of funding:

SITES OF IMMEDIATE POTENTIAL

1 New Colleges on Residence Lane 1 (Site I)
To be undertaken in 2009

With the provision of additional residential places within the northern college neighbourhood, consideration should be given to the enhancement of the pedestrian connections to the Central Campus, rationalisation of the bus routes and improvements to the road system serving the northern college neighbourhood.

These improvements should be undertaken in parallel with the college developments.

2 Area 39 - Northside Research Campus (Site H)
Phase 1- laboratory facilities: To be undertaken in 2009

With the provision of new research facilities at the northern periphery of the University, consideration should be given to the planning of a new cycle track connection to the MTR, the establishment of new bus routes to serve the area and improvements to the existing road junctions. Planning considerations should accommodate the phased growth of the development into a research hub, including the provision of hostels and amenity facilities. Completion of the landscape screening to the entire site should also be considered.

The above should be undertaken in parallel with the first phase of development.

3 Arts & Humanities Hub (Site E)
The development is subject to the review of the design options proposed. The option review will be made with consideration of various factors, including acquisition of funding, phased relocation of the departments, etc.

Prior to the redevelopment of the new facilities, alternative accommodation should be provided for the existing occupants of Fung King Hey Building.

4 Staff Residences (Site F)

The development is subject to demand for residential accommodation.

SITES OF INTERMEDIATE POTENTIAL

1 Academic Building 1 - Southside Outlook (Site C)
To be undertaken post 2012

Prior to the development of the new facilities, alternative accommodation should be provided for decanting the existing occupants of Academic Building 1.

2 University Station - Station Court (Site G)
To be undertaken post 2012

Prior to the commencement of this substantial development, comprehensive planning of the University Station area should be considered. Planning considerations should include the pedestrian access to the main campus, to the University Station and the integration with the school bus terminal.

3. Area 39 - Northside Research Campus (Site H)
Phase 2: To be undertaken post 2012

The improvements undertaken during the first phase of construction within Area 39 should enable the continued development of the site.

The site can accommodate hostels at its eastern portion which in conjunction with the laboratories will form a research hub.

SITES OF LONG-TERM POTENTIAL

1 Romney Stores - Eastside Sports Hub (Site A)
To be undertaken post 2021

Prior to the commencement of the sports facilities, the overall planning of recreational and sports facilities within campus should be considered. Any geotechnical enabling works required for the stabilisation of the adjacent rock face should be undertaken in parallel with the development.

2 Open carpark outside John Fulton Centre - Westside Belvedere (Site D)
To be undertaken post 2021

Prior to undertaking the administrative and amenity facilities, temporary relocation of the coach and car park should be considered. Depending upon the sequence of works to the road layout, the road junction upgrade may need to be considered along with the relocation of the University security facility.

3 Village Path - Eastside Outlook (Site B)
To be undertaken post 2021

Prior to the development of the new facilities, alternative accommodation should be provided for decanting the existing occupants of the Village Path and the University Health Centre.

4 Area 39 - Northside Research Campus (Site H)
Remaining phases: To be undertaken post 2021

Reviewing the adequacy of the services infrastructure provision.

The improvements undertaken during the first and second phase of development of Area 39 should enable the continued development of the area.

6.2 ENHANCING COLLEGE LIFE

The implementation of any proposals for enhancing college life is to remain within the authority and responsibility of the Colleges.

1 Colleges may resolve to set up Stakeholder Groups to ascertain the development aims.

2 Stakeholder Groups to review the Master Plan proposals for individual colleges in relation to specific college aims.

3 Colleges to implement agreed proposals at their own pace.

6.3 A PEDESTRIAN-FRIENDLY CAMPUS

MTR PLATFORM EXTENSION

Negotiations to begin in 2009

The plan for a new northern entrance and extension to the platforms at the University Station is subject to an extensive lead in time due to the complex nature of agreements required to expedite this work. It would be advisable to begin negotiations with MTRC to establish the planning parameters of the proposal as soon as practicable.

NEW WALKWAYS, FOOT BRIDGES, EXPRESS LIFTS

1 Central Link
To be undertaken in 2012

New footbridges and express lifts connecting the Student Amenity Centre to the Engineering Buildings are essential for the new Central Link, and should be built in tandem with the Student Amenity Centre.

2 Western Link
To be undertaken in 2012

New footbridges and express lifts are the central element in establishing the pedestrian connectivity between the University Mall and the growing population of the northern college neighborhood. They should be built in parallel with the new colleges.

3 Eastern Link
To be undertaken post 2012

New canopies to existing walkways, new covered walkways, footbridges and express lifts are separate important elements in enhancing the pedestrian connectivity between the University Station and the University Mall. The link should be progressively developed in phases along with the construction of the teaching facilities.

RE-ARRANGEMENT OF BUS ROUTES

1 Reducing Downhill Bus Stops
To be commenced in 2009

With the widened footpaths along the University Avenue and other planned pedestrian-friendly facilities, reducing downhill bus stops to encourage walking is immediately feasible.

2 Bus Route Re-arrangements
To be commenced in 2009

Re-arrangement of a number of the bus routes should be completed before September 2012 to accommodate the increase in student population.

ENHANCEMENT OF ROAD NETWORK

The proposed enhancement of road network as shown in Map 15 is planned to be completed by 2012.

PARK-AND-RIDE

To be undertaken post 2012

Following the completion of all the proposed peripheral carparks, further limitation of vehicle access within the campus can be developed and vehicles free zone can be considered. These provisions should be progressively phased in over time in parallel with the construction of the new facilities at John Fulton Centre, the University Station and Area 39.

CYCLE TRACKS

To be undertaken in 2012

As part of the connectivity planning for the research facilities and hostels at Area 39, the proposed cycle tracks should be considered before 2012.

6.4 CONSERVING PLACES OF VALUE

To be commenced in 2009

The University to carry out the procedures in identifying places of cultural value:

- Complete a draft List of Places with Cultural Significance for consultation.
- Appoint experts and stakeholders to carry out an assessment of the significance of each listed place against a set of values.
- Conclude report on all aspects of Places with Cultural Significance.
- Consult the document with reference to any future proposal and follow its guidance.
- Review List of Places with Cultural Significance every five years.

6.5 A LANDSCAPE OF VITAL IMPORTANCE

To be commenced in 2009

Below is the management plan for each Landscape Area. The measures to be implemented should be an ongoing process.

INDIGENOUS WOODLAND

- To maximise the ecological potential, taking into account the requirements of all avian habitats.
- Proposals for the incorporation of new trails shall be developed in line with the 2012 proposals.
- The indigenous woodland planting zone should be properly protected through the administration of the Landscape Management Plan.

SCREENING / BUFFER PLANTATION WOODLAND

- Carry out work for visual mitigation requirements, to screen land uses and unsightly utility areas as well as slope stabilization.
- Carry out a safety review of existing trees, especially ageing non-indigenous trees.
- Carry out replacement planting with native species trees in areas not destined for future development.
- Carry out landscape design work in conjunction with new campus development within the existing buffer plantation woodland.

AMENITY PLANTATION WOODLAND

- The amenity plantation woodland zone should be properly protected through the administration of the Landscape Management Plan.
- Where development is proposed, the landscape, visual and ecological impact should be carefully studied and documented.
- Carry out design work at new road junctions and new developments to incorporate ornamental species within indigenous planting to generate visual accents.
- The Management Plan should ensure that the composition of woodland planting takes account of the requirements of avian habitats.

ORNAMENTAL PLANTING

- Design work for new developments, plazas and courtyards should incorporate lawn spaces to enhance existing features.
- Design of sub-soil drainage systems should be installed to remove excess water from soil bodies and be connected to the sustainable campus water system.

