PRELIMINARY DESIGN PROPOSAL REPORT
The Walkable Campus

UNIVERSITI SAINS MALAYSIA
Universiti Sains Malaysia
The Walkable Campus Plan

Preliminary Design Proposal Report

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1 Introduction

The Walkable Campus Project is a follow up of the USM Campus Planning Project which has formulated the planning doctrine and policies and guidelines for the Universiti Sains Malaysia Main Campus in Penang. In undertaking this project we have gone to great lengths to implement the concept, vision and policies of The University in a Garden outlined in our earlier report. The overall vision of the USM Campus Plan is to address the need for a policy document to guide sustainable development on the campus that will protect our treasures. The ultimate aim of the project is to provide a more conducive campus environment for the campus community by creating a garden-like environment. However, it must be emphasised that the garden is not merely about the physical elements but include good practices which will further enhance the enjoyment of the beauty of our campus. One of the good practices that we hope to encourage amongst the campus community is walking. Planning for pedestrians is major planning principle and goal which can benefit the campus community in many ways. It will remove barriers to mobility, increase the safety and comfort of pedestrians and cyclists, increase recreational activities as well as physical activity or exercise. All these will translate into the creation of a more livable community in USM. Ultimately, these healthy habits will hopefully become the lifestyle of choice preferred the whole community within and outside the campus.

In our earlier report, we have outlined policies and guidelines\textsuperscript{1} that will facilitate and encourage the realization of a pedestrian-friendly campus. The report stressed that the design of pedestrian spaces and routes should be able to invite walking and strolling through the campus. In order to achieve this, safe and well-identified connections to the major pedestrian and bicycle paths within the campus should be provided with ample shade. The report also highlighted important of providing safe and friendly pedestrian routes for the disabled (or popularly referred to as OKU which stands for “Orang Kurang Upaya”). The use of interlocking pavement should be discouraged as far as possible because it will creates difficulties for those requiring special walking aids or wheelchairs. In concordance with our overall objective of being close to nature, permeable paving surfaces such as wood decks, bricks and concrete lattice are recommended where appropriate.

\textsuperscript{1} Please refer to Policies and Guidelines Report, page 59-60. The report is also available online at http://www.hbp.usm.my/usm.
Pedestrian walkways should also be furnished with streetscape, which are well-coordinated with other major landscape features in terms of design, colour, material and scale. Seating, wakafs (pavillons) and water-coolers should be located in areas with high pedestrian traffic.

The plan for the USM Walkable Campus attempts to create a comprehensive system of pedestrian networks in line with the aspirations outlined in the report “The University in a Garden”.
2 The Walkable Campus

The vision to turn USM into a Walkable Campus was first brought up by the first Vice Chancellor\(^2\) who was trained as town planner. However, the pressure to satisfy the increasing demand for more floor space has apparently received more priority and attention resulting in the idea of the walkable campus being neglected. Separation between vehicle and pedestrian movements was neglected with very little thought given to provisions of pedestrian facilities. This was recognised way back in the mid 1980s (Campus Planning Report, 1984) but not much was done to address the problem.

Increasing student enrolment and staff in-take has taken its toll on the campus. More and more land have to be taken to build hostels, lecture halls, administrative offices, schools and parking spaces. Heritage trees and builds have been destroyed while the roads in campus are getting busier each year. The introduction of shuttle buses and the policy disallowing students from using motor vehicles in campus has helped to restrict the growth in terms of the volume of vehicular traffic but has not satisfactorily fulfilled the goal of creating the ideal campus. The constraints limiting the width of roads in USM should be accepted as the upper limit of the environmental capacity that should not be breached in order to maintain the garden environment (Policy and Guidelines, 2002). It is now necessary for the campus to make a major shift in policy to de-emphasise motorised transport in favour of the pedestrians. The need to develop more systematic pedestrian network is urgent as a recent study showed that about 40% of USM students walk on campus (Aldrin et al., 2002). The impetus to undertake this project has come from various sources, but notably the top management has been most supportive. The current Vice-Chancellor for instance has not only supported the project with a grant from the University but has also attended various briefings on the project as well as sending words of encouragement and supporting materials\(^3\).

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\(^2\) The current VC (Dato’ Professor Dzulkifli Abdul Razak) acknowledged this during presentation of Sungai Dua Entrance Landscape and Pedestrianization Proposal at Sungai Dua Wakaf, 28\(^{th}\). October 2002.

\(^3\) On one occasion, the VC handed a “Walkable Community” brochure to Lee LM which spurred him to invite Aldrin Abdullah to lead the “Walkable Campus Project”.
The starting point of the Walkable Campus Plan was a request from the VC to the Campus Planning Team to come out with proposals to solve the traffic problems at the Sungai Dua Entrance. The lives of students and staff are constantly at risk as they cross the road daily. A fatality involving a USM student has spurred the authorities to seek a solution to the problem. Several options have been considered including the construction of an overhead bridge barriers to prevent indiscriminate crossings at unsafe locations. The Campus Planning Team is taking a different perspective of the problem by emphasising the human element rather than vehicles.

We feel that the present rarely used traffic light which is less than 50 metres away from the entrance should be fully utilized. The present situation is that students prefer to cross at numerous points as they feel that it is too far to walk to the traffic light to cross to the other side of the road. In order to encourage students to walk to the traffic light, a pleasant walking environment should be created so that pedestrians will be encouraged to cross safely using the traffic light. Details of the landscape and pedestrianization plan for Sungai Dua entrance are discussed in Chapter 4.

We envision the Sungai Dua Entrance as the main focal point of the campus pedestrian network. From the entrance, the main spine of pedestrian network will branch out to both to east and west sides of the campus. On the east side, the pedestrian network will start from the Dataran Bintang (next to Dewan Budaya) and continue right down to the Main Library II and the Eureka building. From there, it will branch off to the Sungai Dua Entrance but will continue its path to the Harapan Lake right up to the Bukit Gambier gate on the western side of the campus. The selection of these routes were based on our pedestrian traffic analysis which showed that these areas drew high number of pedestrians 4.

This document presents our proposed pedestrian network for the main spine from Dataran Bintang to Sungai Dua entrance. Proposals for the other segments of the pedestrian network is currently being prepared and is expected to be ready by March 2003.

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4 The study found that on average, the number of pedestrians using the Sungai Dua entrance is 220 people per hour during weekdays and 95 people per hour during weekends.
3 Issues and Problems

Planning for non-motorized travel can benefit our community in many ways. It can increase the safety and comfort of the pedestrians and cyclists, reduce conflicts between vehicles–vehicles and vehicles–pedestrians, reduce vehicular traffic and the problems it creates, increase recreational activity and exercise, better accommodate disabled people and help to create a more livable community. There are probably many reasons why the majority of campus community does not walk within the campus in carrying out their daily activities (such as going for meetings, lecturers, etc). In order to encourage the USM community to practice ‘walking culture’ in the campus, we have to understand the issues and problems faced by these pedestrians.

Most students encounter weather-related problems when walking. For instance, the walking conditions from Desasiswa Indah to the School of Pharmacy (Photo 1) is very uncomfortable as there is no shade provided along the path, thus forcing students to walk under the extremely hot tropical sun. This is seen as a missed opportunity as this route is the shortest route from Desasiswa Indah to the lecture halls using the staircases at the back of Desasiswa Fajar. This route only takes 15 minutes. In order to promote walking, ample shades should be provided. Our observation also showed that the hilly terrain of the campus is also one of the main problems that hinders people movement.

Photo 1: Pathway leading to School of Pharmacy

Apart from that, the design of walkway in the campus also affects the interest of walkers. The paths are too narrow and can only cater for two persons at any one time. As a result, it is quite common to see pedestrians walking on the road, thus creating situations that may result in accidents. There is also a lack of
continuity from one point to another. Often, the continuity of the walkway is interrupted with structures such as lamp posts or trees. It is also common to see the walkways end abruptly to give way to vehicular roads. There is also not enough proper pedestrian crossings in the campus.