6.6 MAKING A SUSTAINABLE CAMPUS

To be commenced in 2009

It is the recommendation of the Master Plan to establish guidelines to develop a practically achievable model for a sustainable campus, which aims to reduce energy consumption beyond that proposed for the wider region of Hong Kong. The two principal targets are:

- Reducing the energy demands (per capita) by at least 25% by 2025 from the campus base figure of 2005.
- Reducing GHG emissions (per capita) by at least 20% by 2025.

7

POSTSCRIPT

The Vision of the Master Plan, which has emerged from consideration of the Plan's objectives and the main challenges and opportunities of the campus site, is to enable the University to be an exemplar of sustainable development by balancing the enhancement of its campus environment with the conservation of its heritage.

POSTSCRIPT

The Planner's Vision

In general, Hong Kong is made up of coastal development fronting spectacular wooded hills. In some places, the wooded hills penetrate forward through the lower land and come close to the edge of the sea. In a few places, this happens gracefully as in the Chinese University of Hong Kong.

On this fine wooded spur in the 1960s, a university was placed: intelligently placed on two plateaux which had been made by excavators seeking granite for the building of a nearby dam.

The plateau on the top of the hill was used for residential colleges and the other halfway down the south side for academic and research buildings laid out on either side of an elegant mall. On the plain at the foot of the spur, on its south side and on the lower slopes, Chung Chi College was also begun. So to start with, there was an elegant symbiosis between hilly spur, landscape and development: colleges on top, academic buildings on the sides, and a further college near the bottom level.

But since then, the pattern has become confused, by building on the spur side and making winding roads up and down it, with students and others going from place to place mainly in buses on these winding roads.

So our vision, our vital aim, is to recapture the clarity of the original pattern as best we may. We will do so by careful study of the existing situation and by enhancing it; just as the first buildings of the university did. We will be "situationalist". We will do so in eight main ways:

On the two plateaux, we will enlarge capacity by responsive infill and make courtyard places between buildings.

We will extend along the ridge of the spur at the top plateau.

We will extend off the lower plateau in a connected manner, making courtyard places that are calm and contemplative.

On the plain at the bottom, we will make buildings which respond to existing ones and make more comfortable courtyards.

Wherever we can, we will make structures which contain elevators to take you comfortably up and down the hill side, to reduce travel by motor.

Where we can, we will enable easeful travel by bicycle and by foot.

By solid construction, through insulation, green roofs and local materials, and by solar collection, water power and even wind, we will make a truly sustainable campus.

We will love the landscape received from the past and the elegant planting added since, and protect and extend it through new buildings and courtyards so that it makes a profound contribution to a new world of calm, of contemplation, of combination, of study and research, of profound imagination and invention and a university environment – a “unique” place in the world.

Edward Cullinan

8

APPENDICES

APPENDICES

APPENDIX A
THE STEERING COMMITTEE ON CAMPUS MASTER PLANNING

COMPOSITION OF THE STEERING COMMITTEE

In August 2006, a Steering Committee on Campus Master Planning was set up, comprising experts in architecture, environmental planning and environmental conservation from both outside and within the University.

Co-chairs:

- Professor P. C. Ching, Pro-Vice-Chancellor
- Professor Essy Baniassad, School of Architecture

Members:

- Professor Michael K.M. Hui, Pro-Vice-Chancellor
- Professor Fung Tung, Associate Pro-Vice-Chancellor
- Professor Lam Kin-che, Department of Geography and Resource Managementt
- Professor Rance P. L. Lee, Emeritus Professor of Sociology
- Professor Bernard Lim, School of Architecture
- Mr. Bosco Fung, former Director of Planning, HKSAR

Member & Secretary:

- Mr. David Lim, Director of Campus Development

MAIN TASKS OF THE STEERING COMMITTEE

- To engage and guide professional consultant(s) to undertake the drafting of the Campus Master Plan (CMP) in fulfilling the long term strategic development objectives of the University.
- To oversee the drafting of the CMP and to liaise with the consultant(s) on relevant matters whenever necessary.
- To recommend a set of procedures for the approval, periodic revision and implementation of the CMP.
- To advise the Campus Planning Committee on all matters related to the CMP, including its scope and contents, implementation, compliance, monitoring and updating.
- To introduce to the general public and liaise with the University community in respect of the CMP, including dissemination of information and collection of views for feedback to the Campus Planning Committee.
- Such other matters as may be referred to it by the Campus Planning Committee.

Subsequent to a series of prequalification presentations in 2007, a consultant team led by Aedas Limited in association with its overseas design partner Edward Cullinan Architects (UK) was appointed and embarked the Master Plan Study in February 2008.

APPENDIX B
CAMPUS FACT SHEET OF 2009

Most of the information in this Appendix is extracted from the booklet of *Facts & Figures 2009*[1] published by the Information Services Office of The Chinese University of Hong Kong.

Campus Location:	Sha Tin, New Territories, Hong Kong
Campus Area:	134 hectares
Faculties:	Faculty of Arts Faculty of Business Administration Faculty of Education Faculty of Engineering Faculty of Law Faculty of Medicine Faculty of Science Faculty of Social Science Graduate School
Buildings on Campus:	154 buildings occupying 548,837m2 Gross Floor Area
Existing Colleges:	Chung Chi College New Asia College United College Shaw College
Five New Colleges:	Morningside College S.H. Ho College C.W. Chu College Wu Yee Sun College Lee Woo Sing College
Hostel Spaces:	6,135 hostel places in total
No. of Undergraduate Hostels[2] :	Chung Chi College – 10 buildings (for 1,413 places) New Asia College – 4 buildings (for 1,066 places) United College - 4 buildings (for 1,048 places) Shaw College – 2 buildings (for 1,160 places)
No. of Postgraduate Hostels:	6 Jockey Club Postgraduate Hall Postgraduate Hall No. 2 Postgraduate Hall No. 3 Postgraduate Hall No. 4 Postgraduate Hall No. 5 Postgraduate Hall No. 6
No. of Staff and Guest Residences:	13 Vice-Chancellor's Residence University Guest House No. 1 University Guest House No. 2 University Residence No. 3 University Residence No. 4 University Residence No. 10 University Residence No. 11 University Residence No. 12 University Residence No. 13 University Residence No. 14 University Residence No. 15 University Residence No. 16 University Residence No. 17
Libraries:	7 libraries
Museum & Galleries/ Cultural Facilities:	Art Museum Chung Chi College Archive The Shum Choi Sang United College Archive Hui Gallery Yuch Chiao Art Gallery Sir Run Run Shaw Hall Shaw College Lecture Theature Lee Hysan Concert Hall Chung Chi College Chapel
Recreational Facilities:	2 outdoor stadiums 1 Swimming Pool (50m) 2 Sports Fields (with running tracks & soccer pitch) 13 Tennis Courts 6 Squash Courts 3 Indoor Gymnasiums 5 Games Rooms 1 Water Sports Centre 4 Fitness Rooms 6 Outdoor Playgrounds 1 Archery Practical Range

1 http://www.cuhk.edu.hk/iso/facts/issue/2009/research_e.htm
2 Refer details in Appendix C

APPENDIX C
FACT SHEET OF EXISTING COLLEGES

Most of the information in this Appendix is extracted from the websites of the four existing colleges and the booklet *Facts & Figures 2009*[1] published by the Information Services Office of The Chinese University of Hong Kong.