Some of the improper designs reflect an ad-hoc approach to the design of pedestrian walkways giving rise to unsatisfactory movements for the pedestrian. Photo 2 shows an example of pedestrian path that hinders movement especially for the disabled. The improper use of materials of the walkways sometimes fail to reflect the surroundings and create an eyesore to the public. For example, the steel material used as a ‘gateway’ shown in Photo 3 is inappropriate and does not have regard for the colonial design of the building.
Another issue that has to be addressed is security especially in isolated areas such as around Harapan Lake during the night. A recent study shows that Harapan Lake is perceived by students as the most ‘unsafe’ area in the campus. This is probably due to the lack of lighting in the area.

The shuttle buses were introduced in USM in tandem with the policy prohibiting the use of motorised vehicles by students. However, we feel that these long coaches are an eyesore to the ‘garden’ image that we want to create. The noisy engines and black fumes emitted from these buses are intrusions in our garden. The campus community should not rely too heavily on the commuter. As an alternative, we should try to provide reasonably comfort conditions for pedestrians to get from one place to another. The shuttle buses should only be used for travel over longer distances in the campus.
Pedestrian movement will be given high priority in the ‘Walkable Campus’. A pedestrian-oriented focus with priority for activities, which encourage walking will support our harmonious existence with USM’s treasures and promote the lifestyle of a healthy campus.

The existing pedestrian walkways are placed along the roadsides adjacent to motorised traffic. The width of the existing walkways varies from 1.5 m to as narrow as 0.5 m and ends abruptly in certain places. At one point near Pusat Kaunseling and Pusat Pengajian Jarak Jauh (PPJJ), one has to walk on the tarred road, as there are no other walkway or sidewalks. The absence of walkways forces the pedestrian to walk on the road and this can be very dangerous (Photo 4).

In the proposed Walkable Campus Plan, pedestrian walkways will have continuous comfortable elements and uninterrupted walking routes. This includes continuity of pavement types. Concrete pavements with finish and texture should be used for it can be easily repaired and replicated. Furthermore, it is more feasible and affordable to maintain and replace.

In this proposal, walkways will be designed around shaded areas and separated from vehicular circulation. Designated pedestrian crossings will be placed further from the junction entrance. This is to prevent pedestrian-vehicle collision due to motorists’ inability to see pedestrian crossing the road when the motorists turn into a junction.
Curb ramps will be placed at all pedestrian crossings to reduce level differences so that it will be convenient for the disabled (Figure 1).

Somehow, due to USM’s undulating topography, not all walkways will be accessible to wheelchair users. Ramps will only be provided to most frequently used activity areas so that the disabled can also take part.

Lightings for the pedestrian will be improved by placing landscape lights (light bollard, decorative lightings, etc.) along the walkways to ensure visibility and safety for night time users. Street lamps will also be placed at all pedestrian crossings to ensure that motorists can see the pedestrians when they cross the street. To improve markings and visibility of pedestrian crossing, bright coloured materials will be used.

Pedestrian amenities will be provided at certain nodes because these amenities will establish a more comfortable and convenient place for pedestrians to rest and enjoy the campus environment. These include landscaping, weather protection (shades and shelter), public art, street furniture, street lighting, public phones, drinking fountains and other pedestrian amenities.
4.1 Dataran Bintang and Post Office Area

The Student Mall (Permatang Pelajar) at Dataran Bintang is a popular gathering venue especially during the annual Convocations. It is also often being used to hold various cultural events, performances, feasts and public lectures. Ramps will be provided to enable wheelchair users to move around Permatang Pelajar and Dataran Bintang (Figure 2).

Figure 2: Proposed pedestrian crossing with curb ramp in front of Post Office

Figure 3 shows the plan for a pedestrian crossing connecting Permatang Pelajar to the Post Office area on the opposite side of the road. This area is found to be one of the most frequently used by pedestrians. The existing cemented area near the post office will be paved and widened. The pedestrians will be walking on a wider walkway bordered with ornamental shrubs and groundcovers to go down to parking space and Convocation Festival site (Figure 4).

Figure 3: Proposed walkway near Post Office
Figure 4: Ramp at Dataran Bintang
The lawn near the entrance to the Counseling Centre (Figure 5) will be given a new look and become part of the pedestrian network. There will be a paved walkway bordered with beautiful combination of shrubs and groundcovers crossing the lawn (Figure 5). Part of the walkway will be semi-shaded with pergolas. Benches will also be provided under the pergolas (Figure 6). Sitting at this spot will give one the view of the USM’s great hall, the DTSP (Dewan Tuanku Syed Putra). A small *Flicium Decipiens* (Kiara Payung), which is already planted in the area, will provide good shade to the area when it matures.