Chung Chi College

Year of foundation: 1951
Year of forming as a constituent college in the University: 1963
Year of moving into the University campus: 1956
No. of full-time undergraduates (in 2009): 2,779

Hostels:
- Hua Lien Tang
- Lee Shu Pui Hall
- Madam S.H. Ho Hall
- Ming Hua Tang,
- Pentecostal Mission Hall Complex High Block
- Pentecostal Mission Hall Complex Low Block
- Theology Building
- Wen Chih Tang
- Wen Lin Tang
- Ying Lin Tang

Number of hostel places: 1,413

New Asia College

Year of foundation: 1949
Year of forming as a constituent college in the University: 1963
Year of moving into the University campus: 1973
No. of full-time undergraduates (in 2009): 2,789

Hostels:
- Chih Hsing Hall
- Daisy Li Hall
- Grace Tien Hall
- Xuesi Hall

Number of hostel places: 1,066

United College

Year of foundation: 1956
Year of forming as a constituent college in the University: 1963
Year of moving into the University campus: 1971
No. of full-time undergraduates (in 2009): 2,684

Hostels:
- Adam Schall Residence
- Bethlehem Hall
- Chan Chun Ha Hostel
- Hang Seng Hall

Number of hostel places: 1,048

Shaw College

Year of foundation: 1986
Year of forming as a constituent college in the University: 1986
Year of official opening on the University campus: 1990
No. of full-time undergraduates (in 2009): 2,745

Hostels:
- Kuo Mou Hall
- Student Hostel II

Number of hostel places: 1,160

1 http://www.cuhk.edu.hk/iso/facts/issue/2009/facilities_e.htm

APPENDIX D
FACT SHEET OF NEW COLLEGES

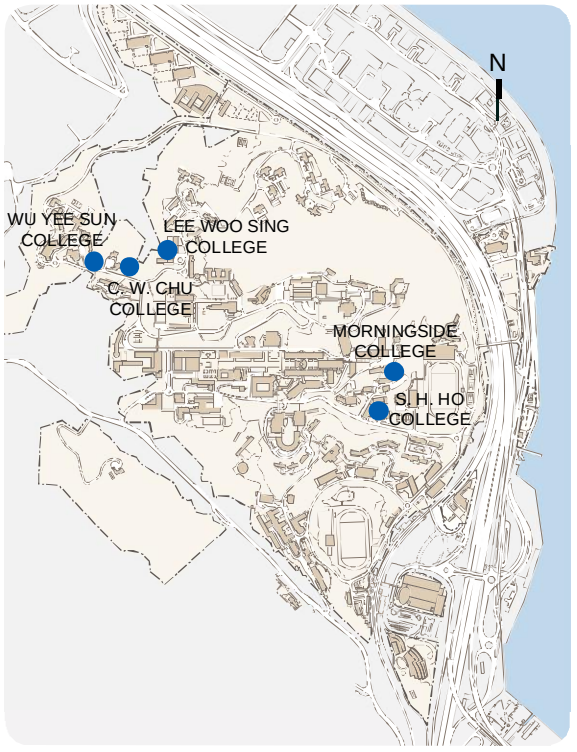
Morningside College[1]
Year of foundation: 2006
Expected year of operation: 2010
Expected number of undergraduates: 300
Expected number of hostel places: 300

S.H. Ho College[2]
Year of foundation: 2006
Expected year of operation: 2010
Expected number of undergraduates: 600
Expected number of hostel places: 600

C.W. Chu College[3]
Year of foundation: 2007
Expected year of operation: 2012
Expected number of undergraduates: 300
Expected number of hostel places: 300

Wu Yee Sun College[4]
Year of foundation: 2007
Expected year of operation: 2012
Expected number of undergraduates: 1,200
Expected number of hostel places: 600

Lee Woo Sing College[5]
Year of foundation: 2007
Expected year of operation: 2011
Expected number of undergraduates: 1,200
Expected number of hostel places: 600



Map 32 - Location plan of new colleges

1 http://www.cuhk.edu.hk/morningside/en/index.html
2 http://www.cuhk.edu.hk/shho/index.html
3 http://www.cuhk.edu.hk/colleges/cwchu-e.htm
4 http://www.cuhk.edu.hk/colleges/wuyeesun-e.htm
5 http://www.cuhk.edu.hk/colleges/LWS-e.htm

APPENDIX E
TRAFFIC STUDY AND SURVEY

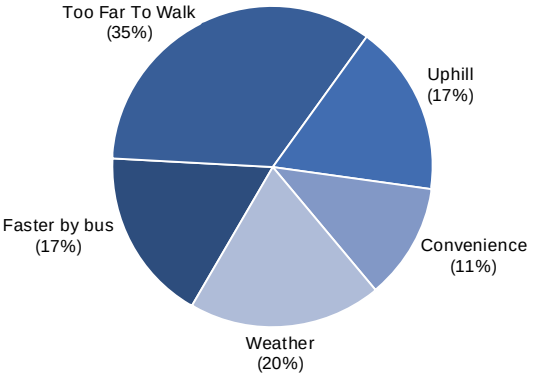
E1. PEDESTRIAN SURVEY

A wide range of basic questions were asked to try to find out why people do not walk:

1. Why don't people walk?

The survey showed that many people (35%) were detered by distance from walking but also 20% were detered from walking by being exposed to the weather.

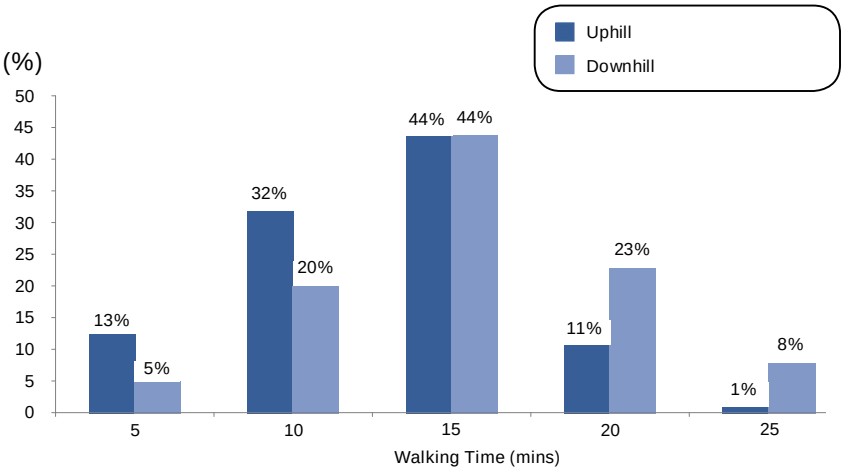
A. Too far (35%)
B. Weather (20%)
C. Uphill (17%)
D. Faster by bus (17%)
E. Convenience (11%)



Diag 05 - Why do you take the shuttle bus instead of walking?

2. For how long would you walk?

Many people, around 44%, indicated that 15 minutes or even longer is acceptable.

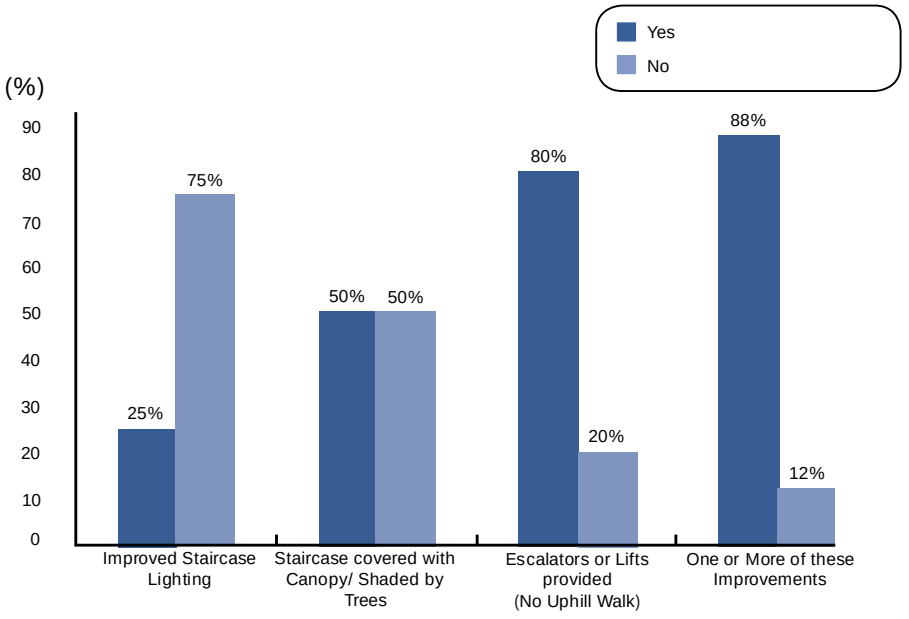


Most respondents are prepared to walk for 15 minutes.
Fewer people are prepared to walk long distances uphill than downhill.

Diag 06 - For how long would you be willing to walk on campus even if you can easily catch a bus?

3. What would encourage you to walk?

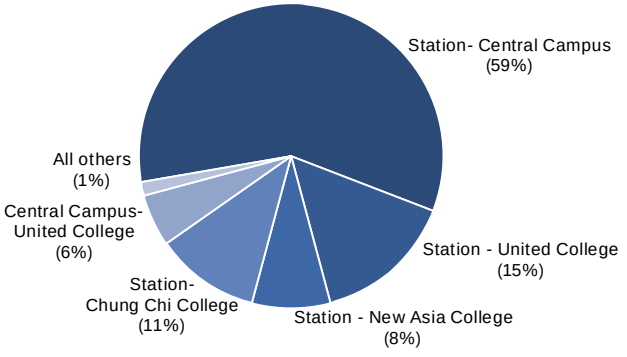
A survey was carried out to see whether people would walk if good facilities are provided and surprisingly a high precentage of the respondents, more than 80%, said they would consider walking if good facilities, especially those countering 'vertical' walking, are provided.



Diag 07 - What kind of staircase improvements would attract you to walk on campus instead of taking a bus?

4. Most popular destinations for walking

The survey showed that 59% of the people who walked would go all the way to Central Campus.

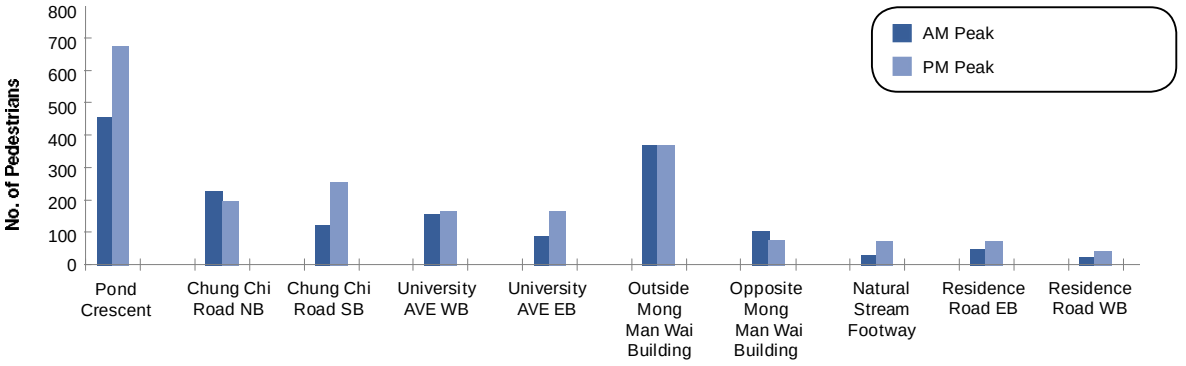


Diag 08 - Most popular walking routes

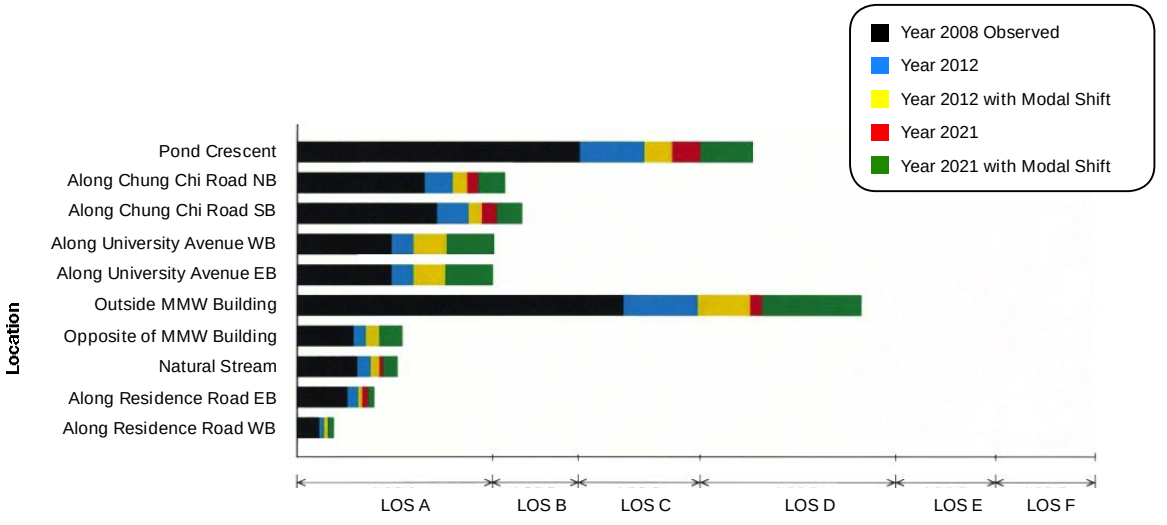
E2. SURVEYS AND ASSESSMENTS OF PEDESTRIAN TRAFFIC

The hard data surveys of pedestrian demand were used to assess the demand at key sections of footway using the 'peak within peak' 15 minute profile. Diag 09 illustrates the results of the assessment and indicates which locations are the busiest. However, this chart does not allow for future growth or indicate capacity of the facility, and therefore further assessment was conducted.

The observed data was assessed further and the concept of Level of Service (LOS)[1] was applied to determine performance in the future years of 2012 and 2021. Growth factors were applied that allowed for the anticipated population growth. The results are summarised in Diag 10. This chart also shows some allowance for passenger diversion at existing locations if more people decide to walk due to improvements in pedestrian facilities. The results indicate that the busiest locations, which exceed LOS B in 2008, are Pond Crescent and Central Avenue near Mong Man Wai (MMW) Building.