![Photo 5: Existing lawn near Counseling Centre](image)

![Figure 5: Proposed landscape near Counseling Centre](image)

Going down to Pusat Pengajian Jarak Jauh (PPJJ), a new route for the pedestrian walkway will be provided. The large existing *Ficus* and *Callophyllum* provide some cooling effect to the area. The sloping ground gives the users a good view of the nearby surroundings.
For aesthetic value, more outdoor or public arts such as sculptures or other elements of surprise can be placed at a pedestrian junction near the PPJJ and Counseling Centre (Figure 6 & Figure 8). The university can take advantage of the availability of the arts courses at USM to programme exhibits of students' produced outdoor sculpture, which can be a permanent or temporary ones.
Figure 7: Dataran Bintang
Figure 8: Pathway from PPJJ to Dewan Budaya
4.2 Areas in front of Pusat Pengajian Jarak Jauh

Rows of trees next to parking spaces opposite PPJJ provide cool shady environment (Photo 7). Pedestrians will walk in the shade on a new walkway replacing the existing walkway that is along the roadside. Comfortable benches will be placed under the shady trees on one side of the walkway. There will be decorative plants in planters on both sides of the benches and high shrubs at the back of the benches (Figure 9). It is not only to beautify, but also to give more privacy to the users as the plants also act as symbolic wall. This is to give the students the chance to study outdoors, have discussions or informal gatherings with less interruption.
The existing staircase in front of PPJJ will be rebuilt for the safety of the users ((Photo 8). Benches will be placed under the shade of trees.

4.3 Retreat Garden

The existing formal landscape near the entrance to the parking space opposite PPJJ (Photo 9) will be converted to a small garden with a gazebo, landscaped areas and pergolas (Figure 10& Figure 11). Part of the grass lawn will be semi-paved as a transition between the scorching hot tarred surface and the grass lawn.
Benches will be placed under the shade trees overlooking the garden.

Figure 10: Proposed retreat garden
Figure 11: Image of the Proposed Retreat Garden
4.4 Oval

The university oval is an open space full of tropical green trees, which provide shade and a comfortable outdoor environment (Photo 10).

The annual Convocation Festival activities will be scaled down on this site to reduce adverse impacts of extremely large crowds on the environment (Photo 11). The activities will be redistributed and spread throughout the campus.

Photo 10: Existing walkway in the Oval. The trees on both sides provide shade for pedestrians.

Photo 11: Too much activities held in the Oval jeopardized the beauty of the space.
4.5 Edu Garden

A pedestrian walkway will be designed to connect the main entrance of the Main Library II to the main pedestrian mall stretching from Dataran Bintang to the mosque area. Ramps will be provided from the Library down to the Edu Garden.

![Existing green area in front of Main Library II](image)

Photo 12: Existing green area in front of Main Library II

![Plan of proposed Edu Garden](image)

Figure 12: Plan of proposed Edu Garden

The shaded green area in front of this library will be provided with seating facilities to entice passerby to pause and reflect as well as to appreciate the beauty of the campus (Figure 12). The grand rain trees (*Samanea Saman*) provide the shade and help to cool the air. Thus, this outdoor space will be a marvelous place for the students and staff to study, have discussions or just to stop and have a rest while walking in the campus (Figure 13).
The drain beside Edu Garden was once a natural stream. The drain will be recreated in a more natural setting with stone and pebbles as the base of the stream. Groundcovers and grass at the slopes on both sides of the ‘stream’ will give it a more natural look. A bridge with a new design will replace the existing concrete bridge (Figure 14).

Pedestrians will walk past the bridge to the area near Eureka building where pedestrians can choose either to walk on the walkway that goes in front of the bus stop or a new walkway at the back of the building. Both walkways connect to the proposed landscaping and pedestrianization plan at Sungai Dua entrance.
Figure 13: Edu Garden
Figure 14: New bridge leading to USAINS (EUREKA Building)
4.6 Sungai Dua Entrance

To reduce conflict between pedestrians and vehicles, the Sungai Dua Entrance is proposed to be pedestrian oriented. A small pedestrian gateway (Photo 13) will be available close to the existing traffic light to channel students from the traffic light directly into the Campus.