Diag 09 – Observed peak demand at key areas (based on a 15 minute peak)

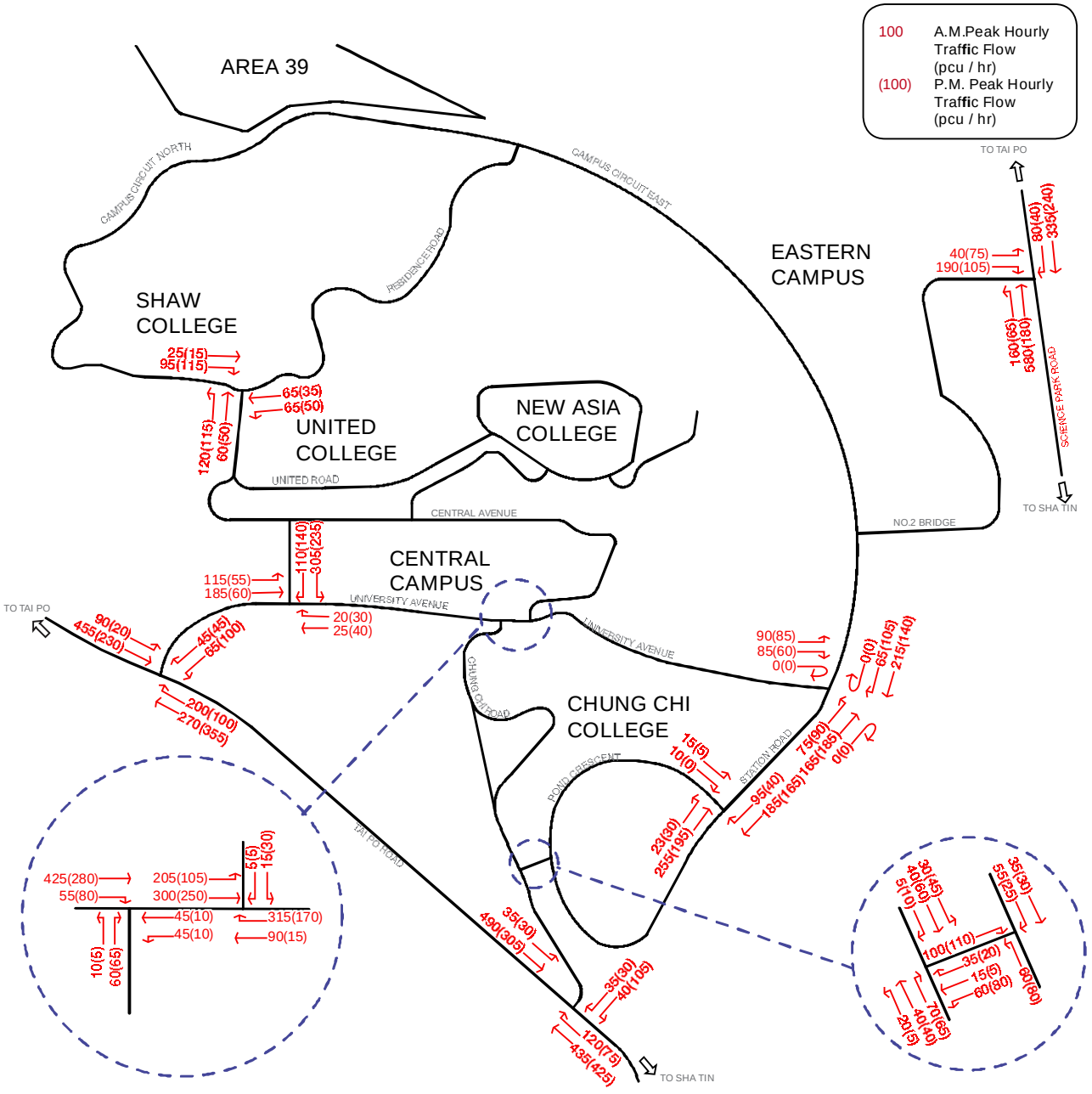


Diag 10 - Level of service in key footway areas

1 Level of Service (LOS) relates observed demand to the comfort levels of people using the footway . LOS A is the best and is very pleasant while LOS F would be like a crowded MTR station. Generally LOS C or D may be acceptable for footways in shopping areas but for the Campus environment we have adopted LOS B as the benchmark.

E3. OBSERVED TRAFFIC FLOW IN 2008

To understand current traffic flow and demand, traffic surveys were conducted at all key junctions within the campus in 2008. Diag 11below shows the traffic flow of buses and private cars at all key road junctions. These data were then analysed to determine the busiest time periods and subsequently the data were assessed to determine the capacity performance of the identified junctions in the existing scenario (Appendix E4).



Diag 11 – Observed traffic flow in the campus (2008)

E4. VEHICULAR TRAFFIC ASSESSMENTS

To determine performance of the road network for vehicles in 2012 and 2021, particular at road junctions, growth factors were applied that allow for the anticipated growth in population. Table 02 shows the results of the junction performance in 2008 and the anticipated performance in 2012 and 2021. The result also indicates the locations that may require improvement from a pure road capacity perspective.

Junction	2008 RFC		2012 RFC		2021 RFC		Conclusion
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	
Tai Po Road Ma Liu Shui / Chung Chi Road	0.256	0.287	0.332	0.370	0.404	0.446	No improvement needed
Tai Po Road Ma Liu Shui / University Ave	0.422	0.290	0.544	0.371	0.661	0.443	No improvement needed
Science Park Road / Road to No.2 Bridge	0.299	0.350	0.390	0.439	0.479	0.520	No improvement needed
University Ave / Station Road / Campus Circuit East	0.475	0.428	0.590	0.533	0.694	0.628	No Improvement needed
University Ave / Central Ave	0.661	0.329	0.864	0.421	1.060	0.507	Improvement needed
University Ave / Chung Chi Road	0.182	0.175	0.238	0.224	0.297	0.270	No improvement needed
Pond Crescent / Station Road	0.207	0.085	0.272	0.110	0.335	0.136	No improvement needed
University Ave / Library Boulevard	0.755	0.672	0.952	0.836	1.133	0.980	Improvement needed
Pond Crescent / Pond Crescent	0.174	0.105	0.217	0.132	0.257	0.153	No improvement needed
Pond Crescent / Chung Chi Road	0.164	0.248	0.206	0.310	0.240	0.365	No improvement needed
Residence Road / Residence Road No.1	0.305	0.322	0.388	0.405	0.463	0.483	No improvement needed

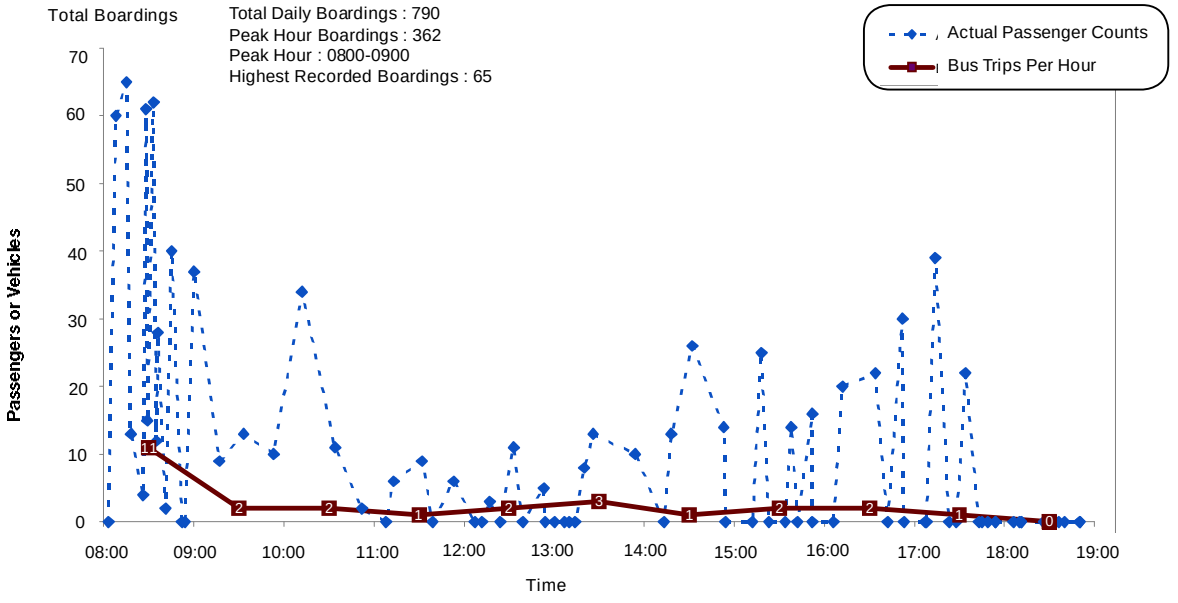
Key: RFC= Ratio of flow to capacity

Table 02 - Junction performance by scenario year

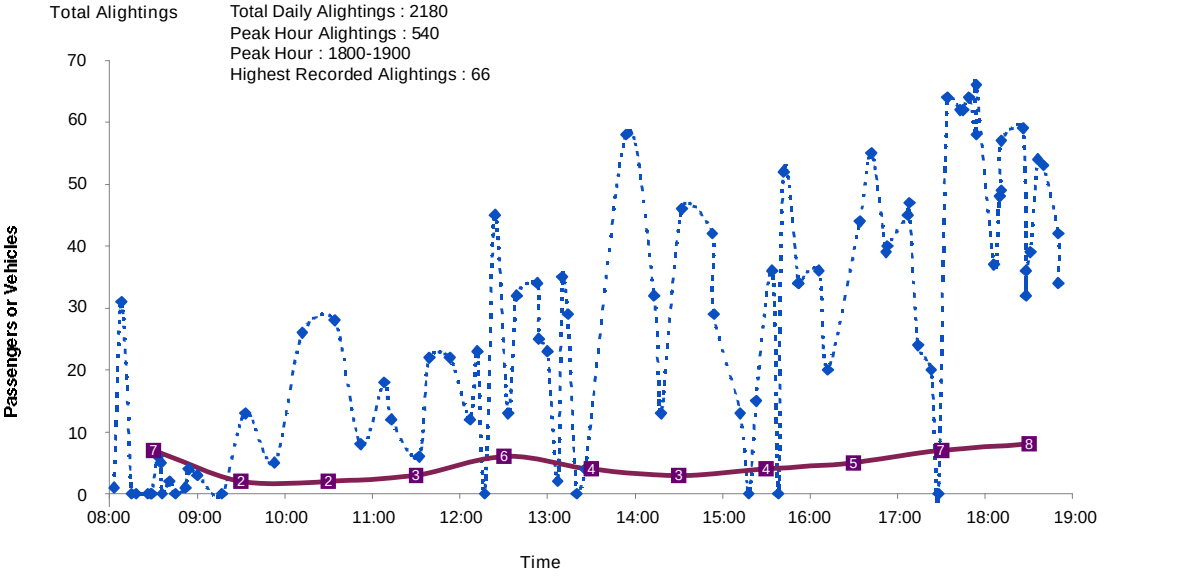
- Approaching 85% of Capacity (RFC = 0.75 - 0.84)
- Approaching Capacity (RFC = 0.85 - 0.99)
- Over Capacity (RFC = > 1.00)

E5. SHUTTLE BUS SURVEYS AND ASSESSMENTS

In order to undetstand the current shuttle bus services including boarding and alighting patterns and bus occupancy, extensive bus usage surveys were conducted, which form the essential basis to formulate a long-term bus service strategy. An example of the results of the survey taken at the bus stop next to the University Station is shown in Diag 12 and Diag 13. The results showed a concentrated early morning peak boarding period whilst the peak alighting period is spread over a longer afternoon / early evening period. Based on this boarding and alighting survey, as well as bus occupancy survey and passengers interview, reconfiguration of shuttle bus service is proposed (Section 4.3.4 refers).



Diag 12 – Surveys on number of passengers boarding shuttle bus



Diag 13 – Survey on number of passengers alighting from shuttle bus

APPENDIX F
INFRASTRUCTURE ASSESSMENT

F1 INTRODUCTION

This appendix provides the following infrastructure assessments of the University campus:

- Drainage & Sewerage Impact Assessment
- Water Impact Assessment
- Utilities Impact Assessment
- Geotechnical Impact Assessment

The assessment includes an overview of the entire campus infrastructure and the impact on potential developments. Recommendations on long-term campus infrastructure strategy will also be stated at the end of this appendix. The proposed development potential as listed in Section 5 was adopted as the design assumptions for this infrastructure assessment.

F2 DRAINAGE & SEWERAGE IMPACT ASSESSMENT

F2.1 Drainage Impact Assessment

Overview:

The University campus has a fairly steep topography with level varies from about 5mPD to 156mPD and with high portion of greenery coverage. This topography provides good storm-water flow paths throughout the campus. The surface runoff is effectively drained away without causing any flooding problem in the existing condition.

The existing drainage network consists of a road drainage system which also collects storm water runoff from buildings. The road drains discharge storm water to the natural water streams or culverts at particular locations. Part of the surface runoff will then be eventually discharged to Tolo Harbour via the existing nullah at the west side of Northside Research Campus (Site H) and the existing box culvert at the south side of Station Court (Site G). The rest of the surface runoff is collected and stored in Weiyuan Lake for irrigation purpose. The existing drainage network is considered to be effective.

Assessment on Potential Developments:

- There is an existing 3m wide drainage channel running across the Northside Research Campus (Site H) and connecting to the existing nullah. This existing channel collects surface runoff from the northwest part of the University campus. An Irrigation pond (20m x 10m x 1.5m) is recommended on the Northside Research Campus (Site H) as irrigation water storage for this site and the main campus. The size of the proposed irrigation pond is tentative only and may be adjusted in the future design development.
- Internal drainage at Area 39 will be collected by rain water outlets and down stacks by gravity to the terminal manhole and discharged to the existing nullah on the north-west side of the site.
- Internal drainage network at the Station Court (Site G) will be connected to the existing public storm water manhole.
- For the proposed developments, including the Eastside Sports Hub (Site A), Eastside Outlook (Site B), Southside Outlook (Site C), Westside Belvedere (Site D), Arts and Humanities Hub (Site E) and Staff Residences (Site F), existing building and hard-paved area are found on these site. The increase in surface runoff is not substantial since the increase in impermeable areas is only minor. Internal drainage network of these sites will be connected to the nearby existing drainage network. The capacity of existing drainage network has been checked and found sufficient to cater for the increased storm water flow.

F2.2 Sewerage Impact Assessment

Overview:

These existing sewerage system consists of small sewers (mostly 150mm to 225mm) running underneath the carriageway which collects and conveys sewage to the public sewerage pumping station adjacent to the Shanghai Fraternity Association Research Services Centre.

A Sewerage Master Plan within the University campus has been conducted and the report finalized in 2008 under a separate consultancy. A number of sewerage network upgrading works have been identified and recommended in the Sewerage Master Plan report for the existing scenario, 2011 / 2012 scenario, 2016 scenario and ultimate scenario. Improvement works as recommended in the Sewerage Master Plan will be carried out progressively.

As mentioned in the Sewerage Master Plan, the public sewage pumping station will be upgraded under the Drainage Service Department (DSD)'s Upgrading of North District and Tolo Harbour Regional Sewerage Project. The pumping station after upgrading is capable to pump all sewage to the Shatin Sewage Treatment Work (STSTW).

Assessment on Potential Developments:

- As recommended in the Sewerage Master Plan, the sewage generated from the north-west end of the University campus will be discharged to the public sewerage network on the northwest side of the Northside Research Campus (Site H). This arrangement will effectively relieve the loading on the existing and future sewage pumping stations and provide spare capacity for the growth of the campus.

- As advised in Sewerage Master Plan, a 375 dia. sewer is proposed along the boundary of Area 39. Internal sewer network will be connected to this sewer pipe and the sewage will be discharged to the northwest side. This arrangement will not increase the sewage flow in the existing main campus sewer networks and is considered to be a preferable option.