Near the traffic light on the other side of the road, there will be a gazebo to act as a holding area for the pedestrians to wait for the traffic light to turn green. A ramp will be provided for wheelchair users (as well as the able bodied) to facilitate access to the shops. The whole stretch of the roadside in front of USM gate will be given a facelift. Trees, palms and shrubs will be planted to soften the look of the JKR-proposed barrier which will be erected on the sidewalk on side opposite the USM campus.

The present USM fences are considered unsuitable for the garden image. They will therefore be removed and replaced with hedges which will act as a symbolic barrier\(^5\) that defines the boundary of the USM campus. Seating facilities will also be provided close to the bus stop for the use of pedestrians while waiting for the bus.

\(^5\) Symbolic barriers, usually in the form of plants are used to define the territory of a space (Oscar Newman, 1972).
Figure 15: Holding area at Sungai Dua traffic light
Figure 16: Pedestrian crossing at traffic light area.
Upon entering the Campus, the pedestrians will be greeted by the refreshing view of trees that provide sought-after shade and create the ambience of a garden. The pedestrians will be walking under tree shades on a wider walkway (3 metres width) that will channel them right up to the Eureka building. The landscaped area will enhance the visual image of the area, thus creating an inviting and welcoming atmosphere. The cooling effect of the trees will reduce the urban warming effects of concrete and tar surfaces and shield pedestrians from the hustle and bustle of traffic noise. The existing bus stop is a disgrace and will be replaced with a more aesthetic Wakaf that portrays traditional Malay architecture, similar to the existing Wakafs.

Figure 17: Holding area at Sg. Dua pedestrian traffic light
Figure 19: Typical sitting area
Figure 20: Pathway leading to bus stop
Figure 21: Bus stop area from Sungai Dua
The space in front of the Mosque will be designed to integrate water and geometric and green elements to represent the greatness and holiness of the Mosque. A water channel will be created, running across the pedestrian plaza. A pond with several fountains will be integrated with the water channel in order to provide the cooling effects of water. The incorporation of the water element to the area is essential as water is an important element of a traditional Islamic garden. With the beautiful landscape, we envisage that the existing Wakafs (Photo 14) will entice the passers by to pause and reflect on the beauty of the green scenery. Water coolers will also be available at the Wakafs for pedestrians to quench their thirst after a long walk.

The impervious surfaces of the extensive pavement will be softened with more green and grass for a greater level of comfort to the users. In certain areas, the grass should not be trimmed and should be left bouncy. These grassy areas will allow the groundwater to be recharged and help prevent flooding. To preserve the sanctity of the Mosque as a place of worship, the extensive parking area for motorcycle will be relocated to the area in front of the Eureka building. The circulation design has also taken into consideration the requirements of disabled people by providing ramps at certain areas.

Photo 14: The existing Wakafs in front of the Mosque should be utilized to promote interaction among the Campus community.
Figure 22: View of Water Channel
Figure 23: Water jet at intersection
Figure 24: Image of Pond Area
Figure 25: Ramp will be provided in front of Eureka building for the wheelchair users.

We envision that the area in front of the Mosque will be totally utilized as a pedestrian-oriented plaza that will further enhance a notable USM landmark that is not only a pride of Muslims but will be inviting to all people, regardless of their faith. It will showcase the tolerance of a multi-ethnic and multi-religious community.

Figure 26 to Figure 31 show our proposals for the main spine of the campus pedestrian network.
Figure 26: Proposed Landscape and Pedestrianization Along Jalan Ilmu
Figure 27: Proposed Landscape and Pedestrianization Along Jalan Ilmu (Zone A)
Figure 28: Proposed Landscape and Pedestrianization Along Jalan Ilmu (Zone B)
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Figure 30: Proposed Landscape for Shop Lots Area at Sungai Dua Entrance
Figure 31: Proposed Landscape and Pedestrianization for Sungai Dua Entrance
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