- Internal sewer network at the Station Court (Site G) will be connected to the existing sewer network at the present bus station.

- For the proposed developments including the Eastside Sports Hub (Site A), Eastside Outlook (Site B), Southside Outlook (Site C), Westside Belvedere (Site D), Arts and Humanities Hub (Site E) and Staff Residences (Site F), an internal sewer network will be connected to the nearby existing sewer network and the capacity of the proposed and existing sewer pipeline is found sufficient to cater for the increased sewage flow.

- No major infrastructure work is required to connect the proposed drainage and sewerage network to the existing system. With implementation of temporary traffic arrangement, conventional pipe laying method (i.e. open-cut method) could be used.

F3 WATER IMPACT ASSESSMENT

F3.1 Fresh Water Impact Assessment

Overview:

Fresh water is currently supplied to the University campus by a Water Supplies Department (WSD)'s DN200 water main at Tai Po Road and a DN150 water main on the eastern campus. Fresh water from these two water mains is pumped by existing pumping station to the water tanks at various locations. To secure a reliable water supply system, a separate up-feed pipe along the Western Campus has been installed as an dual-feed pipes to the water tanks.

A separate fresh water supply to the Northside Research Campus (Site H) and main campus is recommended to meet future water demand of the campus. The University is liaising with WSD for another fresh water supply point at the west side of Area 39. Together with the existing fresh water supply, this new fresh water supply point can act as dual fresh water source to the Area 39 and the main campus.

Assessment on Potential Developments:

- A fresh water pumping station in Area 39, fresh water rising main between Area 39 and the main campus is recommended to inter-connect the new water supply point to the existing fresh water network. Inter-connection between fresh water network of Area 39 and the main campus will provide a stable fresh water supply for the development of the University. Fresh water tanks on rooftops with pump sets are also recommended in Area 39.

- Internal fresh water network in Station Court (Site G) will be connected to the existing fresh watermain right in front of the site.

- For the proposed developments including the Eastside Sports Hub (Site A), Eastside Outlook (Site B), Southside Outlook (Site C), Westside Belvedere (Site D), Arts and Humanities Hub (Site E) and Staff Residences (Site F), internal fresh water network will be connected to the nearby existing water network and the capacity of the existing fresh water pipeline is found sufficient to cater for the increased water flow.

F3.2 Flushing Water Impact Assessment

Overview:

Flushing water is currently supplied to the University campus by the WSD's DN150 sea-water mains at Tai Po Road and by the rainwater stored in Weiyuan Lake.

Similar to fresh water supply, a separate flushing water supply to Northside Research Campus (Site H) and main campus is recommended to meet water demand for campus development.
Similar to fresh water supply, the University is also liaising with WSD for another flushing water supply point at the west side of Area 39. Together with the existing flushing water supply, this new flushing water supply point can act as dual flushing water source to Area 39 and the main campus.

Assessment on Potential Developments:

- A flushing water pumping station in Northside Research Campus (Site H), flushing water rising main between Area 39 and the main campus is recommended to inter-connect the new water supply point to the existing flushing water network. Inter-connection between flushing water network of Area 39 and the main campus will provide a stable flushing water supply for campus development. Flush water storage tanks on rooftops with pump sets are also recommended in Area 39.

- Internal flushing water network in Station Court (Site G) will be connected to the existing flushing water mains right in front of the site.

- For the proposed developments including the Eastside Sports Hub (Site A), Eastside Outlook (Site B), Southside Outlook (Site C), Westside Belvedere (Site D), Arts and Humanities Hub (Site E) and Staff Residences (Site F), internal flushing water network in these sites will be connected to the nearby existing water network and the capacity of the existing flushing water pipeline is found sufficient to cater for the increased water flow.

F3.3 Fire Service Water Impact Assessment

Overview:

Fire service water is currently supplied to the University campus by the WSD's DN200 water mains at Tai Po Road.

Similar to the fresh water supply, a separate fire service water supply to the Northside Research Campus (Site H) and main campus is recommended to meet water demand for campus development.

The University is liaising with WSD for another fire service water supply point at the west side of Area 39. Together with the existing fire service water supply, this new fire service water supply point can act as dual fire service water source to Area 39 and main campus.

Assessment on Potential Developments:

- A fire service water pumping station on the Northside Research Campus (Site H), fire service water rising mains between Area 39 and the main campus are recommended to inter-connect the new water supply point to the existing fire service water network. Inter-connection between fire service water network of Area 39 and the main campus will provide a stable fire service water supply for campus development.

- Internal fire service water network in Station Court (Site G) will be connected to the existing fire service water mains right in front of the site.

- For the proposed developments including the Eastside Sports Hub (Site A), Eastside Outlook (Site B), Southside Outlook (Site C), Westside Belvedere (Site D), Arts and Humanities Hub (Site E) and Staff Residences (Site F), internal fire service water network in these sites will be connected to the nearby existing water network and the capacity of the existing fire service water pipeline is found sufficient to cater for the increased water flow.

F3.4 Irrigation Water Impact Assessment

Overview:

A sustainable irrigation system is currently implemented in the University campus. Rainwater is collected and stored in Weiyuan Lake for irrigation purpose. Reuse of rainwater for irrigation effectively reduce fresh water usage in the University.

Further development of the campus will increase irrigation water demand. Expansion of existing irrigation storage and distribution network is therefore recommended.

Assessment on Potential Developments:

- The Northside Research Campus (Site H) is a relatively large area and irrigation demand will be substantial. Therefore an irrigation pond or tank is recommended on the site to store rainwater for irrigation use.

- An irrigation pumping station on the Northside Research Campus (Site H), irrigation water rising main between Area 39 and the main campus and the irrigation tank in main campus are recommended to inter-connect the new irrigation system to the existing irrigation network. Inter-connection between irrigation network of Area 39 and the main campus will relieve irrigation water demand on campus and maintain more stable irrigation water supply. A smaller irrigation water tank with pump sets is recommended for internal irrigation of Area 39.

- Station Court (Site G) is an isolated area separated from the main campus network by the MTR track. New irrigation water pipe laying across the MTR track may not be feasible and therefore the irrigation water for this site is recommended to be supplied from nearby existing fresh water main.

- For the proposed developments including the Eastside Sports Hub (Site A), Eastside Outlook (Site B), Southside Outlook (Site C), Westside Belvedere (Site D), Arts and Humanities Hub (Site E) and Staff Residences (Site F), irrigation demand for these sites will be nominal. Tee-offs from the main campus irrigation network will be made to connect the internal irrigation networks of each site.

No major infrastructure works are required to connect the proposed water mains network to the existing system. With implementation of temporary traffic arrangement, conventional pipe laying method (i.e. open-cut method) could be used.

F4 UTILITIES IMPACT ASSESSMENT

F4.1 Power Supply

Overview:

Existing power supply to the University campus is currently fed by various CLP (China Light & Power Company) substations, which connected by CLP's 11kV HV power cable network running throughout the campus. LV power cable from the substation connected to the various LV main switch rooms to serve various buildings throughout the campus. Dual sources of power supply from Fo Tan and Pak Shek Kok were adopted by CLP to enhance the reliability for the electricity supply to the campus.

Assessment on Potential Developments:

- A new substation is required for the Eastside Sports Hub (Site A) and Eastside Outlook (Site B) respectively. The CLP's 11kV HV cables shall be tee-off from Campus Circuit East for Site A and Site B respectively.

- Existing substation S/S 'AL' for the Southside Outlook (Site C) can be demolished to suit the new development and hence a new substation fed from CLP's 11kV HV cable at Chung Chi Road is recommended. However, the existing power served by substation S/S 'AL' such as Chung Chi College Staff Quarters Block A, B, C, D, & G will be affected and can be diverted.

- New substation is required for the Westside Belvedere (Site D) and CLP's 11kV HV cable is recommended to be tee-off at University Avenue and connected to the recommended new substation.

- Existing substation S/S 'F' for the Arts and Humanities Hub (Site E) can be demolished to suit the new development and hence a new substation fed from CLP's 11kV HV cable at Central Avenue is recommended. However, the existing power served by substation S/S 'F' such as Leung Kau Kui Building and University Library may be affected and require diversion.

- Power supply for Staff Residences (Site F) to be fed from existing substation located at Residence No.16 & 17 S/S 'AC'.

- Power supply for Station Court (Site G) is recommended to be using the 11kV HV cable at Chak Cheung Street laid by CLP.

- As there are CLP's 11kV HV cables running along the MTR East Rail line, it is recommended to tee-off from these CLP cables to a new CLP substation is required for the Northside Research Campus (Site H).

- All power supply schemes including dual feed power supply concept are subject to CLP final approval.

- It is recommended that all the diversion works for the Southside Outlook (Site C) and Arts and Humanities Hub (Site E) should be completed before any commencement of work of these sites accordingly.

F4.2 Towngas/ LPG

A separate system and individual gas meters will be provided for development on the Northside Research Campus (Site H). DN200 gas pipe will be supplied from gas or LPG main located near the site and distributed to the development.

For the proposed developments including the Eastside Sports Hub (Site A), Eastside Outlook (Site B), Southside Outlook (Site C), Westside Belvedere (Site D), Arts and Humanities Hub (Site E), Staff Residences (Site F) and Station Court (Site G), since Towngas is not available on the existing campus, LP Gas will be provided for the catering facilities of these sites. LPG will be supplied from gas cylinders located at an open LPG cylinder area and distributed to the development via the gas piping system.

F4.3 Telecommunications

Existing telecommunication and IT network to the University campus is currently linked by the internal telephone duct and computer duct system. These service ducts have been planned for dual lead-in at Tai Po Road and Science Park Road.

A new cable duct system connecting to the existing ducting network can be provided at the Station Court (Site G) and Northside Research Campus (Site H). While on other sites, the telecommunication and IT network can be connected to nearby ducting network.

F4.4 Wi-Fi Network Connection

A centralized Wi-Fi Model in the University is currently covering most of the public areas, the major lecture theatres, classrooms, libraries, student canteens, etc.

New Wi-Fi access points can be provided on all potential development sites and connected to the existing Wi-Fi network and to become part of the centralized Wi-Fi Model.

F5 GEOTECHNICAL IMPACT ASSESSMENT

F5.1 Assessment on Potential Development Site

Eastside Sports Hub (Site A)

- A natural terrain hazard study (NTHS) may be required for the site beyond the area delineated by the alert criterion. Mitigation measures, such as debris resisting barriers may be required. The necessity, location, extent and type of the barriers are subject to further study.
- A set back zone from the existing slopes is required for the proposed development. If no set back zone is provided, a nearby barrier may be required subject to further study on the stability of the existing slope features.

Eastside Outlook (Site B)

- A set back zone or nearby barrier from the existing slopes is required for the proposed development.
- Excavation and Lateral Support (ELS) works (rock cut slope or pile wall) of an existing slope is required for the site formation works for the terrace platform.

Southside Outlook (Site C)

- A set back from the existing slope toe at the northern portion of the site shall be required. In case the proposed building is located and extruded into the slope, extensive ELS works at the northern boundary will be involved.
- Another existing slope will be affected and slope upgrading works may be involved. Mitigation measure such as soil nail may be required. The necessity, location, extent and type of the barriers are subject to further study.
- At the northern portion of the site, there is a sloping ground and so retaining wall is required for the proposed development.

Westside Belvedere (Site D)

- Some existing slopes (including fill slope) may be affected, slope upgrading works may be involved for entire feature.
- An existing slope upgrading works has been in progress since the end of 2008.
- Retaining walls / toe walls is required for the proposed development.
- ELS works at the northern boundary will be involved for the considerable retaining height for the development platform.

Arts and Humanities Hub (Site E)

- Existing building will be altered or demolished. Proposed development will be constructed on the same location.
- A tentative platform is to be provided on the original ground level. If the tentative platform level is lower than the original ground, ELS works and slope works will be involved.
- Backfilling or changing of surcharge due to the new building will involve the checking of the slope underneath.

Staff Residences (Site F)

- Some existing slopes may be affected, set back & slope upgrading works may be involved.
- A natural terrain hazard study (NTHS) may be required for the site beyond the area delineated by the alert criterion. Mitigation measures, such as debris resisting barriers may be required but for the necessity, location, extent and type are subject to further study.
- Set back zone from an existing slope is required for the proposed development.

Station Court (Site G)

- An existing slope may be affected. A setback or nearby barrier is required if necessary.
- Referring to PNAP279 , it was found that the site fall outside but in the vicinity of the Schedule Area no.3,

hence the submission relating to ground investigation, foundation design and construction in this area would not be required to follow the requirements from PNAP.

- If no setback zone is provided, a nearby barrier is required for the proposed development subject to the further study on the stability of the existing slope.

Northside Research Campus (Site H)

- Some existing slopes (including fill slope) will be affected (slope upgrading works may be involved).
- A natural terrain hazard study (NTHS) may be required for the site beyond the area delineated by the alert criterion. Mitigation measures, such as debris resisting barriers may be required. The necessity, location, extent and type of the barriers are subject to further study.
- With reference to PNAP279, it was found that part of the site falls within the vicinity of the Schedule Area no.3, hence the submission relating to ground investigation, foundation design and construction in this area would be required to follow the requirements from PNAP.
- The site is under construction works by the Civil Engineering and Development Department (CEDD) since the end of 2008.

F5.2 General Guidelines on Geotechnical / Site Formation Works at Potential Development Site

- To minimize the overall impact of the new developments to the environment and to preserve the balance of every aspect of the environment with appropriate geotechnical / site formation works.
- Existing landscape features, such as trees and rock outcrops, should be maintained wherever possible.
- The extent of cutting slope, if required, should be minimized.

F6 RECOMMENDATIONS

The following items are recommended as an advance project work for the long term campus development and sustainable development of infrastructure in the University.

Irrigation Pond at at Northside Research Campus (Site H)

Further to the campus development in the coming years, the irrigation water demand will be getting higher and the existing irrigation facilities may need to be upgraded to meet the demand. The University is currently reusing the rainwater collected and stored in Weiyuan Lake. It is recommended to adopt the rainwater-reuse strategy in the future irrigation facilities upgrading works. An irrigation pond is recommended at Area 39 to store the rainwater collected from the nearby channels and drains. This will effectively reduce the fresh water consumption in the future development.

Dual Feed from External Utilities Supply (water, power, telecommunication services and sewerage discharge etc.)

In recent years, dual feed from external utilities supply have already been provided on the campus, which ensure a stable supply and reduce the risk of utilities supply disruption in case the external network fails.

It is recommended to continue the improvement of the internal services distribution to a complete dual feed system, taking the advantages of the potential development sites.

Relocation of Existing Tanks and CLP Station

Some existing tanks currently on the ground can be considered for relocation to the rooftops of buildings to vacant precious land for future development need.

Existing centralized CLP Station on the central campus can be de-centralized to the substation rooms of new buildings to secure a high voltage network of higher reliability and vacate the existing space.

APPENDIX G
LIST OF ILLUSTRATIONS